NORD45 WHITEPAPER: UNDERWRITER'S GUIDE TO LENDING IN ELEVATED COMMODITY PRICE PERIODS

As we write this, we've just papered our January 2022 Monthly Commentary, in which we observe a period of 18 months of strong commodity price growth. While it may seem that *now is the time* to invest in producers of such commodities, prudence is of utmost importance now more than ever. Producers of all qualities thrive in such an environment, making difficult work of distinguishing the good from the bad. Missteps now are common, and when cycles inevitably turn, much like when the tide goes out, lower prices put good firms on display and leave the bad ones out to dry.

In an environment in which commodity prices are rising, gains accrue to the companies with the largest long positions. In the agriculture sector, this is most pervasive amongst producers of agricultural goods (i.e. farmers), rather than processors or traders, who purchase agricultural goods, rather than grow them themselves. In every case, regardless of where it may sit in the supply chain, it is important that companies hedge their market risks appropriately; however, a producer is always naturally long the price of agricultural goods even when following a suitable hedging policy. Thus, a producer, regardless of its quality, can have variable margins, and as prices rise so will profitability. The same is not necessarily true of processors and traders; however, our approach to underwriting is relevant to all.

Having successfully navigated through these cycles in the past, we explore our approach for investing under these circumstances in a series of sub-sections. Each section is taken in turn, but all should be considered together to enhance underwriting and structuring of transaction, especially during elevated pricing periods.

1. **Margin volatility**: Producers often have wide margin volatility because of their natural exposure to underlying agri-commodity prices. That is, as owners (or long-term lessors) of land, they have a near-perpetual long position. Nonetheless, near-season exposure should be managed through proper crop rotation and hedging, both of which can be influenced by higher prices.

    Crop rotation (row crops): In the event that some crops are benefiting from higher prices than others, producers will invariably trend towards planting those crops where profitability will be highest. While there is nothing wrong with this, producers who ignore their own expertise and what is best for each land parcel in an effort to unnaturally plant more of a particular crop are putting themselves at a higher level of risk.

    Producers should rotate parcels in such a way that land is not over-exhausted, encouraging sustainability and stronger long-term crop yields. In Brazil, the most common rotation is between soybeans, corn, and cotton. If, for example, a Brazilian producer were to increase its cotton plantings by 50% year-over-year, encouraged by commodity prices, we would view this as an increase in risk. Successfully growing quality cotton requires more expertise and working capital than corn or soybeans. While the added risk may pay off, improving the producer's profitability, a creditor is exposed to far more risk. Margins and cash flow appear stronger in that year, but the corresponding addition to risk is hard to see in the financial statements alone.

    The example above is not limited to cotton. It is often tempting for producers to plant as much soybean as possible, as this crop generally benefits from stronger margins. This too can benefit

profitability in the short term; however, in the longer term it may over-exasperate the land, requiring more land investment in future seasons and weighing on margins at that time.

The approach then should be to examine year-over-year plantings by crop, observing where the producer's expertise exist by checking crop yields in each season for each crop. If negative correlation exists between higher planted area and crop yields in particular crops, this could be an indication of improper rotation. This analysis can be useful in a capsule, but we also recommend comparison to crop yields in the entire region in which the producer operates. The regional level analysis is important for normalizing the data for weather conditions in any given season.

Hedging: We expect to see improvement in margins when prices rise, and compression when prices fall; however, the extent of this volatility is important. Producers should follow a well-defined hedging policy, regardless of prices or the speculative belief of where prices may end up. While examining and accepting hedging policies is straightforward, tracking the enforcement of them during the season itself is much harder.

For this we turn to historical margin variability and reconcile with the hedging policy at that time. Again, strong margin improvement may improve traditional financial metrics from one year to the next, but they may also be an indication of veering from hedging policies and engaging in speculative activity. Thus, if the observation is made that margins increased dramatically when prices rose this may in fact be a negative indicator, as the producer could be straying from its hedging policy. In general, we prefer to see tighter margin variability such that increases in underlying prices are not entirely conveyed in margins, just as decreases would not be entirely absorbed due to proper hedging adherence.

2. **Breakeven (cost) analysis**: Companies producing agricultural goods should have a crop-by-crop breakdown of expected variable costs per unit, including any financing costs. Without this analysis you can be sure that the producer is effectively driving blind. Thus, this information should be readily available.

   So, now that we have this in hand, what are we looking for? The first level analysis is simple, comparing breakeven of each crop to current prices, ensuring that a margin exists that is satisfactory to buffer financing expenses. Given our initial assumption, high underlying commodity prices, we expect that the buffer should be high, but there are a couple of things we suggest looking into further.

   Input price forecasts: The breakeven analysis should be on a look-forward basis, used to plan the season ahead. Therefore, it will have assumptions for input prices, including fertilizers, seeds, pesticides, and gasoline, all of which can have significant variability in themselves. Our experience is that input providers typically take advantage of underlying commodity price rises to increase their own prices. It is important to have a keen on eye on the producer's forecasts for these costs, and to understand where they are garnered. Ideally, costs are hedged through forward purchase agreements or existing inventory ahead of the season. On the other hand, if a producer has merely pushed through forecasts using last seasons' figures, even with a marginal adjustment for inflation, we would recommend revisiting these figures alongside them.

   In the end, input price forecasts should be conservative, conveying larger than normal increases, due to the increase in underlying commodity prices.

Historical cost analysis: Looking into the producer's historical breakeven analysis can be telling of its capital efficiency. If the breakeven level is increasing at a pace greater than the market increase of input and financing costs, then it may indicate that asset acquisitions are being made that are impeding on margins. This type of inefficiency is easily hidden when underlying commodity prices are high but comes back to bite when they inevitably decline.

For example, the acquisition of overpriced farmland when commodity prices are high is common. Producers are inclined to increase the amount planted to take advantage of such prices. The issue however is that while current prices would support the growth in planting, the producer could be giving up cost efficiency in return. While this could improve his bottom line in the near term, it may increase his breakeven levels such that a future downturn is not as easily absorbed.

In historical cost analysis, the underwriter is looking to identify an abrupt increase in cost structure going into the coming season. If this is indeed the case, then remain weary and discuss further with the borrower. Such an increase is not a deal-killer but warrants further understanding. To go a step further, we can analyze companies' cost structure historically, observing previous abrupt increases and changes in breakeven levels when assets were acquired in the past.

The ideal analysis is coupling breakeven levels with the borrower's hedging program and then with historical statistical downside commodity price analysis. In doing so, underwriters can get an idea of what size of price downturn will have a significant affect on the borrower's cash flow and credit risk, as well as the likelihood of that event.

3. **Capital expenditure & productivity:** Companies may be inclined to acquire more farmland to produce more agricultural goods when prices are high. This is a consequence of overexuberance, but also an abundance of capital as creditors begin to pile in to the ever-successful sector (after all, prices are so high). Naturally, the market for farmland is quite active at times like this, and thus land is priced using the assumption of continued elevated commodity prices on top of higher multiples. At the time of investment, the acquisition of new farmland appears accretive, as higher prices support the current land values; however, when new land is acquired, it can be at the cost of productivity, thus diminishing marginal productivity.

   In times of higher commodity prices, land with lower historical crop yields appears attractive as the lower yields are compensated by higher prices. Producers may also be inclined to purchase land far from their existing region of expertise, bringing on unknown conditions, and added logistical and storage costs. Lastly, higher commodity prices incentivize the purchase of land that is completely unproductive at the moment but can be brought up to farmable quality with multiple seasons of continued investment and below breakeven yields. In all these cases, the producer is adding risk by decreasing marginal productivity in an effort to increase absolute returns, which are only sustainable in the event that prices remain elevated.

   Similarly, wide processing margins, whether it be for oilseed crushers or sugar millers, can drive investment into these assets in such a way that shrink margins dramatically. The cycle is much like that described above, for farmland. Wider margins bring about more capital investment in processing assets, which are made based on assumptions of prevailing prices with only minimal downside analysis. The wider the margin, the bigger the swing, and likely the greater chance of default.

A fatal example of overexuberant misplaced capital expenditure comes from the Brazilian sugar sector. In the early 2000s a confluence of events brought about a boom in ethanol: energy prices were high and the US was a big net importer, conflict in the Middle East was increasing, and environmentalists were beginning to emerge *en masse* to reduce carbon emissions. Enter Brazil. In 2003, Brazilian car manufacturers introduced flexible fuel vehicles (FFVs) that could run on regular petroleum as well as blended gasoline and ethanol. By 2005 Brazilian sales of FFVs surpassed that of traditional petroleum-fueled vehicles, and by 2012 the bulk of cars on the road could run off ethanol or petroleum. While the Brazilian FFV transition brought about its own increase in ethanol demand, the idea that the entire US market was also available, further increased speculative activity.

Taking a step back here, sugarcane can be processed into sugar or ethanol, similar to corn. However, sugar is far more efficient. In 2009, the California Energy Commission concluded "*Currently, Brazilian sugarcane ethanol has the lowest carbon life-cycle rating of all different types of ethanol that are currently being produced at commercial-sized facilities.*"

One can imagine the exuberance in the Brazilian sugar market at this time given the context. The increase of capital expenditure in the Brazilian sugar sector was incredibly high during this period. Between 2005 and 2012 the total state area of São Paulo - the biggest sugar producing state in Brazil, which is the biggest sugar producing country in the world – increased from 12.4% to 20.7%[1]. Neighboring states also got in on the action. In Mato Grosso do Sul there was a three-fold increase in sugar mills between 2005 and 2012.

The pitch was simple, new sugar mills could produce sugar or ethanol, at the choice of the processor itself. With sugar prices high, and ethanol demand only increasing, the optionality in production meant that if either price decreases, the switch can be made from one commodity to the other – how can you lose? In some cases, companies with no sugar production experience whatsoever raised capital to acquire land and build mills.

Sugar prices peaked at over 30 USc/lb in 2011, before steadily declining all the way through to mid-2015 to just over 10 USc/lb, a more than two-thirds decrease. Even in the midst of this decline, in 2013, the OECD and The Food and Agriculture Organization of the United Nations jointly projected an average sugar price of 21.58 USc/lb between the 2012/13 and 2021/22 seasons. The average between 2013 and 2021 was in fact 15.14 USc/lb, about 30% lower than their forecast. This only served to add fuel to the fire. In 2016, the Brazilian Sugarcane Industry Association estimated that around 80 mills filed for bankruptcy over the preceding three years, out of less than 300 operating in the main sugarcane production region.

So, what went wrong? Most obviously, expectation of sustained high prices created more production, and thus demand is met by increased supply and prices adjust. While this explanation would suffice for a traditional cycle, this instance was far more protracted. The extreme rise in sugar prices also included the expectation of a massive jump in prices coming from anticipated ethanol demand. This proved to be false, as the advent of fracking solved the US energy problem, and by 2013 this would have been obvious by merely looking at US oil production and net imports. In the end, Brazil would never export ethanol to the US in even a remote fraction of initial expectations.

With sugar prices so high at the time, only the best-case scenario was priced in. Acquiring land assets and building processing facilities at this time would have all been done under pricing scenarios that would prove to be false in the long run. An important observable factor at this time would have been the cost of

[1] Assuncao, Juliano; Pietracci, Breno; Souza, Priscila. July 2016, "Fueling Development: Sugarcane Expansion Impacts in Brazil"

production of Brazilian sugar, which, between 2005 and 2012, increased by about 2.5 times in US Dollar terms[2].

At the time, the prudent analyst would analyze cost of production, or breakeven levels, looking for companies that had maintained lower levels despite the increase in prices. In doing so, they would have identified sugar mills capable of surviving when the cycle turned. We recommend looking at production cost per unit, or breakeven per unit, especially when observing that a company has increased its capital expenditures significantly.

4. **Debt:** An increase in underlying commodity prices will often be coupled with an increase of available credit to the companies that benefit. The sector is strong and the financial standing of the companies operating within will have improved. Existing lenders will be keen on renewing and even increasing lines, while new creditors will emerge. With the availability of debt capital easily at hand, the temptation to add leverage is ever prominent. Depending on the macroeconomic conditions, it's likely that borrowers can also decrease their cost of debt, while increasing their leverage. The unintentional perfect storm of high commodity prices and readily available credit mis-motivates agri-companies in their use of capital.

   The prevailing conditions make it appealing for agri-companies to take on more debt, acquire more assets, venture into crops or regions in which they may lack expertise, and inadvertently increase their risk. Our previous recommended analysis will help uncover this but must be layered with a traditional capital composition analysis.

   Companies that take on debt to acquire capital efficient assets and maintain a relatively even capital composition are remaining prudent. For example, a profitable season may result in increased book value and allow a company to borrow additional capital while retaining the same Debt to Equity. Let's say the additional capital is used to improve machinery leading to productivity gains, or to acquire land contiguous to existing plots where expertise already exist; this is a prudent way to grow and invest in one's own future success. On the other hand, companies can choose to pay out added profitability as dividends, take on additional debt and recklessly acquire new assets under a more leveraged capital structure. This added risk accrues directly to creditors who, in most cases, will not benefit from the additional profitability, but will bear plenty of the downside risk.

   Traditional analysis of borrowers' capital structure is always warranted, but we recommend taking a dive into debt structures themselves. The term of new debts is important: longer-term debt should be used to acquire fixed assets at loan-to-value ratios that are not overly levered; and interest rate structures would ideally be predictable. A borrower using a 3-year facility to purchase farmland whose purchase price assumes seven or eight consecutive years of productive yields is adding a debt rollover risk in three years' time. In practice, we've come across even worse misalignments than this one.

   Often, borrowers will increase working capital lines, then using this capital to make long-term investments. This is not to say these companies are purposefully deceitful, they are not. The reality is that creditors are knocking, and they are eager to increase existing lines and add exposure to the sector. This capital is easy for borrowers to acquire, as structures are already in place and a mere change in the notional amount is made through an amendment. From the borrower's perspective there is no reason not to take the additional amount – many working capital facilities are under lines of credit whereby there is no penalty for not taking the added capital. With the availability of capital now at their fingertips, there is very little

[2] Haley, Stephen; USDA. May 2013. "World Raw Sugar Prices"

incentive to structure a longer-term deal to acquire an appealing asset, and thus a seasonal line of credit is used to acquire a fixed asset. The path of least resistance is the route taken.

5. **Governance & Character Quality:** While a proper governance overview has become ever more popular alongside its colleagues: environmental and social analysis, this is one of the pillars of investment analysis in emerging markets and has long been a focal point of ours. While westernized bureaucracy and hierarchical organizational structures were traditionally accepted as commonplace in the developed world, the same is not true in emerging markets. Nowadays a governance overview and analysis is required regardless of geography, which we believe to be more sensible.

   We begin our analysis with organizational structure, understanding decision-making at all material levels, and then rolling up to the board of directors and shareholders. These policies are usually well documented. Whatever the accepted level of governance quality may be for the investor, we believe that aside from checking these boxes, an attempt at understanding influence within the company is warranted.

   In big companies and small alike, there can be a smaller group, or even an individual pulling the strings regardless of the intended governance structure. In our experience, companies whose founders are still within the structure can exert this kind of power, having built a company from the ground up and being unwilling to relinquish the reigns. Naturally, a company with a single shareholder or family of shareholders is likely to have a similar centralized power structure. Even in companies without a concentrated shareholder structure, leaders emerge and exert influence across the company, whether it be in the board room or in the day-to-day operations. Most of the time this happens unassumingly, without mal intent, but affects decision making, nonetheless.

   There is no simple answer to identifying these individuals. Throughout the due diligence process, it is likely that the spheres of influence will emerge on their own. If not, they are more than likely to arise during negotiations and transaction structuring, as material decisions will be directed towards the relevant sphere. If a transaction is in its negotiation and structuring phase, we recommend continuing due diligence quietly. We are effectively trying to determine the character of the decision makers, those with influence.

   Character quality is always important, and all the above should occur in any transaction. We draw attention to it in this piece, as higher prices encourage risk-taking, and thus prudent and patient leaders are of utmost value in such an environment. Unfortunately, deciding on the people you do business with is a matter of tact and personal choice. It would be hard for us to describe the company you should keep. Our only point here is that a high price environment is one in which we encourage taking risk off the table. Therefore, veering towards companies with risk-taking leadership is unlikely to be in your best interest as a creditor.

6. **Structuring & Collateral Considerations:** While the previous sections serve investors entering a transaction anywhere in the capital structure, we focus ourselves on supply chain finance in this our last section. That is, short-term debt for the purpose of financing agricultural companies' seasonal working capital cycles. We shall not introduce the intricacies of structuring such a transaction here, as it could be a paper (or even a book) of its own. Instead, we focus only on the considerations that should be made in light of higher commodity prices.

   All structures should be accompanied by the underlying commodity that is being financed in the transaction, whether it be in the form of crops or inventory, or both. A transaction that is securitized by receivables

alone is not backed by collateral, but instead has merely spread the counterparty risk across the borrower and the offtaker (i.e. the party purchasing goods). While receivables are an essential part of structuring a self-liquidating transaction, and are included in all transactions, we treat this separately from collateral in the form of real agricultural commodities.

Looking at the commodity collateral, the lender and borrower must decide upon a loan to value ratio – we will quote this inversely, as *Collateral Value divided by Total Outstanding Loan Amount*, that is the *Overcollateralization Rate*, which is standard practice. Aside from agreeing to the interest rate, the overcollateralization rate is one of the most contentious points negotiated between the parties. In all cases, lenders will want a higher overcollateralization rate, while borrowers will prefer it to be lower, thus locking up fewer of their assets.

When commodity prices are high, it is probably the case that downside price risk is much higher than if prices were low. Thus, despite the borrower likely being in better standing, underwriters must remain prudent and demand higher overcollateralization ratios. This is a tough argument to make though. Borrowers expect better treatment, especially after they've had a good season and their financials are stronger than before. Moreover, there is likely to be more capital is available in the market competing for good borrowers, which can drive overcollateralization rates lower.

At times like these, we believe its best to stick with borrowers with whom strong relationships have been built. These relationships should be valuable to both parties and allow underwriters to negotiate terms that are acceptable. We work closely with our borrowers and build partner-like relationships, adding elements of flexibility to transactions and building trust over time. When these negotiations roll around, such borrowers are willing to give the extra collateralization, understanding our point of view, and knowing we are partners, rather than one-time lenders.

While leaning on strong relationships is the first line of defense, it may be that concessions must be made, nonetheless. If so, we believe that it serves underwriters better to make concessions elsewhere in the transaction to retain a strong enough overcollateralization rate. For example, adding flexibility in the prepayment structure, or disbursement scheduling is far more favorable than reducing collateral. There is a caveat here, we do not recommend adding tenor beyond the season that is being financed, unless end-of-season cash flow still runs through borrower-controlled accounts, as they would in a self-liquidating structure.

Lastly, if the overcollateralization rate does need to be decreased, and it is very possible that the starting point is high enough that a decrease is not out of the question, then it should be limited as much as possible. We like to set an acceptable floor before going into such a negotiation, and we base this upon our previous experience coupled with historical analysis of commodity price downturns using statistical methodology. We shall not belabor the reader with such methodology here; but we do note that such an undertaking should not only consider historical price downturns and their significance levels but should also include historical commodity price moves under previous high price environments.

Ultimately, higher commodity prices are good for commodity producers, and should improve profitability and book values. This means it is a good time to be underwriting transactions. But the circumstance is a double-edged sword that can bring about exuberant risk taking. The tools above, taken together, should serve to identify if borrowers are

adding too much price risk, and to properly structure deals in such an environment. They do not cover a wholistic underwriting approach, rather they are our top items given the stated situation.

Our view is that it is far harder to identify good borrowers and structure strong transactions when prices are high. While it is obvious, commodities' prices move in cycles, and investing near the top is harder than the bottom. We always retain our integrity, regardless of circumstance, but can't help but keeping our guard up even further when the market is topping. When the tide goes out, and it will, those swimming naked will be quickly apparent.