

## Will your customers or suppliers meet their future contract obligations?

Ron Wells discusses the Art of Assessing, Quantifying and Managing Buyer or Supplier Performance Risk in the Physical World; a Challenging Undertaking

In the early eighties, against the backdrop of volatile market prices, Bankers, Traders and Commodity Exchanges adopted value at risk (VaR) calculations as the foundation on which to manage exposures that would only crystallize in the future. The widespread deregulation of markets for all sorts of commodities, as well as financial instruments, and the increasing use of future fixed price purchase and sale contracts has seen the associated performance risks spread far beyond the realms of inter-bank, trader and commodity exchange dealing. The application of the Bankers', Traders' and Exchanges' existing techniques – involving VaR calculations and Margining – has likewise spread.

This article examines whether commercial Counterparty Risk Managers should accept the use of the “VaR and Credit VaR, Margining and the Right to Sue to recover damages” formula as the most effective way to manage Performance Risk and add value to their businesses. It is pre-supposed that the function of the professional Counterparty Risk Manager is to add value to the business by providing competitive advantage, while protecting the business from suffering catastrophic losses.

### Performance Risk

In light of the volatility of input and energy prices many firms are or will be considering buying forward at fixed prices, and/or selling forward at fixed prices, on term contracts. Such contracts create performance risk.

Credit Risk is not the same as Performance Risk. Credit Risk is the risk that the counterparty will not pay an invoice in full, on the due date. This is sometimes referred to as Payment Risk or Delivery Risk.

Performance Risk is the risk that a counterparty will not deliver or will not accept delivery of a physical product or service, at the agreed price, on the agreed future date or series of dates.

A company that relies on a forward contract (a contract that is at inception intended to be settled by transfer of ownership of a physical good in exchange for cash) will either (a) lose a profit opportunity, or (b) incur an actual cash loss, if its counterpart

to the contract fails to deliver or accept the goods in question at the price contracted on the agreed future date.

If the company that relies on such a forward purchase contract is able to pass on to its customers the increased cost of purchasing substitute goods, it may simply have lost an opportunity to realise the higher profit margin it would have made if its supplier had not failed to deliver.

However if the same company had itself contracted to deliver its final product at a fixed price, relying on the fixed input price agreed with its raw material, energy or transport supplier, it would suffer a cash loss when meeting its obligation to its customer.

This illustrates that Performance Risk has two main elements; **firstly** the question of whether or not the counterparty will meet its obligation to deliver the agreed product of agreed quality in the agreed quantity at the agreed price on time, and **secondly** what the quantum of the loss would be if the counterparty were to fail to meet its obligations.

The focus of counterparty management practices so far, in respect of Performance Risk, has been on attempting to quantify the maximum likely amount of the loss that would be incurred by each party should the other fail. It is in dealing with this challenge that 'marked-to-market' (m2m or m-t-m) and VaR (value at risk) analysis tools have been adopted.

Once the possible potential future exposure (PFE) is quantified using these tools, counterparty risk managers have turned attention to assessing whether a counterparty that failed to deliver or purchase could and would pay damages, at that maximum likely level, to the wronged company. In this respect it is usual for the Credit Risk related Probability of Default (PD) and Loss Given Default (LGD) factors to be applied to the VaR calculation in order to complete the assessment. Since Credit Risk and Performance Risk are fundamentally different in nature, application of the credit risk related PD and LGD factors is inappropriate.

In seeking to ensure that a counterparty will pay in due course credit professionals have employed Margining techniques; together with the inclusion in forward contracts of the rights (a) to require the provision of Risk Mitigating Collateral – cash or guarantees - in defined circumstances, and (b) to Sue for Liquidated Damages.

In large measure these techniques for calculating PFE and for assessing the potential risk, seriously inhibit the propagation of additional profitable business; in respect of transactions not involving banks, major commodity trading houses and exchange traded instruments.

## Value at Risk (VaR)

VaR calculations are mostly useless, for the purpose of estimating the possible future exposure in relation to commercial transactions. This is the case because they are always based on the assumptions (1) that future prices can be predicted based on the trend and volatility of prices observed in the past, and (2) that relevant price trend and volatility data are available.

In the *first* case it is clear that the future cannot be predicted with any certainty based on the extrapolation forward of past statistics; no matter how elegant the formula used or how many tens of thousands of iterations are run through powerful computers. It is possible to cite many cases when such calculations underestimated the risk of catastrophic events that actually occurred. Several examples are cited in *The Misbehaviour of Markets* by Benoît Mandelbrot and Richard Hudson; see <http://www.barrettwells.co.uk/bookshop.html> for details.

In the *second* case, most commercial markets for physical goods are micro-markets dependent on the supply and demand for goods of a particular specification at the particular time they are required, at the particular place where delivery is desired. Trying to fit commercial physical delivery of a particular type of good, produced in certain quantities at a particular place – with attendant particular transportation challenges and costs – into a calculation based on a similar class of good traded on an exchange in another country or region, which is often what is attempted, inevitably produces misleading results.

## Margining and Legal Redress

Most commercial end-users of products do not have the cash or the bank lines available to provide daily settlement of the marked-to-market (m2m) amount that would in theory be due to the supplier should the buyer become bankrupt within 24 hours. The m2m amount referred to is the difference between the agreed forward fixed price and the calculated or published potential future market price. Hence the potential loss that the supplier would suffer if the future price is lower than the fixed forward price agreed. Most of such buyers would also in all probability be judged not to be financially able to pay the calculated maximum potential future exposure, which usually exceeds the current m2m amount by many multiples.

The upshot of an insistence on Margining and on Legal Redress based on VaR calculations (potential marked-to-market variances) is therefore all too often the failure to complete otherwise profitable business transactions.

**When a counterparty risk management function repeatedly declines potentially profitable business it fails in its primary objective, which is to actively manage credit and performance risk, not to avoid or eliminate such risk.**

As the demand for goods and services has spread more evenly across the planet; with the growth of construction, industrialisation and consumerism in emerging markets, the demand-supply balance for many products has destabilised leading to increased price volatility. Naturally this leads businesses to turn to establishing forward fixed price or index-linked-price purchase and/or sales contracts in order to better predict profitable operations. Thus commercial credit professionals are being challenged to find ways to effectively manage Counterparty Performance Risk.

In response to this challenge a suggested alternative, albeit untested, method of assessing performance failure risk is presented here for consideration.

## **A METHODOLOGY PRESENTED FOR CONSIDERATION**

### **Opportunity Motive and Means (OM<sup>2</sup>)**

One possibility when considering Performance Risk, as opposed to Credit Risk, may be to consider:

- Is the counterparty sufficiently hedged to tolerate any foreseeable Potential Future Exposure? That is to say, does it have a strategy or an arrangement that will enable it to manage in the face of adverse price change, perhaps by having in place an opposite position (such as a financial option) or an ability to adjust its retail prices to compensate. (Opportunity)
- Is the counterparty motivated to meet its commitments? (Motive)
- Will the counterparty have the financial means to pay? (Means)

### **Constructing a Performance Risk Management Process**

Possible building blocks for a performance risk management process could be:

- **Scenario Planning** as a basis to estimate the Potential Future Exposure (Opportunity)
- **A Performance Risk ScoreCard** to produce a Probability of Performance Default (Motive)
- **A Recovery Rate Model** to estimate the Loss Given Default (Means)

### Opportunity to Perform - Creating an Appropriate Scenario:

Decide how far in the future the risk extends; for example 3 months, 6 months, one year, two, five, seven, ten or twenty years. Then consider what relevant factors may change during that period; such as:

- Prices; based on a prognosis of the possible changes in supply and demand, and consideration of possible maximum and minimum price levels; taking into account:
  - Substitutes
  - New Technologies
  - Competition
  - Regulation
  - Demographics
  - Black Swans, positive and negative<sup>1</sup>

Devise a method to determine the maximum Potential Future Price (PFP) factor for the related product-market combination category, in each future time period. Apply these factors to the current values of the relevant volumes daily. Revise the factors periodically; with the frequency of revision determined by the volatility of the relevant prices.

### Motive to Perform – Create a Performance Risk ScoreCard

Consider what are the imperatives of the senior Executives of the Counterparty (CP), what is in their interest given those imperatives, and on what basis they will likely decide whether to perform or not when the time for performance arrives. Include country risk related issues when imports or exports are involved.

When proposing to **deliver/sell product forward**, factors such as the following could be included in a ScoreCard:

- The share of total input volumes represented by the volume contracted to be delivered to the CP. If relatively small the negative impact of completing a purchase per contract, despite then current market prices being lower than contract prices, would likely not outweigh the negative consequences of a failure to perform.
- The proportion of the receiving country's requirement of the product supplied. The higher the proportion that must be imported the more likely the receiving country's government will prioritise foreign currency availability to pay for such imports.
- Ability of the CP to pass on to its customers the cost of goods to be supplied at a fixed price, despite the then current market price being lower than the contract price. This would require consideration of the CP's business model,

the diversity of its customer base, its ability to maintain prices based on cost of production or cost of acquisition, and whether maintaining its profit margins would allow its competitors to appropriate some of its market share. If the CP is not able to pass on the cost of its inputs (those that are to be purchased based on a fixed price forward contract) it will probably have to operate at a loss for some period of time and may face bankruptcy, unless (a) it can re-negotiate its commitment under the fixed price forward contract or (b) it repudiates that forward purchase agreement.

- Availability of Stakeholder and/or Parent support.
- Political and/or social imperatives
- Reputation and culture
- Consequences for the CP of failure to perform
- Legal consequences
- Whether performance in some circumstances would threaten its survival
- If the CP were to go into Administration (Chapter 11 equivalent) before performance or during a delivery period, consider whether the Administrator would be likely to confirm or reject the contract; that is whether the contract arrangement would still be in the interests of the company and its possible successor, despite its bankruptcy.

When proposing to **buy/receive product forward**, factors such as the following could be included in a ScoreCard:

- The share of total sales volumes represented by the volume contracted to be received from the CP. If relatively small the negative impact of completing a sale per contract, despite then current market prices being higher than contract prices, would likely not outweigh the negative consequences of a failure to perform.
- In the case of purchases (imports) from relatively weak economies, the proportion of foreign exchange earnings and/or Gross National Product (GNP) that is represented by exports of the product. The higher the proportion the less likely the state will block exports. However, in the case of some commodity exports, domestic beneficiation (such as the refining of crude oil or bauxite) may be possible, hence the state may be minded to ban exports of the raw material, so the beneficiated outputs could either replace imports, or be exported to realise higher net value.
- Availability of Stakeholder and/or Parent support.
- Political and/or social imperatives
- Reputation and culture
- Consequences for the CP of failure to perform
- Legal consequences
- Whether performance in some circumstances would threaten its survival
- If the CP were to go into Administration (Chapter 11 equivalent) before performance or during a delivery period, consider whether the Administrator

would be likely to confirm or reject the contract; that is whether the contract arrangement would still be in the interests of the company and its possible successor, despite its bankruptcy.

## Means to Perform – A Recovery Rate Model

Design a Recovery Rate Model that might include scoring some or all of the following factors:

- Is Right-way Risk a factor? This risk type would arise when a contract, say, provides a fixed price which, in the context of a counterparty's business model, offers the counterparty an increased profit opportunity, even though its supplier or buyer (you) would face a loss and require compensation, should the counterparty not perform under the contract.

### Right-way Risk Example:

In a situation where a contract exists to purchase copper from a copper producer at a future date, based on a price fixed at the time the contract is agreed. If the market price of copper rises in the interim period, the buyer may take comfort in the fact that, as its marked-to-market exposure (valued performance failure risk) to the producer increases so does the value of the producer's alternative sales revenue, future production and reserves. This sense of comfort would rely on the buyer's ability to sue the producer to recover any additional profit the producer would make by selling copper in the market rather than at the fixed price previously agreed with the buyer.

The Right-way Risk concept is particularly important in the case of producers or re-sellers that are not financially strong in that, when it operates the producer's or re-seller's financial position strengthens to match its increasing market-to-market obligation. Hence the potential fixed price buyer's ability to recover any loss resulting from a supplier's or re-seller's failure to perform likewise strengthens.

- The existence or otherwise of a liquid market for the product in question at the place of failure to perform, or the cost and practicality of moving the product to a place where such a market can be found, or the cost of obtaining substitute product in an alternative location.
- Likely existence of an alternative buyer or supplier in a 'distress' situation, and the likely cost of switching to such alternative should the CP fail to perform.
- Legal options, the quality of the legal profession and the predictability of the outcome of arbitrations or court appearances in the relevant jurisdiction(s).

- The possibility of arresting ships or other mobile assets (such as aircraft) in order to enforce court issued judgments.
- The existence in 'helpful' jurisdictions of assets of value belonging to the CP.
- The value of any Parent Company or Sibling/Affiliate Company guarantee held, covering performance (marked-to-market) loss.
- Whether an insurance policy is held to cover any actual marked-to-market loss.
- Whether diplomatic pressure could be effectively employed to persuade the CP to perform.
- The existence, if any, of a margining agreement, the threshold that has been agreed, and how quickly a position could be closed (crystallised) should the CP fail to post (provide) margin.

## Conclusion

It is evident that the risk that a counterparty will not pay an invoice on due date, a date after physical delivery of a commodity, is fundamentally not equivalent to the risk that the same counterparty will refuse to receive the same commodity at a previously agreed fixed price. Likewise the risk that a supplier of a physical commodity will fail to deliver the commodity, at a previously agreed fixed price in the future, is fundamentally not the same as the risk that that supplier would fail to repay a loan at some future date.

Therefore it is not appropriate to use the same risk assessment approach when considering both credit (payment) and performance risk, hence the need to develop an alternative.

There must be many possible solutions so it is hoped that this article will stimulate thought and discussion, leading to development of alternative methods to be included in the counterparty risk management profession's body of knowledge in due course.

Ron Wells

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<sup>1</sup> See article in CCR Magazine, issue August 2009, regarding Black Swan Events. Copy available at: <http://www.barrettwells.co.uk/blackswan.html>

Ron Wells is the author of Global Credit Management - an Executive Summary, and co-author of the Mandarin Chinese language version (simplified characters) Huan Xin Shui Shi (Awaken the Sleeping Lion on the Balance Sheet - an Executive Summary for International Credit Management) published by **T3P LIMITED** ([www.t3plimited.com](http://www.t3plimited.com) English and [www.t3plimited.net](http://www.t3plimited.net) Mandarin Chinese, simplified characters). Ron has twenty three years of commercial, corporate banking and trade finance experience; plus 18 years of experience in international corporate credit management.

Ron is a Certified Credit Executive (CCE), a Chartered Management Accountant (ACMA), a qualified International Banker (ACIB) and a Chartered Corporate Secretary (FCIS). He participated in the NACM Graduate School for Credit and Financial Management in 1996/97, passed with distinction and was elected Best Student.

Ron maintains a free access, credit resources web site at [www.BarrettWells.co.uk](http://www.BarrettWells.co.uk). Email: [ron.wells@barrettwells.com](mailto:ron.wells@barrettwells.com)



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