21 July 2015

Electricity Authority

Hedge Market Development - Enhancing trading of hedge products

emhTrade is a private investment firm that specialises in trading physical and derivative electricity products in New Zealand. We have been deeply involved in the hedge market as it has evolved to its current form and welcome the opportunity to provide our views on the further development of the hedge market.

Our comments should be read in conjunction with our submission to the WAG discussion paper in December 2014 which we have attached as an appendix.

We have included detailed answers to the questions posed in the consultation paper and we would be happy to provide further information or to engage in discussion with the Authority about the views expressed in this submission.

Please don't hesitate to contact me in this regard via stu.innes@emhtrade.com

Regards,

Stuart Innes,
Director,
emhTrade Ltd

Do you consider more authoritative market making arrangements to be necessary?

The Authority has identified the benefits of better market making. The current voluntary system does not provide liquidity consistently. This fact is being obscured by the metrics that the Authority is currently using to monitor market making (see further discussion below).

As has been highlighted by a number of participants, there is a very real free rider issue that reduces willingness to participate on a voluntary basis and hampers constructive discussion on market improvements. This issue would disappear under a more prescriptive arrangement.

As we have noted previously, our view is that the obligation to provide liquidity in the risk market should fall on those that have chosen to internalise this liquidity; vertically integrated participants, rather than generators specifically.

What are your views on the need for improved transparency around market making performance?

As a participant with direct market access, we are privy to more information than the Authority and many participants in regards to market making performance. Without greater access to data by the Authority and some publication of more transparent metrics to the wider market, it is not possible to have an informed debate on the current situation.

We understand that the Authority is doing their best to make use of the data that is available, however the current metric of average spread can (and often does) fail to show the lack of liquidity that often occurs during the market making period.

Firstly, averaging across the whole curve smooths away any evidence of there being a lack of liquidity in the more volatile front end of the curve.

Secondly, failing to consider the depth can make it difficult to observe when liquidity is missing. For example, if there were two market makers (instead of four) providing quotes at 10% spreads (instead of 5%), the current metric would often fail to draw attention to the lack of liquidity, given the best bid and offer might still have a spread of say 6% (but only for a small amount of volume).

What market making metrics would be of most value to participants?

The metrics that will be of most value to participants are those that facilitate informed regulatory oversight by the Authority as well as constructive debate among industry and consumer representatives.

The Authority correctly identifies a number of issues with increased transparency of market making performance. Of paramount importance is the fact that the ASX market is anonymous and any increased transparency needs to preserve this anonymity.

Our view is that the Authority should obtain the data required to calculate, monitor and publish improved metrics at an aggregate level. Where these metrics are highlighting issues, further information could be requested from participants (trading systems contain detailed logs) under the Code, or from the ASX if available.

Our preferred metric would be:

By contract, for each market making session, the maximum volume weighted average spread of the first 10MW of bids and offers. Under current arrangements, this should rarely exceed 5%.

From our observations of the market, it is clear that such a metric would paint a considerably different picture of the current situation than the metrics being relied on at present.

Do you agree the Authority should investigate improvements to the market making arrangements for the baseload futures products?

Yes, the current *arrangements* are inadequate to ensure that liquidity, and therefore the efficiency of risk transfer, continues to improve.

If there was consistent performance from the market makers, and the market making obligation fell more fairly but prescriptively on participants, thus removing the free rider problem, we think the current *obligations* would be adequate to shift the focus from baseload to other shape or volatility based products.

All participants withdrawing liquidity from the market through vertical integration should face a commensurate, prescriptive obligation to provide liquidity to the risk management markets.

Specifically, do you agree that it should investigate tighter bid-offer spreads, greater volumes, and an extension of the monthly futures product by three to nine months?

It should be recognised that the existing market makers have contributed a significant amount of liquidity to the market to date, and continuing to make this task more onerous may have diminishing returns in the baseload products.

There could be a benefit to tighter spreads, especially if these were graduated. Although we expect that when the contract size is reduced to 0.1MW, market makers will realise the benefit of offsetting their volume (at an average of 5%). We are surprised this practice isn't more popular at present. If this occurs there will be a reduction in the *market spread,* albeit for smaller volume, which may achieve the benefits the Authority identifies in 4.4.4 (a) of the paper.

There may be benefit to having markets made in more of the monthly contracts, but we see 6 months as a reasonable amount. Certainly, having a market made until the end of the next quarter would ensure no-arbitrage pricing held across both products.

We would prefer to see refresh volumes increased rather than initial volumes and think this would be more likely to increase support for options by changing the nature of volatility in the baseload products.

To be clear though, the key changes that need to be made to the current arrangements are:

- Ensuring compliance with current and future obligations, through prescriptive measures.
- Spreading the obligation to provide liquidity across vertically integrated participants, rather than just the four who have done so voluntarily to date. Internalised risk is starving the market of efficient risk transfer, and voluntary obligations are exacerbating the free rider problem.

Do you agree that introducing a cap product would support the Authority's statutory objective?

We continue to hold the view that the most important improvement that can be made to the market is the introduction of compulsory market making in a cap product at a reasonable spread (<10%).

The Authority has identified a number of participants that may benefit from a cap product. Other parties could be added to this list in our view, including those engaging in load control and aggregation, and hydro generators with significant capacity, but uncertainty in annual energy supply.

It is clear to us that an efficient market for the transfer of capacity shortfall risk will be in the interests of all of the parties mentioned and, in the long term, will benefit consumers. A liquid cap product is likely the best way to alleviate the current inefficiencies in this market.

In regards to product design, we don't see a need for a low price cap product (~$150), as the lower the strike price, the more the cap will behave like an option. As the Authority identifies, options can be synthesised by financial participants (and others with the expertise) provided there is enough liquidity in the underlying futures.

However, a high priced cap covers a very different kind of risk, which is one that cannot be easily offset through trading baseload products. The appropriate strike price for a cap will be the minimum that largely removes the energy/hydro component and isolates short term capacity risk (of course 'largely removes' will be somewhat subjective). We do not believe premium should be a consideration when setting this strike price.

With the ability to efficiently transfer these two distinct risks, we see it as likely that intermediaries and proprietary traders including emhTrade will be willing to make a market in other products such as peak, and bespoke contracts for a wide range of participants. Provide liquidity in the transfer of the two fundamental risks, and financial engineers can build any product that is required.

This is currently not possible due to the internalisation of capacity risk, which is manifest in inefficient FPVV pricing, un-hedgeable demand response, and potentially inefficient investment in peaking plant.

What price making arrangements do you consider to be appropriate and/or necessary to support cap products?

Firstly, we do not agree with the Authority's assertion that participants will typically adopt a 'buy and hold' strategy with caps. This is apparent from the fact that 10-14% of *traded* volume in the Australian market is through caps, and as the Authority implies, this number is likely to be higher in NZ if the product were available.

In an efficient market, both buyers and sellers would be constantly adjusting their portfolio as their physical positions changed due to outages, customer acquisition/loss and the weather. This trading activity would create price transparency that could then be relied upon for investment decisions with exposure to capacity risk (most emerging technologies in the industry). This efficient market for capacity risk does not exist in New Zealand due to vertical integration.

Respectfully, we don't think there is any merit whatsoever in a one-sided price making obligation on generators.

The Authority's paper highlights the issue in that 'generators have suggested that purchasers do not appreciate the fair value of cap products, and would be unwilling to buy a cap product given the price they would likely be offered at'. On the few occasions in the past where an OTC cap market has been quoted, it has been clear that the generators would also be unwilling to buy a cap product at even 50% of the offer (e.g. spreads up to 200%).

If only one side of the market is to be quoted, a bid would give more information for investment decisions and therefore be of greater benefit to consumers in the long term.

Our view is that the obligation to provide liquidity to a cap product should be in the form of a two-way market making obligation, and this obligation should fall commensurately on those parties that have reduced their natural incentive to provide liquidity through choosing vertical integration.

Do you agree that the Authority should not further investigate market making arrangements for the peak futures product?

We agree that peak futures should not be the focus, but with the caveat that something must be done to create liquidity in a cap product. As previously mentioned, with reliable liquidity in energy risk and capacity risk, we think financial engineers will be able to make markets in the peak futures.

Having said that, the use of peak futures should continue to be encouraged, as they are perhaps a better fit than baseload for most participant's portfolios.

Do you agree that liquidity in the option product is best supported by improving liquidity in baseload futures products?

No, but we agree that this may be the best approach for now from a more holistic risk market perspective (i.e. cap should be the priority).

Whilst it is true that increased liquidity in the baseload products will help support options traders, we don't think the Authority recognises the amount of change that would be required to reach this point from where we are today.

Reliable liquidity is essential to the risk management of options by parties that don't have a natural position to manage. With better metrics it will be clearer that currently liquidity is not reliable, creating volatility characteristics that are particularly hard to manage for naked options traders.

If we were only looking at the option product it would make far more sense that the parties with natural positions be encouraged to more effectively manage their risks through the market instead of internalising them or transacting large one-off swaps that are not subsequently fine-tuned. Indeed it is disappointing to hear Genesis Energy state that due to the skill set required to trade and market make options "There would be a significant additional cost imposed…"

We would expect that the skill set required to trade options is remarkably similar to that which is required to manage a portfolio of real-options (such as power stations), and note that the savings that can be gained by not investing in these skills comes at a very real social cost of inefficient risk management markets.

There is of course a pragmatic limit to the obligations that can be imposed on participants, and given that, we would prefer these obligations are directed at cap products.

Are there other products or price making arrangements that the Authority should investigate further?

Our view on optimal price making arrangements can be summarised as follows:

- As far as possible, aim to replicate the diversity and liquidity of products that the market would have in the absence of vertical integration.
- Do this on an exacerbator-pays basis, with obligations reflecting the extent of participant's VI down to some minimum bound, say those participants with an obligation to offer into the spot market. 0.1MW contract sizes will facilitate this.
- Whilst ensuring the two key risks (energy and capacity) can be traded efficiently, allow participants the opportunity to provide liquidity in the way that is best suited to their portfolio.

We propose that the above points could be achieved through a Code change that creates a prescriptive market making obligation based on related parties' historic and/or forecast purchases and sales from/to the clearing manager[1].

This obligation may vary from say 0.5MW to 15MW depending on the participant. Furthermore, whilst a certain amount of this obligation (say half) should mandatorily be provided to baseload and cap products, for the remainder, each party could be free to choose the allocation across products that suited them provided this was disclosed to the Authority for monitoring purposes.

[1] We recognise there could be significant complexity in how best to do this, particularly as volumes will reflect hydro conditions. However we do not see this complexity as an insurmountable challenge for the industry.

By including more participants in the market the number of opposing views will increase, which will lead to tighter market spreads as well as removing the free rider problems that are apparent today. Furthermore, basing obligations on VI gives participants a choice as to whether they want to incur the obligations or not. It may be that for some, disaggregating and using the risk markets instead of VI may be a better choice.

What is your view on these approaches, and the extent to which they could be employed by the Authority, either alone, or as part of a mixed strategy?

Overall we think the Authority recognises the issues and it is great to see continued movement in the right direction. However, a rethink is required on the proposals around cap.

Furthermore, we would like to see more work done to truly understand the root cause of the lack of liquidity in our risk management markets. It really does seem to us that best practice in risk management is missing in NZ due to the abundance of VI. This then creates a feedback loop whereby VI becomes the optimal strategy for any new participant (buyer or seller) due to the inefficiencies in the risk management market (it's cheaper to buy an unnecessary peaker than pay the offer in a cap product) which leads to inefficient outcomes that in the long run harm consumers.

In an efficient market, competition would force all participants to continually strive to better understand, measure and manage risk. It is this competition that leads to more robust and transparent price signals that in turn lead to better investment decisions. As we highlighted in our submission to the WAG, for most participant organisations the amount of volume that is left exposed to the market and not internalised is negligible compared to what there would be without VI, and thus there is relatively little incentive for these participants, and the market as a whole, to operate more efficiently. This creates socialised costs which are eventually worn by consumers which in our view is grounds for more aggressive regulatory intervention.

emhTrade

APPENDIX 1

Submission to WAG discussion paper December 2014

www.emhtrade.com

Ironbank Suite 504, 150 Karangahape Road, Auckland 1010

P.O. Box 147144, Ponsonby, Auckland 1144, New Zealand

Based on your experience, are there any other challenges to managing risk through the hedge market that the WAG has not identified?

The WAG correctly asserts that liquidity is low, but for anything other than a base-load profile, liquidity is virtually non-existent. The paper doesn't highlight this issue enough in our view.

We do not agree that the barriers to market access are significant for any well-funded market participant. We question whether it is appropriate for parties that don't have the expertise to manage risk to be taking it in the first place by exposing themselves to spot prices. It may be appropriate for direct purchasers to have to demonstrate that they have experience with managing spot risk (including the use of derivatives) before becoming certified. The EA could facilitate or approve education providers for this purpose.

Do you agree with the assessment that the status quo is insufficient, and that some improvements are appropriate at this point in time? If so, please rank your preferred initiatives and provide your rationale for them.

Absolutely. It is clear from the chart that OI has been basically flat in the last 12 months, and that volume has not grown significantly since spreads were tightened in 2012. Furthermore, we note that this picture is likely to overstate the OI in the market. The pricing structures in the VAS contracts are such that a significant amount of open interest is 'unwinding' them through the exchange. Thus when considering these two market developments (ASX and VAS), the effects should be measured as subtractive rather than additive as is often the case when measuring the success of the ASX market developments.

The most important improvement that can be made at this stage is compulsory market making of a cap product. Due to the uncapped nature of the spot market, the management of capacity shortfall risk is essential to any participant, whether purchaser, retailer or speculator. Currently there is no liquidity in products exposed to this risk, and therefore no efficient method of transferring it between parties. Due to vertical integration this risk is simply internalised among gentailers.

This risk transfer could be achieved at least partially through a peak future. Peak futures have been listed for a year now and it is symptomatic of the lack of engagement by the major parties that this product has not become more actively traded. Again, vertical integration removes the need and therefore the willingness for major participants to trade these contracts. Given they are already listed, it could be a quick win to push liquidity in these products, but it is clear after 12 months that this won't happen without regulatory intervention.

The paper notes that FPVV prices are very competitive and that this may hamper uptake of derivatives as a risk management alternative. Our view is that this 'competitive' FPVV market is an indication of inefficiency in that derivative and FPVV markets are not aligned. This suggests that either there is still an internal disconnect in the pricing of these contracts within some of the major organisations, or that futures are being deliberately priced above FPVV to stifle competition (we suspect the former rather than the latter).

What is your view on the ability or otherwise to manage different facets of price risk?

Improvements in the hedge market to date have enabled participants to effectively manage a substantial amount of their short to medium term base load energy price risk. This has been a commendable change from prior to 2010. We feel there are still significant shortcomings in participant's ability to manage the following risks through the market:

Profile Risk: Whilst peak contracts have historically been correlated with base-load prices, for many participants, the residual risk may still be significant and beyond what is prudent to take. Without a cap and/or peak product, there is no efficient means to manage this risk other than vertical integration or FPVV. We note that there are a number of emergent technologies and business models that have no baseload exposure.

Location Risk: The increase in FTR nodes and general improvement in the grid is likely to have reduced this risk substantially in recent years. We don't think there should be priority given to further improvements in this area until the FTR market has had a chance to mature and the impacts measured.

Transmission and Distribution Price Risk: An emergent risk that was not identified in the paper ought to be considered by the WAG. New technology such as distributed PV, automated load shifting, and electric vehicles are rapidly emerging and have the potential to add significant economic value to New Zealand. Investment decisions for these technologies rely heavily on assumptions around the cost and structure of distribution tariffs. The visible horizon for distribution pricing (structures) is currently far shorter than the investment horizon for these technologies. This uncertainty is likely to be leading to inefficient investment decisions. A requirement for distributors to fix their tariff structures for a longer period, or at least offer this option may alleviate this problem by giving the market earlier signals on the future of these price structures.

Do you have any comments on the Energy Link analysis and its conclusions? What should the WAG take away from the Energy Link work?

ASX price level analysis: We agree that a risk premium is to be expected given the asymmetry of prices and concentration of ownership (and balance sheet) on the sell side. We see it as futile to try to assess whether this premium is appropriate or not for the circumstances. A better question would be to ask whether or not there is an efficient market for risk in NZ electricity prices. HHI, entry and exit of participants etc could be used to inform this analysis. If the risk market is efficient, it follows that the risk premium will be efficient.

OTC vs ASX: We agree with the caveats around the limitations of the data available. Although we also suspect there is no clear link between ASX and FPVV pricing in a number of participant organisations, in part because of the lack of an efficient and transparent market for profile risk.

What are your views on the WAG's indicative assessment of the broad initiatives that might improve the ability to manage different facets of price risk? Which, if any, of the initiatives discussed to you think would be worth pursuing?

- Firmer market making obligations that include products that facilitate the management of profile risk should be given priority.
- As previously noted, recent improvements to the location risk market should be given a chance to mature.
- Real time price improvements, price and offer caps (absolute or cumulative) should be investigated further, along with a day and week ahead market.
- Given the lack of appetite for incumbents to trade new products, we don't see weather or gas markets as something that the regulator should focus on.
- We don't see any benefit to disclosure of transfer pricing. However believe there is merit in reducing information asymmetry between physical and financial participants. In particular, more timely and detailed disclosure of short term OTC trades, and tighter rules around outage notifications would create more even playing field for speculators in the futures market.

Are there any other specific initiatives that could improve the ability to manage the different facets of price risk that you think should be considered?

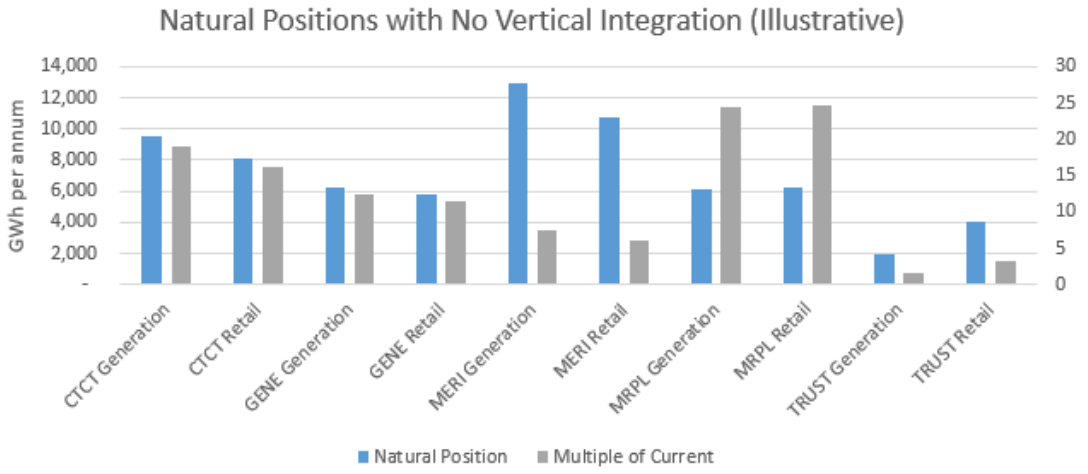
As per above, OTC trades that will significantly impact spot price outcomes should have higher disclosure obligations than is currently the case. Same day disclosure including buyer and seller would remove information asymmetry and allow all participants to assess the impact of these changes in position on short term spot market outcomes, leading to more efficient pricing in the front futures contracts.

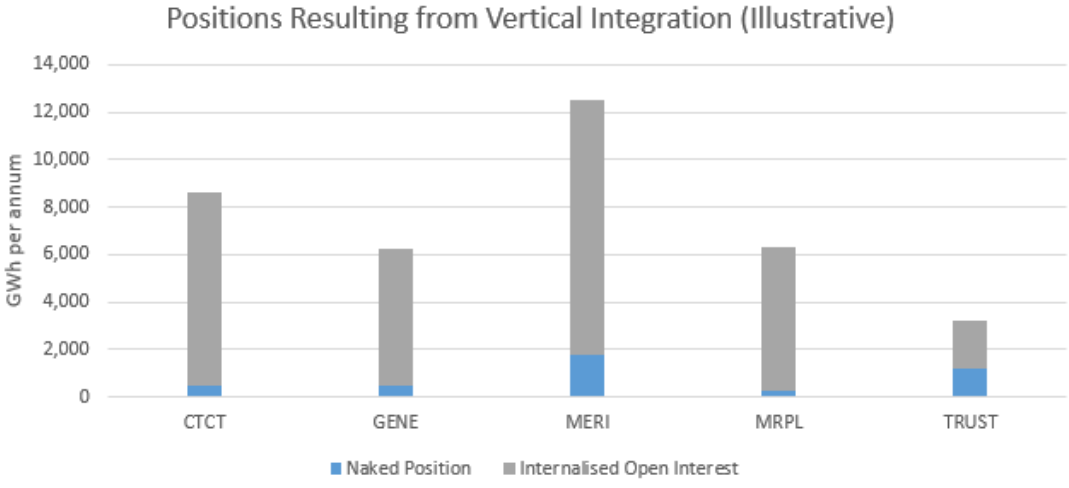
Similarly, tighter obligations around outage notifications and trading around notifications may help remove information asymmetry between physical and other participants.

What evidence is there to support the view that vertical integration may be creating a barrier to hedging by independent generators and/or retailers?

Our view is that vertical integration (VI) is the single biggest impediment to a liquid hedge market.

Whilst the paper highlights the high percentage of physical volume that is internalised through vertical integration, we think further explanation of the issue is warranted, particularly with regards to the effect that this risk internalisation has on the *market for risk*. The two charts below (adapted from the chart in the paper) illustrate how much more 'skin in the game' there would be without vertical integration.





There are two things that are clear from these charts. Firstly, that the risk that needs to be managed through the market by participants is, in some cases, negligible compared to their total portfolio. For these participants, there is very low incentive to innovate and improve best practice in risk management relative to if that participant was not vertically integrated.

The second and perhaps more important point that is highlighted above is that the number of natural participants in the market would at least double with no vertical integration. In such a market environment, not only would there be more participants, but they would be trading around positions that are an order of magnitude larger than those in the market today.

Trade in derivatives occurs when two parties have an overlapping willingness to buy and sell a product at a given price. Their individual willingness will depend on their position, risk tolerance, and view on expected prices. As participant numbers increase, the possible combinations of potential counterparties, and thus the probability of there being an overlapping view, increases exponentially. Thus the marginal benefit of even 5 new participants with significant risk to manage is high, especially with regard to the impact on spreads.

With more participants, each with considerably more incentive to manage risk, not only would the volume traded be significantly higher, but the types of risk management tools traded would dramatically increase. In such an environment, it would be far easier to find a willing counterparty for the transfer of specific types of risk. There would be innovation in product development such that risk management tools will evolve in the market to suit participant's needs. Vertical integration has stifled the eco-system that is needed to support an active, liquid and dynamic hedge market.

This stifling has down-stream effects on other aspects of the industry including retail, load management, distributed generation, and electric vehicle uptake. Innovators in these areas would be far more likely to find the hedge products they need, at a price that works, under a no VI counterfactual world than in the market that we have today.

Do you agree with the WAG's high-level assessment of options that might improve hedging opportunities available to independent generators and retailers?
Which, if any, of the options discussed do you prefer or not prefer?
Are there any other specific options aimed at improving the hedging opportunities available to independent generators and retailers that you think should be considered?

Broadly, we agree with the options that are outlined.

We recognise that it is probably not feasible to remove or restrict vertical integration in the market, and also that there are benefits that arise from vertical integration. However, it must also be recognised that the benefits of VI are generally private whilst the cost, all of the efficiency losses from a lack of hedge market, are socialised. It is for this reason that additional regulatory intervention is necessary.

When considering what form this should take, we suggest the Authority take a similar approach to monopoly pricing regulation and consider the counterfactual that would exist if there were no VI. What would the hedge market look like under such a counterfactual? What sort of products would be available? In what volume and at what spread? Regulatory intervention should ensure that the benefits of such are world are replicated despite participants choosing VI.

Our view is that the best way to do this would be through firmer market making obligations across a wider product base (perhaps including OTC markets). We do not think these obligations should be set by the size of a participant's generation fleet, rather they should be based on the extent to which a participant is vertically integrated.

Independent generators that have no retail position have a natural incentive to participate in the market and as such should not have additional obligations. However those participants that choose to internalise their risk through VI should offset the socialised cost of this decision through larger obligations to support the market. Such an approach would also ensure that small vertically integrated participants contributed to liquidity (this will be much more feasible with 0.1MW lot sizes).

A fairer, socialised-cost based approach to market making obligations may result in more willingness to take them on voluntarily.

What is your view on the importance of speculators and intermediaries in the hedge market? What factors do you think are limiting their involvement?

Speculators add benefit but without natural players actively managing risk through the market, there will be no foundation for a sustainable, liquid hedge market. The existence of a number of international speculators will be a good indication that the market for NZ electricity risk is efficient. The existence of speculators will create a higher probability of opposing views and therefore tighter spreads, but we see it as unlikely that speculators will add any significant volume in the long term.

Currently there are three impediments to speculating in NZ electricity derivatives:

1. Finding a counterparty with an opposing and overlapping price in the product that you are trying to trade. As highlighted above, a market with only 5 traders with small exposure does not create a high probability of trades occurring.
2. As noted in the paper, infinite right tail on the spot distribution, with no liquid market to hedge it, limits the amount of spot and prompt forward exposure that speculators are willing to take.
3. Physical market size and concentration of ownership. Whilst NZ electricity may be initially appealing to global macro speculators due to the volatility and lack of correlation with other commodities, the reality is that there are very real constraints on the amount of speculation that the market can absorb. Given the small number of generators and their vertical integration, any significant speculator is likely to face only a few large generators as a counterparty to their trades. Due to the small volume in the physical market, for the gentailers, changes in position of as little as 50MW can have significant changes in generation decisions and subsequent spot market outcomes.

   In a deeper physical market, or one where positions could be spread across a greater number of smaller participants, these position changes would be less likely to create adverse spot market outcomes for speculators.