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Comments on two NERA reports on the CWH/NZWSI merger

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In this note I review two recent papers prepared by NERA Economic Consulting in relation to the proposed merger of Cavalier Wool Holdings Limited and New Zealand Wool Services International Limited. The first is NERA's review of my report dated April 21, 2015, which reviewed the Commerce Commission's Draft Determination on the proposed merger. The second is NERA's own review of the Draft Determination.

NERA's preliminary comments on my paper of April 21, 2015

NERA has prepared some preliminary comments on my paper of April 21, 2015. NERA's comments have helped me improve my explanation of some of the points in my original report. In one case, NERA's comments have helped me improve my understanding of the economics of the proposed merger. I take advantage of that here to clarify my arguments for the benefit of the Commission.

Entry modeling should use the required rates of return observed in the real world

> *NERA: The binding constraint is the threat of exporting greasy wool, not entry.*

I discuss this in my review of NERA's own review of the Draft Determination.

> *NERA: "[T]he cost of capital we use in our base case entry model is already 15% real, post-tax, which corresponds to 17% nominal, post-tax and 24% nominal, pre-tax."*

NERA is confusing the concept of a firm's cost of capital and the expected rate of return that a firm requires in order to be willing to undertake an investment (commonly called its "hurdle rate"). Presumably it would like the Commission to believe that the 15% rate is already high and so needs no adjustment. If the 15% return were actually the firm's cost of capital then it would be relatively high. However, it is a hurdle rate—and a hurdle rate of 15% is not high.

The cost of capital and the hurdle rate are fundamentally different concepts. When the Commission sets regulated prices it uses a firm's cost of capital to set the regulated allowed rate of return. However, in the present case the Commission is not setting prices. Instead, it is trying to predict whether firms

will enter the scouring market. NERA's entry model is trying to do the same thing. The crucial question that NERA's model seeks to answer is how high would prices need to rise before the expected rate of return from entering the scouring market is high enough to persuade real-world firms to enter. Equivalently, how high would prices need to rise before the expected rate of return from entering the scouring market exceeds the hurdle rates of real-world firms.

All of us—academic experts, Commission staff, and professional consultants—are trying to predict how firms will behave. To do so, we need to estimate the hurdle rates that are used in the real world. The theoretical evidence I cited in my original report shows that firms should set their hurdle rates significantly above their cost of capital. The survey evidence I cited shows that real-world firms say they set their hurdle rates significantly above their cost of capital. The econometric evidence I cited shows that these firms do what they say they do.

When the Commission attempts to predict the price increases needed to induce entry, it must use hurdle rates that reflect those used by firms in the real world. The evidence I cited in my original report shows that hurdle rates of 20% are entirely plausible.

> *NERA: "While we do not dispute the literature Professor Guthrie cites, from a practical perspective his report does not apply the literature carefully to the present case."*

NERA cites two examples to support its claim that the evidence showing high hurdle rates is not applicable to the present case. As I explain below, NERA's first example incorrectly asserts that long-term contracts eliminate project risk, when in fact they only reallocate it. Once this erroneous assertion is corrected, NERA's argument collapses. The second example actually illustrates the applicability to the present case of the evidence I report, and so strengthens the case for its inclusion.

> *NERA: "Professor Guthrie does not acknowledge that our entry modelling assumes the entry investment would be underwritten (by contract or vertical integration) – this addresses squarely Professor Guthrie's 'winner-take-all'/stranding risk argument (page 2)."*

The reason I do not acknowledge that NERA's entry modelling assumes the entry investment would be underwritten (by contract or vertical integration) is that the contracting arrangements are largely irrelevant to the entry decision.

NERA's argument is that the entrant's assets will not be stranded because scouring customers will be obligated to use its services, or at least to pay for them. At first glance, it might seem that this makes entry more attractive, by making the scouring plant's revenue stream less risky. However, that is an overly simplistic view because such long-term contracts merely reallocate the risk

between the contracting parties. Long-term contracts do not reduce the risk, which is what is required for NERA's argument to be valid.

The customers who sign up for these contracts are taking on the risk that would otherwise be borne by the entrant's shareholders. If harvests are down due to exogenous events, or down as an endogenous response to poor industry returns, then customers still have to pay the scouring firm. They will demand compensation for bearing that risk, and providing that compensation is costly to the entrant. The entrant's shareholders can eschew the long-term contracting arrangement, bear the risk themselves, and charge a relatively high price for scouring. Alternatively, they can adopt the underwriting approach, shift the risk onto customers, and charge a relatively low price for scouring. In either case, the net present value from entering the scouring market will be the same

Something similar happens when a vertically integrated firm enters the scouring industry. The other parts of its business generate demand for scouring services, so it might seem that the risk of entry is low. However, if harvests are down, either exogenously or endogenously, then the firm as a whole is still exposed to risk. Vertical integration means that it is the division using scouring services that bears this risk, rather than the division that provides them. However, the firm as a whole still bears the risk.

The situation can perhaps best be summarized by a well known saying: "There is no such thing as a free lunch." Using long-term contracts to reduce risk, and hence the hurdle rate, is not the free lunch that NERA suggests because it is accompanied by either lower average revenue or other parts of the firm's business becoming more risky.

> *NERA: "[T]he irreversibility or sunkness that gives rise to the real option is mitigated in the present case by the saleability of land and the secondhand market for plant."*

The firms in the two strands of empirical evidence—the surveys and the econometric evidence—that I cite in my original report also use land that can be sold, as well as plant and machinery for which there is a secondhand market. Any risk-reducing effects of the saleability of land and the secondhand market for plant are already reflected in the hurdle rate estimates in the empirical studies that I cite. In fact, it is a feature of that evidence, and one of the benefits of using data on actual firm behavior when calibrating entry models.

Allowing for the conflict created by the Lempriere option

> *NERA: "It is theoretically correct that the option would introduce a conflict of incentives. However, query [sic] whether in a practical sense there would be any material conflict, or any material impact on decision-making. In the context of productive inefficiency (as opposed to business strategy) it is*

> *likely both parties would have the incentive to ensure the firm is productively efficient."*

NERA does not explain why it thinks it is "likely" that all parties would have an incentive to be productively efficient. The suggestion seems to be that, unlike "business strategy", productive efficiency does not reach the threshold where the various parties will care one way or another. Of course, this casts doubt on the claim that the merged firm would care much about productive efficiency at all. However, if the Commission were to share the view that productive efficiency was somehow less important to the merged firm's board than "business strategy", the Commission might consider the following two examples.

First, consider a firm that is deciding whether or not to reduce maintenance spending to levels where there is a material risk of substantial machinery failure, worker injury, and so on. If the firm is fortunate and these negative outcomes do not occur, the firm's profitability and market value rise, and the shareholder with the option captures the lion's share of the benefits. On the other hand, if the firm is unfortunate and these negative outcomes occur, the firm's profitability will fall as the firm has to make costly repairs, etc., but the shareholder with the option effectively passes 55% of these costs onto other parties.

Second, consider a firm that is deciding whether or not to raise cash and reduce capacity by selling off plants. If the firm is fortunate and the reduced capacity is sufficient (even after allowing for demand fluctuations, equipment failure, and so on), the firm's market value rises and the shareholder with the option once again captures the lion's share of the benefits. On the other hand, if the firm is unfortunate and it ends up having insufficient capacity, the firm's profitability will fall as the firm has to pay overtime to its workers, etc., but the shareholder with the option effectively passes 55% of these costs onto other parties.

These two examples show that NERA's distinction between productive efficiency and business strategy is artificial. Nevertheless, NERA makes that distinction. In fact, it goes one step further.

> *NERA: "[Productive efficiency] is an issue of monitoring."*

NERA's assessment flies in the face of decades of economic thinking on the matter. In the real world, when parties to a contract have different objectives that they want to achieve, monitoring cannot be relied on to eliminate the effects of the resulting conflict. Monitoring is imperfect. It is also costly, so that even if perfect monitoring were achievable, it would not be efficient. It is not the case that a problem (in this case, productive inefficiency) will be eliminated by simply monitoring more. In the real world, there will always be a conflict when two parties to a contract have different objective functions. Managing a wool-scouring business is no exception. Incentives matter.

> *NERA: "Regarding dynamic efficiency, it is worth keeping in mind that the merged entity would be a firm that cleans wool, which can then be used for*

> *further processing by other firms. It is not clear how much scope there is for a distinction between 'high-risk business strategies' and 'low-risk business strategies'."*

The two examples above illustrate the scope for business strategies in this industry to have differing risk profiles.

> *NERA: "It is also not clear how analogous the option holder/shareholder situation is to the shareholder/bondholder and manager/shareholder literature Professor Guthrie refers to."*

This comment by NERA has actually helped me develop my own understanding of the Lempriere option. I now realize that the optionholder-shareholder situation in the merged scouring operation is directly analogous to the situation considered in the extensive bondholder-shareholder literature.

The starting point in that literature is the observation that corporate bonds can be interpreted as a portfolio comprising the firm's assets and a short position in a call option on those assets.[1] If the value of the firm's assets is less than the option's strike price when the option expires, the option is worthless and the owner of the portfolio ends up owning the firm's assets. On the other hand, if the value of the firm's assets is greater than the option's strike price when the option expires, the owner of the portfolio ends up selling the firm's assets to the option holder for the fixed (strike) price. This is almost exactly the situation involving the Lempriere option. In particular, ACC and Direct Capital would own a stake in the merged firm that is analogous to corporate debt: if the firm does poorly, they will end up still owning that stake; if it does well, they will have to sell their stake to Lempriere. In the cases of both corporate debt and the Lempriere option, one party is primarily exposed to downside risk and the other is primarily exposed to upside risk. That is the source of conflict in both cases.

In summary, the Commission can be confident that the existence of the Lempriere option would create a conflict within the merged firm that is analogous to the conflict we observe between a firm's bondholders and shareholders.

> *NERA: "It is important to note that with a 45 percent shareholding, Lempriere would not be able to unilaterally choose business strategies that disadvantage the other shareholders, and nor would the other shareholders, because control would be split."*

The ownership structure described by NERA might actually make the conflict worse, as no side will be able to definitively take control. Anybody who has served on a perpetually divided committee will have a clear idea of the difficulty a conflicted board of directors will have in making good decisions. Moreover, as

[1] For example, see Ross, Westerfield, and Jaffe (2002, p. 635).

conflict persists and the costs of participating in a meaningful way increase, the quality of decision making will fall even further. The Commission should not expect a conflicted board to act in ways that maximize a firm's share price when shareholders have such divergent interests.

> *NERA: "Furthermore, Professor Guthrie's analysis does not appear to account for the exercise price of the option. The value of a call option decreases as the strike price gets larger.[Footnote omitted] At a minimum, the strike price would be $14 per share, compared to the share price of $[…] for the merger.[Footnote omitted] Therefore the strike price is materially higher than the merger share price."*

NERA is correct when it says that a call option's market value is low when its strike price is high. However, the relevant issue in the present case is not the value of the Lempriere option, but the strength of the incentives that it creates. What should concern the Commission is that an option that is as deeply "out of the money" as NERA describes creates a strong incentive for the option's owner to throw a "Hail Mary" pass, thus creating even greater conflict.

The intuition is clear. When the option's strike price is high relative to the value of the underlying asset (in this case, a share in the merged firm), large risks create a disproportionate benefit for the option-holder. This gives the option-holder a strong incentive to take on especially risky policies, which have the potential to increase the share price above the option's exercise price

In summary, if the strike price is indeed materially higher than the merger share price then this makes it even more important that the Commission considers the parties' conflicting incentives when it assesses the potential for improvements in productive and dynamic efficiency. NERA's observation strengthens, not weakens, my argument.

> *NERA: "Since Decision 725, the threat from overseas scouring has increased, justifying the Commission using 1% for productive efficiency detriments rather than the 3% last time."*

When NERA carried out its own analysis in October 2014, it estimated that the loss of productive efficiency would lie in the range from 1% to 5% of pre-merger variable costs. NERA offers no explanation for why it has revised its own estimate in this way.

Evaluating the (un)importance of incentive contracts

> *NERA: "No doubt incentive schemes are seldom perfect, but they are still likely to be better than having no incentive scheme. We have to assume that the firm designs (and adapts) the scheme it thinks will work best. The Commission does not claim that the incentive mechanisms will be better*

> *under the factual than the counterfactual. Rather the Commission's claim is that incentive mechanisms will restrict the degree of productive inefficiency under the factual."*

I make five points in relation to the Commission's discussion of performance-based pay. My first three points highlight some of the shortcomings of performance-based pay. My fourth point explains that such pay schemes are available to firms under the factual and counterfactual, so that allowing the merger to go ahead will have no effect on the availability of such pay schemes. My fifth point is that these pay schemes were also available to wool-scouring firms at the time of Decision 725. This final point is the most important, as it explains why the Commission cannot use the proposed roll-out of CWH's pay schemes to the merged firm as a reason for lowering its estimate of the loss of productive efficiency in 2015 compared to Decision 725.

NERA is agreeing with my first four points and ignoring my fifth point.

Allowing for lags in selling unused land and plant

I recommend in my report that the Commission calculate the present value of land sales as though the land becomes available for non-scouring use one year after the end of the merger's "rationalisation period". This is to capture the effects of the inevitable delays involved in selling land. However, NERA wants the Commission to calculate the present value of land sales as though the land becomes available for non-scouring use *at the beginning* of the rationalisation period.

> *NERA: "The Commission has already considered this issue (paragraph 384 of Decision 725), and that detriments may also take time to occur. The Commission's approach is the most practical and appropriate."*

The obvious problem with NERA's response is that paragraph 384 of Decision 725 actually applies to production efficiencies. (The section on production efficiencies begins at paragraph 337 and ends at paragraph 392; the Commission's discussion of the sale of land and buildings does not begin until paragraph 393.)

However, there is a less obvious, and more serious, problem with NERA's recommendation: it is asking the Commission to ignore its own guidelines to the analysis of public benefits and detriments of mergers. NERA wants the Commission to deviate from those guidelines in two respects.

First, on p. 20 of the Guidelines, the Commission notes that "[t]he time pattern in which the benefits are expected to accrue may be significant. Claims should make realistic allowance for likely delays in the generation of the benefit." I believe that my proposal makes such a "realistic allowance". In contrast, assuming that the land starts to generate benefits from non-scouring use as soon as the rationalisation period *begins* is clearly not making a realistic allowance for likely

delays: not only are the delays not positive, NERA wants the Commission to assume that they are actually negative!

Second, also on p. 20 of the Guidelines, the Commission states that "[b]ecause benefit claims are based on predictions, the Commission is likely to test the robustness of the claims by subjecting them to sensitivity testing. This involves varying key assumptions to test the stability of the estimates." I am proposing that the Commission test the sensitivity of its results to what is clearly an implausible assumption. It is especially important in this case because according to the Commission's own calculations, [ ]% of the total quantified benefits of the proposed merger come from the sale of land and plant.[2]

NERA is all over the place on this issue. It wants the Commission to ignore the actual timing of land sales and instead pretend that they occur on day 1. However, in NERA's paper dated April 21, it wants the Commission to calculate the present value of future capital expenditure using a very specific time profile proposed by NZWSI, which concentrates the surplus flows early in the five-year period (Table 7). NERA is even proposing very specific timing of the transfers to foreigners, motivated by an ad hoc "linear glide path" for the pass-through of price increases (Section 3). NERA does not explain why the Commission should ignore realistic sale delays but adopt entirely speculative timings of other surplus flows.

There is some consistency in NERA's approach, however. With regard to the land sales and avoided capex that are claimed benefits of the merger, NERA wants them counted as early in the five-year period as possible, when their present value will be highest. With regard to the price increases faced by growers, which are detriments of the merger, NERA wants them counted as late as possible, when their present value will be lowest.

Allowing for foreign ownership of the merged firm

In my original report I explained why the Commission needs to adjust its calculations of the value of benefits and detriments to reflect the partial foreign ownership of the merged firm. The adjustment is essential to ensure that any increased surplus from the merger is counted only to the extent that it affects New Zealanders.

> *NERA: "This increased surplus results from cost savings and investment. Accordingly it is 'functional', as opposed to the surplus transferred by merger-facilitated price increases (above the competitive level). The resources (e.g., gas, labour and land) can be freed up for higher value uses in New Zealand, and accordingly the surplus is appropriately considered as a measurement of the social benefit to New Zealand, regardless of where it flows."*

[2] Table 7 of the Draft Determination.

The terminology used by NERA illustrates the source of the misunderstanding. In particular, NERA refers to resources being "freed up" for use in New Zealand. The crucial point that the Commission needs to bear in mind is that the resources are not actually "free". A better description would be that the resources are "released" or "made available" for use in New Zealand. Most importantly, they are made available *at a cost*. NERA is proposing that the Commission counts the benefits of the resources being released, but does not count the cost of releasing those resources.

The issues become clearer if we examine them using an example from my original report that involves surplus resulting from cost savings. In this example, to which NERA has offered no response, the merger allows the merged firm to scour the same amount of wool using less gas. For the purposes of this example, suppose that this "unit" of gas cost the firm \$100. To help clarify the issues, for the time being assume that the firm is not taxed in New Zealand and that all shareholders are based overseas. In this situation, NERA argues that the value of the benefit to NZ is \$100, whereas I argue that the benefit to New Zealand is negligible.

It is helpful to analyze the situation from first principles.

- As a result of the merger, the overseas shareholder effectively holds one unit of gas that is of no value to him. (It is not needed to scour wool and the shareholder has no other use for it.) The overseas shareholder effectively sells that unit of gas back to the NZ supplier for \$100. The overseas shareholder has lost one unit of gas that had no value to him and received \$100 in return. The overseas shareholder therefore makes a net gain of \$100.

- The New Zealand gas supplier effectively buys the unit of gas back from the overseas shareholder. He pays \$100 and in return receives a unit of gas. Suppose that one unit of gas is worth \$p in its most valuable non-scouring use. The New Zealand supplier makes a net gain of \$p-\$100.

- The combined net gain of the overseas shareholder and the New Zealand gas supplier equals (\$100) + (\$p-\$100) = \$p. This is the total value of the resource that is "released" by the merger. However, the net gain to New Zealand is just \$p-\$100.

- As there are many competing uses for gas, p = 100, proving that the net gain to New Zealand is zero.

If the Commission followed NERA's approach, it would set the value to New Zealand of the reduced gas usage in this example equal to \$100. If my approach were adopted, the Commission would set the value to New Zealand equal to the correct level, which is zero. The Commission's Guidelines clearly state that "it is the net benefits, not the gross benefits, which are to be counted." (Guidelines, p. 12) My approach counts only the net benefits.

The flaw in NERA's approach becomes even more obvious when we recognize that the improvement in productive efficiency in this example is economically equivalent to NZ importing one unit of gas for a price of $100.

- In the case of the merger, a NZ gas supplier will sell one less unit of gas to the merged firm. Compared to the counterfactual, the gas supplier is up one unit of gas and down $100. The firm's shareholders have received $100 more in profits. Compared to the counterfactual, the overseas shareholder has used one less unit of gas and has received $100. That is, the NZ gas supplier has given the overseas shareholders $100 and in exchange the overseas shareholders have given the NZ gas supplier one unit of gas.

- In the case of gas importing, a NZ gas supplier buys one unit of gas from overseas for $100. The NZ gas supplier is up one unit of gas and down $100. The overseas party is down one unit of gas and up $100. That is, the NZ gas supplier has paid the overseas shareholders $100 and in exchange the overseas shareholders have given the NZ gas supplier one unit of gas.

The two cases are economically equivalent. In particular, the flows of resources are identical. When the Commission decides how it should value the benefits of the improvement in productive efficiency, it just needs to decide how it should value the benefits of imports of resources into New Zealand. Surely the decision is clear. The Commission would not (and should not) set the value of the benefit to New Zealand of imports equal to the expenditure on those imports. Rather, it would set it equal to the value of the imported resources minus the cost of importing them.[3] This is the only approach consistent with the Commission's correct decision to count net benefits and not gross benefits (Guidelines, p. 12).

To summarize: I claim that the value to NZ of importing a resource is the value of that resource minus the cost of importing it. NERA is effectively claiming that the value to NZ of importing a resource is the value of that resource *without making any allowance for the cost of importing it in the first place*. The latter approach is clearly wrong.

What this example shows is that NERA's advocated approach gives only half the story. Yes, improvements in productive efficiency release resources for use in NZ. However, if the merged firm is at least partly foreign-owned then cash is flowing overseas in the form of increased profits to foreign shareholders. Surely that cash is also a valuable resource that is not available for use in NZ. This is

[3] If the merged firm is entirely New Zealand owned, then one group of New Zealanders (the firm's shareholders) are transferring one unit of gas that they cannot use to another group of New Zealanders (the gas supplier's owners) that can use it productively. The net gain to New Zealand from this leg of the transaction is the value of the gas to the second group. The second group is transferring $100 in cash to the first group. As this is just a transfer between New Zealanders, it would (and should) be ignored by the Commission. Overall, the value to New Zealand of the productive efficiency would be the sum of the values of the two legs of the transaction, which equals the value of the gas in its best non-scouring use.

another example of NERA looking for a free lunch. When the resources released to NZ are at least partly foreign-owned, they are not free—and they are not "freed up".

The Commission's Guidelines are actually very clear on how the situation should be treated: "benefits to foreigners are to be counted only to the extent that they also involve benefits to New Zealanders" (Guidelines, p. 5). We can see the relevance of this statement if we return to the example in my original report, where the merged firm pays tax at the rate of 28%, 55% of the firm's shares are owned by New Zealand shareholders, and the remaining 45% are owned by overseas shareholders. Of the \$100 increase in profit from reduced gas use, \$28 goes to the New Zealand government in increased tax, \$39.6 goes to the New Zealand shareholders, and \$32.4 goes to the overseas shareholders.

According to the Guidelines, the Commission should count the \$28 in tax and the \$39.6 gain to New Zealand shareholders, which is exactly the outcome of applying my approach. However, the Commission should *not* count the \$32.4 gain to overseas shareholders because none of that gain involves benefits to New Zealanders, whether NERA regards them as "functional rents" or otherwise. Counting the \$32.4 on the grounds that this also involved benefit to New Zealanders would be double counting: the benefits to New Zealand are fully captured by the \$28 in tax and \$39.6 in increased profits.

> *NERA: "At the extreme, Professor Guthrie's suggested approach implies that there would be no benefit to the New Zealand economy by [sic] a rationalisation that frees up New Zealand resources for higher value use in New Zealand if the rationalising parties and their customers were foreign-owned. Put another way, the test proposed would be likely to preclude the restructuring of inefficient sectors of the economy in situations with substantial foreign ownership. [Footnote omitted]"*

This is incorrect. In the scenario described by NERA, the only NZ parties to be affected by the rationalisation would be the firm's domestic suppliers. Compared to the counterfactual of no rationalisation occurring, they would be supplying fewer inputs and receiving less cash. This is economically equivalent to the suppliers buying back these inputs (i.e., their own output) from the foreign shareholders. The benefit to NZ would be the amount by which the value of the resources in their best alternative use exceeded the price paid to (re)acquire them. However, NERA is proposing that the Commission set the value equal to the purchase price. It is the *net* payoff that matters.

> *NERA: "As a final comment, we think is important to carefully review footnote 15 of Professor Guthrie's report. The most important thing to note is that Professor Guthrie is actually downplaying the more extreme of his public benefit results set out on page 18, because at least some of the benefits would be captured by New Zealand residents if the option is exercised. We made the point in our 22 December 2014 memo that the*

> *option does not increase the transfer overseas. We do not agree with Professor Guthrie's argument that this is mitigated by the exercise price being set "far in advance", partly because we are not sure that would matter anyway, but also because we do not think the exercise price is necessarily set "far in advance" – in fact, three out of four of the pricing methods set out in clause 9 of the Shareholders Agreement would determine the price at the time of exercise."*

The existence of the Lempriere option alters the way that ACC and Direct Capital benefit from factors such as reduced production and administration costs and the proceeds from selling land and plant. One effect of the option is that ACC and Direct Capital effectively granted Lempriere a valuable option in return for a greater ownership stake in the merged firm. The strike price arrangements reflect the value of the prospective merger at the time the agreement was made. In particular, it will be affected by all of the factors that determine an option's value, including the time until the option expires and the volatility of the underlying asset (in this case, the volatility of the value of the merged firm). The presence of these factors diminishes the role of the strike price in determining the wealth transfers.

With regard to the extent to which the strike price is set "far in advance", it is important to note that what matters here is not the amount of time that elapses between the terms of the option being agreed and the option being exercised. A more useful measure is the magnitude of what can happen between the terms of the option being set and the option being exercised. For example, if the share price is very stable, then even an apparently long period of time will not allow much to happen. However, if the share price is very volatile, then the length of time needed for the "far in advance" condition to be met can be surprisingly short. For example, in the last 12 months, Cavalier's share price has had (annualised) volatility of 70%. Any option to buy shares with a level of volatility approaching a figure that high would not require much time at all to elapse for us to able to say the option's terms were set "far in advance".

> *NERA (footnote 5): "In this respect, we think that Professor Guthrie omits a fourth possible outcome in his bullets on pages 14 to 15, being that not counting benefits to foreigners could result in a "good merger" not occurring."*

Surely a "good merger" is one that benefits New Zealand consumers and shareholders. Excluding the benefits that flow to affected overseas parties does not prevent such a merger being approved. NERA's "fourth possible outcome" is simply an example of the type of merger described in my first bullet point.

NERA's review of the Draft Determination

NERA's review of the Commission's Draft Determination, which is the second NERA paper that I review here, covers many of the issues discussed above.

Therefore, in my review here I restrict myself to a discussion of material that has not already been covered.

Threat from overseas scours

NERA claims that the threat of exporting greasy wool is the binding constraint on prices. However, I have not been able to find NERA's evidence justifying this claim. NERA undertook no analysis of this possibility in its October 22, 2014 cost-benefit analysis and the discussion of this issue in NERA's April 21, 2015 review of the Draft Determination is largely restricted to some quibbling over the Commission's logic. The closest thing to a justification I can find is NERA's claim on p. 4 that the threat from overseas has increased since Decision 725 and that as the Commission capped price increases at 15% then, the price cap now should have fallen. However, NERA goes on to accept that the threat from overseas scours was not binding in Decision 725, so there are absolutely no grounds to assume that it is binding now. NERA is just asserting that this threat imposes a binding constraint on prices without providing any evidence.

Variable cost reductions

In Section 2.3 of its report, NERA claims that the merger would result in reduced variable costs that, to some extent, would be passed onto consumers. It then recalculates the percentage price changes used by the Commission against the lower prices that result if these cost savings are passed onto customers. This allows NERA to "repackage" the Commission's assumed price changes. For example, NERA claims that a 20% price change assumed by the Commission is actually a [ ]% price increase in the North Island and a [ ]% in the South Island.

As the Commission will surely recognise, this is purely an exercise in cosmetics and should have no bearing on the Commission's analysis. The reason is as follows.

- If the merger goes ahead, the constraint on price increases comes from factors such as the possibility that wool is exported directly without first being scoured in New Zealand or that a new scouring operation enters the New Zealand market.
- In the first case, customers will compare the net revenue they will receive from exporting the wool directly and the net revenue they will receive from first scouring it in New Zealand. This creates a cap—denominated in dollars, not percentage points—that a wool scour can charge before losing customers.
- Similarly, a potential entrant does not wait until it can charge a price that is some fixed percentage above the merged firm's price. It waits until it can charge a price that covers its costs. NERA's own entry analysis shows how it works. Given a set of assumed costs, scouring volumes, and a

hurdle rate, the potential entrant effectively calculates a scouring price that makes the net present value of entry positive. The potential entrant will enter if and only if it is able to charge a price that exceeds this threshold level, which—to be absolutely clear—is expressed in dollar terms. Only once this price threshold has been calculated is the implied percentage price increase calculated.

- Thus, when the Commission calculates that a merged firm would be able to increase prices by 20% against one particular baseline, the Commission is using a cap that is fixed in dollar terms. When NERA comes along and recalculates that price against a different—and lower baseline—of course the percentage cap will be higher. However, that is simply a consequence of using a lower baseline. NERA's alternative baseline makes the Commission's assumed price increases seem much greater, but that is merely a visual illusion.

What the Commission must not do is be scared into backing off its analysis simply because NERA has re-presented the Commission's results in an artificial form.

Cournot simulation

NERA's third look at the potential for price increases takes the form of a static, deterministic analysis of the scouring market in which three scouring operations (CWH, NZWSI, and a generic overseas firm) engage in Cournot competition. NERA set the model's parameters to match its marginal cost estimates and market shares, and then calculates the equilibrium scouring price with and without a merger of the two New Zealand based firms.

This is an interesting exercise, but I am not convinced that it is an informative one. NERA's assumption that the firms engage in Cournot competition is questionable. For example, I question whether scouring wool in New Zealand and sending it overseas for scouring are the "relatively homogenous" products that NERA claims them to be. I also question whether it is realistic to model overseas-based scouring firms as adjusting prices to sell capacity to New Zealand customers.

Moreover, the approach adopted by NERA ignores the role of intertemporal decision making, and assumes that the players operate in a world with no uncertainty and no frictions. In reality, of course, scouring customers will consider the future implications of their decisions before they switch between New Zealand based scours, and even more so before they abandon scouring wool in New Zealand altogether. They will also make an allowance for the uncertainty of future market possibilities, recognising that what might look like a good switch today may not seem so attractive in the future. On the supply side, NERA states that scouring capacity may be "relatively fixed" in the short-term (although it does not specify what changes in capacity are measured relative to). However, scouring firms aren't going to make pricing decisions like the ones

envisaged by NERA that have the required short-term focus. The current proposal to reduce scouring capacity is evidence of that. Capacity decisions will also incorporate intertemporal decision making in the face of uncertainty, which is entirely absent from NERA's Cournot analysis.

In summary, NERA has performed an interesting modeling exercise, but not one that provides the Commission with much in the way of useful information about the potential for price increases in the New Zealand scouring industry.

Effects of foreign ownership

NERA advances four arguments to support its claim that the Commission should modify its approach to measuring the transfers to foreign shareholders in such a way that the merger's total detriments reduce in magnitude. All four of these arguments are flawed.

First, NERA claims that it is difficult to delineate functional from functionless rents. As I explained above, this is a red herring, because the distinction is not relevant to the calculation that the Commission has to perform. The recommendations in the Commission's Guidelines are clear, simple to implement, and appropriate for the task the Commission faces.

Second, NERA claims that it is difficult to determine the ownership structure of affected parties, which makes it difficult to measure the surplus flows. I agree that in many cases measuring the level of foreign ownership can be difficult. However, the role of foreign ownership is so important here that the Commission has to consider the issue. Difficulty is not an excuse for inaction. Moreover, NERA overstates the difficulty in this particular case. Here the key driver of transfers is the ownership structure of the merged firm. One approach for the Commission to adopt would be to assume that Lempriere is 100% foreign-owned and that ACC, Direct Capital, and CWH are 100% New Zealand owned. The level of foreign ownership of the merged scouring operation then depends solely on the level of Lempriere's ownership. This approach will underestimate the extent of foreign ownership of the merged firm, and so will underestimate the total transfer overseas. That is, it will overestimate the net benefits (or underestimate the net detriments if detriments exceed benefits). However, the estimation errors will be much smaller than if the Commission ignored foreign ownership altogether.

Thirdly, NERA claims that "the surplus could end up being reinvested in New Zealand anyway." However, on this matter the Commission's Guidelines are clear: "[t]he correct assessment involves a 'with' and 'without' comparison of the matter under consideration" (p. 5). If there is a profitable investment opportunity in New Zealand, firms will undertake that investment whether or not the merger goes ahead. They will not be relying on the merger to generate cash to fund their investment. That is, firms have access to capital markets, so the merger will not magically reduce a capital constraint that was not there to begin with. In addition, the Guidelines (p. 15) note that "inflows of overseas

capital themselves are not benefits to New Zealand, since they are made in return for the subsequent transfer of dividends, interest, and capital repayments." Thus, NERA's third point is irrelevant.

Finally, NERA proposes a novel "linear glide path" for pass-through of prices from merchants to growers, which would have the effect of reducing the measured value of the transfer of surplus overseas. The approach is entirely speculative and ad hoc. I can think of nothing to say in its favour.

References

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