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Inflation & Commodity Trends

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What's in this Report

This report contains information on twelve primary commodities. Information provided for these commodities includes forecast growth rates, the impact of these primary commodities on secondary commodities, substitutes for primary commodities, as well as upstream and downstream supply chain analysis for each primary commodity.

Executive Summary

- Commodities are currently being impacted by several factors, including surging global inflation, rapidly changing demand trends, and the ongoing conflict between Russia and Ukraine. However, sustained interest rate hikes are projected to weigh on demand for many commodities in 2023, which will place downward pressure on prices in several markets.
- The war in Ukraine continues to adversely affect the supply of metals, such as aluminum and steel. Furthermore, the strict COVID-19 lockdowns and property crisis in China, a country that accounts for a significant portion of global production and demand for metals, have exacerbated the supply chain issues for these two metals and yielded forecast uncertainty.
- China's evolving COVID-19 policies, including recently lifting many pandemic-related restrictions, continue to introduce volatility from both the demand side and supply side of many commodities. This volatility is amplified by the persistent risk of the reimplementation of such restrictions, especially considering the rising number of coronavirus cases throughout the country.
- As primary commodities are experiencing a highly volatile environment due to current global events, secondary commodities are subsequently being impacted. Extended lead times and limited availability for many secondary commodities are expected to negatively impact buyers as the supply of primary commodities continues to be disrupted.

Commodity Analysis

1. Aluminum

Forecast CAGRs:

- 6 Month: -7.2%
- 1 Year: -5.7%
- 2 Year: -4.4%
- 3 Year: -3.3%

Analysis: The rise in energy prices fueled much of the price growth for aluminum in 2022, along with a restricted supply of aluminum due to factory shutdowns in China and restricted export activity of Russian aluminum. However, a reduction in construction activity in 2023 is expected to significantly reduce demand for aluminum, which will place downward pressure on prices. Over the next three years, aluminum prices will continue to decline as new regulations limiting debt-financed property development in China will significantly weigh on demand, pressuring prices downwards. While aluminum prices are unlikely to return to pre-pandemic prices, the market is expected to correct to the downside after two years of strong price growth.

Secondary Commodities:

- Cameras/Cell Phones/Computers/Copiers
  - Aluminum is used in printed circuit boards, computer chips, and other structural or body components of technology such as cameras, cell phones, and computers. As aluminum prices continue to fall, product prices may face downward pressure.
- Canned Goods
  - Canned goods and beverage manufacturers will see input costs fall over the next three years as aluminum prices continue to fall from record highs set over the past two years.
- Vehicle/Vehicle Parts
  - Vehicle and auto part manufacturers expect increases in manufacturing capabilities due to greater aluminum production. New and used car availability is expected to increase in 2023.

Substitute Commodities:

- Magnesium Alloys

Upstream Supply Chain:

- Alumina Producers & Processors
  - Bauxite Miners
- Mining Equipment Manufacturers

Analysis: The upstream supply chain for aluminum consists of raw material suppliers that mine bauxite, process it into alumina, and deliver it to aluminum manufacturers. As China has eased restrictions on industrial users and factories, smelting activity has increased significantly, increasing the overall supply of aluminum and placing downward pressure on prices.

Downstream Supply Chain:

- Car & Automobile Manufacturers
- Metal Can & Container Manufacturers

Analysis: The downstream supply chain for aluminum consists of final products and solutions engineered and built from aluminum. Major downstream players include aircraft and automobile part and equipment manufacturers, and canned goods and beverage suppliers. Aluminum demand is

1. Aluminum

anticipated to drop over the next year as construction activity in both the United States and China declines.

2. Crude Oil

Forecast CAGRS:

- 6 Month: 27.4%
- 1 Year: 9.4%
- 2 Year: 1.6%
- 3 Year: -0.4%

Analysis: The price of crude oil is currently experiencing high volatility. Price forecasts have a high level of uncertainty due to many conflicting factors in both supply and demand. For instance, interest rate hikes of central banks worldwide and economic stagnation in China have lowered demand prospects. Meanwhile, continued sanctions against oil from Russia, the world's second-largest producer, have elevated uncertainty about supply. Despite high volatility, several leading institutions such as the Energy Information Administration, World Bank, Wall Street Journal, and Yahoo Finance anticipate per-barrel oil prices to average between $90-$100 in 2023. After a decline in oil prices over the last few months, crude oil prices are projected to increase over the next year from current prices, with an increased supply later in the forecast period translating to decreased demand in 2026, and thus lower prices.

Secondary Commodities:

- Diesel/Gasoline
  - Average prices in June for gasoline and diesel currently stand at $3.32 and $4.71 per gallon, respectively. Prices have decreased considerably since the previous forecast made in October 2022, when gasoline and diesel prices stood at $3.94 and $5.21, respectively.
- Grounds Maintenance Equipment/Heavy Equipment
  - Many types of equipment rely on lubricating oils to ensure the longevity of machines. As these products are refined from crude oil, owners of these machines can expect significant volatility in future costs associated with maintaining their equipment.
- Tires/Auto Parts
  - Oil is a primary component in tires, as well as in the manufacturing of additional auto parts. Both manufacturers and buyers of tires can expect increased prices and extended lead times as global rubber shortages occur alongside the extreme volatility in the market for crude oil.

- Asphalt
  - As asphalt is produced from petroleum crude oil, prices and supply depend nearly entirely on the current conditions in the global oil market. As a result, asphalt prices are projected to increase in line with oil prices over the next six months; however, waning demand for the construction sector will limit price growth.
- Industrial Consumables:

2. Crude Oil

- Industrial consumables, including motor and lubricating oils, paint and plastic products, depend heavily on the market for crude oil, as many of these products are oil derivatives. As volatile conditions persist in the crude oil market, supply and prices of these products are expected to shift quickly.

Substitute Commodities: N/A

Upstream Supply Chain:

- Mining, Oil & Gas Machinery Manufacturing
  - Steel Manufacturers
- Industrial Supplies Wholesalers
  - Power Tools & Other General Purpose Machinery Manufacturers
  - Pump & Compressor Manufacturers
- Metal Pipe & Tube Manufacturers
  - Steel Manufacturers
  - Iron Manufacturers

Analysis: Significant supply chain risk exists in the market for crude oil, as the market depends heavily on other risky commodities. While international sanctions on Russia have been contributing to instability in the supply chain, tariffs on global steel producers can also cause disturbances, as steel and iron are critical components of most machinery used in the oil-extracting process.

Downstream Supply Chain:

- Petroleum Refineries
- Gasoline & Petroleum Stations
- Petrochemical Manufacturers
- Rubber Product Manufacturers
- Plastics & Related Products Manufacturers

Analysis: Downstream demand shocks in the market can contribute to further strain on already low supply levels. Oil executives anticipate that recessionary fears may compromise demand from critical downstream buyers.

3. Chlorine

Forecast CAGRS:

- 6 Month: 18.1%
- 1 Year: 11.2%
- 2 Year: 7.3%
- 3 Year: 5.4%

Analysis: The price of chlorine is expected to remain elevated over the next three years as shortages persist throughout the market. High demand and fires at large chlorine and chemical-producing plants in Louisiana in mid-2021 and New Jersey in early 2022 have continued to hamper the supply of chlorine. These events have been particularly limiting the supply of chlorine tablets. The supply of chlorine tablets is unlikely to increase in the short term, as a shortage of construction materials and rising interest rates have limited the opening and construction of new chlorine manufacturing facilities. These trends, along with rising overhead costs, will continue to place upward pressure on prices over the next three years.

Secondary Commodities:

- Pharmaceutical Products

3. Chlorine

- As chlorine shortages linger and prices continue to rise, pharmaceutical products and medicines that use chlorine as components are also expected to increase in price. Prices are anticipated to face further upward pressure as demand from water treatment facilities prompts suppliers to raise chlorine prices further.

Substitute Commodities:

- Bromine

Upstream Supply Chain:

- Chemical Product Manufacturers
  - Inorganic Chemical Manufacturers
- Mineral & Phosphate Miners
  - Mining Equipment Manufacturers

Analysis: The primary upstream supply chain risk for chlorine stems mainly from the ability to meet demand. A significant disruption in the supply chain occurred from the fire at a Louisiana chlorine plant in 2021, which affected the supply of chlorine into 2023.

Downstream Supply Chain:

- Pharmaceutical Manufacturers
- Chemical Product Wholesalers
- Facility Maintenance Providers

Analysis: Demand from downstream suppliers is steady on average, as most buyers in the market require the product at a regular, predictable pace for operations to continue.

4. Corn

Forecast CAGRS:

- 6 Month: 1.5%
- 1 Year: -2.9%
- 2 Year: -6.4%
- 3 Year: -7.6%

Analysis: Supply shortages were the primary driver of rising corn prices in the recent three-year period. Prices have started their descent since an agreement between Russia and Ukraine allowed corn export to continue. During the next six months, corn prices are expected to rise due to the rising price of crude oil; corn and oil prices are correlated as ethanol prices are determined by the petroleum industry. When oil prices increase, demand for ethanol increases, which increases demand for corn and pressures prices upwards. Over the long term, corn production is expected to increase, as substitute goods such as soybeans grow in demand, fertilizer prices normalize and bushels harvested per acre rise due to improved farming technologies and methods.

Secondary Commodities:

- Animal Feed/Products
  - As corn is a major component of the typical animal feed used by farmers, the drastic increases in corn prices during the Ukraine war have negatively impacted cattle and livestock owners. As animal feed prices rise, farmers raise the prices of these animal products to cover rising costs, thereby contributing to upward pressure on various

4. Corn

food prices, including beef and dairy. The projected decline in corn prices over the next three years will place downward pressure on prices for animal feed and products.

Substitute Commodities:

- Barley & Other Grains
- Rice

Upstream Supply Chain:

- Fertilizer Manufacturers
  - Chemical Product Manufacturers
- Farm Product Storage & Warehousing Providers
- Tractors & Agricultural Machinery Manufacturers
  - Steel Manufacturers
- Water Supply & Irrigation Providers
  - Pipe & Tube Manufacturers

Analysis: Major supply chain disruptions can result from fluctuations in the price or availability of fertilizer. In cases where fertilizer becomes abnormally expensive or difficult for farmers to procure, farmers often switch to crops that depend less heavily on fertilizer, including soybeans, which can reduce the overall supply of corn. As supply chain disruptions ease, a normalization in fertilizer prices over the next three years will lead to an increase in production for fertilizer-intensive crops such as corn, increasing the overall supply of corn and pressuring prices downwards.

Downstream Supply Chain:

- Animal Feed Producers
- Food & Grocery Stores
- Fruit & Vegetable Markets

Analysis: Downstream demand is steady; however, many substitutes are available to consumers and farmers alike, reducing the impact of demand shocks in the market.

5. Lumber

Forecast CAGRS:

- 6 Month: -13.5%
- 1 Year: -5.9%
- 2 Year: 0.0%
- 3 Year: 1.9%

Analysis: The price of lumber has been highly volatile since the start of the pandemic. The price of lumber is expected to decline consistently over the next year, continuing its fall from extreme highs during both the pandemic's peak and early 2022. Lumber producers are anticipated to catch up to demand caused by increased home and residential construction projects, while at the same time, overall construction activity over the next year will decrease due to rising interest rates and a decline in housing starts. Nonetheless, the eventual recovery in the construction sector later in the forecast period will once again increase demand for lumber and pressure prices upwards.

Secondary Commodities:

- Toilet Paper
  - As lumber shortages resolve and prices decline over the next year, the price of toilet paper and other products that depend on wood pulp are forecast to decline. This trend will reverse later in the forecast period when demand for lumber increases.

5. Lumber

Substitute Commodities:

- Metals/Steel
- Concrete/Asphalt
- Plastics

Upstream Supply Chain:

- Tools & Hardware Wholesalers
  - Tools & Hardware Manufacturers

Analysis: Upstream supply chain risk primarily stems from the availability of wood and lumber to be cut and sold. Weather events or wildfires can reduce the overall stock of lumber and contribute to higher prices.

Downstream Supply Chain:

- Hardware Stores
- Commercial Building Construction
- Residential Building Construction
- Municipal Building Construction
- Lumber & Building Material Stores

Analysis: Rapidly rising interest rates and declining construction activity have significantly compromised demand for lumber, which is expected to place downward pressure on prices in the forecast period. Furthermore, surging inflation has disincentivized discretionary spending on home repair and remodeling, lowering demand for lumber and contributing to lower prices.

6. Natural Gas

Forecast CAGRS:

- 6 Month: 76.3%
- 1 Year: 32.1%
- 2 Year: 14.0%
- 3 Year: 7.6%

Analysis: Natural gas prices are highly volatile and difficult to predict. Prices are anticipated to begin increasing considerably throughout the next year, in line with rising crude oil prices. While average gas prices in 2023 are projected to be lower compared to average prices in 2022, the lowest gas prices for the year are likely to be experienced in the first several months of 2023 before pushing higher once again. Co-founder of OPIS, Tom Kloza, indicates that the lowest prices of 2023 will likely be seen in the first 55 days of the year, as refineries will not be able to sustain current levels of production.

Secondary Commodities:

- Equipment
  - Equipment, such as generators, depends on natural gas to operate and generate electricity. As a result, owners of these generators, including large facilities, universities and other buildings, can expect operating cost increases in the short term. However, as the natural gas supply becomes more abundant as global production increases, prices will be pushed lower.

Substitute Commodities:

- Propane
- Biofuel

6. Natural Gas

- Coal

Upstream Supply Chain:

- Mining, Oil & Gas Machinery Manufacturing
  - Steel Manufacturers
- Industrial Supplies Wholesalers
  - Power Tools & Other General Purpose Machinery Manufacturers
  - Pump & Compressor Manufacturers
- Metal Pipe & Tube Manufacturers
  - Steel Manufacturers
  - Iron Manufacturers

Analysis: Supply chain disruptions stem both from low gas yields at drilling sites and fluctuations in markets for steel and iron, as these metals make up a significant portion of the machinery required to drill for natural gas. Furthermore, the war in Ukraine has compromised the transportation of natural gas via pipeline. As a result, European countries have turned to transporting U.S. natural gas via tanker ships. However, there are infrastructure concerns associated with liquefying the gas to prepare it for marine shipping.

Downstream Supply Chain:

- Coal & Natural Gas Power Providers
- Fuel Dealers
- Fertilizer Manufacturers

Analysis: Downstream demand for natural gas is steady. However, shifts toward green energy and the ongoing energy crisis in Europe have made demand shocks more likely in the forecast period, which is expected to limit price growth later in the forecast period.

7. Oats

Forecast CAGRS:

- 6 Month: -6.7%
- 1 Year: -8.3%
- 2 Year: -6.9%
- 3 Year: -4.0%

Analysis: Food commodity prices in general have been pushed to unprecedented levels, even outpacing inflation on average. However, oats prices have been correcting to the downside in recent months, as demonstrated by the St. Louis FED's Oats Producer Price Index, which declined by 43.8% from April to November. Ultimately, increased oats production per acre and reduced supply chain disruptions will pressure oats prices downwards throughout the forecast period. Normalizing fertilizer prices will also contribute further downward price pressure to oats prices.

Secondary Commodities:

- Animal Feed & Products
  - Oats are a key ingredient in animal feed for horses, cattle, sheep, pigs and poultry. The declining price of oats decreases purchases as a percentage of revenue for the farming industry, placing downward pressure on prices for animal feed and products.
- Granola & Baked Goods

7. Oats
o Many baked goods and granola are typically derived from oats. The fluctuating price of oats directly contributes to the rising prices of granola and granola products. Therefore, decreasing prices over the forecast period will likely pressure baked goods and granola prices downwards. Rising interest rates are also expected to lead to a decline in the food price inflation index.
Substitute Commodities: • Chia Seeds • Quinoa • Brown Rice • Buckwheat

Upstream Supply Chain:
• Fertilizer Manufacturers
  o Chemical Product Manufacturers
• Farm Product Storage & Warehousing Providers
• Tractors & Agricultural Machinery Manufacturers
  o Steel Manufacturers
• Water Supply & Irrigation Providers
  o Pipe & Tube Manufacturers
Analysis: Prices for oats have fallen significantly since June, largely due to the recent decline of fertilizer prices along with the relative stabilization of the Russian invasion of Ukraine. In addition, a strong US dollar has limited demand for American oats, which has contributed further downward pressure to prices in this market.

Downstream Supply Chain: • Grocery Wholesalers • Supermarkets & Grocery Stores • Granola Producers • Oatmeal Producers • Oat Milk Producers • Baked Goods **Analysis:** Increased demand for oat products will limit price declines in this market.

8. Plastic
Forecast CAGRS: • 6 Month: 15.5% • 1 Year: 8.6% • 2 Year: 5.4% • 3 Year: 4.3% **Analysis**: Propane, a derivative of crude oil, is used to make ethylene and propylene, which are the foundational building blocks of plastic manufacturing. The Russian invasion of Ukraine has caused the world price of oil to rise rapidly, placing upward pressure on propane and plastic prices early in the forecast period. As average oil prices decline year over year, these effects should dampen moving further into the outlook period; however, sustained demand will ensure steady price growth.
Secondary Commodities:

8. Plastic

- Medical Equipment
  - Plastic is a key input for medical equipment and it is used in vials, beakers, implants and medical instruments. Demand for plastic medical equipment is projected to increase as plastic materials offer buyers a more cost-effective solution to alternatives such as metals, glass and ceramics.
- Disposables and Polystyrene Foam
  - Disposable bottles and bags are reliant on plastic, so increases in plastic prices directly impact these goods' prices. Polystyrene foam is also a plastic-based product that is used in packaging, as well as in automobile parts.
- PVC Pipes
  - PVC pipes are plastic-based products that are often used for sewage pipes and in water mains for irrigation.
- Consumer Electronics
  - Smartphones and other consumer electronics use a wide variety of plastic products, including Polycarbonate (PC), Acrylonitrile Butadiene Styrene (ABS), and Polymethyl Methacrylate (PMMA). These plastics are used for display frames, haptic feedback cushioning and mounting frames, among other purposes.

Substitute Commodities:

- Paper & Paperboard
- Bioplastics
- Glass
- Platinum Silicone
- Ceramics

Upstream Supply Chain:

- Petrochemical Manufacturers
  - Petroleum Refiners
- Industrial Machinery & Equipment Wholesalers
  - Steel Manufacturers
  - Iron Manufacturers
- Inorganic & Organic Chemical Manufacturers
  - Steel Manufacturers
- Resin Producers
  - Coal Miners

Analysis: Petrochemicals, such as ethylene and propylene are key inputs for plastic manufacturing and are produced from propane and butane, both of which derive from crude oil refining. Thus, increases in oil prices will continue to pressure prices upwards for plastics.

Downstream Supply Chain:

- Plastic Bottle Manufacturers
- Plastic Film, Sheet & Bag Manufacturers
- Plastic Pipe & Part Manufacturers
- Urethane Foam Manufacturers
- Plastic Product Wholesalers
- Plastic Toys

8. Plastic

- Adhesive Manufacturers

Analysis: Rising costs in resin and oil, and thus plastic, have pushed prices higher for plastic-based products, including plastic containers, bags and bottles. The price of polyolefins, which are used in a wide variety of products, including clothing, carpet and roofing materials, is also rising.

9. Semiconductors

Forecast CAGRS:

- 6 Month: 0.6%
- 1 Year: -0.8%
- 2 Year: -1.4%
- 3 Year: -1.6%

Analysis: Rising logistics prices, pandemic-induced shortages, and high demand have pressured prices of semiconductors upwards throughout the past three-year period. The rate of price increases is anticipated to decrease over the next six months, and eventually begin corrections to the downside. In addition, as the economic outlook has soured over the past several months and interest rates remain elevated, demand for semiconductors is expected to decrease. At the same time, chip manufacturers such as GlobalFoundries, the largest manufacturer based in the United States, expect to boost chip production by about 50.0% by the end of 2023, placing further downward pressure on prices and thus prompting price declines in the latter portion of the forecast period. Nonetheless, sustained demand for semiconductors will limit the rate of price declines later in the forecast period.

Secondary Commodities:

- Cell Phones
  - Cell phones were largely shielded from semiconductor shortages throughout much of the past three-year period, as suppliers had reserved capacity for critical components and did not cancel orders of semiconductor chips at the start of the pandemic as other industries had done. While major players in this market have largely insulated themselves from semiconductor shortages, smaller vendors such as Lenovo and TCL have struggled to keep up with supply without semiconductor chip reserves.
- Computers, Copiers, Web Cameras and Smartboards
  - The rise in demand for consumer electronics, including laptops and desktop computers, ultimately led to a major shortage of products that has caused backlogs.
- Vehicles
  - Car companies of all sizes have been impacted by the semiconductor chip shortage, forcing many to limit the number of features added to certain vehicles due to the lack of chips. However, the limiting effects of computer chips on the automobile industry are anticipated to wane throughout the forecast period, as automobile manufacturers anticipate a return to pre-pandemic production levels.

Substitute Commodities: N/A

Upstream Supply Chain:

- Semiconductor Machinery manufacturers
  - Steel Manufacturers
  - Iron Manufacturers
  - Aluminum Manufacturers

9. Semiconductors

- Copper Rolling, Drawing & Extruding Suppliers
  - Copper Miners
- Chemical Product Manufacturers
  - Silicon Suppliers

Analysis: Silicon production slowed down during the past three-year period, despite increasing demand for digital products from employers and consumers alike during the pandemic. In an effort to switch to cleaner energy, the world's leading supplier of silicon, China, has aimed to reduce its consumption of coal by rationing the electricity use of industrial suppliers, including silicon suppliers. However, energy rationing and pandemic-related disruptions in Chinese manufacturers have ultimately limited the supply of silicon and thus semiconductors available on the global market.

Downstream Supply Chain:

- Consumer Electronics Stores
- Computer Manufacturers
- Wireless Telecommunication Manufacturers
- Automobile Electronics Manufacturers

Analysis: The global chip shortage has limited the production of electronic consumer goods and vehicles, pressuring prices upwards for these goods. In addition, while the supply of semiconductor chips is anticipated to increase over the next three-year period, buying lead times and shortages will differ, as more complex and advanced semiconductors will not be as readily available or produced compared to those with simpler components.

10. Soybeans

Forecast CAGRS:

- 6 Month: -10.3.%
- 1 Year: -7.0%
- 2 Year: -5.7%
- 3 Year: -4.7%

Analysis:. According to the Wall Street Journal, rising interest rates will limit demand for soybeans and other commodities, placing downward pressure on prices. The supply side for soybeans and other agricultural commodities remains highly dependent on conditions surrounding the Russian invasion of Ukraine, while the demand side is highly influenced by China's COVID-19 policies, restrictions, re-openings and shutdowns.

Secondary Commodities:

- Animal Feed
  - Soymeal prices continue to slide from highs set over the summer, as prices declined about 13.8% from August to November, according to the St. Louis FED's Global Price of Soybean data.
- Nutrition
  - The price of soybean oil, which is used in many food products and as a cooking oil, declined by about 11.1% from May to November, according to the St. Louis FED's Global Price of Soybean Oil data.
- Biodiesel

10. Soybeans

- About one-third of all soybean production in the United States is used to produce biofuel. Declining soybean prices will place downward pressure on biofuel prices.
- Industrial Consumables
    - Industrial consumables such as concrete sealant, engine oil and asphalt rejuvenators all rely on the oil produced by soybeans.

Substitute Commodities:

- Canola Seeds
- Sunflower Seeds
- Corn

Upstream Supply Chain:

- Fertilizer Manufacturers
    - Chemical Product Manufacturers
- Farm Product Storage & Warehousing Providers
- Tractors & Agricultural Machinery Manufacturers
    - Steel Manufacturers
- Water Supply & Irrigation Providers
    - Pipe & Tube Manufacturers
- Shipping Containers
    - Steel Manufacturers

Analysis: As with many other industries, soybean farmers and producers are struggling to obtain containers to export their products to buyers. Unlike other grains such as corn and sorghum, which move in bulk vessels, the supply of distilled grains has been constrained by the shortage of containers. However, as shipping snarls continue to ease in 2023, these effects will dampen, increasing the supply of soybeans.

Downstream Supply Chain:

- Animal Food Producers
- Margarine & Cooking Oil Processors
- Meat Producers
- Soy-Based Food & Beverage Producers

Analysis: Over three-quarters of all world soybean production goes to meat and dairy producers in the form of animal feed for livestock. A decrease in prices for soybeans and soymeal will continue to place downward pressure on meat and dairy products.

11. Steel

Forecast CAGRS:

- 6 Month: 5.9%
- 1 Year: -12.1%
- 2 Year: -15.0%
- 3 Year: -10.6%

Analysis: The world price of steel is anticipated to fall significantly over the next three years, and U.S. manufacturers are set to increase steel production to satisfy downstream demand. This should alleviate upward pressure on prices caused by the shortage of steel over the last three-year period, which caused the price of steel to rise 200% in 2021 alone. However, over the next six months, steel prices are

11. Steel
anticipated to rise. According to the Fabricator's Michael Cowden, increased lead times over the past several weeks indicate a potential uptick in steel prices, while a growing number of steel mills are unwilling to negotiate lower prices as they have done in recent weeks. Supply side dynamics are therefore projected to push steel prices higher in the short-term, however souring macroeconomic conditions and construction activity will place downward pressure on steel prices later in the forecast period.

Secondary Commodities:
• Grounds Maintenance Equipment
  ○ Grounds maintenance equipment, such as shears, are made of hardened carbon or chromium steel.
• Heavy Equipment
  ○ Steel is the backbone for scaffolding, cranes, bulldozers and other heavy equipment.
• Industrial MRO Supplies
  ○ Declining steel prices have placed downward pressure on prices for repair tools and safety equipment.
• Medical Equipment
  ○ Medical equipment includes a wide range of steel products, such as medical carts, wheelchairs, hospital beds, IV stands, surgical tools, medical syringes and needles, surgical screws and plates among a host of other steel-based products.
• Vehicle & Vehicle Parts
  ○ Despite declining steel prices, supply chain issues and backlogged orders continue to limit the supply of vehicles and vehicle parts. Therefore, prices for such goods remain elevated.

Substitute Commodities: • Aluminum • Wood • Stone • Concrete • Plastic

Upstream Supply Chain:
• Iron Ore Miners
• Copper, Nickel, Lead & Zinc Miners
• Industrial Machinery & Equipment Manufacturers
  ○ Steel Manufacturers
• Utilities & Energy Providers
  ○ Coal Miners
Analysis: China accounts for more than half of global steel production. The steel market remains open to increased volatility as China's COVID-19 policies continue to evolve. However, with the ongoing re-opening of the country over the past several months, steel production is anticipated to continue to rise. As steel prices are also influenced by transportation costs, the declining price of fuel has contributed to downward pressure on steel prices.

Downstream Supply Chain: • Constructors

11. Steel

- Metal Pipe & Tube Manufacturers
- Car & Automobile Manufacturers
- Steel Rolling & Drawers
- Ferrous Metal Foundry Products

Analysis: Downstream demand for steel includes products and services that rely on steel and steel-based products as a key input. This includes industrial and construction markets that use steel in heavy equipment and structures, such as for shipbuilding, oil and gas refining and vehicle production.

12. Wheat

Forecast CAGRS:

- 6 Month: -11.1%
- 1 Year: -6.9%
- 2 Year: -5.4%
- 3 Year: -3.8%

Analysis: The Russian invasion of Ukraine has caused wheat prices to spike in the last year. However, a recent agreement between Russia and Ukraine has allowed the flow of wheat exports from the two countries to continue, which is continuing to place downward pressure on prices in the short run. Additionally, higher production from Argentina and the EU, combined with decreased demand for expensive compared to other grains, will facilitate price declines throughout the forecast period.

Secondary Commodities:

- Animal Feed & Products
    - Wheat is often used in swine and poultry feed, with over 50.0% of all grain production in the United States going to animal feed (while globally, 40.0% of grain goes to animal feed). Declines in wheat prices over the next year will apply downwards pressure on animal feed prices, however, the price of corn generally has a more powerful impact on prices.
- Nutrition
    - The Russian invasion of Ukraine has hurt wheat exports. However, since the recent agreement between the two countries to resume the flow of exports, prices are expected to experience greater relief over the next year. Declining freight rates have also contributed downward pressure to wheat prices.

Substitute Commodities:

- Millet
- Quinoa
- Rice Flour

12. Wheat

Upstream Supply Chain:

- Fertilizer Manufacturers
    - Chemical Product Manufacturers
- Farm Product Storage & Warehousing Providers
- Tractors & Agricultural Machinery Manufacturers
    - Steel Manufacturers
- Water Supply & Irrigation Providers
    - Pipe & Tube Manufacturers

Analysis: Supply chain risk for wheat stems from increasing fertilizer prices, which yield uncertainty for the forecasted price declines over the next year. Fertilizer price increases have also been linked with suppliers failing to adjust production levels to account for increased demand.

Downstream Supply Chain:

- Cereal Producers
- Bread Producers
- Animal Food Producers
- Cookie, Cracker & Pasta Producers
- Flour Millers

Analysis: Although wheat exports are starting to normalize following the agreement between Russia and Ukraine, inflation is the predominant factor plaguing food producers. Furthermore, there is a global food crisis being driven by adverse weather and crop conditions, as well as the lingering effects of the COVID-19 pandemic. As a result, food producers worldwide have started to seek alternatives to wheat. For example, South Korea has turned to rice flour as a substitute, looking to replace 10.0% of their demand for imported wheat by 2027. Nonetheless, interest rates should continue to dampen gains in the food price inflation index, placing downward pressure on prices in the wheat market.