TERVITA AND THE EFFICIENCY DEFENCE IN CANADIAN MERGER LAW

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On January 22ⁿᵈ, the Canadian Supreme Court issued a decision, Tervita, that has important implications for application of section 92 and especially section 96 of the Competition Act. *Under* Tervita, *the respondents continue to have the burden of proof of demonstrating efficiencies, and in practice this is almost invariably a quantitative exercise. But now the Commissioner has a burden of also presenting quantitative evidence. If the Commissioner does not present quantitative evidence on quantifiable parameters underlying the competitive harm then he fails to meet his burden in section 96, even if the qualitative evidence of competitive harm is strong and efficiencies are negligible, insignificant or marginal.*

This paper offers an economist's perspective on section 96 aspects of Tervita. *I set out three general criticisms. First,* Tervita *creates a hierarchy of quantitative evidence over qualitative evidence that is without foundation. Second, in a merger case (as in any common law case) evidence comes before the trier of fact as the outcome of an adversarial process in which each side has the incentive to bring the strongest evidence. The Court offers no theory of why the Commissioner would fail to bring quantitative evidence if this evidence were important.*

My third criticism or suggestion concerns the process for merger review. The Court has decided that the Commissioner must bring quantitative evidence on competitive harm before the merging parties' evidence so that the parties know the target that they must meet in developing evidence on efficiencies for the balancing test of section 96. In the Court's view, this not only resolves the problem of subjectivity of evidence but is also required as a matter of procedural fairness. I argue that procedural fairness is not an issue in section 96. The subjectivity of qualitative evidence is a potential issue, but is minimized when the parties, not the Commissioner, present a target for the other side to meet in developing section 96 evidence.

Le 22 janvier, la Cour suprême du Canada a rendu sa décision dans l'affaire Tervita *et celle-ci a des retombées importantes sur l'application de l'article 92, et surtout de l'article 96, de la* Loi sur la concurrence. *Selon la décision* Tervita, *comme avant, les intimés ont le fardeau de démontrer l'existence des gains en efficience, ce qui en pratique devient presque invariablement un travail axé sur des données quantitatives. Toutefois, désormais, le commissaire a également le fardeau de présenter de la preuve quantitative. En outre, si ce dernier ne présente pas de tels éléments de preuve selon des paramètres quantifiables sous-tendant les effets anticoncurrentiels, il ne s'acquitte pas de*

son fardeau au sens de l'article 96; et ce, même en dépit d'éléments de preuve qualitatifs convaincants des effets anticoncurrentiels et de gains en efficience négligeables, insignifiants ou peu importants.

L'article présente le point de vue d'un économiste sur les aspects de la décision Tervita *qui ont trait à l'article 96. Je fais trois critiques générales : première- ment, l'arrêt* Tervita *crée, sans fondement, une hiérarchie qui privilégie la preuve quantitative au détriment de la preuve qualitative. Deuxièmement, dans les causes qui portent sur une fusion (comme c'est aussi le cas de toutes les affaires relevant de la common law), la preuve qui est présentée au juge découle d'un processus de débat contradictoire dans le cadre duquel chaque partie a intérêt à présenter les éléments de preuve les plus convaincants. La Cour n'avance aucune thèse à savoir pourquoi le commissaire ne présenterait pas de preuve quantitative si celle-ci était importante.*

La troisième critique ou suggestion porte sur la procédure dans le contexte de l'examen des fusions. La Cour a statué que le commissaire doit présenter des éléments de preuve quantitatifs sur les effets anticoncurrentiels avant que les parties au fusionnement ne présentent leur preuve quant aux gains en efficience afin que les parties puissent connaître le critère auquel elles doivent répondre lorsqu'elles présentent cette preuve aux fins de la pondération qu'exige l'article 96. La Cour est d'avis non seulement que cette façon de procéder règle le pro- blème de la subjectivité de la preuve, mais aussi que cette procédure est requise pour assurer le respect de l'équité procédurale. J'avance qu'il n'est pas question d'équité procédurale à l'article 96. La subjectivité de la preuve qualitative est un problème qui pourrait surgir, mais qui peut toutefois être atténué lorsque c'est le commissaire, plutôt que les parties, qui doit répondre au critère lorsqu'il fournit de la preuve au sens de l'article 96.

1. Introduction

On January 22nd, the Supreme Court of Canada issued a decision, *Tervita*,[1] that has important implications for application of s. 92 and especially s. 96 of the *Competition Act*.[2] Section 92 allows the Competi- tion Tribunal, upon application by the Commissioner of Competition, to block a merger or remedy the effects of a merger that is likely to substantially lessen or prevent competition. Section 96 offers a defence of a merger that meets the s. 92 conditions of a substantial lessening or prevention of competition. If the merger is likely to bring about effi- ciencies that "are greater than and offset" the competitive harm from the merger, under s. 96 the Tribunal cannot impose a remedy. Under s. 96 the competitive harm from the merger is balanced against merger- specific efficiencies.

A merger case involves a s. 96 efficiencies defence whenever the merging parties allege merger-specific efficiencies. While the burden of

proof under s. 92 lies with the Commissioner, prior to *Superior Propane*[3] and *Tervita* it was understood that the burden of proof in s. 96 was on the merging parties. With better access to information on costs and potential merger synergies, the parties had the obligation to demonstrate quantitatively the extent of efficiencies. The Tribunal could then determine whether the efficiencies offset and were greater than the anticompetitive effects of the merger.

Under *Tervita*, the respondents continue to have the burden of proof of demonstrating efficiencies, and in practice this is almost invariably a quantitative exercise. But now the Commissioner has the burden of also presenting quantitative evidence. If the Commissioner does not present quantitative evidence on quantifiable parameters underlying the competitive harm then he fails to meet his burden in s. 96, *even if the qualitative evidence of competitive harm is strong and efficiencies are negligible, insignificant or marginal.*

This paper offers an economist's perspective on the s. 96 aspects of *Tervita*. I set out three general criticisms. First, *Tervita* creates a hierarchy of quantitative evidence over qualitative evidence that is without foundation. I recognize the irony of this criticism as coming from an economist. Quantitative analysis, along with providing the conceptual framework for cases, is the main contribution of economists in this area. The role of economists in competition law has evolved from one of mere "handmaidens to lawyers" in 1970[4] to being central in both challenging mergers or business practices and defending the mergers or practices. Without a doubt, this is progress. But I believe that in its categorical prioritization of quantitative evidence, the Court in *Tervita* fails to recognize the potential limitations of this class of evidence. Meaningful estimation of parameters that are quantifiable in principle may be impossible, even where data are plentiful. The European General Court held in 2010, in *Ryanair*,[5] that there is no need to establish a hierarchy between quantitative and qualitative evidence.[6]

The principles of economics and inference support *Ryanair*, not *Tervita*. And as a matter of law, *Tervita* would appear to weaken the restriction against anticompetitive mergers in markets where data are scarce relative to markets such as in retail settings where scanner data often allow accurate estimation of the necessary parameters. I surmise that this difference in merger law across markets was not intended by Parliament in drafting the *Competition Act*.

My second criticism starts with the observation that evidence in a merger case, as in any common law case, comes before the trier of fact as the outcome of an adversarial process. In an adversarial process, each side has the incentive to adduce its strongest evidence. All parties

are aware of both the limitations of qualitative evidence (such as subjectivity) and the limitations of quantitative evidence. Certainly these will be revealed as part of the process. Each side considers the strengths and weaknesses of various types of evidence in deciding which evidence to present. Why should we believe, as the Court implicitly assumes, that the Commissioner's decisions as to the choice of quantitative versus qualitative evidence are somehow distorted? In imposing a constraint on the type of evidence the Commissioner must bring, the Court in *Tervita* is intervening in the adversarial process for merger review without a theory as to why the process fails to elicit incentives on the parties to advance their strongest evidence.

These two criticisms elaborate on the clear and persuasive dissent by Justice Karakatsanis in *Tervita*.

My third criticism or suggestion concerns the process for the merger review as it relates to the balancing test in s. 96 between competitive harm and efficiencies. The Court decided that the Commissioner must present quantitative evidence on competitive harm first, with the merging parties then presenting evidence on efficiency. In the Court's view, the quantification minimizes subjectivity. And the Commissioner must move first to ensure procedural fairness; the parties should know the case they must meet in developing evidence on efficiencies. I argue that procedural fairness is in fact not an issue in s. 96. The subjectivity of qualitative evidence is a potential issue, but is minimized when the parties, not the Commissioner, present a target for the other side to meet in developing s. 96 evidence. The "second-mover advantage" of meeting a quantitative target presented by the other side in a process like merger review should always be assigned to whichever side is more reliant on qualitative evidence. Qualitative evidence fits more easily – and with less subjectivity – into a test of whether a bound is exceeded than into the determination of a numerical estimate.[7] Without question, the Commissioner is more reliant on qualitative evidence such as strategic documents and the testimony of market participants. In the application of s. 96, subjectivity is minimized if the parties, not the Commissioner, establish a quantitative estimate as a target for the other side.

I review briefly the facts of the case and the decisions at the Tribunal, Federal Court of Appeal and Supreme Court in the next section of this paper. Section 3 unpacks the meaning of the new burden on the Commissioner in *Tervita* and develops a general case against a categorical priority of quantitative over qualitative evidence. This section does not rely on detailed economic theory. In section 4, I present, in an economic model, the three parameters determining competitive harm

that are quantifiable in principle. I delineate the challenges in estimating these parameters. In section 5, I criticize the process that the Court favours in the application of section 96, including a two-stage procedure. I then present arguments in favour of an alternative procedure in which the parties, not the Commissioner, first present a quantitative estimate in the balancing test of this section. I conclude this article with a discussion of the implications of *Tervita* for merger policy going forward.

2. The Facts and Decisions in *Tervita*

2.1 The Facts

Tervita Corp. is a supplier in the market for the disposal of hazardous waste generated by oil and gas operations in Northeastern British Columbia. Four permits for the operation of secure landfills for this waste had been issued in Northeastern British Columbia at the time of the Tribunal's decision in this case. Tervita held two of the permits, under which it operated landfills. A third permit was held by an Aboriginal community, which had not yet operated a landfill under the permit. Babkirk Land Services Inc. ("Babkirk") a wholly owned subsidiary of Complete Environmental Inc. ("Complete") held the fourth permit, but was not yet in the market. In short, Tervita was a monopoly supplier in the market for secure landfill services and Babkirk was a potential entrant into the market.

In July 2010, the five investor-owners of Complete (the "Vendors") signed a letter of intent to sell Complete to Tervita, a sale that closed in January 2011. Prior to the closing, the Commissioner informed the parties that she opposed the transaction on the grounds that it was likely to prevent substantial competition in secure landfill services in Northeastern British Columbia. On the theory that Babkirk likely would have entered, absent the merger, the Commissioner asked the Competition Tribunal to order, pursuant to s. 92, that the merger be dissolved or, in the alternative, that Tervita divest itself of Complete or Babkirk.[8]

2.2 The Tribunal's Decision

In *The Commissioner of Competition v CCS Corporation et. al.*,[9] the Tribunal found that the merger was likely to prevent a substantial increase in competition in the relevant market. The Tribunal noted at para. 131 that the parties essentially agreed that the timeframe for considering the "but for" market conditions (i.e. the hypothetical situation in which the merger had not occurred) was the end of July 2010, the month in which the letter of intent between Tervita and the Vendors was signed.

The commencement of the timeframe for assessing the but-for market conditions is important because of the principle adopted by the Tribunal and described more precisely in *Tervita Corporation v Commissioner of Competition*,[10] that prevention of competition for the purposes of s. 92 required that the Babkirk entry to have occurred "within a reasonable period of time."

The Tribunal concluded that as of the end of July 2010, there were two plausible scenarios for the Babkirk site:

- The Vendors would have sold the site to a particular waste company, which would have operated a secure landfill; or
- The Vendors would have operated a bioremediation facility together with a limited sized secure landfill. (para. 132)

The Tribunal decided, on a balance of probabilities, that the Vendors would have taken the second option. But the Tribunal further decided the bioremediation facility, which would have been fully operational by October 2011, would have been unprofitable and it was "unreasonable to suppose that [the Vendors] would have been prepared to operate unprofitably beyond the fall of 2012." (para. 206) The Tribunal concluded that the Babkirk site would, after this business failure, operate as a secure landfill and, no later than the spring of 2013, would have been a "direct and substantial" competitor with Tervita.[11]

The Tribunal therefore found a likely effect of the merger would have been to allow Tervita to maintain its ability to exercise materially greater market power than it would have in the absence of the merger. The Tribunal accepted evidence that disposal fees would have been 10 percent lower in the relevant geographic market without the merger (para. 229(iii)). Hence its decision that the merger was likely to prevent a substantial increase in competition.

In the application of s. 96, the Tribunal noted that under *Superior Propane* the Commissioner had an obligation to demonstrate the magnitude of quantifiable effects. It found that the Commissioner had failed to meet this burden. The Commissioner's expert had estimated a price decrease in the but-for scenario but had initially provided no estimate of the impact on the quantity of sales that this would represent and therefore no estimate of the competitive harm from the merger. The Commissioner's expert offered an estimate of demand elasticity and therefore the impact on quantity of the price effect of the merger; but this was an admittedly rough estimate provided only in a reply report late in the proceedings (two weeks before the hearing). The Tribunal therefore did not attach weight to this estimate.

The Tribunal rejected most of Tervita's claimed efficiencies as not being specific to the merger. The Tribunal weighed the combined qualitative and quantitative efficiency gains against the qualitative and quantitative competitive harm and found that the efficiency gains were not likely to be greater than the competitive harm. In spite of concluding the Commissioner had not met her burden of quantifying the competitive harm, the Tribunal reached a conclusion based on balancing qualitative evidence of harm against quantitative efficiencies. A substantial but not quantified level of competitive harm was not offset by a marginal efficiencies.

2.3 The Federal Court of Appeal Decision

The Federal Court of Appeal found a number of errors in the Tribunal's reasons. But in a fresh assessment of the facts, the Court agreed that the divestiture was necessary to avoid a substantial prevention of competition in the market and that the merger provided "marginal", "negligible" and "insignificant" gains in efficiency. These gains were not significant enough to meet the efficiency defence provided under s. 96. The Court dismissed the appeal. Efficiencies that are negligible, in the Court's view, cannot offset a substantial lessening or prevention of competition.

2.4 The Decision of the Supreme Court of Canada

The Supreme Court disagreed with the Federal Court of Appeal. It allowed Tervita's appeal and set aside the divestiture order.

The Supreme Court decision hinged on the failure of the Commissioner to meet the burden of proof under s. 96 to quantify the magnitude of competitive harm in the merger. The Tribunal and Federal Court of Appeal had both recognized this burden and the Commissioner's failure to meet it, but had decided that negligible efficiencies could not offset substantial, even if unmeasured, prevention of harm.

The Supreme Court took a harder line on the failure of the Commissioner to meet the quantification burden. Under *Tervita*, the Commissioner must not only demonstrate that the merger would involve a substantial anticompetitive effect (in meeting s. 92 conditions), but in doing so, the Commissioner must quantify (for s. 96) those elements of the lessening or prevention of competition that can be quantified. Even where the Commissioner demonstrates a substantial lessening or prevention of competition, and efficiencies are shown to be negligible, the Commissioner's burden of proof in s. 96 is not met unless the quantifiable evidence of anticompetitive effects is quantified.[12]

The interpretation of the quantification burden in *Tervita* depends entirely on the Court's meaning of the terms "quantifiability" and "quantitative." The following paragraph in the decision is key in this respect:

> [100]   The Tribunal should consider all available quantitative and qualitative evidence (*Superior Propane I*, at para. 461; *Superior Propane III*, at para. 335). While quantitative aspects of a merger are those which can be measured and reduced to dollar amounts, qualitative elements of a merger, including in some cases such things as better or worse service or lower or higher quality, may not be measurable as they are dependent on individual preferences in the market (see *Superior Propane I*, at paras. 459-60). Effects that can be quantified should be quantified, even as estimates. If effects are realistically measurable, failure to at least estimate the quantification of those effects will not result in the effects being assessed on a qualitative basis.

3. The Prioritization of Quantitative Evidence in *Tervita*

The Court uses three concepts of quantifiability or quantitative in para. 100, quoted above. The first is that quantitative aspects of the merger are those that can be reduced to dollar amounts. Qualitative aspects of a merger cannot be so reduced. In other words, a parameter is quantifiable if it is measurable *in principle*. The requirement becomes "effects that can be quantified should be quantified, even as estimates." The second concept of quantifiable effects is that the effects be *realistically measurable*, as the result of which the *Tervita* quantifiability burden on the Commissioner is weaker, since parameters that are measurable in principle may not be realistically measurable if adequate data are not available.

A separate distinction drawn in this paragraph and elsewhere in the decision pertains to quantitative versus qualitative *evidence*, rather than to quantifiability of underlying merger parameters or aspects. This is a different distinction because qualitative evidence may be advanced even on quantifiable parameters. For example, evidence in a merger case that there are no functionally close substitutes to a product sold by the merging parties is qualitative evidence on demand elasticity, a quantifiable (in principle) parameter. A buyer from merging parties testifying that he would not change purchase decisions if price rose by 20 percent because of a lack of reasonable alternatives to the merging firms' products, is providing qualitative evidence about a quantifiable parameter.

The lack of clarity in the language of para. 100 is aggravated by the fact that the concluding sentence of the paragraph "... failure to at least

estimate the quantification of those effects will not result in the effects being assessed on a qualitative basis," contradicts the opening sentence, "The Tribunal should consider all available quantitative and qualitative evidence..."

What to make of these various definitions and the meaning of the burden placed on the Commissioner? The first distinction between quantifiable and non-quantifiable market parameters must be dismissed as being unhelpful. All market parameters related to demand, costs and deadweight loss are measurable in principle. To say that service and product quality are not measurable "as they are dependent on individual preferences in the market" is wrong since the average dollar value of quality and cost of quality of a product or service are well-defined, quantitative concepts. If we took the Court's definition of non-quantifiable as "dependent on individual preferences in the market" we would have to categorize output quantity, price and virtually all other variables as non-quantifiable since the market values of all of these variables depend on individual preferences.

The Court's language following this first definition, that "effects that can be quantified should be quantified, even as estimates" reflects a lack of appreciation of the challenges of unbiased estimation even when substantial data are available. The phrase "even as estimates" is indeed suggestive of the definition of an estimate as "approximate judgment (of number, amount, etc.)."[13] The Court's view that an estimate of demand elasticity could have been provided by the Commissioner's expert (a view that will be discussed below) also suggests this definition of "estimate", since an estimate *only under this definition* is always available. An expert may simply be asked to provide his or her overall opinion.

Asking an expert to make a judgment based on his or her review of the evidence would certainly not avoid subjectivity. To be consistent with the Court's reasoning, specifically the Court's desire to avoid subjectivity, "estimate" must refer to an unbiased statistical estimate. But then unbiased statistical estimation requires a host of conditions on available data that simply cannot be presumed *a priori* to hold, as I will explain in the next section of this paper.

The second definition of quantifiable parameters, as those that are reasonably measurable, is sensible and useful. We must, however, recognize that quantifiability in this sense is a matter of degree. A parameter may be highly quantifiable; for example, very precise estimates of the elasticity of demand may be possible in some (rare) cases. At the other extreme, a parameter may be quantifiable only in principle, as in a case where the elasticity of demand cannot be assigned an

econometric estimate. For example, data for meaningful econometric estimates of the demand elasticity may be simply unavailable.

We can think of the degree of quantifiability of a parameter as being indexed by the accuracy with which a parameter can be estimated. A tight confidence interval around an estimate represents a high degree of quantifiability, a large confidence interval represents a parameter that can be estimated only roughly. Economists and statisticians index the accuracy of estimates by the "standard error" of the estimate;[14] a low standard error indicates a tightly estimated parameter, i.e., an estimate that is likely to be accurate.

The fact that measurability or quantifiability in this second definition is a matter of degree creates problems for interpreting *Tervita*. The burden established or at least strengthened in the decision, that all quantifiable parameters must be given at least an estimate, demands that "quantifiable" be a categorical concept. What is the *degree* of quantifiability that triggers the obligation on the part of the Commissioner to provide an estimate of a parameter or the competitive harm from a merger?[15]

Turning the discussion from the issue of quantifiability of parameters to the nature of evidence, the Court creates a hierarchy in the classes of evidence between (a) *quantitative* evidence used to estimate the dead-weight loss and (b) *qualitative* evidence. Unless the quantitative evidence (including, in particular, an estimate of demand elasticity) is supplied to the fullest extent possible, no weight is attached to qualitative evidence.[16] Justice Karakatsanis objects to this hierarchy. She writes:

> Relevant evidence is generally admissible, and the failure to lead the best evidence available goes to weight, not admissibility. Clearly, the evidence will have less probative value without an estimate or quantification. No doubt it would be more difficult for an undetermined anti-competitive effect to outweigh any significant efficiency gains. However, it does not become irrelevant of inadmissible. The statutory language does not require such a result. Nor does the purpose or context of the legislation. (para. 195)

The quantifiability burden placed on the Commissioner in *Tervita* amounts to a constraint on the nature of the evidence to which weight will be accorded. Merger review at the Tribunal works on an adversarial system, as does our entire common law. The very purpose of the adversarial system is to ensure that the most relevant evidence gets before the trier of fact. Qualitative evidence is to varying degrees subjective,

and one of the purposes of the Court imposed the constraint is to minimize subjectivity. But quantitative evidence as I have explained is subject to standard errors. The selection of the best evidence must consider standard errors or potential inaccuracy of quantitative evidence, not just subjectivity of qualitative evidence.

From an economist's perspective, as a matter of optimal decision-making by the Tribunal, both qualitative and quantitative evidence on an aspect of a merger should be considered, even where the aspect must in the decision be assigned a numerical value. Qualitative evidence is weighted according to its relevance, subjectivity, and reliability; quantitative evidence according to its relevance and standard error. Decisions by a trier of fact in an adversarial system that are based on all the evidence elicit more or less efficient incentives by the parties to produce the strongest evidence in the proceeding. Both sides, as well as the trier of fact are aware of the subjectivity and standard errors. If quantitative evidence is valuable to the Commissioner's position, then the Commissioner has the incentive to present the evidence.

The Court in *Tervita* is intervened in the adversarial process underlying merger review by restricting the class of evidence that a party, the Commissioner, must bring. But the Court does not offer any reasoning as to the failure of the mechanism to elicit the right incentives. If the Commissioner chooses to ignore strong, quantitative evidence, then as Justice Karakatsanis said in her dissent, he bears the cost of a reduced likelihood of success. The Court offers no explanation of why it is necessary to constrain the classes of evidence that the Commission may bring.[17]

To summarize this discussion, *Tervita* invokes two concepts of quantifiability of parameters as well as the concept of quantitative evidence. One concept of quantifiability of parameters is not meaningful; the other concept involves quantifiability as a matter of degree – but the key aspect of *Tervita*, the burden on the Commissioner, requires that quantifiability of parameters be categorical. Understanding the meaning of the decision is therefore a challenge.[18] *Tervita* intervenes in the adversarial system of arriving at evidence to put before the trier of fact, without a justification of why such intervention is necessary.

There is, however, a valid point in *Tervita* and *Superior Propane* that we must bear in mind. Consider a typical merger case (one in which the s. 1.1 factors external to the competitive and efficiency impacts of the merger are unimportant). The question of which is greater, the competitive harm from the merger or the efficiencies, is ultimately a comparison of numerical values. Efficiency evidence is almost invariably brought in the form of quantitative estimates in practice, and the

court after deciding which of the alleged efficiencies are valid, arrives at a number, say, 100,000 dollars per year. The Tribunal therefore must decide on the basis of all the evidence on competitive effects, quantitative and qualitative, whether these effects amount to greater than 100,000 dollars per year or not.

Now, courts often are forced to translate evidence on qualitative factors into numbers. In tort cases, for example, victims experiencing pain and suffering are made whole with financial compensation. But in merger cases, the parameters that enter into the calculation of competitive harm are numerical, and therefore measurable in principle, even if the parameters cannot always be estimated with a reasonable degree of accuracy. The ultimate decision must translate all evidence into a number, so it makes sense for the Commissioner to develop and present the evidence to the extent possible in a quantitative form (even though it does not make sense for the law to constrain the Commissioner's development and presentation of evidence).

In *Tervita*, the Commissioner's expert did estimate the critical parameter, the demand elasticity. But the expert provided only a rough estimate – and this was late in the proceeding, in his reply report. The Tribunal placed no weight on the estimate. Setting aside for now the procedural fairness issues related to the timing of the estimate, from the perspective of one not privy to the details of the case, it is highly likely that only a rough estimate of demand elasticity was possible with available data. No evidence is referred to in *Tervita* to support the Court's assumption that an accurate estimation was possible. This is consistent with the evident failure of the Court to appreciate standard errors and the challenges in accurate estimation generally.

In a coherent framework for merger review, the Commissioner must be allowed to justify his relative reliance on quantitative evidence and qualitative evidence. Notwithstanding the fact the anti-competitive effects must ultimately be assigned a numerical value or range in the balancing test, the Commissioner should be free to rely upon both types of evidence. I discuss a framework allowing this in section 5 of this article.

I have offered in this section a general, high-level discussion of the approach in *Tervita* to the balancing test in s. 96. More depth, and discussion of potential frameworks requires detailed economic analysis and terminology, which I review in the next section of this paper.

Figure 1 - Parameter estimates needed for DWL
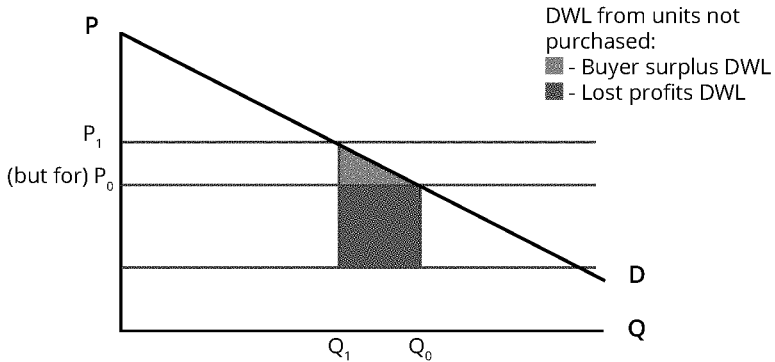
Need 3 parameters:
- ΔP
- Elasticity of demand, η
- Marginal cost

4. Quantifying a Substantial Lessening or Prevention of Competition: the Economic Principles

I present in this section a brief review of the estimation of competitive harm from a merger. I delineate the parameters that must be estimated and then review the challenges in their estimation or quantification. In doing so, I adopt four simplifying assumptions. First I assume the Tribunal adopts the total surplus standard; the extension to the more general balancing weights standard of *Superior Propane* is straightforward.[19] Second, I assume the efficiencies take the form of savings in fixed costs so that we can focus on the estimation of the deadweight loss from a merger. Third, I assume the market is a monopoly if the merger is allowed, as in a prevent case like *Tervita* where there is a single supplier. Finally, I set aside initially the possibility of price discrimination, under which different buyers pay different prices. Since the evidence in *Tervita* showed that "tipping fees" (prices) charged to buyers depended on buyers location (as economic theory would predict for a product with a high weight-to-value ratio such as contaminated soil),[20] I consider the effects of relaxing the last assumption.

A. Deadweight Loss : the Parameters to Estimate

The deadweight loss ("DWL") from a merger that raises price (or from anything else that raises price) is the loss in total surplus *on all purchases that are deterred from the market by the price increase*. For example, suppose that sales in the market are reduced from 1 million units of a

product per year to 950,000 units as a result of a price increase due to a merger. The competitive harm from the merger is the dollar value of the benefits to society that the 50,000 units were generating in the pre-merger market. If the 50,000 units cost 1 dollar each to produce, but were worth 3 dollars each on average to purchasers, then the loss in surplus – the competitive harm from the merger – is (3 – 1)*50,000 = 100,000 dollars. This is the surplus of social value over cost that is lost as a result of the merger. This surplus would be captured by society but for the merger, and represents the opportunity cost of the merger that must be balanced against any efficiencies such as reduced fixed costs.

The deadweight loss, or loss in total surplus, is depicted in Figure 1 for the case of a merger to monopoly. This figure contains a demand curve, and a flat curve representing the constant marginal cost of production, c, which is unaffected by the merger. The pre-merger price is p_0; the post-merger price is p_1. The loss is the sum of two parts: (a) the DWL in consumer surplus (or buyer surplus) on the discouraged units, which is the triangular area under the demand curve above the price;[21] and, (b) the DWL in profits on these units, which is the rectangle under the pre demand price and above marginal cost, for the unit lost.[22]

In the original and classic article on deadweight loss and efficiency tradeoffs, Oliver Williamson assumed a perfectly competitive market in the but-for case, *i.e.*, the market without the merger.[23] Prices equal marginal cost in the but-for case. Unfortunately, this has led observers to focus on the triangle rather than the rectangle of lost profits. In *Superior Propane*, for example, the Commissioner ignored the loss in profits (the rectangle), as Margaret Sanderson first pointed out.[24]

It is important to note that the rectangle of lost profits that is sometimes overlooked is likely to be many times the size of the lost consumer surplus. As Ross and Winter pointed out, the loss in profits was approximately 8 times the consumer surplus loss in *Superior Propane*, and had this been recognized in the Commissioner's evidence, the Commissioner would likely have been successful.[25] Let the market elasticity of demand be e (e.g., e is the elasticity at the pre-merger price in a prevent case) and the *percentage* higher price from the merger be Δp. The DWL in consumer surplus from the units is approximated, as a proportion of revenue, by

$$(1/2)e(\Delta p)^2 \qquad\qquad\qquad (1)$$

The DWL in profits as a proportion of revenue, on the other hand, is approximated by

$$[(p-c)\,/\,p]\cdot e\cdot \Delta p \qquad\qquad\qquad (2)[26]$$

where p is the monopoly price (i.e., the price when the merger is allowed). The lost consumer surplus, because it depends on the square of Δp, is a "second-order effect" in mathematical terminology and is likely to be very small compared to the loss in profits. For example, if, p = 2c, e = 1.0 and Δp = 10%, then the lost consumer surplus is 0.5 percent, whereas the lost profits are 5 percent, ten times as large. This is why it is critical not to ignore the lost profits. Under the total surplus standard, each dollar of the DWL in profits count as much as a dollar of DWL in consumer surplus.

The Commissioner's task under *Tervita* is to quantify, if at all possible, the DWL. The merging parties bring quantitative evidence of efficiency and the Commissioner must bring quantitative evidence of competitive harm. In a merger to monopoly, or preservation of monopoly in a prevent case, equations (1) and (2) show that the parameters that we must estimate to arrive at an estimate of the DWL are the following

- The **price impact** of the merger, Δp.
- The **elasticity of demand, e**
- The **marginal cost, c.**

Note that merger to monopoly is a very simple case. In the more general case in which there are competitors in the market in addition to the merging parties, additional parameters would be needed.[27] For understanding *Tervita*, the merger to monopoly model is enough, but *Tervita* and *Superior Propane* arguably present poor fact patterns for refining merger law in Canada because the cases are so simple.

I have set aside in the above discussion the possibility that buyers in different regions can be charged different prices. Where price discrimi-nation is possible, the analysis must be replicated at each location where suppliers can set a distinct price. The marginal cost would usually not differ across regions (where buyers are providing the transportation) and it might be assumed that the elasticity of demand was common across regions as well. But the first parameter, the price impact, would vary, as would the pre-merger price, p_0. A merger in a market with price discrimination is likely to involve lower DWL since a monopolist would set lower prices for low willingness-to-pay buyers. In a prevent case, these buyers would be in the market, both with the merger and in the but-for market; they would not contribute to DWL.

B. Estimating the parameters

Having set out the three parameters needed for a quantitative

estimate of the DWL, let me turn to the challenges of estimating these parameters.

The first parameter is the price difference between the but-for market and the post-merger market. In *Tervita* the predicted price difference accepted by the Tribunal was 10 percent, based on evidence from the relationship between price paid and distance to waste disposal sites. The full analysis is not contained in the public version of the report of the Commissioner's expert, but based on regression analysis of price versus distance to nearest competitor from a particular market or set of markets.

Sometimes, the price impact of a merger can be estimated by the price impact of similar mergers. Mergers in the U.S. banking industry are an example. Without a set of comparison markets, a prediction of a price change as a result of a merger (or that would result with entry in the absence of the merger, in a prevent case) would require full esti- mation of the demand functions of the firms in the market, possibly estimation of cost functions as well, and a full simulation of the market.

The second parameter is the demand elasticity. Econometric esti- mation of demand functions is usually necessary to estimate demand elasticity, unless one has, independently of full demand estimation, estimates of the price impact of the merger and the quantity impact. Estimation of demand functions is also often necessary for estimation or prediction of the first parameter, the price change.

To estimate demand, we have to solve many problems. These problems include

- The **adequacy of data**, in a time series or (as in *Superior Propane*) a cross section;
- The **identification problem**: to estimate demand we cannot just estimate the relationship between observed prices and quantities. This would work only if we knew that demand were perfectly stable, and shifts only in supply across time or across the sample were causing price and quantity movements. In general, prices and quantities are caused by shifts in demand and supply; just having price and quantity data is not enough. There are several methods that econometricians use to try to resolve the identifi- cation problem, but these require assumptions that are unlikely to hold exactly.[28] Michael Ward, the expert in *Superior Propane* behind the 8 percent price increase prediction, assumed that demand was stable across 46 separate geographic markets. This is not an entirely realistic assumption, although it is commonly

made. Once in a while, demand can be estimated with high confidence that the identification problem has been solved.[29] But this is rare.

The identification problem is often resolved by *assuming* a stationary demand relationship over time or the cross-section where in fact the variation in prices and quantities is generated by variation in demand and supply. The bias that results is often an understatement of the demand elasticity, i.e. a steeper demand curve. If the estimate of the price impact of the merger is derived from independent evidence (as in *Tervita*) the effect in this case is then a downward bias in the estimate of the DWL. Too many mergers are allowed. If, however, the price impact is determined using the estimated demand elasticity (via full merger analysis or application of the Lerner equation[30]) then the DWL is overestimated and too many mergers are remedied or prohibited.[31]

• The **uncertainty in the choice of specification**, which may include the functional form (e.g. linear versus log-linear) as well as which other variables to include (e.g. income) as affecting demand. We often have to assume some speed of response of demand to price (again, as in *Superior Propane*). These assumptions must be assumed *a priori*, in general; nothing in the statistical results indicates how accurate the assumptions are.

• The requirement that the specified relationship be **stationary** across the sample.

All of these requirements mean that in many cases, it is extremely difficult to get an accurate estimate of demand, and therefore difficult to get an accurate quantitative estimate of the DWL associated with a merger. One possible response is that the statistics or econometrics can produce a range of estimates. But ranges of estimates, and closely associated "standard errors" of estimates are conditioned upon the specification of the demand model being correct. The confidence intervals are conditioned upon the same assumption. The fact that specification is virtually always wrong to some degree, meaning the estimates of standard error and confidence intervals almost always overstate, sometimes substantially so, the confidence that we can place in quantitative evidence.

The third parameter is marginal cost. Marginal cost may be derived from financial statements. A challenge here, however, is the difference between accounting costs and economic costs, or opportunity costs. For example, if the supply of waste disposal involves the use of a limited number of waste disposal sites of limited capacity, without the prospect of additional sites opening at low cost, then the opportunity cost of

disposing of waste today includes the inability to use the same capacity in the future. Economists refer to this opportunity cost as "Hotelling rents."[32] Hotelling rents are part of the opportunity cost of using any exhaustible resource, including waste disposal capacity. On the other hand, if evidence shows that investment is firm specific rather than specific to disposal sites, and if more sites are expected to be licensed in the future, then Hotelling rents may be unimportant. Another challenge is to identify which accounting costs are marginal opportunity costs (an issue that is particular difficult in airline merger cases).

With these challenges in arriving at accurate estimates of parameters necessary to estimate DWL, what is the efficient means of putting the best evidence before the trier of facts with respect to a s. 96 efficiencies defence?

I offer two remarks in response to this question. First, if estimates or bounds on DWL can be determined with the evidence offered by the respondents or the respondents' experts in a merger case, then the Commissioner or his expert should use this evidence. The respondents are the parties most familiar with their own cost parameters and market conditions. In addition, the evidence that the parties bring to the case is unlikely to be biased against the merger; the adversarial system allows the parties to choose which evidence to present. Testimony by the Commissioner's expert that uses the respondents' own testimony to derive a lower bound on the DWL that exceeds allowed efficiencies should be convincing.

This is exactly what Michael Baye, the Commissioner's expert, did in *Tervita*.[33] Baye used the parties' experts' projected price and quantity reactions to the merger in a particular region to infer demand elasticity for that region. Given an estimate of marginal cost from the parties' expert, Baye was able to compute a minimum value for the DWL, which exceeded the efficiencies that the Commissioner had argued, in a different report, were legitimate merger-specific efficiencies.

Yet the Supreme Court agreed with the Tribunal that this quantitative analysis did not satisfy the Commissioner's burden of quantifying evidence of competitive harm in part because the analysis was "rough", and was presented only in a reply report.

This is where the Court's wholly optimistic view of quantifiable evidence is clearest. The Court assumed, without citing any basis, that data must have been available to arrive at estimates of the parameters underlying the DWL that would be more reliable than the simple inferences drawn from the respondents' evidence in the reply report of the

Commissioner's expert. Somehow the data existed to provide at least an estimate.

Second, the process must recognize that the evidence of competitive harm in s. 96 will be a mix of quantitative and qualitative evidence, just as in s. 92. The entire set of evidence, both quantitative and qualitative, must ultimately be translated into a numerical determination of whether the DWL is greater than or less than efficiencies. Since efficiencies are quantified in merger cases, this comes down to the determination of whether the DWL is greater than or less than a particular number, the allowed efficiencies.

The subjectivity in the use of qualitative evidence is minimized if analysis is used to determine *bounds* on the non-quantified or non-estimated parameters, using economic theory, and those parameters than can be estimated. For example, instead of translating qualitative evidence such as the existence or non-existence of close substitutes into a specific estimate of the demand elasticity, one may be able to derive from the evidence on efficiencies and quantified parameters underlying DWL how large the other parameters must be for the DWL to be greater than efficiencies. Qualitative evidence can then be brought to bear on the relative size of the DWL and the efficiencies, instead of being translated into a specific number.

Let me illustrate this approach with a numerical example. Suppose we are dealing with a merger that would prevent competition. A monopolist serves the pre-merger market. The annual revenue of the monopoly is 1 million dollars per year, and the allowed efficiencies are 25 thousand dollars per year. This would represent small efficiencies, of 2.5 percent of revenue per year. Recall that in *Tervita*, efficiencies were negligible (perhaps even smaller than 2.5 percent, although this is not part of record).

Suppose, to complete the example, that marginal costs were estimated to be 50% of price and the price effect of the merger were to maintain prices 10 percent higher. Then using equations (1) and (2), it is straightforward to show that DWL will exceed efficiencies of 2.5% of revenue if the elasticity of demand exceeds 0.45. Using the simple principle that a monopolist always sets price where the elasticity of demand exceeds 1.0, it is obvious that the condition is met in this numerical example.[34][35] In other, more difficult, cases one might end up with a bound on elasticity of, say, 1.5 that must be exceeded for efficiencies to be non-offsetting. The qualitative evidence on demand, including patterns of substitution, reasonable functional interchangeability of products, and testimony from buyers can then be used to determine whether or not the inequality is likely met.

A simple necessary condition for the efficiency defence: Somewhat surprisingly, given evidence on the price effect and efficiencies, one can derive a simple necessary condition for the efficiencies defence of s. 96 to be met in a prevent case. Let the efficiencies as a fraction of revenue be denoted by f. Adding (1) and (2), we have the following condition under which DWL will exceed efficiencies:

$$(1/2)e(\Delta p)2+[(p-c)/p]\cdot e\cdot\Delta p \geq f \qquad\qquad (3)$$

The Lerner equation for optimal pricing by a monopoly (recalling that p is the monopoly price, i.e. the initial price in a prevent case with an incumbent monopoly) is

$$[(p-c)/p] = 1/e$$

Substituting this into the inequality (3), we see that the elasticity of demand cancels out in the second term of (3). This yields the following as a sufficient condition for DWL to exceed efficiencies in the case of a merger to monopoly:

$$\Delta p \geq f \qquad\qquad (4)[36]$$

In words, *a necessary condition for the efficiencies defence in s. 96 in a prevent case is that efficiencies, as a percentage of revenue, exceed the percentage increase in price from the merger.*[37] The condition is necessary, and close to sufficient because the term that is ignored in the condition is only of second order.[38]

From the description of the efficiencies by the Federal Court of Appeal as "insignificant," "marginal" and "negligible", and the evidence accepted that the average price impact of the merger was approximately 10 percent, we can infer that the condition (4) is easily met in *Tervita*.

5. Procedures in the Application of Section 96

The Supreme Court in *Tervita* suggested a two-stage approach to the efficiencies defence in s. 96. I assess this approach and then discuss an alternative procedure that would meet the Courts' goal of minimizing subjectivity in the use of qualitative evidence without invoking unrealistic assumptions as to the power of quantitative evidence.

The Court stated:

> [147] [T]he balancing test under s. 96 may be framed as a two-step inquiry. First, the quantitative efficiencies of the merger at issue should be compared against the quantitative anti-competitive effects (the "greater than" prong of the s. 96 inquiry). Where the

quantitative anti-competitive effects outweigh the quantitative efficiencies, this step will in most cases be dispositive, and the defence will not apply. There may be unusual situations in which there are relatively few quantified efficiencies, yet where truly significant qualitative efficiencies would support the application of the defence. However, such cases would likely be rare in view of the emphasis of the analysis on objectivity and the impermissibility of asserting unquantified-but-quantifiable efficiencies as qualitative efficiencies. Qualitative considerations must next be weighed. Under the second step, the qualitative efficiencies should be balanced against the qualitative anti-competitive effects, and a final determination must be made as to whether the total efficiencies offset the total anti-competitive effects of the merger at issue (the "offset" prong of the inquiry).

Note that the first part of the second step, "qualitative efficiencies should be balanced against the qualitative anti-competitive effects" adds nothing to the inquiry. If the evidence on harm is substantially from qualitative evidence and only a tiny part of the weight on efficiencies is from qualitative evidence, then the first stage calls for balancing the substantial qualitative harm evidence against the tiny qualitative efficiencies evidence. This balancing is not meaningful. We can ignore that qualitative-versus-qualitative balancing exercise, I think, as simply unintended.

The effect of the two-stage test depends on the extent to which the efficiency evidence is qualitative. Consider first the possibility that some efficiency evidence is qualitative. In this case, as Roger Ware has pointed out to me, the test for mergers under the procedure is over-inclusive in the sense that too many mergers are blocked. If quantified evidence on efficiencies is less than quantified evidence on competitive harm, then the respondents lose, even if the total efficiencies, including qualitative effects, are greater.[39] We do not get to the second step of the test where the totality of the evidence on each side is assessed.

Consider next the possibility that all efficiency evidence is quantitative. This is the usual case since in practice merger efficiencies are quantified. Savings in resources such as labour, or the efficient resolution of overlapping distribution systems by the merging parties (as in *Superior Propane*) are quantified as a matter of business planning in the course of the merger. In addition, in practice the burden on parties to measure efficiencies is already strong in merger cases. In this case of entirely quantitative efficiency evidence, the first stage of the two-step test is simply redundant, as Justice Karakatsanis observes in her dissent. Moving directly to the second stage of comparing all evidence

on both sides leads to the same result as employing the full two-stage test.

In summary, the logic of the two-stage structure means that it is at best redundant and, at worst, leads to a merger process that is over-inclusive in blocking mergers that should be allowed under s. 96. The latter possibility is likely to be unusual, so the two-step test can be viewed as essentially redundant.

Beyond its proposed two-stage approach, the Court unambiguously sets out a procedural requirement on merger review involving efficiencies. The Commissioner must first set out a quantitative estimate of anti-competitive effects, in anticipation of an efficiencies defence.[40] The merging parties then have a target to meet in developing their efficiencies defence. The Court justifies this requirement not only on the basis of minimizing subjectivity, as we have discussed, but also on grounds of procedural fairness:

> [131]…The difficulty with assigning non-quantified quantifiable effects a weight of 'undetermined' is that it places the merging parties in the impossible position of having to demonstrate that the efficiency gains exceed and offset an amount that is undetermined. Under this approach, to prove the remaining elements of the defence on a balance of probabilities becomes an unfair exercise as the merging parties do not know the case they have to meet.

The procedural fairness argument is unconvincing. The parties in a s. 96 defence simply delineate the complete set of efficiencies that they can defend. In fact, they generally delineate synergies as part of the business decision to merge prior to a merger even being challenged under the *Competition Act*. The merging parties are not in the position of a high jumper who must know how high the bar is, and who could legitimately object if the bar were hidden. The parties' strategy of delineating *all* of the efficiencies that they can defend is standard, completely independent of whether or not the Commissioner brings a specific estimate of the deadweight loss. There is no basis in procedural fairness for requiring the Commissioner to quantify the anticompetitive effects of a merger.

The Commissioner, not the parties, should have the second-mover advantage of knowing the case that he has to meet. Once the parties have presented the efficiencies evidence, the Commissioner can challenge individual efficiencies (as not being merger-specific, for example) and with his revised estimate of efficiencies arrive at a bar that must be met to prevail in the s. 96 balancing test.

Why should the Commissioner, rather than the parties, have the advantage of having a target to meet? The issue is which side must rely more on qualitative evidence. The Commissioner's evidence on competitive harm, unlike parties' evidence on efficiencies, inevitably involves qualitative evidence; quantitative evidence on its own is insufficient for reasons that we have discussed. Qualitative evidence is well suited to the task of determining whether a bar has been exceeded, but not to the task of identifying a numerical estimate.

It is much easier to determine whether demand elasticity exceeds a value of 1.3 than it is to provide a precise estimate of demand elasticity. Buyers can be asked whether they would respond significantly to a 10 percent price increase in terms of switching to available alternatives, for example. Their responses, and qualitative evidence on available substitutes in the market generally, will translate more easily into evidence that a particular limit on elasticities has been exceeded than into a numerical estimate of demand elasticity. A point estimate of demand elasticity would require buyers to identify precisely how high prices must rise (in a substantial lessening case) for them to respond, as well as the degree to which they respond. This evidence, and more generally the translation of qualitative evidence into a point estimate, would involve excessive subjectivity.

In summary, the reliance on subjective evidence in the merger would be minimized by having the merging parties, not the Commissioner, provide quantitative evidence in the evaluation of the s. 96 balancing exercise of competitive harm versus efficiencies. Assigning the second-mover advantage to the side that must rely most heavily on qualitative evidence minimizes subjectivity. In an efficiency defence, this is clearly the Commissioner, not the merging parties.

6. Conclusion

In reacting to *Tervita*, the Commissioner of Competition has stated

"I know that most people already have a natural tendency to see economists as the rock stars of competition law enforcement — but I'm still pleased that this ruling has clearly made that the only possible point of view" (John Pecman, Commissioner of Competition, Feb 17 2015)

Surely, the only possible view even before *Tervita* was that economists are the rock stars of competition law enforcement. Apart from this quibble, I would agree that *Tervita* can only solidify the central role of economists in competition policy. The prediction of a greater role follows from the case for two reasons. First, the law now demands

greater quantification of evidence. Analysis of quantitative data is the main task of economists in competition cases.

Second, and more ironically, the limitations of quantitative economic analysis point to the greater need for economists. The burden of the Commissioner to quantify evidence may well be relaxed if the Commissioner can present evidence and argument as to the limitations of the empirical evidence available.[41] Given the wide range of possible limitations, expert opinion will be required to assess the weight that should be placed on this evidence. It takes an economist to understand the limits of economic analysis.

Endnotes

[1] *Tervita Corp v Canada (Commissioner of Competition)* 2015 SCC 3 [*Tervita*].

[2] RSC 1985, c C-34.

[3] *Canada (Commissioner of Competition) v Superior Propane Inc (CA)*, 2003 FCA 53, [2003] 3 FC 52 [*Superior Propane*].

[4] Justice Richard Posner characterized the role of the economists in the Antitrust Division of the U.S. Department of Justice in 1971 as "handmaidens to the lawyers, and rather neglected ones at that" (Richard A. Posner, "A Program for the Antitrust Division" (1971) U Chicago L Rev 532.

[5] *Ryanair Holdings plc v European Commission* [2010] ECR II-3457 ("*Ryanair*").

[6] "The assertion that the 'non-technical [qualitative] evidence' cannot be taken into account unless it is supported by 'technical [quantitative] evidence' cannot be upheld. There is no need to establish such a hierarchy. It is the Commission's task to make an overall assessment of what is shown by the set of indicative factors used to evaluate the competitive situation. It is possible, in that regard, for certain items of evidence to be prioritized and other evidence to be discounted." *Ibid* at para 136.

[7] Readers familiar with Canadian competition law will recognize the parallel behind this logic and the adoption of the "balancing-weights test" by the Tribunal in *Superior Propane*. In the balancing weights test, the Tribunal first decides on the basis of evidence the weight that must be placed on consumer surplus relative to profit that would render a merger marginal in terms of the considerations of competitive harm versus efficiencies. Then it decides on the basis of additional evidence (including the wealth levels of buyers) whether there is justification to place more than this necessary weight on consumer surplus. Subjectivity is minimized in this approach because the Tribunal need not arrive at a precise set of weights.

[8] An unusual aspect of this prevent case is that the intent of the owners of

Complete, prior to being approached by a prospective purchaser of the company and then seeking further purchasers, was not simply to have Babkirk enter the market for landfill services. The Vendors had instead intended to operate the Babkirk site as a bioremediation facility that would treat contaminated soil using microorganisms, and to operate the bioremediation site in conjunction with a secure landfill facility, which would store hazardous waste not amenable to bioremediation.

[9] *The Commissioner of Competition v CCS Corporation et al*, 2012 Comp Trib 14.

[10] *Tervita Corporation v Commissioner of Competition*, 2013 FCA 28.

[11] This article is about *Tervita* and section 96 of the *Competition Act*, but I cannot resist a comment on the section 92 aspects of the decision. The Tribunal's decision that the merger prevented competition hinged on placing their own judgment, that Babkirk's attempt at bioremediation would fail, ahead of the business judgment of Babkirk owners. Babkirk's owners, not the Tribunal, had money at stake in the bioremediation investment and were experts in the market. The Tribunal's decision in the application section 92 is therefore unsupported. On the basis of this observation and my discussion in this article of the section 96 aspects of the Supreme Court's decision, I find it likely that the Court made the right decision in *Tervita* but for the wrong reasons. The important aspect of the decision, however, is in the analysis required for section 96 review, not in whether this (very small) merger was decided correctly.

[12] I focus in this paper on 3b in para 33 of *Tervita*: "What is the proper approach to the requirement that efficiency gains be greater than and offset the anti-competitive effects?" Another section 96 issue is raised in question 3.a. of para 33: "Can order implementation efficiencies be included as efficiency gains in the balancing analysis?," which I do not discuss.

[13] *Oxford Concise Dictionary*.

[14] A standard error is an index of the statistical accuracy of an estimate, equal to the standard deviation of the theoretical distribution of a large population of such estimates. The standard error underlies the construction of a confidence interval.

[15] The Court appears to suggest at para 147 the possibility that the Commissioner, in lieu of offering an estimate of an anticompetitive aspect of the merger, can explain why an estimate is not possible: "For the Tribunal to give qualitative elements weight in the analysis, they must be supported by the evidence and the reasoning for the reliance on the qualitative aspects must be clearly articulated."

[16] *Tervita, supra* note 1 at 137: "In this case, the Commissioner failed to meet her burden to quantify the quantifiable anti-competitive effects. As a result, the Tribunal should have assigned zero weight to the quantifiable anti-competitive effects."

[17] I do not mean to suggest that as a matter of economic theory, the adversarial process always provides incentives for the ideal set of evidence. A recent contribution to the economics literature shows that the issue is complex (Kamenica, Emir, and Matthew Gentzkow. "Bayesian Persuasion" (2011) 101:6 American Economic Review 2590-2615). But intervention in the adversarial process, like intervention in a market, requires a theory of mechanism failure.

[18] It may be tempting to interpret *Tervita* as stating that the Commissioner must do the best he can in quantifying parameters, i.e. in coming up with estimates. Unfortunately, there is no methodology in economics or statistics generally for arriving at the best possible estimate for a given set of data. This is not a coherent interpretation. This is discussed further in section 4.

[19] I also set aside Section 1.1 considerations such as promoting exports by Canadian firms.

[20] See for example, the expert reply report of Professor Michael Baye, paras. 7 and 8.

[21] The most important property of a demand curve is that it represents not only the quantity that would be purchased at any given price but also, the marginal social value of a unit of the product at a given quantity. Taking the area under the demand curve therefore gives a change in social value.

[22] There is a shift from buyers to sellers in the gains on the inframarginal units sold before and after the merger, but under the total surplus standard this is irrelevant.

[23] Oliver E Williamson, "Economies as an Antitrust Defence: The Welfare Tradeoffs" (Mar. 1968) 58:1 American Economic Review 18-36.

[24] Margaret Sanderson, "Competition Tribunal's Redetermination Decision in Superior Propane: continued Lessons on the Value of the Total Surplus Standard" (Spring/Summer 2002) 21:1 Can Competition Rec.

[25] Ross, Tom, Winter, RA, "The Efficiency Defence in Merger Law: Economic Foundations and Recent Canadian Developments" (2005) 72 Antitrust L J 471-504.

[26] It is useful to outline the basis for equations (1) and (2). Let dp represent the change in price in dollars; Δp represents the change as a proportion of revenue. $\Delta p = dp/p$, where p is the price at the pre-merger monopoly. Similarly dq is the change in quantity in units and $\Delta q = dq/q$. Then the DWL in consumer surplus as a proportion of revenue is $(1/2)*dp*dq / pq$. Using $e = (dq/dp)(p/q)$ and $\Delta p = dp/p$, yields equation (1). The DWL in profits equals $(p - c) dq$. Using the expression for e and the expressions for Δp and Δq yields equation (2).

[27] These additional parameters would include costs of the firms outside the pair of merging parties as well as demand parameters.

[28] One method is to find a variable, such as an input price, that is highly correlated with supply but independent of demand. Then one can use the variable effectively to shift the supply curve in a statistical sense, so that the prices and quantities trace out the demand curve. This is referred to as an instrumental variable approach to solving the identification problem.

[29] An example is where a good instrument for supply, such as input prices, is available for estimation using the instrumental variables approach.

[30] The Lerner equation states that a firm maximizes profit by setting the markup, $(p - c)/p$, equal to the inverse of the demand elasticity.

[31] With price projected via demand elasticity and cost projections, there are two effects. One is an upwards bias in the price impact of the merger estimated from the demand elasticity and costs. (The less elastic the demand, the greater the price impact of the merger.) This biases the DWL upwards. The second effect works in the opposite direction; as explained, conditional upon the predicted price increase, a downwards bias in the demand elasticity.

The first effect dominates as Roger Ware has shown (Roger Ware, "Is Competition Law 'Beyond the Ken of Judges'?" (2001) 20:3 Can Competition Rec).

[32] From the classic paper: Hotelling H. "The economics of exhaustible resources" (1931) 39 Journal of Political Economy 137–75.

[33] Reply report of Michael Baye in *Tervita*, paras 10 and 12.

[34] A monopolist always sets price where elasticity, e, exceeds 1.0 because at any price where e < 1.0 a 1% increase in price would have an impact on quantity of less than a 1% drop. Revenue would increase and, because costs would not increase, profits would increase. Such a price could not be optimal.

[35] A qualification to this method is that we need to assume that the price that the single supplier in the market sets is actually the monopoly price, rather than (for example) a price set at a lower level to discourage entry or compete against insignificant but positive competition. The underlying issue is that the textbook definition of a monopolist, which allows us to identify the supplier's elasticity with the market elasticity of demand, is not the same as the competition policy definition, a single supplier in a relevant market.

[36] This bound can be made slightly tighter by including the first term of (3) along with the principle that e > 1, in cases (like *Tervita*) where there is evidence on Δp.

[37] Note that this proposition is developed for prevent cases with a pre-existing monopoly, rather than competition lessening cases. In both types of cases, the market elasticity of demand enters the determination of deadweight loss. In prevent cases, this elasticity is also the elasticity of demand of the pre-existing monopoly and may be more easily estimated than in lessening cases. Note that the proposition is based on first-order approximations and will be valid for mergers with small price changes, such as those with price changes in the order of 8 to 10 percent.

[38] In the case of price discrimination in which there are a number of discrete submarkets in which different prices can be set, the expression involves a weighted average of percentage changes in price. It is also sufficient for the efficiency defence to fail that the inequality (4) hold in one particular submarket.

[39] The two-step structure essentially imposes a quantifiability condition on efficiencies.

[40] After *Tervita*, an efficiencies defence is almost inevitable.

[41] This is the practice in European competition law, following *Ryanair*. In *Ryanair*, the General Court stated with approval that the European Commission had carefully examined the quantitative evidence, and had explained the limitations of econometric studies in its evidence as well as its reluctance to draw firm conclusions from them. See Ioannis Lianos & Christos Genakos, "Econometric Evidence in EU Competition Law: an Empirical and Theoretical Analysis" in Ioannis Lianos & Damien Geradin, eds, *Handbook on European Competition Law* (Edward Elgar Publishing, 2013) at chapter 1.