

***ANALYSIS OF THE FINAL REPORT BY CHARLES  
RIVER ASSOCIATES ON THE COORDINATED  
MARKETING OF POHOKURA GAS***

by

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for

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## Executive Summary

This report, commissioned by Ballance Agri-Nutrients Ltd, provides an economic analysis of the arguments developed by Charles River Associates in support of Shell, Preussag, and Todd's application to the Commerce Commission to joint market the Pohokura natural gas field.

The conclusions of this analysis are:

1. The argument that joint-marketing would be more efficient has some plausibility and precedent from Australian rulings.
2. Nevertheless the factors that applied to the ACCC's acquiescence to the joint marketing in the North West Shelf decision are not all relevant to the Pohokura application.
3. CRA assert, rather than demonstrate, that requiring independent marketing would delay production from the field by three years or more (rather than this being just a threat)
4. The perfect competition model used to calculate welfare loss is not valid in a market with few sellers and buyers. In a small-numbers bargaining situation, output does not uniquely determine price (ie, the latter cannot be simply read-off the demand curve). Even if the total quantity being traded is fixed, the final price will vary according to the relative bargaining strengths and negotiating skills of the buyers and sellers. Hence calculation of welfare losses driving the public detriment argument must be seen in this context.
5. Even assuming a competitive market model the welfare loss calculations are overestimates because they do not take into account the fact that gas not produced now is conserved for later production
6. CRA do not allow for the possibility that, because of the (admitted) differences ('asymmetries') between the parties, higher-value transactions might be achieved by buyers being able to choose which of the three parties they wished to contract with for their gas.
7. CRA do not confront the market power issue. Yet increased market power (and thus ability to charge higher prices) provides a plausible non-efficiency related motive for the parties wanting to joint-market
8. CRA do not try very hard to offer and explore suggestions for alternatives to joint marketing, which would ameliorate any transaction costs problems.

## 1.0 INTRODUCTION

- 1.1 Shell, Preussag and Todd (the ‘parties’) seek authorisation from the NZ Commerce Commission to jointly market the natural gas from the Pohokura field offshore of North Taranaki that they have jointly explored and will jointly develop.
- 1.2 Permission to cartelise a market would not normally be granted under competition law in New Zealand, as elsewhere. However, the Commerce Act allows under S31 for the granting to joint ventures of exemptions to the S30 *per se* prohibition on price fixing.
- 1.3 The parties commissioned Charles River Associates (CRA) to carry out an economic analysis of independent or separate marketing of the Pohokura gas, to be compared with the economics of joint marketing. CRA concluded that joint marketing would actually be pro-competitive because it is significantly more efficient than separate marketing.
- 1.4 This paper is an economic analysis of the application and of the CRA Report. It does not focus on the legal aspects of the situation and I can claim no special expertise in the natural gas business.
- 1.5 The CRA Report is quite long (119 pages) but its findings can be summarised briefly:
  - Independent or competitive marketing would be significantly less efficient than joint or cartel marketing because independent marketing would incur transaction costs associated with ‘hold-up’ problems and incentives for over-extraction of a common-pool resource
  - Because of these costs, should joint marketing not be authorised, development of the Pohokura field would be delayed by (at least) three years, to begin in 2007 instead of 2004.
  - The shortfall in production for the years 2004-2009 would average about 35 PJ/year (after when a delayed field would be in full production, expected to be around 70 PJ/year).
  - The ‘welfare costs’ (deadweight losses) generated by the shortfall would average about \$50 million/year, this being the difference in the average market value of the gas not produced – about \$5.5/GJ – and what would have been the full cost of producing that gas – around \$4 – multiplied by the annual shortfall in production

**1.6** This paper is set out as follows:

- Section 2 sets out the situation in this market and the possible scenarios
- Section 3 analyses the market economics of monopoly and joint ventures
- Section 4 explains and discusses the CRA welfare loss calculations
- Section 5 focuses on the transaction cost issue
- Section 6 explores some alternatives to simple joint marketing
- Section 7 concludes.

## 2. THE SITUATION AND THE SCENARIOS<sup>1</sup>

2.1 The rights to the Pohokura condensate and gas field are currently held by the parties in these proportions: Shell has about 48%; Preussag, 36%, and Todd 16%. The field will produce gas, condensate and LPG in commercial quantities. The parties are capable of and willing to separately market condensate and LPG because these are storable products traded on international spot markets. However, in New Zealand, natural gas is not economically storable; there is no spot market, and there is not a dense distribution network connecting large numbers of buyers and sellers. All this means that the market for this gas is what is called a ‘thin market’, with only a small number of feasible purchasers of the Pohokura product. This is the background to the request for authorisation of joint marketing.

2.2 CRA note that there is in fact a continuum of possible marketing arrangements, but identify and focus on three specific practices representing points on this continuum:

- “**Joint marketing**” is when the joint venture formed by the parties handles all production, marketing and sales decisions
- “**Separate marketing scenario 1**” has the parties agreeing jointly on field development, including the depletion path which would ‘probably represent the result of a mixture of reservoir engineering and financial analysis’ (CRA, p4). Then each party goes off with its share of the gas and sells it independently.
- “**Separate marketing scenario 2**” has the parties independently selling gas and then going back to their partners to agree on the production/depletion path.

2.3 We could represent scenario 1 as ‘supply first’, and scenario 2 as ‘demand first’. The second scenario is considered by far the worst of the two by CRA, and it is hard not to agree with this, given the opportunities for ‘hold-ups’ and other opportunistic behaviour when a party would come to the joint venture production decision meeting bearing a contractual obligation to supply gas to its customers but without any gas to supply, especially when the parties may not particularly like or trust each other.

In any case, I will treat scenario 2 as a ‘straw man’ and will not consider it further below. I will be looking, as the alternative to joint marketing, for supply-first arrangements, where the parties’ exploration and development joint venture is permitted to extend into the total production/depletion decision, but thereafter the parties are somehow required to act independently in the downstream marketing of the gas.

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<sup>1</sup> This section abstracts from Section 1 of the CRA Report

### 3. MARKET ANALYSIS

3.1 Usually in the economic analysis of markets it is predicted that a reduction in competition (fewer independent sellers) leads to lower output and higher prices. CRA reverse that proposition: they claim that the cartel or joint venture would actually produce more gas and, by inference, sell it for less.

3.2 How do they manage to achieve this? Arguments that monopolistic cartels will produce more than more competitive market structures, and may even be necessary for any production at all to be profitable, usually depend on one or both of two factors: economies of scale, and risk sharing. Both these are relevant to Pohokura.

For a particular field it may be efficient to mount just one exploration program, and, especially for an offshore field requiring a massive platform, the capital needed for efficient extraction may be such that just one facility should be built. That is, exploration and extraction may be, for technical and scientific reasons, a 'natural monopoly', such that only one operation can achieve the economies of scale needed for efficiency.

As for risk, exploration and extraction of natural resources such as gas is a highly uncertain business, with a high and unknown risk of failure or at least surprises. A single firm's prudent response might be to invest less in an individual field to reduce their exposure to risk, in which case it may be necessary to aggregate smaller parcels of capital to get the investment needed. That is, for example, if there are three investors each owning rights to one of three potential gas fields, if each investor had to take on one field by themselves, the risk might be prohibitive, and development would not occur, whereas if they can all invest in each others' fields, the risk may be spread acceptably

3.3 Risk and scale economies explain why parties like Shell, Todd and Preussag may wish to combine forces to search for oil and gas, and to develop the field, and why we usually have no problem with them doing so.<sup>2</sup> But they do not justify combining on the downstream marketing function, which is not particularly subject to scale economies, nor to risk from uncertainty about states of nature (such as the size of under-sea gas fields).

3.4 The argument here is based instead on *transaction costs*, which are, basically, the costs of doing business (buying and selling and coordinating production). Use of markets incurs transaction costs, use of non-market coordination such as a joint venture also incurs such costs, and the question is: which method is the more efficient in particular circumstances?

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<sup>2</sup> Note that competition law presumably does not apply to exploration joint ventures, because nothing is being sold. (It would apply if a joint venture was using its power to unfairly restrict other parties from access to the exploration business).

For almost all transactions in a mature developed capitalist economy, independent selling and buying in markets is considered to be the more efficient, as well as equitable, and indeed it is largely to protect and foster such independent market behaviour that competition law and policy operates.

- 3.5** But when the potential market is very ‘lumpy’ with a small number of buyers and/or sellers, it can be difficult to sustain market transactional forms, and there may be a case on efficiency grounds for allowing non-market institutions, such as joint ventures.
- 3.6** It is the essence of the CRA case that, indeed, joint venture marketing is the efficient way to dispose of Pohokura natural gas, and that if such is not permitted, then the costs of doing business will be increased such that an ostensibly more ‘competitive’ structure with independent sellers would actually deliver less gas.

It is this claim that I will focus on below in section 5, but first I will set out the welfare loss calculation as proposed by CRA.

#### 4. WELFARE LOSSES

- 4.1 CRA's quantification of the value of the welfare losses from independent marketing is based solely on the value of gas not produced and sold because of a three-year delay. The Report notes that with this delay, 'alternative and more expensive sources of production must be developed' (CRA, p56). This appears to counter statements elsewhere where they predict that failure to permit joint marketing of Pohokura would discourage alternative sources of supply. In any case, their quantified simulations appear to involve only shortfalls in production due to the Pohokura delay, and these shortfalls generate welfare losses because gas that would be worth more on the market than it would cost to produce is not produced and sold.
- 4.2 Using CRA's Figure 5 (p58) for the production profile<sup>3</sup> and their reported welfare losses from Table 11 (p63), we have the following situation:

year	Production shortfall (PJ)	Welfare Loss (\$million)
2004	15	51
2005	30	79
2006	30	28
2007	55	73
2008	40	37
2009	40	35
2010	0	-

2004 is the first year a non-delayed field would produce some gas; by 2010 a delayed field would be in full production of 70 PJ/year.

CRA show the welfare loss calculation for the year 2006 in their Figure 6, and it is quite easy to match the diagram to the \$28 million loss calculated for that year: it is the trapezoid of lost consumer surplus equal approximately to the shortfall (30 PJs) times the difference between the cost of production, which is about \$4/GJ (or \$4 million/PJ) and the average consumption value of the unconsumed gas (the average of the price that would be paid for this by the keenest customer<sup>4</sup> who doesn't get any gas (about \$6, given the demand curve assumed here, and the price that would be paid by the least keen or marginal customer, which is about \$4 here). That is, we multiply 30 by 1  $(=(6+4)/2-4)$ , and get close to \$28 million.

The much larger loss in 2005 is a bit of a puzzle, given that the supply shortfall in that year is the same as in 2006. It appears to be caused by Methanex crowding out higher-value customers that year. Methanex currently takes up about

<sup>3</sup> Why are the numbers which can be read off Figure 5 deleted as confidential from Tables 8 and 9 ???

<sup>4</sup> These customers, whose demand is inelastically responsive to price changes, are all assumed to be electricity generators (CRA, p99).



90PJ/year of Maui gas for which it apparently (CRA, p60) pays the princely sum of \$2/GJ. Its access to Maui will be affected by the run-down in production from that field.

For the years from 2007 through 2009, the losses approximately match the production shortfalls.

**4.3** CRA undertake, as they should, various sensitivity analyses of the impact of different scenarios and assumptions. The most dramatic of these has Methanex and other petrochemical companies continuing to operate at their current rates, given continued access to the cheapest gas available. This results in very large welfare losses (CRA Tables 12, 13, p64), as the demand curve for other users is pushed to the right by the large bite of supply taken out first by Methanex, so that other users must be paying prices of around \$6-8 GJ, to clear the market. It could be doubted that the authorities would permit such an inefficient allocation of gas.

**4.4** There are four things to be noted about the CRA welfare loss calculations:

**4.4.1** First, they are based on what economists call perfect competition, meaning that price is simply determined by the intersection of demand and supply (=marginal cost) curves, with no manipulation of the market. Apart from the factual inaccuracy of this assumption, on which more below, we should note that it implies that the gas producers in the economy would make huge sums of money from the delay in bringing Pohokura on stream. In 2006, for example, as depicted on CRA's Figure 6 (p62), revenues to producers are about \$1.50/GJ higher on more than 100 PJs of gas sold, a windfall of more than \$150million!

Now it may be that long-term contracts tie up prices so that some or most of this windfall could not be collected. But the point remains that a restriction of supply in a market with low demand elasticity (ie, relatively 'captive' customers) is normally highly beneficial to industry profits. Higher prices should also stimulate new sources of supply, countering CRA's assertion that inability to joint-market would depress exploration and production activity in New Zealand.

**4.4.2** Second, this year-by-year welfare analysis is not appropriate to a resource in finite total supply. A Peta-Joule of Pohokura gas not produced this year is not thereby lost forever, it can be extracted at some future date. This is not allowed for in the CRA welfare analysis.

It is true that CRA's imposed 10% annual discount rate will quickly chew up the benefits from delaying production, but such a rate is not necessarily the appropriate social discount rate for a depleting energy resource. Option values of conserving the resource, and possible increased real prices for energy (as discussed by CRA as justification for *faster* depletion) may imply smaller discount rates and slower depletion.

**4.4.3** Third, the market for Pohokura gas in no way is perfectly competitive, which requires many buyers and sellers. The relevant scenarios here are just one versus just three independent sellers of this gas – ie, monopoly (cartel) or triopoly.<sup>5</sup> Economists' standard models of oligopolistic industries predict that the price goes up as the number of competing sellers goes down -- for example by about 20% when going from three sellers to one.<sup>6</sup> What this means is that CRA's prediction of increased supply with joint marketing (monopoly cartel) would not necessarily eventuate, so that the independent marketing counterfactual would not necessarily have the higher prices needed to generate the predicted welfare losses.

Unfortunately, CRA's report fails to confront the market power (or lessening of competition) issue. They claim (section 7) that joint marketing would, in essence, be pro-competitive because it would increase supply (increase efficiency). But the efficiency issue, though of course valid, needs to be kept separate from the competition issue. Someone on the buying side of the market can reasonably expect to end up paying less for a given petajoule of gas if they have a choice of three possible suppliers than if they face a cartel, and it is clearly fear of paying more that has motivated some of those making submissions on this matter. These are quite legitimate concerns on the part of buyers, especially for the years after a delayed Pohokura has come on stream, when the supply of gas from this source would be potentially larger with no joint marketing (since the size of the remaining reserves would be larger).

Efficiencies may be offered as a defence for a substantial lessening of competition, but the latter should not be ignored, and indeed cannot be in the quite extreme case of allowing three firms to cartelise their market.

**4.4.4** The fourth point to make about the welfare loss numbers is that they are (in the CRA analysis) triggered solely by the additional transaction costs of the joint venture parties being prevented, and so imply that those transaction costs must indeed be substantial, and merit close scrutiny.

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<sup>5</sup> And not many buyers, so even oligopoly/monopoly modeling may not be quite right, as there is a bilateral bargaining situation here under which given demand curves may not exist.

<sup>6</sup> This is from the Cournot-Nash model, assuming linearity and symmetric costs and that the elasticity of demand at the competitive price is  $-1$ .

## 5. THE TRANSACTION COSTS (AND BENEFITS) OF INDEPENDENT MARKETING

- 5.1 The Australian Consumer and Competition Commission prefers, in general, independent or separate marketing. In its *North West Shelf* Determination (cited by CRA), they write:

*The Commission considers that separate marketing, where possible, is the preferred method of gas supply contracting. By having a number of separate marketers, the Commission would expect a more competitive market and resultant benefits of lower prices and greater supply options being made available to final consumers. (1998, iv)*

Yes indeed, but the ACCC concluded that, unfortunately, separate marketing was not feasible at that time in that market, though it was hopeful that conditions might change to allow it in the future, and on this basis only authorised the joint marketing for seven years.

- 5.2 The ACCC is not known as the Monopolist's Stooge, and their decisions to permit joint marketing of gas in two Australian cases cannot be ignored, even though every case must be decided on its own merits. The ACCC Determinations are more forthcoming on the nature of the transaction costs detriments to competitive or independent market of gas than are the submissions of the Pohokura applicants and their consultants, Charles River Associates.

Even so, the information presented in the Australian Determinations fell well short of any sort of quantitative assessment to ascertain whether the predictions of indefinitely delayed extraction of the gas in the absence of permission to joint market made commercial sense, or were just threats.

In the end the ACCC could not get any substantive counters to the *North West Shelf* applicants' position that separate marketing of gas was not 'currently viable in Western Australia', and they concluded that 'given the substantial public benefits associated with the proposed expansion [of gas production] and the assurance of the applicants that the expansion will not proceed unless they are authorised to co-ordinate their marketing, [the ACCC] authorises co-ordinated marketing by the joint venture parties.'

- 5.3 However, the ACCC's NWS Determination does, to a greater extent than CRA, dig into the applicants' reasons for separate marketing not occurring. These are given as ( their section 5.2.4; my numbering):

- [1] reduced incentives for substantial infrastructure investment
- [2] less reliable supply to customers
- [3] greater time and costs associated with negotiations with customers
- [4] fewer economies of scale

- [5] higher transportation costs
- [6] higher storage costs

- 5.4** Applying these to Pohokura: [1] doesn't seem very relevant; [2] can be dealt with by more [3]; [4] essentially repeats [1], [3] and possibly [5]& [6]; and [5] and [6] do not apply here (one transportation network; no storage).

This leaves the costs of negotiations [3], which in submissions to the ACCC the *North West Shelf* users group claimed was not a reason for them to not want separate marketing. It is quite easy to see why this would indeed not be, in proportion, a big problem, given the size of the contracts, against which even quite substantial negotiating efforts will not seem unduly costly.

- 5.5** Also, separate marketing gives buyers some choice of which party they deal with, which may reduce their costs as well as yield better-tailored contracts, compared to dealing with a monolithic joint venture. Although natural gas is (at least from a particular source) a very homogeneous, undifferentiated commodity, the *transactions* whereby title to gas is transferred from producer to user can be highly differentiated. That is, there are quality as well as price issues in the gas market.

For example, a buyer might, say, have had a long and fruitful business relationship dealing with Shell, but have had much less pleasant experiences with Todd. Such a buyer would prefer to buy their gas from Shell, and might even be willing to pay a small price premium to do so, for quite sound commercial reasons. That is, having choice of seller can increase the value of transactions; and this opportunity for adding value through choice will be missing if all buyers have to deal with only the joint venture cartel.

- 5.6** Overall, although an independent outside analyst has to be impressed by the vehemence of the opposition to separate marketing, and by the ACCC's acquiescence to that opposition, the lack of detail and precision backing up the assertions or 'assurances' that separate marketing is infeasible is worrying, and the lack of effort put into considering methods of ameliorating the difficulties of achieving some competition between sellers is unsatisfactory.

## 6. ALTERNATIVES TO JOINT MARKETING

- 6.1 The joint/separate marketing issue is not a binary choice between discrete alternatives. As CRA note, there is potentially a ‘continuum’ of marketing institutions. There may be some compromises possible which would preserve an acceptable level of independence or competition on the selling side without incurring intolerable levels of transaction costs.

Clearly separate marketing is feasible where it already exists (which is almost everywhere in the economy), and it may or may not be feasible where it currently does not exist. The relevant questions then are, first, where on the continuum of market structural characteristics does separate marketing become clearly feasible, and, second, what could be done, in the interests of choice and competition, to move that tipping point on the line closer to the present situation.

It is easy, probably too easy, for an outsider to come up with possible schemes. I will sketch some of these in this section, quite briefly as befits my lack of specialist expertise in the natural gas industry.

- 6.2 Note first that, when a transaction really would be more efficiently dealt with by negotiations with the parties jointly, then the prospective purchaser could always invite them to do so, in the expectation that the surplus thereby generated could be shared between buyer and seller.
- 6.3 So, one compromise that immediately suggests itself is that one of the biggest potential customers for Pohokura gas might step forward, confident enough in their own bargaining competence, and offer to deal with the producers jointly. This would be enough to get the development underway, and the parties would then be required to deal independently with other prospective buyers.
- 6.4 Another compromise, weaker from the competition point of view, is that the Commerce Commission follow the ACCC *North West Shelf* precedent and authorise joint marketing for a finite period only, five or seven years say, to be reviewed at the expiry of the authorisation.
- 6.5 The trickiest issue in specifying a separate marketing scenario is, as CRA are well aware, how to let the parties decide jointly on the overall production/depletion path for the field, without them using this to *de facto* cartelise the market through an output path that implies a higher level of prices. That is, with total output specified, and with the partners having their allocated shares of this, how would they then compete? Would not the price be determined at the level that would just clear the market of that amount of output?

[Engineering considerations and the geology of the field will place some constraints on depletion decisions, and might even be important enough to determine the optimal path over a wide range of price paths.]

- 6.6** Note first that, in a small-numbers bargaining situation, output does not uniquely determine price (ie, the latter cannot be simply read-off the demand curve). Even if the total quantity being traded is fixed, the final price will vary according to the relative bargaining strengths and negotiating skills of the buyers and sellers.
- 6.7** It is also feasible for the parties to compete on market share by buying and selling gas amongst themselves, in effect thickening the market by introducing more traders.
- 6.8** Nevertheless, determination of the output depletion path, and the issues of ‘balancing’ to prevent the parties from marketing more than their ‘fair’ share of the gas remain as difficult issues.
- 6.9** A possible solution to this problem is to place the output path decision under some form of regulation. In a footnote, CRA write:

*Interestingly, oil and gas producing states in the United States have responded to the balancing problem by regulation. Pierce (1987) notes that: “All producing states have recognised the concept of correlative rights in response to the potential for one owner to ‘steal’ gas from other owners through uncompensated drainage. The doctrine of correlative rights provides a legal framework in which each owner of oil and gas in a reservoir can produce its fair share of the total oil and gas in the reservoir, measured with reference to its proportionate ownership of the reservoir...*

*One of the forms of regulation used (for example, in Oklahoma) requires the operator of a field to provide each other owner (joint venture party) the option to elect to have the operator market each owner’s share of the gas on terms at least as favourable as those the operator obtains for its own share. (CRA p 37, note 70)*

The political transaction costs of establishing such legislation/regulation in New Zealand if it does not exist would not be trivial, and perhaps this would not be worthwhile just to deal with a single situation, but if the Pohokura issues are likely to recur, then such interventions should be considered.

- 6.10** Failing regulation, could the parties solve the balancing problem themselves? CRA elucidate the difficulties, drawing on their knowledge of internal differences between the Pohokura joint venture parties:

*[In-kind balancing] would... be used to attempt to mitigate the common pool incentive problem [of over-extraction]...However, the uncertainty and asymmetric information (and judgments) among the parties about relevant variables is likely to make negotiations long and contentious, and to result in a very incomplete contract...*

*Because a balancing arrangement is unlikely to be as complete and incentive compatible as a joint marketing arrangement, the costs of enforcement (for example, legal fees, management opportunity costs and production delays) will almost certainly be higher. (CRA p38)*

Higher than what? Given the implied propensity of the parties to squabble amongst themselves, could not a simpler, rules-based balancing regime deliver lower transaction costs? These rules, though sure to be sub-optimal in a frictionless world, could be imposed on separate marketing arrangements, would avoid these ‘long and contentious’ negotiations within the joint venture.

- 6.11** The suggestions of internal differences within the joint venture are interesting. CRA also write:

*Because each joint venture party would have different information, value and expectational judgments and contractual constraints, in respect of each development parameter, the scope for disagreement is very large...negotiations would be long and contentious, and result in a very incomplete contract (if any). (CRA, p35)*

I will take it that these remarks are well informed, and relevant to these parties in this particular situation. What is surprising, then, that they are used in support of joint decision-making, rather than as good reason for having them do as much as possible of their business independently.

- 6.12** Are there existing models or precedents for splitting joint venture production from marketing? In the NZ petroleum industry, the major players, which include Shell, have been able to successfully separate a joint venture in production (their jointly owned refinery at Marsden Point) from independent downstream marketing of petrol and other products. Of course there are big differences from the present case: the raw material, crude oil, is normally readily available at world prices, and the downstream market has a million or so customers, not a handful. But the point is that the oil companies must have had difficult issues to resolve in terms of setting transfer prices and dealing with differences in returns due to differences between the share of uptake (determined by retail market shares) and the share of ownership in the refinery.<sup>7</sup> They appear to have successfully resolved these issues.

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<sup>7</sup> My understanding is that the parties in this joint venture have used a formula based on the difference between the world prices of crude and refined petroleum to allocate profits between the refinery and the downstream petrol retailers.

- 6.13** Very little attention has been paid to these questions by the joint venture applicants and their consultants, perhaps understandably, but it would be interesting to see the outcome if these capable companies diverted a fraction of the energy and ingenuity that they devote to discovering oil and gas to the discovery of possibly new transactional technologies which would enable them to continue to prosper in a separate-marketing environment.
- 6.14** Note that the development of a thicker market with more buyers reduces the force of arguments for the necessity of joint marketing. But it also reduces the market power danger from joint marketing, as a thicker market will also have more alternative sources of supply. Nevertheless, in jurisdictions such as the US, Canada and the UK where markets are quite thick, separate selling has tended to be required, reflecting the norm that competition is generally to be preferred to monopoly.



## 7. CONCLUSION

- 7.1 It is understandable that parties may wish sometimes to combine forces to mitigate the risks of oil and gas exploration, and it might be understandable to find natural justice in them being permitted to jointly sell any oil or gas that they may find. If the price at which such gas is sold is higher than it would be were the parties forced to compete with each other, and thereby is not pleasing to the downstream customers, then the latter might be told: 'If you don't like it, push off and find your own gas!' On the other hand, it is understandable that those same customers might point out that just because the parties are permitted to combine to explore and extract gas doesn't mean that they should be able to form a cartel to sell their output, any more than firms in other sectors of the economy who might be allowed to form joint ventures on certain activities such as Research & Development or industry market promotion are thereby permitted to go further and circumvent the competitive process in the pricing and selling of their products.
- 7.2 In this analysis I take no position on the justice, natural or otherwise, of the joint marketing of Pohokura natural gas. I focus on the positive and normative economics of the situation, as displayed in the CRA Report commissioned by the joint venture.
- 7.3 CRA mount a vigorous defence of joint marketing, and they make some good points. But their analysis falls short of being fully satisfactory. The economic consequences of approving a cartel are quite serious and this particular situation needs more scrutiny and more effort paid to finding alternatives or compromises that would enable efficient production and transactions without harming competition in the market.