LESSONS FROM THE SUPERIOR-ICG MERGER

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ABSTRACT

The Canadian Competition Tribunal allowed the recent Superior Propane-ICG Propane merger to proceed, in spite of demonstrated anti-competitive effects, because of demonstrated offsetting efficiencies. In this paper, we consider the merger review process in the Superior case and Canada's merger policy, as embodied in the "total surplus standard." We argue that in this case the full array of the merger's possible effects on the marketplace was not considered. Furthermore, we argue that this case illustrates how merger review under the total surplus standard can suffer from a great deal of complexity and uncertainty, which can lead to a lack of transparency not found in a simpler standard.

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INTRODUCTION

The long and tortuous legal history of the Superior Propane-ICG Propane merger[1] ("*Superior*") has given birth to a great deal of commentary among those interested in competition law and policy.[2] At the center of the commentary, and at the center of *Superior*, is the role of efficiencies in horizontal merger policy. Efficiencies have a unique role in merger legislation in Canada. The 1986 Canadian Competition Act expressly allows otherwise anticompetitive mergers if they also generate efficiencies sufficient to overcome the anticompetitive effects.[3] *Superior* was the first case since the passage of the Competition Act in which a merger found to be anticompetitive was permitted because of offsetting efficiencies.

In any economy, mergers potentially have an impact on consumers and producers via two simple effects: (1) the effect on competition—generally negative if the merger increases market power, and (2) the effect on the efficiency of production—generally positive if the merger is to have economic benefits to owners or shareholders (other than those that accrue through enhanced market power). The two effects are connected because any change in production technology or costs will affect how the merged firm competes. However, if the overall effect of the merger is that prices to consumers are predicted to rise (there is a loss of "consumer surplus"), then the merger is said to be anticompetitive.[4] This rise in price, while hurting

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1 The merger was announced on December 7, 1998. The Commissioner of Competition contested the merger, and the Competition Tribunal heard the case. On August 30, 2000, the Competition Tribunal upheld the merger based primarily on large predicted efficiency gains. *See* Comm'r v. Superior Propane Inc., 2000 Comp. Trib. 15 ("*Reasons and Order I*"). This decision was appealed and the Federal Court of Appeal remanded the case to the Competition Tribunal on April 4, 2001, with instructions to reconsider the anticompetitive effects of the merger and whether they were overcome by the predicted efficiency gains. *See* Canada (Commissioner of Competition) v. Superior Propane Inc. and ICG Propane Inc., [2001] 3 F.C. 185 ("*Appeal Decision I*"). The Competition Tribunal handed down its revised order on April 4, 2002, and upheld the merger once again. *See* Comm'r v. Superior Propane Inc., 2000 Comp. Trib. 16 ("*Reasons and Order II*"). The Federal Court of Appeal affirmed this decision on January 31, 2003. *See* Canada (Comm'r) v. Superior Propane Inc. and ICG Propane Inc., [2003] F.C. 529 ("*Appeal Decision II*").

2 *See infra* note 11.

3 *See* Competition Act, R.S.C. ch. C-34 (1985) (Can.) (as amended). Specifically, § 96 states:

> The Tribunal shall not make an order under section 92 [an order based on a finding of anticompetitive harm from the merger] if it finds that the merger or proposed merger in respect of which the application is made has brought about or is likely to bring about gains in efficiency that will be greater than, and will offset, the effects of any prevention or lessening of competition that will result or is likely to result from the merger or proposed merger and that the gains in efficiency would not likely be attained if the order were made.

Competition Act, § 96(1).

4 Note that there can be anticompetitive effects other than price increases, examples of which are

consumers, will benefit the merged firm in the form of increased profits (or "producer surplus"). Producer surplus will also increase due to the increased efficiency of production.

Before *Superior*, merger review in Canada attempted to balance the impact of anticompetitive effects and efficiencies by looking at their overall effect on "total surplus," or the sum of consumer surplus and producer surplus. The intellectual support for this approach is the pioneering work done by Oliver Williamson.[5] He argued that a complete review of a merger's potential impact on the economy should consider both the possible increase in market power, the possible increase in production efficiency, and the overall effect on total surplus.

The reliance on the total surplus standard has led some to state that the Competition Act is the most "economically literate" in the world.[6] In fact, most economists would agree that merger policy (and competition policy more generally) should be focused on increasing economic efficiency.[7] Most antitrust economists would further argue that merger and competition policy should be focused on increasing total surplus, thus distributional effects, or transfers from one member of society to another, should not be considered. Distributional issues are better addressed using other economic tools such as taxes and transfers.[8]

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mentioned in the Canadian merger guidelines: "The calculation of the likely anticompetitive effects of mergers is generally very difficult to make. This is particularly so with respect to the measurement of losses related to a reduction in service, quality, variety, innovation and other non-price dimensions of competition." GOV'T OF CAN. COMPETITION BUREAU, MERGER ENFORCEMENT GUIDELINES § 5.5 (Mar. 1991). A similar statement is found in the American merger guidelines: "Sellers with market power also may lessen competition on dimensions other than price, such as product quality, service, or innovation." U.S. Dep't of Justice & Fed. Trade Comm'n, Horizontal Merger Guidelines n.6 (rev. ed. 1997), reprinted in 4 Trade Reg. Rep. (CCH) ¶¶ 13, 104 (Apr. 8, 1997).

5 *See* Oliver E. Williamson, *Economies as an Antitrust Defense: The Welfare Tradeoffs*, 58 AM. ECON. REV. 18 (1968).

6 MICHAEL J. TREBILCOCK ET AL., THE LAW AND ECONOMICS OF CANADIAN COMPETITION POLICY 31 (2002).

7 *See generally* Kenneth G. Elzinga, *The Goals of Antitrust: Other Than Competition and Efficiency, What Else Counts?*, 125 U. PA. L. REV. 1191 (1977). *See also* ROBERT H. BORK, THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF (1993).

8 For example, TREBILCOCK ET AL., *supra* note 6, at 40, state that:

> Competition policy is appropriately viewed as an instrument to maximize efficiency, or the 'total surplus' gained by market participants. The use of competition policy to achieve not merely efficiency but an equitable distribution of wealth would result in an excessively complex and non-transparent set of legal rules that would be both uncertain and arbitrary—being determined by the opinions and values of whoever was sitting on the tribunal in a particular case. Government instruments such as taxes and social insurance are much better suited for the goal of distributing income equitably.

On the other hand, public finance economists might disagree and argue that distributional effects should be considered in merger and competition policy. For a discussion relevant to *Superior*, see Affidavit of

Superior put this economic literacy to the test. For the first time, an "efficiency defense" was successfully used to allow a merger that was found to be anticompetitive.[9] However, the increase in market power caused by this merger and the approval of the merger based on current law have created debate in Canada.[10] There is debate both about whether the legislation should be changed and about the correct interpretation of the existing legislation. Differing views held by the relevant parties to the merger review process were also highlighted during the long period of litigation, which involved two rulings by the Competition Tribunal and two rulings by the Federal Court of Appeal.

In this paper, we join the side of the debate that considers the process of the merger review in *Superior* a failure. Further, in our opinion, the total surplus standard in the context of the Competition Act leads to a merger review process that is not at all transparent because of the complexities and sophistication inherent in the standard. A total surplus standard requires careful balancing and comparison of effects that are often hard, if not impossible, to measure with any degree of accuracy. This implies that there is likely a low degree of confidence in any decision made, whether to allow or to disallow a merger. What *Superior* teaches us is that a greater sophistication in the rules requires a greater sophistication in the application of the rules. Unfortunately, the lack of transparency itself may discourage some welfare-enhancing mergers.[11]

We review and discuss these issues in the context of the *Superior* case. The rest of the paper is structured as follows. In Part I, we present a more complete discussion on the total surplus standard and the role of efficiencies. In Part II, we discuss the *Superior* case and the application of the total

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Peter G.C. Townley, The Commissioner of Competition v. Superior Propane Inc., 2000 Comp. Trib. 15 (affidavit dated Aug. 16, 1999). An intermediate perspective, based on the outcome of *Superior,* is found in Thomas W. Ross & Ralph A. Winter, *Canadian Merger Policy Following* Superior Propane, 21 CAN. COMP. REC. 7 (2003).

9 Very few mergers in Canada are actually contested before the Competition Tribunal. Since 1986 only three merger reviews were concluded "through contested proceedings." *See* Donald G. McFetridge, *Merger Enforcement under the Competition Act after Ten Years*, 13 REV. IND. ORG. 25 (1998); COMPETITION BUREAU, ANNUAL REPORT OF THE COMMISSIONER OF COMPETITION FOR THE YEAR ENDING MARCH 31, 2002, Table 4; and COMPETITION BUREAU, ANNUAL REPORT OF THE DIRECTOR OF EXAMINATION AND RESEARCH FOR THE YEAR ENDING MARCH 31, 1997, Table 5.

10 For citations to published opinions on *Superior* see Ross & Winter, *supra* note 8.

11 The value of process transparency in merger review has been well discussed. *See*, *e.g.*, CANADIAN COMPETITION BUREAU, MERGER REVIEW BENCHMARKING REPORT (Jun. 28, 2001); International Competition Policy Advisory Committee, Meeting Minutes (Dec. 16, 1998), *at* http://www.usdoj.gov/atr/icpac/2331.htm; and US-EU Merger Working Group, Best Practices on Cooperation In Merger Investigations (Oct. 30, 2002), *at* http://www.usdoj.gov/atr/public/international/docs/200405.htm.

surplus standard in the context of the facts and circumstances of that case. Finally, in Part III, we present some policy conclusions drawn from the *Superior* experience.

I. TOTAL SURPLUS AND EFFICIENCIES

Before *Superior,* the fundamental criterion that governed horizontal merger policy in Canada was the maximization of total surplus.[12] This has its roots in the classic treatment by Williamson,[13] and commentators on Canadian merger policy have indicated that the total surplus criterion was "firmly grounded in economics, and arguably, also in Canadian legislative intent."[14] The total surplus criterion has three critical elements: deadweight loss, neutrality of transfers, and efficiencies. Deadweight loss is the loss in economic surplus that comes via the exertion of increased market power by a newly merged firm. It is the economic loss to society from the anticompetitive effects of the merger.[15] Neutrality of transfers means that when the merger causes a transfer of money from one member of society to another (for example from consumers who pay more to producers who earn more), it has no effect on overall surplus. Efficiency gains are simply the gains from more efficient production or the savings in overall production cost. They are the economic gain to society from the merger.

Under the total surplus standard, the effect of the merger is equal to the efficiency gain minus the deadweight loss. Transfers among members of the economy are considered neutral.[16] Under this standard, when this effect is positive, the merger should be allowed, and when this effect is negative, it should be blocked.[17] This implies that under this criterion an

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12 *See* GOV'T OF CAN. COMPETITION BUREAU, MERGER ENFORCEMENT GUIDELINES § 5 (MAR. 1991).

13 Williamson, *supra* note 5.

14 Margaret Sanderson, *Efficiency Analysis in Canadian Merger Cases*, 65 ANTITRUST L.J. 623, 627 (1997).

15 In the simplest case, when the increase in market power leads to a price increase, the deadweight loss is simply the loss in consumer surplus due to the price increase (higher price paid and fewer units purchased) net of the consumer surplus that is simply a transfer to producers who earn higher profits because of the higher price. This is the classic definition of deadweight loss. The overall anticompetitive effect of a market power-increasing merger is much more complex.

16 Another way to frame this is to note that the total surplus standard implies that a merger will be allowed (blocked) if it increases (decreases) total surplus, or the sum of consumer and producer surplus in the economy. Because all that matters is the sum, transfers from consumers to producers and vice versa have no effect on total surplus and are thus neutral.

17 See Williamson, *supra* note 5, for a discussion of this calculation. For an overview of the basic economics underlying the welfare tradeoffs see Thomas W. Ross & Ralph A. Winter, *The Efficiency Defense in Merger Law: Economic Foundations and Recent Canadian Developments* (Feb. 2003),

anticompetitive merger with significant expected deadweight loss could still be allowed if there were also significant expected efficiencies.

It has been argued that the total surplus standard is quite lenient because a small efficiency gain appears to overcome even a large anticompetitive price effect. This is easily seen in the simple Williamson model where the deadweight loss due to even a large price increase is modest compared to the gain in producer surplus due to a decrease in the marginal cost of production. A large price increase may lead to large transfers between consumers and producers, but these are neutral under a total surplus standard. Williamson himself found that a "relatively modest cost reduction is usually sufficient to offset relatively large price increases."[18] However, the simple model is an abstraction. It is a model based on a single price for a homogeneous good, an initially perfectly competitive market, and simple efficiencies in cost. The simple Williamson model only captures a small part of the relevant anticompetitive effects that may arise from an increase in market power associated with a particular transaction. Furthermore, it does not take into account the effect of market structure and competitive response, or the full scope of efficiencies.[19]

There are many possible types and sources of efficiencies that could be realized by a horizontal merger.[20] Because a merger combines the assets, human and physical, tangible and intangible, of two firms, it could have many different effects on the production possibilities of the new firm, both in the short run (immediately changing the efficiency of production of current output, called production efficiencies) and in the long run (changing the possible avenues of growth, called dynamic efficiencies). These effects could be in many distinct economic markets. With assets combined, knowledge of best practices is shared, and redundancies in facilities, overhead, administration, and other areas can be removed. Furthermore, the merger

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available at http://finance.sauder.ubc.ca/~winter/RossWinter03.pdf.

18 Williamson, *supra* note 5, at 22-23.

19 An issue of particular importance in the context of S*uperior* is how the presence of pre-existing market power affects the calculation of deadweight loss, even in the simple case. This is discussed in Frank Mathewson & Ralph Winter, *The Analysis of Efficiencies in* Superior Propane*: Correct Criterion Incorrectly Applied*, 20 CAN. COMP. REC. 88 (2000). We discuss this further in our analysis of *Superior* below. *See also* Ross & Winter, *supra* note 17, for a general discussion of the effects of pre-existing market power under a total surplus standard. They begin to analyze the complex problem of determining the social welfare effects of a merger when the merger has effects in other markets and markets are imperfectly competitive (firms have pre-merger market power).

20 For discussions of categories of efficiencies in the context of horizontal mergers, see Sanderson, *supra* note 14; and Werden, *infra* note 28. For the perspective of the U.S. agencies, see U.S. Dep't of Justice & Fed. Trade Comm'n, Horizontal Merger Guidelines § 4. For the Canadian perspective, see GOV'T OF CAN. COMPETITION BUREAU, MERGER ENFORCEMENT GUIDELINES § 5 (Mar. 1991).

could enable the firm to broaden its product offerings or to engage in research and development that are more efficient. Both are long-term, or dynamic, benefits to economic welfare.

There can be savings in both fixed costs and variable costs.[21] Achieving efficiencies may also involve bearing some short-term costs, such as those that accrue from shutting down redundant facilities, that must be netted out of the overall efficiencies. Finally, it is important that the efficiencies be merger-specific.[22] It should not be the case that the efficiencies could be achieved by the firms acting independently or in an arrangement that is short of a total merger.[23]

As with efficiencies, there are also many different relevant anticompetitive effects to consider in the analysis of a horizontal merger. The primary effect is an increase in price for a significant period of time. Increases in market power, however, may also negatively affect competition in product quality, product variety, service, advertising, innovation, or related dimensions of competition. Such anticompetitive effects can arise via unilateral effects or via coordinated effects. As with efficiencies, a careful examination of the details of competition in the relevant market(s) will need to be undertaken in order to understand the likely anticompetitive effects of the merger.[24]

In order to apply the total surplus standard accurately, the cost in surplus, or deadweight loss, of these anticompetitive effects must be calculated. Economists are relatively confident that a meaningful increase in market power will likely lead to a variety of meaningful anticompetitive

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[21] Note that the specific type of cost savings will determine whether the firm's pricing decision is affected. Under standard economic theory, if the savings is only in fixed costs, it will have no effect in a typical oligopoly setting. These savings are still relevant under a total surplus standard but not under a price standard.

[22] *See* Joseph Farrell & Carl Shapiro, *Scale Economies and Synergies in Horizontal Merger Analysis*, 68 ANTITRUST L.J. 685 (2001). In their high-level analysis of horizontal mergers, Farrell and Shapiro differentiate scale efficiencies from true synergies (which they define as ways in which the production technology of the merged entity has truly changed) and efficiencies that are truly merger-specific from those that can be achieved without merger. With respect to both kinds of merger-specific efficiencies, they argue that they are likely to be more relevant the less competition there is in the pre-merger marketplace. *Id.* at 690-92. This leads to a mixed finding that efficiencies are likely to be more important in the very case where anticompetitive effect is likely to be most relevant. In the case of non-synergy efficiencies, they argue that it will be rare for them to allow a merger to lead to a price decline to consumers. *Id.* at 702-03; *see also* Joseph Farrell & Carl Shapiro, *Horizontal Mergers: An Equilibrium Analysis*, 80 AM. ECON. REV. 107 (1990).

[23] It is important to note that only real savings in the use of resources are relevant under a total surplus standard. If a merged firm is able to realize cost saving that is merely a transfer, such as might occur if their new size enables them to get better terms from vendors, then these are not savings in real resources; these are simply pecuniary savings. Such transfers are neutral under a total surplus standard.

[24] This is a rich subject in the economics literature. For a general, though somewhat dated, discussion of merger review, see *Symposium on Mergers and Antitrust*, 1 J. ECON. PERSP. 3 (1987).

effects; however, quantifying the totality of those effects is a much more difficult task. This calculated deadweight loss will then be weighed against a similar calculation of efficiency benefits.[25] Given the variety and complexity of both the anticompetitive effects and the efficiency benefits, this is a difficult task. Some anticompetitive effects or efficiencies will not lend themselves to quantification and may be better described qualitatively.[26] However, in theory, the impact of all anticompetitive effects and efficiencies should be measured in a common metric, appropriately weighted by the likelihood that they will occur, and appropriately discounted if they occur at different points of time.[27] Finally, the total weighted deadweight loss should be compared with the total weighted efficiency benefit in order to determine the overall effect of the merger. [28]

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25 Note that some dynamic efficiencies may be as hard to quantify as some anticompetitive effects. There is debate on both sides of the issue of measurement. Some authors are skeptical of efficiencies proposed by the merging firms. *See* Conrath & Widnell, *infra* note 28; *see also* Dennis A. Yao & Thomas N. Dahdouh, *Information Problems in Merger Decision Making and Their Impact on Development of an Efficiencies Defense*, 62 ANTITRUST L.J. 23 (1993). Some authors believe that anticompetitive effects are not empirically justified and that more weight should be given to efficiencies. *See* Muris, *infra* note 28, at 735-40.

26 The Merger Enforcement Guidelines speak to the issue of qualitative effects by specifying that the Director is to exercise his/her discretion when effects that are only qualitative in nature need to be compared. *See* GOV'T OF CAN. COMPETITION BUREAU, MERGER ENFORCEMENT GUIDELINES, § 5.4.

27 Such weighting was discussed in Williamson, *supra* note 5.

28 Other criteria for merger review do not necessarily require such a broad and detailed analysis. Under a price standard, such as that used in the United States, the focus is on determining the likely effect of the merger on prices to consumers, or more generally the effect of the merger on any relevant dimensions of competition. Under this standard, there is no need to put different effects into a common metric or to measure the actual deadweight loss of the price or competition effect. If the result of the analysis is a determination that the merger will increase market power and this power will lead to anticompetitive effects, then under this standard the merger should be blocked. A price standard allows less scope for an efficiencies defense. *See* Lin Bian & D.G. McFetridge, *The Efficiencies Defense in Merger Cases: Implications of Alternative Standards*, 33 CAN. J. ECON. 297 (2000). The debate over the role of efficiencies in merger analysis has a long history in the United States, in both academic commentary and legal rulings and opinion. A recent symposium in the GEORGE MASON LAW REVIEW provides a useful discussion of efficiencies in the wake of the 1997 revision to the Horizontal Merger Guidelines. *See* Symposium, *The Changing Face of Efficiencies*, 7 GEO. MASON L. REV. 485 (1999). Section 4 of the Guidelines was revised to include a section explicitly about the treatment of efficiencies. In particular, the Guidelines state:

> The Agency will not challenge a merger if cognizable efficiencies are of a character and magnitude such that the merger is not likely to be anticompetitive in any relevant market. To make the requisite determination, the Agency considers whether cognizable efficiencies likely would be sufficient to reverse the merger's potential to harm consumers in the relevant market, e.g., by preventing price increases in that market.

U.S. Dep't of Justice & Fed. Trade Comm'n, Horizontal Merger Guidelines § 4. The articles in the symposium provide a discussion of the recent treatment of efficiencies and a discussion of their treatment historically. *See* Craig W. Conrath & Nicholas A. Widnell, *Efficiency Claims in Merger Analysis: Hostility of Humility?*, 7 GEO. MASON L. REV. 685 (1999); Jerry A. Hausman & Gregory K. Leonard, *Efficiencies from the Consumer Viewpoint*, 7 GEO. MASON L. REV. 707 (1999); Timothy J. Muris, *The*

Recent advances in the quantitative methodology used to evaluate mergers have improved analysts' ability to predict some effects from mergers.[29] These unilateral effects merger simulation models allow for the simulation of one of the possible effects of a merger, the change in unilateral pricing decisions due to the merging of two firms into one. They can also incorporate the effect of a change in marginal cost (due to efficiencies). The development of these models has led some authors to argue that efficiencies can begin to be incorporated effectively into an overall quantitative analysis of anticompetitive effect.[30] These models, however, do not provide quantitative evidence on coordinated effects,[31] nor do they allow for an estimation of non-price competitive effects.

It is precisely the false sense of security that these models may provide that has other authors warning analysts to take caution.[32] The models seem to allow for an apples-to-apples comparison of efficiencies and anticompetitive effects.[33] However, it is important to understand their limitations, and that they only provide a prediction of part of the overall economic effect of a merger.

Government and Merger Efficiencies: Still Hostile After All These Years, 7 GEO. MASON L. REV. 729 (1999); and Robert Pitofsky, *Efficiencies in Defense of Mergers: Two Years After*, 7 GEO. MASON L. REV. 485 (1999). See also Gregory J. Werden, *An Economic Perspective on the Analysis of Merger Efficiencies*, 11 ANTITRUST 12 (1997), and Joseph Kattan, *Efficiencies and Merger Analysis*, 62 ANTITRUST L. J. 514 (1994).

29 *See* Gregory J. Werden, *Simulating the Effects of Differentiated Products Mergers: A Practical Alternative to Structural Merger Policy*, 5 GEO. MASON L. REV. 363 (1997).

30 See Werden, *supra* note 28, at 14, who states, "It is not difficult to incorporate efficiencies into this [competitive effects] analysis; and within the context of a unilateral effects analysis, a quantitative analysis is feasible." *See also* Jerry Hausman et al., *Competitive Analysis with Differenciated Products*, 34 ANNALES D'ECONOMIE ET DE STATISTIQUE 159 (1994)("[T]he role of post-merger induced efficiencies . . . [is] quite clear . . . .").

31 See Werden, *supra* note 28, at 16 n. 20, which states that "[w]ith the current state of the art, no quantitative analysis appears to be possible for analyzing the impact of efficiencies on coordinated effects."

32 See Conrath & Widnell, *supra* note 28. They argue that the recent growth in the use of merger simulations, and their ability to incorporate some efficiency arguments, should not lull those analyzing mergers into a false sense of security. They state:

> While merger analysis often concentrates solely on price effects for convenience in modeling, or on price as a shorthand for all the market output factors protected by competition, we should not lose sight of all the other factors. Consequently, even a very good econometrically-derived prediction of a price increase may be an inadequate measure of anticompetitive harm.

Id. at 694. They further argue for a "high standard for determining that efficiencies are verifiable and likely to occur." *Id.* at 687.

33 The inability to make such a comparison has historically left efficiencies out of merger analysis in the United States. See Conrath & Widnell, *supra* note 28, for a historical perspective.

Superior provides us with a rare opportunity to examine the application of these ideas in the context of an actual merger review. We will argue that the process failed to acknowledge fully the range and complexity of economic effects involved in the Superior-ICG merger and thus it cannot be said with much confidence that the Tribunal reached the right decision.

II. THE *SUPERIOR* CASE

In 1998, Superior Propane Inc. ("Superior") announced its intention to acquire ICG Propane Inc. ("ICG").[34] At the time, Superior was a propane wholesaler and retailer with operations in all Canadian provinces and territories, while ICG sold and distributed propane and provided related services in most provinces and territories.[35] The two companies were the only two national propane companies in Canada.[36]

After an initial review, the Commissioner of Competition brought an application before the Competition Tribunal to block the merger.[37] The Commissioner argued that "[t]he merger will create a dominant national propane marketer and in several markets, a dominant local propane marketer."[38] The Tribunal allowed the transaction but issued a consent interim order on December 11, 1998, to hold separate the assets of the two companies (excluding non-overlapping locations), pending the Tribunal's review.[39] The hearings began on September 23, 1999, and were completed on February 9, 2000.[40]

On August 30, 2000, the Tribunal issued its decision, in which it denied the application of the Commissioner based on a review of the anticompetitive effects and the efficiencies that the merger would cause.[41] The Tribunal explicitly weighed one against the other and found that the efficiencies dominated the anticompetitive effects, thus it decided to allow the merger.

The Tribunal was quite clear about its findings on the anticompetitive nature of the merger:

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34 *Reasons and Order I*, 2000 Comp. Trib. 15 at ¶ 2.

35 *Id*. at ¶¶ 3-4.

36 Amended Notice of Application under § 92 of the Competition Act, Statement of Grounds and Material Facts 3 (Dec. 7, 1998) ("Notice of Application").

37 Under the Competition Act, the Commissioner of Competition is responsible for the administration and enforcement of the Act. The Competition Tribunal hears mergers contested by the Commissioner. *See* Competition Act, R.S.C. ch. C-34, § 7 (1985) (Can.) (as amended).

38 *Reasons and Order I*, 2000 Comp. Trib. 15 at ¶ 5.

39 *Id*. at ¶2.

40 *Id*. at 1.

41 *Id*. at ¶¶ 459-69.

> [T]he merger is likely to lessen competition substantially in many local markets and for national account customers and that the merger is likely to prevent competition substantially in Atlantic Canada, the Tribunal is of the view that the sole remedy appropriate in this case would be the total divestiture by Superior of all of ICG's shares and assets . . . .[42]

The Tribunal quantified the deadweight loss associated with the price effect of this loss of competition at $3 million per year and found that other "negative qualitative effects" were not likely to exceed another $3 million per year.[43] However, the Tribunal also found that both "efficiencies of $29.2 million per year will likely be brought about by the merger" and that these efficiencies would likely not be attained without the merger.[44] The tradeoff of deadweight loss against efficiencies led to the Tribunal's conclusion that the merger should be allowed. In addition, it explicitly stated, "[T]he Tribunal is of the view that nothing in the [Competition] Act allows us to consider distributional goals in merger review."[45]

The Commissioner filed an application of appeal of this decision with the Federal Court of Appeal on September 6, 2000.[46] The Federal Court of Appeal heard the appeal of the Tribunal's decision in January 2001 and issued an order on April 4, 2001, in which it remanded the case to the Tribunal.[47] The court argued that the Tribunal had not properly considered all of the "effects" of the merger in its application of section 96 of the Competition Act: the total surplus standard as applied by the Tribunal was too limiting.[48] The anticompetitive effects that should have been considered were broader than just the efficiency gain or deadweight loss. The appeals court instructed the Tribunal to apply "weights" to effects other than deadweight loss, such as the transfer of surplus from consumers to producers, the impact on medium and small businesses, the variety of products available to consumers, and the creation of monopolies.[49]

On April 4, 2002, the Tribunal handed down its redetermination order, in which it reconsidered all of the effects of the merger, including the redis-

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42 *Id.* at ¶ 314.

43 *Id.* at ¶¶ 463, 467.

44 *Id.* at ¶¶ 383, 463.

45 *Id.* at ¶ 426.

46 The Commissioner also tried and failed to have the assets of Superior and ICG held separate until the conclusion of the appeal process. The Federal Court of Appeal ruled that the assets could be integrated. If they then had to be split because of subsequent legal rulings, this division would occur at that time.

47 *Appeal Decision I*, [2001] 3 F.C. 185.

48 "[B]y so limiting the factors to be considered as 'effects' the Tribunal erred in law because it failed to ensure that all the objectives of the *Competition Act*, and the particular circumstances of each merger, could be considered in the balancing exercise mandated by section 96." *Id.* at 185, 223.

49 *Id.* at 194, 201, 222, 227, 236-37. The court knew that its order was going to expand the universe of anticompetitive effects that needed to be considered. *See id.* at 237.

tributive effect, and found that under any reasonable weighting of the considered anticompetitive effects and redistributive effects against the efficiency gain, the latter would be greater than, and offset, the total anticompetitive harm.[50]

The Commissioner again appealed the Tribunal's decision. On January 21, 2003, the Federal Court of Appeal ruled that the Tribunal had fulfilled its role and its redetermination order met the directive given it.[51] The Tribunal had considered and weighted all the relevant anticompetitive effects and found that they did not outweigh the efficiencies.[52]

The vigorous and continued challenge to the Superior-ICG merger likely arose because of the perception that the merger was going to create an entity with a great deal of market power. For example, in its original order, the Tribunal found that the combined Superior-ICG entity would have "approximately 70 percent of the market on a national basis," and that "barriers to entry in the retail propane business are high."[53] In 16 local markets, the merger would create virtual monopolies (a post-merger share above 95 percent), and the merger would be between the only two firms able to provide trans-Canadian services to national accounts.[54]

The long litigation of *Superior* has raised fundamental questions about what the standards of merger policy should be and how to implement them.[55] Although *Superior* represents the first real test of an efficiency defense, it is not the determination and quantification of the efficiencies to be gained by the merger that has led to the long dispute; rather, it is the debate regarding the other side of the ledger. To what should those efficiencies be compared? What is a true measure of the anticompetitive effects of the merger?

As outlined above, the Competition Act has dictated the terms of this debate. Section 96 of the act clearly states that efficiencies are to be weighed against anticompetitive effects that are predicted to arise due to an investigated merger. There is scope for debate over the size of these efficiencies, but not for ignoring them entirely. In *Superior*, the Tribunal ruled on the size of the relevant efficiencies in its initial order. The debate from that point forward centered on the measure of anticompetitive effect.

The debate over what the Tribunal considered (and measured) as the relevant anticompetitive effect was fundamentally a debate over what standard it should be using. In its initial ruling, the Tribunal applied the total

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50 *Reasons and Order II*, 2000 Comp. Trib. 16 at ¶ 371.

51 *Appeal Decision II*, [2003] 3 F.C. 529.

52 *Id*.

53 *Reasons and Order I*, 2000 Comp. Trib. 15 at ¶ 312.

54 *Id.* at ¶¶ 306, 310.

55 *See* Ross & Winter, *supra* note 8.

surplus standard, treating transfers as neutral.[56] Subsequently, after the Federal Court of Appeal overturned its ruling, it reconsidered the standard and the range of anticompetitive effects that it implied.[57] The primary issue was what weight to put on the transfers from consumers to producers.[58] Any positive weight would increase the measured anticompetitive effect of the merger and would be a movement away from a total surplus standard. In its redetermination order, the Tribunal explored the appeals court's ruling in the context of the legislative history and intent behind the total surplus standard, of other standards, of merger treatment in the United States, and in the context of academic commentary on antitrust. The Tribunal's conclusion put weight on the redistributive effects of the merger, but it was insufficient to raise the overall anticompetitive effects to a level at which they would exceed the efficiency gains.

Debate and uncertainty over efficiencies and the total surplus standard in Canada predate *Superior*. Before S*uperior*, the treatment of efficiencies under the total surplus standard was set out in the Merger Enforcement Guidelines.[59] However, different court rulings and commentary by those responsible for Canadian competition policy led some to believe that the standard, in practice, was unclear.[60] *Superior* focused attention on these issues via the back and forth among the Commissioner, the Tribunal, and the appeals court.

The total surplus standard appears to have survived *Superior*, although not in its purest form. The appeals court decision, which seems now to be the law of the land, departs from the rigid total surplus standard adhered to by the Tribunal in the original decision.[61] The authorities should not con-

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56 *Reasons and Order I*, 2000 Comp. Trib. 15 at ¶ 426.

57 *See Reasons and Order II*, 2000 Comp. Trib. 16.

> The Appeal Judgment requires the Tribunal to conduct a broad assessment of all the anticompetitive "effects" of the merger using a different standard or test, in lieu of the Total Surplus Standard, that reflects all of the objectives of the purpose clause of the Act. The Tribunal's initial findings were expressly tied to resource allocation and failed, according to the Court, to give adequate weight to the full range of objectives set out in the purpose clause of the Act. The Tribunal is now required to consider the wealth transfer that will result from the merger and to reconsider its prior findings with respect to the negative qualitative effects of the merger.

Id. at ¶ 10.

58 *Id*. at ¶¶ 102-13.

59 *See* GOV'T OF CAN. COMPETITION BUREAU, MERGER ENFORCEMENT GUIDELINES § 5 (Mar. 1991).

60 Michael Trebilcock & Ralph A. Winter, *The State of Efficiencies in Canadian Merger Policy*, 19 CAN. COMP. REC. 106 (1999-2000). In their article, written before the final *Superior* rulings, they review how the application of section 96 and how efficiencies are to be treated under the Competition Act is "disturbingly" unclear. They review the contradictory opinions that seem to have been made by the different parties involved. *See also* TREBILCOCK ET AL., *supra* note 6, at 146-150. McFetridge, *supra* note 9, reviews the uncertainty that followed the ruling in *Hillsdown.*

61 A notice on the first page of the Merger Enforcement Guidelines reads:

sider transfers strictly neutral (but rather should consider them with some weight), but rather, they are to consider them in light of a general focus on economic efficiency. The efficiency defense remains.[62] Our focus in this paper is not the question of whether or not redistribution can be considered an anticompetitive effect; rather, we focus on the Tribunal's consideration of the anticompetitive effects that are predicted to arise from the merger's creation of market power and their impact on economic efficiency.

A. *Efficiencies*

A detailed discussion of the calculation of efficiencies in *Superior* is beyond the scope of this paper. We discussed above the large amount of commentary on the role of efficiencies in horizontal merger policy. In the long process of appeal and redetermination, the Tribunal's original ruling on efficiencies was not revisited. As the appeals court stated, "there is no appeal from this aspect of the Tribunal's decision [on the net efficiency savings that would result from the merger] and it is unnecessary to say more about it here."[63] The appeal concerned the correct assessment of anti-competitive effects.

There was, of course, debate over the scale of the relevant efficiencies before the Tribunal in the initial litigation. The Order outlines the Tribunal's finding on specific points of disagreement between the Commissioner and the respondents.[64] The Tribunal found that "efficiencies of $29.2 million per year will likely be brought about by the merger"; this amount fell between the $21.2 million sought by the Commissioner and the $40 million sought by the respondents.[65]

The Tribunal did not explicitly weight its finding on efficiencies with any contingency factor. It was satisfied, however, with "a buffer zone around the estimated efficiency gains" and ruled that "the absence of an

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> Readers should also note that in light of the decision of the Federal Court of Appeal in the Commissioner of Competition v. Superior Propane Inc., The Efficiency Exception Part 5 of the guidelines no longer applies. In cases where efficiencies are claimed, the Competition Bureau will apply the principles set out in the Commissioner of Competition v. Superior Propane Inc. and ICG Propane Inc., 2001 FCA 1004.

GOV'T OF CAN. COMPETITION BUREAU, MERGER ENFORCEMENT GUIDELINES (Mar. 1991)

62 For a summary of how the *Superior* case affected Canadian merger policy see Ross & Winter, *supra* note 8. They argue that *Superior* has clarified the merger standard in Canada and is "coherent, appropriate, and as predictable as one could reasonably hope for." *Id.* at 2.

63 *Appeal Decision I*, [2001] 3 F.C. 185 at 207.

64 *Reasons and Order I*, 2000 Comp. Trib. 15 at ¶ 380.

65 *Id.* at ¶¶ 380, 383.

explicit contingency provision is immaterial."[66] Furthermore, in its redetermination, the Tribunal dismissed arguments that the merged firm might become complacent and thus not realize these anticipated efficiencies.[67]

B. *Anticompetitive Effects*

A merger that increases market power can be predicted to have a wide range of anticompetitive effects on economic efficiency. Many of these effects can be quantified with careful analysis; some are more qualitative in nature. Below we review and discuss the analysis of anticompetitive effects that was (and was not) undertaken in *Superior*.[68] Our primary interest is in using the record of the case to develop a range for the likely effects. Simply analyzing the more "quantifiable" effects shows that there exists a large range, much of which is greater than the range of quantified efficiency gains.

1. Deadweight Loss from a Unilateral Price Increase

This was the fundamental analysis relied upon by the Tribunal. In reaching its conclusion, it rested on analysis done by Professor Michael Ward.[69] The Tribunal took simulated price increases calculated by Ward and used them to calculate deadweight loss.[70] The deadweight loss calculations were based on a very simple framework: they assumed a homogeneous product with linear demand in price and an initial, pre-merger price that reflected perfect competition (price equal to marginal cost). In this simple case, the size of the deadweight loss assumed to arise due to the merger depends on only three things: the elasticity of demand (which determines the slope of the demand curve), the simulated price increases, and the pre-merger dollar volumes of sales.

This simplified model likely does not reflect reality in a number of ways. First, Mathewson and Winter have pointed out that the assumption of

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66 *Id.* at ¶¶ 381-82

67 *Reasons and Order II*, 2000 Comp. 16 at ¶ 232. The Tribunal found these arguments interesting, but "these inferences are unsupported by anything on the record and the Tribunal will not consider them further." *Id*. The argument that a firm's market dominance makes it complacent has a long history in economics. *See* J.R. Hicks, *Annual Survey of Economic Theory: The Theory of Monopoly*, 3 ECONOMETRICA 1 (1935).

68 Note that our review and discussion are of the public record of the case.

69 Affidavit of Michael R. Ward, The Commissioner of Competition v. Superior Propane Inc., 2000 Comp. Trib. 15 (affidavit dated Aug. 30, 1999); *Reasons and Order I*, 2000 Comp. Trib. 15 at ¶ 452; *Reasons and Order II*, 2000 Comp. Trib. 16 at ¶¶ 220-33.

70 *Reasons and Order I*, 2000 Comp. Trib. 15 at ¶¶ 451-58.

pre-merger perfect competition is not consistent with the record in the *Superior* case.[71] There is evidence of pre-merger market power; that is, the pre-merger price was above marginal cost.[72] Mathewson and Winter show how this error likely led the Tribunal to underestimate grossly the calculated deadweight loss.[73] We will incorporate a correction for pre-merger market power in our calculations below.

Second, the Canadian propane markets may not be well approximated by an aggregate homogeneous product model with linear demand. The Tribunal found that there are over seventy separate geographic markets for propane in Canada, as well as a national account market.[74] Furthermore, different end-use categories for propane will likely have different industry demand elasticities as customers in each end use face a different set of competitive alternatives (e.g., residential propane customers could switch to oil heat if the relative price of propane is too high, whereas automotive propane customers could switch to gasoline if the relative price of propane is too high) and an aggregate elasticity may not provide a good approximation.[75] In their analysis of the demand elasticity of propane at the provincial level in different sectors (residential, industrial, and commercial), Ryan and Plourde found a great deal of variation across regions, across sectors, and across time (though few of their results are statistically significant).[76] Linearity is also an assumption that can have large effects on the calculation of deadweight loss.[77]

It is beyond the scope of this paper to analyze the effects of the homogeneity, aggregation, and linearity assumptions on the deadweight loss cal-

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71 Mathewson & Winter, *supra* note 19.

72 This implies that there was an efficiency loss or deadweight loss in the propane market(s) before the merger. The formula for the size of this deadweight loss ("DWL") is given by

$$DWL = \frac{(p_0 - c)^2 b}{2} = \frac{(p_0 - c)^2 \varepsilon_0 q_0}{2 p_0} = \left[\frac{p_0 - c}{p_0}\right]^2 \frac{\varepsilon_0 r_0}{2},$$

where p is price, q is quantity, r is revenue, c is unit cost, b is the slope of the demand curve, and ε is the elasticity of demand. The subscript 0 denotes a pre-merger value.

73 They show how the actual deadweight loss based on the evidence in the *Superior* case could have been 8.5 times what was found.

74 *Reasons and Order I*, 2000 Comp. Trib. 15 at ¶¶ 86, 106, 107.

75 The Tribunal did not find that there were separate competition markets by end-use. *Reasons and Order I*, 2000 Comp. Trib. 15 at ¶ 72. However, Ward simulated different price increases for residential, industrial, automotive. *Id.* at ¶ 453. An "other" category was also used by the Tribunal in its calculations of deadweight loss. *Id.*

76 Affidavit of David Ryan & André Plourde at 43-45, Commissioner of Competition v. Superior Propane Inc., 2000 Comp. 15 (affidavit dated Aug. 16, 1999).

77 *See*, *e.g.*, Philip Crooke et al., *The Effects of Assumed Demand Form on Simulated Post-Merger Equilibria*, 15 REV. IND. ORG. 205 (1999).

culation. However, their consideration is relevant to an accurate application of the total surplus standard in the *Superior* case.[78]

If we consider the aggregate homogeneous product and linear demand model and incorporate the possibility of pre-merger market power, the formula for the change in deadweight loss due to the merger is a function of four things: the elasticity of demand, the simulated price increases, the pre-merger dollar volumes of sales (revenue), and the markup of the pre-merger prices over cost.[79]

A fundamental assumption of the model is that the demand curve used represents the market-wide demand curve. The elasticity of demand is the industry elasticity, not the elasticity facing an individual firm. This means that the pre-merger revenue should also represent the market revenue, in this case the overall revenue for propane. The predicted price increase used to make the deadweight loss calculation is the overall average price increase in the marketplace across all firms. The Tribunal's use of the model was not consistent with this: it considered only the predicted price increases of Superior and ICG and the pre-merger revenues of Superior and ICG.[80] Correcting this means filling out the revenue to represent the entire market and considering the impact of price increases by firms other than Superior and ICG. We assume that firms other than Superior and ICG make up 25 percent of the market.[81]

The figure below shows the amount of the change in deadweight loss associated with post-merger price increases using the Tribunal's methodol-

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78 The aggregate perspective taken by the Tribunal also means that information about the predicted anticompetitive effect of the merger in the different relevant antitrust markets is not considered. All the markets are "considered together," and an overall effect is calculated. This is appropriate under a pure total surplus standard because of the lack of distributional considerations; however, this could mask markets where there was an extraordinary effect on competition, such as the creation of a local monopoly.

79 The formula for the change in deadweight loss ("ΔDWL") is given by

$$\begin{aligned}\Delta DWL &= \frac{\left[(p_1 - c)^2 - (p_0 - c)^2\right]b}{2} \\ &= \frac{\left[(p_1 - c)^2 - (p_0 - c)^2\right]\varepsilon_0 q_0}{2p_0} \\ &= \frac{\left[(p_1 - p_0)^2\right]\varepsilon_0 q_0}{2p_0} + \frac{(p_0 - c)(p_1 - p_0)\varepsilon_0 q_0}{p_0} \\ &= \left[\frac{1}{2}\left(\frac{p_1 - p_0}{p_0}\right)^2 + \left(\frac{p_1 - p_0}{p_0}\right)\left(\frac{p_0 - c}{p_0}\right)\right]\varepsilon_0 r_0.\end{aligned}$$

The subscript 1 denotes a post-merger value. Other notation remains the same.

80 *Reasons and Order I*, 2000 Comp. Trib. 15 at ¶¶ 453-54. This follows the analysis in Ward.

81 This was the assumption made by Ward. *See* Ward, *supra* note 69, at 29.

ogy, the correction for pre-merger market power, and a market fringe that has a 25 percent share.[82]

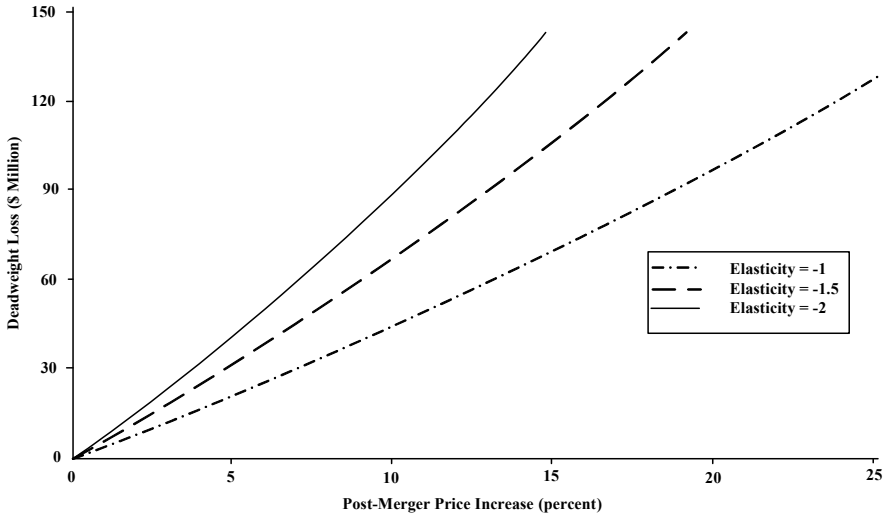

Chart I—Change in Deadweight Loss v. Post-Merger Price Increase

For example, with an industry elasticity of -1.0 and a post-merger price increase of 10 percent, the measure of deadweight loss is about $45 million per year. The measure of deadweight loss doubles to about $91 million per year, if the elasticity is -2.0 and the post-merger price increase remains the same.

If this measure of deadweight loss was a complete measure of the welfare loss associated with the anticompetitive effects of the merger, and if the efficiency gain was $29.2 million per year, then losses exceed the gain if the post-merger price increase exceeds about 6.6 percent. This assumes a pre-merger markup of 53 percent and an elasticity of -1.0.[83]

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82 Combined sales for Superior and ICG in 1998 were found to be $585 million. *See Reasons and Order I*, 2000 Comp. Trib. 15 at ¶ 454. Under our assumption of a 25% fringe, this implies total market pre-merger revenue of $780 million. We use a pre-merger markup of 53%, which is calculated using a pre-merger price of 27.2 cents per liter (the above dollar volume divided by the sum of 1,227 million liters for Superior and 922 million liters for ICG (volumes in 1998)) and a 1998 sales margin of 14.5 cents per liter. SUPERIOR PROPANE INCOME FUND, ANNUAL REPORT 2000 at 21 (2001). Note that Mathewson and Winter assume a pre-merger elasticity of -3.0, which implies a pre-merger markup of 33%. Mathewson & Winter, *supra* note 9.

83 Using an elasticity of -1.5, a post-merger price increase greater than about 4.5% would imply losses that exceed the efficiency gains, and an elasticity of -2.0 implies a critical post-merger price

With the 25 percent fringe assumed not to increase price, Ward calculated a predicted average post-merger price increase of about 5.8 percent assuming an industry elasticity of -1.0.[84] If the fringe matches Superior and ICG's predicted price increases, Ward's predicted average rises to about 7.7 percent. Comparing Ward's estimated price increase to the critical value, we see that his predicted change in deadweight loss exceeds the predicted efficiency gain when the fringe matches Superior and ICG's predicted price increase and is just under when it does not.[85] Because Ward and the Tribunal did not consider the effect of pre-merger market power, nor did they correctly account for the non-Superior and non-ICG portion of the market, the record does not contain correct estimates of deadweight loss. Thus, it appears that the Tribunal was unable to reach the correct conclusion in this regard.[86]

Once the entire market is properly considered, uncertainty about the extent of this measure of deadweight loss arises from uncertainty about the size of the simulated post-merger price increase, the industry demand elasticity, and the pre-merger markup. As pointed out above, the effect of the pre-merger markup was not considered by the Tribunal. With respect to the industry elasticity, Ward initially considered elasticities in the range of -1.5 to -2.5.[87] However, based on the estimates done by Ryan and Plourde, the

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increase of about 3.4%.

84 *Reasons and Order I*, 2000 Comp. Trib. 15 at ¶ 453. Price increases of 11.7%, 7.7%, and 8.7% were predicted for residential, industrial, and automotive end-uses, respectively. The Tribunal adopted these estimates and lowered each by 0.7% to account for the "pass-through of cost savings." Ward did not calculate a price increase for the "other" category, so the Tribunal assumed one of 7%. *Id.* We have calculated a weighted average price increase using the 1998 combined sales of Superior and ICG: $94 million for residential, $239 million for industrial, $139 million for automotive, and $113 million for other. *See id.* at ¶ 454. Finally, this prediction was lowered by 25% to account for the implied assumption that the rest of the firms in the market do not raise price.

85 Ward computes average post-merger price increases of about 5.4% assuming an industry elasticity of -1.5, and 2.9% assuming an industry elasticity of -2.0. (If other firms respond, these price changes increase to 7.2% and 3.8%, respectively.) These averages are calculated as outlined above. We assume the price change in the "other" category to be the minimum of the other reported price increases for the given elasticity. *See* Ward, *supra* note 69, at 30. Comparing these to the critical values calculated for an industry elasticity of -1.5 and an industry elasticity of -2.0, we see that in one case his predicted change in deadweight loss exceeds the predicted efficiency gain.

86 *See Reasons and Order II*, 2000 Comp. Trib. 16 at ¶¶ 219-33, for the Tribunal's discussion of the deadweight loss calculation. The Tribunal was aware of the impact of pre-merger market power on the deadweight loss calculations but was precluded from incorporating it because it was not properly introduced into evidence. It notes that "[i]f these estimates had been properly introduced and had withstood cross-examination, the Tribunal might have concluded, using the Total Surplus Standard that it adopted, that the estimated efficiency gains of $29.2 million did not exceed and offset the effects of lessening of competition so measured." *Id.* at ¶¶ 164-69.

87 *See* Ward, *supra* note 69, at 29.

Tribunal found the demand for propane to be inelastic and thus used a value of -1.0 for its calculations.[88]

With respect to the post-merger price increases, Ward produced estimates using "merger simulation" techniques.[89] Merger simulation uses economic theory to predict the effect of a merger on price based on a series of assumptions about the structure of the market and behavior of the firms in the market, pre- and post-merger. Generally, merger simulation involves two steps, sometimes referred to as the estimation and simulation steps. For example, one methodology involves econometric estimation of a specific model of aggregate demand (the Almost Ideal Demand System) in the estimation step, and a specific set of behavioral assumptions (Bertrand competition pre- and post-merger) in the simulation step, to determine how the merging parties' prices would change as a result of the merger.[90]

Ward's merger simulation is based on a series of assumptions and scenarios that may or may not be supported in the record. From the public documents, it appears that Ward estimated part of a multi-level demand system and assumed other parts of the demand system. He also assumed that pre-merger Superior and ICG were already coordinating their behavior so that prices were already elevated above a level that would have prevailed without that coordination. He considers alternative scenarios in which the parties face competition from other regional suppliers and other alternatives where they do not.

An important question is how sensitive the price increases simulated by Ward are to the various assumptions inherent in the simulations. If the conclusions are driven by assumptions inherent in the methodology rather than by the underlying market facts, the conclusions may not be reliable. While we were unable to replicate exactly Ward's calculations based on the publicly available information, we have applied a generally accepted merger simulation methodology[91] and tested the conclusions using this platform. We would expect the results from this analysis to apply generally to Ward's analysis.

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88 *Reasons and Order I*, 2000 Comp. Trib. 15 at ¶ 453. Note that the Tribunal adopted simulated price increases that were calculated under an assumption of an elasticity of propane demand of -1 but used Ward's deadweight loss calculations, which were based on an elasticity of propane demand of -1.5. *See id.* at ¶¶ 455-57.

89 *See* Gregory Werden & Luke Froeb, *Simulation as an Alternative to Structural Merger Policy in Differentiated Products Industries*, in THE ECONOMICS OF THE ANTITRUST PROCESS 65 (Malcolm Coate & Andrew Kleit, eds., 1996).

90 *See* Hausman et al., *supra* note 30.

91 *See* Roy J. Epstein & Daniel L. Rubinfeld, *Merger Simulation: A Simplified Approach with New Applications*, 69 ANTITRUST L.J. 883 (2001). The proportionally calibrated almost ideal demand system (to which Epstein and Rubinfeld refer as PCAIDS) allows "estimation" of an underlying model of an industry under a particular set of assumptions and a limited set of market data. *Id.*

Our simulated post-merger price increases range from 4.8 to 19.7 percent under reasonable alternatives to the baseline based on Ward's analysis. This confirms the conclusion that the change in deadweight loss likely exceeds the efficiency gain. More importantly, it shows the inherent sensitivity of the results. In our baseline merger simulation,[92] we simulate a post-merger price increase of 6.3 percent.[93] We have assumed pre-merger pricing behavior of the type that Ward seems to have assumed (that a one-percent increase in the price of Superior or ICG implies a 0.66 percent increase in the price of the other), no price response from the other suppliers in the market, and no change in marginal costs. If we allow the prices of other firms to respond with the increased post-merger prices of Superior and ICG, then the simulated price change is 10.5 percent. If we instead assume that pre-merger, suppliers take the prices of others as fixed, the simulated post-merger price increase is 13.4 percent, when the non-merging suppliers do not raise prices, and 18.5 percent if they also respond optimally.

In Table I located at the end of this article, we present a summary of the merger simulation and an analysis of the sensitivity of these simulations to various underlying assumptions. The scenarios under which we assume that other firms can change their price imply a deadweight loss of between $26 and $90 million.

2. Other Measures of Welfare Loss

Although the Tribunal focused primarily on the deadweight loss calculation above, other relevant anticompetitive effects should be weighed against efficiencies in the overall consideration of the merger's impact on total surplus. We can use the model that we developed above to investigate two further sources of deadweight loss: coordinated effects and the loss of product variety.

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92 We calibrate the baseline PCAIDS model using market shares of 43%, 32%, and 25% for Superior, ICG, and others, respectively; an industry demand elasticity of -1.0; and a pre-merger cost-price margin for Superior of 53%. *See supra* note 82.

93 We report weighted-average price increases. Also, like Ward, we do not incorporate any cost efficiencies into our analysis. The Tribunal's approach to this was to reduce Ward's predicted price increases slightly. We report price increases with this same adjustment, we lower them by 0.7%. *See Reasons and Order I*, 2000 Comp. Trib. 15 at ¶ 453. In addition, we have made the same calculations for an industry elasticity of -0.75. Price increases under these scenarios range from 5.6% to 30.1%.

a. Deadweight Loss from a Coordinated Price Increase

In its original order, the Tribunal expressed concern about the possible anticompetitive harm that might arise from coordinated effects. In particular, it was "concerned about the increased interdependence effects that the merger is likely to produce" in the local markets where competition was going to be meaningfully reduced or a dominant firm was going to be created.[94] However, the deadweight loss calculation based on the Ward analysis used price increase predictions that were solely from the consideration of unilateral effects. This seems contrary to the statement by the Tribunal that it

> [T]ook into account the increased probability of coordinated behavior in its consideration of the evidence regarding a substantial lessening of competition. To the extent that the effect of such anti-competitive behaviour is a higher price, then it has already been reflected in the deadweight loss estimate.[95]

In its redetermination order, the Tribunal revisited this question and stated that "there is no evidence of deadweight loss from interdependent and coordinated pricing on the record . . . [a]ccordingly, the Tribunal can reach no conclusion about deadweight loss from interdependent and coordinated pricing by competitors."[96] Of course, Ward's analysis of interrelated pricing suggests that prices were substantially above the level that myopic unilateral action would imply.[97] Indeed, our own estimates suggest that pre-merger "parallel pricing" between Superior and ICG lead to prices that were about 7 percent above those implied by pricing behavior where the firms take the price of the other as fixed when setting their own.

We can use the merger simulation model that we developed above to calculate a range for the deadweight loss predicted to arise due to coordinated effects. We simply simulate the merging of Superior, ICG, and the other firms into one firm. With a pre-merger markup of 53 percent and an elasticity of -1, the average price increase is predicted to be 27.1%. This implies a deadweight loss of about $141 million. This is the total effect of going from pre-merger to a monopoly. To get an estimate of the cumulative effect of coordinated effects on top of the unilateral effects we simply subtract the deadweight loss from the unilateral effects calculation from this total monopoly estimate. This yields an estimate of about $93 million. We have made this calculation for the scenarios outlined in Table I, under

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94 *Id.* at ¶¶ 308-09.

95 *Id.* at ¶ 465.

96 *Reasons and Order II*, 2000 Comp. Trib. 16 at ¶ 228.

97 *See* Ward, *supra* note 69, at 23-27.

which we allow the other firms' prices to vary, and our estimates of the additional change in deadweight loss range from $52-$121 million.

This calculation should be seen as an upper bound. It represents the effect of the monopolization of the marketplace, which is the goal for any coordinated interaction, but it is unlikely to be achieved. In particular, in only about two-thirds of the local markets identified by the Tribunal was there found a risk of coordinated effects.[98] There is not sufficient evidence to conclude how effective a post-merger cartel might be, but studies of other cartels suggest that less than the full amount of the deadweight loss was realized in their specific circumstances.[99] For present purposes, we consider one-third of the upper bound to reach a range of $17-$40 million, which is not inconsistent with the literature.[100]

b. Loss of Product Variety

In addition to its consideration of deadweight loss arising from unilateral effects, the Tribunal considered the deadweight loss arising from a variety of other "negative qualitative effects," primarily the loss of certain ICG programs and services.[101] It viewed "the impact on resource allocation of the negative qualitative effect as minimal and as most unlikely to exceed in amount the estimated deadweight loss."[102] Thus, the Tribunal capped the value of the lost programs and services provided by ICG at $3 million per year.

We can use our model developed above to estimate the welfare loss associated with the loss of the ICG brand. The standard approach for measuring the welfare loss associated with the withdrawal of a branded product is to measure the total amount consumers would be willing to pay to have the product available in the market at the current price.[103] We have com-

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98 *Reasons and Order I*, 2000 Comp. Trib. 15 at ¶¶ 308-09. In about 45% of the markets, the Tribunal believed that the merger would create a dominant firm. In those markets where the merger would make the merged firm a more focal market leader, the merger would promote the emergence of a price leader able to lead the way effectively to a tacitly collusive outcome. In markets in which the merger would change the structure from a duopoly with a competitive fringe to a monopoly with a competitive fringe, the emergence of a dominant firm would be expected to result in a "dominant firm" equilibrium. In this market structure, fringe firms provide only limited competition, since a dominant firm considers their supply and restricts its own output accordingly. *See* J.J. Rotemberg & G. Saloner, *Collusive Price Leadership*, 39 J. IND. ECON. 93 (1990).

99 This is generally consistent with estimates of effective collusion developed by R. H. Porter, *A Study of Cartel Stability: The Joint Executive Committee*, 1880-1886, 14 BELL J. ECON. 301 (1983).

100 *Id*.

101 *Reasons and Order I*, 2000 Comp. Trib. 15 at ¶¶ 466-67.

102 *Id.* at ¶ 467.

103 Jerry A. Hausman, *Valuation of New Goods under Perfect and Imperfect Competition*, in THE

puted the lost value to consumers induced by the loss of a branded product. We have assumed for purpose of these calculations that the ICG products will be rebranded as Superior—as we believe is consistent with statements from the company.

Based on our model that replicates Ward's analysis, we compute a loss in consumer surplus associated with the withdrawal of ICG from the market of between about $26 million and $61 million per year, under the set of scenarios enumerated in Table I.[104]

C. *Trade-Off Analysis*

A complete trade-off analysis would consider all sources of efficiencies and deadweight loss. In our examination of the *Superior* record, we have calculated plausible ranges for some of the relevant anticompetitive effects. We have not examined others, such as dynamic effects like innovation and technological change.[105] We have not attempted an independent analysis of the efficiencies (which could also include important dynamic effects); however, a plausible range falls between the Commissioner's estimate of around $21 million per year and the respondents' estimate of around $40 million per year.[106]

On the other side of the ledger, we present in Table II, at the end of this article, a summary of the ranges of the deadweight losses associated with the anticompetitive effects we have analyzed in *Superior*.

If we begin the trade-off analysis with the range of deadweight loss measured from the simple unilateral effects model (the focus of the Tribunal), we have on the one hand efficiencies between $21 and $40 million and on the other hand deadweight loss of $26 to $90 million. These ranges do overlap, so there is no unequivocal answer as to the overall conclusion when considering only this anticompetitive effect. There is a potential procompetitive gain of $14 million per year at one end and a potential anticompetitive effect (a loss in welfare) of $70 million per year at the other.

ECONOMICS OF NEW GOODS, NBER STUDIES IN INCOME AND WEALTH NUMBER 58 at 209 (Timothy F. Bresnahan & Robert J. Gordon, eds., 1996).

104 This is done by calculating the area bounded by ICG's demand curve and the pre-merger price.

105 The Tribunal was asked to consider whether the merger precluded dynamic efficiency gains due to a "transformation project," upon which ICG was about to embark. In its decision, the Tribunal finds evidence of such a project but no such evidence that it would cause gains in efficiency, that they would be likely to happen, or that they were indeed dynamic. *Reasons and Order II*, 2000 Comp. Trib. 16 ¶¶ 256-58.

106 *Reasons and Order I*, 2000 Comp. Trib. 15 at ¶ 380.

If we next consider the deadweight loss due to both unilateral and coordinated effects, we have a range of $67 million to $107 million.[107] This no longer overlaps the range of efficiencies. This becomes even more pronounced when we add the deadweight loss due to the loss of the ICG brand.[108]

On balance, it seems that a reasonable case could be made that the Tribunal erred in allowing the Superior-ICG merger. Although we have not considered all of the economic effects of the merger, both positive and negative, plausible ranges for important effects can support a conclusion that the merger should not have been allowed. The main point, however, is that plausible assumptions can lead to such a large range. The complexity of the required economic analysis and its inherent inexactitude imply a relatively high level of uncertainty in the conclusion. This uncertainty arises because, among other things: (1) the total surplus standard requires balancing *all* the effects; (2) the complexity of measuring each effect means that various simplifying assumptions must be made to make the problem tractable, and this implies that the utilized models deviates from reality; (3) ultimately there is uncertainty in some of the underlying features of the market, for example, the industry demand elasticity; (4) the complexity of the required analysis to measure each effect provides an environment for technical errors; and (5) the need to balance all effects makes the uncertainties compound one another.

Because of the inherent complexities in the total surplus approach, it would have been difficult *ex ante* for the parties to make an accurate prediction of the decision that the Tribunal would reach in *Superior*.

III. DISCUSSION AND CONCLUSION

Superior provides a valuable look at the application of a total surplus standard in the analysis of a horizontal merger that has the potential to increase market power meaningfully and to realize meaningful production efficiencies. The contentious nature of the case created a fascinating record of debate over many aspects of the review and economics of mergers and, more generally, the goals of competition policy. The heart of the case was the Competition Tribunal's attempt to apply the total surplus standard to a body of evidence that had been developed in order to predict the efficiency

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107 This range is calculated using the underlying model and is not simply the sum of the endpoints found in Table II.

108 It is not strictly valid to simply add this deadweight loss to the deadweight loss from the unilateral and coordinated effects. This would involve some double counting. However, the loss that arises from the loss of the ICG brand will meaningfully add to our range.

gains and the anticompetitive harm from the merger. Whether the goal of the Competition Act was really the dispassionate maximization of total surplus was also called into question. The Federal Court of Appeal ruling forced the Tribunal to take a broader look at the meaning of anticompetitive effect and to consider, among other things, the effect of transfers among different members of society.

For students of merger policy and review, there are a number of lessons to take away from *Superior*. Primarily, the case illustrates the complexity that fundamentally underlies merger review under a total surplus standard. The total surplus standard adds considerable complexity as compared to, for example, a United States-like price standard. This complexity adds a great deal of uncertainty to the decision-making process because of the inherent difficulty of measuring all the necessary effects that must be considered in order to apply the total surplus standard accurately. We argue that even with a great deal of sophistication on the part of the decision maker and a great deal of sophistication on the parts of the entities developing the economic evidence, this uncertainty still exists. It is a degree of uncertainty not present when decisions are made under a "simpler" standard like the price standard.

The total surplus standard requires a balancing of all of the relevant economic effects of a proposed merger. Such a balance implies that different effects must be put into similar metrics so that they can be compared—either formally through quantification in common units like dollars, or informally through qualitative judgment. Using this process means that the decision maker must go beyond, for example, the determination that a proposed merger is anticompetitive, to determine how anticompetitive it will actually be. What will the actual efficiency cost, or deadweight loss, of the merger be? Such a determination is necessary in order to compare the cost of the anticompetitive effect with the benefit of possible efficiencies brought out by the merger.

Superior provides us with an illustration of how uncertain this process is. Findings on market definition, changes in concentration, barriers to entry, and merger simulations allowed the Tribunal to conclude that the proposed merger was going to be meaningfully anticompetitive.[109] Under a price standard, this would have been the end of the story. However, the total surplus standard required that this finding of likely anticompetitive harm be quantified. The results of the merger simulation provided a predicted price increase that was then used to make a deadweight loss calculation. The presence of other effects was understood, but the combination of a lack of clear evidence and a belief that they would not rise to the level nec-

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109 The process by which this determination was made rests on deep foundations built up via the process of economic research and understanding and the process of merger review and litigation.

essary to overcome the measured efficiencies meant that they were not made relevant deciding factors.[110]

We showed above how errors in the deadweight loss calculation, different realistic scenarios of unilateral anticompetitive effect, basic calculations of possible coordinated effects, and the loss of the ICG brand all combine to deliver a wide range of possible values of deadweight loss. The presence of meaningful anticompetitive effect underlies all of them; it is only the actual deadweight loss that is uncertain.

Even without carefully considering what a realistic range for the production efficiencies might be, it is clear that any final decision is going to have a great deal of uncertainty attached to it. Whether the decision is to allow the merger because the efficiencies are predicted to outweigh the deadweight loss, or to disallow the merger because of an opposite finding, the decision cannot be made with much confidence. The integration of further measures of anticompetitive effect or further measures of production efficiency could reduce or increase this uncertainty depending on the range and confidence with which they could be measured.

A simpler standard, such as a price standard, does not have this degree of uncertainty. There is much more confidence in making an assessment that a merger will likely lead to meaningful anticompetitive harm than in quantifying the loss to society from that harm. A price standard, however, can lead to the blocking of mergers that do have meaningful efficiencies.

Highlighting this tradeoff is the final message of *Superior*. *Superior* shows us what might happen if merger review in the United States moved towards a total surplus standard. The incorporation of efficiencies into merger review has been debated at great length in the literature. We commented on some of that debate above. The *Superior* case shows us that such incorporation, under a total surplus standard, creates a review process with much more risk and uncertainty. There is a cost associated with moving toward what economists would argue is, in theory, the right metric for merger review: a metric based on economic efficiency, the total surplus standard. It may be the right decision rule in theory, but, in practice, it will mean decisions will come with a great deal of uncertainty. Thus, they may not satisfy those who believe that efficiencies due to mergers are currently not given enough weight, as well as those who continue to be skeptical of the incorporation of efficiency arguments into merger review.[111]

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110 Once the unilateral effects deadweight loss was found to be $3 million and the efficiencies were found to be $29.2 million, the motivation to quantify other effects carefully seemed to flag. The other effects were seen as unlikely to bridge the gap.

111 See the articles in the GEORGE MASON LAW REVIEW Symposium, *The Changing Face of Efficiencies*, *supra* note 28, for a discussion on both of these views.

Modern economic techniques, such as merger simulation, allow us to make the kind of calculations that are necessary inputs into a sophisticated weighing of the costs and benefits of mergers. It must be understood, however, that these techniques need to be taken seriously, but perhaps not literally. Conclusions based on the direction and general magnitude of price increases that they predict are much more robust than conclusions based on further calculations of the actual competitive harm that the price increases imply.[112]

Finally, much of what we have discussed (and what is found in *Superior*) involves a relatively "static" perspective on the measurement of efficiencies and anticompetitive effect; however, the more dynamic elements of the competitive process are likely more relevant in the long run. Assessing the long-run maximization of total surplus requires consideration of the process of innovation, technological change, technological diffusion, and other fundamental drivers of long-run economic performance that may be affected by the merger at issue.[113] The merger may affect this process through its creation of market power and through its effect on the development of dynamic efficiencies.[114] Incorporating these long-run considerations into merger review is complex but can potentially provide an answer to the questions raised by *Superior*. If long-run goals are better served by more competitive markets, then simple merger review criteria based on preserving competition (such as the price standard) are preferred to more complex criteria that attempt to balance all relevant anticompetitive and efficiency effects but can only do so imprecisely. In this case, a simple rule that leads to more precisely informed decisions will better achieve the goal of total welfare maximization.

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112 A similar call for humility is found in Conrath & Widnell, *supra* note 28.

113 *See* D.B. Audretsch et al., *Competitive Policy in Dynamic Markets*, 19 INT'L J. IND. ORG. 613 (2001). *See also* Joseph F. Brodley, *The Economic Goals of Antitrust: Efficiency, Consumer Welfare, and Technological Progress*, 62 N.Y.U. L. REV. 1020 (1987).

114 There is a longstanding debate in economics on the relationship between market structure and innovation. *See, e.g.,* RICHARD R. NELSON & SIDNEY G. WINTER, AN EVOLUTIONARY THEORY OF ECONOMIC CHANGE (1982); Wesley M. Cohen & Richard C. Levin, *Empirical Studies of Innovation and Market Structure*, in 2 THE HANDBOOK OF INDUSTRIAL ORGANIZATION 1059 (Richard Schmalensee & Robert D. Willig eds., 1989).

Table I
Sensitivity of Simulated Post-Merger Price Increases

Scenario[1]	Simulated Post-Merger Price Increase	Critical Post-Merger Price Increase	Exceed Critical Post-Merger Price Increase?	Deadweight Loss[2] ($ millions)
Baseline[3]	6.3 %	6.6 %	No	27.7
- other firms respond to Superior/ICG increase[4]	10.5	6.6	Yes	47.7
- pre-merger firms take others' prices as given[5]	18.5	6.6	Yes	90.0
- pre-merger firms take others' prices as given[5]	13.4	6.6	Yes	62.6
Superior pre-merger markup is 33%	4.8	6.6	No	13.2
- other firms respond to Superior/ICG increase[4]	8.9	6.6	Yes	26.0
- pre-merger firms take others' prices as given[5]	19.7	6.6	Yes	66.0
- pre-merger firms take others' prices as given[5]	12.0	6.6	Yes	36.9

Notes: [1] Calculations are done according to Roy J. Epstein and Daniel L. Rubinfeld, "Merger Simulation: A Simplified Approach with New Applications," 69 *Antitrust Law Journal* (2001), pp. 883-919. Instead of the constant-elasticity upper-level demand curve that they use, however, we employ a linear upper-level demand curve.

[2] Deadweight loss is calculated according to the formula in note 75.

[3] We calibrate the baseline PCAIDS model using market shares of 43 percent, 32 percent, and 25 percent for Superior, ICG, and others, respectively; an industry demand elasticity of –1.0; and a pre-merger cost-price margin for Superior of 53 percent. In addition, we assume, as Ward does, a degree of pre-merger coordination (a response of 0.66% for a competitor's increase of 1%). The basline case assume that other firms do not respond to the Superior and ICG price increases.

[4] Other firms are assumed to respond to the Superior and ICG price increases.

[5] There is no pre-merger coordination (a response of 0% for a competitor's increase of 1%).

Table II
Summary of Deadweight Loss Ranges

Effect	Range
Unilateral Effects[1]	$26 - 90 million
Coordinated Effects[2]	$17 - 40 million
Loss of ICG Brand[3]	$26 - 61 million

Notes: [1] See Table I and note 75 for details on this deadweight loss calculation. Only the deadweight losses under scenarios in which the other firms' price is allowed to vary are displayed above.

[2] This deadweight loss is calculated by simulating the average price increase if all firms were to merge. The total deadweight loss is calculated from these price increases, and the resulting number is decreased by the deadweight loss due to unilateral effects. This number is multiplied by one-third to represent better the magnitude of the loss.

[3] This deadweight loss is calculated as the area bounded by ICG's demand curve and the pre-merger price. ICG's own elasticity is calculated using the PCAIDS model.