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LENGTH: 14112 words**SECTION:** ARTICLE: THE **EFFICIENCY DEFENSE IN MERGER LAW: ECONOMIC FOUNDATIONS AND RECENT CANADIAN DEVELOPMENTS****I. INTRODUCTION**

In a recent article in the *Antitrust Law Journal*, William Kolasky and Andrew Dick review the U.S. experience with the efficiencies defense in mergers. n1 The U.S. law has changed substantially since the early days of *Brown Shoe* n2 and *Procter & Gamble*, n3 when significant efficiencies appeared to harm the chances of merger approval. Evidence of efficiencies now is a defense against a prima facie case that a merger will substantially lessen competition. The scope of the efficiency defense in the United States has not, however, expanded to the extent of allowing a merger that would lead to an increase in prices.

n1 William J. Kolasky & Andrew R. Dick, *The Merger Guidelines and the Integration of Efficiencies into Antitrust Review of Horizontal Mergers*, 71 ANTITRUST L.J. 207 (2003).

n2 *Brown Shoe Co. v. United States*, 370 U.S. 294 (1962).

n3 *FTC v. Procter & Gamble Co.*, 386 U.S. 568 (1967).

The Canadian experience with the efficiency defense is strikingly different. Section 9b of the Canadian Competition Act explicitly prohibits the Competition Tribunal from intervening in a merger that substantially lessens competition if efficiencies attributable to the merger are "greater than and offset" the anticompetitive effect. Thus, even a merger that substantially lessens competition must be approved under Canadian law if efficiencies are strong enough. The debate over the meaning of "greater than and offset"--i.e., over how efficiencies and anticompetitive effects should be balanced--has become intense, however. In *Superior Propane* n4 the decisions of the Competition Tribunal and the Appellate Court hinged on the interpretation of abstract principles of welfare economics, n5 econometric estimates of demand curves, and calculations of consumer surplus and profits that followed almost exactly the framework in the classic article by Oliver Williamson. n6 The result of *Superior Propane* is a merger law that is close to the method of balancing efficiency and anticompetitive effects favored by most economists. n7

n4 *Comm'r of Competition v. Superior Propane Inc.*, [2000] C.C.T.D. No. 15, 7 C.P.R. (4th) 385 (Can. Comp. Trib.) (original decision); [2001] 3 F.C. 185 (Fed. Ct. App.) (first Court of Appeal decision), available at <http://reports.fja.gc.ca/fc/2001/pub/v3/2001fc28500.html>; [2002] C.C.T.D. No. 10, 18 C.P.R. (4th) 417 (Can. Comp. Trib.) (re-determination); [2003] 3 F.C. 529 (Fed. Ct. App.) (second Court of Appeal decision), available at <http://reports.fja.gc.ca/fc/2003/pub/v3/2003fc31974.html>.

n5 A "balancing weights" procedure for assessing the net effect of a merger was offered in a highly theoretical expert report and became central to the case.

n6 Oliver E. Williamson, *Economies as an Antitrust Defense: The Welfare Tradeoffs*, 58 AM. ECON. REV. 18 (1968).

n7 Thomas W. Ross & Ralph A. Winter, *Canadian Merger Policy Following Superior Propane*, CAN. COMPETITION REC., Summer 2003, at 7. In this approach, even a substantial price increase can be offset by modest cost efficiencies. *See, e.g.*, Williamson, *supra* note 6, at 22-23.

This article offers a perspective on the efficiencies debate informed by the issues that have emerged in Canada. While other major antitrust jurisdictions are moving towards a greater role for efficiencies in merger policy, the Canadian law is ahead of the wave in this respect. The issues that have arisen in Canada in the implementation of a more liberal approach to efficiencies therefore hold lessons for any jurisdiction.

The existing literature on efficiencies in mergers deals mainly with evidentiary issues of how to demonstrate and measure technical efficiency gains, such as decreases in costs. We set aside these measurement issues in order to focus on two questions related to the underlying methodology of merger assessment: How should efficiency gains be balanced with the anticompetitive impact of a merger (or, how should gains to producers be balanced against losses to consumers); and, how is the implementation of a merger criterion affected by market power in the premerger market and related markets? The first question is about the economic foundations of choosing a merger criterion, i.e., a merger standard, the second about implementation. We discuss these questions in turn, in each case extending the traditional Williamsonian analysis.

In general, we find that the only merger criteria or standards that are both practical and have a solid economic foundation are criteria that can be expressed as a weighted sum of producer surplus and consumer surplus. n8 This approach places weights on consumer versus producer surplus that depend on the relative wealth levels of consumers versus shareholders. n9

n8 In reaching this conclusion we draw on Louis Kaplow & Steven Shavell, *Any Non-Welfarist Method of Policy Assessment Violates the Pareto Principle*, 109 J. POL. ECON. 281 (2001).

n9 An article complementary to this one, Daniel Gifford & Robert Kudrle, *Rhetoric and Reality in the Merger Standards of the United States, Canada, and the European Union*, *supra* this issue, 72 ANTITRUST L.J. 423 (2005), develops in detail a comparison of merger standards across three jurisdictions, with a focus on the prospects for convergence or greater consistency of the sets of merger law. Gifford and Kudrle conclude that if courts in the jurisdictions "adopted the practice of explicitly considering future developments, certainty, timing, and emphasis on buyer advantage in their decisions, the . . . process of competition policy cooperation could be enhanced." *Id.* at 469.

Building on these economic foundations, we analyze *Superior Propane*, a case in which these two questions were central. *Superior Propane* is informative for both the sophisticated analysis on the part of the Tribunal and the subtleties involved in omissions on the government side of the case. In addressing the question of how sensitive the weights on consumer and producer surplus should be to the wealth levels of the two groups, the Tribunal turned to evidence on the progressivity of the national tax and social insurance systems. We support this approach. Pursuing the approach further than the Tribunal needed to, we arrive at relative weights on consumer and producer surplus very close to equal weights, or (.5, .5). These weights correspond to the merger criterion advocated by many economists. Implementation issues in *Superior Propane* are more problematic. We conclude that in this case, and in general, implementation matters related to premerger market power are critical--much more important than assumptions chosen to justify various welfare weights.

II. THE ECONOMIC FOUNDATIONS OF MERGER CRITERIA

A. THREE PRINCIPLES

Markets bring together buyers and sellers to exchange products. Economists use the term "total surplus" achieved by a market to refer to the dollar value to consumers of all units of a product purchased in that market in excess of the costs of producing that quantity. This surplus is shared between the selling firms (as profits n10) and the consumers, who are normally charged less than their full willingness to pay and, thereby, earn what is termed "consumer surplus." n11 A merger may raise prices and lower costs through the realization of merger-specific efficiencies, with the result that profit rise but consumer surplus falls. The normative issue at the foundation of merger policy is the following: Once the

impact of a merger has been identified or estimated, what should be the criterion for blocking a merger? n12 The economic approach to the normative issue is distinguished by three principles.

n10 Producer surplus is actually the sum of profits plus "Ricardian rents," for example the return to a particularly productive plot of land in a competitive agricultural market in which profits are zero. For simplicity, and following most analysis of merger policy, we ignore rents in this article. Margaret Sanderson and Ralph Winter, however, show that the distinction between profits and rents can be critical in antitrust policy. Margaret F. Sanderson & Ralph A. Winter, *Profits Versus Rents in Antitrust Analysis: An Application to the Canadian Waste Services Merger*, 70 ANTITRUST L.J. 485 (2002).

n11 Throughout, we assume that consumer surplus measures the benefits of trade to consumers. In fact, consumer surplus only approximates the more appropriate measure, called "compensating variation." Economists rely on Robert Willig, *Consumer's Surplus Without Apology*, 66 AM. ECON. REV. 589 (1976). For a critical perspective on this issue, however, see Jerry A. Hausman, *Exact Consumer's Surplus and Deadweight Loss*, 71 AM. ECON. REV. 662 (1981).

n12 We set aside the possibility that a remedy could improve the merger outcome, restricting the regulatory choice to accepting or blocking the merger. We also set aside, for now, what actual merger policies are in various jurisdictions and how they have developed historically.

1. *Welfarism*

First, a merger is assessed according to the impact that the merger has on the welfare of individuals. This is a principle known in welfare economics as *welfarism*, n13 and may appear to be so obvious that it must be satisfied in any serious discussion of merger analysis. It is not. A common argument that violates this principle is that competition policy is about "protecting competition," and, therefore, any merger negatively impacting competition should be ruled out. Such an argument is without economic foundation. What should ultimately matter in terms of approving or rejecting a merger is the impact that the merger has on individual welfare. n14

n13 AMARTYA K. SEN, *COLLECTIVE CHOICE AND SOCIAL WELFARE* (1970).

n14 See Kolasky & Dick, *supra* note 1, at 207 n.2 (quoting Kenneth Heyer of the U.S. Department of Justice as stating, "efficiency is the goal, competition is the process").

2. *The Pareto Principle*

Second, a merger criterion should obey the Pareto principle: if a merger makes some individuals better off by increasing their surplus as consumers or their profits as shareholders without harming others, it should be allowed. In fact, the Pareto principle logically implies the welfarist principle, as Louis Kaplan and Stephen Shavell n15 have recently demonstrated: any government policy decision rule that is predicated on conditions other than the impact on individual welfare will, in some circumstances, violate the Pareto principle. In Part IV of this article, we illustrate this proposition in the merger context by considering a non-welfarist criterion prominent in Canadian merger cases since it was first suggested by the Tribunal in *Hillsdown*. n16

n15 See LOUIS KAPLOW & STEVEN SHAVELL, *FAIRNESS VERSUS WELFARE* (2002).

n16 Director of Investigation & Research v. Hillsdown Holdings (Canada) Ltd., [1992] 41 C.P.R. (3d) 289, available at http://www.ct-tc.gc.ca/CMFiles/CT-1991-001_0155a_38IEP-4142004-5100.pdf?windowSize=popup.

3. *The Basis for Relative Weights on Surplus Measures*

A merger criterion satisfying the first two principles (or just the Pareto principle) can be expressed approximately in terms of a weighted sum of the change in surplus of individuals affected by the merger. n17 The selection of a merger criterion is therefore reduced to deciding on the weights to be applied to the surplus changes of all individuals affected. In practice, one aggregates the impact on all consumers and on all shareholders. That is, one summarizes the impact of the merger by its effects on total consumer surplus and total producer surplus. The decision is then which weights to apply to these two aggregates in determining whether the overall impact of the merger on social welfare is positive or negative.

n17 A more general approach would be to formulate a merger policy as maximizing a general, possibly non-linear, function of the impact on various individuals' surplus levels. If the merger has a relatively small proportional impact on any individual's total welfare, then the linear weighted average is a close approximation to any more general function.

For example, one might apply equal weights to consumer surplus and profits. This would implement the *total surplus standard*. Weights of 1 on consumer surplus and 0 on profits would implement the *price standard*: n18 the merger is acceptable if and only if cost efficiencies are so strong that they overwhelm any market power increase so that price does not rise with the merger. n19

n18 We adopt here the convention of having the weights (placed on the surpluses of consumers and producers) summing to one, but this is without loss of generality. All that really matters in this evaluation of the benefits and costs of mergers is the relative weight placed on the groups' surpluses.

n19 It is understood in the implementation of this standard that the change in price is quality-adjusted. The price standard is, therefore, equivalent to accepting a merger if, and only if, the impact on consumer surplus is positive.

The third economic principle characterizing the economic approach to merger criterion selection is that the appropriate weight applied to the surplus change of any individual should not depend upon the label of the individual as a "consumer" or "shareholder." A merger criterion can depend upon the distribution of dollar gains and losses across a set of individuals, as well as individual characteristics, such as wealth, but the dollar impact of a merger on a particular individual should not be affected by the individual's identity as a consumer or a shareholder.

One way to justify the third principle is through an *ex ante* perspective. Economists often approach a policy design problem such as an optimal merger standard by taking a long-run perspective, asking how a representative citizen would design a merger standard prior to any knowledge about which mergers were going to affect her and whether she was going to be a consumer or a shareholder. This is similar to the modern social contract theory adopted by political philosophers, most notably John Rawls, in thinking about distributive justice. n20 Rawls approached the problem of how wealth should be distributed among individuals in a society by asking how any individual would choose to allocate wealth among individuals if she were "behind a veil of ignorance," not knowing which position she occupied in the society. n21 An individual would typically consider the distributional impact of a policy. But there is no reason why the individual would, *ex ante*, count a dollar accruing to a shareholder in one market differently from a dollar accruing to the same individual as a consumer in another market.

n20 JOHN RAWLS, A THEORY OF JUSTICE (rev. ed. 1999). Rawls's *Theory of Justice* resurrected the social contract theory of Locke and Rousseau and is regarded as one of the most important works in philosophy in the second half of the 20th century.

n21 Rawls set out a second postulate, which, in contrast to the first, is not adopted by economists. This is the assumption that the individual is "infinitely risk averse" in the sense that the individual would choose, from behind the veil of ignorance, a distribution of wealth that maximized the welfare of the least-well-off member of society. *Id.* at 131.

A second justification of the principle that welfare weights on an individual's surplus should not depend upon whether the individual is a shareholder or producer is that, *ex post*, society would make the same judgment. Whatever overall welfare society attaches to the individual welfare of various individuals in the society, the means by which the welfare is achieved by each individual does not matter.

We can expand the third principle from its statement of what welfare weights should *not* depend upon, to determine what the weights on individuals *should* depend on. We observe that government policies are generally sensitive to their distributional impact: a policy with a regressive distributional impact is less likely to be chosen than one with a progressive distributional impact, other things equal. n22 Citizens of most democratic countries have elected governments that pay attention to the distributional impact of policies across individuals and households of different wealth levels, even to the extent where the main purpose of some policies is to redistribute wealth from wealthy to poorer citizens. n23 Individual citizens generally value greater equality in the distribution of wealth and government policies are sensitive to this value. Nothing in formal welfare economics restricts attention to wealth as the only criterion, and it is possible that some mergers harm particular groups whose measured wealth is not low but who would warrant a high weight in the welfare assessment. Physically challenged or elderly patients in hospitals may be an example. Usually, however, differences in the wealth levels of individuals are the main element determining whether the redistribution of surplus involved in a particular government policy, such as a merger decision, has negative or positive social value.

n22 On the role of redistribution in public finance, see RICHARD A. MUSGRAVE & PEGGY B. MUSGRAVE, *PUBLIC FINANCE IN THEORY AND PRACTICE* (1984) (especially Chapter 5).

n23 Of course, as a matter of political economy, other dimensions of the distributional impact of government policy matter.

B. IMPLICATIONS FOR MERGER POLICY

It follows from the three principles discussed above that welfare economics supports a merger criterion based on a weighted average of the impact of the merger on consumer surplus and the impact on profits; the relative weights are specific to each merger and depend at most on average wealth levels of consumers and shareholders, with the weight on each group being non-increasing in the group's average wealth. n24

n24 This note outlines the more formal basis for this conclusion. We are assuming that the impact of a merger on each individual consumer's welfare can be approximated by the change in consumer surplus, as discussed *supra* note 11. This assumption sets aside income effects and in addition requires perfect competition in markets outside the set in which surplus changes are being measured, as we discuss in Part III.C. of this article. The assumption allows us to associate changes in surplus with equivalent changes in wealth. In the economic approach, aggregate social welfare over wealth levels is then represented by a social welfare function $W(w[1], w[2], \dots, w)$ where $w[i]$ is the current wealth of individual i . This welfare function is assumed to be symmetric (i.e., unchanged if the wealth levels of two individuals are interchanged). If a particular set of policies, such as merger decisions, has only a small percentage effect on the wealth of any individual, then the welfare impact of a policy can be expressed approximately in terms of linear weights of the wealth changes across the individuals. These weights are the derivatives of the welfare function, W . Finally, averaging these weights across consumers and across shareholders, respectively, provides an (approximate) measure of the welfare impact of a merger as a weighted sum of changes in consumer and producer surplus.

Consider, as an example, a merger in the luxury cruise industry involving both cost efficiencies and price increases. Under the economic approach, the competition authorities cannot attach less weight to an increase in profits than to a drop in consumer surplus. This is because the average wealth of the consumers in these markets is likely higher than the average wealth of the shareholders of the merging firms. The redistributive impact of such a merger, if it is going to influence the regulatory decision at all, should count in favor of allowing the merger.

Economic theory does not yield a numerical value for the right weights to apply in summing up the welfare effect of given changes in consumer surplus and profits. It does, however, suggest a source of evidence on the appropriate weights. The progressivity of the existing system of tax and social insurance can be used to infer, at least in general terms, the relative weights on consumer surplus and profits that are consistent with existing government policy, given evidence of wealth levels of consumers in affected markets. n25

n25 This is exactly the route taken by the Canadian Competition Tribunal in their re-determination decision under the constraints imposed on them by the Federal Court of Appeal's review of their original decision. We shall suggest in Part IV that this approach has, in fact, left the merger law in Canada very close to the total surplus rule, with the exceptions coming in cases of unusual and severe distributional impact.

We note that, in theory, evidence is required on the wealth levels of shareholders as well as consumers because it is the *relative* wealth levels that matters for distributional weights. The Tribunal's approach, and our approach, is to assume that shareholders are not poor on average.

As a final remark on the normative basis for a welfare weights rule, we note that it is not necessary for a court or tribunal in practice to specify a precise set of weights prior to making a decision in a merger case. The "balancing weights" approach suggested by an expert witness in *Superior Propane*, commented upon favorably by the appellate court and then applied in the re-determination decision, involves calculating on the basis of econometric evidence the *minimum weight* on consumer surplus (relative to profits) that would render the merger unacceptable, and then asking whether the most appropriate weight (based on evidence from the tax and redistribution system) likely exceeds this number. n26 Thus, a court or tribunal can make a merger decision committing only to an upper or lower bound on the weight attached to consumer surplus, rather than to a specific weight.

n26 Affidavit of Dr. Peter Townley Ex. A: Report of Peter G.C. Townley at 33 (Aug. 16, 1999) retained by counsel for Commissioner of Competition (Canada), *Comm'r of Competition v. Superior Propane Inc.*, [2000] C.C.T.D. No. 15, 7 C.P.R. (4th) 385 (Can. Comp. Trib.), available at http://www.ct-tc.gc.ca/CMFiles/CT-1998-002_115_45NZO-4232004-9611.pdf?windowSize=popup

C. APPLICATION TO TWO MERGER CRITERIA: THE PRICE TEST AND TOTAL SURPLUS STANDARDS

The price test, or consumer surplus test, sets the relative weights on consumer surplus and profits to (1, 0) for every merger, whether the merger is between airlines or recycled-clothing stores. This test has no normative economic basis. There is no rationale for disregarding the benefits flowing to shareholders simply because they are labeled as shareholder-

ers. In the case of airline mergers, for example, shareholders are likely to be less wealthy than consumers on average, with the result that the distributional impact of a merger that raised prices and profits is likely positive.

The price test does have the practical advantage of simplicity, but simplicity alone is not enough to justify a criterion that is otherwise without foundation. The efficiencies defense in Canada places the burden of proving merger-specific efficiencies on respondents in a merger case, as it should. The consequence is that unless the court can be convinced of the required magnitude of efficiencies, a weighted surplus or total surplus standard effectively reduces to the price standard. In other words, where the price standard is the only standard simple enough to apply, it will be used.

The total surplus standard, like the price test, takes a simple approach. The total surplus standard sets equal weights, (.5, .5), on consumer surplus and profit. A frequent argument offered by advocates of the total surplus standard is that other policy instruments, such as taxation and welfare payments, are more efficient for wealth redistribution than merger decisions.ⁿ²⁷ In fact, however, the tax system is not used to redistribute gains from individual mergers. An individual consumer's income taxes are not affected by losses or gains from a merger. Higher prices paid as a result of a merger are not tax-deductible and the incidence of high prices on some consumers is thus not offset by the tax system. A merger will generally affect the distribution of wealth in ways that may or may not be socially detrimental, and these effects will in reality not be offset by taxes, however superior the tax system is as an instrument for redistribution.ⁿ²⁸ A more convincing argument for the total surplus test may be made on pragmatic grounds: it would add simplicity and predictability to merger policy and reduce the potential sources of error. Our discussion in Part IV will make it clear that this may well be a minor issue.

ⁿ²⁷ The following quotations in support of total surplus are taken from the classic references:

One of Harberger's famous "three postulates" is: "c) when evaluating the net benefits or costs of a given action (project, program, or policy), the costs and benefits accruing to each member of the relevant group (e.g., a nation) should normally be added without regard to the individual(s) to whom they accrue." Arnold C. Harberger, *Three Basic Postulates for Applied Welfare Economics: An Interpretive Essay*, 9 J. ECON. LIT. 785 (1971).

Williamson writes:

For specific welfare valuations, however, we might not always wish to regard consumer and producer interests symmetrically-- although since, arguably, antitrust is an activity better suited to promote allocative efficiency than income distribution objectives (the latter falling more clearly within the province of taxation, expenditure, and transfer payment activities), such income distribution adjustments might routinely be suppressed.

Williamson, *supra* note 6, at 28.

And Bork puts it more forcefully:

Income redistribution due entirely to increased efficiency may, and often does, produce social discontent, as when computers replace file clerks, but that would not be a reason for a court in an antitrust case to enjoin the progress of automation. The problem of social discontent is one for Congress and not the federal judiciary to address.

ROBERT H. BORK, *THE ANTITRUST PARADOX: A POLICY AT WAR WITH ITSELF* 112 (1978).

ⁿ²⁸ A response by some theoretical economists to this argument, in turn, will be that if the income tax system has already achieved within limits the socially optimal or appropriate wealth distribution then the marginal value of a dollar to any citizen is equal. This then justifies equal weights in summing up the welfare effects of individual wealth levels, such as those attributable to a merger, that are *small* relative to individuals' total wealth levels. In other words, the total surplus criterion is approximately justified. This argument, stated formally, is the Atkinson-Stiglitz Theorem, Anthony B. Atkinson & Joseph E. Stiglitz, *The Design of Tax Structure: Direct Versus Indirect Taxation*, 6 J. PUB. ECON. 55 (1976), which provides conditions under which all redistribution of wealth should be implemented through the income tax system rather than through commodity taxes (or, by extension, through subsidies to consumers via market-specific policies that distort efficiency). The Atkinson-Stiglitz theorem, however, is violated for a myriad of reasons. See Robin Boadway & Pierre Pestieau, *Indirect Taxation and Redistribution: The Scope of the Atkinson-Stiglitz Theorem in ECONOMICS FOR AN IMPERFECT WORLD: ESSAYS IN HONOR OF JOSEPH E. STIGLITZ* 387 (Richard Arnott et al. eds., 2003). For example, simply "different needs or endowments" across consumers violates the Atkinson-Stiglitz theorem. Boadway & Pestieau, *supra*, § 3.1. In our context this corresponds to differential impact of a merger across consumers.

III. IMPLEMENTING THE TOTAL SURPLUS STANDARD

A. THE WILLIAMSONIAN ANALYSIS: NO PREMERGER MARKET POWER

To review the standard case where merging firms initially have no market power, consider a market with a downward-sloping demand curve and constant unit costs of production (Figure 1). Total surplus is maximized where the marginal social value of output (given by the demand curve) is equated to the marginal social cost of production, at the output Q^* depicted in Figure 1. If a competitive market outcome is distorted for any reason so that the output is reduced to some level, $Q[1]$, as in Figure 1, then the loss in total surplus is reduced by the "welfare triangle" that is darkly shaded in this figure.

A merger affects both the total market surplus and the distribution of this surplus between consumers and firms. Total market surplus is reduced by higher prices because higher prices distort the quantity sold. On the other hand, total surplus is raised by cost savings achieved by the merged firm. Cost savings can result from the realization of greater economies of scale, for example, or from the rationalization of overlapping product distribution systems, as in *Superior Propane*. The distribution of surplus, if it is affected at all by a merger, is usually altered to the

Figure 1. Deadweight Loss from a Price Increase from AC to P[1] and from AC to P[2]

[SEE Figure 1 IN ORIGINAL]

benefit of firms; any exercise of market power through higher prices results in a transfer of surplus from consumers to firms. n29

n29 There is the chance, however, that some other firms in the market will not benefit from the merger if it makes the merging firms more successful competitors.

These various effects can be illustrated with the classic diagram used by Williamson in his analysis of efficiencies in mergers (Figure 2). n30 To illustrate the variety of potential effects of a merger most simply, we first follow Williamson's original article in assuming that the merger changes the market outcome from perfect competition to monopoly. n31 The merger then has two direct effects: it will result in lower costs and (if the cost reduction is not drastic) higher prices.

n30 Williamson, *supra* note 6, at 21.

n31 The implications of premerger market power are in fact very important and will be considered later in this article.

Before the merger, competition reigns and the price equals the higher unit cost, $AC[0]$. n32 The firms make zero economic profits and all the surplus goes to the consumers. After the merger, price rises to $P[1]$ and the unit cost falls to $AC[1]$ with the result that the firm now makes positive economic profits at the new quantity $Q[1]$. The merged firm's profits are now given

Figure 2. Gains and Losses from a Merger that Raises Price and Lowers Cost

[SEE Figure 2 IN ORIGINAL]

by the areas $B+A$ and consumer surplus is reduced from the area $S+B+L$ to the area S . Total surplus is then $S+B+A$. Thus we see the various effects of the merger: the merger creates additional surplus A through lower costs; it destroys surplus L through allowing higher prices (L is the deadweight loss); and it transfers surplus B from consumers to producers. Under the total surplus standard, the merger is acceptable if the cost savings on the final quantity produced, A , exceed the deadweight loss from the merger, L . This result, however, is contingent on the presumption of no pre-existing market power.

n32 We follow Williamson in assuming that unit costs are constant and therefore that marginal cost and average cost are identical.

B. THE IMPACT OF PREMERGER MARKET POWER IN THE RELEVANT MARKET

An easy extension to the standard case begins by presuming that price already exceeds marginal cost in the premerger market. A deadweight loss triangle will exist even in the premerger market because of the difference between price and marginal cost. The impact of the merger is to expand the deadweight loss triangle; the inefficiency attributable to the merger is the *increase* in the area of the triangle. This is the trapezoidal area lightly shaded in Figure 1, as quantity falls from $Q[1]$ (pre-merger) to $Q[2]$ (post-merger), and price increases from $P[1]$ to $P[2]$. In a merger with both premerger

market power and cost efficiencies, the net impact on total surplus depends on a comparison of this trapezoidal area with a cost-efficiency rectangle, such as A in Figure 2. n33

n33 Note for reference below that if an analyst estimated the price increase attributable to the merger as well as the slope of the demand curve, but mistakenly assumed that the premerger price were equal to marginal cost, then the analyst would calculate the deadweight loss as the triangle above the premerger price instead of the entire trapezoid.

C. THE IMPACT OF PREMERGER MARKET POWER IN RELATED MARKETS

Pre-existing market power on the part of merging parties in the primary market under consideration is only one aspect of a larger issue in the estimation of deadweight loss. How should one handle market power in closely related markets--markets for substitute or complementary goods? As a matter of economic theory, the estimation of deadweight loss as a "welfare triangle" assumes not just that the merger-induced price distortion is the only distortion within the market, but that it is the only distortion in the entire economy. The "problem of the second best" is pervasive in welfare economics: once distortions are recognized elsewhere in the economy, we cannot measure the welfare gain from the elimination of a single distortion in a market as the surplus change in that market. One cannot even say with complete generality that the correction of a price "distortion" in a single market is always welfare increasing. n34 However, we can ask how market power in markets for substitutes or complements will alter the application of merger criteria.

n34 See, e.g., Richard G. Lipsey & Kelvin Lancaster, *The General Theory of Second Best*, 24 REV. ECON. STUD. 11 (1956).

It is traditional in merger analysis to focus on the "first-round effects" of a merger. These are the changes in surplus when prices outside the primary market are held fixed. The first-round effects of a merger on surplus are straightforward, and provide a useful guide to how the merged firm's exercise of market power will induce quantity changes in all markets. (Ultimately, total surplus depends only on quantities.) Consider, therefore, the quantity effects in related markets that flow from price increases in the relevant market, when prices in the related markets are fixed at levels above marginal cost. When price exceeds marginal cost, then an increase in quantity in these markets has a surplus-increasing effect. Suppose, for example, that the marginal cost of production is \$ 5 and price is \$ 7 in a related market. An increase of one unit of quantity in this market generates an additional surplus of \$ 2 because this is the difference between social value to consumers of the last unit consumed (the price) and the social cost of the unit. Similarly, a decrease in quantity results in a drop in surplus.

The determinant of whether quantity increases or decreases in a related market is whether the product in that market is a complement or a substitute for the merged firms' products that are subject to a price increase. n35 This should be the first focus of inquiry into conditions in related markets in the course of merger analysis. In the market for a complementary good, quantity will tend to decrease, and the impact of market power in the complementary goods market will then be to exacerbate the negative impact of the merger on consumer surplus. On the other hand, a gap between marginal cost and price in a substitute product market--where quantity will increase as the result of the merger--will reduce any negative impact of the merger on consumer surplus. n36

n35 Roughly speaking, two goods are said to be complements when buyers use them together--as in gasoline and automobiles. Because they are consumed as a sort of package (e.g., gasoline and automobiles are combined by buyers to create "transportation services"), their quantities generally rise and fall together. Thus, when the price of one rises, we expect to see consumption of both decline (other things equal). When goods are substitutes, buyers will typically choose between them. In such cases the quantities consumed of the goods will generally move in opposite directions: e.g., when consumers buy more pork, they buy less beef. When the price of a good rises then, we expect to see (other things equal) the quantities consumed of substitute goods to rise.

n36 In fact, this effect can more than offset the negative impact of the merger in the primary market with the result that the net impact on total surplus of the merger can be positive even in the absence of cost efficiencies. Market power in the markets for two substitute products can result in higher surplus than market power in only one of these markets; two monopoly prices (the post-merger situation) can be better than one (the premerger situation). For example, consider the markets for cars and trucks. Suppose that consumers have a very inelastic need for a vehicle of some sort (up to a particular price) but are willing to substitute to some extent between cars and trucks. In this case the key determinant of efficiency is not the total number of vehicles sold but the mix of cars and trucks sold. The efficient mix of cars and trucks will be elicited by the right *relative prices* of cars and trucks. If there is a premerger monopoly in trucks alone, allowing a monopoly in cars as well can lead to a more efficient relative price of cars versus trucks and an increase in total surplus.

The quantity effects are analyzed here as if the prices of related goods were fixed; however, those related prices will, in general, change as well. In the case of pre-existing market power in complementary goods, for example, the impact of a

merger (and a price increase in the primary market) will usually be to decrease the price of the related good: demand for the related good drops and becomes more elastic as the consumption of the primary good falls.

We can illustrate the full equilibrium impact of the price effects in the complementary goods case with reference to the most important version of this case: premerger market power in vertically related markets. Specifically, under a set of commonly applied assumptions, the actual deadweight loss from a merger of upstream rivals selling to a downstream monopolist may be two and one-half times the conventionally estimated deadweight loss triangle.ⁿ³⁷

ⁿ³⁷ Our analysis of the efficiency impact of a merger on vertically related (*complementary*) products parallels Farrell and Shapiro's analysis of the impact of a merger on the production of perfect *substitute* products, Joseph Farrell & Carl Shapiro *Horizontal Mergers: An Equilibrium Analysis*, 80 AM. ECON. REV. 107 (1990), and Shapiro's analysis of a merger's impact on the production of imperfectly substitutable products, Carl Shapiro, *Mergers with Differentiated Products*, ANTITRUST, Spring 1996, at 23.

To elaborate, this result holds if we assume that (i) the merger transforms a competitive manufacturing sector into a monopolized one; (ii) manufacturing unit costs are constant; (iii) the retail demand curve is linear; (iv) there is (for simplicity) a single monopoly retailer who has no other costs beyond the wholesale price paid to the upstream manufacturers; and, (v) manufacturers and retailer use regular linear pricing, e.g., a constant price per unit without quantity discounts. We denote the retail price by P and the manufacturers' wholesale price by w and illustrate the example in Figure 3 below. In this case, it is straightforward to demonstrate that the manufacturer's (derived) demand curve ($D[M]$) will also be linear, but will be twice as steep as the retailer's demand curve ($D[R]$). Premerger, manufacturers price at cost, $W[0] = C[M]$ and the quantity sold to retailers, then resold to final consumers

Figure 3. Welfare Consequences of Upstream Merger in Presence of Downstream Monopoly

[SEE Figure 3 IN ORIGINAL]

(at price $P[0]$), is given as $Q[0]$. Notice that, because of the retail market power, this quantity is below the efficient quantity Q^* which is the quantity at which final demand crosses the retail channel's total cost per unit. This (efficient) quantity would be transacted if both stages were competitive, but here the monopoly retailer is restricting output to push up price.ⁿ³⁸

ⁿ³⁸ It may be worth emphasizing here that it is the reduction in output, not the increase in price as such, that creates the deadweight loss. Price movements reallocate surplus but do not by themselves change the total amount of surplus in a market. If the price increase did not lead to lower output (because the good was essential, perhaps) it would not create new deadweight loss.

The total deadweight loss in this two-stage supply chain will be determined as if this were an integrated firm in which we compare the value of units, as given by the final demand curve, to all the costs (at all stages) of production. Premerger, the market power downstream leads to deadweight loss equal to the area of the triangle labeled H. Notice that there is no deadweight loss under the manufacturer's demand curve as manufacturers are pricing at their marginal cost.

Suppose now the merger results in market power at the manufacturer level with the result that wholesale price rises to $W[1]$.ⁿ³⁹ While this creates deadweight loss as measured under the manufacturer's derived demand curve equal to area E, this greatly understates the effect on the total channel surplus. Because the retailer will take higher prices and mark them up further (to $P[1]$), total channel deadweight loss grows from H to $H+E+F+G$. Thus, the merger has added $E+F+G$ to deadweight loss, not just area E. Under the simplifying assumptions we have used here, area G will be the same as area E and area F will be half as large as E, with the result that the real deadweight loss associated with the merger is two and one-half times (or 250 percent greater than) the loss as measured under the manufacturer's (derived) demand curve.

ⁿ³⁹ Because of the simplifying assumptions we have made in this example, the monopoly manufacturer picks a post-merger wholesale price equal to the premerger retail price. This is a convenient coincidence in that it removes the clutter of illustrating more prices on the same graph, but it is not material to the argument.

As indicated above, vertically related markets like these are really just a special case of complementary products. When two products are used together in consumption, the welfare effects of an increase in price of one good will depend on the price level of the other. Suppose, for example, that there were market power in the market for gasoline with the result that the price of gasoline is above its marginal cost. A merger in the automobile industry that created market power there would, if it raised automobile prices, lead to a further reduction in the quantity of gasoline produced and sold. Thus, the deadweight loss of the merger measured only with respect to the demand for automobiles would understate

the true surplus loss attributable to the merger. Of course, to the extent that gasoline producers respond by reducing their prices, this second effect will be mitigated somewhat. n40 These types of "related markets" considerations were raised in the *Superior Propane* case, to which we now turn.

n40 There is mitigation in the example just described of vertically related markets. Under the assumptions of the model, the monopoly retailer will raise its price only 50 cents for each \$ 1 increase in wholesale price--in a sense then the monopolist is reducing its "price" (the margin it takes over wholesale price).

IV. CASE STUDY: *SUPERIOR PROPANE*

A. THE ISSUE OF A MERGER CRITERION

Superior Propane involved a merger between the two largest distributors of propane in Canada. The combined shares of the business of the two distributors were over 95 percent in sixteen of the local markets identified in evidence as well as in the nationally coordinated service business. The Tribunal accepted the Commissioner's argument that the relevant product market for the merger was propane distribution. Because the transaction represented a merger to monopoly in many geographic markets, the Tribunal concluded that the merger substantially lessened competition. n41 Evidence for cost efficiencies was also accepted by the Tribunal, and the decision in the first hearing was to allow the merger on the basis of the efficiency defense. n42 The Tribunal based this decision on an unqualified application of the total surplus criterion: the Tribunal accepted evidence of cost savings of \$ 29 million per year over a ten-year horizon, and the estimated deadweight loss derived from cost estimates and econometric estimates of industry demand functions was only \$ 3 million per year. n43

n41 Comm'r of Competition v. Superior Propane Inc., [2000] C.C.T.D. No. 15, P306.

n42 *Id.* PP467-469. The efficiency defense is provided in Section 96 of the Competition Act which states that the Tribunal shall not intervene in a merger, even a merger involving a substantial lessening of competition, if there are "gains in efficiency that will be greater than, and will offset, the effects of any prevention or lessening of competition."

n43 *Id.* P458.

The Court of Appeal rejected the unqualified application of the total surplus standard, requiring instead (with reference to the purpose clause of the Competition Act) that some weight be placed on other factors. n44 Among these factors was the distributional impact of the merger. The Court commented favorably on the "balancing weights" approach to merger decisions, an approach that had been suggested by an expert witness for the Commissioner. n45 The balancing weights method is a tool or approach to be used within the weighted surplus or welfarist approach outlined in Part II of this article. Simply put, in a merger that involves a decrease in consumer surplus and an increase in profits, the Tribunal first determines the change in consumer surplus, $[DELTA] CS$, and change in profit, $[DELTA] II$, that are supported by the evidence in the case. Instead of committing itself to a precise set of weights in balancing the two figures, however, it then calculates the weight, w , that would lead to a weighted average of the changes in surplus, $w * [DELTA] CS + (1 - w) [DELTA] II$, equal to zero. (Any greater weight on consumer surplus would lead to a negative change in this weighted average.) Then the Tribunal decides whether the appropriate weight on consumer surplus is greater than or less than this critical value, w .

n44 The purpose clause of the Competition Act states in full:

1.1 The purpose of this Act is to maintain and encourage competition in Canada in order to promote the efficiency and adaptability of the Canadian economy, in order to expand opportunities for Canadian participation in world markets while at the same time recognizing the role of foreign competition in Canada, in order to ensure that small and medium-sized enterprises have an equitable opportunity to participate in the Canadian economy and in order to provide consumers with competitive prices and product choices.

Comm'r of Competition v. Superior Propane Inc., [2001] 3 F.C. 185, 223-28, 242-43.

n45 Affidavit of Peter Townley Ex. A., *supra* note 26, at 33.

Thus, the Court of Appeal rejected the interpretation of the Competition Act as supporting in all instances merger decisions based on the total surplus criterion alone--but it allowed the Tribunal to remain squarely within the welfarist approach of assessing a merger based on its impact on market participants. In remanding the decision back to the Tribunal, the Court of Appeal allowed the Tribunal a great deal of latitude in the sense that it required that *some* weight be placed on factors other than total surplus but did not specify how much weight. n46 The Tribunal, in the re-determination decision (following remand), effectively calculated the critical weights as approximately (.62, .38); that is, the merger would be allowed in this case if the weight placed on the change in consumer surplus was not more than 1.6 times the weight placed on profits. The Tribunal concluded that a welfare weight on consumer surplus of more than 1.6 times the weight on profits was not supportable and therefore concluded that the merger, while substantially reducing competition, met the efficiency defense. n47

n46 *Superior Propane*, [2001] 3 F.C. at 242.

n47 *Superior Propane*, [2002] C.C.T.D. No. 10, PP338, 374, 18 C.P.R. (4th) 417 (Can. Comp. Trib.).

In an insightful part of the decision, the Tribunal looked to the progressivity of the Canadian tax code for guidance in determining the relative value that Canadians attach to income flowing to citizens of different wealth or income levels. The Tribunal cited Robin Boadway and Harry Kitchen, who had found that the Canadian tax system overall implements taxes that are roughly proportional to income. n48 As these authors and the Tribunal noted, however, taxes, social insurance, and fiscal expenditures combined do reveal progressivity--but in the sense of a redistribution to the substantially poor or needy rather than to, say, the poorest half of Canadians. No evidence in the Canadian system supports substantially different weights to the changes in surplus to different parties affected by a merger except to the extent that parties detrimentally affected by the merger are genuinely poor, as opposed to simply less wealthy than those who gain from the merger. As the Tribunal stated in the re-determination decision, "Having regard to the combined system of taxes and public expenditures in Canada, there appears to be a basis for attaching a greater weight to the income groups that could be described as poor or needy than to shareholders assuming they are neither." n49

n48 ROBIN W. BOADWAY & HARRY M. KITCHEN, CANADIAN TAX POLICY PAPER NO. 103, 3d ed. (Canadian Tax Foundation 1999).

n49 *Superior Propane*, [2002] C.C.T.D. No. 10, P113.

This is the Tribunal's key concession to the Court of Appeal's ruling that it must look beyond total surplus. It is clear that government intervention in mergers should not be relied upon *more* strongly to implement a redistribution of income than the policy instruments designed specifically for that purpose. While the Tribunal stated that it would expect to have evidence on the issue and additional research is clearly needed, n50 the indication is that redistribution is to be valued where it is towards income groups that could be described as poor or needy. The Tribunal heard evidence on the consumption of propane by quintile. n51 The choice of the lowest quintile of consumers (as opposed to the lowest quartile or the lowest decile) as "poor or needy" is arbitrary, but the choice is convenient, given Canadian data on consumer expenditure. In any case, the arbitrariness in the definition of the size of the group can be offset by the choice of welfare weight to be attached to the group.

n50 *See id.* P112.

n51 *Id.* P347.

In short, the effect of evidence on the progressivity of Canadian tax and social policy is to justify welfare weights that are higher than the weight on profits only for those consumers who are "poor or needy." If we identify these consumers as falling within the lowest quintile of the income distribution, then only consumers from the lowest quintile would warrant the higher welfare weight. n52 Suppose, for example, that we are considering a merger in a market in which consumption is independent of income (i.e., income elasticity is 0). Then the set of consumers would be drawn from the entire income distribution and 20 percent of the consumers in the market would warrant a high welfare weight. What should the weight be? This is the biggest source of ambiguity or uncertainty in the entire normative exercise. The weight should reflect the higher marginal social value of income to the poor, but should also be tempered by the practical difficulties and inaccuracies in using merger policy as an instrument for wealth redistribution. However, even if the

weight on income to poor consumers were 50 percent greater than that on other consumers and producers, the weight on consumer surplus as a whole would be only 10 percent greater than that on producers. In other words, the weights on consumer surplus and profit, instead of being (.5, .5) as in the total surplus approach, would be (.52, .48), based on the assumption that the income elasticity of demand is 0 (i.e., that demand is independent of income).ⁿ⁵³

ⁿ⁵² As mentioned, the choice of 20 percent is arbitrary. It will become clear, however, that our results are robust-to-moderate changes in this value.

ⁿ⁵³ To derive these weights precisely, let w represent the weight on each dollar of producer surplus and higher-income consumer surplus. Then $(1.5)w$ is the weight on the surplus of poor consumers. If the lowest quintile has 20 percent of consumption, then because the weights on consumer and producer surplus must sum to 1, we have

$$[(1.5)w(0.2) + w(0.8)] + w = 1.$$

Solving this yields $w = 0.48$, and the relative weight on consumer surplus (the term in square brackets) is 0.52. We ignore in this calculation, and throughout the article, the theoretical possibility that poor consumers may be significant shareholders on the supply side of the market. Where poor consumers are significant shareholders, our conclusion that the justified welfare weights are close to (.5, .5) would be strengthened.

On average across products, however, the income elasticity of demand is approximately equal to 1.ⁿ⁵⁴ For a typical product, therefore, expenditure rises with income and the poorest 20 percent of Canadians account for much less than 20 percent of the quantity purchased. For example, in 1996, the lowest income quintile of consumers accounted for only 6.7 percent of the total expenditure on all goods.ⁿ⁵⁵ Thus, if the lowest quintile is to receive a weight of 50 percent higher than other market participants, the resulting weight on consumer surplus would be only $(.067)(.5) = (.035)$ proportionately higher than the weight on profits.ⁿ⁵⁶ The corresponding weights in the weighted surplus approach would be, for the average good, (.508, .492) instead of the equal weights corresponding to the total surplus measure.ⁿ⁵⁷ Even if the welfare weight on income to the poorest consumers is twice that on income to other consumers, instead of 50 percent greater, then the implied weights are (.516, .484).ⁿ⁵⁸ For a typical case, in other words, the Tribunal's reasons in the re-determination decision--reasons that we suggest are supported by analysis and evidence--lead to a change in only the second decimal point to the weights applied to consumer and producer surplus, within the class of weighted surplus rules.

ⁿ⁵⁴ More precisely, the average income elasticity across products, weighted by expenditures, equals 1. This is termed the Engel Aggregation Property. See ANDREU MAS-COLELL ET AL., MICROECONOMIC THEORY 28 (1995).

ⁿ⁵⁵ This is calculated from the data in Table 1 in Exhibit A to the Affidavit of Dr. Peter Townley, *supra* note 26, in *Superior Propane*. We note that, as Dr. Townley indicated, there are limitations on the usefulness of these data.

ⁿ⁵⁶ This calculation ignores any interaction effect between income and price on consumer demand. For example, we are ignoring the possibility that poorer consumers have a lower elasticity of demand for the product produced by the merging firms.

ⁿ⁵⁷ The derivation of these weights is parallel to the derivation in note 54, and follows from the equation $w(1.5)(0.067) + w(1 - 0.067) + w = 1$. Solving this equation yields $w = 0.492$.

ⁿ⁵⁸ The derivation of these weights is via $w(2)(0.067) + w(1 - 0.067) + w = 1$, which yields $w = 0.484$.

While these weights follow from the Tribunal's reasons (combined with an assumption of a weight on poor consumers that is 50 percent or 100 percent greater than that on other consumers and producers), the Tribunal itself did not carry the calculation this far. It did not need to. Under the balancing weights approach, the Tribunal need only decide whether or not the weight on consumer surplus necessary to lead to a rejection of the merger is too high. But our calculations indicate that the balancing weights approach to implementing the weighted surplus standard would lead to the acceptance of virtually as many typical mergers--that is mergers in markets with average income elasticities of demand--as the total surplus rule. Readers familiar with the wide range of approximations, estimation errors, and rough guesses involved in evidence in merger cases will agree that a change in the second decimal place of the weights will have a small impact.

Two additional factors make the implied welfare weights even closer to (.5, .5) than the figures we derived above. First, in *Superior Propane*, as the Tribunal noted, only 10 percent of the buyers of propane are households, while 90 percent are businesses. n59 Lacking any evidence on the distributional impact of the price increases resulting from the increased prices to businesses, the Tribunal assigned the business buyers a weight equal to that on shareholders. Suppose that we incorporate, in our calculations above, this fact and the fact that the lowest quintile of households purchases approximately 13 percent of the propane purchased by households. n60 Then, adopting our illustrative assumption that the appropriate welfare weight on poor consumers is 50 percent greater than that on the other participants, the resulting welfare weights on consumer surplus and producer surplus are (.502, .498). n61

n59 *Superior Propane*, [2002] C.C.T.D No. 10, P358.

n60 The figure of 13% is calculated from Table 2 of Dr. Townley's evidence (for the year 1996) and is based only on expenditures for bottled propane, because of data limitations. Affidavit of Peter Townley Ex. A, *supra* note 26, at 37.

n61 If poor consumers purchase 13 percent of propane purchased by households, which in turn purchase in aggregate 10 percent of total propane, then poor consumers purchase 1.3 percent of propane. The weight, w , on producer surplus is then determined by $[(1.5)w(0.013) + w(0.987)] + w = 1$. This solves to give $w = 0.498$. The weight on purchasers (in the square bracket of this equation) is then 0.502.

The second factor, in general, is the consideration of taxpayers as stakeholders in a merger. Any profits accruing to corporations do not flow directly to shareholders but are split between shareholders and government tax receipts. Each dollar of taxes received from corporations reduces the need to raise taxes from other taxpayers. And the effect is important: corporate tax rates average 38 percent in Canada, and profit is taxed again when it is distributed as dividends before it can be spent by shareholders. Roughly speaking, therefore, taxpayers share the before-tax profit equally with shareholders. Taxpayers are as important a group of stakeholders in the merger decision as shareholders. Moreover, the opportunity cost of each dollar of tax revenue gained from a merger is *greater* than a dollar because the dollar of tax revenue would have to be raised elsewhere with a resulting deadweight loss of taxation. n62 (Dozens of estimates of the marginal deadweight loss have been published for the United States. n63) The impact of taxation is thus that half of the before-tax profits should arguably receive a weight greater than the weight on surplus to shareholders or to middle- or higher-income consumers. This reduces further the relative weight on consumer surplus that can be justified from the premise that the role of redistribution should not be greater in merger policy than in policies specifically designed for redistribution.

n62 If the government's fiscal policy is optimal, the marginal opportunity cost of taxation is also equal to the marginal social benefit of taxation, so that one could equally say that the marginal benefit of the reduction in dollars spent by the government exceeds 1. Some readers will not be persuaded that a dollar in the hands of government is worth more than a dollar in the hands of citizens, whether shareholders or consumers. Our position is that merger analysis should not be used as an instrument to correct inefficiencies elsewhere in government policy. One cannot base a sensible merger criterion on the presumption that taxation and government expenditures are excessive.

n63 These estimates improve on the methodology of Arnold Harberger's original estimation and show that his estimate of less than 5 percent was understated. Arnold Harberger, *Taxation, Resource Allocation, and Welfare*, in *THE ROLE OF DIRECT AND INDIRECT TAXES IN THE FEDERAL REVENUE SYSTEM* 25 (John F. Due ed., 1964.) See, e.g., Alan J. Auerbach, *The Theory of Excess Burden and Optimal Taxation*, in *1 HANDBOOK OF PUBLIC ECONOMICS* 61 (Alan J. Auerbach & Martin Feldstein eds., 1985); Charles Stuart, *Welfare Costs per Dollar of Additional Tax Revenue in the United States*, 74 *AM. ECON. REV.* 352 (1984); Charles L. Ballard et al., *General Equilibrium Computations of the Marginal Welfare Costs of Taxes in the United States*, 75 *AM. ECON. REV.* 128 (1985). The estimates range from Harberger's original estimate to Martin Feldstein's estimate of nearly 200% (in what has been described as "the most comprehensive analysis of the impact of taxation on deadweight losses." RICHARD K. VEDDER & LOWELL E. GALLAWAY, *TAX REDUCTION AND ECONOMIC WELFARE*, JOINT ECONOMIC COMM. STUDY, 106th Cong. 3 (Apr. 1999), available at <http://www.house.gov/jec/fiscal/tax/reduce.pdf> (citing, *inter alia*, MARTIN FELDSTEIN, *TAX AVOIDANCE AND THE DEADWEIGHT LOSS OF THE INCOME TAX* (Nat'l Bureau of Econ. Research, Working Paper No. 5055, 1995)). In their recent review of the estimates, Professors Vedder and Gallaway suggest that a "40 cent welfare loss per tax dollar estimate is a reasonable midrange evaluation of a number of studies of the issues using different methodologies, data sets, and time periods." *TAX REDUCTION AND ECONOMIC WELFARE*, *supra*, at 6. In Canada, where personal income tax rates are higher on average, the deadweight loss would presumably be even greater.

Our conclusion that this weight is extremely close to .5 has been based on particular values for parameters: for example, a weight on the surplus to less wealthy consumers of not more than 1.5 and an assumption that 90 percent of demand for the product is from businesses, as in *Superior Propane*. In the Appendix we show that our conclusion is robust to changes in the assumptions.

In sum, the *Superior Propane* approach to incorporating distributional considerations into merger analysis is soundly based on evidence about the scope of income redistribution in Canadian social insurance and fiscal policies in general. This evidence supports higher weights to the incidence of a merger only on the poor or neediest consumers of the merging firms' products. When combined with the high proportion of business purchasers, as in the *Superior Propane* case, and the presence of taxpayers as stakeholders, in general, the implied deviation leads to an extremely small departure of the law from the total surplus standard--even if income to poor consumers is to receive twice the weight as income flowing to other participants.

The *Superior Propane* re-determination decision thus leaves Canadian merger law with solid welfarist foundations. In reaching this decision, the Tribunal rejected two non-welfarist arguments on the part of the Commission. First, the Commissioner at times took the position that any merger to monopoly cannot meet the efficiency defense. Even a merger that reduced price, because of efficiencies, would not be justified under this argument. The argument is obviously inconsistent with the Pareto criterion. The second of the Commissioner's non-welfarist arguments was the "free competition" legal doctrine, that consumers have the right to the benefits of competition. A third non-welfarist argument (the *Hillsdown* merger criterion) was, unfortunately, applied by the Tribunal, although this application did not change its decision. The *Hillsdown* merger criterion, which was originally suggested in an obiter dictum in an earlier Canadian merger case, counts the transfer from consumers to producers as a negative outcome of a case and adds up the net positive elements to assess a case.ⁿ⁶⁴ In terms of our Figure 2, the *Hillsdown* criterion would require that $A > B+L$ for a merger to be approved. In the *Hillsdown* standard, different components of profit receive different weights: the profit that results from merger-related efficiencies receives a weight of 1 and the profit that results from a transfer from consumers receives a weight of 0. It is possible that the *Hillsdown* standard when applied to each of two mergers, M[1] and M[2], could accept M[1] and reject M[2], even though M[2] is better for both firms and consumers.

ⁿ⁶⁴ Director of Investigation & Research v. Hillsdown Holdings (Can.) Ltd., [1992] 41 C.P.R. (3d) 289 (Can. Comp. Trib).

Consider, as an example, mergers M[1] and M[2] described by Table 1.

Table 1
Effects of Two Hypothetical Mergers

Merger	DWL	Transfer	Efficiencies	Hillsdown Net Effect	Impact on Consumers	Impact on Profits
M[1]	16	79	98	+3	-95	177
M[2]	8	86	92	-2	-94	178

In this example, the *Hillsdown* net effect of merger M[1] is efficiencies minus the sum of deadweight loss (DWL) and the transfer, which equals 3; the impact on consumer surplus is the negative sum of deadweight loss and the transfer, or -95; the impact on profits is the sum of the transfer and efficiencies, or 177. The result is similar for M[2]. The *Hillsdown* test would accept merger M[1], but reject merger M[2], even though for all parties affected M[2] is the better merger.

B. IMPACT OF THE MERGER ON RELATED MARKETS

The Tribunal also considered the impact of the merger on related markets but, following concerns of the Court of Appeal, focused on the possibility of negative *redistributive* effects in these markets, not on efficiency (i.e., total surplus) consequences:

The Tribunal heard the testimony of some small and medium-sized business owners, and it infers therefrom and from the CMR study regarding Superior's commercial customers in eastern Canada, that propane is used by some businesses whose owners will be negatively affected by the reduction in their profits that will result from their higher costs of propane to the extent that they cannot pass the price increase on in the form of higher prices for their products.ⁿ⁶⁵

Interestingly, any inelasticity of demand facing individual firms in the related markets was taken by the Tribunal and the Court of Appeal as *favorable* towards the merger because it indicates an ability to pass on price increases. This may be

valid for redistributive concerns, although even then one would have to examine the distributional impact of the price increases on downstream customers. The major focus in examining related markets, however, should be with respect to the efficiency impact of the merger, given our inference that the Tribunal's decision criterion was very close to the total surplus standard. In this case, as we showed in Part III, inelasticity of firm demand in vertically related markets must be considered as a *negative* factor in merger assessment because it exacerbates the deadweight loss resulting from any exercise of market power by the merged firm.

n65 *Superior Propane*, [2002] C.C.T.D. No. 10, P359.

C. THE IMPLEMENTATION OF THE TOTAL SURPLUS STANDARD

The entire debate over the standard for assessing a merger that was the core of *Superior Propane* arose only because of a simple miscalculation of deadweight loss in evidence filed on behalf of the Commissioner. Evidence of premerger market power was on the record, as part of the demand estimation and forecast of price increases (of about 8 percent on average). The required inputs into the correct calculation of the area of the trapezoid in Figure 4 were all in evidence, yet the Commissioner, through his expert, calculated the deadweight loss as the area of the small, darkly shaded triangle in Figure 4. For a market elasticity of demand of -1.5 (the value on which the Tribunal focuses in its reading of the evidence), individual firm demand elasticities of -3 (the approximate average of elasticities in the evidence), and a price increase of 9 percent, the actual deadweight loss that follows from the estimates already in evidence is approximately eight and one-half times the value for which the Commissioner actually argued.

As previous articles on the case have discussed, the Commissioner would have likely won the case under even the total surplus standard, but for this error. n66 An attempt by the Commissioner to correct the error

Figure 4. Miscalculation of DWL in *Superior Propane* (Evidence Filed on Behalf of Commissioner)

[SEE Figure 4 IN ORIGINAL]

in final argument was naturally excluded from consideration by the Tribunal as an attempt to introduce new evidence, but the Tribunal indicated that its decision may well have been different had the correction been introduced properly. n67

n66 Margaret Sanderson, *Competition Tribunal's Re-Determination Decision in Superior Propane: Continued Lessons on the Value of the Total Surplus Standard*, CAN. COMPETITION REC., Spring/Summer 2002, at 1; Frank Mathewson & Ralph A. Winter *The Analysis of Efficiencies in Superior Propane: Correct Criterion Incorrectly Applied*, CAN. COMPETITION REC., Fall 2000, at 88.

n67 *Superior Propane*, [2000] C.C.T.D. No. 15, P451.

V. EFFICIENCIES AND MERGER LAW IN OTHER COUNTRIES

We believe the Canadian experience has relevance for antitrust authorities in other jurisdictions that are grappling with just how to integrate the consideration of efficiencies into the merger review process. While there may be no other leading jurisdiction that has ever come as close to adopting a total surplus standard for the review of mergers, some appear to be open to the idea that a tradeoff is possible. Furthermore, the situation appears to be evolving: a number of jurisdictions have shown interest in expanding the scope for the incorporation of efficiencies into merger review. n68

n68 For more on these developments, see, e.g., Ann-Britt Everett & Thomas W. Ross, *The Treatment of Efficiencies in Merger Review: An International Comparison*, Report Prepared for the Government of Canada (Nov. 22, 2002), available at <http://strategis.ic.gc.ca/pics/ct/ct02516e.pdf>.

A. UNITED STATES

In the United States, for example, there has been a trend toward allowing a greater role for efficiencies. n69 Some of this can be seen in the evolution of the Merger Guidelines. In 1968 the first Department of Justice Merger Guidelines contained only a short paragraph on efficiencies, indicating the DOJ would accept "economies" as justification for a merger normally subject to challenge only under "exceptional circumstances." n70 While the 1982 Guidelines changed relatively little, the 1984 Guidelines moved efficiencies from a defense to the competitive effects section where they became part of the analysis of whether a merger lessened competition substantially. n71 Efficiencies came to play a somewhat greater role after this change. A further change in 1992 removed the need to establish the efficiencies "by

clear and convincing evidence," lowering the standard of proof and facilitating efficiency arguments. n72 Finally, the 1997 revision to the 1992 Guidelines, while not obviously relaxing the standard, did provide greater guidance to merging parties with respect to how and what efficiencies would be considered. n73

n69 This history has been usefully reviewed by William Kolasky and Andrew Dick. Some are of the view that before the 1968 Guidelines, efficiencies could have been counted against a merger on the theory that the more efficient firm could then out-compete its rivals and induce their exit. This is the so-called efficiencies offense. See Kolasky & Dick, *supra* note 1, at 211.

n70 U.S. Dep't of Justice Merger Guidelines § 10 (1968), *reprinted in* 2 Trade Reg. Rep. (CCH) P4510.

n71 U.S. Dep't of Justice, Merger Guidelines § 3.5 (1984), *reprinted in* 4 Trade Reg. Rep. (CCH) P13,103.

n72 Compare 1984 Merger Guidelines § 3.5, with U.S. Dep't of Justice and Federal Trade Comm'n Merger Guidelines § 4 (1992).

n73 U.S. Dep't of Justice and Federal Trade Commission Merger Guidelines § 4 (revised 1997), *reprinted in* 4 Trade Reg. Rep. (CCH) P13,104.

There were two less obvious but potentially significant changes in the 1997 revisions. The first was the addition of the sentence: "The Agency also will consider the effects of cognizable efficiencies with no short-term, direct benefit on prices in the relevant market." n74 To Kolasky and Dick this means the U.S. standard has become "a hybrid consumer/total welfare model rather than one or the other." n75

n74 *Id.* § 4 n.37.

n75 Kolasky & Dick, *supra* note 1, at 230.

The second was the addition of footnote 36 on how the agencies would deal with a merger that produced efficiencies in one market but net anticompetitive effects in another. Indicating that they may, in some cases, be willing to trade off harm to some consumers when others benefit, the Guidelines indicate that such a merger might be approved if the efficiencies are "inextricably linked" to the anticompetitive harm and if the imbalance is substantial. n76

n76 1997 Revision, *supra* note 73, § 4 n.36.

B. AUSTRALIA

The Australian approach to the consideration of efficiencies in merger review is not clear, in large part because there have been few cases and most merger work is handled through an informal clearance process that does not produce much public information. Australian law does allow for a merger to be "authorized" and allowed to proceed on public benefit grounds notwithstanding that it may be anticompetitive. And efficiencies can quite clearly be considered a public benefit: the Australian Merger Guidelines indicate that "public benefits in the form of increased efficiency and better resource usage, resulting in lower unit costs, are most important in the consideration of applications for the authorization of mergers." n77 The result appears to be a standard that grants some weight to producers, though likely not the same weight as consumers: "While the door may be open to a total surplus approach in authorization cases, it is far from clear that the [Australian Competition and Consumer Commission] ACCC and [Australian Competition] Tribunal are prepared to go this far." n78

n77 Australian Competition and Consumer Comm'n, Merger Guidelines P6.39 (1999), *available at* <http://www.accc.gov.au/content/item.phtml?itemId=304397&nodeId=file3fb2c3a84d549&fn=Merger%20Guidelines.pdf>

n78 Everett & Ross, *supra* note 68, at 40.

C. EUROPEAN UNION

Formal merger review in the European Union really began only with the implementation of the Merger Regulation in 1989. Article 2(1)(b) of the Regulation appeared to open the door to the consideration of efficiencies--albeit with a consumer-benefits perspective--where it indicated that merger review required a broad market analysis including "the

development of technical and economic progress provided that it is to consumers' advantage and does not form an obstacle to competition." n79 Economic and technical progress also formed part of the assessment of block exemptions. In its contribution to a 1996 report by the Organization for Economic Cooperation and Development (OECD) the Commission made it clear that it did not recognize an efficiency defense. n80 The phrase "and does not form an obstacle to competition" led some to believe that mergers that are good for firms and consumers (because the efficiencies are so large as to lead to lower prices) might nevertheless be blocked if they harmed competition or competitors. While there was relatively little jurisprudence on these issues, a number of commentators expressed the concern that efficiencies could be counted against a merger by the Commission--that there was an "efficiency offense." n81 More recently, the Commission has worked to avoid the appearance of a negative attitude toward efficiencies and to support debate about the role efficiencies should play in merger review. n82

n79 Council Regulation 4064/89 on the Control of Concentrations Between Undertakings, art. 2(1)(b), 1989 O.J. (L 395) 1. Under the 1989 Merger Regulation the Commission adopted a dominance test for objectionable mergers--effectively taking the view that in mergers short of dominance, efficiencies must be greater than the harm to competition.

n80 ORGANIZATION FOR ECONOMIC CO-OPERATION & DEVELOPMENT, COMPETITION POLICY AND EFFICIENCY CLAIMS IN HORIZONTAL AGREEMENTS 53-54 (1996), available at <http://www.oecd.org/dataoecd/1/4/2379526.pdf>

n81 See, e.g., Fabienne Ilzkovitz & Roderick Meiklejohn, *European Merger Control: Do We Need an Efficiency Defense?*, in 5 EUROPEAN ECONOMY 3, in DIRECTORATE-GENERAL FOR ECONOMIC & FINANCIAL AFFAIRS, EUROPEAN COMM'N, THE EFFICIENCY DEFENSE AND THE EUROPEAN SYSTEM OF MERGER CONTROL 3+30 (European Economy Reports & Studies No. 5, 2001), available at http://europa.eu.int/comm/economy_finance/publications/europeanconomy/2001/eers0501_en.pdf.

n82 European Comm'n, Green Paper on the Review of Council Regulation (EEC) No. 4064/89 (Nov. 21, 2001), COM(2001) 745/6 final, available at http://europa.eu.int/comm/competition/mergers/review/green_paper/en.pdf.

In January 2004 a new Merger Regulation was adopted, taking effect in May 2004. n83 Subsequently, new Guidelines were issued by the Commission. n84 It is unlikely that these changes will end the debate about how best to incorporate efficiencies in merger review. Significantly, the Regulation shifts the substantive test away from a pure dominance test toward something more like a "substantial lessening of competition" test. And Paragraph 29 of the new Regulation indicates that it is "appropriate" to consider efficiencies but it leaves details of how this is to be applied to the Commission. n85 In Section VII of the new Guidelines the Commission indicates that the efficiencies must "benefit consumers, be merger specific and be verifiable" n86 and that "the relevant benchmark in assessing efficiency claims is that consumers will not be worse off as a result of the merger." n87

n83 Council Regulation 139/2004 on the Control of Concentrations Between Undertakings, 2004 O.J. (L 24) 1, available at <http://europa.eu.int/cgi-bin/eur-lex/udl.pl?REQUEST=Seek-Deliver&COLLECTION=oj&SERVICE=eurlex&LANGUAGE=en&DOCID=20041024p00010022&ext=.pdf>.

n84 Guidelines on the Assessment of Horizontal Mergers Under the Council Regulation on the Control of Concentration Between Undertakings, 2004 O.J. (C 31) 5.

n85 Council Regulation 139/2004, 2004 O.J. (L 24) at 4, P29. Paragraph 29 indicates that "It is possible that the efficiencies...counteract the effects on competition . . . and that, as a consequence, the concentration would not significantly impede effective competition . . ." *Id.* The reference to "not significantly impede competition" leaves open the possibility of efficiencies being used against a merger that benefits buyers and sellers.

n86 Guidelines on the Assessment of Horizontal Mergers, 2004 O.J. (C 31) at 13, P78.

n87 *Id.* at 13, P79 (footnote omitted).

Thus, as this short review of the experience of a number of other jurisdictions reveals, many authorities are struggling with the question of how best to balance the potential for harm created by concentration-increasing mergers with the possible efficiencies such combinations can create. We see that other jurisdictions have been gradually giving more positive weight to efficiencies--or have active debates in which such moves have been advocated. Hence, there may be a convergence of policies toward a position in which both producers and consumers matter. Our two central conclu-

sions--that the approach taken by the Canadian Tribunal in its re-determination decision in *Superior Propane* is well-founded and that the practical implication is merger criteria that are close to the total surplus standard--apply equally to these other jurisdictions.

VI. CONCLUSION

We have argued in this article that the current state of the efficiency defense in Canadian merger law is well-founded in principles of welfare economics. The Tribunal in its most recent merger decision was constrained by the Court of Appeal to incorporate the distributional impact of a merger. Our examination of the evidence and methods used by the Tribunal to incorporate the distributional impact, an examination more detailed than that required on the part of the Tribunal, shows that the Canadian law is extremely close to the total surplus criterion. Unless merger law is to be used *more* extensively for redistribution of income than government policies designed specifically for that purpose, the merger decision, except in very rare cases, will result in the same outcome as the decision reached by the total surplus criterion. In short, our policy conclusion for Canada is that the current law on merger efficiencies is well-founded and should not invite statutory reform; n88 our practical conclusion is that the law in almost all cases follows the total surplus criterion. n89

n88 A bill, C-249, introduced in the Canadian Parliament, would have seriously weakened the power of the efficiency defense in Canadian merger law. This bill was close to being enacted when the Canadian election interceded in September 2004.

n89 A comparison of the Canadian merger law and U.S. law, for example, shows that in spite of the greater emphasis on equality of income within Canadian government policy in general, the current Canadian merger law is much more oriented towards overall efficiency (total surplus) than the U.S. law.

The analysis in this article and in *Superior Propane* is relevant for other antitrust jurisdictions. To support a criterion very close to total surplus one need not claim, as is commonly but incorrectly argued, that any negative redistributive effects can be undone with policy instruments designed for redistribution. It is enough to assume that merger policy should not be used for redistribution to a greater extent than the instruments designed for that purpose. And virtually any consideration given to taxpayers as stakeholders sharing in pre-tax profits, with correct accounting for deadweight losses that would be incurred to replace any tax revenue lost were a profitable merger to be declined, is enough to offset higher a welfare weight to consumers of low income.

The irony in *Superior Propane* is that the fundamental issue of the choice of a merger criterion arose because of an analytical error on the Commissioner's side of the case. Without this error, the Commissioner would likely have won the case even under the total surplus standard. The lesson for implementation is that estimates of premerger market power are critical in estimating the welfare impact of a merger.

LANGUAGE: ENGLISH