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A Digital Commodities Firm

Commodity Hedging – A Case for Incentives

I have seen many times where the real impediment to hedging is a lack of incentive both from the equity and debt holders in a firm. To highlight such an issue, let us consider a specific case of a feed producer, hereafter called the "firm" that uses corn as the key input to produce feed. Just as for any corn end user, gross margins for such a firm can be modeled in two ways: firstly, where the cost of raw material has no bearing on the sale price of the feed (which I call a "static model"), and secondly, where the cost of the raw material can be passed on to the sale prices (which I call a "dynamic" model). In addition, let us also assume that this firm is fully debt financed by a bank. I chose a 100% debt capital structure for distinguishing between the creditor and the firm. The hedging incentive is irrelevant to the capital structure.

In a static model, if the firm operates under this scenario, then one way to improve the IRR of its corn investment is to lock in the corn costs, and make a forward sale of the feed. Assuming that revenues are thus locked in, and assuming credit risks arising from the firm's customer arrangements are negligible, the firm should clearly focus on hedging the cost of corn. The challenge to making a hedge is often an issue of a financial incentive, where the firm considers its own cost of hedging vs. the benefits -- and is dissuaded. In addition, hedging activity usually requires additional capital to fund the marked to market positions, making the firm additionally levered, which could increase its cost of debt, creating one more strike against hedging.

In a dynamic model, if the firm operates under this scenario, then one could say that costs of corn should presumably have no bearing on the gross margins of feed, as these costs can be passed through to the selling price. Well, in a real world, we know that as prices fall, demand increases and vice-versa. Thus, in this model even if the gross margins were kept constant, the firm's debt service ratio doesn't remain static. The firm could foreseeably lose a perspective on cash flow, and there have been numerous situations where there have been sudden needs for liquidity in volatile markets, despite firms having robust pass-through dynamic models.

In both cases, we see a definite need for hedging but an unfortunate lack of incentive on the firm's part to hedge. It turns out it is fairly easy to come up with different hedging strategies in either case and maximize profits, but ultimately it is imperative that there is an incentive to hedge that can be quantified. I argue this incentive needs to apply in two places – for the firm's provider of capital (in this case its bank, since its 100% debt financed) and of course, for firm itself.

To illustrate this quantifying incentive, let us assume the notional borrowing for a firm as described above is $100 million at a cost of capital of 7%. At a 95% confidence level, the firm would need to allocate an additional $ 24 million capital (Additional Capital = 100 x $\left[1-e^{-\{1.65*\sigma*\sqrt{t}-0.5*\sigma^2*t\}}\right]$ assume σ =17% and t = 1 year. This is for 95% confidence level. Please use Z value of 2.33 should you want 99% confidence level) towards hedging at the onset of business. Thus in a simple cost benefit analysis, I would argue the firm's additional borrowing cost of $ 1.7 million (7% x $24 MM) would annually

provide a benefit of less volatile cash flows irrespective of cost of corn for the firm, and a guaranteed debt service for the lender.

In theory, the cost of capital here should also reduce a bit given the better credit profile generated by the firm through this hedge (good for the firm) as well as a reduction in capital allocation for provision against the firm's default (good for the bank). Thus, both the lender and the borrower are incentivized towards hedging practices – indisputably a better outcome for all.

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