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ROUNDTABLE ON THE ROLE AND MEASUREMENT OF QUALITY IN COMPETITION ANALYSIS

-- Note by the Secretariat --

This note by the Secretariat is submitted FOR DISCUSSION under Item VI at its forthcoming meeting to be held on 19-20 June 2013.

Please contact Mr Jeremy West if you have any questions regarding this document [Email: jeremy.west@oecd.org].

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THE ROLE OF QUALITY IN COMPETITION ANALYSIS

By the Secretariat[1]

1. Introduction

1. In principle, concerns about quality are just as pervasively interwoven in competition policy as concerns about prices. After all, a decrease in quality (holding price constant) can harm consumer welfare just as much as an increase in price (holding quality constant), and firms compete on the basis of quality as well as price. Merger guidelines routinely mention not only higher prices but lower quality as potential outcomes that can raise competition concerns. Similarly, entrenched monopolists are undesirable from a competition perspective not only because they cause inefficiencies and reduce consumer welfare through supracompetitive pricing, but because they tend to become complacent, letting the quality of their products and services slip. Competition authorities pursue cartels not only because they conspire to raise prices artificially, but because they sometimes conspire to reduce quality, too. Furthermore, behavioural remedies for competition law violations sometimes require companies to provide certain minimum levels of performance, which could be categorized as "quality" conditions.

2. It is not obvious how to incorporate quality considerations into actual competition analysis, though. Price considerations are much easier to incorporate. Price is a single, objective factor. Every consumer will prefer a lower price for a given level of quality. Quality, however, is a multi-dimensional, subjective factor. Consumers may disagree on what better quality means with respect to a certain product *at any price*. And even if they agree on what the relevant components of quality are, they may disagree on how to rank the importance of those components.

3. For example, a set of pizza delivery customers might all agree that both the speed of delivery and a diverse menu are important factors, but some may consider the delivery speed to be the most important factor while others care more about whether certain types of pizza are available. Or, to take a more nettlesome example, suppose we are analysing the market for chemotherapy drugs. At first, one might think this is the perfect counterexample – one that supports the argument that surely there exist some products for which quality is an obvious and universal concept. After all, everyone will agree that the most important quality feature in a chemotherapy drug is how effectively it fights cancer. Or will they? We might find, when comparing the views of youths and octogenarians, that people can have very different perspectives about quality even when they are cancer patients talking about cancer medicine. A young person may indeed give top priority to a drug's effectiveness against cancer, regardless of the drug's other traits. But an elderly person who has already been through cancer and its treatments once or twice before might prefer a drug that has milder side effects even though it is less effective. Or the older person might care most about whether the drug is administered orally or intravenously, or how frequently he or she will have to leave home to see a doctor during the course of treatment.

4. Such differences in consumers' outlooks can make measuring quality and incorporating it into competition analysis more difficult than measuring and incorporating prices. That is a likely explanation for the fact that courts and competition authorities rarely address quality concerns as thoroughly as they address price concerns.

5. We begin this paper by delving into some definitional questions associated with quality. What do we mean when we use that term? Is choice an aspect of quality? Can quality be used to define markets?

[1] This paper was written by Anna Pisarkiewicz and Jeremy West, OECD Competition Division.

Then we turn to the question of how changes in the level of competition affect quality. We examine that issue from the perspectives of both microeconomic theory and empirical studies. Next, we look at how quality concerns have been analysed by courts and competition authorities in a variety of competition law enforcement contexts.

2. Definitional questions

2.1 Defining Quality

6. As the Introduction suggested, trying to define quality is a bit like trying to nail jelly to a wall. It is an elusive, fluctuating concept because different people often have different ideas about what it means, both generally and with respect to particular products or services. Yet we all share some ideas about what quality is. We may not be able to come up with a narrow, uniform definition that suits everyone in a given market, but we can identify what some of the main considerations are. Quality concerns things like workmanship, materials, design, reliability, durability, aesthetics, location, and performance.

7. In this paper, we are not talking about characteristics of products and services that can be easily translated into prices or costs. For example, if we offer you 500 grams of sugar for 3 euros but our competitor offers 1 kg of sugar for the same price, it could be said that the competitor is offering a higher-quality deal simply because buyers will get more sugar for the same price. But it would be a simple matter to compare these offers purely on price terms: our price is 6 euros per kg and our rival's price is 3 euros per kg. Who would not want twice the sugar for the same price? That is an easy decision. It is not at all what this Note is about. Similarly, we are not talking about things like how long one light bulb lasts in comparison to another. It is trivial to compare a 70 watt bulb that lasts for a year and costs 3 euros with a 70 watt bulb that lasts for ten years and costs 10 euros. That is really just a difference in quantity per euro again.

8. Instead, we are talking about the features of the product itself: not how much of it there is, but how *good* it is. Sugar is a commodity. Generally speaking, all sugar tastes the same, dissolves the same, pours the same, etc. So there is not much variation in quality from brand to brand. Customers base their buying decisions almost entirely, if not entirely, on price. But what about something like an automobile? Or a holiday package? Or accounting services? For those kinds of products and services, a lot more matters than the price/quantity pairing. For an automobile, considerations like cargo capacity, styling, handling, and fuel economy matter. But some customers may care a great deal about a car's appearance and horsepower and much less about its cargo capacity. Others may agree that appearance and horsepower matter, but disagree on which factor is paramount. For holiday packages, location obviously matters a great deal. But how can one determine in an objective, universally applicable way whether Rome or Phuket is the better holiday destination? Such questions are much harder to answer than whether 3 euros for 500g of sugar is better than 3 euros for 1 kg of sugar.

9. Economists have come up with a semantic way to distinguish features that all consumers agree are desirable from features that only some consumers find desirable. The former are grouped under the heading "vertical product differentiation" while the latter are categorized as "horizontal product differentiation." That is useful terminology, but it does not change the facts that, to some consumers, a given horizontal product differentiation will count as "quality" while to others it will not, and that even among vertical differentiations, consumers sometimes disagree on how important various features are relative to one another.

10. Faced with this situation, analysts wishing to study quality in a market could try to identify and measure most or all of the variables that matter to consumers. Box 1 provides an example of this approach, taken by a sectoral regulator in Ireland that looked at 13 different elements of service provided by an

airport authority. Alternatively, one could rely on the theory of revealed preference, which holds that the preferences of consumers can be revealed by their buying habits. By observing which products customers buy, and how much they buy, we can learn what quality is and who is providing it.

Box 1. How Do Sectoral Regulators Assess Quality? An Example from the Dublin Airport Authority

In accordance with the latest determination made by the Commission for Aviation Regulation on the maximum level of airport charges,* the Dublin Airport Authority (the DAA) must ensure that the level of revenue collected from airport charges does not exceed the maximum revenue permitted per passenger. The maximum revenue is set by a specific formula into which the Commission introduced a quality term, thereby creating a direct link between the price cap and the quality of service delivered.

For example, for the regulatory period covering year 2010, the formula provided that the maximum revenue per passenger should be $\mathbf{[€8.93 + T2_{2010}] * QS_{2010}}$ where

$T2_{2010}$ is an increase in the maximum permitted revenue per passenger allowed if Terminal 2 (T2) became operationally ready in 2010, and QS_{2010} represents a Quality of Service adjustment that took a value between 0.965 and 1, depending on how many service quality targets the DAA managed to achieve.

If the DAA met all the targets, the value would equal 1. If, on the other hand, it failed to meet any target, the value would be 0.965, so the level of maximum permitted revenues would decrease by 3.5% (and by 4.5% in subsequent years).

Thirteen service measures were used to monitor quality of service, but only 12 of them could affect the level of airport charges. These were:

- Whether security passenger search time took longer than 30 minutes
- Percentage of time out-bound baggage handling system unavailable for more than 30 minutes during hours of operation
- Percentage of time in-bound baggage handling system available during hours of operation
- Ease of way-finding through airport
- Flight information screens
- Cleanliness of airport terminal
- Cleanliness of washrooms
- Comfort of waiting/gate area
- Courtesy/helpfulness of airport staff (excluding check-in & security)
- Courtesy/helpfulness of security staff
- Overall satisfaction (all passengers) Communication/telecom/e-facilities
- Feeling of being safe and secure

Nine of these measures are calculated on the basis of the results of passenger surveys, which are currently carried out by Airports Council International (ACI) on a quarterly basis. The three other measures, relating to security passenger search times and the availability of out-bound baggage and in-bound baggage systems, are taken by the DAA.

Prior to releasing its determination, the Commission published consultation papers, which discussed the question of how quality of service should be treated. While the current quality of service regime has been developed following consultation with all interested stakeholders, and most respondents welcomed the introduction of a monitoring scheme for the quality of service at Dublin airport, one party (Ryanair) asserted that the Commission had failed to identify what is meant by a good quality of service.

Naturally, although regulatory authorities may include a quality term in their formulae, parties may never fully agree on what constitutes good quality of service. Indeed, the responses submitted by various stakeholders to the Commission revealed the existence of, at times, significantly different opinions on the precise scope of a proper quality monitoring regime and the manner in which various indicators should be measured. To ensure the robustness of the monitoring scheme and to reflect the diversity of views presented, the Commission opted for a mixture of measures, which it considered to be sufficiently wide.

*Available at: http://www.aviationreg.ie/_fileupload/2009_CP4_Final_Determination.pdf.

2.2 Choice: An Aspect of Quality, or Something Different?

11. Is the availability of choice – say, the option of choosing from hundreds of different styles of shoes – an aspect of quality? Or is choice a factor that is separate from quality? Given that the choices available in a market may themselves be differentiated on the basis of their respective quality (say, luxury-brand shoes versus an unknown brand made with cheap materials), it would seem that choice is something separate from quality. Furthermore, choice is obviously essential to competition's ability to cause improvements in quality, as customers must have options before they can effectively "vote" for higher quality products and services with their money. Then again, if one compares shoe retailers rather than individual shoe brands, choice not only becomes an element of quality, but a very important element. Customers may prefer to shop at shoe stores that carry a wide variety of brands instead of a more limited product line. The customers would therefore view larger shoe selections as an element of quality for shoe retailers. As a recent OFT report found, people seem to value choice for its own sake, apart from its effect on the quality of a given service of product.[2] So choice and quality have a somewhat fluid definitional relationship. In this paper, we treat choice as an element of quality.

2.3 Using Quality to Define Markets

12. Can quality be used to define markets? For example, could the well-known SSNIP (small but significant, non-transitory increase in price) test be replaced with a SSNDQ (small but significant, non-transitory decrease in quality) test? Even if it could, would we ever want to do that in the first place? In other words, are there situations in which the SSNIP test would yield an incomplete or inaccurate result because it focuses on price, and in which the SSNDQ test would yield a more accurate result?

13. Hartman, Teece, Mitchell and Jorde have argued that a SSNDQ test is not only feasible, but necessary, for defining markets and assessing market power in sectors subject to rapid technological change.[3] Starting from Schumpeter's premise that antitrust analysis focuses too often on existing market structures rather than how those structures are created and destroyed, Hartman, et al. lay out a case for complementing the static SSNIP test with a dynamic SSNDQ test. Firms do not compete only on price, they emphasize, but on innovation and quality. That is especially true in markets featuring swift technological progress. Customers in such markets may care far more about product features than about price. To assume that two products in those markets can be in competition with each other only if customers are so price-sensitive that a hypothetical five percent increase in the price of one induces a switch to the other leads to overly narrow market definitions, the authors argue. Therefore, some markets should not be defined with a method that relies on price alone.

14. Hartman, et al. do have a good point about competition not always taking place on the basis of price alone. Google did not topple Yahoo in the internet search market and Facebook did not crush MySpace in social networking, for example, because of price competition. That was quality competition.

15. The authors' featured example is the medical diagnostic device industry, which includes technologies such as X-rays, nuclear imaging, ultrasound, and magnetic resonance imaging. They argue that the SSNIP test would have viewed each of those technologies as belonging to distinct product markets because the cross-price elasticities among them were very low and the price differentials were very significant. Hartman, et al. show, however, that competition in the medical diagnostic device industry is based more on performance (quality) competition than on price competition. They also show that what the

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2 Office of Fair Trading (UK), Choice and Competition in Public Services: A Guide for Policy Makers, OFT1214, p. 28 (2010).

3 Raymond Hartman, David Teece, Will Mitchell & Thomas Jorde, "Assessing Market Power in Regimes of Rapid Technological Change," 2 *Industrial and Corporate Change* 317 (1993).

SSNIP test would have suggested was market power was actually transient, at most, due to rivalry from technologies with very different price points but competitive features.

16. Seasoned competition enforcers might not be terribly worried by this argument. It is purely hypothetical in the sense that it assumes competition authorities and/or courts will blindly apply and follow the SSNIP test. In reality, enforcers would have likely spotted the competition between different types of devices when they interviewed company officials, customers and competitors and when they examined corporate documents. The SSNIP test is only a guideline, after all. If customers indicated that CT scans are so much clearer than X-rays and nuclear imaging that they compete with X-rays and nuclear imaging despite the fact that CT scans are far more expensive, for example, then a good competition investigation would have reflected that without needing a formalized SSNDQ test.

17. Nevertheless, Hartman, et al. roughly delineate what such a test would look like. The primary question, they say, is whether "a change in the performance attributes of one commodity would induce substitution to or from another. If the answer is affirmative, then the differentiated products, even if based on alternative technologies, ought to be included in the relevant product market."[4] Rather than the five percent price increase that is typically used in the SSNIP test, the authors propose a 25 percent decrease in a major performance attribute for their SSNDQ test. So the idea is that if an existing manufacturer were to reduce quality to that extent, holding all else equal, and no substitution to other products occurs, then the first type of product is a relevant market. If substitution takes place, then the other products are in the relevant market, too.

18. But this is the type of exercise on which differences in the nature of price and quality have a substantial impact – one that makes implementing the authors' proposal quite challenging. As they acknowledge,

> performance changes are more difficult to quantify than price changes because performance is multi-dimensional. As a result, quantification requires measuring both the change in an individual attribute and the relative importance of that attribute. Unlike price changes that involve altering the value of a common base unit [currency], performance changes often involve changing the units by which performance is measured.[5]

19. Hartman, et al.'s idea is therefore probably more useful as a loose conceptual guide than as a precise tool that courts and competition authorities should actually attempt to apply.

3. How does competition affect quality?

20. One of microeconomics' core principles is that competition causes the market price to fall until it equals an efficient firm's marginal cost. Is there a similar economic principle for competition's effects on quality? Specifically, will more competition cause quality to improve? Will less competition cause quality to deteriorate? Intuitively, it might seem reasonable to expect that changes in competition have the opposite effect on quality that they have on price, but the truth is that it depends on the situation. Economic theory alone cannot predict competition's effect on quality in most markets. Therefore, we must usually rely on empirical work to determine how competition affects quality.

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4 Hartman, et al., *supra* n.3 at 334.

5 *Id*. at 339.

3.1 Theoretical Insights

21. Microeconomic theory has a habit of assuming that goods are homogeneous or commoditized, produced by identical plants using identical technologies and operating at the minimum efficient scale. It also usually assumes that quality is constant and that buyers have a perfect understanding of the quality they are getting for their money. Ignoring differences and changes in quality, and comparisons of quality, simplifies equilibrium analysis. It allows economists to focus on just two main variables: price and output. Therefore, the emphasis in microeconomic equilibrium analysis tends to be on price competition, not non-price competition. Competition analysis, having been strongly influenced by economic analysis, likewise focuses on price competition.

22. But most markets in the world do not conform to those assumptions. Almost a century ago, J.M. Clark observed that "there is so wide a field in which a difference between the goods offered by the different makers is one of the essential features of the competitive struggle that this is really the typical case rather than the exception."[6] Consumers spend time comparing the quality of competing products, while sellers spend resources on improving their products and persuading consumers that those products have superior features.

23. Moreover, consumers do not necessarily want to have the absolutely lowest price possible if that means they will have only one choice available. For example, a firm's economies of scale might be so large that if every consumer were content to buy exactly the same item, then the manufacturer could offer a much lower price than if it offered several choices. (Think of Henry Ford's mass-produced Model T automobile.[7]) But consumers do not always, or even usually, prefer to have such a restricted choice set. While competition for staple products like table salt probably is based almost entirely on price competition, consumers obviously like being able to choose from among thousands of wines, scores of automobiles and options for each model, endless varieties of artwork, and so on – and they are often willing to pay more to get a product that closely matches their wants, or simply to get something different for a change. "It would be preposterous, for example, to imagine the toy industry deciding to produce a single 'standardized' toy, or even a given number of such toys."[8]

3.1.1 How competition affects the range of products and services offered.

24. We can examine, in a somewhat more formal way, the likely effects of different degrees of competition on the choices available to consumers, along with the implications for producer and consumer surplus of the range of choices available. Figure 1 is a hypothetical representation of the surplus associated with the available sizes of notebook computer screens.[9] We are assuming that only two screen sizes are available, a small one at nine inches and a large one at 17 inches. Of course, people will also care about factors other than the size of the screen. But we can make some useful theoretical points without fussing over all the other features that notebook computer users associate with quality.

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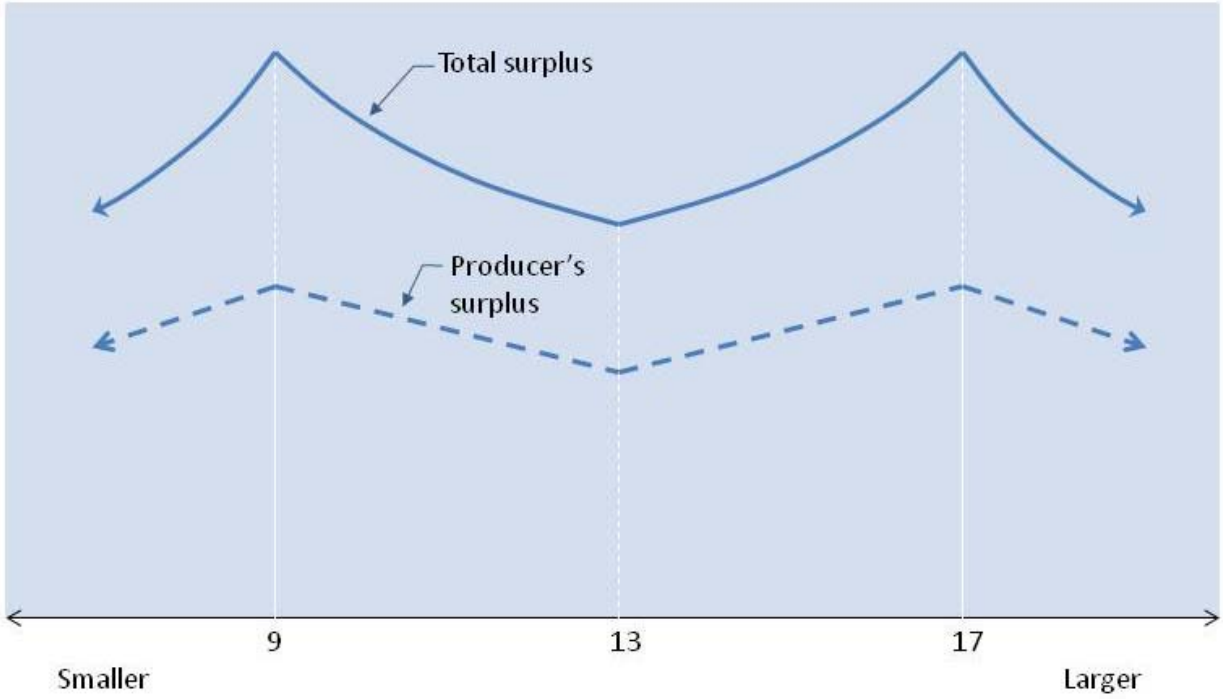
6 John Maurice Clark, "Economics and Modern Psychology," 26 *Journal of Political Economy* 1 (1918).

7 Ford carried his no-choice philosophy to extremes. At one point he told his management team that "Any customer can have a car painted any color that he wants so long as it is black." Henry Ford & Samuel Crowther, My Life and Work (Garden City Publishing Co.: 1922).

8 Lawrence Abbott, Quality and Competition: An Essay in Economic Theory 16 (Columbia University Press: 1955).

9 This figure is adapted, with slight alterations, from F.M. Scherer, Industrial Market Structure and Economic Performance 395 (Houghton Mifflin: 1980). The accompanying discussion also draws on Scherer's analysis.

Figure 1. Surplus implications of having two choices for computer screen sizes.

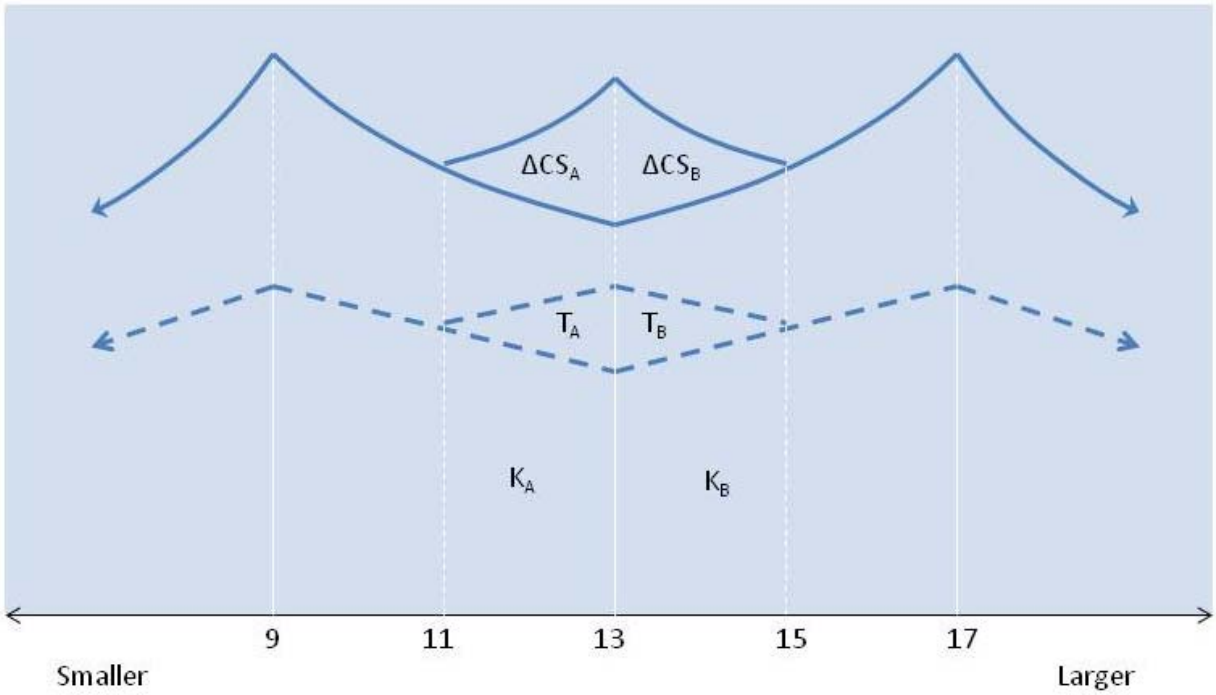


25. The horizontal axis shows the size of the screen, while the vertical axis reflects the surplus associated with each size. Customers that prefer larger screens are located to the right side, while customers that prefer smaller screens are located to the left. For simplification, we have assumed a uniform distribution and intensity of preferences. Total and producer's surpluses peak at the two sizes that are actually offered, reflecting the gains from sales to consumers who have preferences for exactly those dimensions. However, we assumed a uniform distribution of consumer preferences, so other consumers will either have to accept the 9" or 17" size or else buy an alternative product such as a tower style PC or a tablet computer. Those other consumers will derive less surplus from the notebook computer market than they would have if there had been screen sizes that perfectly matched their preferences. Accordingly, they will demand less than the customers with preferences at exactly 9" and 17". The larger the gap between a preferred size and a size that is actually offered, the less demand there is for that size from the customers with that preference.

26. Now suppose that a third screen size is offered halfway between the existing sizes. This 13" screen will attract customers who prefer moderate screen sizes, leading to an increase in consumption at that spot on the horizontal axis. Some of these customers will be drawn away from the 9" and 17" products. Others will be consumers who had previously declined to buy notebook PC at all because they did not want either of the available screen sizes. A new peak appears above the 13" point on our surplus chart, as shown in Figure 2, to reflect the additional consumer and producer surplus from the new sales.[10] With the additional assumption that the prices and other features of notebook PCs are equal for all three screen sizes, the market is now equally divided between the three screen sizes.

[10] Figure 2 and the accompanying discussion are adapted from *id*. at 396-98.

Figure 2. Surplus implications of having three choices for computer screen sizes.



27. The important question to ask here is "Under what circumstances will the 13" screen be offered?" The answer naturally depends to some extent on the costs of providing that screen relative to the revenues it will generate. But it also depends on market structure and the nature of competition in the market. If the market is monopolized and entry by other notebook PC manufacturers at the 13" point is not possible for some reason, then the incumbent will consider the payoff from introducing a 13" screen to be area TA plus TB. If TA plus TB is greater than the fixed cost of offering the new screen size, then the incumbent monopolist will supply it. Otherwise, the 13" screen will not be offered.

28. But if entry is possible, a potential entrant at the 13" point will consider its payoff to be not only TA plus TB, but KA plus KB, as well. (This assumes, in Nash fashion, that the prices of notebook PCs with all three screen sizes are equal and that the 9" and 17" model prices do not change in response to entry.) Areas K_A and K_B were previously producer surplus for the monopolist, but upon entry by the outside firm at the 13" point, they are transferred to the entrant. Therefore, the attractiveness of offering a 13" screen is much higher to an entrant than it is to the incumbent. Whereas T_A plus T_B alone have to exceed the fixed cost of supplying the 13" screen for the incumbent to offer it, an entrant would offer it as long as $T_A + T_B + K_A + K_B$ exceed the fixed cost. For this reason, Scherer and a host of other economists have concluded that a market with monopolistic competition and open entry is likely to yield more variety for consumers than a monopolized market with no (or little) possibility of entry.[11]

29. As always, though, much depends on the shapes of the curves and the assumptions built in to these charts. For example, we have assumed that all notebook computer manufacturers face the same fixed and variable costs for each screen size. If we relax that assumption, it becomes possible that, upon the entry of a rival seller at the 13" point and the consequent loss of KA and KB by the incumbent, the fixed

[11] *Id*. at 397 (citing, *e.g.*, Michael Spence, "Product Selection, Fixed Costs, and Monopolistic Competition," 43 *Review of Economic Studies* 217 (1976); Michael Lovell, "Product Differentiation and Market Structure," 8 *Western Economic Journal* 137 (1970).

costs of supplying the 9" or 17" model will exceed the remaining producer surplus associated with offering that screen size. If that turns out to be the case, then the incumbent may withdraw the now-money-losing model(s) from the market, leaving consumers with no overall gain from the introduction of the 13" model.

30. Another possibility if entry is possible is that the incumbent, eager to keep rivals away, may make entry less attractive by offering a 13" screen model itself. That way it can hold on to KA + KB, even though it will have to spend more to do so. This means that an entry-deterring monopolist may provide as much choice to consumers as monopolistic competitors would, all else being equal.

31. If we accept their assumptions, Figures 1 and 2 show that greater range alone can be welfare-enhancing for consumers. A larger available range of choices can make consumers better off, in other words, even if prices do not decline. (In fact, depending on their preferences, they might be made better off even if prices increase as a result of having more choices.) Furthermore, an open, competitive market is likely to bring about more options than a closed, monopolized market.[12]

32. On the other hand, Figure 2 can also show how there may be such a thing as too much variety. From an overall societal perspective, a new product should be introduced only if its net contribution to surplus is greater than the fixed costs of introducing it. The net contribution to surplus is equal to areas ΔCS_A and ΔCS_B. Figure 2 happens to be drawn such that $\Delta CS_A + \Delta CS_B$ is much smaller than $T_A + T_B + K_A + K_B$. That means it could well be the case that entering at the 13" point will be appealing to an outside manufacturer even though the fixed costs of doing so are greater than the net contribution to surplus of providing the new model. In other words, the market could encourage too much variety in comparison to the level that would maximize social welfare.[13]

3.1.2 Quality and variety: Too much or too little?

33. Intuitively, it must be true that there can be such a thing as too much variety. If there are too many different types of products available in a market, then it becomes harder for all producers to capitalize on scale economies and their resulting inefficiency leads to products that are all too expensive. Consumers in such situations would be happy to give up some choices in exchange for lower prices.[14] The market therefore has to make an implicit trade-off among choice, price, and cost.

34. It is also possible for there to be too much quality and yet not enough variety. Although the theoretical literature about competition's effects on quality is full of uncertainties, one firm conclusion it reaches is that when prices in competitive markets are regulated and set at a level above marginal cost, expenditures on quality and marketing will increase until the economic profits are competed away (*i.e.* until marginal cost rises to the level of the regulated price). Lawrence White demonstrated that point in 1972.[15] With the simplifying assumptions that every consumer views a certain element of quality as not

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12 At least, that is the case when prices are not regulated. See n.15 *infra* and accompanying text regarding the effects on variety of competitive versus monopolistic markets under price regulation.

13 Taking this to the extreme, it is perhaps easier to see how it would be impractical and inefficient for manufacturers to offer, say, 25 different screen sizes in one millimetre increments. Yes, almost even the most exacting buyers would have their preferences met, but economies of scale would have to be sacrificed.

14 Psychologists have also done work on a very different point, which is that having many choices can be detrimental to consumers because it can cause anxiety, dissatisfaction and regret. *E.g.*, Barry Schwartz, The Paradox of Choice (Harper: 2005).

15 Lawrence White, "Quality Variation When Prices are Regulated," 3 *Bell Journal of Economics and Management Science* 425 (1972). *See also* Martin Gaynor, "What Do We Know about Competition and Quality in Health Care Markets?," NBER Working Paper No. 12301, p. 10 (2006) (noting that "the

only desirable, but equally important relative to other features, White's model clearly predicts the profit-dissipating result.

35. White's model also made four related predictions:

1. Unregulated, competitive industries will produce a range of quality offerings, whereas price-regulated competitive industries will produce more uniform quality offerings;

2. The quality of the competitive firms' offerings varies directly with the regulated price. The regulator therefore sets both the price and the level of quality.

3. Virtually all consumers are worse off when price controls are placed on a competitive industry because the range of price/quality choices available to consumers becomes very narrow; and

4. Price-regulated firms in competitive industries offer more quality per unit of output than an equally regulated monopolist would produce.

36. The first prediction expresses the idea that when competing firms are not subject to price controls, they will offer a variety of price/quality pairings to suit the tastes and preferences of different customers. Some customers, for example, may be more price-sensitive than others and therefore prefer a lower price/quality point. But when prices are controlled, the only way firms can compete is by raising quality, so they will raise it until their profit margins disappear (just as they would have lowered their prices until the margins disappeared if price competition were allowed and quality were held constant). Quality will rise until the most efficient firms are earning zero rents; relatively inefficient firms that cannot afford to match that level of quality will be eliminated.

37. Prediction 2 follows from the main (profit-dissipation) principle and Prediction 1. The higher the regulated price, the higher the quality the market will produce. This is the effect that creates the possibility that price controls on competitive markets will lead to "too much" or "wasteful" quality. If regulators choose a price/quality pairing that is higher than what most consumers want, the industry will not operate efficiently.

38. Prediction 3 reflects the fact that, once the new price/quality equilibrium is reached under price regulation, the only consumers who will not be made worse off are those who happen to prefer that exact pairing. Every other consumer loses welfare because they all preferred a price/quality pairings that the market no longer offers.

39. White was unable to make a solid prediction about what would happen to consumer welfare if a monopolistic industry were suddenly subjected to price control. That is because consumers lose choice (presumably the monopolist was able to price discriminate) but gain a lower (in theory, at least) price.

40. Prediction 4 reflects the fact that a monopolist would not be motivated to offer higher quality for the purpose of stealing business away from rivals because, after all, it has no rivals. Its only consideration with respect to quality will be the entire market's sensitivity to quality at the regulated price. It will set quality at a profit maximizing point such that its marginal costs equal its marginal revenues, just as it would have set its price at the point where MR = MC if it were operating in a market without price control and constant quality. The only difference is that in the former case it chooses the quality level, whereas in

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theoretical literature on competition and quality when prices are regulated is clear" and that "[w]hen price is above marginal cost, competition leads to more quality"). Furthermore, as we shall see in Part 3.2, empirical results support White's theoretical work. For a more mathematical review of the economic theory of product differentiation, see Paul Belleflamme & Martin Peitz, Industrial Organization 113-125 (Cambridge University Press: 2010).

the latter case it sets the price level. Furthermore, in both cases the monopolist will produce and sell less output than the competitive firms would collectively produce and sell, resulting in deadweight loss.

41. Note that White's main finding is also applicable to markets that are subject to resale price maintenance or price-fixing cartels. It should not be surprising that quality will rise in rivalrous markets with minimum RPM. The whole point of minimum RPM is to induce retailers to provide better service.[16] It might come as more of a surprise that quality could rise under a price-fixing cartel, but it could happen, especially if the relevant product is heterogeneous and the cartel members are not very disciplined. Obliged by their cartel agreement not to engage in price competition, the cartel members may turn to quality competition as a way to increase their sales at the expense of their co-conspirators. In theory, at least, a firm that is inclined to cheat could do so by investing in greater quality up to the point where it has competed away its profit margins. Therefore, just like a regulator that imposes a price cap, a manufacturer that imposes RPM or, potentially, even a cartel that fixes a price is, in effect, setting not only the price but the level of quality.

42. Artificially setting a particular quality level is not desirable from society's viewpoint because, as Scherer puts it, "society is almost always better off when consumers enjoy a wide range of choices between high-quality, high-priced and low-quality, low-priced opportunities than when they face a severely restricted choice set."[17] Hammer and Sage agree, noting that "[w]ell functioning markets respond to different consumer preferences by providing a range of tailored products or services. Actions by entrenched market participants that artificially restrict the range of market alternatives available are inherently suspect from an antitrust perspective."[18]

43. Seen in that light, RPM is less worrisome than either price regulation or cartels because RPM leaves open the possibility of interbrand competition, so the market may still offer a range of qualities (and prices) across brands. It is also quite possible that the same markets in which RPM is imposed would yield a choice set that is just as limited without RPM as with it, but instead of only high price/high quality options, there would be only low price/low quality options. Unless manufacturers are using RPM as a cartel enforcement mechanism, they would have few, if any, reasons to impose RPM unless customers tend to prefer the high price/high quality pairing.

3.1.3 Unpredictable outcomes when both prices and quality are variable

44. Outside of the context of competition under price regulation, theoretical predictions about competition's effects on quality are murkier.[19] As the microeconomics textbook by Belleflamme and Peitz states, "models of imperfect competition in which firms choose product characteristics [and prices are not regulated] do not necessarily generate predictions concerning prices and product choices."[20]

45. Horizontal mergers, for example, have a variety of clashing potential effects on quality. To avoid cannibalization, the acquiring firm might change similar products in its newly expanded product line to

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16 An exception might occur if the real aim of imposing RPM is to facilitate a cartel, but in that case the market either cannot be said to be rivalrous or the colluding firms will switch to non-price competition and compete away their margins, just as White predicts.

17 Scherer, *supra* n.9 at 394.

18 Peter Hammer & William Sage, "Antitrust, Health Care Quality, and the Courts," 102 *Columbia Law Review* 545, 624 (2002).

19 Readers interested in the theoretical models reaching these ambiguous results will find several of them in Gaynor, *supra* n.15 at 4-10 and in Belleflamme & Peitz, *supra* n.15 at 113-125.

20 *Id*. at 118.

make them less similar. Or the merger might create efficiencies that make it more cost-effective to introduce new products. Those outcomes would enhance variety. On the other hand, after the merger the acquiring firm might opt to withdraw a product from the market altogether if it is similar to another product in its portfolio. Or it might decide to bunch its products more tightly by making their features more similar. That could deter entry by closing gaps in the product variety space that potential entrants might otherwise exploit. Either of those actions would reduce variety.

46. It is, in fact, possible that competition authorities will approve a horizontal merger because it will raise consumer welfare by increasing price competition, even though the merger's effect on choice will reduce consumer welfare – and perhaps by enough to overwhelm the price effect. Consider a hypothetical example,[21] in which a town has two supermarkets: one gourmet, high-end store and one discounter. Then suppose a supermarket chain, also a discounter, acquires the high-end store and converts it to a discount format because the chain finds it cost effective for all its stores to operate as discounters. If we suppose that zoning laws or insufficient demand make new entry infeasible, the town is now stuck with two supermarkets that are both discounters. The townspeople will benefit from greater price competition between those stores, but their choices have been reduced. Some consumers will have shopped only at the high-end store previously, and many others likely shopped at both stores. All of those consumers lose some welfare as a result of the acquisition. But because of the increase in price competition, it is unlikely that a competition authority would challenge the transaction.

47. Generally, when both prices and quality are variables, the theoretical literature can offer only limited guidance because outcomes will largely depend on the relative strengths of the price elasticity of demand and the quality elasticity of demand. Simply put, sellers will do what buyers most want them to do. In some markets, buyers will prioritize low prices. In others, they will care more about high quality. Buyer preferences, in turn, will depend to some extent on how transparent price and quality are. Buyers tend to care more about features they can perceive, and quality is sometimes less observable than price.

48. One can easily see how that latter situation could lead to a socially non-optimal underemphasis on quality in some markets.[22] Firms may simply be reacting to relatively strong price elasticities of demand. By the same token, where market demand is much more sensitive to quality than to price (for example, in health care markets where patients choose their provider but pay nothing themselves), the market may develop a socially non-optimal overemphasis on quality.

49. Consumer welfare can be improved by both competition on quality and competition on price, but in some situations price competition is inferior. That is more likely to happen when quality is difficult for customers to observe. In such situations, price competition can cause quality to deteriorate because companies will be more confident that they can get away with funding price cuts by reducing quality to reduce costs. Granted, it is also true that quality competition might cause prices to rise. But customers usually do not have a problem observing how much they are paying, so they will typically be able to make more accurate judgments about the price/quality pairings that are being offered.

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21 Maurice Stucke, "Is Competition Always Good?," __ *Journal of Antitrust Enforcement* 4 n.17 (forthcoming 2013) (citing example given by Davies).

22 This is the well-known "market for lemons" problem in which quality deteriorates because consumers make their decisions on the only product trait they can perceive well: price.

3.2 Actual Effects

3.2.1 Evidence from the media sector.

50. A number of empirical studies focus on the effects that horizontal acquisitions in radio broadcasting and newspaper markets have on the variety of formats available to listeners and readers. The studies consistently find that product variety actually increases as a result of horizontal mergers.

51. For example, Berry and Waldfogel studied the effects on variety of a wave of horizontal acquisitions in the US radio broadcasting market that took place between 1993 and 1997.[23] During that time, the average Herfindahl-Hirschman index across 243 major media markets increased by nearly 65 percent, from 1272 to 2096. While the increase in concentration was correlated with a decline in the entry of new radio stations, it was also correlated with greater variety per station when the number of stations was held constant.[24] In other words, the conditions in the study were that the number of stations remained the same, but they came under the ownership of a smaller number of firms, which then offered a larger number of programming formats per station. Indeed, even without holding the number of stations constant, the authors found evidence that industry consolidation increased the overall variety available to listeners.[25]

52. We mentioned in the previous section that mergers can have conflicting effects on quality, so it is hard to predict what their overall impact will be based on theory alone. The Berry and Waldfogel study supports the idea that the strongest effect probably stems from the acquiring firms' incentive to spread products apart so as to avoid cannibalization. The main point they want competition authorities to take away from their study is that greater concentration reduces potentially excessive resource use for station entry without hurting listeners.

53. Lisa George conducted a similar study of the US daily newspaper market and obtained similar results. She examined the effects of a spike in newspaper mergers in the 1990s by tracking the topics that 25,000 reporters and editors were assigned to cover in 1993, 1994 and 2004. Her study shows that having fewer newspaper owners led not only to more differentiation among newspapers, but to coverage of a larger number of topics per market. George concludes that US antitrust and communications policies toward media mergers incorrectly presume that limiting concentration ensures greater variety.

54. A problem with both the Berry/Waldfogel study and the George study, however, is that these authors all assume that multiple content formats provided by one firm are just as valuable as multiple formats provided by many firms. That assumption misses the point that it might be important to a society to keep its media markets unconcentrated because that helps to ensure that a variety of points of view and biases are expressed in the media. Another way of saying this is that there is more to variety and choice than simply whether radio listeners can tune in to classical music, talk radio and sports formats, or whether newspaper readers can find articles on 20 different topics instead of 15. The political, demographic, and cultural diversity of the people and firms controlling the media might be an important aspect of choice, too.

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23 Steven Berry & Joel Waldfogel, "Do Mergers Increase Product Variety? Evidence from Radio Broadcasting," 116 *Quarterly Journal of Economics* 1009 (2001).

24 "Greater variety" here means more programming formats, *e.g.* jazz, news, sports radio, etc.

25 There is also evidence that listeners value variety. Research shows that more people listen to radio when radio programming variety increases. Berry & Waldfogel, *supra* n.23 at 1019 (citing Steven Berry & Joel Waldfogel, "Public Radio in the United States: Does It Correct Market Failure or Cannibalize Commercial Stations?" 71 *Journal of Public Economics* 189 (1999); Robert Rogers & John Woodbury, "Market Structure, Program Diversity, and Radio Audience Size," 14 *Contemporary Economic Policy* 81 (1996)).

George acknowledges that point[26] but Berry and Waldfogel do not. We are not arguing that it should be up to competition authorities to take societal concerns about cultural diversity into account in their merger analyses. Problems related to the concentration of ideas or cultural viewpoints might be more appropriately placed in the domain of communications policy than that of competition policy. The point is simply that there is more to choice and variety in media markets than just the formats on offer.

3.2.2 Evidence from the airlines industry.

55. The experience of regulation in the US airlines industry is empirical proof of the validity of White's conclusion that imposing price control on a competitive market will cause quality to rise to the point where economic profit disappears and possibly to the point where there is "too much" quality. Airfares in the US were regulated during the 1960s and early 1970s. Prices were set at a level substantially higher than what a low-cost airline would have offered, so airlines had resources with which to compete on quality features such as conveniently timed (but not necessarily full) flights, meals, in-flight films, etc. As a result, the market neglected customers who would have preferred less convenience and lower prices.[27]

56. Douglas and Miller studied US airline data from the period when prices were regulated.[28] Reported profit rates confirmed that the airlines were bidding their potential profits away. Other data show that most of those potential profits were spent on scheduling competition, *i.e.* on providing more flights to suit customers' schedules. The airlines were offering so many flights that they typically managed only to break even on any given route. The results also showed that average load factors (and therefore profit) tended to increase as the number of competitors on a route decreased. Finally, whenever estimated break-even levels changed, the actual load factors tended to follow and equal them. The authors concluded that

> in a market in which scheduling competition bids away all rents, the regulator in choosing price implicitly determines the equilibrium number of travellers and the expected per passenger schedule [convenience]. The regulator's role, therefore, is one of serving as a proxy for the population of consumers in choosing the appropriate combination of service quality and price from the opportunity locus of these variables.[29]

57. A different study of quality and competition in the US airline industry focuses on the period after deregulation. Analyzing data from the Bureau of Transportation for the year 2000, Michael Mazzeo found that the frequency and severity of flight delays were significantly less on routes served by more than one airline providing direct (non-stop) service.[30] Mazzeo, who published his study in 2003, lamented that US antitrust authorities did not pay more attention to quality effects in their analyses of two cases in the airlines industry from that period. One was a predatory pricing case against American Airlines, while the

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26 Lisa George, "What's Fit to Print: The Effect of Ownership Concentration on Product Variety in Daily Newspaper Markets," 19 *Information Economics and Policy* 285 at 290 (2007).

27 Lawrence White, "Quality, Competition, and Regulation: Evidence from the Airline Industry," in Richard Caves & Marc Roberts, eds., Regulating the Product: Quality and Variety 17 (Harvard University Press: 1975).

28 George Douglas & James Miller III, "Quality Competition, Industry Equilibrium, and Efficiency in the Price-Constrained Airline Market," 64 *American Economic Review* 657 (1974).

29 *Id*. at 663.

30 Michael Mazzeo, "Competition and Service Quality in the U.S. Airline Industry," 22 *Review of Industrial Organisation* 275 (2003). This study is typical, by the way, among empirical studies on competition and quality in the sense that it uses just one (fairly obvious) dimension of quality rather than trying to tackle the grand question of what all the components of quality are in a given market. The timeliness of flights was the most common subject of customer complaints about airlines. *Id*. at 276.

other was a proposed merger between United Airlines and US Air. He did not necessarily expect quality effects to displace price effects as the chief concern in those matters. Given the relationship between concentration and flight delays, however, as well as the fact that cancellations and delays were a growing problem at that time, he thought it would have been a good opportunity to raise harm to quality as a competition issue.

3.2.3 Evidence on advertising bans by professional associations.

58. Professional associations sometimes limit their members' ability to advertise. Common rationales for such restrictions are that they eliminate misleading advertising and make it harder for price-cutting, low quality providers to win customers, thereby preventing a "race to the bottom". In 1980, the US FTC issued a staff report on a study that tested those claims in the context of the optometry industry.[31] The report showed that price advertising for eyeglasses and eye exams lowers prices without significantly reducing average quality.

59. This research capitalized on the fact that advertising optometry services and eyeglasses is allowed in some areas of the US and curtailed in others. The results indicated that average prices were substantially lower in cities with the lightest restrictions on advertising while the average quality of service was approximately the same as in cities with heavier restrictions, thereby casting considerable doubt on one of the favourite excuses professional associations use to justify anticompetitive rules against advertising. Competition in professional services markets, or at least in markets for optometry services, does not appear to harm quality.

60. Survey research experts ("testers") working for the FTC took 434 eye examinations and bought 280 pairs of glasses in cities across the US. Senior optometrists and optometry schools helped the Commission to define medically appropriate quality measures, design the survey and evaluate the results. Testers were asked to buy a particular type of frame, if possible, to minimize cost variation. The results showed that the average prices of eye examinations and eyeglasses in the most restrictive cities were 33.6 percent higher than in the least restrictive cities.

61. To measure quality, testers answered a set of standardized questions about the details of each examination. The glasses they bought were then evaluated for quality. Testers were also examined by two optometry schools to determine their appropriate prescription, which was then compared with the prescriptions given in the field. The study featured several quality measures, including: (1) thoroughness of the eye exam (2) accuracy of the prescription, and (3) accuracy and workmanship of the resulting eyeglasses. The results undermined arguments by professionals that simple price comparisons fail to take account of quality differences and that it would be wrong to assume that quality is the same in both restrictive and non-restrictive cities. The results also undermined claims that if professionals advertise they will also reduce their quality of service, and that even non-advertising professionals will do the same in response.

62. The thoroughness of eye exams by optometrists in restrictive and non-restrictive cities was found, on average, to be about equal. Furthermore, eye exams by non-advertising optometrists in non-restrictive cities were, on average, *more* thorough than exams by non-advertising optometrists in restrictive cities. It was simply not true that optometrists who gave thorough examinations were driven out of market in which advertising was unrestricted. About 55 percent of optometrists in the non-restrictive cities did not

[31] Ronald Bond, John Kwoka, John Phelan & Ira Whitten, "Staff Report on Effects of Restrictions on Advertising and Commercial Practice in the Professions: The Case of Optometry," US Federal Trade Commission, Bureau of Economics (1980).

advertise. Results for both the accuracy of prescriptions and the accuracy and workmanship of the glasses showed that consumers were better off in the non-restrictive cities.

3.2.4 Evidence from the vehicle emissions testing market.

63. Stucke finds that in some circumstances competition causes a race to the bottom, in which society suffers. In particular, he notes that customers in intermediary information markets may succeed in pressuring sellers to alter their reports in the customers' favour. The more competitive such a market is, the more willing the sellers are to be dishonest, he concludes.[32]

64. One such market is vehicle emissions testing. Stucke refers to an empirical study of emissions testing in the state of New York. It examined whether greater competition led testing services to attract customers by certifying that their vehicles complied with state emissions standards even when they did not.[33] In New York's testing system, vehicle owners must periodically choose a privately-owned emissions testing centre and pay for its services. The price of testing services was fixed by the state government.

65. Just as economic theory predicts for competitive markets under price control[34], the rival test centres – unable to compete on price – focused their competitive efforts on non-price factors. One tactic they employed to please customers was to lie, allowing cars that should have failed the test to pass it. The study found that as the number of competing test centres rose in local markets, so did the vehicle pass rates. It concludes that competition among test centres "can induce firms to increase quality for their customers in ways that are both illegal and socially costly."[35]

66. That terminology is exactly right. From the test centres' perspective, the customers were the vehicle owners, not the state of New York. It was the vehicle owners, after all, who selected and paid the centres. Competition did indeed cause quality to increase, in the collective view of the customers. The policy problem in this example is not that for some strange reason competition worked counter to the way it normally works and wound up reducing quality. Competition did exactly what it should do when prices are fixed, which is to raise quality *as it is perceived by the customers who select the provider*. The real policy problem in this case was that, to accomplish what it was intended to do, the emissions testing system should have been designed so that the government, not the vehicle owners, selected the testing centres. If that had been the case, then the testing centres would have had every incentive to provide the most accurate information possible.

67. Faulting competition for reducing accuracy in New York's emissions testing programme is a bit like blaming a piano for playing a C when you press the C key. Yes, a composer may mistakenly put a C note in a chord and that may ruin the song. But that does not mean there is something wrong with the piano.

68. Granted, competition does motivate firms to try harder to win business and the testers in New York went so far as to lie. But they did so because lying was in the interest of their customers. It is much less likely that they would have lied if their customer had been New York, the entity with the biggest stake

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32 Stucke, *supra* n.21 at 29-35.

33 *Id*. at 33 (citing Victor Bennett, Lamar Pierce, Jason Snyder & Michael Toffel, "Customer-Driven Misconduct: How Competition Corrupts Business Practices" *Management Science* (forthcoming 2013), available at http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2005779).

34 See discussion of White (1972), *supra* n.15 and accompanying text.

35 Bennett, et al., *supra* n.33 at 2.

in receiving accurate information. New York's emissions testing system suffered from a design flaw, not excessive competition.

69. The same conclusion applies to Stucke's other example of an intermediary information market in which competition is said to have been the cause of inaccuracy: the bond ratings industry.[36] Like New York's emissions testing programme, the ratings industry has a flawed payments model. Instead of ratings agencies being selected and paid by the people who actually rely on the accuracy of their reports, it is the credit issuers who select and pay them.[37] One of the lessons of the 2008 financial crisis is that credit issuers do not necessarily have a strong interest in the accuracy of credit ratings. As the ratings agencies competed with one another, they tried ever harder to give their customers what they wanted. In some cases what the customers wanted was inflated ratings. Had the customers wanted accurate reports, competition would have ensured that they received accurate reports.

3.2.5 Evidence from the supermarket sector.

70. David Matsa recently published an empirical study of competition's effect on inventory shortfalls in US supermarkets.[38] Frequent shortfalls and limited product variety are the leading cause of consumer dissatisfaction with supermarkets, so shortfalls are a useful indicator of quality. The expansion of Wal-mart into the supermarket sector, which Matsa describes as "the most significant shock to industry market structure in half a century," provided the variation in competition that made the study possible.[39] Wal-mart became the largest grocery retailer in the US within 14 years of opening its first grocery store in 1988. It also became the first genuinely national chain, so its entry was indeed a shock to the industry. Matsa found that Wal-Mart's entry was not only correlated with but *caused* a 33 percent decrease in shortfalls at large supermarket chains.

71. Matsa studied data on how incumbents adjusted their inventories in response to entry by Wal-Mart. He found that different stores reacted in different ways. Wal-mart is well known for competing on the basis of low prices, which are enabled, in part, by relatively low levels of service. Matsa found that chain stores tended to respond to Wal-mart's entry by improving their quality. They seem to have figured out that they had no hope of competing on price with Wal-mart's economies of scale and buyer power. Instead, they improved the availability of products in their stores. The number of inventory shortfalls fell by one third. Independent stores, on the other hand, tried to compete on price. Many failed, so as a group they did not survive Wal-mart's entry as often as the chains did.

72. Matsa also found that low shortfall rates were correlated with good performance on other measures of quality, such as cleanliness, staff courteousness, and average checkout speed. Supermarket chains that succeeded in reducing shortfalls seemed to have been improving in those categories, too, as well as in the freshness of their meat, fruit, and vegetables and in the variety of their product lines. This suggests that Wal-mart's entry was a greater boon for consumers than was previously realized. Consumers were getting more than a new, deep discount option in the form of Wal-mart. They were also getting significantly improved quality from the incumbent chains.

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36 Stucke, *supra* n.21 at 31-33.

37 See OECD, Competition and Credit Rating Agencies (2010), available at www.oecd.org/daf/competition/sectors/46825342.pdf.

38 David Matsa, "Competition and Product Quality in the Supermarket Industry," 126 *Quarterly Journal of Economics* 1539 (2010).

39 *Id*. at 1539.

3.2.6 Evidence from the hospital services sector.

73. The hospital services sector, like the health care industry generally, has certain characteristics that interfere with competition's ability to motivate improvements in quality. Chief among them is that patients do not always have good access to information on the comparative medical quality of the doctors, nurses, drugs, and equipment in hospitals, either before or after treatment. Exacerbating this problem, hospitals sometimes compete by focusing more on the aspects of care that are most transparent to patients, such as the aesthetic appeal of their rooms, than on actual medical outcomes. Consequently, patients' choices do not necessarily reflect the medical quality of the health care they receive. That means that quality competition does not usually function as well in health care markets as it does in markets where the elements of quality are more transparent.

74. Consistent with theoretical conclusions on competition's effect on quality, empirical evidence from hospital services markets usually shows that where prices are regulated, competition improves quality (as measured by mortality rates). Where prices are unregulated, the evidence is mixed.

75. It is no accident, incidentally, that most of the empirical studies on hospital services focus on just one quality factor (mortality rates). There are many other factors that the studies could have examined, at least in principle. These include the overall level of patient/family satisfaction, the adequacy of the information given to patients and their families, and the extent to which the hospital stay improved the patient's condition (as opposed to the binary variable of whether the patient died or not). Those factors are all subject to a degree of subjectivity, though, whereas mortality rates are not. So by focusing on mortality, the studies gain objectivity but sacrifice completeness.[40]

3.2.6.1 Studies on the effect of competition on quality in price-regulated hospital markets[41]

76. Kessler and McClellan conducted one of the first empirical studies on the effects of competition on hospital service quality.[42] They examined the impact of market concentration (using Herfindahl indices) on the quality of US hospital services for Medicare beneficiaries as measured by the risk-adjusted one-year mortality rate from heart attacks. The results are striking because they show that quality is significantly lower in markets that are more concentrated. Patients in the most concentrated markets had mortality rates that were 4.4 percent higher than patients in the least concentrated markets. That translated into a difference of more than 2000 deaths between the least concentrated and most concentrated parts of the dataset.

77. Cooper et al. examined whether hospitals facing more competition lowered heart attack death rates more quickly than hospitals in monopoly markets after competition was introduced in the UK's health system in 2006.[43] The study relies on four different methods for defining hospital service markets and two measures of competition. It consistently found that hospitals facing greater competition decreased mortality rates in heart attack cases about a third of a percentage point more quickly than monopoly providers. With

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40 For more on the measurement of quality in the health care sector, see Arik Mordoh, "Critical Review of the Quality and Competition Measures and Identification Strategies Used in Health Care Studies," Occasional Paper 11/05, Office of Health Economics (UK) (2011).

41 This sub-part is partially based on OECD (2012), Competition in Hospital Services, Secretariat Background Note at 47-55, DAF/COMP(2012)9, available at www.oecd.org/daf/competition/50527122.pdf.

42 Daniel Kessler & Mark McClellan, "Is Hospital Competition Socially Wasteful?" 115 *Quarterly Journal of Economics* 577 (2000).

43 Zack Cooper, Stephen Gibbons, Simon Jones & Alistair McGuire, "Does Hospital Competition Save Lives? Evidence from the English NHS Patient Choice Reforms," 121 *Economic Journal* 228 (2011).

a 12 percent mortality rate, that difference was substantial. The authors surmised that the role played by general practitioners in the UK system had something to do with that outcome. The expert knowledge and experience gained by general practitioners seems to have made quality a more important factor for hospitals as they competed for patients.

78. In a study pointedly entitled "Death by Market Power", Gaynor et al. found strong evidence that under a regulated price regime, hospitals engage in quality competition.[44] The authors detected significant improvements in mortality and reductions in the average length of stay without changes in total expenditure or increases in expenditure per patient within two years after competition was introduced in the UK health system. They also concluded that if the UK took steps to de-concentrate hospital markets, the gains could amount to more than 276 million GBP.

79. Bijlsma et al. focus on the relationship between competition and quality in the Dutch hospital sector after pro-competitive reforms were implemented.[45] They found that hospitals were paying more attention to quality and making more disclosures of the quality indicators they use. The data covered both process and outcome indicators of quality, and the analysis showed that the change in process performance (but not outcome performance) could be explained by competition. In particular, the results suggested that competition between hospitals put pressure on profits margins, forcing hospitals to improve production efficiency. The authors concluded that "competition may provide hospitals incentives to improve on quality indicators that can easily be observed by patients and perceived as a signal of quality (such as the time the patient has to wait for a diagnosis and check-up frequency for chronic patients)."[46, 47]

3.2.6.2 Studies on the effect of competition on quality in hospital markets without price regulation

80. Like their theoretical counterparts, empirical studies analysing the effect of competition on quality in hospital services markets when both quality and prices are variable reach ambiguous or mixed results. This section is mainly about the situation in the US because that is the geographic market on which most of the studies concentrate.

81. Figure 3 shows how that US hospital markets were substantially more concentrated in 2006 than in 1990:

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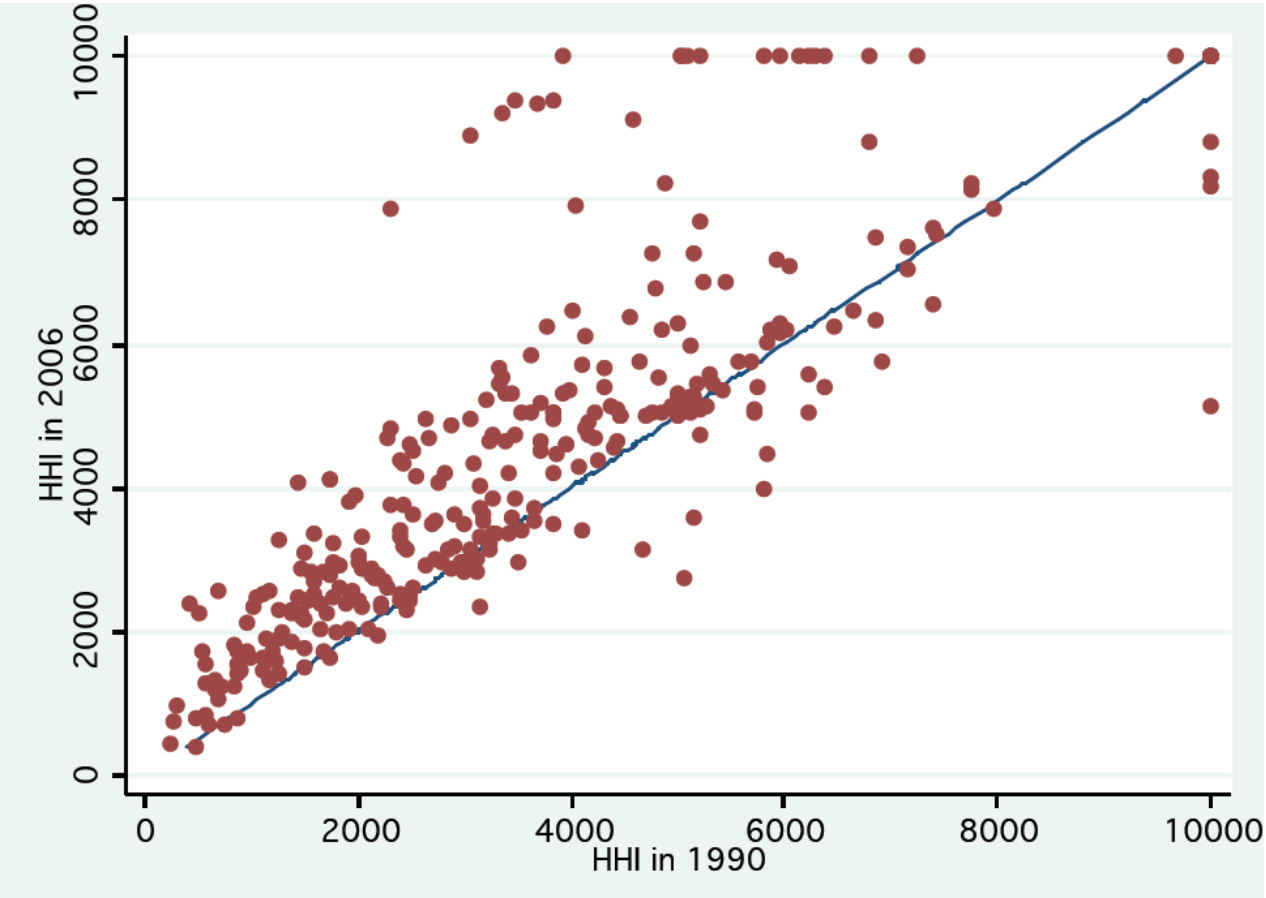
44 Martin Gaynor, Rodrigo Moreno-Serra & Carol Propper, "Death by Market Power: Reform, Competition and Patient Outcomes in the National Health Service," CMPO Working Paper No. 10/242 (2011).

45 Michiel Bijlsma, Pierre Koning, Victoria Shestalova & Ali Aouragh, "The Effect of Competition on Process and Outcome Quality of Hospital Care – An Empirical Analysis for the Netherlands," CPB discussion paper no. 157 (2010), available at www.cpb.nl/sites/default/files/publicaties/download/disc157.pdf.

46 *Id*. at 35.

47 For summaries of additional studies that are nearly all consistent with those mentioned here, see Gaynor, *supra* n.15 at 16-21.

Figure 3. HHI Values in 1990 and 2006 for US Hospital Markets.[48]



82. Vogt and Town reviewed ten studies about the effect of consolidation on the quality of US hospital services and concluded that the overall results show quality declines when hospital market concentration increases.[49] For example, Sohn and Rathouz examined the risk-adjusted mortality rates for patients who received angioplasties in 116 California hospitals in 1995. They found that mortality was lower for patients who went to hospitals that faced more competition.[50]

83. Many studies are laden with caveats, though, including that it is very difficult to draw firm conclusions about the effects of market concentration on quality when both price and quality are variables. The caveats are underscored by the contrary results reached by other studies. Maeda and LoSasso, for instance, found only slight incremental benefits from lower HHI values for inpatient heart-failure care. They concluded that "market competition might be a blunt instrument and it may not be the most suitable

48 This figure is from Martin Gaynor & Robert Town, "Competition in Health Care Markets," NBER Working Paper No. 17208 (2011).

49 W. B. Vogt & R. Town, "How Has Hospital Consolidation Affected the Price and Quality of Hospital Care?," Research Synthesis Report No.9, Robert Wood Johnson Foundation (2006).

50 M.W. Sohn & P.J. Rathouz, "Competition among Hospitals and Quality of Care: Hospital-Level Analysis," University of Chicago, unpublished paper (cited in Gaynor, *supra* n.15). Schneider reached the same results in her study of mortality rates in California hospitals from 1997-2002. Helen Schneider, "Incorporating Health Care Quality into Health Antitrust Law," 8 *BMC Health Services Research* 89 (2008).

policy tool to drive hospital quality-improvement effects".[51] In fact, Mukamel et al. found that competition was actually correlated with an increase in mortality in their study, which also focused on California patients. Unlike Sohn and Rathouz, though, Mukamel et al. compare results in 1982 and 1989, which are the years just before and after insurer selective contracting was implemented in California. The authors hypothesized that selective contracting would boost price competition and that hospitals would react by shifting resources from medically important clinical activities, where quality is hard to observe, to relatively unimportant (medically) "hotel" features (such as comfortable, attractive rooms, etc.), which are more easily observed. The results seem to confirm their suspicions, as competition had a positive relationship with mortality through reduced clinical expenditures on patients.[52] Furthermore, Volpp, et al., compared changes in risk-adjusted heart attack mortality rates in New Jersey and New York hospitals before and after New Jersey deregulated hospital prices.[53] They found that mortality increased in New Jersey relative to New York after the deregulation.[54]

3.2.6.3 Conclusions on competition and quality in hospital markets

84. The empirical literature just summarized mostly reinforces theoretical predictions that competition can generate better quality where prices are regulated. Where both prices and quality are market-based, the results also support the theoretical literature in that they yield ambiguous or conflicting results on quality effects.

85. As the OECD has pointed out previously, though, the generally consistent finding that regulating hospital service prices leads to beneficial competition on quality is "rather crude."[55] By itself, it ought not to be taken as a recommendation that price regulation in the hospital sector is always a good idea. It puts the government in the position not only of having to select an appropriate price, but of having to select the optimal level of quality because the two necessarily go hand in hand when prices are regulated. It is quite possible that in some circumstances the market will arrive at more socially optimal price/quality pairings than governments will.

86. While it may be easy to see why too little quality in hospital services would be undesirable, it may not be so easy to conceive of how the opposite situation could ever be a problem. As Gaynor has noted, even suggesting the possibility that there can be such a thing as "too much" quality in health care services can be off-putting. The ultimate implication is that social welfare can be improved by allowing mortality rates to rise.

> However, the same economic concepts apply here as to any other resource allocation problem. We want to devote resources to reducing patient mortality up until the point where the marginal benefit of reduced mortality is balanced by the marginal cost. This means that there will be a socially optimal mortality rate that will certainly be greater than zero. While this may seem repugnant, it is important to realize that there are competing uses for resources and if the value of

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51 Jared Maeda & Anthony LoSasso, "Effect of Market Competition on Hospital Performance for Heart Failure," 17 *American Journal of Managed Care* 816, 821 (2011).

52 D. Mukamel, J. Zwanziger & A. Bamezai, "Hospital Competition, Resource Allocation and Quality of Care," 2 *BMC Health Services Research* 10 (2002).

53 K. G. Volpp, S. V. Williams, J. Waldfogel, J.H. Silber, J.S. Schwartz & M.V. Pauly, "Market Reform in New Jersey and the Effect on Mortality from Acute Myocardial Infarction," 38 *Health Services Research* 515 (2003).

54 For summaries of additional studies, see Gaynor, *supra* n.15 at 21-27.

55 OECD (2012), Competition in Hospital Services, Secretariat Background Note at 60, DAF/COMP(2012)9, available at www.oecd.org/daf/competition/50527122.pdf.

reduction in patient mortality is not that great, then it may be better to devote those resources to finding a cure for cancer, school lunches, or battleships.[56]

3.2.7 The sectoral evidence presented in this section supports the theoretical work on competition and quality.

87. While we do not suggest that the literature review in this section is broad enough to validate any firm conclusions, we do note that the findings are consistent with the main points from the theory section. That is to say, the empirical studies presented here conclude that competition increases quality in markets where prices are regulated, and the studies reach conflicting results about competition's effect on quality in markets where prices are not regulated.

88. Next, we turn to an empirical sample of a different kind. We examine a number of decisions in several competition law contexts to see what kind of a role courts and competition authorities give to quality when it is relevant to their analyses.

4. Quality in a sample of competition law enforcement contexts

4.1 Mergers

89. Quality, though it is mentioned at least cursorily in most merger guidelines, does not figure prominently in many actual merger decisions. When it does, it sometimes arises because the merging parties have argued that their transaction will lead to improvements in quality. Alternatively, there may be a focus on quality if the competition authority believes that a proposed merger would cause quality to deteriorate in the relevant market. Our first case is a blend of both situations.

90. When Waterstone's Booksellers Ltd (owned by HMV Group plc) proposed to acquire Ottakar's plc, the UK's Competition Commission had to determine whether the combination of these two book retailing businesses posed a substantial threat to competition.[57] Waterstone's argued that the merger would allow it to compete more effectively with growing competition from major chains, supermarkets, and internet retailers.

91. After concluding that the relevant market was the retail sale of new books, the Commission looked for competitive effects at the local, regional, and national levels. The parties both had primarily uniform national pricing policies, so a decline in price competition at the local and regional levels was not a significant concern. In fact, even at the national level price effects were not a concern because the Commission found no evidence of significant direct price competition between the parties.

92. Quality was an issue, though, because non-price competition focused on the range of titles in stock and the quality of in-store service. The parties argued that the Commission should have no worries about a decline in quality. In fact, they claimed that the acquisition would lead to *better* quality because Waterstone's would offer a greater range of book titles in the former Ottakar stores.

93. The Commission undertook a rather thorough examination of quality in the sector. They commissioned a survey to discover what factors were important to customers. They compared the range of titles available in various stores, the number of staff, the level of staff experience, store opening hours, refurbishments, and even book signings.

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[56] Gaynor, *supra* n.15 at at 3-4.

[57] Competition Commission (UK), *HMV Group plc and Ottakar's plc*, 12 May 2006.

94. In the end, the Commission concluded that there was no systematic and substantial difference in the range or service quality in locations where stores from the two parties competed with each other versus locations where they did not compete with each other. That gave them no reason to believe that the level of quality in the stores was dependent on direct competition between Waterstone's and Ottakar's (where such competition existed in the first place). Indeed, the Commission found that the parties' argument that quality would improve as a result of the acquisition was credible. Therefore, the Commission cleared this transaction.

4.2 Cartels

4.2.1 Cartels that conspire to reduce quality.

95. Although the vast majority of detected cartels have involved agreements to eliminate price competition, firms occasionally conspire to reduce quality competition. Cartelists might agree not to introduce new products, for example, or they could agree not to offer certain services to their customers. Another possibility is that they could agree to restrict the hours during which their businesses are open. The next two cases feature that type of arrangement. In both cases, the agreements were deemed to be violations of the applicable competition law.

4.2.1.1 Ordre des Pharmaciens

96. The Belgian Pharmacists Association (BPA) maintained a set of rules with which its members were expected to comply. The rules included a schedule showing which pharmacies were to remain open (and therefore which ones were to be closed, as well) on any given weekend in various areas within Belgium. When several pharmacists were disciplined by the BPA for violating the rules by keeping their pharmacies open on weekends when they were not on weekend duty, the pharmacists complained to the Belgian Competition Council. The Council found that the rules limiting the hours of operation for pharmacies could cause a restriction of competition between pharmacists. The BPA argued that such limitations were necessary to ensure the security of supplies to customers because when a pharmacy is open even though it is not supposed to be on duty, it will create confusion in the mind of the public.[58] The Council, however, determined that the rules on operating hours disproportionately restricted competition relative to the goal of ensuring the security of pharmacy supplies. It therefore ordered the BPA to stop enforcing the relevant rules.

97. The BPA then brought the case to the Court of Appeal of Brussels, which upheld the Council's decision.[59] The court stressed that the Council had established the absence of a direct link between the between the "social purpose" of an organization like the BPA and its restriction on opening hours. Furthermore, because the BPA had failed to show that those restrictions improved drug distribution for consumers, the court rejected the BPA's argument that its rules should have been exempted from the Belgian Competition Act's provisions on anticompetitive agreements among competitors.

4.2.1.2 Adanim Mortgage Bank, Ltd.

98. In Israel, parties that want to have an arrangement that restricts competition can apply for an authorisation from the Antitrust Tribunal. In 1996, 26 banks requested an authorisation for an agreement

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[58] Communication 43 of the BPA states that a pharmacist who is not supposed to be on duty compromises the proper functioning of the emergency pharmacy service by remaining open outside normal hours.

[59] *Ordre des Pharmaciens*, n° 2007/MR/5, Cour d'appel de Bruxelles, Dix-huitième Chambre, 7 avril 2009.

to close their branches on Fridays. The Tribunal denied the request, and in doing so it made many insightful remarks on the role of quality in competition policy.[60]

99. The main issue to be decided was whether the banks' arrangement served the public welfare. The Tribunal wasted no time in revealing its views, referring to it immediately as a request for "approval of a cartel arrangement . . . *centering on [the banks'] collective decision to close their branches on Fridays and, thereby, to reduce the week of service to the public to five days*." As if that were not a sufficiently clear signal of where it was going, the Tribunal added that "we are asked to consider an arrangement in which the Banks colluded to close their branches on Fridays and undertake not to compete with each other in serving the public by opening the branches on that day."[61]

100. The court then methodically demolished the banks' arguments. First, the banks downplayed the harm to consumers of their proposal, arguing it was not serious and that in any event it was less severe than an agreement to fix prices. The Tribunal, however, found that the harm was severe. Citing multiple sources, including the late Robert Bork and decisions by the European Commission and a US court, the Tribunal reasoned that curtailing business hours could be just as harmful as raising prices because convenience has economic value to consumers. Furthermore, the harm was severe because the agreement was intended to encompass the entire retail banking industry, which was crucial to the economy and affects the economic activity of all citizens.[62]

101. Next, the banks argued that closing on Fridays would promote efficiency by steering customers to use ATMs and bank-by-phone services instead of live bank personnel. But the Tribunal noted that any such increase in efficiency would be achieved by interfering with consumers' preferences. Customers who wanted direct interactions with bank personnel would be forced to accept indirect banking services. "The basic premise in measuring consumer welfare is that this welfare is determined by the consumers themselves, and such a premise is inconsistent with intervention in consumers' tastes by forcing them to adopt services that they do not consider acceptable."[63] In other words, consumer welfare and all it encompasses, including quality in the form of convenience and choice, is the priority under Israeli competition law. Pure cost-based efficiency is not. Furthermore, the correct way to persuade consumers to use new services is not to form cartels that reduce quality by forcing unwanted changes on consumers, but to promote the new service until it is accepted.

> In this context, the concept of "enhancing efficiency" means meeting consumers' true preferences in the best way and at the lowest price possible, as opposed to imposing preferences on consumer because they are less costly to provide. . . . When efficiency is enhanced, one should expect this to have the result of improving the quality of products, lowering their prices, or both. What, however, is gained by a price reduction that is achieved not by enhancing production efficiency but by compromising product quality? . . . Following the same line of argumentation, the banks may agree collusively to reduce their business days or hours even more, since this, too, will not lead to a meaningful change in the extent of banking service [demand] due to the inelasticity of the demand curve but will concurrently reduce the banks' expenses.

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60 *Adanim Mortgage Bank, Ltd. v. Israel Consumer Council*, Antitrust 1393/96 (January 27, 1997), available at http://eng-archive.antitrust.gov.il/files/87/1393-96.pdf.

61 *Id*. at 1 (emphasis in original).

62 *Id*. at 2-3.

63 *Id*. at 6.

> Ostensibly, providers of other goods and services, such as grocers, could agree collusively to reduce their business hours, *e.g.*, in the late evenings, and thereby reduce their expenses and even share some of the savings with the consumer. Airlines could agree to stop serving meals on flights, a change that would result in lower airfares, and so on. Such an argument, were it to be accepted, would allow unlimited cartelization in almost any market. After all, there is hardly a product in the economy that could not be offered at a lower price if manufacturers could mitigate its quality.[64]

102. Of course, had any individual bank had the courage to close on Fridays without first obtaining a promise from its competitors that they would do the same, then that bank would have been free to do so unilaterally. The fact that none of them did suggests that the banks believed their customers placed considerable value on the availability of Friday banking hours.

4.2.2 Quality concerns as a justification for cartels.

103. While quality is a highly subjective concept, there is no doubt that in some markets consumers are willing to pay a higher price for higher quality. Firms in such markets sometimes establish voluntary consortia to help ensure that high quality products are reaching customers – and that customers are able to differentiate high quality from lower quality. This has happened, for example, in the agricultural sector. However, since such consortia require some degree of coordination between members who may compete with one another, a question arises about the extent to which the members can cooperate without violating competition laws.

104. One of the cases analysed by Italy's competition authority, the AGCM, illustrates this type of problem.[65] In November 1995, AGCM launched a proceeding against the Consortia for the Protection of Grana Padano and Parmigiano Reggiano[66] to investigate whether the Consortia had restricted competition through market sharing agreements and quota systems. A critical fact was that the consortia specified the total quantity of cheese to be produced each year, as well as individual quotas for member firms. Moreover, each consortium had a system for imposing fines on overproducing diaries. However, even though the Consortia sought to enforce their respective production plans by sending monitoring letters and threatening non-complying diaries with fines, no fine had ever been imposed.

105. Both consortia argued that their quota systems were lawful and, in any event, necessary to maintain quality standards, which directly benefit consumers. Thus, the defendants asserted, the quotas should be exempted even if they were otherwise deemed to violate competition law. However, AGCM

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64 *Id*. The Tribunal, by the way, was aware of the possibility that if the harm to consumer welfare that would be caused by this arrangement could be measured, it might be outweighed by the cost savings achieved by the banks. The banks' representatives failed to present relevant data (on customer service usage patterns) requested by the Tribunal, though, and the burden was on them to show that benefits outweighed costs. *Id*. at 14-15.

65 AGCM, Provvedimento No. 4352 (I168), Consorzio Parmigiano Reggiano (1996). *See also National Society of Professional Engineers v. United States*, 435 U.S. 679 (1978) (in which the US Supreme Court rejected an argument by an association of professional engineers that one of its ethical rules, which prohibited members from submitting competitive bids for engineering services, did not violate the Sherman Act because the rule minimized the risk that the pressure of competition would lead to inferior work and thereby endanger public safety).

66 The Parmigiano Reggiano Consortium associates approximately 600 cheese dairies, while the Grana Padano Consortium associates around 300 producers. In both cases the producers must be located in specific provinces. Over 90% of the grana cheese consumed in Italy comes from dairies that are members of the two Consortia.

noted that both the European Court of Justice[67] and the European Commission[68] had already confirmed that even if an organization composed of many firms has been entrusted with duties such as monitoring product quality, it remains subject to competition law whenever its activities restrict competition.

106. In the alternative, the Parmigiano Reggiano Consortium requested a derogation on the basis that the quota system allowed it to supervise the quality of production more effectively and at an acceptable cost, thus helping to improve the quality of cheese. The consortium argued that it was less expensive to reach its quality objective by relying on the quota system rather than by controlling the quality of the milk used. The consortium also contended that its system also supported the competitiveness of Italian companies abroad, as it contributed to the maintenance and improvement of a high reputation.

107. The Grana Padano Consortium likewise emphasized the link between quotas and quality, asserting that quotas were the only tool that could ensure the quality and good reputation of Grana Padano cheese. It explained that the amount of cheese that could be produced by each dairy was based solely on each dairy's capacity, *i.e.* the amount of the quality raw material[69] it had available and its ability to fully respect the consortium rules.

108. Finally, the consortium argued that an industry-specific business cycle made the quota system necessary. Contending that the relevant market was subject to roughly five-year cycles of expanding and shrinking demand, the Consortium said that producers do not take into account the time lag between production and placing the cheese on the market. They therefore tend to expand production in the early stages of a cycle when price increases. Because producers may seek to boost production when prices rise by buying milk outside of the usual channels, there is a risk that low-quality cheese would be placed on the market. According to the consortium, quotas eliminated that risk.

109. AGCM found that neither consortium's production plans were mandatory under any national or Community legislative provisions and that the plans restricted competition. AGCM pointed out that rules concerning dairy products as well as recent regulations on production from protected origins favoured more effective supervision of quality rather than restrictions on quantity.

110. AGCM ruled that the quota systems constituted agreements that had the object of restricting competition among the members. The authority stressed that its investigation revealed that the quota systems had been implemented on the basis of historical information, and that references to the amount of high quality raw material available had turned out to be irrelevant. The consortia's argument that granting quota increases was subject to a verification of milk quality was rejected because the evidence showed that the consortium had not systematically taken the quality of milk available into account.

111. The consortia eventually agreed to limit themselves to recording information submitted by the individual cheese diaries, after having ascertained their capacity to produce quality cheese and to set indicative, rather than enforceable, consortium-wide production targets. Individual producers, moreover, would no longer be limited by their historical production levels.

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67 Joined Cases 96-102, 104, 105, 108 and 110/82, *NV IAZ International Belgium and others v Commission*, [1983] ECR 03369, para. 20.

68 Commission Decision of 26 July 1976 relating to a proceeding under Article 85 of the EEC Treaty, Case IV/28.980 - Pabst & Richarz/BNIA.

69 The production of the cheese in question requires that also milk possesses specific characteristics and is produced according to the standards set by the Consortium. To protect the quality of the product, the Consortium is therefore required to verify in advance the quality of the raw material and its origin.

4.3 Quality Concerns as a Justification for Tying

112. Concerns about quality have occasionally been asserted as justifications for tying inputs or aftermarket services to a good. The usual argument is that the tie is necessary for quality control because third party providers' products or services are inferior and might impair the performance – and therefore the reputation – of the tying product, especially if buyers are unable to determine whether poor performance would be caused by the tying good or the secondary good/service.

113. This argument is quite old, and it does not always fare very well in court. In *IBM v. United States*, for example, IBM argued that tying sales of its paper punch cards to rentals of its tabulating machines was lawful because cards from independent suppliers could not be trusted to conform to the size and cleanliness standards necessary for the machines to perform properly. Customers could not necessarily trace the cause of poor performance to faulty punch cards, though. The objective of the tie was therefore to preserve customers' goodwill toward IBM, the company argued, rather than to harm competition. The Supreme Court easily rejected that argument. It simply quoted the relevant text of the Clayton Act, which makes it unlawful to lease machinery on the condition that lessees do not use a competitor's supplies where the effect of that condition may be to substantially lessen competition or tend to create a monopoly. The Court then concluded that IBM's tie operated in the manner forbidden by the Act, noting that IBM did not even argue that other suppliers would be unable to meet the necessary specifications, and that in any event IBM could have conditioned its leases on the use of cards that conform to IBM's specifications.[70]

114. Another possible quality-based justification for tying is that the use of inferior third-party goods or services would impose financial costs on the seller of the tying good. This could happen, for example, if poor performance due to the use of low quality complementary goods or services would trigger a warranty provided by the seller of the tying good. Iacobucci argues that the following conditions must exist for this justification to make sense:

- The tying and tied goods are used in conjunction with each other
- The quality of the tying and tied goods affects their joint performance
- The tying good seller bears at least some of the costs of poor joint performance (*e.g.* there is a warranty)
- Buyers would be able (but for the tie) to choose a competitor's product instead of the tying good seller's tied product[71]

115. Under these circumstances, Iacobucci reasons, buyers are more likely to buy sub-optimal-quality complementary goods because the performance-related risk of doing so is at least partially borne by the tied good seller. Rational primary good sellers will react by charging a higher fee for guaranteeing performance than they otherwise would. "Because the higher price results from an inefficient choice of low-quality tied goods, it may be preferable for the buyer to commit to purchase only high-quality tied goods."[72]

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70 *IBM Corp. v. United States*, 298 U.S. 131 (1936); *cf. Eastman Kodak Co. v Image Technical Services, Inc.*, 504 U.S. 451 (1992) (aftermarket services tying case in which there was evidence that some customers found an independent provider's service to be better than Kodak's).

71 Edward Iacobucci, "Tying as Quality Control: A Legal and Economic Analysis," 32 *Journal of Legal Studies* 435, 447-48 (2003).

72 *Id*. at 448.

116. "Inefficient" is a rather loaded word, though, because Iacobucci seems to be assuming that if the primary good seller is permitted to tie its complementary products, then it will charge a lower price that is related to an "efficient" choice of high-quality complementary goods. But what if it does not do that? Indeed, what if it charges a monopoly-level price for its complementary goods only because it is allowed to tie them to the primary good?

117. Furthermore, Iacobucci contends that this cost-imposition justification differs from the first one mentioned above because only the earlier justification depends on buyers being unable to determine whether poor performance is due to the primary good or the complementary good. But if that is true, and if customers can determine that poor performance is the complementary good's fault, then to avoid the imposition of costs due to the use of low quality complementary goods, the primary good seller need only condition its warranty on the use of complementary goods that meet its specifications. That is the same alternative to tying that the Supreme Court mentioned 77 years ago when finding *IBM* liable for tying.

118. On the other hand, not only does the "buyer confusion" justification sometimes work, but Iacobucci's distinction between that rationale and the "cost imposition" rationale sometimes matters. That was the case in *United States v. Jerrold Electronics*, a decision that was affirmed by the Supreme Court.[73] In *Jerrold*, the trial court accepted the buyer confusion argument in ruling that the defendant's tying conduct was temporarily justified because customers could not determine whether poor performance would be due to Jerrold's product or the inferior aftermarket goods and services of independent providers. However, the cost imposition justification could have been applicable, as well, and that arguably should have made a difference in the outcome.

119. Jerrold was a pioneer in the development and installation of television antennae in the early 1950s. It required antenna buyers to purchase complementary Jerrold equipment and five-year service contracts, as well. The government alleged that Jerrold's tying conduct violated Section 1 of the Sherman Act and Section 3 of the Clayton Act.

120. Jerrold argued that its experience in selling other goods had shown that independent service providers tended to give inferior service. The antenna industry was nascent and therefore unproven, though. Furthermore, customers would not know whether malfunctioning antennae were performing poorly because of the antennae themselves or because of low quality installation and maintenance services or low quality complementary equipment. The tie was therefore necessary to protect both Jerrold's reputation and the development of the antennae and television broadcast markets. In this case, the court accepted these arguments, at least for the years when the market was still young.

121. Iacobucci notes that buyer confusion may not have been the only valid justification in *Jerrold*, though. The decision is unclear on this point, but Jerrold may have borne some of the costs of inferior service and complementary equipment. Inferior service may have triggered warranty provisions associated with the antenna, while inferior third-party equipment may have triggered either the warranty provisions or Jerrold's obligations under its service contract. One would think that the inferior equipment problem could have been solved by conditioning Jerrold's warranty and service obligations on the use of specification-compliant independent goods. But adequate third-party service would not necessarily be easy to describe comprehensively in a list of specifications. Therefore, the cost-imposition justification may have had merit.

122. This matters because the buyer confusion and cost-imposition justifications have different durations of validity. The buyer confusion rationale would have less and less merit as time went by and

[73] *United States v. Jerrold Electronics Corp.*, 187 F. Supp. 545 (E.D. Pa. 1960), *affirmed per curiam*, 365 U.S. 567 (1961).

Jerrold's reputation solidified. But the cost-imposition rationale's merit (with respect to third party installation and maintenance services) would not diminish over time, as long as Jerrold continued to support antenna purchases with warranties.

4.4 Vertically Integrated Firms: Sabotaging the Quality of Downstream Competitors' Services

123. In some markets, such as fixed line telecommunications services, there is often a large incumbent upon whom downstream rivals depend for access to network capacity. That situation creates the possibility for vertically integrated incumbents to harm their downstream competitors by degrading the quality of the services those competitors can offer. In such situations, a regulator or a competition authority must determine whether quality has actually been degraded or not.

124. For example, in December 2007 the Polish Office of Competition and Consumer Protection (UOKiK) imposed a PLN 75 million fine on Telekomunikacja Polska (TPSA) for discriminating against competitors in the Internet services market. UOKiK found that TPSA had decreased the quality of some downstream competitors' services and, in some cases, that it had completely disabled their ability to transfer data.[74]

125. The proceedings were launched on the basis of numerous complaints UOKiK received in 2004 from Polish telecommunications operators. TPSA's objective, the operators argued, was to make it impossible for end-users to access information stored in the networks of operators who acquired network access services from foreign operators rather than from TPSA.[75] To check the validity of such assertions, UOKiK carried out controls at the premises of the incumbent, which confirmed that the alleged practice could have taken place.

126. The relevant market was defined as the market for access to Internet end-users connected to public telecommunications networks. To provide retail services on the relevant market, Polish telecommunications operators could procure access service either directly from TPSA or indirectly through from foreign operators that already had access agreements with TPSA, namely France Telecom or Telia. The Polish competition authority found that TPSA selectively degraded the IP traffic coming from Polish operators' networks that reached TPSA's network through connections with foreign operators. Upon detecting such traffic, the TPSA's router would either reduce the quality of traffic or completely prevent data transmission.

127. Contracting with foreign operators was commercially very attractive for Polish operators because the prices France Telecom and Telia charged were much lower than those charged by the Polish incumbent. In principle, the service they obtained should have been the same as the one offered by TPSA. However, because of TPSA's discrimination, to offer their customers the expected quality of access to the Internet, the Polish operators were forced to terminate agreements with foreign operators and contract the

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74 Prezes Urzędu Ochrony Konkurencji i Konsumentów, Decision No DOK-98/07 (20 December 2007).

75 To understand the nature of TPSA's practice it is first necessary to understand the architecture of the network. The Internet functions as a web of many telecommunications networks connected to each other and administered by different network operators, who are operating on different levels. On the lowest level there are small networks administered by local Internet service providers (ISPs). To provide the users of these networks access to data in networks from other regions, countries, and continents, the local networks have to be connected to larger networks. This connectivity is provided by so-called second level Internet providers, which administer regional networks (such as TPSA, France Telecom, or Telia). Finally, the regional networks have to connect with each other to provide global connectivity.

same services from TPSA for much higher fees.[76] Consequently, those Polish operators who sought to increase their efficiency and offer their customers the same quality at lower prices by contracting with France Telecom or Telia, were unable to compete with either TPSA or other Polish operators who stayed with TPSA.

128. While the degradation of quality of service lies at the heart of the anti-competitive behaviour identified by UOKiK, the decision does not specify what quality of traffic means or how it is measured. It may have been the case that it was enough for the authority to prove the existence of discrimination. It is clear that UOKiK needed specialized information, which it obtained from an appointed expert. The expert was asked to determine whether the configuration of TPSA's routers could degrade foreign IP traffic. However, it is unclear how much degradation there was and what the minimum amount of degradation was that UOKiK would have deemed necessary to constitute a competition violation.

4.5 Quality Concerns in Market Investigations

129. Competition authorities in some jurisdictions occasionally conduct market investigations, in which they analyse sectors having particular features that could be impeding competition. Such investigations typically focus on industry-wide characteristics and practices rather than on the conduct of a specific firm. Sometimes the quality of the products or services in a market turns out to be a significant concern in these investigations.

130. The UK's Competition Commission undertook one such investigation of the retail groceries sector in 2006,[77] after the Office of Fair Trading decided to refer an investigation of the supply of groceries by retailers.[78] The OFT's decision was based on evidence suggesting that even though overall consumers had benefited in recent years from falling prices, a greater variety of products, and better services, they may have been harmed by other market developments that could constitute a distortion of competition.

131. When considering the impact that those market developments had on consumers, the OFT looked at price, quality, range and service. It noted "evidence that consumers may increasingly value quality of product over pure competition on price", which "appears to be having benefits for some niche players, including independent stores".[79] The OFT also pointed out that "some respondents argued that the OFT should take account of wider issues such as the quality and healthiness of food sold in supermarkets. The OFT has not attempted to measure this. In general, provided competition gives consumers a choice of types of food, the OFT would view issues of diet and healthiness of food to be outside its remit as a competition authority".[80] This highlights one of the difficulties with examining quality in antitrust cases. It may well be the case that a holistic approach to quality would require a competition authority to take into account non-competition concerns. Drawing a line between quality aspects that do and do not belong among competition concerns adds to the initial difficulty caused by the subjectivity of what quality means for a given product/service.

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76 The extent of the disparities between the fees charged by TPSA and those charged by France Telecom and Telia, which were deemed significant by UOKiK, is not known because UOKiK treated price-related information confidentially. Prezes Urzędu Ochrony, *supra* n.74 at paras. 168-178.

77 Competition Commission (2008), The supply of groceries in the UK market investigation, available at: http://www.competition-commission.org.uk/assets/competitioncommission/docs/pdf/non-inquiry/rep_pub/reports/2008/fulltext/538.pdf.

78 OFT (2006), The Grocery Market: The OFT's reasons for making a reference to the Competition Commission, OFT 845, available at: http://www.oft.gov.uk/shared_oft/reports/comp_policy/oft845.pdf

79 *Id*. at para. 4.6.

80 *Id*. at para. 4.8.

132. In its report, the Competition Commission observed that according to the Enterprise Act, it must consider price, quality, choice and innovation. It then explained that in grocery retailing, choice can mean the choice of product range within a store as well as the choice between shops.[81] No such explanation was given for quality. When discussing its methodology for defining the relevant market, though, the Commission explained that in grocery retailing, demand-side substitution may occur in response to a change in price or a change in the non-price elements on which stores compete, such as product variety, quality and service. While the Commission stated that it takes both price and non-price factors into account when considering demand- and supply-side substitution, it acknowledged that applying the hypothetical monopolist test to non-price factors is not straightforward. In particular, it noted that "although a change in non-price factors sheds light on demand-side substitution and thus the extent of competition between firms, it is more difficult to assess the impact of a change in non-price factors on supplier profitability".[82]

133. The Commission found that many factors differentiate grocery stores. Rather than analyzing changes in every single aspect of the entire retail offer, though, the Commission quite reasonably limited its examination to changes in price, quality, range and service.[83] The Report, however, refers to both the quality of products (*e.g.* freshness) as well as store service quality, without providing a systematic framework for the assessment of quality. In his study, Matsa, for instance, specified that retail product quality includes a store's cleanliness, checkout speed, the courteousness of its staff, and the depth of its product assortment.[84]

4.6 Vertical Restraints

134. Vertical restraints such as RPM and exclusive territorial allocations may cause prices to be higher than they would otherwise be, but an argument made in their favour is that they also lead to better quality for consumers. Higher prices alone therefore may not tell the whole story. Should claims of quality improvement justify vertical restraints?

135. The Competition Committee has covered this debate in roundtables that were devoted specifically to vertical restraints. There is no need to go over it again in detail here.[85] The main point is that considerations about vertical restraints' effect on quality have led to a relaxation of the applicable legal standard in several OECD countries. That is to say, it has led to a shift from per se illegality to the rule of reason in some jurisdictions.

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81 Competition Commission, *supra* n. 77 at para. 2.17.

82 *Id*. at p. 48 n.2.

83 To assess the extent to which individual aspects of the store-level retail offer vary across local markets in response to competitive conditions, the Commission reviewed two studies: one submitted by Tesco, the other by a market research firm – the Gfk. The study submitted by the GfK assessed variation in 18 individual aspects of the retail offer at stores larger than 1,400 sq metres. Quality, for example, was assessed on the basis of the number of shopping basket items on display that were damaged (*e.g.* split packaging) or that were past (or close to) the sell-by date. The Commission, however, had concerns about the premise of both of these studies because "many aspect of the store-specific retail offer are intangible and have no identifiable metric with which to measure variation from store to store". (Para. 6.51.) It also acknowledged that "it is extremely difficult to measure quality and service adequately". (p. 116 n.1.)

84 Matsa, *supra* n. 38.

85 See OECD, Vertical Restraints for On-line Sales (forthcoming 2013) (will be available at www.oecd.org/daf/competition/roundtables.htm); OECD, Resale Price Maintenance (2008), available at http://www.oecd.org/daf/competition/43835526.pdf.

5. Conclusion

136. This paper reveals that although quality is a substantial concern of competition policy, it is a difficult concept to pin down or measure. It means different things to different people and cannot always be quantified, unlike prices and costs.

137. Microeconomic theory does not offer enforcers or judges much help with understanding how changes in the level of competition in a market are likely to affect quality. Apart from price-regulated markets with multiple competitors, one cannot confidently predict how quality will change if competition weakens or intensifies. Therefore, to understand the effect of competition on quality, one must usually turn to empirical studies tailored to individual markets.

138. The empirical studies we reviewed support the main points from the theory section. That is to say, the studies find that competition increases quality in markets where prices are regulated, whereas they reach conflicting results about competition's effect on quality in markets where prices are not regulated.

139. It was not easy to find decisions by competition authorities and courts in which quality considerations played a prominent role. That is probably a reflection of how difficult it is to define and measure a multidimensional and subjective variable like quality. It may also signify that authorities and courts are satisfied that focusing on price effects is adequate in almost every case. Where we did locate decisions that dwell on quality, we found qualitative treatments rather than quantitative ones. That should not be taken as an indication that quality is a less important concern than prices and costs. Many decisions that focus on price effects, after all, do not contain any quantitative analysis, either. And as Israel's Antitrust Tribunal noted in *Adanim Mortgage*, lower quality can be just as detrimental to consumer welfare as higher prices.

140. If competition authorities wish to place a greater focus on quality, they must be prepared to do market-specific empirical work. Theories about competition and quality alone will not provide sufficient insights about quality effects in most markets. If they are willing to do the empirical work, though, they may find that analysing competitive effects on quality is a valuable option when price effects analysis is irrelevant or inconclusive.