Comment on allocative efficiency losses and response to Direct Capital

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I have been asked to comment briefly on specific issues related to the loss of allocative efficiency associated with the proposed merger of Cavalier Wool Holdings Limited and New Zealand Wool Services International Limited.

After reviewing the Commerce Commission's Draft Determination and NERA's various reports, and listening to the arguments at the June 10 conference, I am still of the view that price increases of up to 25% are possible if the proposed merger goes ahead.

The threat from China

The Commission has been presented with various pieces of largely anecdotal evidence that are supposed in some way to show that the ability of a merged scouring firm in NZ to raise prices will be limited by merchants' ability to export greasy wool to China. However, none of these pieces of evidence help the Commission to decide what, if any, constraint on price increases is posed by the Chinese scouring industry.

The premium for scoured versus greasy wool in China

At the June 10 conference, John Dawson claimed that "the Chinese will only pay a maximum of 10 to 15 US cents a kilo more than the greasy price" (NZ14-21c at the current exchange rate).[1] I am told that the cost of scouring wool in NZ is approximately NZ22c/greasy kg and that the cost of re-packing the scoured wool is NZ10c/clean kg. After converting the packing cost based on an average scoured wool yield of 78%, the total cost of scouring wool in NZ is approximately 35c/greasy kg. This does not include inwards cartage and outwards freight or any other treatments such as bleach or pH correction of the scoured wool.

It follows that many NZ wool merchants are currently paying 35c to get wool scoured in NZ in order to raise the price they receive from exporting it to China by 14-21c. The only way this makes sense is if these merchants receive benefits from scouring wool in NZ in addition to simply receiving a higher price in China. All we know about these benefits is that they must be worth at least 14c/kg (so that it is currently more profitable for these merchants to export scoured wool rather than greasy wool). These benefits could be worth very much more than

[1] Transcript, Public Session, p. 52.

this, but none of the evidence presented to the Commission helps us understand how much more.

The benefits of scouring wool in NZ include retaining control of the process and being able to respond quickly and make any necessary changes to wool blends if necessary. I am told that if a scourment processed in NZ misses its specification then the merchant's options include re-processing and/or blending with other wool, and that this would not be possible if the wool was processed in Malaysia or China. NZ scours also offer pre-scour blending and machining of greasy wool, whereas overseas scours do not have such equipment. If overseas scours were to offer pre-scour opening and blending to the same standard as New Zealand then it is likely they would need to increase their tariff to recover their additional costs. In short, overseas wool scours (including all the examples brought forward by CWH) do not offer the same level of service as NZ-based scours.

For wool that is destined for markets outside of China, scouring in China and re-exporting will likely be more expensive than processing and shipping from NZ. I am told that extra costs would arise due to factors such as a lack of high-density scoured wool pressing in China resulting in twice the number of containers being needed to ship the scoured wool to its end user and double leg freight being more expensive than shipping direct from New Zealand.

Neither NERA nor the Commission has quantified the value of these benefits to merchants from scouring in NZ. Without knowing that value we cannot know how far the price of scouring in NZ could rise without inducing merchants to give up these benefits and export greasy wool instead. What we do know is that even now the competing NZ wool scours are able to charge a higher scouring price than the implied cost of scouring in China without losing their customers to Chinese scours. I have not seen any evidence during this authorisation process that suggests a merged scour would be unable to do the same thing.

Does NERA's evidence on CWH's scouring prices amidst industry consolidation reveal anything?

In its April 21, 2015 report, NERA presented data suggesting that CWH's scouring prices have [ ] in real terms over the period from 2006/07 to 2013/14. I believe it would be a mistake for the Commission to attach much significance to this data.

First, when NERA discussed this data at the June 10 conference, it claimed that [ ][2] In contrast, in its April 21 report, NERA was careful to state only that CWH [ ]. This rider is significant. I am not aware of NERA presenting evidence to support this condition in its report or since then. It appears that NERA has not even specified the inflation index it used to calculate the real price. However, the data

[2] Transcript, Confidential Session, p. 5.

is suddenly being presented as evidence that [ ]. It is not clear that [ ]. Indeed, the cost of many of the inputs to scouring has fallen over the period considered by NERA, not increased. For example:

- The average price of natural gas for industrial users fell from 3.07c/kWh in 2007 to 2.82c/kWh in 2012.[3]
- I am told that most of the raw materials required to scour wool (detergent, peroxide, bale wrappers, steel bands, and so on) are purchased or priced relative to the USD, the price of which fell by more than 20% in NZD terms over NERA's sample period.[4]
- The average business-lending rate fell from 9.03% in 2007/08 to 5.83% in 2012/13.[5]

It is therefore not obvious that CWH's costs have "increased in line with the inflation index". Moreover, I am told that scours' profitability is determined more by the wool grease price and that, with the exception of the past year, the wool grease price has been at its highest levels ever.

In summary, the Commission cannot infer from NERA's data that the profitability of scouring in NZ has fallen since 2006.

Second, during the June 10 conference, NERA claimed that [ ][6] The Commission cannot draw that inference. [ ] that might have been due to competition from NZWSI. As Dr Berry suggested at the conference, [ ].[7] For example, under Bertrand competition, firms will set prices at the perfectly competitive level as long as there are two or more firms in the industry, so previous industry consolidation might have had little effect. However, the game changes completely when moving from two firms to one.

The threat from entry

The other limit on price increases is the threat of entry by a rival scouring firm that will compete with the merged entity. The analysis of entry—by Commission

[3] http://www.med.govt.nz/sectors-industries/energy/pdf-docs-library/energy-data-and-modelling/data/prices.xlsx, accessed June 18, 2015.
[4] http://www.rbnz.govt.nz/statistics/tables/b1/hb1-monthly.xls, accessed June 19, 2015.
[5] http://www.rbnz.govt.nz/statistics/tables/b3/hb3.xls, accessed June 18, 2015.
[6] Transcript, Confidential Session, p. 5.
[7] Transcript, Confidential Session, p. 7.

staff, NERA, and myself—has used variants of NERA's entry model. I believe that two aspects of models like NERA's are not well understood.

First, it is important to emphasize that the scouring price that appears in NERA's model is the hypothetical scouring price that occurs *after* the entry occurs. The analysis presented to the Commission implicitly assumes that the cap on the price the merged entity can charge without triggering entry is equal to the post-entry scouring price, but this is unlikely to be the case. The Commission needs to consider the (highly likely) possibility that the scouring price would fall following entry. (I would expect any potential entrant to consider this possibility as well.) Thus, a monopolist would be able to maintain a price higher than the post-entry scouring price without triggering entry. It follows that, all else equal, the entry model calculations probably *underestimate* the price rises that are possible without triggering entry.

Second, the entry model implicitly assumes that the entrant survives. Some firms might choose a relatively low required rate of return. For example, at the conference one of Lempriere's representatives mentioned that his firm would set a relatively low hurdle rate. However, firms that set relatively low hurdle rates will be the ones that are less likely to make investments that are financially viable. The question the Commission needs to ask is not: "What is the lowest required rate of return that a potential entrant will adopt?" It is: "What rate of return would a firm need to enter the industry *and be financially viable*?" It would be a mistake to use the lowest hurdle rate that potential entrants will use because these, typically overly-optimistic, firms may be the least likely to survive.

A related point is that any potential entrant into the NZ wool scouring industry will surely see the difficulties that the most recent entrant has experienced and will be discouraged from entering itself. If that entrant couldn't compete profitably against an incumbent scour, then why would a new entrant fare any better?

What can the Commission learn from NERA's "file note" on the hurdle rate literature?

In my April 21 report I discussed the empirical evidence that firms considering investing typically require a much higher rate of return than their WACC. I used this evidence to support my view that the Commission should consider adopting a hurdle rate of 20% when evaluating the price rises needed to trigger entry. At the June 10 conference, NERA distributed a "file note" describing the results of its review of the empirical evidence I cited in my report.

In reviewing this literature, NERA succeeds merely in shooting down a straw man of its own making. The literature I cited provides useful information on the size of hurdle rates *relative to the WACC*. NERA ignores that and tries to draw inferences about the *level* of the hurdle rate from this literature.

NERA must surely know that its approach is inappropriate, because the levels of rates of return vary over time and between countries in ways that make comparisons of levels uninformative. For example, all rates of return (including hurdle rates and WACCs) will tend to be relatively low during periods when the market price of risk is low. We cannot usefully compare the levels of rates of return across time and across jurisdictions. Simply put, NERA's approach is pointless.

However, these predictable variations are much less important for the *difference between* hurdle rates and the WACC. For example, differences in the market price of risk will affect the level of hurdle rates and the WACC in much the same way, and so have a much smaller effect on the difference between the hurdle rate and the WACC. The distinction between real and nominal rates also disappears when we consider the difference between hurdle rate and WACC because any inflation adjustment affects the hurdle rate and WACC in the same way—and so does not affect the difference between the two at all.

For example, Jagannathan et al.'s finding that hurdle rates exceed the WACC by 7% on average is much more informative than their finding that the average hurdle rate is 15% and the average WACC is 8%. Similarly, Poterba and Summers report an average hurdle rate 10% *higher* than the cost of debt and 5% *higher* than the cost of equity (and consequently some 5-10% higher than the WACC). Lastly—and NERA has entirely missed the point of this study—Chirinko and Schaller present a detailed analysis of the premium of hurdle rates over the WACC. They show that firms facing similar circumstances to scouring operations (for example, low depreciation rates, limited resale markets, recent negative industry-wide shocks) set hurdle rates that typically exceed their WACC by 10% or more.

It is this evidence on the *difference between* hurdle rates and WACC that can help the Commission assess the threat of entry. After reviewing NERA's file note, I continue to believe it is appropriate for the Commission to use a 20% hurdle rate for its entry analysis.

Response to Direct Capital

I have also been asked to review Mr Lonergan's response to the Commission's request for "[i]nformation on and examples of the rate of return for different investor types."

There are two components to Mr Lonergan's paper. First, he critiques my work on the rates of return that investors require when investing in new physical capital. Second, he produces some anecdotal evidence of WACCs and assorted rates of return. I will address these two components separately.

Mr Lonergan's critique of my papers on the hurdle rate in NERA's entry model

Mr Lonergan claims that I "focused specifically on concluding a single rate of return applicable for new entry in the scouring industry" and that my work

"assumes all investor types are the same". Mr Lonergan goes on to claim that my "paper appears to present all investor types as being homogenous, having the same return requirements." These claims are incorrect.

As I explained in my April 21 paper, survey evidence shows that the margins between firms' hurdle rates and their WACCs vary according to operational considerations such as rationing scarce managerial and organizational resources. These are clearly investor-specific. I also cited evidence that these margins vary with the degree of firms' financial sophistication. Again, these are clearly investor-specific. Moreover, the investors with characteristics that are empirically associated with high margins—scarce managerial and organizational resources, and low levels of financial sophistication—would seem to be the type of investors being suggested as the most likely entrants to the scouring industry.[8]

Mr Lonergan describes the factors that Direct Capital takes into consideration when it sets its own hurdle rate. He goes on to speculate as to the factors that "a merchant, or group of merchants" would take into account when setting their own hurdle rate. However, it is just that: speculation.

Ultimately, the Commission needs to use an entry model like NERA's to estimate the price cap imposed by the threat of entry. These models work by calculating the present value of the stream of incremental cash flows from entering the industry. For the case being considered here:

- If merchants do not enter the scouring industry, they will have to pay out a stream of future cash flows to get their wool scoured (that is, they pay the scour's revenue).

- If merchants do enter the scouring industry, they will instead have to pay capital expenditure up front and a stream of future operating expenditure.

The incremental cash flow of a merchant entering the scouring industry is therefore an immediate outflow of capital expenditure and a future net inflow of scouring revenue minus operating expenditure—just like any other investor.

As I explained in my May 8 paper, the contracting and other arrangements result in a *transfer* of risk, but they do not result in the *reduction* of risk that would be required to lower the hurdle rate as claimed by NERA.

What about the "strategic factors" advanced by Mr Lonergan? For example, he claims that merchants would benefit from "avoiding…the threat of scour price increases". The Commission's approach captures that already by calculating the *highest price* that makes the present value of the cash flows in the first bullet point above equal to the present value of the cash flows in the second bullet

[8] Mr Lonergan expresses the view that "the most likely new entrant will be a merchant, or group of merchants, acting to protect their … core business."

point above. There is no need to change the hurdle rate. The avoided price increases are captured in the cash flows. In summary, the Commission's current approach adequately deals with these so-called "strategic factors".

I note in passing that if, as "financial investors", Direct Capital and (presumably) ACC actually have hurdle rates that differ so significantly from industry participants Cavalier and Lempriere, then the Commission has even more reason to be concerned about the prospect of conflicts of interest between the two groups of shareholders of the merged firm. It is not just the "Lempriere option" that would cause the different owners' objective functions to differ, but also something as fundamental as the rates of return they would require on the merged firm's investments.

Mr Lonergan's anecdotal evidence

Mr Lonergan presents six pieces of anecdotal evidence that he claims shed light on the issue of the hurdle rate for entering the NZ wool scouring industry. None of these pieces of anecdotal evidence will help the Commission make its decision. Two are examples of WACCs that are explicitly used for valuation purposes, and so say nothing about hurdle rates. One is calculated from the CAPM-based WACC formula typically used for valuation purposes, so again says nothing directly about hurdle rates. Two are merely single items in large complex transactions, were negotiated as part of a bundle of items, and reveal nothing useful about WACCs or hurdle rates. The other example—the only one to actually involve explicit hurdle rates—omits information which, when added, shows the firm in question uses hurdle rates as high as 38%.

ACC's acquisition of 25% shareholding in 2009

Mr Lonergan includes an extract showing what he claims is "ACC's WACC at the time of 10%". The extract indicates that this figure was used for "a DCF valuation of the forecast performance". That is, the 10% figure is explicitly referred to as a WACC and it is explicitly used for valuation purposes. Therefore, it sheds no light on the level of hurdle rates used to make investment decisions regarding new physical capital. However, it is at least consistent with the 10% discount rate that the Commission is using to calculate the present value of benefits and detriments.

Agreement between ACC and NZWL (D Ferrier)

Mr Lonergan reports that when ACC acquired a stake in CWH,
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Direct Capital's acquisition of 25% shareholding in 2010

This particular example is presented without enough context to know what exactly is involved. However, it is clear that it involves calculation of a WACC estimate using the traditional CAPM-based formula. WACCs calculated in this way are designed to be used for valuation purposes and it is not clear how it has been used to inform investment decision-making. It is described as being used in a "sense-check of [the] purchase price", but this description is so vague that it could mean just about anything. For example, how far would the resulting DCF-based valuation have to deviate from the purchase price before the firm would reject a deal? Are other adjustments made to the DCF valuation to capture the factors that might otherwise be included in the hurdle rate (and are excluded

from the NERA model used by the Commission)? The screenshot provided by Mr Lonergan leaves too many questions unanswered to help the Commission choose a hurdle rate for input into NERA's entry model.

Option Agreement between ACC, Direct Capital and Lempriere

Mr Lonergan refers to the clause in the Option Agreement that states that one of the four components used to set the option strike price increases by 15% per annum. Obviously this is a price-setting rule that has been negotiated as part of a wider agreement. The initial level of this component of the strike-price rule, the annual rate of increase in this component, the identity of the other three components and their precise specifications, and the ownership level of the various parties in the merged firm were all negotiated as part of the same deal. For example, the parties may have negotiated a high starting value and a low growth rate in this component of the strike price, or a high initial ownership stake for Lempriere and a low growth rate in this component of the strike price, or countless other possibilities. The Commission cannot draw any inference from this particular aspect of the negotiated outcome.

The annual growth rate in this component of the strike price formula has no direct (or for that matter indirect) relationship with the hurdle rate for investment decisions or even the WACC. Even if it was related to a WACC—and it is not—the overall rate of return comprises the dividend yield and capital gain, so any implied rate of return would be greater than the 15% capital gain.

Lastly, the terms of the merger imply shares valued initially at $[ ],[9] so if the option was exercised within 12 months (at a strike price of $14.00), Direct Capital would earn a rate of return of [ ]% p.a. If instead it was exercised within two years, Direct Capital would earn an average rate of return of [ ]% p.a. If it was exercised within three years, [ ]% p.a. By Mr Lonergan's logic, does this mean that Direct Capital's required rate of return is actually [ ]%? Of course not, but this just goes to show the terms of the annual strike price adjustment tell the Commission nothing about hurdle rates in the wool scouring industry.

Forsyth Barr

Mr Lonergan includes a table entitled "DCF Valuation Parameters", which reports WACC estimates for 65 NZSX listed firms. The average WACC is apparently 9.7%. These figures are explicitly referred to as WACCs and labeled as being used for valuation purposes. Therefore, they shed no light on the level of hurdle rates, but are at least consistent with the 10% discount rate that the Commission is using to calculate the present value of benefits and detriments.

Scales Corporation

[9] Source: NERA's review of my April 21, 2015 report.

Mr Lonergan reports a company-wide target rate of return of 15% from Scales Corp.'s 2015 AGM. However, Mr Lonergan neglects to mention that Scales Corp. also reports sector-specific target rates of return ranging from 10% ("Storage & logistics") to 38% ("Food ingredients"):

	FY2014	
	ROCE	EBITDA margin
Horticulture	20%	16%
Storage & logistics	10%	14%
Food ingredients	38%	12%
Group	15%	15%
Target	15%	13%

http://scalescorporation.co.nz/wp-content/uploads/Factsheet-May-2015.pdf (accessed June 22, 2015).

This example illustrates the wide range of hurdle rates that are possible and, more importantly for this case, that firms can choose extremely high hurdle rates. In the context of this table, a 20% hurdle rate continues to seem quite plausible.