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Competition Policy in Small Distant Open Economies: Some Lessons from the Economics Literature

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Competition Policy in Small Distant Open Economies: Some Lessons from the Economics Literature

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Abstract

New Zealand is a small open economy that is remote from all major markets. The smallness and remoteness of New Zealand combine to imply that this country has, at least quantitatively, distinctive features for the regulation of economic activity by competition law. The isolation and small size of the economy mean that typically all but exporting firms are small as judged on a world scale, and that domestic markets are small and generally highly concentrated. This paper reviews the economic literature on the implications of an economy's size and isolation for competition law.

The literature suggests that principles underlying competition law do not change for small economies, but that the application of competition law should be different. In small economies, low regulatory and tax barriers to trade dominate the importance of competition law for good economic performance of domestic markets. In these economies, competition law should focus on economic benefit/detriment evaluations of mergers and trade practices rather than rules of thumb of the sort based on measures of market structure and indicators of competition, or those aimed at prohibiting particular practices *per se*. Producers' surplus should not be de-emphasised in the calculation of benefits and detriments in small economies; particularly for activities that relate in any way to (potential) export activity. For any economy, particularly in the presence of competition, cooperation enhances economic performance in specific circumstances. In small economies cooperation can be particularly efficient—for example, in achieving scale and thereby export performance—although it may entail interaction among a large fraction of players in an industry. The approach that the literature suggests to the application of competition law in small economies places relatively heavy weight on dynamic efficiency as the criterion for competition law design and enforcement. It is squarely in accord with recommendations in the literature on desirable competition law for the so-called new economy.

JEL CLASSIFICATION K21 - Antitrust Law
L40 - Antitrust Policy – General
L50 - Regulation and Industrial Policy – General

KEYWORDS Small; Isolated; Economy; Antitrust; New Zealand; Producer Surplus: Consumer Surplus; Competition Law; Economic Benefit; Economic Detriment; Rule of Reason

Table of Contents

List of Tables

List of Figures

Competition Policy in Small Distant Open Economies: Some Lessons from the Economics Literature

1 Introduction

The purpose of this paper is to examine whether there is a case for adjustments to the standard competition policy approach in order to deal with the challenges posed by the location and relatively small size of the New Zealand economy.

The economic precepts underlying the Commerce Act 1986 were in substance taken from the Australian Trade Practices Act 1974, which in turn drew heavily (but not exclusively) on United States anti-trust law. But the United States is an economy of some 300 million people; by contrast, New Zealand is an economy of 3.8 million people: about two thirds the population of Sydney. Are concepts developed in the context of a large economy such as that of the United States, or even Australia, applicable without modification in a small isolated economy such as New Zealand? Certain country-specific characteristics—for example, population and geographic isolation—are exogenous to the operation of competition law and regulation, but others—for example, market structure and firm performance—are much less so, being moulded to a degree by these legal constraints as well as by the country's given features. Thus various economy characteristics will variously reflect and determine its market structures.

New Zealand is an open economy by any standard measure and its export and foreign procurement markets are of relevance to its economic performance and to the conduct of domestic competition law. Under the Commerce Act 1986 and its subsequent amendments, competition law is defined with respect to New Zealand markets and not with respect to New Zealand (as opposed to foreign) entities or consumers. Further, the openness of the economy is important for the opportunities it presents industries for procurement and for exports and the competition that industries face. These factors may be relevant to effective competition law.

That New Zealand is remote is not news. If one looks at the globe, it is obvious that some countries are close to potential trading partners (eg, Germany) while other countries are in very remote locations (eg, New Zealand). Similarly, it is obvious that in some countries economic activity may be concentrated in a relatively small area (eg, Netherlands, Japan) while economic activity in other countries is quite dispersed (eg, Canada, Australia). In the Appendix we propose a summary statistic based on gravity models that reflect GDP and distance to capture these elements of remoteness. New Zealand has the most

remote position (2.45) in this scale of all OECD countries. The scores of other countries with which New Zealand is often compared are: Australia (2.5), Finland (9.6), Sweden (11.92), Norway (12.05), Ireland (14.22), the Netherlands (26.57) and the UK (26.87). These figures crudely indicate the extent to which New Zealand is remote from potential trading partners. Such remoteness will affect transport and transactions costs of international trade of New Zealand *vis à vis* other countries and may have implications for competition law.

Alger and Leung (1999) report that New Zealand's population, taking account of occupied areas, is less dense than for the four other countries—Australia, USA, UK and Sweden—they studied insofar as this resulted in a higher cost of telecommunication services, all other factors equal. Sweden was an exception: the relatively lower costs predicted for Sweden resulted from the more uniform distribution of the population within that country. The heavy concentration of the population in one city, Auckland, affected this result and would create a significant disparity of market size within New Zealand on a geographic dimension. Intra-country markets are not the focus of this report: essentially it is presumed that for any country institutional arrangements and transport costs are such that each can be taken as representing single markets for goods and services.[1]

Arnold, Boles de Boer and Evans (2003) using various databases—but particularly those of Standard and Poors Compustat, and the ANZ database of 400 New Zealand firms—describe the structure of New Zealand industry relative to the rest of the world and relative to the five selected countries. They conclude that these data plus certain assumptions imply that New Zealand, relative to other countries, generally has the highest industry concentration[2], the highest capital intensity across most industries[3], the highest total cost to revenue (with smaller firms having a relatively higher ratio than larger firms) and significant diseconomies of scale. These characteristics are those that might reasonably be expected in one of the world's smallest and most geographically isolated developed economies.

The literature suggests that in small economies competition law should focus on efficiency evaluations of mergers and trade practices rather than rules of thumb that imply the elimination of some potentially efficiency-enhancing activities. The rule of reason is suggested for most relevant activities and practices at the expense of *per se* offenses. It is important to give producers' surplus equal weight with consumers' surplus in the calculation of efficiencies in small economies; particularly in activities that relate to (potential) exporting. Competition issues that arise in the so-called new economy industries should be examined placing most weight on dynamic efficiency. There is some suggestion that this implies that the behaviour of firms in these industries should be the criterion for the application of competition law, rather than traditional measures of market structure. Drawing together all the various issues, distance from trading partners may be relatively more important than size of the economy for industry structure and competition law in New Zealand, and low impediments to trade and investment are likely to be as important as competition law.

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1 This is inferred from Commerce Commission jurisprudence.

2 Ratnayake (1999) shows that New Zealand manufacturing industries are more concentrated than those of most other countries, but that there has been a clearly declining trend in industry concentration over time indicating that the efforts taken in the past to enhance domestic competition have produced some favourable results. The analysis supports the hypothesis that economies of scale are a major source of concentration. The other determinants of industry concentration are entry barriers, the size of industry, import competition and foreign ownership of industry. The relatively high concentration of New Zealand industry is confirmed by other unpublished work at ISCR that uses various data of national statistical offices.

3 Particularly for network industries, we would expect this to be characterising for small economies.

2 Small and distant economies

The characteristics that make a country "small" have been the subject of extensive debate. Kuznets (1963) emphasizes a country's population and draws a line at 10 million inhabitants. Other authors such as Marcy (1963) and Vakil and Brahmananda (1963) point to a country's geographic area as well as population, but note that special exceptions are necessary to deal with geographically large countries such as Australia and Canada. A general conclusion drawn in this literature is that none of these variables are decisive (eg, one must take into account a country's level of development and/or living standard). Vakil and Brahmananda (1963) argue that increases in a country's size may not be an unmitigated good and there may be an "optimal" country size.[4]

The essential characteristic of small countries is that their firms are limited by the size of their local markets. McLeod (2003) makes the reasonable suggestion that for the consideration of competition law, small economies are defined as those economies that are approaching the minimum size needed to operate a full set of regulatory and competition policies and institutions. This group includes New Zealand, Singapore, Hong Kong, Sweden, Norway, Israel and Ireland. Economies that fall below this threshold, such as the micro states of the South Pacific, are faced by a different set of issues than those of larger economies. The limitation on market size expresses itself in few competing firms and absence of scale of operation.

New Zealand is both small and isolated. While, for competition law, the size of the domestic market is a critical factor, distance from other markets is relevant for cross-border trade and consequently the size and form of the domestic market which, in turn, might reasonably influence reasonable policy settings for competition and trade law. The empirical international economics literature distinguishes between the influence of borders and distance-from-market on trade. While many applications of the gravity model have shown that the volume of trade is materially adversely affected by distance from markets, it is only since the work of McCallum (1995) that the empirical regularity has been established that, given distance, borders also lower trade. McCallum estimates that intra-country cross state (US) and cross province (Canada) trade was some 2200% higher than across the US-Canadian border. Andersen and Van Wincoop (2003) argue that the gravity equations of McCallum are not informed by economic theory and that when the relevant modifications are made the intra-country trade relative to cross border trade falls to 44%.

The distance effects on trade can be attributed to transactions costs, including shipping, timeliness, communication, contractually related costs and weakening cultural ties that affect trade[5] and are associated with distance. Certain of the border effects can be attributed to obvious factors that include different currencies (Rose 2000) and the presence of tariffs and quota trade barriers (Wolf 2000): but other elements of them are more subtle.[6] Border effects arise within as well as between countries. Wolf (2000) for the USA and Combes, Lafourcade and Mayer (2003) for France show that state and regional boundaries affect trade. However, Combes *et al* explain a significant fraction of the French regional border effects by social networks (measured by employees' birth places) and by business networks (measured by inter-plant connections). They found that these networks interacted with distance effects on trade by reducing transport costs, and that

4 See pp.137-9.

5 See the review of Rauch (2001).

6 For example, "home bias" preference for goods would produce border effects (Combes, Lafourcade and Mayer 2002).

the effects were present in all industries. The finding of such network effects might have been suggested by the literature on the history of institutions that facilitate trade.[7]

The extent to which a market is small is reasonably assessable. The effects of distance on trade and the interaction of the distance and border factors are much more difficult to assess, and yet they are important in establishing what might be expected of internal and external trade of an isolated economy. The potential vigour of trade affects the definition of relevant markets and concomitantly the extent of competition in them. Despite the width of the Tasman sea, for New Zealand the analysis suggests that open access to trade with its relatively large near neighbour, Australia, is almost certainly extremely important for New Zealand trade *per se*, and for the competition it potentially poses for the New Zealand domestic market. This is particularly the case given New Zealand's very small domestic market which, because of the transaction costs and arguably network dislocations implied by distance, suggest a separation of New Zealand's domestic market from other markets to an extent not experienced by many other countries. However, based on the work of Krishna (2003) that finds for the USA no correlation between trade and welfare arising from either distance or income relating to any of the USA's trading partners, the extent of the importance of an open trade relationship between New Zealand and any other particular country continues to be an open question. Nevertheless, the implications of low barriers to trade remain and are issues of direct relevance to the specification and application of competition law in New Zealand.

3 Efficiency issues for small distant economies

The focus of this review is the basis and application of competition law. Competition law has the purpose of regulating commercial conduct in the sector of the economy for which there is de-centralised production, competition and consumption decisions. As von Hayek (1945) put it:

> We must look to the price system as … a mechanism for communicating information if we want to understand its real function – a function which, of course, it fulfils less perfectly as prices grow more rigid…. The marvel is that in a case like that of a scarcity of one raw material, without an order being issued, without more than perhaps a handful of people knowing the cause, tens of thousands of people whose identity could not be ascertained by months of investigation, are made to use the material or its products more sparingly.[8] [9]

[7] See, for example, Evans and Quigley (2004).

[8] Von Hayek (1945) at pp. 526-7. Von Hayek goes on to say at p527:
Those who clamor for 'conscious direction' – and who cannot believe that anything which has evolved without design (and even understanding it) – should remember this: the problem is precisely how to extend the span of our own utilization of resources beyond the span of the control of any one mind; and, therefore, how to dispense with the need of conscious control and how to provide inducements which will make the individuals do the desirable things without anyone having to tell them to do it.

[9] Von Hayek (1945) states at p519:
The conditions which the solution of this optimum problem must satisfy have been fully worked out and can be stated best in mathematical form: put at their briefest, they are that the marginal rates of substitution between any two commodities or factors must be the same in all their different uses…. This, however, is emphatically not the economic problem which society faces. [T]o put it briefly, it is a problem of the utilization of knowledge not giving to anyone in its totality.

Antitrust policy is the set of laws designed to prevent firms from exercising market power by the firms' restricting output and engaging in other anticompetitive behaviour.[10] Competition law can be viewed as affecting the balance of co-operation and competition among commercial firms and limiting their practices. Particularly in small economies, there is a trade-off between numbers of firms and economies of scale that competition policies should reflect. The tension between scale and numbers of firms is aggravated by geographic isolation. Further tension can occur where economies are widely dispersed within national borders, resulting in even smaller geographical markets within the small economy. As we have indicated, we do not explore the issue of intra-country dispersion in this paper.

3.1 Industrial concentration

The industrial structure we have reported for New Zealand is in accord with positions, well established in the literature, that small economies are characterised by relatively high industrial concentration levels and the presence of few-firm oligopolies. This point is illustrated by Scherer *et al* (1975) as shown in Table 1. It provides evidence that industrial concentration in manufacturing tends to increase as the size of an economy's population decreases. Gal (2001) expresses it differently reporting that studies of manufacturing industries in small economies show a considerably larger fraction of all output is produced at less than minimum efficient scale. Firms grow in all sorts of ways, via competition in the product and ownership markets and by other arrangements with other firms seeking to attain improvements in productive efficiency and scale. In small economies, however, the extent to which such efficiencies can be achieved may be limited by the size of the domestic market thereby limiting economies of scale, economies of scope—where the costs of producing two or more products are less than the costs of producing them separately—and raising transaction costs in which there are savings associated with specialisation that attends larger market sizes.[11] Based on the evidence presented in Arnold *et al*, New Zealand would appear below Sweden in Table 1, characterised by high concentration in a small market. The alternative for tradable goods and services in small economies is to expand by exporting.[12]

[10] Katz and Rosen (1994), p478.
[11] See Stigler (1951).
[12] See Section 4.2.

Table 1 – Industrial concentration and the size of the market

Country	Market Share of the three largest firms		Population	
	%	Index*	Millions	Index+
USA	41.1	100	204	100
West Germany	56.1	136	61	129
Britain	60.4	147	55	133
France	66.3	161	51	135
Canada	70.8	172	21	175
Sweden	83.4	203	8	256
Israel	91.0	221	3	480

USA = 100
+ The index of the inverted logarithm of the population

Caves, Porter and Spence (1980) argue that the small country handicap is manifest in three standard sources of economic performance. We summarise these as:

1) Allocative efficiency: Small countries' markets can often only support a few firms in industries where scale is important. There are two cases

   a) Incumbent firms that can profitably raise prices above competitive levels to earn supra-competitive profits, this leads to an inefficient allocation of economic resources across sectors;

   b) Small markets can impede the ability of firms to achieve minimum efficient scale (MES). As a result, unit costs may be higher;

2) Productive efficiency or x-efficiency: the ability to produce output at minimum resource cost. This intra firm allocative efficiency may be impeded if entry of competitors is not credible or in governance arrangements in which there is no market for control; for example, under trust ownership;

3) Dynamic efficiency: Small markets affect the incentives to, and resources for, innovation and appropriate investment. The outcome of dynamic efficiency is allocative and productive efficiency over time.

Each of these effects[13] is briefly discussed in this section.

3.1.1 Allocative efficiency

To achieve allocative efficiency, prices must reflect cost conditions and thus, on the margin, production and consumption decisions must equalize the relevant marginal rate of substitution to the market price.

[13] Any dividing line between the creation of the technology and the sale of the ultimate product, including the one used here is arbitrary. Taken literally, focusing exclusively on the *ex ante* decision to innovate is impossible since if there were maximum allocative inefficiency (ie, price at a prohibitive level so that output sold is zero) there would be no economic incentive to innovate (revenue for the innovator or his or her agents or licensees would be zero). Similarly, if one were to literally take the cost curves as static, the analysis would inevitably seek to make "illusionary or temporary" gains in allocative efficiency by artificially extracting rents necessary for the creation of the technology in the first place. This section makes these distinctions merely to aid exposition. Implicit in the analysis is recognition that the incentives across these three effects are intrinsically interrelated.

Case A

The first form of "allocative inefficiency" may particularly arise in small countries where, it is often argued, small markets are less competitive. This issue is considered in an empirical study of the size distribution of establishments for thirteen retail trade industries across 225 US cities by Campbell and Hopenhayn (2002).[14] In this analysis, the authors empirically compare two approaches to modelling competition among large numbers of producers. According to the first approach, a producer's actions (eg, competitive responses) have a broad effect across the market and affect all rivals symmetrically. According to the second approach, the effects of a producer's actions are more localised (eg, can only be felt by rivals located nearby).

This is of interest because models of competition among differentiated products provide differing conclusions on whether the size of a market matters to its competitiveness. In particular, models of monopolistic competition (such as Dixit and Stiglitz 1977) predict that doubling the number of consumers and producers has no effect on the degree of competition. Spatial models, in contrast, (eg, Salop 1979) predict that larger markets should be more competitive.

Campbell and Hopenhayn (2002) find that establishments are larger in larger markets for six industries. The authors suggest that, in these industries, competition appears tougher in larger markets. Models of competition in which individual producers' markups do not depend on the number of producers (eg, Dixit and Stiglitz 1977) are inconsistent with these observations. Models in which competition is tougher in larger markets can reproduce the positive effect of market size on establishments' average size.[15] Whether there are significant elements of monopoly or oligopoly pricing will depend upon additional factors such as barriers to entry; numbers of competitors is but one determinant of market performance.

In models of monopoly or oligopoly (such as Cournot-Nash or differentiated Bertrand-Nash), a firm faces a downward sloping demand curve for its own brand (ie, its residual demand curve) that reflects the firm having power over price. The magnitude of the reduction in economic welfare resulting from this distortion is calculated using concepts of consumers' and producers' surplus[16] to indicate efficiency: the aggregate of which is the change in total economic welfare. In Figure 1, the change in welfare resulting from the higher price is equal to the area of trapezoid (P0P1AB).

The loss in consumers' surplus is partially offset by the increase in the producers' surplus equal to the area of rectangle (P0P1AC). Thus, this rectangle is the wealth transfer from consumers to producers. Using a total surplus standard that makes a neutral value judgment that each agent in the economy is equally deserving of a dollar, the net welfare loss is equal to the area of triangle (ABC). This is called the "deadweight loss."

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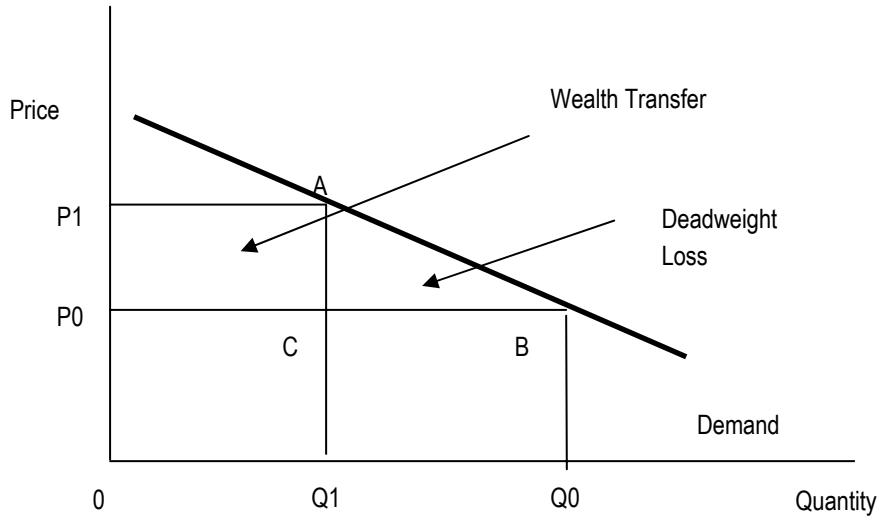
[14] See Campbell and Hopenhayn (2002) who use observations from 13 retail trade industries in 225 metropolitan service areas, each of which they define as a separate market. The primary data source is the 1992 Census of Retail Trade, from which the authors calculate establishments' average sales and employment in each market. Their definition of producer is an establishment.

[15] See Campbell and Hopenhayn (2002).

[16] Consumers' surplus is measured as the area under the demand curve and above the unit price. The concept of consumers' surplus relies on the fact that, under some assumptions (for example, an absence of income effects is sufficient); the market demand curve shows the value of various increments of output. Producers' surplus is calculated in a symmetric way. Looking at the firm's marginal cost curve, we see the per unit real resource cost of output. Thus, the area that lies under the market price and above the monopolist's marginal cost curve shows the producers' surplus.

Harberger (1954) estimates that the total welfare loss due to market power is no larger than 0.1 percent of GNP.[17] This calculation has been criticized on the grounds that the static situation it represents does not capture the longer-term dynamic effects of competition.[18] A potential counter-argument to Harberger's estimate is provided by the

Figure 1 – A graphical depiction of the welfare effects of an oligopolistic or monopolistic price increase[19]



theory of rent seeking.[20] It suggests that, in cases where a firm has an ability to capture an oligopoly or monopoly rent, economic agents have an incentive to compete for it. This competition can involve economically wasteful activities such as lobbying, unnecessary litigation or even crime (eg, bribery). This raises the possibility that part of the rent transfer generates a net loss in real economic resources.[21]

An additional economic cost of monopoly or oligopoly markups not explicitly captured in Figure 1 lies in the possibility that it can reduce non-price competition. The key paper on the economics of non-price competition is Stigler (1968).[22] Mussa and Rosen (1978) show that the incentive for a monopolist to restrict quality (ie, reduce it) remains even if the monopolist has the option of offering both high and low quality versions (or brands) targeted at different consumers (eg, low versus high income buyers, business versus casual vacation passengers, brand conscious versus price conscious consumers).[23]

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17 These calculations estimate an average monopoly markup of about 6 percent and assume that the demand elasticity is constant and equal to unity.

18 See Ahn (2002, 4) for example.

19 Figure 1 assumes that the marginal (and thus average) cost is constant and equal to P0.

20 See Tullock (1967).

21 Posner (1975) argues that rent-seeking can be a large source of the economic costs of monopoly and concludes that public regulation is probably a larger source of these costs than private monopolies. The weak point in the theory is that it assumes that such competition takes the form of economically wasteful activities. In the alternative, it could be argued that some of these expenditures could take the form of useful activities such as informative advertising or the development of superior skill.

22 See Lancaster (1998).

23 In their model, the monopolist has an incentive to refrain from offering low quality (no frills) options to the market because it will tend to cannibalize more lucrative business. It is important to note that the firm in their model has a monopoly in both segments. A dominant incumbent facing new "discount" entrants may have different incentives (eg, it might introduce its own "discount" or "white label" brand as a defensive measure).

The example of the incentive to restrict quality in Mussa and Rosen (1978) has wide application. In general, the incentive for a monopolist to provide non-price attributes is related to the marginal willingness to pay, for the marginal consumer in the case of a monopolist and for the average consumer in the case of the maximization of total welfare of the economy as a whole.[24] Empirically evaluating the value of product quality or new products is a daunting task because an increase in non-price attributes such as quality shifts the demand curve and thus economic welfare may be increased even if nominal prices are little changed (or even increased). Using "hedonic" prices to account for such empirical problems, Bils and Klenow (2002) conclude that quality growth has been an important part of recent economic progress.[25]

Finally, we note that pricing above average cost is generally driven by the objective of profit maximisation. Where (cooperative) governance is such that dividends are paid out as price discounts to stakeholders there is no rationale to price differently from average cost. If scale is important, allocative inefficiency induced by a small market may be the more important issue.

Case B

As we have mentioned, Gal (2001) defines market size as the ratio of the size of the relevant market, that is, the output that would be demanded at a price just sufficient to cover minimum unit costs, to the size of a unit of production that is just sufficiently large to achieve lowest average costs of production MES.[26] Firms in a small market where demand is small relative to MES face cost disadvantages, and arguably limitations on the creation of indigenous research and development, technology acquisition and technical progress. Scherer *et al* (1975) provides estimates of the observed plant sizes in a variety of countries based on late 1960s data. This information is reproduced in Table 2. Asterisks indicate that the estimate is based on actual production levels. Figures without asterisks are based on employment information.

Table 2 illustrates that the problem of plants operating below MES can occur in practice. Plant sizes above 100% may indicate that, once MES is reached, plant scale can be increased to double or triple MES without causing unit costs to significantly increase.[27] In any case, observed plant sizes may reflect other restrictions (eg, interstate or inter-provincial trade barriers in brewing) or, where based on employment information, may simply reflect inefficiencies or employment arrangements.

The issue posed by diseconomies of scale is illustrated in Figure 2 where the firm's average cost curve is drawn so that it reaches its minimum at a relatively large output level (denoted Q_{MES}). The demand curve is denoted D(P) and the output level that would be demanded at a price just sufficient to cover minimum average cost is given by Q*. The ratio of Q* divided by Q_{MES} gives an indication of market size. A value of one for this ratio indicates that the market is just large enough to support a single firm operating at minimum efficient scale. A value of two indicates that two firms of efficient size can be supported while values of less than one indicate that not even a single firm of minimum efficient scale can be supported.

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24 See, for example, Winter (1993).

25 Looking at information on 66 durable products, the authors find that average annual quality growth averages 3.7 percent and that this quality improvement is understated in conventional adjustments to consumer price indices. For a general discussion of the notion of "hedonic" prices see Rosen (1974).

26 Also see Gal (2002).

27 For example, the underlying cost curves may be "U-shaped" but with a sizeable flat part at the bottom.

Table 2 – Observed plant sizes as a percentage of estimated MES

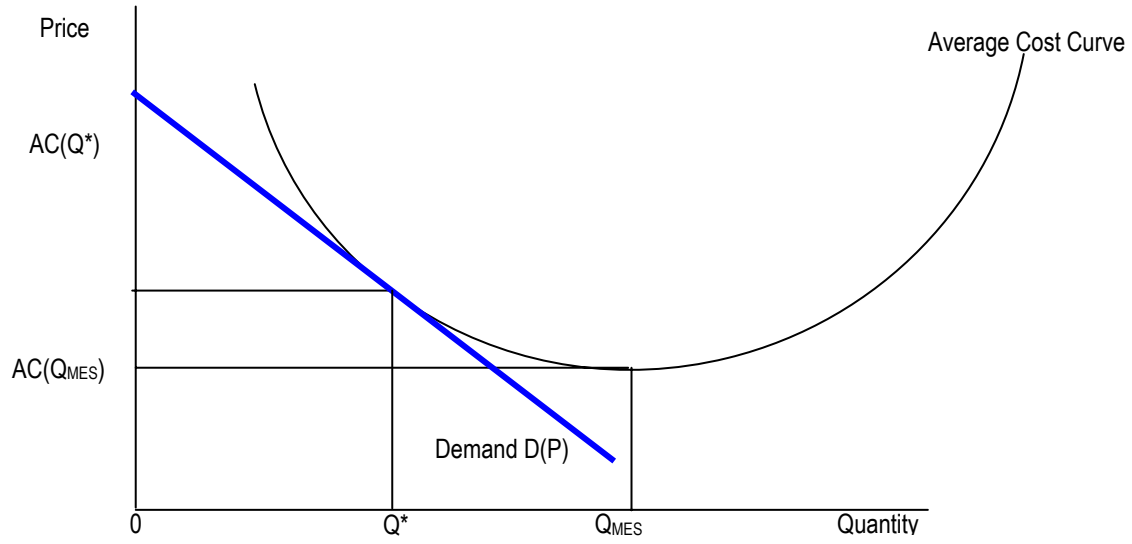
Industry	U.S.	Canada	U.K.	Sweden	France	Germany
Brewing	35*	11*	11*	2*	6*	4*
Cigarettes	105	24	29	11	17*	15
Cotton & Synthetic Fabrics	133	156	36	74	39	124
Paints	28	19	20	20	7	6
Petroleum Refining	51	30	105	42*	66*	46*
Shoes	146	76*	71*	25*	63*	110
Glass Bottles	77	104	30*	51*	56*	52
Cement	47*	60*	42*	63*	54*	53*
Steel	73*	65*	38*	18*	41*	55*
Antifriction Bearings	203	88	234	698	131	375
Refrigerators	63*	10*	15*	12*	25*	46*
Batteries	91	45	100	39	180	500

Notes: Data from Tables 3.1 to 3.6 of Scherer *et al* (1975). Observed plant sizes reported are mid-points of a number of observations for each country – ie, actual observations on individual plant sizes in a country could be either higher or lower than the reported mid-point.

The magnitude of the cost disadvantage depends on the market size ratio, the price level, and how quickly the average cost curve rises.

The demand curve in Figure 2 (and the associated Q*) includes not only domestic demand but also all foreign markets that the firm or firms can supply at a small per unit tariff and/or transportation cost. That is, implicit in Figure 2 is the definition of a relevant geographic market.

Figure 2 – Graphical depiction of the allocative (b) efficiency problem



We may distinguish between final and intermediate goods when considering whether export markets should be included when identifying Q*. For example, consider the case of a book or a machine that can be used to make tools. It may be the case that the input (the text of the book or the machine) can be cost-effectively transported to foreign markets

while at the same time it is not an economic proposition to transport the final output (the printed book or the tools made by the machine) across international boundaries.[28]

If the market for the intermediate good is international, the relatively small size of an individual country's market cannot lead to technical inefficiency in the production of the intermediate good. For example, say Q_{MES} is 100 units of the intermediate good and the demand in the U.S. is 85, the demand in Europe is 35 and the demand is so small in New Zealand that it is not cost effective to justify the use of a single unit. Then, if indivisibilities are important, New Zealand may suffer a loss of economic welfare because the final output that is available in other countries does not reach New Zealand consumers. But this does not mean that there is allocative inefficiency in the production of the machine. In this example, 120 units would be produced at minimum average cost. Nor does it seem correct to call this allocative inefficiency in the production of the final good. Rather, the problem is that there is no economically viable production. If the relevant geographic market for the final good is international while the relevant geographic market for the intermediate good is restricted to the national market, this is enough to assure there is no allocative inefficiency at either level.[29] For example, consider wine. It may be the case that it is prohibitively expensive to transport the grapes internationally, but it is feasible to transport the more valuable finished product (wine or sterling silver). Then, in each local market, the production of the intermediate good (grapes) can expand until all scale economies have been exhausted. This could involve producing ten or one-hundred times the amount of grapes that the local population would consume as wine even at a zero price.

Scherer *et al* (1975) provide empirical information on cost effects of scale. These findings are reproduced in Table 3. They indicate quite significant cost differentials for firms that do not achieve scale economies. At the same time, it is worth noting that a small market is not a significant handicap for values of Q* which are "close" to Q_{MES}. This is because Q_{MES} is near the minimum of the average cost function and thus the rate of change of AC is small—ie, the AC function is "flat." Or, to put the same idea somewhat differently, because marginal and average cost are equal at Q_{MES}, the effect of very small reductions on AC is "second-order small."

While the specific values in Table 3 are arbitrary, a general conclusion holds: relatively small but significant deviations from Q_{MES} (eg, Q^*/Q_{MES} of about 0.9) result in insignificantly small relative cost differentials that will hold up for any "U-shaped" cost function.

[28] The proposition that the text of the book can be transported more easily than printed books is quite obvious – the former can be transmitted by e-mail for example. The machine that makes tools is perhaps less obvious since the machine itself may be more heavy and/or cumbersome. But it is the value to weight (or more precisely transport cost) that matters, and given that the machine can make the tools, one would expect it would have a considerably higher value than the tools it makes.

[29] Implicitly this paragraph assumes that competition in the market is sufficient that no firm can sustain a price above average total cost.

Table 3 – Estimated values of cost disadvantages in industries operating at 1/3rd of MES

Industry	Q_{MES}	Relative AC cost disadvantage
Beer Brewing	4.5 million (31 US gallon) barrels per year.	5.0%
Cigarettes	36 billion cigarettes per year or 2275 employees.	2.2%
Cotton & Synthetic Fabrics	37.5 million sq. yards per year or 600 employees in modern plants.	7.6%
Paints	10 million US gallons per year, or 450 employees.	4.4%
Petroleum refining	200,000 (42 US gallon) barrels per day	4.8%
Non-rubber shoes	1 million pairs per year or 250 employees per shift.	1.5%
Glass Bottles	133,000 short tons per year or 1000 employees.	11.0%
Portland Cement	7 million 376-pound barrels per year.	26.0%
Integrated Steel	4 million short tons per year.	11.0%
Antifriction Bearings	800 employees.	8.0%
Refrigerators	800,000 units per year.	6.5%
Automotive Batteries	1 million units per year or 300 employees.	4.6%

Source: Scherer FM (1974) "The Technological Basis of Plant Scale Economies in Twelve Manufacturing Industries," Preprint I/74-6, International Institute of Management (Berlin, 1974). Reproduced in Scherer *et al* (1975).

3.1.2 Productive efficiency

This form of efficiency determines the level of cost at any level of output. It results from the management of the firm and has been termed x-efficiency by Leibenstein (1966) who proposed that it was more important than allocative efficiency. Productive efficiency may be affected by the smallness of an economy, but it is as likely to be affected by the barriers to entry of that economy. While profit maximisation provides strong incentives for productive efficiency, competition arguably strengthens them. Companies with listed shares are pressured to be productively efficient by the threat of takeover: the market for control. This particular pressure is weaker for cooperative governance structures: although both forms of governance can make their management contestable the incentive to do so is weaker in cooperatives because these are not subject to the threat of loss of control.[30]

3.1.3 Dynamic efficiency

Investment and innovation are key elements of dynamic efficiency. Both economic arguments and empirical studies of the literature confirm dynamic efficiency gains are more important for social welfare than static (allocative and productive) efficiency gains. Goolsbee (2000), for example, points out that delayed innovation and investment lead to missing markets where both consumers' and producers' surplus is missing, not just a welfare triangle. He estimates significant losses attending impediments to broadband

[30] See Hansmann (1996) on cooperative organizations and Jensen (2001) on why the corporate model should differ from stakeholder models of organisations.

investment. There is an extensive literature on this subject.[31] This subsection restricts to cases that could plausibly arise from the small size of the economy (ie, Q* < QMES).[32]

Innovation itself can be transported across international boundaries at little or no tariff or transportation cost. So even if the market for the output produced by the innovation is not international, its firms should not have a scale inefficiency argument. Even if the domestic market is small, access to foreign markets—if not by setting up their own facilities, at least licensing it abroad—should enable actual and prospective expansion.

Innovation investment (including basic research and knowledge) typically has externality and public good elements and thus enabling cooperation in research and development is important to foster innovation. However, it is not obvious that, excepting perhaps the scale of research budgets, the relative size of the New Zealand market places firms at a disadvantage in research and development. It may be that because of communication externalities in research that New Zealand's isolation is something of a factor. New Zealand's success relative to other countries in innovation will reflect a complex array of factors; such as the country's comparative advantage and communication networks. Assuming that international obligations to protect intellectual property are fully complied with,[33] the geographic market for innovation is by assumption international, and thus there is no need to take any special account of the small size of the small countries' domestic market in regard to the innovation itself.

With respect to adoption (or diffusion), what are the incentives to make additional up-front expenditures in order to effectively invest in innovation and employ the innovation within the small country? The adoption of such intellectual and/or intangible capital[34] to the legal, cultural and other characteristics of a particular small country may often require additional expenditures in order for them to be effective.[35]

The question of when to modify the intangible capital for use in a small country has been considered extensively in the literature.[36] The following example is illustrative of the analysis. Consider the case where there is an existing technology available to market players (summarised by the cost function depicted as AC_0 in Figure 3) and assume that the initial market price is P. Assume further that, either by *de novo* innovation or adoption of innovations (or other intangible capital such as copyrights or trademarks), one or more of these firms could produce output with the cost function AC_1. It is assumed that the cost of the resources to achieve this new innovation or adoption must be incurred up-front and do not vary with the amount of output produced after it has been developed. The amount of this cost is denoted F.

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31 See Baumol (2002).

32 Though perhaps the small size of an economy does not qualify as a barrier to entry as such (see Demsetz (1982) for a discussion on the ambiguities surrounding various existing definitions of 'barriers to entry'), it does limit potential entrants' interest in entering the market.

33 Exactly what those obligations are is an important issue itself, but a detailed discussion is beyond the scope of this paper.

34 An example of "intangible capital" is a brand, trademark or patent. In fact, anything that involves up-front cost but then allows the firm to earn revenues above current operating costs in future periods. These future net revenues (ie, "quasi-rents") should not be confused with allocatively inefficient market power.

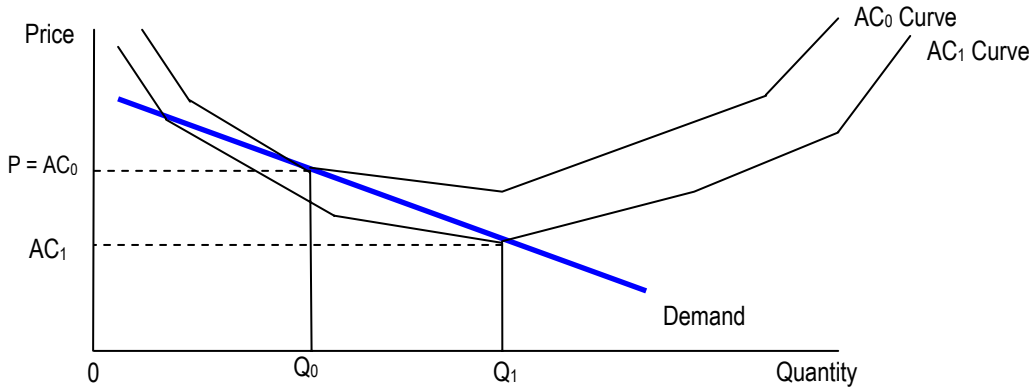
35 We are not aware of any estimate of the magnitude of these costs. It does appear to be the case that there is a lag-time between the time at which patents, trademarks, copyrights, trade secrets or other innovative processes are used in large countries such as the US and when their use is diffused to smaller countries. Furthermore, it would appear that the lag is related to country size (language, legal system and other cultural differences also play a role). In order for profit-maximizing firms to act in this way, there must be some (non-trivial) up-front costs. We shall argue that in modern times the lag is very short (see for example Argarwal and Gort (1999)).

36 See Dunning (1969) and Markusen (1995).

The significance of Figure 3 lies in the fact that the choice of producing with AC_0 or AC_1 is endogenous. Specifically, as the demand for a product in a market is initially relatively small, the firm has a relatively small incentive to make the investment F. As the demand grows, the case for making these investments improves but the firm has an incentive to delay these investments and instead rely on imports. The reason is that the firm earns the revenue from exports even if it does not invest in F (eg, Dunning 1969 and Markusen 1995). If a country can induce the firm (usually a multinational firm) to invest in F (eg, establishing local plants or brands), there may be economic benefits to the local economy. With intellectual property rights in place, the welfare effects are ambiguous and depend upon the structure of the market, the behaviour of costs as output changes and the size of the upfront cost.

A point often made in reference to dynamic efficiency is that new entry can be a particularly important force. Protected incumbents facing no competition have limited incentive to innovate and/or bring the benefits of the innovation to a small economy because they are able to maintain a customer base even if they do not innovate. This result holds generally and is due to Arrow (1962). Arrow's argument is called the "replacement effect".

Figure 3 – A graphical depiction of the effect on production cost of adapting foreign innovation or other intangible capital for use in the home market



4 Competition policy in New Zealand: a first examination

Given the relative population and income in New Zealand, and its geographic isolation, it is quite likely that there is a significant number of industries where demand within the relevant geographic market is small relative to minimum efficient scale: indeed this is the evidence of Arnold *et al* (2003). The application of competition law remedies to such industries could significantly magnify these costs. Consider, for example, if the enforcement of merger provisions impedes the ability of the two firms of an industry to merge where demand (as measured by Q*) is 0.66 of minimum efficient scale. Absent a merger, each firm individually would only be able to achieve a scale of 0.33 of minimum efficient scale. As indicated by Table 2 above, depending on the industry, this could impose a significant cost disadvantage on New Zealand producers and consumers.

We note that such inefficiencies could equally arise in other areas of competition policy. For example, consider the case where the competition authority attacks a business practice such as exclusive dealing, tied selling, loyalty rebates or geographic price discrimination under its Abuse of Market Power provisions on the basis that it excludes an equally efficient entrant (ie, with identical cost curves). Or consider a situation where the incumbent firm is required to provide potential entrants with access to its facilities or where conspiracy law prevents two incumbent firms from entering into an agreement where one firm pays its rival for a non-competition (clause whereby the other firm exits this market). If the industry is one where Q* is, for example, 0.66 of minimum efficient scale, the same cost disadvantage could arise.

The most direct policy implication is that much weight should be placed upon the efficiency defence under New Zealand merger and trade practice law. In a seminal article, Williamson (1968) argues that, as a general matter, a horizontal merger could benefit an economy if it allows the firms to achieve "efficiency gains"—ie, a reduction in their per-unit operating costs. The capture of such efficiency gains would reflect real resource savings for the economy. Because efficiency gains allow any given level of output to be produced with fewer inputs (eg, labour and capital), such a merger would free up new resources that could be used in other industries and potentially lower prices to consumers. In essence, the efficiency defence entails permission of mergers and practices that increase the sum of consumers' and producers' surpluses.

In open small economies often a relatively high fraction of economic activity in some industries is conducted by foreign firms, and certain of the aggregate benefits may rest with foreign consumers. Furthermore in these economies' markets firms' output growth opportunities may lie in exports. Do these issues pose particular concerns for estimating the efficiencies of mergers and practices?

The Commerce Act requires that benefit and detriment (ie, efficiency) calculations be applied to any market that is, under Section 3(1A) of the Act,

> A market in New Zealand for goods or services as well as other goods or services that, as a matter of fact and commercial common sense, are substitutable for them.

And Section 4(1) of the Act provides:

> This Act extends to the engaging in conduct outside New Zealand by any person resident or carrying on business in New Zealand to the extent that such conduct affects a market in New Zealand.

We note that the Act is defining markets with respect to New Zealand independently of ownership of entities in those markets. The history and implications of this position are reviewed in the Appendix, where it is pointed out that in almost all applications differential treatment of foreign and domestic owners in efficiency analyses would render time-inconsistent policies and actions and inhibit dynamic efficiency.[37] [38]

[37] The exclusion of any benefits or detriments to foreign consumers is much more justifiable than to owners because of the latter's much more direct effect on the dynamic efficiency of domestic markets (see Appendix 2 for discussion).

[38] For a discussion of the same issue in the context of intellectual property treaties see Scotchmer (2003).

The calculation of efficiency in a small open economy in industries where a large fraction of output is exported entails applying the efficiency calculation to the domestic market and the efficiencies of firms domiciled in New Zealand. Thus, the efficiency of domestic actions by exporting firms will appear in the calculation as well as the producers' surplus changes that are anticipated to flow from the effect of these actions on the profitability of exports. In an open trading country, this implies it is very important that producers' surplus be weighted equally with consumers' surplus. To ignore or ascribe a lower weight to domestic and/or (potential) export generated producers' surplus would be to inhibit activity and investment in these industries.[39]

4.1 Assuring efficiency enhancing mergers are not blocked

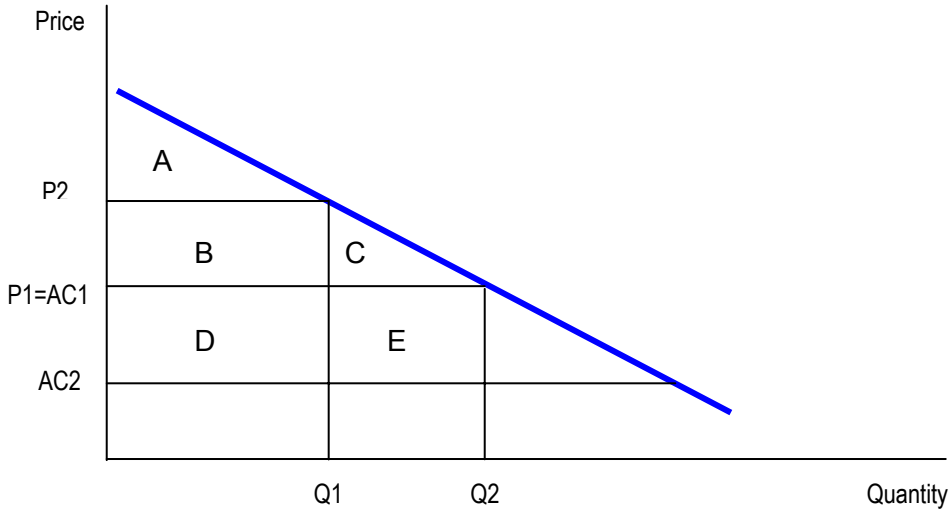
The principle articulated by Williamson (1968) applies to all industries where a credible efficiency argument can be mounted. Where Q* is small relative to minimum efficient scale, establishing efficiency would require estimating minimum efficient scale and then assessing Q* given a rigorously defined geographic market. As a practical matter, it will be important to assess the curvature of the cost curves as well.[40] As shown in Table 2, some industries have relatively "flat" cost curves (eg, non-rubber shoes in the data from Scherer *et al* (1975)), and in such industries efficiency arguments would be less substantively important.

Even if a merger increases market power for the merging firms that would enable them to raise price, increased efficiency may still outweigh the welfare loss resulting from the price increase. In Figure 4 it is assumed that a merger creates both market power and efficiencies. This results in lower marginal (and thus average) cost and a higher price / lower output. We can observe three main changes in welfare. First, the restriction of output creates a deadweight loss (area C). Second, the higher price transfers surplus from consumers to producers on the units still sold (area B). And third, the efficiencies lower the costs of producing this output (area D). Antitrust authorities should compare area C and D to determine whether the resulting welfare loss to society is outweighed by the efficiencies created by the merger.

[39] There are two rationales for not discriminating in the weighting of consumer and producer surpluses. The first is that producers' returns are ultimately owned by individuals and are derived on the same basis as that of consumers' surplus: i.e. as a money metric of welfare. Hence to discriminate between consumers and producers is to discriminate among individuals on a basis that is likely to be arbitrary. Secondly, producers' surplus is rent that serves as an incentive for competition that translates into dynamic improvements in the product and its delivery price that is in the long-term interest of consumers. Thus weighting producers' surplus equally with consumers' surplus means that static welfare analysis does take some cognizance of dynamic concerns. The basis for, and issues in, cost-benefit analysis are exactly those for the measurement of efficiencies under competition law.

[40] The discussion on whether competition law should embody cost revelation mechanisms to ensure truthful reporting of costs is interesting in this respect. As such, a discussion is beyond the scope of this paper, however, we refer to the extensive body of literature on incomplete information.

Figure 4 – Efficiencies versus market power[41]



The same principles would apply to non-merger areas such as Abuse of Market Power.[42] Breaking up a firm in an industry with a Q* of, for example, 0.66 could impose significant efficiency losses, depending on the industry.

Although such efficiency analysis will involve markets where most of the consumers are in New Zealand and exports are not significant, as noted earlier, if sales in foreign markets are important, the firms may be able to achieve minimum efficient scale by exporting. Nevertheless, where (potential) exporting is important there may be (potential) domestic market detriments that should be weighed against benefits of mergers and practices that enhance scale related cost savings.

4.2 Applying the efficiency defence in cases where price changes

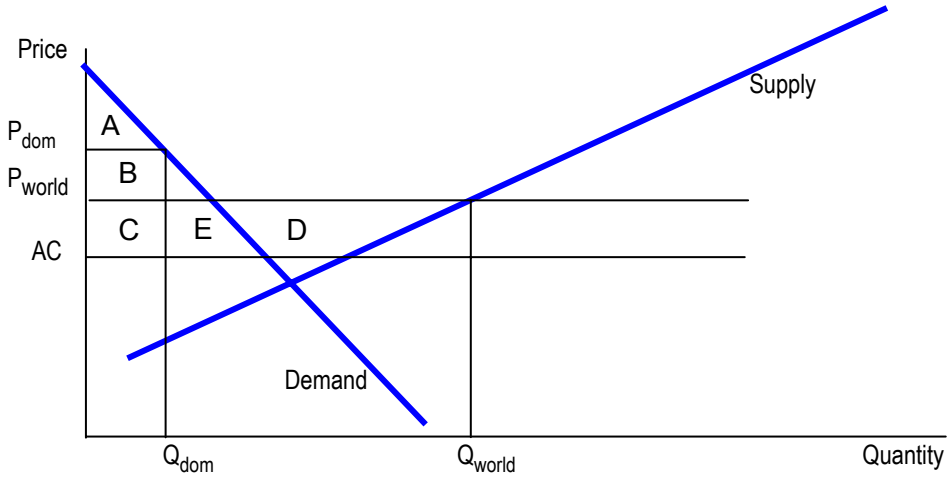
If a price increase is likely to result from the merger, or a dominant firm is likely able to raise prices above competitive levels, then, in the spirit of Williamson (1968), it is necessary to compare the magnitude of potential efficiencies to the allocative efficiency costs of the price increase (ie, the deadweight loss triangle in Figure 1). Price rises in domestic markets could be the result of mergers or practices relating to exporting and non-exporting firms. Indeed, in a small economy the domestic detriments that were otherwise quite significant may or may not be outweighed by export benefits of some mergers and practices. Figure 5 shows how an increase in producers' surplus due to exports (resulting from increased efficiencies through merging for example) may outweigh a reduction in consumers' surplus due to a price rise in the domestic market. If a merger

[41] How to weigh efficiencies against a lessening of competition is a delicate subject that many jurisdictions seem to struggle with. It is clear that efficiencies matter, but the scope for efficiency arguments varies considerably among the US, UK, EU, Canada, and Australia and New Zealand. Whereas the US., Australia and New Zealand apply a substantial lessening of competition (SLC) test to determine whether mergers should be enjoined, the EU applies a dominance test, the UK recently switched from a public benefit test to the European system, and Canada has an explicit efficiency defence built into its competition law. Though the implementation may differ across jurisdictions, an international trend towards a greater role for efficiencies is apparent. See Everett and Ross (2002).

[42] In fact, in determining whether a merger should be enjoined, the EU applies a dominance test (as Australia did previously). See Everett and Ross (2002).

increases efficiencies and thereby reduces average cost, producer surplus increases with area C and D. If this merger creates market power resulting in a price rise on the domestic market, area B is transferred from (domestic) consumers to producers and the little triangle next to it becomes deadweight loss (DWL). Clearly, the loss in consumers' surplus is more than made up for by the increase in producers' surplus. Even if area C and E would be considered a loss of 'potential' consumers' surplus, the export effect may still outweigh the welfare loss of a higher domestic price (compare areas B + DWL and D).

Figure 5 – Export benefits may outweigh loss in domestic consumers' surplus



Under US merger law, any price increase is sufficient to block a proposed merger. However, if one adopts a total welfare standard, it can be shown that there can be a misalignment between private incentives to enter an industry and the entry levels that maximize total economic welfare.

It is not always the case that more firms imply improved efficiency. In this case we have the following two results: First, Von Weizsacker (1980) shows that under the assumption of Cournot oligopoly behaviour, the free-entry outcome involves excessive entry. Perry (1984) examines this result when the conjectural variation term is allowed to vary. Brander and Spencer (1984) find similar results under the assumption that firms engage in tacit collusion in an environment of free entry. Simply put, it may be that free entry will achieve the optimal number of firms. Also, Winter (1993) shows that, under the assumption of differentiated Bertrand oligopoly behaviour, the free entry equilibrium involves an excessive number of differentiated product offerings (see also Spence 1976 and Dixit and Stiglitz 1977).

The problem identified in both these strands of the literature reflects the following two characteristics of the entry process. The last entrant reduces price and thus increases total welfare by an amount equal to the deadweight loss. That is, the last entrant generates a positive externality on the economy ie, there is a real resource cost of setting up an additional firm. This cost is manifested through an increase in all firms' average total cost—each entrant reduces the quantity sold by each, and thus fixed costs must be averaged over a smaller amount of output. That is, the last entrant imposes a negative cost externality on existing competitors.

These results are reviewed in Mankiw and Whinston (1986) who identify the fundamental forces that give rise to each of them, recognising that the opposite result had been found in earlier literature (eg, Spence 1976 and Dixit and Stiglitz 1977). Amir (2001) provides further insights on this issue for a more general cost function. Amir points out that marginal cost changing with output may quantitatively strengthen the conclusion of other authors, and goes on to emphasise that merger analysis should explicitly take scale into account.

In sum, as long as one retains a total welfare standard, it remains that an effective efficiency defence is important even if prices may be increased above competitive levels. The analysis may be more complex in such cases because one must compare the deadweight loss triangle to the magnitude of efficiency gains. The excess-entry literature implies that the efficiency gains are larger in a fairly wide set of circumstances. However, whether excessive entry will occur in a small open economy, particularly one that is open to imports, is an open question the answer to which is likely to depend on the relevant good or service characteristics. It may well be less a potential issue in small relative to large domestic markets.

Sustainability arises when there is a zero-profit equilibrium.[43] Non-sustainable cases arise when demand intersects with a firm's U-shaped average cost curve beyond the point of minimum average cost, but not far enough out to admit two or more homogeneous firms producing at minimum average cost. In this circumstance industry equilibria generally will not exist if strategies are purely in prices, certainly not one with zero economic profits, because when the incumbent prices at average cost—let alone marginal cost—it will be profitable for an entrant with the same cost curve to enter. No equilibrium exists because *ex ante* no firm would rationally be the first to enter because it knows it will be subject to cream skimming entry. The "no-equilibrium" result is sensitive to the simple strategies of the game: if long-term contracts with consumers are credible they can restrict cream skimming and thereby enable an equilibrium, or if there is competition in the quality dimension then an equilibrium may well exist. The sustainability issue therefore arises most often in the context of the delivery of a homogeneous good. Ultimately the possibility of sustainability is an empirical issue. But, because non-sustainability requires a single firm's average cost curve to rise over the output range of the relevant market and yet the market does not support two firms with the same cost structure at minimum average cost, it is unlikely to be a major issue in the markets of very small economies. It is not an issue for tradable goods and services since aggregate demand in this case is very large, and where a single firm can supply (almost) all the market at minimum average cost it is likely that the average costs will not increase over the relevant range of market demand of a small economy.[44] From the point of view of competition law, the issue on non-sustainability is that there may not exist an equilibrium if zero (economic) profits are insisted upon; although we reiterate that the issue does not arise in situations where there is product differentiation and dynamic competition that entails long term contracting.

We return to examine competition law in small economies after consideration of dynamic efficiency in modern economies and linkages with trade policy.

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43 For a discussion of sustainability see Waterson (1987).

44 Beardow (2003) reports U shaped cost curves for electrical lines companies depending upon customer densities that at the upper end typically go beyond that likely in New Zealand. However, we note that this does not translate directly into average-cost scale measures unless output is defined to be connections.

4.3 Public benefits and detriments – foreign ownership

In an open economy it is important to establish the basis on which to consider benefits and detriments; in particular, should different weightings be given to domestic or foreign ownership or as between consumers and producers. We take as given the equal weighting of domestic consumers and producers, in part, since this seems most likely to promote dynamic efficiency, and consider here the ownership issues. What consideration can, or should, be given to markets (consumers or producers) outside New Zealand or foreign ownership in assessing public benefits and detriments under the Commerce Act, and if they are considered, to what extent, if any, differential weighting should be applied.

Section 3(1A) of the Act provides:

> Every reference in this Act, except the reference in section 36A(1)(b) and (c) of this Act, to the term "market" is a reference to a market in New Zealand for goods or services as well as other goods or services that, as a matter of fact and commercial common sense, are substitutable for them.

This definition indicates that it is markets within New Zealand that are the primary concern when implementing the provisions of the Commerce Act. The focus is on New Zealand markets (consumers and producers) and does not differentiate between domestic and foreign owned firms. The provisions of the Commerce Act operate regardless of who is operating in the market and the ownership of those firms.

Section 4(1) of the Act provides:

> This Act extends to the engaging in conduct outside New Zealand by any person resident or carrying on business in New Zealand to the extent that such conduct affects a market in New Zealand.

This clearly extends the coverage of the Act to conduct outside the borders of NewZealand provided there is an impact on a market in New Zealand. Therefore a foreign owned firm, carrying on business in New Zealand, would be subject to the Commerce Act provided the conduct had an impact in a market in New Zealand.

Section 3A of the Act provides that:

> Where the Commission is required under this Act to determine whether or not, or the extent to which, conduct will result, or will be likely to result, in a benefit to the public, the Commission shall have regard to any efficiencies that the Commission considers will result, or will be likely to result.

The Commerce Commission's publication "Guidelines to the Analysis of public benefits and detriments" (1994) provided that the "public" is the public of New Zealand and that benefits to foreigners are to be counted only to the extent that they also involve benefits to New Zealanders. This publication (revised in 1997) no longer accurately records the Commission's view and is currently being updated to reflect the changes in the Commerce Amendment Act 2001.

The revocation of those Guidelines leaves the comments by the High Court in the Amps-A decision as the leading authority on whether benefits to foreign firms should be considered and to what extent they should be discounted.

The High Court in that case stated:

> "We reject any view that profits earned by overseas investment in this country are necessarily to be regarded as a drain on New Zealand. New Zealand seeks to be a member of a liberal multilateral trading and investment community. Consistent with

> this stance, we observe that improvements in international efficiency create gains from trade and investment which, from a long-run perspective, benefit the New Zealand public."

and went on

> "On the other hand, if there are circumstances in which the exercise of market power gives rise to functionless monopoly rents, supra-normal profits that arise neither from cost savings nor innovation, and which accrue to overseas shareholders, we think it right to regard these as exploitation of the New Zealand community and to be counted as a detriment to the public."

Given that the public in Section 3A of the Act is the New Zealand public, whether the Court is suggesting that an efficiency defense of a merger or commercial practice may differ according to whether or not the relevant firm is foreign owned depends upon the interpretation of functionless monopoly rents. If functionless refers to rents that have no implications for behaviour that is to the long term benefit of consumers there will be only very limited possibilities of appeal to discrimination on grounds of ownership in efficiency calculations. As mentioned in Sections 3.1.3 and 5.1, absent regulatory barriers to entry, profits are the catalyst to competition, entry and innovation that enhances dynamic efficiency. If this function of profit is admitted under competition law there will be very few instances where ownership discrimination is applicable. Alternatively, if the rents are statically treated as functionless, and their effect on competition and innovation ignored, there will be many examples of efficiency computations potentially materially affected by the Court's caveat. For example, the rent transfer of Figure 1 in the text would be treated as a detriment leaving it plus the triangle as the cost of the price rise to the public of New Zealand: accordingly the test of Williamson (1968) would have to be modified for actions involving price rises because of such non-neutral transfers.

Even if profits were considered functionless there are a number of obvious direct issues that should be considered before application of discrimination. The direct issues include the fact the New Zealand public may own some proportion of relevant foreign firms, and these firms would generally pay some domestic tax on any surplus: thus the dichotomy between foreign and domestic firms is not necessarily a dichotomy that represents the incidence of benefits and costs. Although the criterion in principle would apply to both foreign-owned producers and foreign consumers it is unlikely that these producers and consumers should be treated symmetrically. The tax and locational-ownership issues cited differ as between foreign ownership and consumption, and foreign consumers are, presumably, much more passive in the determination of the dynamic performance of the New Zealand economy. Because of this asymmetry it will generally be in the interest of dynamic efficiency for foreign consumers to be discriminated against by ignoring benefits and detriments that lie with them in efficiency calculations, but to generally ignore the ownership of firms.

Since competition law is a constraint on institutions of trade, including those of contracting, its neutral application is required if the availability, enforceability and uptake of contracts is to be neutral as between domestic and foreign-owned firms. Indeed, the argument for the treatment of efficiencies is the same as the rationale for sanctity of contracts. Unless contracts are impartially enforced transactions and investment will be affected; in particular if foreign-owned firms perceive that contracts are not enforceable in New Zealand they will either not transact in New Zealand or they will write into New Zealand contracts that they be enforceable in other jurisdictions. To treat firms within the same (New Zealand) market differently—under competition and/or contract law—

according to domestic or foreign ownership would hinder dynamic efficiency because it would imply that existing foreign-owned firms in New Zealand would be discriminated against in administrative decisions of commerce. If firms were fully informed of the discriminatory policy before they entered, fewer foreign-owner firms would enter and thereby competition and concomitantly the dynamic efficiency of New Zealand markets would be reduced. Where this inhibits the uptake and development of innovations the loss in welfare would be very large.

The argument for enforcement of contracts—despite the existence of ex post outcomes that could be more efficient on a static efficiency basis—is that the limitation of opportunistic behaviour that is proscribed under enforceable contracts enhances dynamic efficiency. This is exactly the rationale for neutral treatment of domestically and foreign owned firms in efficiency tests under competition law.

5 Dynamic efficiency and the modern economy

Dynamic efficiency is so important to the performance of an economy and characteristics of innovation and production has so changed in the last 50 years that we return to consider it. Modern developed economies markets are characterised by growth in the share of services, rapid evolution of technological change and product quality, lower transactions costs, relatively high fixed to variable costs of new products, and the debated importance of actual and virtual network effects.[45] These have direct implications for competition law.[46] We note that the effect of electronic communication and declining transport more generally of the modern economy on the implications for distance for trade are complex.[47] It follows that their implications for competition law across economies will not be straightforward either.

McLeod (2003) suggests that a distinguishing outcome of markets that have sourced the modern "digital" economy, at least from the perspective of competition law, is the profitability of their leading firms (Microsoft and Intel for example). These reflect the competition for the field and the winner take-all proclivity of products with network effects. As a range of literature points out,[48] it is the prospect of profits in an environment of rivalrous competition to differentiate their products and services, and innovate that drives dynamic efficiency: price competition may play a limited role.

Although profits may be prominent and, in modern-economy, industries characterised by network effects and/or economies of scale, there may be limited space for viable competing products, this does not imply that the profits are inhibiting or even not necessary for continued economically beneficial evolution. The incentives for innovation implied by profits and the possibility of the winner take-all means that potential profits—indicated by an ability to retain actual profits—are necessary for dynamic change. Measuring any inessential (monopoly) profits is extremely fraught in the modern economy, particularly in those sectors of rapid technological advance.

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45 Quah (2003) provides a lively insightful classification and analysis of digital goods that lie at the root of characteristics of modern economy markets.

46 See Evans (2003) for a discussion of competition implications of the modern economy.

47 See for example, Evans and Harrigan (2003) that conclude that there has been centralisation of services but not manufacturing to date in the past 10 years.

48 Baumol (2002) and the literature review of CRA (2002a and b) examine competition in the modern economy.

5.1 Industry structure and innovation

A great deal of literature has recently been produced on the characteristics of market structure in industries.[49] There is a growing consensus in the economics literature that the ideal market structure for industries lies somewhere between perfect competition and complete monopoly. At both these extremes there are limited incentives, and at the small-firm end limited resources, for firms to innovate and it is somewhere at an intermediate level that such incentives are maximised.

Baumol (2002) endorses the long-established Schumpetarian argument that the market structure that maximises the rate of innovation is oligopoly. However, the empirical evidence is much more equivocal.[50] We note that empirical studies of the relationship between market structure and determining features have had a long history of grappling with unstable empirical results and that these arise from the fact that on the basis of theory there is no stable relationship between market structure and performance as it depends critically upon the nature of the industries. We consider it reasonable to presume that innovation does arise from firms of all sizes and that there is no reason for discriminating among firm sizes through the efficiencies calculation of competition law. Of course typically oligopolies will be the focus of competition law. While relative to other markets a predominance of oligopoly might be expected in a small economy, in fact this need not be the case if products and industries of smaller firms are relatively more profitable in these economies.

5.2 Cooperation and competition

Competing firms may benefit from cooperation in a variety of circumstances. These circumstances include risk sharing, particularly when large risky irreversible investments are contemplated, access to networks that have natural monopoly characteristics (eg, transaction networks and product standards (in relation to virtual networks)), and externalities such as the costs and outcomes of research. Particularly providing that these firms are otherwise competing, the literature[51] argues that firms operating in dynamically competitive markets will often choose to cooperate for these purposes in the instances in which it is in society's interests as well as their own. A good example is provided by joint venture arrangements. In these arrangements parties that otherwise may compete cooperate in particular projects that have certain of the defining characteristics that predispose cooperation. These parties may or may not be competing head to head in (other) markets, but even if they are not they will be competing in seeking and developing other projects that further their private interests. Thus generally joint venture arrangements produce quite different outcomes from mergers that lead to single-firm ownership. Efficient outcomes from joint ventures reflect the tension between co-operation and competition. Cooperation is essential for certain activities and the presence of competition will generally limit the extent and focus of it to the bounds of the project.[52]

The literature[53] suggests that a key to unlocking the benefits of innovation in new economy industries lies in setting conditions where both competition and cooperation are unrestricted and permitted to co-exist and reinforce each other. As with competition, the

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49 For an assessment see Ahn (2002) and Evans, Quigley and Zhang (2003).

50 This literature is reviewed briefly in Ahn (2002) pp 10-16, and the OECD (2002).

51 Shapiro (2002, p. 21) reviews the reasons for firms' co-operation. He notes that co-operation is typically vertically, rather than horizontally, between firms.

52 Cooperation is common in producing research and extension outputs in agriculture. Joint ventures arise in these industries and many others (e.g. gas and petroleum discovery) in New Zealand.

53 For example, see Fershtman and Pakes (2000).

primary role for government in promoting efficiency enhancing cooperation lies in removing barriers to such cooperation. In the absence of barriers, cooperation will emerge wherever and whenever firms view it as a useful adjunct to their competitive activities.

The literature (see Baumol 2002 and CRA 2002a, for example) suggests that the efficient development of new economy industries requires the removal of barriers to entry rather than focus on the level of a market's concentration. The argument is based on the position that new economy industries rely particularly on the process of dynamic competition. Evans and Schmalensee (2001) explain it this way:

> In particular, the analysis of market power in new economy industries must consider the vulnerability of leading firms to entry powered by drastic innovation, not just to the entry of firms producing equivalent products with known processes. Analysis of this sort of fragility may require difficult judgements about the likelihood of disruptive innovations in the future, but simply to assume such innovations cannot occur is to ignore history and to impart substantial and obvious bias to market power analysis in important sectors.[54]

Dynamic efficiency and the characteristics of digital-goods markets imply the substitution of detailed rule-of-reason analysis for traditional rule of thumb competition analyses. In order to economise on the resource use that this implies they suggest that:

> The only apparent approach to mitigation of these problems is to develop presumptions and structured rules of reason that reflect new economy realities and that are designed to lighten the courts' analytical burden. When the world is changing rapidly, an approximate analysis of today's conditions is much more likely to be useful than an exact analysis of conditions a decade ago.[55]

It is a consensus in the literature that in new economy markets, the application of competition law should be less concerned with levels of concentration per se. However, the natural advantages—eg, first-mover advantage—of monopoly in new economy industries, in the view of some, may facilitate the adoption of exclusionary devices that prolong and enhance the market power to the detriment of even dynamic efficiency.[56]

It is part of this consensus (eg, CRA 2002a, Shapiro 2002) that the focus of competition authorities should shift from the structure of a new technology industry to the conduct of individual firms in the market. The CRA study concluded that competition laws in new economy markets should concentrate on conduct and its alleged effect on competition. Because of the cost of implementing such a case-specific approach the study suggested that action should only be taken in new economy markets when there were substantial potential benefits from intervention.

5.3 Implications for small economies

Although Baumol (2002) claims that new economy industries are not pervasive and can be identified we are not sanguine about this conclusion. Such have been the changes wrought by digital goods and other elements of the new economy that most industries reflect their influence. Furthermore the adaptation of these goods to uses in other industries may result in goods that themselves have new economy goods characteristics.

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54 At p47.

55 Fershtman and Pakes (2000) p17.

56 See for example Piraino (2002).

Indeed, Quah (2003) makes the case that digital goods can be used to represent many goods that are not obviously digital in nature: eg, biotechnology. We note that the distinguishing feature of competition law for new economy goods is that it should be applied with the objective of dynamic efficiency. Given this, it would be desirable to apply the approach on a case-by-case basis across the economy.[57] In small economies it will generally be that competition concerns arise in oligopoly or near monopoly industries where again dynamic efficiency considerations are important: for example, for New Zealand dynamic efficiency must be the competition law criterion if exploration for gas and oil are enabled. Thus, it may be that for small economies that already emphasise dynamic efficiency little adjustment may be needed. Across industries there already would be case-specific analysis focussing on the removal of institutional barriers to entry.[58]

As we have noted, cooperation is important to efficiently deal with externalities that arise in areas such as innovation and standard setting. The ability to semi-formally coordinate is provided through joint ventures.[59] There is a growing body of literature that argues that it is not efficient to limit coordination by *per se* offences. These impose direct and indirect inhibitions on potentially economically efficient coordination. This literature argues that rule of reason should apply, notwithstanding that monitoring and transaction costs of enforcement may be reduced by the *per se* approach. In small economies the issue is likely to be particularly acute because of the low population of firms in highly concentrated industries. In such circumstances any communication is likely to involve a significant share of the market and seem widespread. But to inhibit cooperation in such small markets is unlikely to be efficient. We note that firms can cooperate under the Commerce Act when it comes to exporting to non New Zealand markets: however other cooperation may be legitimate, and the division between exporting and domestic activity may not always be that sharp.

In small economies firms may engage in practices that in some larger economies would be *per se* illegal under competition law. For example, in larger economies price fixing arrangements are typically *per se* prohibited. As we have mentioned, some literature questions the wisdom of this approach on the grounds that agreements by firms to fix prices can be dynamically welfare enhancing.[60] It suggests that *per se* offences should be evaluated under the rule of reason. Nevertheless, a *per se* prohibition does provide some certainty as to the nature of the law and thereby potentially limits the practice and reduces transactions costs of enforcement. In Australia and New Zealand firms can apply for an authorization for such an arrangement, and it may be that a partial solution is to allow the penalty for *per se* offences to be based on the efficiency of the practice and to not have it mandated in any way. The inclusion of *per se* restrictions on behaviour deserves further investigation.

It is very likely that regulatory institutions have economies of scale that imply that the average cost of competition law enforcement will fall with the size of the economy, and that might imply optimally relatively less activity. However, the complexity of the dynamic efficiency issues and the need to consider the avenue of efficiency defences—rule of reason—suggest a resource intensive regulatory authority. However, there may be

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57 This does not mean that the competition authority may not develop rules of thumb about practices that go to dynamic efficiency and which limit case-by-case considerations. It might, for example, reach a presumption that long-term contracts by joint ventures in industries with much risk and sunk costs – eg, in oil and gas exploration and production – will generally be efficient and therefore be readily authorized.

58 See Mathewson and Quigley (2003) for an analysis of barriers to entry in the New Zealand context.

59 The Commerce Act permits certain actions among joint venture parties.

60 See Fershtman and Pakes (2000) and Mellsop (2000) for a New Zealand example.

savings to be achieved in focussing on barriers to entry at the expense of market structure and (static) efficiency defences.

6 Trade, investment and competition policies

There is a growing body of literature that concludes that open trade and investment policies are relatively more important for small countries.[61] Levinsohn (1993) found that imports were a source of domestic market discipline in Turkey. Other researchers report similar results for the Ivory Coast and Mexico. Hoekman, Kee and Olarreaga (2001) show that in a simple symmetric Cournot model with a fixed cost of entry, import penetration reduces domestic markups whereas entry regulations have the opposite effect. Their empirical work utilising data on 41 countries shows that imports have a relatively greater impact on competition in small economies whereas domestic entry regulation (achieved through competition law and/or regulatory policies) have a relatively greater impact on competition in large economies.[62] In an allied study, Hoekman and Kee (2003) confirm that low barriers to imports discipline markups and find that the introduction of competition law had no discernable direct effect on mark-ups. They contend it may have some indirect effect because numbers of firms were 7.2% higher in the presence of competition law, all else held constant.

We note that distance related costs will affect the discipline of imports on domestic activity, although low import barriers can be expected to remain very important. At a minimum it sets a threshold of competition for domestic firms. Returning to our earlier discussion, we note that for tradable goods and services we would not expect there to be a problem of excess entry since the fixed costs of imported goods have already been incurred in the country of origin.

As trade and investment policies of all countries have liberalised, there has been considerable convergence of competition and regulatory policies; fostered in part by international organisations such as the OECD and WTO. For this reason, and because the issues are similar, central elements of competition law are common across different countries. However, while the law is similar and techniques for its application almost identical, its application does materially differ across countries. An obvious example of the communality of approach is the rules of thumb used to screen merger proposals in countries such as the USA and the UK: they utilise to some degree some function of market shares and number of firms in the market – eg, the Herfindahl-Hirschman Index (HHI). The resultant communality of regulatory approaches can lower the costs faced by firms operating across countries, and regulations and case law from other jurisdictions can in principle be usefully utilised by the courts and competition authorities.

The efficiency of such harmonisation can easily be overstated. First there is the choice of which jurisdiction to harmonise with, and secondly outcomes from common application of competition precepts may be quite different depending upon legal systems—eg, the presence of common or civil law—and the state of any system.[63] Even under the same systems outcomes depend as much on the implementation of law and regulation as they do on the statutes themselves.

To the extent that there are substantive differences between countries on the basis of their size and location it is likely that implementation would and should be different even

[61] For a more sceptical position see Baldwin (2000) who reports on the robustness of some earlier studies.

[62] At pp21-2.

[63] See Evans and Quigley (2004) for an analysis of the limited place of competition law when law of contract is not firmly established.

for the same statute. An obvious example is the HHI which is used in the USA as a prima facie indicator of the anti-competitive effects of a merger that, when tested against thresholds, will determine legality.[64] As Gal (2001) points out, the level of the US thresholds are simply not appropriate for small economies as they would create barriers to efficient mergers in those economies. That operative rules of thumb have been entirely different in New Zealand and the USA is pointed out in Arnold *et al* (2003), and an example relating to the electricity industry is given in Evans (1999). Indeed, accepting the thesis of this paper that small isolated economies are different from large economies in their absence of economies of scale and necessarily more concentrated markets implies that, at a minimum, implementation of competition law would differ across countries. This seems to have been the basis for Canada to deliberately emphasise the efficiencies defence relatively more than is the situation in the USA.[65] [66] Emphasising the efficiency defence relatively more in small economies is likely to admit consideration of more restrictive competition law conditions of larger economies, which would likely lower transactions cost for firms seeking to operate in small economies.

We also note that extent of isolation may be a critical factor both in harmonisation and competition law. For those countries whose location is such that their (domestic) markets coincide geographically with those markets of larger economies were it not for trade and other institutional restrictions, close harmonisation of all aspects of competition law would seem appropriate, particularly if barriers to trade are low. Indeed, in the absence of these barriers economies of scale and scope will be available by low-cost exporting as will market discipline effects of imports. The small economy problem may not apply for countries geographically and institutionally close to much larger economies, no matter how small the economy. A small European country might efficiently harmonise its law closely with the competition law of large neighbours (and ultimately even be embedded in the European Union) whereas New Zealand and Australia face some disjunction between their domestic and export markets due to costs associated with distance and for them close harmonisation with other countries may be less efficient.

Certain small economies—New Zealand being an example—have extensive competition law whereas other small economies—eg, Singapore, Hong Kong and the Philippines—have negligible competition law. Part of the difference may be explained by New Zealand's isolation, which can mute the domestic advantages of trade in some areas, but it will also reflect the history of the country's institutions. The Singapore and Hong Kong situation may reflect their positions adjacent to much larger economies which in effect provide competition and markets for many of their firms. Competition law is currently being proposed in both countries as the non-tradable sector—particularly that of services—becomes relatively more important. The Philippines exemplifies the very considerable numbers of countries for which consistent credible contract law is of much higher priority than the precepts of competition law.

It would seem efficient for small and geographically remote economies to have their own approach to the specification and implementation of competition and regulatory policies. The appropriate approach will desirably depend upon a country's legal and political-governance structures. For all of these countries low institutional barriers to trade and investment are likely to enhance welfare. For those small economies for which competition law will improve welfare, mimicking the competition law and implementation

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64 Note that this presumption arises in part because the efficiencies defence is emphasized less in the USA where the effect on competition is given pre-eminence.

65 See footnote 40.

66 Berry and Pickford (2000) suggest that New Zealand competition authorities have to 1999 had a more tolerant approach to mergers on the basis of efficiencies than has had the United States or Canada.

practices of larger economies is very unlikely to be optimal. It is preferable that small economies place particular emphasis on efficiencies of practices and mergers and the removal of barriers to entry, rather than preconceived rules about competition; in which case arrangements that satisfy the competition law of larger economies will not be constrained in smaller economies thereby enabling lower cost foreign and domestic firm activity in the smaller countries. As common low barriers to trade across countries are likely to benefit the performance of domestic industries in these countries, there is no case for the promulgation of identical competition rules across economies.[67]

7 Competition law in small isolated economies: a summing up

The structure of any country's entities will depend upon that country's comparative advantage and this will be affected by the characteristics that include size and location. Industry structure will reflect these characteristics. The small size and isolation of the New Zealand economy places it in an unusual position, and it is likely that isolation has been as important as size for the country's comparative advantage, institutions and historical performance.

In small isolated economies there can be expected to be a larger fraction of domestic markets that are concentrated, although competitive industries may also exist. Where domestic markets are concentrated in such economies it is important that case-by-case application of the efficiencies criteria are applied to mergers and practices, particularly at the expense of rote application of competition rules of thumb derived from other jurisdictions.[68] The desirability of utilising economies of scale, perhaps by enabling exporting and dynamic efficiency means that the efficiency defence should generally weight consumer and producer surpluses equally in this calculation. On similar grounds it is generally not desirable to distinguish between foreign and domestic entities in the efficiencies calculation. The recent suggestions for the implementation of competition law in modern economies are designed to enhance dynamic efficiency and they are suited to direct application in small isolated economies.

For any economy cooperation enhances economic performance in specific circumstances and particularly in the presence of competition. In small economies cooperation can be particularly efficient—eg, in achieving scale and thereby export performance—and at the same time entail interaction among a large fraction of players in an industry. In this context the inclusion of per se restrictions on behaviours in competition statutes deserves further investigation.

The place and form of desirable competition law in any economy will depend upon the existing legal and political institutions of that country as well as more specific factors including those of size and location. Application of competition law that does not inhibit but enhances dynamic performance is a particular challenge for economies such as New Zealand with very small isolated domestic markets because domestic demand—and therefore domestic opportunity—is very limited and firms are extremely mobile in the modern world. This combination enhances the argument for competition law that enables dynamic efficiency and thereby the long term interest of New Zealand consumers.

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[67] Trebilcock (1991) propounds the view that trade and investment policies are at least as important as competition law in small economies for the performance of domestic markets.

[68] This is the position of Khemani (1991, p.219).

References

Ahn, Sanghoon (2002) "Competition, Innovation and Productivity Growth: a Review of Theory and Evidence", Organisation for Economic Co-operation and Development, Economics Department, Paris, Working Paper No 317, January.

Alger, D and J Leung (1999) "The Relative Costs of Telecommunications in Five Countries", NZ Institute for the Study of Competition and Regulation, Wellington. mimeo <www.iscr.org.nz>.

Amir, R (2001) "Market Structure Scale Economies and Industry Performance", School of Economic Studies, University of Manchester, Manchester, mimeo.

Andersen, JE and E Van Wincoop (2003) "Gravity with Gravitas: A Solution to the Border Puzzle" *American Economic Review* 93(1): 170-192.

Argarwal, R and M Gort (1999) *First Mover Advantage and the Speed of Competitive Entry*, University of Buffalo New York, Buffalo mimeo.

Arnold, T, D Boles de Boer and L Evans (2003) "The Structure of New Zealand Industry and its Implications for Competition Law" in M Berry and L. Evans eds *New Zealand Competition Law at the Turn of the Century* (Wellington: Victoria University of Wellington Press): Chapter 1

Arrow, K (1962) "Economic Welfare and the Allocation of Resources for Inventions" in R. Nelson ed *The Rate and Direction of Inventive Activity* (Princeton NJ: Princeton University Press): 609-624.

Baldwin, RE (2000) "Trade and Growth: Still Disagreement about the Relationships", OECD Economics Department, Paris, Working Paper No 264.

Baumol, WJ (2002) *The Free Market Innovation Machine: Analyzing the Growth Miracle of Capitalism* (Princeton NJ: Princeton University Press).

Beardow, M (2003) "The Cost Structure of Electricity Lines Businesses and Performance Competitive Pressures", presentation to the ISCR seminar on Regulation of Electricity Lines Companies, NZ Institute for the Study of Competition and Regulation, Wellington, March <http://www.iscr.org.nz>.

Berry, M and M Pickford (2000) "A New Zealand Perspective on the Efficiencies Defence" *ISCR Competition and Regulation Times* October.

Bils, M and PJ Klenow (2002) "Quantifying Quality Growth" *American Economic Review* 91: 1006-1030.

Brander, J and B Spencer (1984) "Trade Welfare: Tariffs and Cartels" *Journal of International Economics* 16: 227-242.

Campbell, JR and HA Hopenhayn (2002) "Market Size Matters" National Bureau of Economic Research, Cambridge MA, Working Paper No 9113, August.

Caves, RE, ME Porter and AM Spence with JT Scott (1980) *Competition in the Open Economy – A Model Applied to Canada* (Cambridge MA: Harvard University Press).

Charles River Associates (United Kingdom) Ltd (2002a) Innovation and Competition Policy – Part 1.

Charles River Associates (New Zealand) Ltd (2002b) Innovation and Competition Policy – Recent Economic Literature.

Combes, P, M Lafourcade and T Mayer (2003) "Can Business and Social Networks Explain the Border Effect Puzzle?" Centre de Etude Prospectives et d'Informations Internationales (CEPII), Paris Working Paper No 2003-02.

Demsetz, H (1982) "Barriers to Entry" *American Economic Review*, Vol. 72(1): 47-57.

Dixit, AK and JE Stiglitz (1977) "Monopolistic Competition and Optimum Product Diversity" *American Economic Review* 67(3): 297-308

Dunning, JH (1969) "Foreign Capital in Europe" in G.R. Denton ed *Economic Integration in Europe* (London: Weidenfed and Nicholson).

Evans, CL and J Harrigan (2003) "Distance, Time and Specialisation" National Bureau of Economic Research, Cambridge MA, Working Paper No 9729, May.

Evans, DS and R Schmalensee (2001) "Some Economic Aspects of Anti-Trust Analysis in Dynamically Competitive Industries" National Bureau of Economic Research, Cambridge MA, Working Paper No 8268, May.

Evans, L (1999) "Economic measurement and the authorisation process: the expanding place of quantitative analysis" *Competition and Consumer Law Journal* 7(2): 99-124.

Evans, L (2003) "The New Economy: A Force for Competition or Market Power", in *The New Economy: Challenges for East Asia and the Pacific* published under the auspices of the 27th Pacific Trade and Development Conference, forthcoming.

Evans, L and N Quigley (2004) "The Interaction Between Contract and Competition Law", forthcoming *in Competition in the New Millennium* published under the auspices of the 28th Pacific Trade and Development Conference, forthcoming.

Evans, L, N Quigley and J Zhang (2003) "Optimal price regulation in a growth model with monopolistic supplier of intermediate goods" *Canadian Journal of Economics* 36(2): 463-474.

Everett, AB and RW Ross (2002) "The Treatment of Efficiencies in Merger Review: An International Comparison" University of British Columbia and Delta Economics Group Inc, Vancouver.

Fershtman, C and A Pakes (2000) "A Dynamic Oligopoly with Collusion and Price Wars" *Rand Journal of Economics* 31(2): 207-236.

Gal, MS (2001) "Size Does Matter: the Effects of Market Size on Optimal Competition Policy" *University of Southern California Law Review* 74: 1437-1478.

Gal, MS (2002) “Reality Bites (or Bits): The Political Economy of Antitrust Enforcement,” in Barry Hawk ed *International Law and Policy*(New York: Juris Publishing): Chapter 23.

Goolsbee, Austan (2000) “In a World Without Borders: the Impact of Taxes on Internet Commerce*” Quarterly Journal of Economics* 115(2): 561-576.

Hansmann, H (1996) *The Ownership of Enterprise* (Cambridge MA: Harvard University Press).

Harberger, H (1954) “Monopoly and Resource Allocation” *American Economic Review* 44(2): 77-87.

High Court, *Telecom Corp. of New Zealand Ltd. v Commerce Commission* (1991) 4 TCLR 473, 531; 3 NZBLC 102.340, 102.386. (Amps A case)

Hoekman, B, HL Kee and M Olarreaga (2001) “Entry Regulation and Trade: Does Country Size Matter?” in *World Development Report 2001 – Institutions for Markets* (Washington DC: The World Bank).

Hoekman, B and HL Kee (2003) “Imports Entry and Competition Law as Market Disciplines” Centre for Economic Policy Research, London, Discussion Paper No 3777.

Jensen, MC (2001) “Value Maximisation, Stakeholder Theory, and the Corporate Objective Function” *Journal of Applied Corporate Finance* 4.

Katz, M. and H Rosen (1994) “Microeconomics” (Sydney: Irwin): 477-78.

Krishna, P (2003) “Are Regional Trading Partners ‘Natural’?” *Journal of Political Economy* 111(1): 202-226.

Khemani, RS (1991) “Merger Policies in Small vs Large Economies” in RS Khemani and WT Stanbury eds *Competition Policy and Law at the Turn of the Century* (Halifax, Nova Scotia: Institute for the Research on Public Policy)

Kuznets, S (1963) “Economic Growth of Small Nations” in EAG Robinson ed *Economic Consequences of the Size of Nations: Proceedings of a Conference held by the International Economics Association* (New York: St. Martin’s Press): Chapter 2.

Lancaster, KJ (1998) “Non-Price Competition” in J Eatwell, M Milgate and P Neuman eds *The New Palgrave: A Dictionary of Economics* (New York: Stockton Press).

Leibenstein, H (1966) “Allocative efficiency versus X-efficiency” *American Economic Review* 56: 392-415.

Levinsohn, J (1993) “Testing the imports-as-market-discipline hypothesis” *Journal of International Economics* 35:1-22

Mankiw, NG and MD Whinston (1986) “Free Entry and Social Inefficiency” *Rand Journal of Economics* 17(1): 48-58.

Marcy, G (1963) “How Far Can Foreign Trade and Customs Agreements Confer Upon Small Nations the Advantages of Large Nations,” EAG. Robinson in *Economic Consequences of the Size of Nations: Proceedings of a Conference held by the International Economics Association* (New York: St Martin’s Press): Chapter 17.

Markusen, JR (1995) “The Boundaries of Multilateral Enterprises and the Theory of International Trade“ *Journal of Economic Perspectives* 9(2): 169-189.

Mathewson, F and N Quigley (2003) “Market Power Thresholds: Theory and Competition Cases Related to Barriers to Entry” M Berry and L Evans eds *Competition Law at the Turn of the Century: a New Zealand Perspective* (Wellington: Victoria University Press): Chapter 6.

McCallum, J (1995) “National Borders Matter: Canada-US Regional Trade Patterns” *American Economic Review* 85: 615-23.

McLeod, R (2003) “Competition Policy in Small Economies: issues arising for New Zealand“ Ministry of Economic Development, Wellington, mimeo.

Mellsop, J (2001) “Information Sharing and the Winner’s Curse in the North Island Livestock Market”, Victoria University of Wellington, unpublished MCA thesis.

Mussa, M and Rosen S (1978) “Monopoly and Product Quality” *Journal of Economic Theory* 18(2): 301-317.

OECD (2002) Competition, Innovation and Productivity Growth: A Review of the Theory and Evidence, Organisation for Economic Co-operation and Development, Economics Department, Paris, Working Paper No. 317.

Perry, M (1984) “Scale Economies, Imperfect Competition and Public Policy” *Journal of Industrial Economics* 32: 313-333.

Piraino,TA (2002) “A Proposed Antitrust Approach to High Technology Competition” *William and Mary Law Review* 44(1): 65-166.

Posner, R (1975) “The Social Costs of Monopoly and Regulation” *Journal of Political Economy* 83: 807-827.

Quah, D (2003) “Digital Goods and the New Economy” Centre for Economic Policy Research, London, Discussion Paper No 3846.

Rose, AK (2000) “One money, One market: The Effect of Common Currencies on Trade” *Economic Policy* 15(30): 7-46.

Rosen, S (1974) “Hedonic Prices and Implicit Markets: Product Differentiation in Pure Competition” *Journal of Political Economy* 82(1):34-55.

Salop, S (1979) “Monopolistic Competition with Outside Goods” *Bell Journal of Economics* Vol. 10: 141-156.

Scherer, FM, A Bechenstein, E Kaufer and RD Murphy (1975) *The Economics of Multiplant Operation: An International Comparison Study* (Cambridge MA: Harvard University Press).

Scotchmer, S (2003) "The Political Economy of Intellectual Property Treaties" National Bureau of Research, Cambridge MA, Working Paper No 9114.

Shapiro, C (2002) *Competition Policy in Perspective* Organisation for Economic Co-operation and Development, Science, Technology and Industry Directorate, Working Paper No 2002/11.

Spence, AM (1976) "Product Selection, Fixed Costs and Monopolistic Competition" *Review of Economic Studies* 43(134): 217-235.

Stigler, GJ (1951) "The Division of Labour is Limited by the Extent of the Market" *Journal of Political Economy* 59(3): 185-193.

Stigler, GJ (1968) "Price and Non-Price Competition" *Journal of Political Economy* 76(1): 149-154.

The Times of London (2000) *Concise Atlas of the World*, 8th ed. (New York: Crown Publishers).

Trebilcock, MJ (1991) "Competition Policy, Trade Policy and the Problem of Second Best" in RS Khemani and WT Stanbury eds *Competition Policy and Law at the Turn of the Century* (Halifax, Nova Scotia: The Institute for the Research on Public Policy).

Tullock, G (1967) "The Welfare Costs of Tariffs, Monopolies and Trusts" *Western Economic Journal* Vol. 5(3): 224-232.

Vakil, CN and PR Brahmananda (1963) "The Problems of Developing Countries" in EAG Robinson ed *Economic Consequences of the Size of Nations: Proceedings of a Conference held by the International Economics Association* (New York: St. Martin's Press): Chapter 8.

Von Hayek, F (1945)"The Use of Knowledge in Society" *American Economic Review*, 35: 519-530.

Von Weizsacker, CC (1980) "A Welfare Analysis of Barriers to Entry" *Bell Journal of Economics* 11: 399-420.

Waterson, M (1987) "Recent Developments in the Theory of Natural Monopoly" *Journal of Economic Surveys* 1(1): 59-80.

Williamson, OE (1968) "Economies as an Antitrust Defense: The Welfare Tradeoffs" *American Economic Review* 58(5): 1371-1372.

Winter, RA (1993) "Vertical Control and Price Versus Nonprice Competition" *Quarterly Journal of Economics* 108(1): 61-76.

Wolf, HC (2000) "Intranational Home Bias in Trade*" Review of Economics and Statistics* 82(4): 555-563.

Appendix – Measuring Remoteness

If one looks at the globe, it is obvious that some countries are close to potential trading partners (eg, Germany) while other countries are in very remote locations (eg, New Zealand). Similarly, it is obvious that some country's economic activity is concentrated in a relatively small area (Netherlands, Japan) while economic activity in other countries is quite dispersed (Canada, Australia). In this appendix, we propose a summary statistic to capture these elements of remoteness.

The remoteness measure adopted here comes from the literature on "Gravity Equations" in the international trade literature.[69] Consider the case of a town located on a road between two other towns, one on the left (town B) that is 100 kilometres away and one on the right (town C) that is 50 kilometres away?. This literature asks – which town is closer, economically speaking, to town A? Or, to put this somewhat differently, if you opened a business in town A, how "important" would town B and town C be to your business plan?

The proposition in the literature on "Gravity Equations" suggests that the answer depends on the physical distance and the size of the town in economic terms. So if the amount of economic activity in town B (the one that is 100 kilometres away) is significantly larger (eg, ten times as much), an economic summary statistic tells us that the economic distance between towns A and B is less than the economic distance between towns B and C.

Conceptually, the basic scaling notion built into gravity models is that a town that is 100 miles away and has aggregate economic activity of $100 gets a 1.0. This is the same value that one gets for a town that is 50 miles away with aggregate economic activity of $50 as well as a town that is 200 miles away and has $200. This scaling is, of course, arbitrary, but it stands up as a reasonable approximation in the empirical literature.

For each country "i", the remoteness index Ri is given by to:

$$Ri = GDP_i / d_{ii} + \sum_j GDP_j / d_{ij}$$

Where d_{ii} is the internal distance for country i and d_{ij} is the distance between countries i and j for all j not equal to i.

To illustrate, consider the example of New Zealand. First we first take the NZ GDP and divide it by the (physical) internal distance within NZ. Then take the Australian GDP and divide it by the physical distance between Australia and NZ. Then we take Japan's GDP and divide it by the distance between NZ and Japan and so on. Summing these terms, we get a "remoteness" index for NZ of 2.45. The results for OECD countries are shown in Table A1.

[69] See, for example, Bergstrand (1985).

Appendix Table 1 – Remoteness Index for OECD Countries

Country	Remoteness Index	Country	Remoteness Index
New Zealand	2.45	Australia	2.50
Mexico	6.86	Turkey	6.92
Iceland	7.24	Greece	8.66
Finland	9.60	Portugal	9.95
Korea	11.62	Sweden	11.92
Norway	12.05	Spain	12.22
Hungary	13.1	Poland	13.26
Ireland	14.22	U.S.	16.39
Austria	16.64	Canada	16.90
Slovak Republic	17.29	Italy	18.00
Denmark	18.55	Czech Republic	18.80
Switzerland	20.58	Luxembourg	21.99
France	22.46	Netherlands	26.57
U.K.	26.87	Belgium	27.38
Japan	28.32		

Note: Small numbers mean more remote

The data used are as follows.

Internal distance of a country is calculated as the square root of a country's total area in miles times 0.4. So, for example, New Zealand's total area is 169,084 square miles. The country area is taken from The Times of London: Concise Atlas of the World, 8th Edition (2000).

Distance between countries is the Great Circle distance between capital cities (see http://www.wcrl.ars.usda.gov/cec/java/capitals.htm).

GDP is current gross domestic product is that reported by the OECD for 2001. The GDP data in domestic currency units are into U.S. dollars using market exchange rates (see: http://www.wcrl.ars.usda.gov/cec/java/capitals.htm).

The above calculations have not been varied. One would want to do a sensitivity analysis on some of the parameters adopted. Most critically, internal distance and international distances are treated symmetrically here; more likely an international mile is more of a barrier than a domestic one. If we were to recalculate these figures assuming that an international mile is more costly than a domestic mile, the U.S. and Japan would move down toward the not remote end of the scale, Canada and some of the more eastern European countries (eg, Poland, Slovakian Rep, Hungary) would move up toward the more remote end of the scale -- because they rely disproportionately on closeness to foreign markets for their ranking in Table A1. In essence, Table A1 reflects only physical distance, so it is the "base" case in a world where there were no country boundaries.