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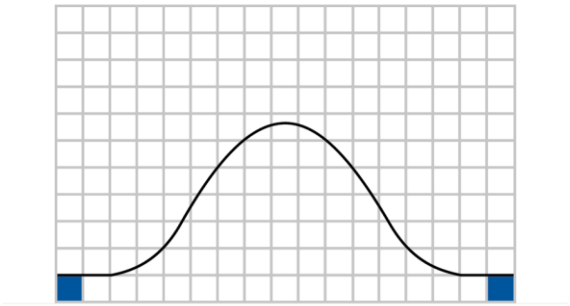

Penetrating the Macro through the Micro

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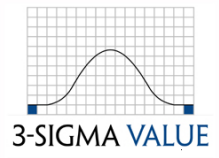

Penetrating the Macro through the Micro

The way we begin every study at 3-Sigma Value is by focusing on something very small. If studying an industry then we begin by studying a company. When studying a company we begin at the very top of the income statement (revenue) and work our way down line by line. We begin with pricing and volumes (price x volume = revenue). Is pricing negotiated or market-driven? Are volumes contracted, and if so, for how long? By focusing on the way one company makes money, modeling its financial statements down to the factors that determine value, we gain incredible insight into the industry at large. The concept is depth over breadth. It is not an unknown or secret skill set that determines success in investing but a profound mastery of the most basic elements.

The reason 3-Sigma Value is able to consistently generate alpha is because we know what we don't know and we are experts in what we know. As Peter Lynch, former Portfolio Manager of Fidelity Magellan Fund recommends in his seminal books *One up on Wall Street* and *Beating the Street*, "invest in what you know." We are specialists here at 3-Sigma Value, not generalists. We invest in three industries chosen based on the experience and expertise of our investment professionals: Technology, Media & Telecommunications (TMT), Natural Resources (NR), and Financial Services (FS).

The first and one of the most important steps in analyzing any industry is defining a universe of investable companies as broadly as possible and then segmenting that universe as finely as possible. With over 1,000 companies in each of our three industries segmented into dozens of sub-segments (there may be only two public companies in a sub-segment) we are able to identify trends (secular and cyclical) by indentifying change in a small subset of companies.

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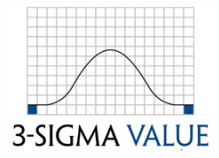

The Identification of Powerful Secular Trends Driving Valuation

Despite the significant research leading up to this point, we often describe the first step in the 3-Sigma Value investment process as identifying a powerful secular trend that drives valuation. For the purpose of this analysis, we will focus on the Natural Resources industry, and specifically on what we believe is an incredible opportunity to make money in an *era of low cost natural gas prices*.

The underlying supply and demand data is widely available on the Internet so we will keep this part short – advances in drilling technology – horizontal drilling and hydraulic fracturing – have created a glut of available natural gas in North America. The price of natural gas (Henry Hub, Louisiana) has collapsed from a high of $14 per million Btu in 2005 to $2 in 2012, and finished the year at $3.40, a level that is near the midpoint of our expected natural gas pricing range of $2.00 to $5.00 per MMBtu.

A striking example of low cost drilling is in the Marcellus Shale[1] basin located across multiple Northeastern states including the Southern Tier and Finger Lakes regions of New York, in northern and western Pennsylvania, eastern Ohio, through western Maryland, and throughout most of West Virginia extending across the state line into western Virginia.

According to Reuters[2], more than 1,000 natural gas wells in the Marcellus are waiting to be hooked up to unfinished pipelines. Meanwhile, more natural gas wells are drilled all the time. While some companies are profitable at the current low level of natural gas prices, many companies are forced to drill in order to meet lease requirements. As the Marcellus Shale comes online, the global natural gas cost curve will continue to shift down and to the left. In 2011, U.S. natural gas production totaled 53 Bcf/day, up from 51 Bcf/day in 2006. By 2016, the number will reach 80 Bcf/day (20%+ of total from Marcellus).

[1] Other key shale gas basins include Barnett, Eagle Ford, Fayetteville, Haynesville, and Utica.

[2] October 15, 2012.

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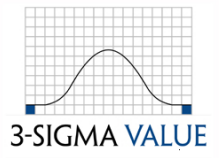

One of the amazing pricing anomalies in the world today is the discrepancy between natural gas prices in North America and prices elsewhere in the world reaching $13 to $16 per MMBtu. That is 4x or even 5x the price of natural gas in North America. This differential is attracting significant foreign investment looking to take advantage of low cost feedstock for petroleum-based products, and the U.S. is in the process of building the infrastructure to become an exporter of energy sourced from natural gas.

One recent example of this phenomenon is Sasol (SSL), the chemical and synthetic fuels giant based in South Africa who announced in December 2012 it would spend $14 billion to build the first gas-to-liquids (GTL) plant in the United States, in Louisiana, supported by more than $2 billion in state incentives. Only a handful of GTL plants operate commercially in the world, only in Qatar, South Africa, and Malaysia, areas where natural gas is cheap and abundant.

Another example is Orascom Construction, Egypt's largest company, who in September 2012 announced it would spend $1.4 billion building a nitrogen plant in Lee County, Iowa in order to access low cost natural gas feedstock. At least 21 nitrogen plants/expansions in North America are in various stages of planning.

The glut of natural gas supply in North America appears to be (nearly) matched by a surge in new demand from energy companies and chemicals manufacturers relocating and even utilities that are in the slow process of retiring coal plants and switching electricity capacity from coal to gas. But these factors, even if they do add up to the 50% increase in natural gas production expected between 2011 and 2016 (from 53 Bcf/day to 80 Bcf/day), will not cause the price of natural gas to spike like it used to in the days before horizontal drilling and hydraulic fracturing, because the marginal cost of production has collapsed.

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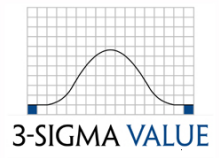

The Identification of Companies, Both Positive and Negatively Impacted

Who are the winners and who are the losers? We begin with the losers, grouped into three categories: (1) High cost and leveraged natural gas producers, especially those who acquired natural gas properties at or near the top of the market; (2) Commodity service providers of traditional natural gas drilling; and (3) Coal and other alternatives including the solar and wind supply chains.

With natural gas priced around $3 to $4, alternatives including coal are <u>not</u> competitive on a simple cost basis:

Coal vs. Natural Gas (December 2012)				
	Spot Price $/ton	Gas Equivalent $/MMBtu	2013 Forward Price $/ton	Gas Equivalent $/MMBtu
CAPP	62.00	5.08	65.75	5.27
NAPP	64.00	4.38	64.75	4.42
ILB	47.00	3.69	47.90	3.74
W.Bit	35.75	3.65	35.75	3.65
PRB	9.48	3.07	10.47	3.13

In particular, Central Appalachian (CAPP) coal is not competitive in the era of low natural gas prices, one major factor leading to the July 2012 bankruptcy of Patriot Coal (PCX), Peabody Coal's (BTU) CAPP operations spun-off in October 2007. Moreover, Northern Appalachian (NAPP) and Illinois Basin (ILB) coal are rarely competitive anymore as well. That leaves the Powder River Basin (PRB) as the only source of coal in North America that is relatively competitive on a cost basis.

The percentage of US electricity sourced from natural gas broke the 50% mark for the first time in 2012. However, the trajectory will slow dramatically in 2013 as coal-to-gas switching basically peaks near-term. The issue is one of infrastructure. Incremental natural gas utilization for electricity requires massive infrastructure expansion, especially in the gathering and processing of the commodity into refined products.

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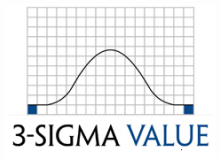

Now it's time to identify the winners in the era of low natural gas prices: (1) Consumers of natural gas, (2) natural gas infrastructure service providers, and (3) low cost natural gas producers – all of these companies benefit in theory while in reality execution issues and lousy management teams can destroy the value of even the best laid plans.

While natural gas infrastructure service providers such as pipelines and gathering and processing systems share extremely attractive fundamentals, the stocks in general are very expensive on a relative and absolute basis[3]. The surging demand for cheap natural gas drives volumes through the supply chain. Backlogs for pipeline projects are at record levels. Incremental supply will be coming on line for years to come. This is the heart and soul of America's effort to become energy independent. It doesn't matter how many wells are drilled if the distribution system is bottlenecked. 3-Sigma Value closely monitors the entire natural gas supply chain – from exploration and production (Upstream) through pipelines and processing (Midstream) to utilities and service stations for sale to the end customer (Downstream) – in our pursuit of profitable investment opportunities.

The best positioned companies in the era of low natural gas prices are producers who use natural gas as a cost input. Chemical companies come to mind. In 2010, 3-Sigma Value owned an equity stake in Terra Industries, a North American-based producer of nitrogen-based fertilizers, when it was acquired by **CF Industries (CF)**, creating the largest nitrogen-based fertilizer producer in North America. Nitrogen (N) is one of the three primary plant nutrients for farming, and the only one requiring annual application.

The timing of the Terra acquisition was incredible. The natural gas industry was on the verge of the shale revolution, permanently altering the cost structure and improving the profitability of North American-based nitrogen production. CF paid 7.6x EBITDA[4], a meaningful data point we use as the terminal value multiple in an Upside Case DCF-based valuation.

[3] See separate analysis of natural gas infrastructure.

[4] 3-year average (2007-2009).

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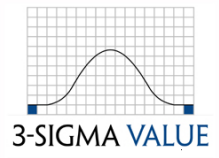

The other two major plant nutrients are phosphates (P=Phosphorous) and potash (K=Potassium). Along with nitrogen, these chemicals are well-positioned to benefit from powerful global secular trends including population growth, increasing protein consumption, and growing use of bio-based fuels – driving 2-3% fertilizer demand growth annually[5]. However, phosphates and potash are somewhat discretionary in terms of application rates as farmers can forgo a year without negatively impacting crop yields. This is untrue for nitrogen. Due to its mobility in the soil, farmers cannot skip nitrogen fertilizer applications. Therefore, demand for nitrogen is more stable and less elastic than demand for phosphates and potash. Crops require nitrogen primarily for the production of chlorophyll and protein. Plants that are deficient in nitrogen tend to be undersized and have discolored leaves.

When farmers reduce application of phosphates and potash it is called "mining the soil". They can get away with reducing application of these two fertilizers (without a dramatic drop in yields) but only if they have been on an aggressive fertilization program in the past. Significantly reducing P and K application for more than one season has a negative economic impact on the productive capacity of land.

Nitrogen Economics

There are four major nitrogen fertilizers – ammonia (82% nitrogen content), urea (46%), UAN (32%), and ammonium nitrate/AN (15%-30%) – with ammonia containing the highest nitrogen content and serving as the base ingredient for the other three.

Ammonia is made by reacting natural gas (the primary feedstock) with nitrogen gas (a common element in the universe). Ammonia can then be injected directly into soil as a fertilizer or processed further into urea, UAN, or AN.

Urea is made by reacting ammonia with CO2 gas, which is conveniently a by-product of ammonia synthesis. Urea is more effective in very moist conditions, is water-soluble, and

[5] See Appendix 1: The Demand Side of the Equation for an analysis that shows demand for fertilizers will remain robust for the foreseeable future.

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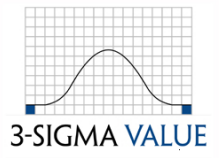

therefore can be applied as a liquid unlike ammonia which requires specialized gas-injection equipment (ammonia is stored as a liquid but applied as a gas).

Ammonia is also reacted with nitric acid to make ammonium nitrate (AN), and then AN and urea are mixed with water to make UAN fertilizer. The main consideration for using UAN or AN is whether the application is combined with other liquids (e.g. herbicides) in order to save costs.

Ammonia is the best value per unit of nitrogen; therefore farmers will always choose to apply ammonia if field conditions allow them to do so.

In addition to being an applied nutrient and an input to upgraded nitrogen products, ammonia is a necessary input for phosphate nutrient production (DAP, MAP). A diversified consumer base for ammonia mitigates price weakness, and therefore ammonia generally outperforms the other nitrogen nutrients on the downside.

With corn prices high (and volatile) and natural gas prices low (in a supply-induced price depression), nitrogen producers should sustain high margins. Farm economics are robust, especially for corn. Fertilizer costs as a percentage of revenue are at lows approaching 10% (10-13% range depending on factors including geography, product mix, and scale), compared to 20% (17%-20% range) historically. Furthermore, the widespread adoption of crop insurance reduces earnings volatility, enabling farmers to plan and apply fertilizer with confident frequency.

While shale gas discoveries have reenergized the North American fertlizer industry, the same cannot be said overseas where there are huge shale deposits that will remain untapped for years if not decades. The issues are many, from government ownership of mineral rights, to environmental issues (hydraulic fracturing is banned in France and Bulgaria), to a lack of infrastructure, but ultimately what it boils down to is that much less is known about the geology in most foreign countries compared to the U.S. where drilling has been an industry for over one hundred years and geologic data is generally made public by state regulators.

China is believed to have more shale gas than the US. The issue is that most of it is in arid areas where energy companies are concerned they won't be able to obtain enough water that is required in the hydraulic fracturing process. In addition, much of China’s shale gas is located in heavily populated and urban settings.

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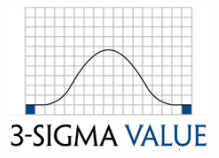

European producers face an additional challenge in competing effectively against their North American counterparts. Much of the natural gas in Eastern Europe is purchased under contract at prices pegged to global crude oil. The historical relationship between the price of natural gas and oil, which has averaged 10-to-1 over the past two decades, is now approximately 30-to-1. This divergence is even starker when considering one barrel of oil holds the energy equivalent of only 5.825 MMBtu of natural gas. This is commonly referred to as the 6-to-1 Rule, and it shows how dramatically over-valued oil is relative to natural gas. Therefore, in addition to the structural supply advantage that North American producers enjoy, there is a structural pricing advantage as well. Because of all of these issues hampering the expansion of shale drilling overseas, North America will likely remain the leading, low cost source of natural gas for the foreseeable future.

Investing at the Low End of the Global Cost Curve

To illustrate the structural cost advantage of North American nitrogen-based fertilizer production, following is the global cost curve for Ammonia, the core nitrogen product.

The Global Ammonia Cost Curve		
	Gas Price ($/MMBtu)	Cost per ton
Western Canada / US Gulf	$2.50 - $3.50	~$100+
W. Europe Hub (@ $8/MMBtu nat gas)	$8.00 - $9.50	~$250
Ukraine (@ $7 gas)	$7.00 - $12.00	~$280
China Soft Coal	NA	$350
China Gas	$6.50	$375
China Anthracite	NA	$390
Ukraine (@ $13 gas)	$13.00	>$400

While China is the largest global nitrogen producer with ammonia capacity representing ~30% of global production, China implemented a tariff in 2012 to limit exports. The reasons are myriad, including the high cost of global energy and China's energy dependence. As a result, year-to-date urea exports were down.

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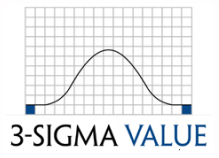

Globally, urea is the most widely applied nitrogen fertilizer because of the ease of its application and storage compared to ammonia and UAN, which are mainly used in North America. Because urea in particular is a global commodity, the floor price is theoretically set by the marginal cost of production, estimated at around $350 per ton.

The Global Urea Cost Curve		
	Gas Price ($/MMBtu)	Cost per ton
Algeria / Middle East	$1.10	<$100
North America	$2.50 - $3.50	<$150
Egypt	$4.00	$150+
Trinidad & Venezuela	$4.00	$150+
Southeast Asia	$5.00	<$200
Other Latin America	$5.00	<$200
Russia	$3.40	~$200
China	$6.50	$300+
Western Europe	$8.00 - $9.50	$300+
Ukraine & Eastern Europe	$7.00 - $12.00	$300+
Idle Chinese Capacity		$300+

Several times in recent years urea prices have pierced their marginal cost (i.e. $350 per ton for urea) and the marginal producers (in Eastern European) have shut in production. Meanwhile, at $350 urea, the gross margin for CF is approximately 60%.

The lack of a U.S. natural gas export market contributes to low natural gas prices. Rectifying this over the long-term is the construction of LNG export terminals such as the Sabine Pass Export Terminal with completion expected in 2015. Until then and for a long time thereafter the natural gas export bottleneck will persist. NIMBY politics combined with runaway cost inflation renders LNG a difficult sell. It will not be until 2016 at the earliest that exports will have any meaningful impact on demand for North American natural gas. Meanwhile, demand from Asia for North American LNG export may never materialize because of disadvantaged logistics and long-term contracts that Asian countries (China) have with its neighboring producers such as Australia and Russia. For a detailed analysis of the demand side of the nitrogen equation, please see Appendix 1 at the end of this report.

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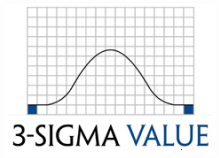

Supply Risk

North America has become the most economically attractive location to build new nitrogen capacity because of low cost natural gas feedstock, however, that is not the only reason. The area is relatively low-risk politically, and near the Midwest Corn Belt, a key source of fertilizer demand where approximately 50% of the world's corn is grown.

The following incremental supply analysis shows 21 Nitrogen plants that are either greenfield (new construction) or brownfield (expansions / debottlenecking of existing plants). The total amount of new production that is funded is 6.0 million tons. If we include all plants that have been announced then the amount jumps to 19.7 million tons.

At least 21 Nitrogen plants/expansions in North America are in various stages of planning. How many will get completed?

Company	Location	Expected Date of Completion	Estimated Cost (in mlns)	New Production Capacity	Status
Greenfied					
Agrium (AGU)	US Corn Belt	2017	$2,500-$2,800	1.3M tons majority urea and UAN	Proposal
Mosaic (MOS)	Louisiana	???	???	1.1M tons ammonia	Likely
Iowa Fertilizer Company (subsidiary of Orascom)	Lee County, Iowa	Mid-2015	$1,400	880k tons ammonia, 510k tons urea	Likely
Indian Farmers Fertiliser Cooperative (IFFCO)	Quebec	2017-2018	$1,200	1.2M tons urea	Proposal
CHS (an agribusiness cooperative)	North Dakota	Late-2016	$1,100-$1,400	750k tons ammonia, 1.02M tons urea	Proposal
CHS / TCEP (Texas Clean Energy Project)	Texas	Late-2014	???	700k tons urea	Proposal
Ohio Valley Resources	Indiana	2016	$1,000+	880k tons ammonia and UAN	Proposal
Dyno Nobel (Incitec Pivot Ltd)	Louisiana	2016	$800	830k tons ammonia	Proposal
North Dakota Corn Growers	N. Dakota	???	$1,500	800k tons ammonia, 1.4M tons urea	Proposal
Brownfield					
Agrium (AGU)	Redwater, AB	2015	$150	170k tons urea	Funded
	Borger, TX	2016	$500	640k tons urea, 120 tons ammonia (gross)	Funded
CF Industries (CF)	Donaldsonville, LA	2013	$55	100k tons ammonia	Funded
	Port Neal, IA	2015	$1,700	1.3M tons urea, 849k gross ammonia	Funded
	Donaldsonville, LA	2H2015	$2,100	686k tons urea, 1.8M tons UAN, 184k (1.3M gross) tons	Funded
PotashCorp (POT)	Geismer, LA	Early-2013	$158	550k tons ammonia	Funded
	Augusta, GA	End of 2012	???	70k tons ammonia	Funded
Austin Powder	Moshein, TN	2013	$220	125k tons ammonia	Funded
CVR Partners LP (UAN)		Early-2013	$125-$130	350k tons UAN	Funded
Rentech Nitrogen Partners LP (RNF)	Illinois	Late-2013	$100	70k tons ammonia	Funded
Yara International (YAR.Norway)	Belle Plaine, SK	2016	$1,000	1.3M tons urea (incl. additional ammonia capacity)	Likely
Koch Fertilizers	Various US states	???	???	2.0M tons nitrogen via various projects	Likely
Total New Production Capacity - Funded				**6,045**	
Total New Production Capacity - Funded + Likely				**11,835**	
Total New Production Capacity - Funded + Likely + Proposed				**19,715**	

Additional global supply additons are under construction, mostly in China, India, Indonesia, and the Middle East (Qatar, Algeria), and mostly at the high end of the global cost curve

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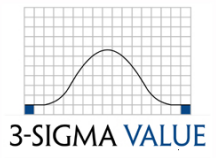

Because some, if not most, of the proposed new capacity will never get built, in particular the capacity planned by foreign companies that are not currently operating plants in North America, the actual amount of new supply is likely to be somewhere around 11.8 million tons, an amount that is roughly equal to the amount of nitrogen imported to the United States in 2011.

U.S. Nitrogen Imports by Product			
(in millions of tons)	2009	2010	2011
Ammonia			
Consumption	11.1	12.0	12.5
Imports	5.4	5.5	6.4
% Imported	*49%*	*46%*	*51%*
Urea			
Consumption	3.9	4.1	4.2
Imports	2.6	2.8	2.9
% Imported	*67%*	*68%*	*69%*
UAN			
Consumption	3.2	3.4	3.7
Imports	0.5	0.5	0.8
% Imported	*16%*	*15%*	*22%*
Total Nitrogen			
Consumption	18.2	19.5	20.4
Imports	8.5	8.8	10.1
% Imported	*47%*	*45%*	*50%*

The United States imports 50% of its nitrogen. Its largest trade partners are Canada and Trinidad & Tobago. The domestic expansion of low cost nitrogen production will replace high priced imported nitrogen – it will not create a supply glut. The total amount of supply will grow, and the market for nitrogen-based fertilizers will remain relatively balanced for the foreseeable future, excluding the impact of supply shocks such as weather and geopolitical events.

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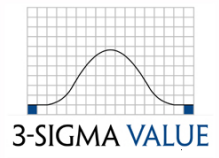

Buy CF Industries (CF)

CF is the leading producer of nitrogen fertilizers in North America, with a solid balance sheet (zero net debt).

CF Capitalization as of 9/30/12			
Share Price as of 11/30/12			$214.00
x FD Shares Out.			63.5
= Market Capitalization			13,589.0
- Cash & S-T Investments			2,221.3
+ Total Debt			1,605.0
+ Minority Interest			520.8
= Enterprise Value (EV)			13,493.5
	2012E	2013E	2014E
Revenue	6,220	6,044	5,730
EV / Revenue	2.2x	2.2x	2.4x
EBITDA	3,428	3,144	2,790
EV / EBITDA	3.9x	4.3x	4.8x
EPS	27.75	25.76	24.10
P/E	7.7x	8.3x	8.9x
Consensus estimates.			

CF's valuation is cheap (4x EBITDA, 8x EPS) because the consensus of Wall Street expects profit to peak in 2012 – a scenario we find unlikely.

On CF's third quarter 2012 earnings conference call, management detailed its capacity expansion strategy to take advantage of the new era of low North American natural gas prices. In addition to acquiring the 1/3 of the Medicine Hat[6] complex that it doesn't own, CF announced a $3.8

[6] The Medicine Hat facility is the largest nitrogen fertilizer complex in Canada with 2 ammonia plants and 1 urea plant. CF paid $900 million for $154 million of EBIT in 2011, $134 million through the first nine months of 2012 ($179 million annualized).

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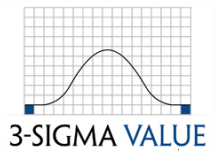

billion expansion at two of its wholly-owned facilities – $2.1 billion at Donaldsonville[7] and $1.7 billion at Port Neal[8]. ThyssenKrupp Uhde is contracted for procurement and engineering services. Timing is 2015/2016. We assume 50% of new production comes online in 2015 and 50% in 2016.

CF Industries Production & Capacity					
(in millions of tons)	2012	2013	2014	2015	2016
Capacity					
Ammonia, net	2.72	2.82	2.82	3.09	3.36
UAN	6.49	6.49	6.49	7.37	8.25
Urea	2.47	2.47	2.47	3.62	4.78
AN	1.72	1.715	1.715	1.72	1.72
Total Nitrogen Capacity	13.39	13.49	13.49	15.80	18.10
Total Phosphates (DAP & MAP) Capacity	2.17	2.17	2.17	2.17	2.17
Production					
Ammonia	2.66	2.66	2.66	2.93	3.19
as a % of Capacity	*97.8%*	*94.3%*	*94.3%*	*94.8%*	*95.1%*
UAN	6.23	6.23	6.23	7.11	8.00
as a % of Capacity	*96.1%*	*96.1%*	*96.1%*	*96.5%*	*96.9%*
Urea	2.57	2.57	2.57	3.72	4.88
as a % of Capacity	*104.0%*	*104.0%*	*104.0%*	*102.8%*	*102.1%*
AN	0.92	0.92	0.92	0.92	0.92
as a % of Capacity	*53.6%*	*53.6%*	*53.6%*	*53.6%*	*53.6%*
Total Nitrogen Production	12.38	12.38	12.38	14.69	16.99
as a % of Capacity	*92.5%*	*91.8%*	*91.8%*	*93.0%*	*93.8%*
Total Phosphates (DAP & MAP) Production	2.05	2.05	2.05	2.05	2.05
as a % of Capacity	*94.7%*	*94.7%*	*94.7%*	*94.7%*	*94.7%*

In addition to the core business of nitrogen fertilizer production, CF owns related assets including several storage facilities, a 50% (non-operating) interest in KEYTRADE AG[9], and integrated phosphate operations located in Florida – includes a rock mine and rock reserves, plus a fertilizer complex and deepwater terminal facility. Because of environmental complaints that

[7] With 5 ammonia plants, five urea plants, and two UAN plants, the Donaldsonville facility located on the Mississippi River is the largest nitrogen complex in North America.

[8] Located on the Missouri River, the Port Neal facility in Iowa has 2 nitric acid plants used in the production of UAN.

[9] KEYTRADE AG, based in Switzerland, is a global fertilizer trading company that informs CF on supply and demand conditions around the world.

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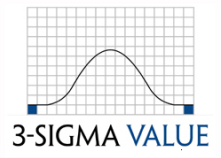

arose during the permitting process in Florida, we do not expect CF to increase phosphate capacity.

CF's pricing strategy is to operate its facilities near capacity levels. Therefore, CF is a price-taker. CF reduces some earnings volatility by hedging a portion of its natural gas costs with forward contracts, and by locking in fertilizer sales via the Company's Forward Pricing Program (FPP). Also, CF's large storage capacity enables it to build inventory during periods of weak demand, and upgraded facilities enable it to rapidly change its production profile.

In 2011, natural gas accounted for 45% of CF's total cost of sales for nitrogen fertilizers and a higher percentage, 75%, of cash production costs (total production costs less depreciation and amortization). Clearly, natural gas is the single most important cost variable in determining CF's profitability. Moreover, the math is relatively straightforward: CF purchased in 2012 (and will continue to purchase) approximately 255 million MMBtus of natural gas annually. A $1 move in the price of natural gas (e.g. from $3.30/MMBtu average price in the fourth quarter of 2012 to $4.30/MMBtu) increases COGS by $255 million.

The Application of 3-Sigma Value's Proprietary Scenario-based Valuation Framework

CF has no publicly-traded comparable company. **Agrium (AGU)** is a peer in the production of nitrogen and phosphates, but it also derives a substantial portion of its revenue and profits from a retail segment. In fact, Agrium is the largest agricultural retailer in North America, thus the drivers of AGU earnings are more diverse than for CF.

Yara International (YAR.OL) is also a significant nitrogen producer, but since its facilities are mainly in Europe (78% of capacity) it doesn't benefit from low natural gas feedstock prices, and therefore is structurally less profitable than CF.

CVR Partners LP (UAN) and **Rentech Nitrogen Partners LP (RNF)** went public in April and November 2011 respectively. Because both of these companies are MLPs, majority-owned by their general partners, the economic interests of stakeholders are more complex and conflicting than common shareholder ownership. MLPs are popular because of single-taxation and high

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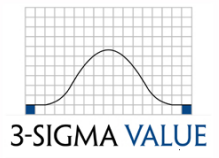

dividend yields based on high payout ratios that are mandated; however, in terms of total returns for shareholders they underperform significantly. Therefore, neither of the Nitrogen LPs are comparable to CF.

With no direct comparable company, we look to CF's 2010 acquisition of Terra Industries as the basis for the 7.6x terminal value multiple used in the DCF embedded in our Upside Case Valuation Scenarios. Base Case scenarios reflect multiples in and around the current 4-6x range.

Because natural gas has a volatile history and accounts for ~75% of the average cash costs of nitrogen production, investors typically value nitrogen operations at a discount to potash and phosphate operations. However, in this era of low natural gas prices, nitrogen price volatility is dampened as a natural result, and margins are relatively stabilized, more so in fact than either for potash or phosphates which continue to face cost inflation and new supply. As a result, we believe nitrogen's valuation discount will shrink.

3-Sigma Value identifies eight key drivers of value, including terminal value multiple (based on EBITDA). These are the fundamental assumptions underlying our valuation of CF.

Drivers of Value - CF Industries:
1. Capacity and Production, by product
2. Sales Volumes and ASPs, by product
3. Cost of Goods Sold, by product
4. Operating Expenses: SG&A & Other
5. Taxes
6. Capital Expenditures
7. WACC
8. Terminal Value Multiple

One final consideration before presenting CF's Base Case financial analysis – the board authorized a $3.0 billion share repurchase program through 2016, representing 22% of the current $13.5 billion market capitalization. This share buyback is in addition to the $3.8 billion capacity expansion project.

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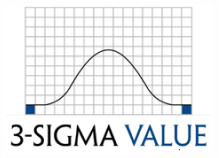

In the Base Case, we assume no change in natural gas prices from the $3.50 average price per million Btus realized in the fourth quarter of 2012. Coincidentally, $3.50 is the middle of our $2.00 to $5.00 expected price range.

3-Sigma Value's Fertilizer Price Deck - Base Case											
	2007	2008	2009	2010	2011	1Q12	2Q12	3Q12	4Q12E	2012E	2013E
Natural Gas ($/MMBtu, H. Hub)	7.11	8.91	4.16	4.40	4.03	2.52	2.35	2.89	3.50	2.70	3.50
% Change		*25.3%*	*-53.3%*	*5.8%*	*-8.4%*					*-33.0%*	*29.6%*
Ammonia ($/ton, Tampa)	331	592	272	408	570	470	548	702	700	580	700
% Change		*78.5%*	*-54.1%*	*50.1%*	*39.8%*					*1.7%*	*20.7%*
Urea ($/ton, Gulf)	346	518	329	345	461	501	624	445	415	485	415
% Change		*49.7%*	*-36.6%*	*5.0%*	*33.6%*					*5.2%*	*-14.4%*
UAN ($/ton, NOLA)	260	374	163	220	320	280	350	310	300	310	300
% Change		*43.8%*	*-56.4%*	*35.0%*	*45.5%*					*-3.1%*	*-3.2%*
DAP ($/ton, Gulf)	370	873	290	446	565	475	480	505	505	490	506
% Change		*135.9%*	*-66.8%*	*53.8%*	*26.7%*					*-13.3%*	*3.2%*
MAP ($/ton, Gulf)	368	897	301	458	580	495	495	525	525	510	519
% Change		*143.8%*	*-66.4%*	*52.2%*	*26.6%*					*-12.1%*	*1.8%*
Potash Int'l ($/ton, Vancouver)	173	426	508	365	453	483	480	505	505	495	403
% Change		*146.2%*	*19.2%*	*-28.1%*	*24.1%*					*9.3%*	*-18.5%*

Once CF's new capacity comes online in 2015/2016, EPS will increase from a current range of $26 - $30 per share to nearly $40. At the current share price around $200, that is 5x EPS – for a structurally-advantaged, low cost producer of necessary fertilizers. 3-Sigma Value's probability-weighted target price is $420.

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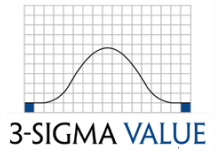

CF - Base Case Scenario 1	3/31/2012	6/30/2012	9/30/2012	12/31/2012	2010	2011	2012	2013	2014	2015	2016
Sales											
1. Nitrogen Products:											
Ammonia	402	504	259	546	1,129	1,563	1,711	1,862	1,862	2,049	2,235
% Growth	*98%*	*-14%*	*16%*			*38%*	*9%*	*9%*	*0%*	*10%*	*9%*
Granular Urea	349	362	263	232	833	1,069	1,206	1,067	1,067	1,546	2,025
% Growth	*56%*	*28%*	*-12%*			*28%*	*13%*	*-12%*	*0%*	*45%*	*31%*
UAN	423	527	474	480	993	1,992	1,904	1,869	1,869	2,134	2,399
% Growth	*5%*	*-1%*	*-4%*			*101%*	*-4%*	*-2%*	*0%*	*14%*	*12%*
AN	64	64	54	55	165	247	237	239	239	239	239
% Growth	*4%*	*-8%*	*-18%*			*50%*	*-4%*	*1%*	*0%*	*0%*	*0%*
Other	33	47	46	46	66	142	172	172	172	172	172
% Growth	*-6%*	*31%*	*23%*			*115%*	*21%*	*0%*	*0%*	*0%*	*0%*
Total Nitrogen Product Sales	**1,271**	**1,504**	**1,096**	**1,359**	**3,186**	**5,013**	**5,230**	**5,208**	**5,208**	**6,140**	**7,070**
2. Phosphate Products											
DAP	209	174	200	202	583	829	785	804	804	804	804
% Growth	*13%*	*-18%*	*-9%*			*42%*	*-5%*	*2%*	*0%*	*0%*	*0%*
MAP	46.5	58	64	63	194	257	232	239	239	239	239
% Growth	*-25%*	*-32%*	*-4%*			*32%*	*-10%*	*3%*	*0%*	*0%*	*0%*
Total Phosphate Product Sales	**256**	**232**	**264**	**265**	**777**	**1,086**	**1,017**	**1,043**	**1,043**	**1,043**	**1,043**
Total Sales	**1,527**	**1,736**	**1,360**	**1,624**	**3,965**	**6,098**	**6,247**	**6,251**	**6,251**	**7,183**	**8,112**
% Growth						***54%***	***2%***	***0%***	***0%***	***15%***	***13%***
Cost of Goods Sold (COGS)											
Natural Gas ($/MMBtu) - Industry	2.52	2.35	2.89	3.50			2.82	3.50	3.50	3.50	3.50
Difference	0.96	0.78	0.45	0.20				0.00	0.00	0.00	0.00
Natural Gas ($/MMBtu) - Actual	3.48	3.13	3.34	3.70	4.55	4.29	3.41	3.50	3.50	3.50	3.50
% Change		*-10%*	*7%*	*11%*		*-6%*	*-20%*	*3%*	*0%*	*0%*	*0%*
Total COGS - a function of the change in natural gas	760	770	697	855	2,785	3,202	3,082	3,107	3,107	3,570	4,032
% of Sales	49.8%	44.3%	51.3%	52.7%	70.2%	52.5%	49.3%	49.7%	49.7%	49.7%	49.7%
Total Gross Profit	**767**	**966**	**663**	**769**	**1,180**	**2,896**	**3,165**	**3,144**	**3,144**	**3,613**	**4,080**
% Margin	***50.2%***	***55.7%***	***48.7%***	***47.3%***	***29.8%***	***47.5%***	***50.7%***	***50.3%***	***50.3%***	***50.3%***	***50.3%***
SG&A	33.8	41.3	36.5	36.5	106.1	130.0	148.1	146.0	146.0	146.0	146.0
Other Operating Expenses	22.3	10.8	8.6	8.6	188.3	25.3	50.3	34.4	34.4	34.4	34.4
Total Operating Expenses	56.1	52.1	45.1	45.1	294.4	155.3	198.4	180.4	180.4	180.4	180.4
Equity in earnings of operating affiliates	15.5	13.8	10.2	10.2	10.6	50.2	49.7	49.7	49.7	49.7	49.7
Operating Income (EBIT)	**726.0**	**927.8**	**628.0**	**734.1**	**896.2**	**2,790.5**	**3,015.9**	**3,013.4**	**3,013.4**	**3,482.0**	**3,949.6**
% Margin	***47.6%***	***53.4%***	***46.2%***	***45.2%***	***22.6%***	***45.8%***	***48.3%***	***48.2%***	***48.2%***	***48.5%***	***48.7%***
Interest Expense	30.9	45.3	28.7	28.7	221.3	147.2	133.6	114.8	114.8	114.8	114.8
Interest Income	-0.4	0.0	-1.6	-1.6	-1.5	-1.7	-3.6	-6.4	-6.4	-6.4	-6.4
Other Non-Operating Expenses	-0.1	-0.6	-0.2	-0.2	-11.8	-0.6	-1.1	-0.8	-0.8	-0.8	-0.8
Pre-tax Income	695.6	883.1	601.1	707.2	688.2	2,645.6	2,887.0	2,905.8	2,905.8	3,374.4	3,842.0
Taxes	206.8	309.2	206.0	247.5	273.7	926.5	969.5	1,017.0	1,017.0	1,181.0	1,344.7
% Rate	*29.7%*	*35.0%*	*34.3%*	*35.0%*	*39.8%*	*35.0%*	*33.6%*	*35.0%*	*35.0%*	*35.0%*	*35.0%*
Equity in earnings of non-operating affiliates-net of tax	-2.3	27.2	23.9	16.3	26.7	41.9	65.1	65.1	65.1	65.1	65.1
Less: Net earnings attributable to noncontrolling interes	-63.3	-72.0	-54.8	-63.4	-91.5	-221.8	-253.5	-87.5	-87.5	-87.5	-87.5
Net earnings per share attributable to common stockh	423.2	529.1	364.2	412.6	349.7	1,539.2	1,729.1	1,866.4	1,866.4	2,170.9	2,474.9
Fully-diluted shares weighted-average shares outstand	66.5	65.2	63.5	63.5	65.4	70.0	64.7	63.5	63.5	63.5	63.5
EPS	**6.36**	**8.12**	**5.74**	**6.50**	**5.35**	**21.99**	**26.71**	**29.39**	**29.39**	**34.19**	**38.98**
P/E					**40.0x**	**9.7x**	**8.0x**	**7.3x**	**7.3x**	**6.3x**	**5.5x**
					Consensus EPS:		**27.75**	**25.76**	**24.10**		
D,D&A	103.1	115.9	99.7	100.0	394.8	416.2	418.7	475.0	550.0	585.0	590.0
EBITDA	829.1	1,043.7	727.7	834.1	1,291.0	3,206.7	3,434.6	3,488.4	3,563.4	4,067.0	4,539.6
EV / EBITDA					**10.5x**	**4.2x**	**3.9x**	**3.9x**	**3.8x**	**3.3x**	**3.0x**
NOPAT	510.2	602.9	412.8	477.2	539.8	1,813.3	2,003.1	1,958.7	1,958.7	2,263.3	2,567.3
+ D,D&A	103.1	115.9	99.7	100.0	394.8	416.2	418.7	475.0	550.0	585.0	590.0
+ Stock Comp, net of excess tax benefit	-6.2	-3.6	-11.4	3.0	2.5	-36.6	-18.2	12.0	12.0	12.0	12.0
+ Increase (Decrease) in Working Capital											
Change in Accounts Receivable					70.6	-35.5	0.0	0.0	0.0	0.0	0.0
Change in Inventories					79.8	-38.5	0.0	0.0	0.0	0.0	0.0
Change in Accrued Income Taxes					95.7	101.6	0.0	0.0	0.0	0.0	0.0
Change in Accounts Payable and Accrued Expenses					-71.3	5.2	0.0	0.0	0.0	0.0	0.0
Change in Customer Advances					166.4	-174.3	0.0	0.0	0.0	0.0	0.0
- Maintenance Capex	-64.3	-93.5	-103.6	-105.0	-258.1	-247.2	-366.4	-300.0	-300.0	-500.0	-500.0
as a % of Revenue	*4.2%*	*5.4%*	*7.6%*	*6.5%*	*6.5%*	*4.1%*	*5.9%*	*4.8%*	*4.8%*	*7.0%*	*6.2%*
= Unlevered Free Cash Flow (for valuation purpo	**542.8**	**621.7**	**397.5**	**475.2**	**1,020.2**	**1,804.2**	**2,037.2**	**2,145.7**	**2,220.7**	**2,360.3**	**2,669.3**
Expansion Capex								-1,500.0	-1,500.0	-700.0	-100.0
										Cumulative:	-3,800.0

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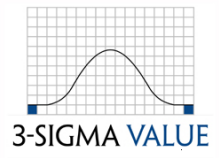

Final Thoughts

According to Tony Will, CF Industries' SVP of Manufacturing and Distribution, "We have a view of a supply response from shale gas production that basically says it's reasonable to put new production on line at about $4.50 to $4.75 per MMBtu. And so that creates kind of a natural window in terms of where the gas market will trade in North American between about $3 and $5." (November 28, 2012 at Citi's Basic Materials Symposium)

The math of supply and demand is clean and straightforward. It can be measured and confirmed. Investing in natural resources is about data. Forecasting is not a guessing game. It is not magical and it doesn't require a supercomputer. There is no secret sauce. When supply or demand significantly exceeds the other, the underlying price is bound to move. The only uncertainty is timing.

By focusing our research effort on gathering and processing data, on finding anomalies and micro trends in capital expenditures, capacity utilization, and supply chain infrastructure, we are able to formulate a view on the overall viability of the industries in which we invest. This is the essence of 3-Sigma Value's approach to research, what we call *penetrating the macro through the micro.*

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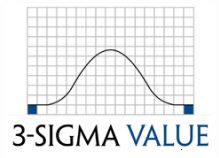

Appendix 1: The Demand Side of the Equation

In the wake of the worst drought in 110 years, farm yields in the U.S. have imploded (down 17% to 122.3 bushels per acre[10] and falling) and stocks-to-use are approaching an all-time low[11] (5.5%).

U.S. Corn Industry Supply Demand Statistics (Source: USDA & JP Morgan)

(in millions of bushels, except where indicated)

	USDA 2009-10	% Change	USDA 2010-11	% Change	USDA 2011-12	% Change	USDA 2012-13	% Change	USDA 2013-14	% Change
Corn Production:										
Planted - acres	86.4	1%	88.2	2%	91.9	4%	96.9	5%	96.9	0%
Harvested - acres	79.5	1%	81.4	2%	84.0	3%	87.7	4%	87.7	0%
Harvested to Planted Ratio	92.0%		92.3%		91.4%		90.5%		90.5%	
Yield - bu/acre	164.7	7%	152.8	-7%	147.2	-4%	122.3	-17%	122.3	0%
USDA Corn Production	13,094	8%	12,438	-5%	12,358	-1%	10,728	-13%	10,728	0%
Corn Supply:										
Beginning Inventory	1,673	3%	1,709	2%	1,127	-34%	987	-12%	615	-38%
Production	13,094	8%	12,438	-5%	12,358	-1%	10,728	-13%	10,728	0%
Imports	8	-41%	28	250%	29	4%	100	245%	100	0%
Total Supply	**14,775**	**8%**	**14,183**	**-4%**	**13,514**	**-5%**	**11,815**	**-13%**	**11,444**	**-3%**
Corn Demand:										
Feed and Residual	5,140	-1%	4,793	-7%	4,547	-5%	4,000	-12%	4,000	0%
Food, Seed, and Industrial	1,371	19%	1,407	3%	1,426	1%	1,000	-30%	1,000	0%
Ethanol for Fuel	4,568	24%	5,021	10%	5,011	0%	5,000	0%	5,000	0%
Total Domestic Demand	11,079	9%	11,221	1%	10,984	-2%	10,000	-9%	10,000	0%
Exports	1,987	7%	1,835	-8%	1,543	-16%	1,200	-22%	1,200	0%
Total Demand	**13,066**	**8%**	**13,056**	**0%**	**12,527**	**-4%**	**11,200**	**-11%**	**11,200**	**0%**
Ending Inventory	**1,709**	**2%**	**1,127**	**-34%**	**987**	**-12%**	**615**	**-38%**	**244**	**-60%**
Ethanol % of Total Production	**34.9%**		**40.4%**		**40.5%**		**46.6%**		**46.6%**	
Stocks-to-Use (inventory vs demand) *	**13.1%**		**8.6%**		**7.9%**		**5.5%**		**2.2%**	

With no improvement in farm yields (bushels per acre), stocks-to-use will continue to shrink, leading to upside price risk for corn, and therefore for fertilizer. The drought of 2012 will impact 2013-2014 because subsoil moisture will not be adequately replenished in time for the growing season. The most likely scenario is a small increase in yields and flattish stocks-to-use.

In short, the demand outlook for fertilizer is positive. 96.9 acres planted will be the highest planted acreage since 1937, and that number is likely to be matched in 2013 as the maximum amount of plant is needed to rebuild stockpiles and improve stocks-to-use to a more normal and stable level. Grain inventories are low around the world, resulting in continued supply tightness, especially in the global ammonia markets. And finally, robust crop insurance programs means the drought ironically had a positive impact of many farmers' cash flow.

[10] Source: USDA November Crop Production Report.

[11] Low was 5.0% in the 1995/1996 planting season. High was 39.8% in 1986/1987.

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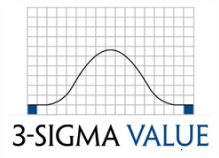

The most substantial risk to corn prices is a repeal of the Renewable Fuel Standard (RFS), which was created in the Energy Policy Act of 2005. RFS mandates minimum requirements for biofuel utilization in gasoline regardless of market prices, thereby guaranteeing a market for biofuels. In 2007, RFS was expanded under the Energy Independence and Security Act (EISA) to 15.0 billion gallons of conventional (corn) ethanol by 2015 (requiring 5.4 billion bushels of corn).

With the US very close to meeting its mandate for ethanol blending – 13.8 billion mandate for 2013 (14.4 in 2014 / 15.0 in 2015 and thereafter) versus 13-14 billion gallon gasoline demand – incremental demand for corn will require new drivers, most likely from China where corn demand growth is around 5% per year, a much faster rate than the rate of expansion of arable acreage and 2% average yield improvement.

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