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Competition: Sacred Cow,
Workhorse, or Lame Duck?

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This article is less about competition policy than it is about competition itself. Most critics of competition policy, including the late Robert Bork, stigmatize the policy for not achieving its goals, while competition itself gets off scot-free. In their estimation, competition remains the sacred cow that always delivers consumer welfare and economic efficiency. I go a step further. For my part, when markets fall short of efficiency, the most likely cause is not that competition policy fails, but that competition itself does not work. In such markets, a better policy would be of little help. The bad news is that, in the vast majority of real-world markets, competition is a lame duck, for the simple reason that economies of scale are pervasive there. And where competition is a workhorse, as it is in innovative markets, competition policy has little to contribute, and traditional competition analysis is of no use due to the unpredictability and shock-wise nature of innovation. In my view, where competition policy has the rudder of competition analysis, the ship does not move, and where the ship moves, the policy is rudderless.

The original title of this article was *What Is Competition?*, but as I worked it out, I realized that most of us have an intuitive understanding of what competition is that is far superior to what any formal definition can tell us. We know what competition is from our daily experiences. Watching our favorite soccer team win the Champions League gives us a pretty good idea, and losing our first love to a classmate is something we will never forget. Therefore, I think we can learn more about competition from a discussion of what it does and what it fails to do than from a definition of what it is.

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Yet as long as the proclaimed objective of competition policy is to promote and protect competition, something more than a reference to a soccer contest or a broken heart seems to be in order. After all, when you protect something, it is beneficial to understand what you are protecting. Moreover, to assess the performance of the policy, competition should be measurable. Competition agencies, blaming the evil forces of monopoly and market power, typically argue that the markets that they investigate suffer from a lack of competition; but how can we be sure, when we are not even able to measure the strength of competition?

It is surprising, to say the least, that more than a century after the enactment of the first competition statute so little progress has been made in this field. As far as the concept itself, much has been written on what competition is, and many definitions have been proposed, but there is no agreement. There is even less agreement on how to measure competition. The only agreement is that conventional measures of competition, such as the market share of the biggest firm and industrial concentration indices, are entirely inadequate. The fact that those indicators are still used in merger control, economic regulation, and the political debate is in no small part due to a lack of something better. If you cannot do what you should, you do what you can. It is like looking for a lost key under a streetlamp, not because the key was lost there, but because that is where you are able to see. Good luck!

Profits are a different story. There is little doubt that strong competition does not go together with high profits, but measuring the strength of competition indirectly through profit levels has a notable inconvenience. The problem is that making profits drives business activity, and high profits reflect success. So, when strong competition is equated with low profits, competition policy would discourage success in business. In practice, this is what competition policy often does, but if there is anything that antitrust authorities want to avoid, it is the semblance of going after the successful. Perhaps the most eloquent expression of this principle can be found in the winged words of Judge Learned Hand: "The successful competitor, having been urged to compete, must not be turned upon when he wins."¹

In this article I will not develop a definition of competition that is better than what has been proposed thus far. Neither will I propose ways to measure competition that are different from the familiar ones. Instead, I discuss some aspects of competition that are, in my view, more helpful for a proper understanding of the concept. Most of them are amply acknowledged in the literature on antitrust but are difficult to deal with in a quantitative manner. Consequently, despite an attitude among competition law enforcers suggesting a scientific and quantitatively rigorous approach, at present it is

¹ *United States v. Aluminum Co. of Am. (Alcoa)*, 148 F.2d 416, 430 (2d Cir. 1945).

still the subjective appreciation of qualitative features that triggers decisions in most competition cases.

One aspect that I examine is the self-destructive nature of competition. When some firms outperform others in the same line of business, as is almost always the case, competition drives the least efficient firms from the market. Should we be happy that this process of expulsion enhances efficiency? Or should we deplore it for the loss of competitors? Where this question becomes particularly acute is in markets with economies of scale in which competition is at war with productive efficiency. A closely related concept is the distinction often made between static and dynamic competition—a distinction that I disfavor. However, because there is little doubt that competition works differently in a static setting than in a dynamic setting, I discuss it in some detail.

I. WHAT IS COMPETITION?

I believe that a discussion of these aspects of competition tells us more about what competition is than any formal definition can achieve. However, to begin, I examine a definition proposed by one of the most prominent scholars in the field—a definition that I believe has generated more confusion than clarity, particularly because it endows competition with qualities that it simply does not have.

What I have in mind is the definition proposed by Robert Bork in *The Antitrust Paradox: A Policy at War with Itself*, probably the most influential text on antitrust of the twentieth century. Of five alternative definitions, Bork opts for the following: “‘Competition’ may be read as a shorthand expression . . . designating any state of affairs in which consumer welfare cannot be increased by moving to an alternative state of affairs through judicial decree.”² It is not a definition that would suffice for a textbook in economics, but what is clear is that, for Bork, competition is not something that firms do in a market; it is a state of affairs that results from what firms do. For Bork, competition is not a process; it is the outcome of a process.

Bork is not the only one to define competition as a state of affairs. Many others describe not so much competition but *perfect competition* as a state of the market in which the individual players are price-takers. That is to say, the demand that they face is infinitely elastic, and they cannot influence prices by selling somewhat more or less of a product. Under such definitions, competition is conceived again, not as something that market players do, but as the result of the doing. Both Bork’s definition and the price-taker definition

² ROBERT H. BORK, *THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF* 61 (Free Press 1978).

refer to extreme situations, however, and are of little help when competition is imperfect or when the purpose is to measure its strength.

Furthermore, Bork identifies competition with maximum consumer welfare, which in his view is the only legitimate goal of antitrust.³ By doing so, Bork gives competition more credit than it deserves. He does not allow for any circumstances in which competition does not lead to maximum welfare. For Bork, competition *is* maximum welfare. This is also why he rejects the definition of competition as *a process of rivalry* with the far-fetched argument that, if that were true, antitrust would be “a prescription for the complete atomization of society . . . call[ing] not only for general abject poverty but for the death by starvation of millions of people.”⁴

In my view, Bork’s definition is confusing. I consider competition to be a good thing, but there are many conditions under which it simply fails to work. There are circumstances in which competition, conceived of as independent decision-making by market players, does not lead to maximum welfare, or even leads away from it. Such situations are well documented in the economic literature, and there is little controversy about them.⁵ For me, antitrust should not promote an idealized concept of competition stripped of its deficiencies; it should promote a more realistic concept of competition, but only in those circumstances where competition really works. When circumstances are not propitious, antitrust should either abstain from intervention or at least allow for efficiency defenses. This more practical approach is what inspires competition law enforcement today.

Another shortcoming of which Bork was probably unaware is that, by defining competition as a “state” of affairs, he limited himself to competition in a static setting. As we all know, competition also has dynamic effects and, as a general rule, the dynamic effects are quite different from—and sometimes even opposed to—the static effects. No wonder that the dynamic aspects of competition remain largely out of scope in Bork’s *Antitrust Paradox*. Illustrative is the absence of any reference to Joseph Schumpeter in his book.

For simplicity, I stick to the unambitious definition of competition as a process of rivalry between suppliers of substitutable goods and services for the preference of consumers. In this process, suppliers have a variety of instruments at their disposal. First, they must procure sufficient supply and charge attractive prices; next, they must attend to product quality; then,

³ Although Bork invariably refers to consumer welfare, from his writings it becomes clear that what he really has in mind is not consumer surplus, but total surplus. See *id.* at 108, 110.

⁴ *Id.* at 59.

⁵ Such market failures include economies of scale, externalities, incomplete information, moral hazard, and transaction costs, among others, which I analyze in a series of essays on the free market and on economic efficiency. See Adriaan ten Kate, Sr., *On Free Markets, Their Benefits and Shortcomings, and How Competition Policy Operates in Such Markets*, 1 *CRITERION J. ON INNOVATION* 381 (2016); Adriaan ten Kate, Sr., *Economic Efficiency as the Ultimate Goal of Competition Policy* (Mar. 1, 2016) (unpublished manuscript), <https://www.ssrn.com/abstract=2740523>.

potential consumers must be well informed about the products; and, finally, the products must be brought as close as possible to the buyers. Competition takes place in all of these dimensions and is always a combination of competition in supply, price, quality, marketing efforts, and distribution logistics.

II. THE STRENGTH OF COMPETITION AND HOW TO MEASURE IT

One way to learn something about competition is by trying to measure its strength. If you try to measure something abstract, you force yourself to think about what exactly you want to measure, and sometimes people recognize their lack of understanding of a concept only after they are asked to quantify it. Therefore, I believe that a discussion of how to measure competition can be helpful.

The strength of competition is a matter of degree and depends on several factors, some of which are structural, others behavioral. One of the structural factors is the *number of firms* in the market. With one firm, there can be no competition at all; with many firms, competition is supposed to be strong, although there is no guarantee. Much depends on how firms interact strategically. Such interaction can be strongly competitive; it can also be accommodating. The strategic interaction between firms is of a behavioral nature.

A. Structural Factors

The number of firms in the market aside, a second structural factor is *market shares*, often combined in an industrial concentration index. As competition is supposed to be weak in highly concentrated markets, concentration indices are often taken as an inverse measure of the strength of competition. A third structural factor is the degree of *substitutability* between the goods offered by competing firms. When those goods are close substitutes, competition can be strong; otherwise, competition is limited by the lack of substitutability.

In competition analysis, it is mostly the structural factors—the number of firms, market shares, concentration indices, and recently also substitutability indicators, such as diversion ratios—that are used to measure the strength of competition. Unfortunately, such indicators do not consider the way that market players interact, and they can therefore be misleading. It is better to see them as rough approximations, but the extent to which competition actually arises in a market still depends on the behavior of the market players.

B. Behavioral Factors

The behavior of market players depends, on the one hand, on what they pursue, which is usually supposed to be individual profit maximization, and on the other, on the responses that they anticipate from the other players to their own moves. In a strategic setting, in which the profits of market players depend not only on their own choices, but also on the choices of the other players, something must be assumed about the choices the others will make. Without such an assumption, profit maximization is a void action device. This brings us to game theory.

In non-cooperative games, players choose strategies that maximize their payoffs under the assumption that the other players keep their strategies fixed. That leads to a solution of the game known as the Nash equilibrium. Alternative assumptions about how the others respond lead to different solutions, but the Nash equilibrium is the solution obtained when strategies are assumed fixed. In all such games, the strategies from which the players make their choice and the payoffs derived from the chosen strategies are given from the outset and are known by all of the players.

Oligopoly models are non-cooperative games, but with a peculiarity. In oligopoly games, it is unclear from the outset what the strategies are, and as long as that is unclear, it is also unclear what exactly the players assume fixed so as to maximize profits and arrive at a Nash equilibrium. Strategies can be prices, quantities, or something else. Different choices lead to different equilibria, none of them *a priori* more realistic than any other. Furthermore, there are ways to anticipate responses without assuming that a specific strategy is fixed. In that case, the result is not a Nash equilibrium in the proper sense, but therefore not less realistic.

The debate on the rationality of response anticipation aside, it is clear that the strength of competition between otherwise independent market players depends on the responses that they anticipate from the other players.⁶ When they assume that the other players keep their prices fixed, the resulting competition will be much stronger than when they assume that the others keep their quantities fixed, and the equilibrium prices will be accordingly lower. Likewise, in models of conjectural variation, the strength of competition depends on assumptions about the strength and direction of the other players' responses.

As a general rule, anticipating parallel moves by the other players leads to less competitive outcomes than does anticipating counter-moves. This is

⁶ Whether an equilibrium is realistic depends on whether the underlying response anticipations are rational, and whether response anticipations are rational depends on the setting. For example, what is rational in a one-shot game might be irrational in a game with continuous interaction and vice versa. See Adriaan ten Kate, Sr., One-Shot Versus Continuous Interaction in Oligopoly Games (Jan. 17, 2017) (unpublished manuscript), https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2901289.

quite intuitive. If you raise your price and expect the other players to follow suit, you will be more inclined to raise your price than if you expect the others to respond by lowering their prices. Likewise, if you increase your supply and expect your competitors to do the same, you will be less inclined to do so than if you expect the opposite response. One should realize, however, that it is not parallel behavior itself that leads to uncompetitive outcomes; it is the *anticipation* of parallel behavior. When all players charge low prices, their behavior is perfectly parallel and the outcome is competitive, but when they anticipate that the others lower their prices in response to their own price decrease, they have no incentive to do so.

Altogether, it is primarily the strategic interaction between suppliers that determines the strength of competition, much more so than does the market structure. As stated above, structural indicators might give a misleading picture of what actually happens. Firms can compete aggressively by setting low prices and seeking market share. Alternatively, they can accommodate to maintain the *status quo*, or they can try to convince their competitors that competition is a lose-lose game. Competition authorities would like (but cannot force) firms to compete aggressively. The authorities can forbid them only from making deals, but having selfish goals is perfectly legitimate, as is anticipating whatever response competitors might have. In a free market, all are free to choose.

C. Measuring the Strength of Competition

The importance of behavioral factors is bad news for agencies, practitioners, and even scholars pretending to measure the strength of competition. The number of competitors in a market is easy to observe, provided that the market is clearly defined. Market shares are somewhat more difficult to ascertain, but some accounting and statistics will do the job. The degree of substitutability between different goods is more difficult to estimate, and the outcomes of econometric exercises often depend crucially on the specification of the demand functions and data availability. However, even if all such structural indicators could be estimated with great precision, which is definitely not the case, we would still have only a rough approximation. The real strength of competition depends on the strategic interaction between market players—that is, on whether they choose to compete aggressively or simply take it easy.

Unfortunately, what market players have in mind while making their choices—what their goals are and how they anticipate others' responses—is unobservable. You might have the impression that they are competing fiercely, though in reality they strike hidden deals or have tacit understandings. And asking market players face to face would not make sense because

they might well pursue their goals and anticipate responses unconsciously. Moreover, they might have reasons not to tell the truth. The only way to learn about a market player's strategy is by observing his choices and trying to infer his goals and response anticipations from those choices.

Indeed, significant empirical research has been undertaken in this field.⁷ As different kinds of strategic interactions (Cournot, Bertrand, Stackelberg, consistent conjectures, and so on) predict different relations between the parameters of the demand system (elasticities) on the one hand, and price-to-marginal-cost margins on the other, one can get an idea of the strategic interactions in a market by checking which prediction comes closest. I myself have little confidence in the results of such exercises. I do not think that elasticities can be estimated with sufficient precision to arrive at anything reliable, and marginal costs even less so.

With marginal costs, the problem is threefold. First, marginal costs have the unpleasant habit of being *marginal* costs, not variable costs or average variable costs. They are a nice theoretical construct, but in practice they hardly work. In bookkeeping there is no such thing as a cost function with derivatives. Second, for the test one needs product-wise margins, but most firms are multiproduct enterprises, and the division of common costs between individual products is inherently arbitrary. Third, and most significant, the relevant concept is opportunity cost, not accounting cost, and opportunity costs can be as different from accounting costs as equity prices are from book values. In brief, such exercises are heroic, but should not be taken all too seriously.

A closely related way to measure the strength of competition is by going directly to actual profit margins, not price-to-marginal-cost margins. The underlying idea is that competition puts profits under pressure, so that high profits are indicative of weak competition. Again, there is a variety of setbacks. First, although it is no longer the theoretical construct of marginal cost against which price is held, it is still accounting costs, not opportunity costs. Intangibles could have increased the value of assets far above book value, and accounting costs would underestimate opportunity costs accordingly. Second, when prices are held against average variable costs excluding fixed costs, one should recall that positive margins are often necessary for firms to break even. Then, there is the problem of the common costs that must be allocated to individual products. Finally, there is the inconvenience mentioned before that the prime motivation for doing business is making profits.

⁷ See, e.g., Charles A. Holt, *An Experimental Test of the Consistent-Conjectures Hypothesis*, 75 AM. ECON. REV. 314 (1985); William P. Putsis, Jr. & Ravi Dhar, *The Many Faces of Competition*, 9 MARKETING LETTERS 269 (1998).

Altogether, there is no way to measure the strength of competition in a market that is anywhere near uncontroversial. One economist does it one way, another does it a different way. I have seen markets with ten suppliers without capacity constraints worth mentioning that were declared uncompetitive, and I have seen markets with a single supplier and no competitors declared competitive (contestable). I have even seen an industry in which a potential entrant was conferred market power before entering.⁸ Altogether, I believe it is fair to say that measuring the strength of competition is still a mess, and that suggesting otherwise is deceptive.

III. WHAT COMPETITION DOES AND WHAT IT DOES NOT

Competition does two things. From the perspective of comparative statics, it drives prices down and increases welfare in the market where it occurs. From a dynamic perspective, it drives the least efficient firms out of the market and picks the winners. Furthermore, in a dynamic setting competition might be a driving force for innovation. Whether this is true is debatable, but it cannot be excluded as a possibility. These are different functions that are often referred to as *static competition* and *dynamic competition*, a distinction that I disfavor. I prefer to see static competition and dynamic competition not as different kinds of competition, but as different functions of competition. So I prefer to distinguish between the static and dynamic *effects* of competition.

A. The Static Picture

In the static picture, the market fundamentals are given and do not change over time, while the strength of competition is the instrumental variable. By market fundamentals, I mean that there is a market with a well-defined product basket, that there are firms that produce (or are able to produce) those products at well-defined production costs, and that there is a demand system reflecting consumer preferences and their purchasing power. The question is then: What is the influence not so much of competition itself but of *more* competition on the market outcome? How does it affect prices and output?

To answer those questions, it is customary to consider two scenarios—a more competitive and a less competitive scenario—and to estimate the effects from competition by comparing the equilibrium outcomes between

⁸ The situation was Mexico's so-called "voucher war." Vouchers are a crazy construct to circumvent income tax on fringe benefits: vouchers, not being money, are not income! A few firms were negotiating between employers and affiliate firms accepting the vouchers. When supermarket chains wanted jointly to attract the business themselves, the existing firms strangled the initiative by accusing the supermarket chains of every kind of anticompetitive conduct imaginable.

the scenarios. More competition might be the result of more firms in the market or of a more competitive strategic interaction between the firms. Less competition might be due to mergers or to a less competitive interaction. The differences are introduced exogenously.⁹

These are the concerns of static competition analysis, which mostly uses one-shot oligopoly models or something of the kind, with a hypothesized strategic interaction between firms to convert the market fundamentals into an equilibrium. In such equilibria, every market player is happy with his choices given the strategic interaction. The rest is a matter of comparing the equilibrium of the actual situation with that of the counterfactual. Merger simulation is a good example. Difficulties might arise with market definition and with the estimation of the parameters of demand and production costs, but thus far such difficulties have not constituted a reason to abandon the approach.

According to this kind of analysis, there is no doubt that more competition leads to lower prices, better products, increased output, and more social welfare in the market where it occurs. That is the result of such exercises, regardless of the oligopoly model that is used to arrive at the equilibria. In other words, competition invariably lowers prices, boosts economic activity, and, although producers do not like it, consumers gain more than what producers lose. So, competition enhances the welfare of the society as a whole. This is why competition is such a sacred cow for the competition community.

There are some pitfalls in this success story, however. The problem is that the benefits from more competition are limited to "*the market where it occurs.*" The addition is essential because more competition in one market has spillover effects in other markets, and such spillover effects might undo in other markets what more competition does in the market itself. To be explicit, when competition drives prices down and enhances demand in one market, productive resources are drawn away from other markets, and the result might be that prices in other markets go up and demand goes down. Furthermore, one would be tempted to assume that with lower prices people are able to buy more, but that is not the case. With lower prices, income from selling also falls, and the net effect is that the purchasing power of the income of society as a whole remains as it was before. It is simply a matter of double bookkeeping.

With that in mind, little is left of the success story of competition. Economy-wide, more competition lowers prices, but the purchasing power of aggregate income remains the same. Likewise, more competition does not lead to more economic activity; it leads to more activity in one market, but at

⁹ One might object that more firms and mergers change the market fundamentals, but for simplicity I beg from the reader some tolerance.

the expense of activity in other markets. That is, there is no net increase in activity across the board; there is simply a shift of activity between markets.

Such shifts might increase social welfare or might reduce it, depending on the markets involved. As a general rule, when the market where competition becomes stronger is less competitive than the economy-wide average, the stronger competition will give rise to a welfare gain, but when the market is already more competitive than the average, more competition is likely to reduce welfare. As a consequence, it is not so much monopoly or supra-competitive pricing by itself, but its disparity between industries that causes the welfare losses, and encouraging competition in all industries in order to enhance economic activity across the board is like pulling yourself out of a swamp by your bootstraps.

If you were to make this argument to members of the competition community, they might look at you as if you were crazy. It flies straight in the face of the conventional antitrust wisdom that they are so familiar with. For them, more competition in one industry enhances social welfare and economic activity in that industry, and that's that. Hence, more competition in all industries enhances social welfare and economic activity in all industries. That is a cornerstone of their beliefs, but they are wrong.

Their usual objection to my argument is that the spillover effects are negligible, and they do have a point. As spillover effects from one market spread out over the economy, they mostly go unnoticed. However, a negligible part of something big can be as big as a big part of something negligible, and indeed, adding up the spillover effects over all industries, as negligible as they might be individually, their sum is in the same order of magnitude as the effect in the market where competition becomes stronger. That is what my critics do not realize. In my essay on deadweight loss, in which I spell out this argument in more detail, I call this the bathtub fallacy.¹⁰

Altogether, what competition does in a static setting is clear. It lowers prices, leads to more productive activity, and enhances welfare in the market where it occurs. What it does not do is also clear. It does not lead to more economic activity across the board, and, in spite of the lower prices, it does not increase the purchasing power of aggregate income. Whether it enhances welfare of the economy as a whole depends on how competitive the market where competition becomes stronger already was.

¹⁰ When you take a pail of water out of your bathtub and throw it in the swimming pool, the water level in the bathtub goes down visibly, but in the swimming pool there is no noticeable difference. So, there is a loss of water. That is the bathtub fallacy. See Adriaan ten Kate, Sr., *The Story of the Deadweight Loss and What Bathtubs and Swimming Pools Have to Do with Antitrust* (June 18, 2015) (unpublished manuscript), <http://ssrn.com/abstract=2620359>.

B. The Dynamic Picture

In the static picture, the direction of causality was understood from the outset. More firms led to more competition, and more competition led to lower prices and more welfare in the market. In the dynamic picture, it is no longer that simple. In the dynamic picture, not only does more competition lead to lower prices, but also, lower prices drive high-cost firms from the market, which in turn might lead to more industrial concentration, and thus to less competition. In this setting, competition and concentration are endogenous. Causality runs both ways.

Moreover, in a dynamic setting, market fundamentals change. New products might enter the scene, giving rise to different demand characteristics and new production techniques. Likewise, for existing products, alternative production techniques might become available to realize cost savings. In other words, there might be both product and process innovation. Such innovation can be considered either as an exogenous phenomenon, or as something endogenous. The latter possibility takes into account that innovation can be encouraged or discouraged by competition.

So, in a dynamic setting, competition assumes the additional roles of driving inefficient high-cost firms out of the market, and of picking the winners. In this way, productive efficiency is enhanced, but markets become more concentrated. Only when there is sufficient churn in the newcomers, is there a countervailing force, but even then, competition mostly picks a winner-take-all. Paradoxically, in a dynamic setting, competition and its greatest enemy, industrial concentration, shake hands. The stronger competition is, the more pronounced the tendency toward concentration. In a dynamic setting, competition tends to destroy itself.

Product and process innovation is a different story, and the role of competition in this field is ambiguous. On the one hand, intellectual property rights grant monopoly power to innovators in order to encourage innovation. That is, monopoly power would be required for innovation to arise. On the other hand, it is possible that competition would encourage innovation, because competition puts profits under pressure, and innovation is a means to escape from that pressure. So, competition today would spur innovation, whereas competition tomorrow would stifle it. It is a stalemate.

The reasoning behind the argument that competition would spur innovation is as follows. Monopolists and firms with market power lean back and enjoy an easy life because they can afford it, whereas competitors must remain alert, otherwise they will be eaten up. The argument sounds reasonable, but its logic is the same as that of the statement that rich people are lazy because they do not need to work, whereas poor people must work hard to survive. In reality, the opposite might be true. Perhaps rich people work hard

because that is the way they are, whereas poor people give up quickly because whatever they undertake does not work out. That sounds equally reasonable. Who is right?

Quite some empirical research has been done on the issue.¹¹ Most of these studies attempt to test the hypothesis proposed long ago by Schumpeter that large firms are in a better position to innovate than are small ones. Evidently, such research suffers from serious measurement problems, not only on the side of competition, but even more so on the side of innovation.¹² However, the outcomes of exercises of the kind are inconclusive, and it seems fair to say that there is no substantial evidence that competition would spur innovation, nor that it is the big firms with market power that contribute most.¹³

C. Competition in Innovative Markets

In innovative markets, competition is different. Competition between already existing products does not really matter; what matters is competition between new and old products. Consumers do not switch because the new products are cheap, but because they are superior. Low prices might be significant in that they might postpone switching, but sooner or later the switching will occur. In innovative markets, there is less product substitution in response to price changes than there is product migration over time. Schumpeter's gale of creative destruction is at work, and competition in innovative markets mostly involves races where one winner takes all. In innovative markets, competition is a vehicle for transition from the old to the new, and the welfare gains from the transition are usually much larger than any gains from lower prices.

Just as competition can fall short of enhancing social welfare in a setting of comparative statics, in a dynamic setting competition can also fail to produce the envisaged benefits. That is, in a dynamic setting, competition does not always pick the most efficient firms as winners. Particularly in the presence of economies of scale, competition in a free market might favor less-efficient incumbent firms with first-mover advantages. There might well be more efficient entrants or potential entrants that do not get a foothold in the market because they arrive late. It is like the QWERTY layout of the

¹¹ A classical text on the issue is Wesley M. Cohen & Richard C. Levin, *Empirical Studies of Innovation and Market Structure*, in 2 HANDBOOK OF INDUSTRIAL ORGANIZATION 1059 (Richard Schmalensee & Robert D. Willig eds., North-Holland 1989); see also JOHN SUTTON, *TECHNOLOGY AND MARKET STRUCTURE* (MIT Press 2d ed. 2001).

¹² See, e.g., Philip G. Gayle, *Market Concentration and Innovation: New Empirical Evidence on the Schumpeterian Hypothesis* (Univ. Colo. Boulder Discussion Paper Econ., Working Paper No. 01-14, 2001), <http://www.colorado.edu/econ/papers/papers01/wp01-14.pdf> (addressing measurement issues).

¹³ J. Gregory Sidak & David J. Teece, *Dynamic Competition in Antitrust Law*, 5 J. COMPETITION L. & ECON. 581 (2009).

keyboard. Perhaps the Dvorak layout is more efficient, but to switch from one to the other is too costly.¹⁴

When this happens, little can be done about it. Competition policy is there to encourage competition, not to improve upon it. Moreover, other public policies such as industrial policy and outright regulation have a poor record of picking the winners. The problem is that, in most circumstances, one is unsure whether the newcomers really are more efficient than the incumbents. They might claim to be, but the only way to find out is through trial and error. This might be very costly, however, and might be beyond the realm of possibility. It is often preferable to settle for something that apparently works than to strive for something better but which is in the air. As the old saying goes: “A bird in the hand is worth two in the bush.”¹⁵

In a nutshell, the function of competition in a dynamic setting is clear. It picks the winners and drives high-cost firms from the market. In so doing, competition for the most part increases industrial concentration. Furthermore, it serves as a vehicle for the transition from the old to the new. What competition does not do is also clear. It does not always pick the most efficient firms as winners. First-mover advantages, combined with consumer stickiness, might push the balance toward less efficient firms. Whether competition encourages innovation remains an open question.

IV. WHERE COMPETITION WORKS, AND WHERE IT DOES NOT

Whether or not competition works properly largely depends on the nature of the markets involved. In markets where fundamentals are stable, consumers are well informed, and economies of scale are absent or not too strong, it is reasonable to expect competition to bring the envisaged benefits of lower prices and more welfare. However, in markets with pervasive economies of scale, competition does not really work. In such markets, competition is at war with productive efficiency, and strong competition renders markets unstable. One might try to promote it, but competition is a lame duck.

Where competition works better is in innovative markets—not so much in its static role of keeping prices near production costs, but in its dynamic role as a vehicle of transition from old to new products and production technologies. There are also pitfalls in that respect, including the possibility that competition will pick the wrong winners or will slow down instead of speed up the process of transition, but as a general rule, competition is a genuine workhorse in innovative markets.

¹⁴ See CARL SHAPIRO & HAL R. VARIAN, *INFORMATION RULES: A STRATEGIC GUIDE TO THE NETWORK ECONOMY* 185 (Harvard Business School Press 1998).

¹⁵ In my native Dutch, the saying is more emphatic: “Better one bird in the hand than ten in the air.”

A. Economies of Scale

The prosperity of mankind as we know it today is in no small part the product of economies of scale. Fishing with a net instead of with a rod, the famous pin factory of Adam Smith, the industrial revolution of the nineteenth century, railways instead of donkeys, and last but not least, the costless reproduction of information goods in more recent times, have made the world a different place, and the exploitation of economies of scale by mass production has spread the fruits of innovation among many more people than otherwise would have been possible.

Comparing competition on the one hand with economies of scale on the other as driving forces of economic progress, the role of competition has been modest to say the least. Cost savings resulting from mass production far outweigh any price reductions from increased competition, and the resulting welfare gains are accordingly higher. It should be admitted that competition lends a helping hand in the transition from old to new production and consumption patterns, but it is not a driving force. At least, that is the way I see it.

What makes the situation worse is that competition and economies of scale are at war with each other.¹⁶ When marginal costs exceed average costs, competition works well and firms break even, but when marginal costs are lower, as is the case with economies of scale, firms no longer break even in the competitive equilibria.¹⁷ In this case, strong competition not only drives prices down and output up, but also drives firms out of business. Competition can become too strong. With economies of scale, the partial-equilibrium model underlying competition analysis breaks down, and the more competitive equilibria are no longer sustainable in a steady state.

This is not only a shortcoming of the theoretical model; the unsustainability of equilibrium solutions reflects what actually happens in real world markets. With decreasing costs, firms have additional incentives to lower their prices, because this not only increases their sales but also lowers their costs. In the more competitive scenarios, this can lead to outcomes in which firms fail to break even—not only high-cost firms, but also the most efficient ones. As a consequence, industries with strong economies of scale lend themselves to price wars with irregular exit and entry of market players, a situation in which the benefits for consumers are short-lived. Too much competition makes markets unstable.

¹⁶ The conflict between competition and economies of scale is eloquently described in DAVID WARSH, *The Invisible Hand and the Pin Factory*, in *KNOWLEDGE AND THE WEALTH OF NATIONS: A STORY OF ECONOMIC DISCOVERY* ch. 4 (W. W. Norton & Co. 2006).

¹⁷ When economies of scale are strong and demand is not too inelastic, monopoly prices might be well below the break-even prices of symmetric duopolists. If so, one wonders what competition is all about.

No wonder that firms in industries characterized by strong economies of scale usually opt for unaggressive strategies. The potential losses from aggressive competition are much greater than any potential gains. It is a matter of common sense that too much competition becomes destructive, and markets tend to consolidate either by mergers or by coordination.¹⁸ Such consolidation has little to do with conspiracies against consumers, as competition authorities like to claim; rather, it is inspired by a desire to conduct business in a sustainable way.

Trying to preserve competition in such industries by challenging mergers or anticompetitive conduct is a waste of energy. By meddling with such industries, the authorities maintain the illusion of doing something useful for the consumers, but the loss of competition that is avoided in the short run will materialize sooner or later through internal growth. Competition authorities bother big business for the sake of competition, but this does not lead to a more efficient, sustainable market outcome. In such cases, competition is a sacred cow causing a traffic jam. Competition does not help, but stands in the way. Like it or not, in such markets there is an invisible hand—this time not that of Adam Smith—that drives firms toward consolidation. Competition is not something to be steered from the outside, but is endogenous.

That economies of scale and competition do not make for a happy couple has long been recognized. Industries with strong economies of scale are natural monopolies, and instead of tackling them with competition policy, they should be regulated. The obvious case is that of industries operating with an infrastructure whose duplication is costly. What is not sufficiently acknowledged is that costly infrastructure is only the tip of the iceberg. In the vast majority of markets even without infrastructure, economies of scale are pervasive and competition is inhibited for the same reason.

This is certainly the case in high-technology markets, where the variable costs of production are often near zero, but it is also the case in mature markets—that is, in markets in which products and production processes do not change over long periods of time. There are many such industries, among them those of cement, manufactured food, alcoholic drinks, airlines, and even funeral services. The list is endless; in fact, a negative list would be shorter. In most of these industries, the economies of scale exist less in the production of the goods themselves than in marketing, in brand and loyalty building, and in distribution logistics. For example, drug stores are no longer independent but belong to a chain with shared procurement facilities, mom ‘n pop stores are replaced by franchises and supermarkets, groups of airlines

¹⁸ Coordination might even be tacit. Firms simply refrain from lowering prices, because they anticipate that their competitors will follow suit to everybody's detriment. This might lead to a less competitive but sustainable equilibrium.

have joint frequent-flyers programs and code-sharing arrangements, and so on.

As a matter of fact, the kinds of markets where competition can be expected to bring about the classical benefits of low prices and ample consumer choices are endangered species. You can still find them in the zoo of textbook economics, but in the jungle of the real world they are hard to identify. In modern times, the playing field for competition in a static setting, which is still the type of competition that competition policy protects and promotes and which underlies competition analysis, is extremely diminished, if not negligible.

B. Public Utilities

Another grazing ground for the sacred cow of competition that has become particularly popular since the time of Margaret Thatcher is public utilities, including electricity, water supply, postal services, telephony, and railways. Before that time, those utilities had been considered natural monopolies, and were usually controlled by the state. The path-breaking idea was to privatize the companies, separate infrastructure from downstream services, and allow competition downstream. In the ideal case, the incumbent companies were vertically disintegrated, but if that was a bridge too far, they were obliged to provide access to their infrastructure at regulated tariffs on nondiscriminatory terms. In so doing, the blessings of competition would be spread over hitherto fallow fields.

Following the British experience, this approach was embraced by many countries all over the world, though somewhat more so in Europe than in the United States, but also in a number of developing countries. The European Commission has actively advocated this scheme across various sectors, and has issued a number of directives to its member countries to implement it. Likewise, international organizations have provided technical assistance to establish the necessary regulatory framework. Altogether, even though there is no agreement on best practices, there is a broad consensus that the present approach forms the skeleton of how things should be done.

To assess the achievements of the approach is a difficult, if not impossible task. It is perhaps as difficult as proving that the expansion of world trade since World War II is thanks to the GATT, or that there has been no World War III thanks to NATO. One simply does not know what would have happened otherwise. However, after a couple of decades of experience, there are definitely more horror than success stories. In all of them, it is unclear whether the horrors are really attributable to the approach itself or to the way it was implemented. It is also questionable whether the successes are thanks to competition in downstream markets or to other factors. Whatever

the answers, I believe it is fair to say that in most cases, the competition that was expected to unfold in downstream markets has been disappointing.

From a theoretical perspective, there are three major difficulties with the approach, each of which is sufficiently serious to derail any benefits from downstream competition. The first is the loss of coordination and economies of scope in production, as well as increased transaction costs, both of which result from vertical separation. The second is the difficulty of providing access to the infrastructure on nondiscriminatory terms. The third, and perhaps the most serious of all, is the difficulty of striking a proper balance between the ease of access for the sake of downstream competition on the one hand, and maintaining the incentives to expand and modernize the infrastructure on the other. Let us have a look at them one at a time.

As a general rule, economies of scope between upstream and downstream production in public utilities are weak, but the coordination of activities upstream and downstream is quite delicate. To avoid the cliché of unscrambling the eggs, I like to see the separate entities as the blind pushing the wheelchair of the lame. With some communication between the two, it might work to some extent, but combining vision with the faculty to walk in a single person makes it a lot easier to cross the street. And having the lame compete with a jogger endowed with sight but obliged to push the wheelchair is good for a reality show, not for a real-life contest. Then, there are the additional transaction costs from vertical disintegration or the arbitrariness of separate bookkeeping from functional separation.¹⁹ Last but not least, with separate entities one no longer knows who is at fault when something goes wrong.

As to access regulation, it would be easy if infrastructure services were homogeneous—a flat access rate would do a fair job—but unfortunately, they are not. Slots at railway stations at peak hours are not the same as slots at midnight, and electricity transport on one route is not the same as that on another. What about interconnection services in telephony in densely populated areas as compared to remote regions? For a level playing field downstream, differentiated services should be charged at different rates, but it is unrealistic to require that regulators establish access rates that take into account these subtleties, and in practice they do not, or they do it in a very rough way.

Charging flat or insufficiently differentiated rates for different services is similar to performing surgery with a kitchen knife. It gives rise to opportunistic behavior such as cream skimming from competitors in downstream markets. Choices made by regulators will always be biased in favor of some and against others, even despite their best intentions to remain neutral.

¹⁹ I like to see separate bookkeeping as keeping a register and valuing all the tangible and intangible services exchanged between husband and wife in a marriage.

Regulatory neutrality remains an ideal beyond the horizon, and the competition that develops in downstream markets is not the kind of competition one would like to see. Rather, it is a form of manipulated competition in which the regulator, not the market, picks the winners. This is not competition for the sake of efficiency; it is competition for the sake of competition.

One consideration is the structure of access rates, another is the level of the rates. Evidently, the lower the rates, the more attractive the entry in downstream markets and the stronger the competition there. So, the advocates of the approach have always pleaded for low access rates, and eventually for ridiculously low access rates, as well as for a tight enforcement of access rules. As a result, incentives to invest in the expansion and modernization in infrastructure are jeopardized. After all, who will invest in facilities that he knows on beforehand he will need to make available to or share with others at bargain prices? In my view, this is the most serious drawback of introducing competition in downstream markets of public utilities and, fortunately, there is a growing awareness of it.²⁰

Privatizing public utilities with the separation of infrastructure from services to give competition a chance looked promising at the outset, but after a few decades of experience, the balance is not favorable. The competition that has emerged downstream remains modest in most cases, mostly because economies of scale are not limited to infrastructure, but are also pervasive in most downstream markets. As a consequence, it is questionable whether the benefits from somewhat more competition here or there in the downstream markets outweigh the losses resulting from vertical separation and from the distortions to investment.

C. Innovative Markets

In innovative markets, as opposed to mature markets, market fundamentals are subject to continual change. New products enter the scene and affect consumer preferences. New production processes become available that not only generate new products, but also reduce the production costs of old products. Competition in innovative markets is different from competition in mature markets. In innovative markets, competition exists primarily between suppliers of new products and suppliers of old ones, and as such competition is a workhorse for economic progress.

In innovative markets, competition is a vehicle for the transition from the old to the new, and is driven by consumer preferences. Competition between suppliers of old products is less relevant. When this type of

²⁰ An excellent description of the problem can be found in Stephane Ciriani & Marc Lebourges, *The Role of Market Power in Economic Growth: An Analysis of the Differences Between EU and US Competition Policy Theory, Practice and Outcomes*, 5 EUR. J. GOV'T & ECON. 5 (2016).

competition is strong, it can postpone consumers' migration from old products to the more expensive new products, but this transition will take place regardless. Competition is no longer there to lower prices, but to encourage the transition, and as a general rule, the welfare gains from the transition are much larger than those derived from lower prices. This is competition in its dynamic function.

The role of competition policy in innovative markets is limited. The best that it can do is not to stand in the way, and simply to allow market forces to prevail. Even when competition picks the wrong winners, competition policy can do little about it without surpassing its role as a promoter of competition in a free-market environment. Competition authorities are not the appropriate institutions to decide which is the right winner and which is the wrong. They have a comparative disadvantage in that field.

Strangely enough, competition policy has occasionally stood in the way of economic progress. An illustrative example in the United States is the Robinson-Patman Act of 1936,²¹ which attempted to protect old mom 'n pop stores against the emergence of a new form of retailing: the supermarket. The mom 'n pop stores never stood a chance, but legislators and antitrust authorities have nonetheless lent themselves to slow down economic progress for quite some time. Today, the occurrence is recognized as a historical slip of antitrust policy, but it is a good example of how a policy can go astray when the dynamic effects of competition are misjudged.

Most obstacles to the transition from the old to the new have their origin not in private conduct, but in the regulatory initiatives of the state. In modern times, competition authorities advocate for competition-friendly regulation, and, in my view, such advocacy from the agencies is at least as important as law enforcement. It should be borne in mind, however, that for the advocacy role to be performed there is no need for a full-fledged competition regime with enforcement powers; an authority for regulatory supervision can achieve the same.

D. The Market for Innovation

The market for innovation is a strange market, if it is a market at all. The producers are the innovators, and the products are innovations. The market for innovation is upstream to innovative markets; that is, innovation is an input to the new products and production processes of innovative markets. The innovations can be used by the innovator himself in the downstream market. In that case, the innovations are for one's own use, and there is no intermediate market transaction. Innovations can also be sold or licensed,

²¹ Pub. L. No. 74-692, 49 Stat. 1526 (1936).

in which case the innovation is acquired or hired in a market transaction between a patent holder and a licensee.

The market for innovation is substantially different from a traditional market, however. In a traditional market, a producer knows clearly what it intends to produce, and from experience it has a pretty good understanding of consumer preferences. In the market for innovation, an innovator has only a vague idea of what it intends to innovate. Often, nothing results from its efforts, and other times, with some serendipity, something unexpected is developed. An innovator's understanding of consumer preferences is even more vague. After all, there can be no experience with something new. In the market for innovation, risk and venture is abundant.

Competition in the market for innovation is also strange. It constitutes a rivalry for hypothesized consumer preferences in downstream markets. So, the innovators have only vague ideas about what the demand for the new products will be. Costs are also up in the air. Nobody knows beforehand whether the innovative efforts will lead to something useful, nor how much time and money will be needed to get there. Moreover, unlike competition in normal markets, there are significant rewards for being first to innovate. Second-comers might be excluded from the party due to intellectual property rights or first-mover advantages. Competition in the market for innovation is less a continuous process of rivalry as it is an unstructured set of once-and-for-all races.

Competition analysis for the market of innovation exceeds our scope; all of the basic elements for analysis are missing. We hardly know what the products are, we know very little about cost functions, and we do not even know who the market players are. There is no register. Only the successful innovators rise to the surface, and the unsuccessful ones remain underwater. One can make some qualitative guesses about the effects from competition in the market, but due to the unpredictability and shock-wise nature of innovation, a quantitative analysis modeling causes and effects is for dreamers.

In my opinion, competition policy hardly has a role to play in the market for innovation. The policy has no instruments with which to protect or promote competition among an undefined set of innovators. Sometimes competition authorities oblige patent holders to grant licenses in order to promote competition in downstream markets, as if the innovations covered by the patents were essential facilities. However, innovations are by nature inessential. That life is possible *without* follows immediately from the fact that life was possible *before*. Moreover, by lowering the expectations of the rewards, compulsory licensing discourages innovation.

CONCLUSION

For Bork, competition was the beauty and antitrust the beast. By defining competition as a state of maximum welfare, alias economic efficiency, it is competition policy that is to be blamed when markets fall short of efficiency, not competition. In my view, competition is a positive thing but not a beauty, and competition policy, though not very effective, is not a beast. For my part, whenever markets fall short of efficiency, the prime suspect is not competition policy, but competition itself.

The single most important reason that competition often fails to work the way we learned from the textbooks is economies of scale. With economies of scale, competition is at war with productive efficiency and market stability. Industries tend to concentrate and firms tend to avoid aggressive competition, not in a conspiracy against consumers but as a result of an understanding among market participants, tacit or explicit, that aggressive competition leads nowhere. Economies of scale and competition simply do not get along with each other. In industries with economies of scale, competition is a lame duck.

The bad news for competition is that its sworn enemy, economies of scale, is formidable. Without a doubt, economies of scale constitute the most important source of prosperity of mankind and are pervasive in the great majority of industries today. In the form of mass production, economies of scale are what spread the benefits of economic progress among the people. With this adversary, competition hardly works in most industries. So, the textbook story about the blessings of competition is a nice fairytale, but reality is not so simple.

For the competition community, competition is an admirable workhorse, and competition policy is there to put the horse to work to the benefit of society, particularly of the consumers, and to protect it from the evil forces of monopoly and market power. For the missionaries among them, competition is a sacred cow to be worshipped and competition policy is a vocation. It is my view that in today's world, with industries characterized by strong economies of scale, competition is mostly a lame duck that contributes little to social welfare.

Where competition works well is in innovative industries. There, competition is a proper vehicle for the transition from the old to the new by picking the winners. In such industries, competition is a genuine workhorse, but competition policy hardly has a role to play. Improving on the dynamic role of competition in picking the winners is an illusion, and the best that competition policy can do is not to stand in the way. To speed up the transition, competition agencies might advocate for competition-friendly regulation,

but such an advocacy role does not require a full-fledged competition regime with enforcement powers.

Competition also works in the market for innovation, but that is not a market in the proper sense of the word. Moreover, the innovative process is unpredictable, shock-wise, and disruptive. So, it does not lend itself to the kind of quantitative analysis necessary to guide antitrust decisions. As a consequence, where competition policy has the rudder of competition analysis, the boat does not move, and where the boat moves, competition policy is rudderless.