EY-Parthenon Perspectives
Investing in the agricultural crop industry

Sean Levy, Managing Director, EY-Parthenon
Greg Miller, Managing Director, EY-Parthenon
Continued consolidation opportunities exist in many segments of the value chain and megadeals, creating carve-out opportunities.

Limitations on adding new farmland creates opportunities to invest in technology and services that drive increases in yield.

Depressed commodity prices and farmer incomes currently drive buying opportunities.

Depressed commodity prices and farmer incomes currently drive buying opportunities.

Strong long-term fundamentals are supported by growth in emerging markets and shifting diets.

Understanding the crop industry value chain is essential for prioritizing investment opportunities.
Agenda

- Agriculture industry overview
- Crop market investment themes
- Crop market value chain
Agriculture industry overview
This is a complicated industry with multiple players in the source-to-consume life cycle and multiple megatrends affecting the industry.

Source-to-consume life cycle

Produce
- Fertilizer
- Agrochemical
- Grain crops
- Grain processing
- Fruits and vegetables
- Sugar
- Coffee, tea and spices
- Ingredients
- Aquaculture
- Dairy
- Livestock
- Meat processing
- Floriculture
- Forestry
- Tobacco
- Agricultural equipment
- Agricultural services
- Animal health and nutrition
- Transportation
- Power and utilities
- Real estate and equipment
- Government and NGOs
- Financial services

Transform
- Agribusiness
- Technology and innovation
- Advanced farming
- Data proliferation
- Genetics and agricultural biotechnology
- Regulatory changes
- Infrastructure trade
- Infrastructure constraints
- Food safety
- Supply traceability
- Geopolitical stability

Make
- Packaged food
- Beverage
- Biofuels
- Industrial products
- Household products
- Building materials
- Tobacco
- Textiles and apparel
- Medical and pharma
- Animal feed

Retail
- Traditional trade
- Grocery
- Club
- Discount
- Convenience
- E-commerce

Source
- Land
- Water

Consume
- Urbanization
- Hunger vs. obesity paradox
- Consumer demographics
- Population growth
- Rising middle class
- Multigenerational

Producer profile:
- Consolidation of family farms
- Shift from subsistence to industrial farming
- Greater reliance on inputs and technology
- Influenced by global markets
- Resource conservation

Consumer profile:
- Higher disposable income
- Seeking convenience
- Health conscious
- Environmental and social awareness
- Omni-channel
- Multigenerational

Megatrends
- Social awareness
- Limited natural resources
- Climate variability
- Advanced farming
- Data proliferation
- Genetics and agricultural biotechnology
- Regulatory changes
- Infrastructure trade
- Infrastructure constraints
- Food safety
- Supply traceability
- Geopolitical stability
Agriculture industry overview
Private equity investment has focused on niche and specialized segments across the entire value chain.

North American buyout deals, agriculture, 2014–16

Representative deals

**Machinery and equipment**
- CD&R/SiteOne acquires AMC Industries

**Seeds**
- Paine & Partners/Suba Seeds acquires Brotherton Seed Company

**Specialty crop production**
- GI Partners/Duckhorn acquires Three Palms Vineyard

**Agricultural chemicals and fertilizer**
- Insight/Dustex acquires Sparstane Technologies

**Distributors/retailers**
- Apollo/Pinnacle Agriculture Holdings acquires ProSelect

**Specialty crop inputs**
- Platte River acquires Tiger-Sul Products

Source: PitchBook
Agriculture industry overview
The US agriculture industry produced ~$340b last year between crops, livestock and dairy; crops account for 62% of that annual production

Total US agriculture industry

<table>
<thead>
<tr>
<th>Crops</th>
<th>Livestock</th>
<th>Dairy</th>
</tr>
</thead>
<tbody>
<tr>
<td>US total crop production: ~$213b</td>
<td>US total meat production: ~$80b</td>
<td>US total dairy production: ~$50b</td>
</tr>
<tr>
<td>Growth figures:</td>
<td>Growth figures:</td>
<td>Growth figures:</td>
</tr>
<tr>
<td>► 5-year price CAGR: -0.35%</td>
<td>► 5-year meat price CAGR: 8.00%</td>
<td>► 5-year milk price CAGR: -0.96%</td>
</tr>
<tr>
<td>► 5-year bushels harvested CAGR: 1.59%</td>
<td>► 5-year volume (lbs.) CAGR: 1.24%</td>
<td>► 5-year volume (lbs.) CAGR: 1.70%</td>
</tr>
</tbody>
</table>

Total crop price paid in the US annually, indexed to 2011 USD
1995–2015

Price received for livestock paid in the US annually, indexed to 2011 USD
1995–2015

Average price received for milk paid in the US annually, in dollars per pound
1995–2015

Bushels harvested in the US annually
Corn (grain), soybeans, wheat
1995–2015

Total annual US livestock production, measured in pounds
1995–2015

Total field dairy pounds produced in the US annually
1995–2015

Note: Crops included in area planted are corn, sorghum, oats, barley, rye, winter wheat, durum wheat, other spring wheat, rice, soybeans, peanuts, sunflower, cotton, dry edible beans, potatoes, sugar beets, canola and proso millet.
Source: U.S. Department of Agriculture (USDA); Progressive Dairyman
**Agriculture industry overview**

The US agriculture industry produced ~$213b in crops in 2015

---

**US agriculture crop production, measured in $b**

<table>
<thead>
<tr>
<th>Region</th>
<th>Crop</th>
<th>Value ($b)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern Plains</td>
<td>Corn</td>
<td>$35b</td>
</tr>
<tr>
<td></td>
<td>Soybeans</td>
<td>$17b</td>
</tr>
<tr>
<td></td>
<td>Hay and haylage</td>
<td>$15b</td>
</tr>
<tr>
<td></td>
<td>Other crops</td>
<td>$15b</td>
</tr>
<tr>
<td>Pacific</td>
<td>Corn</td>
<td>$34b</td>
</tr>
<tr>
<td></td>
<td>Soya beans</td>
<td>$15b</td>
</tr>
<tr>
<td></td>
<td>Potatoes</td>
<td>$15b</td>
</tr>
<tr>
<td></td>
<td>Other crops</td>
<td>$8b</td>
</tr>
<tr>
<td></td>
<td>Hay and haylage</td>
<td>$8b</td>
</tr>
<tr>
<td></td>
<td>Other crops</td>
<td>$7b</td>
</tr>
<tr>
<td>Northen Plains</td>
<td>Corn</td>
<td>$29b</td>
</tr>
<tr>
<td></td>
<td>Soybeans</td>
<td>$17b</td>
</tr>
<tr>
<td></td>
<td>Hay and haylage</td>
<td>$15b</td>
</tr>
<tr>
<td></td>
<td>Other crops</td>
<td>$8b</td>
</tr>
<tr>
<td></td>
<td>Hay and haylage</td>
<td>$7b</td>
</tr>
</tbody>
</table>

**Total = $185b**

Source: USDA-NASS crop production by state
Agenda

► Agriculture industry overview
► Crop market investment themes
► Crop market value chain
## Crop market investment themes

Four key themes outline the industry issues and related questions

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>► Long-term fundamental industry trends remain highly positive.</td>
<td>► Low commodity prices are currently depressing farm incomes and affecting the entire value chain.</td>
<td>► Technology continues to drive an evolution in farming practices; although timing is gradual, many farmers are reluctant to change, and adoption varies.</td>
<td>► Megadeals among AgChem companies will transform industry landscape.</td>
</tr>
<tr>
<td>► Grower specialization continues with increasing focus on food traceability.</td>
<td>► Due to a rise in speculation and globalization, commodity prices are increasingly correlated across crops and regions.</td>
<td>► Precision agriculture ecosystem is fragmented without dominant platforms.</td>
<td>► Growers and retailers continue to consolidate, but the market remains fragmented.</td>
</tr>
<tr>
<td>► Large theoretical growing capacity exists in non-Western regions given gaps in yield.</td>
<td>► Have we reached a “floor,” and how soon will the market recover in line with longer-term trend?</td>
<td>► Which products are best positioned to capture scarce farmer spend (and prove ROI) to enable yield growth?</td>
<td>► Where can financial sponsors participate in the market with mature companies of scale?</td>
</tr>
<tr>
<td>► Will political change in US and the EU cause shifts in the current regulatory framework?</td>
<td>► Have we entered a “new normal” with less volatility now that biofuel growth has slowed?</td>
<td>► Will breakthrough seed technology come to the market (e.g., hybrid wheat)?</td>
<td>► Which market segments are best positioned to benefit from macro trends?</td>
</tr>
<tr>
<td>► Will changes in trade policies significantly affect agricultural trade flows?</td>
<td>► Will long-term price growth return to the slow pace experienced prior to 2000 or follow the higher growth trend line since 2000?</td>
<td>► How will data privacy, security and ownership issues be resolved?</td>
<td>► Which assets will be divested as a result of megadeals, and which will be targets for strategic buyers vs. available for financial sponsors?</td>
</tr>
<tr>
<td>► What is the outlook for GMO use and public opinion? Will China adopt?</td>
<td></td>
<td>► Can retailers leverage the strength of their grower relationships to shape the market? Will traditional technology and data companies (e.g., Google) ultimately take a leadership role?</td>
<td>► How will consolidation of the major manufacturers affect the distribution channel?</td>
</tr>
<tr>
<td>► Can the industry count on generational change to drive an inflection in adoption of new farming practices?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: The Economist, Bloomberg, Forbes
Crop market investment themes
Globally, population growth and societal shifts represent topics critical to the agriculture industry

Global market drivers in agriculture

Population growth will not only significantly increase global food demand …

- The global population is expected to increase to 8.5b by 2030 and to 9.6b by 2050.
- This will demand an additional billion tons of cereal and 200m tons of meat to be produced annually by 2050, assuming current consumption levels remain constant.

… but also decrease the amount of arable land globally.

- As the population grows, more land will be needed for residential purposes.
- Arable land scarcity happens in part because of degradation, climate change, soil constraints, urban encroachment and unequal land distribution.

Significant dietary shifts will imply an increase in calories consumed per person.

- The middle class is expected to double in size, driving significant lifestyle shifts globally.
- This societal shift is expected to increase meat consumption per person while the overall population grows.
- Livestock increases will in turn require large land and feed crop investments.

Source: USDA; Future Directions
Crop market investment themes
Short-term market trends such as increased stocks and reduced demand for biofuel have disrupted the US agriculture market in recent years

<table>
<thead>
<tr>
<th>High production levels have recently driven stock levels higher despite growth in consumption.</th>
<th>Depressed prices, resulting in part from high stock levels create financial stress for producers.</th>
<th>Demand for biofuel is decreasing even as stocks rise.</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Graph of stock levels" /></td>
<td><img src="image2" alt="Graph of price received per bushel" /></td>
<td><img src="image3" alt="Graph of share of corn used for ethanol" /></td>
</tr>
</tbody>
</table>

- Higher corn stock levels – partially a result of increased demand for biofuels in the mid 2000s and record yields – drive down commodity prices.
- Falling commodities prices – partially a result of excess row crop inventories – reduce US farmer cash margins.
- Lower commodities prices and margins result in lower net income for farmers and lower spend on farm inputs.
- Since 2010, falling gas prices and changes in regulation have driven a decrease in ethanol usage.
- Falling gas prices since 2011 have driven down the demand for a cheap alternative to high petroleum prices.
- Better understanding of the environmental costs of ethanol production has reduced demand for ethanol from conservationists.

Source: USDA Feed Grains Yearbook, USDA Feed Grains Dataset, USDA ERS Survey
Crop market investment themes
Growing population is an overarching driver of growth in the agriculture space, driving improvements in yield in part through improved technology.

The overall size of the population is growing while the dietary demands of each individual person are simultaneously increasing.

Urbanization trend is likely to decrease the availability of labor

This implies a need for greater efficiency in agriculture to grow more food with less arable land.

Global food needs are changing drastically, causing major shifts in agriculture.

These shifts toward greater efficiency create new areas for investment within agriculture.

1. Advances in seed technology
   - R&D expenditure on CP and seeds/trait by the 15 leading companies was $7b in 2014 (vs. $4.5b in 2007).
   - Key issues: outlook for GMO, strength of future pipelines

2. Adoption of precision agriculture
   - The precision agriculture market is projected to grow to $3.7b by 2018, representing a ~14% CAGR.
   - Key issues: privacy/control of data, adoption trends

3. Increased usage of specialty crop inputs
   - Micronutrients, inoculants, adjuvants and additives have growing importance in crop production but are immature and fragmented markets.
   - Key issues: product proliferation, farmer skepticism

4. Increased adoption of existing technologies
   - Substantial yield improvement opportunity exists for less sophisticated farms particularly in emerging countries.
   - Key issues: access to capital, fragmentation of farmers

Source: USDA Feed Grains Yearbook; USDA Feed Grains Dataset; USDA ERS Survey
Crop market investment themes
Despite limitation on adding new arable land, tremendous opportunity exists for yield growth from emerging markets as they adopt technology.

Commentary
► According to FAO, yield growth in emerging countries will account for about 70% of growth in crop production to 2030.

► Substantial unrealized potential exists from adoption of current seed and precision ag technologies in both developed and emerging markets.

► Yield convergence could theoretically unlock significant production increases:
  ► Kazakhstan reaching EU yield levels in wheat would imply a 2.7x increase in production.
Crop market investment themes
Short-term disruptions have been driving consolidation of input providers; growers and retailers also continue to consolidate

Consolidation observed in the US agriculture market

Significant consolidation and divestments are occurring in the crop input market.

- The top ranks in the crop protection and seed industries have remained unchanged since 2000.
- However, falling commodity prices coupled with lower farm income and weakening farmer buying power have triggered consolidation discussions among several agribusiness players, including the “Big Six.”

Large retailers have systemically acquired smaller ones over the last decade.

- Over the past few decades, large agriculture retailers have systemically acquired smaller ones, expanding their market presence.
- Despite significant consolidation in recent years, there is still much room for M&A activity.
- Retailers with revenues under $100 million still make up 62% of the Crop Life 100 list.

Consolidation among growers has increased the size of the average farm to ~438 acres.

- Over the last 50 years, small farms have been swept away by the forces of globalization and industrialized agribusiness.
- The increase has been driven by several factors, including the development of high-tech equipment, seeds and pesticides that have made farming less labor-intensive, increasing the returns to scale.

Source: CRU Group, IFA, Crop Life, Wall Street Research
Crop market investment themes

The M&A activity in the US crops industry has been dominated by the upstream components from the growers.

Number of mergers and acquisitions in the US crop value chain
2007–2015

- Agronomic consulting: 31
- Software/regulation service providers: 7
- Processors: 44
- Traders: 3
- Growers: 49
- Retailers: 62
- Equipment producers: 19
- Input producers: 69

Source: Pitchbook
Agenda

► Agriculture industry overview
► Crop market investment themes
► **Crop market value chain segmentation**
Crop market value chain segmentation
Investment opportunities vary across the four key segments of the value chain

<table>
<thead>
<tr>
<th>The crop industry value chain segments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Input and equipment providers:</strong> Focus on four core inputs to the crop-growing process: fertilizer, seed, crop protection chemicals and equipment</td>
</tr>
<tr>
<td><strong>Retailers:</strong> Consolidation in the US ag retailer market has increased in recent years but remains highly fragmented</td>
</tr>
<tr>
<td><strong>Growers:</strong> Market remains fragmented with a generational change in process; focus on specialization and traceability is increasing</td>
</tr>
<tr>
<td><strong>Services:</strong> Diverse range of downstream and upstream services such as agronomy, financial services, processing, transportation and trading</td>
</tr>
</tbody>
</table>

Continued M&A opportunities
Crop market value chain segmentation
Participants in the crop market value chain can be broken down into four key buckets

Crop market landscape

Source
- Inputs
  - Power
  - Agronomy services
- Equipment
- Financial Services

Produce
- Seed, mature, harvest
  - Soil enrichment
    - Nitrogen (N)
    - Phosphorus (P)
    - Potassium (K)
  - Seed planting
    - Cereal grains
    - Oil seeds
    - Vegetables
    - Fruits, nuts, spices
    - Non-food
  - Nourish and protect
    - Herbicides
    - Fungicides
    - Insecticides
  - Harvest/transport
    - Inspection
    - Threshing
    - Cleaning
    - Drying
    - Waste removal
  - Process/store
    - Commodity markets
    - Sell to seed producers
  - Sell
  - Transport
  - Process/refine

Transform
- Transport, process, distribute
  - Barge/container
  - Truck
  - Rail
  - Wet mill
  - Dry mill

Make/retail/consume
- Fuel (ethanol)
- Feed (DDGs)
- Other by-products
- Food
- Ingredients
- Industrials
- Feed
- Other

Value chain participants

Input providers
- Fertilizer providers
- Seed providers
- Chemical providers

Equipment providers
- Farm equipment providers

Retailers
- Ag retailers/cooperatives/dealers

Producers
- Growers

Upstream services
- Software/information services/agronomy/financial services

Downstream services
- Traders/storage providers/grain processors/mills
Crop market value chain segmentation
The input provider market focuses on four core inputs to the crop-growing process

<table>
<thead>
<tr>
<th>Input provider market</th>
<th>Global equipment provider market</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fertilizer providers</strong></td>
<td><strong>Global market size:</strong> $328b</td>
</tr>
<tr>
<td><strong>Seed providers</strong></td>
<td><strong>Chemical providers</strong></td>
</tr>
<tr>
<td><strong>Chemical providers</strong></td>
<td><strong>Specialty crop inputs</strong></td>
</tr>
<tr>
<td><strong>Equipment providers</strong></td>
<td><strong>Equipment providers</strong></td>
</tr>
</tbody>
</table>

**Global market size**
- $183b
- $48b
- $58b
- $39b
- $109b

**Growth**
- ~4%
- ~7%
- ~6%
- High
- ~1%

**Fragmentation**
- Low
- Low
- Low
- Medium
- Medium

**Relevant segmentation**
- Potash
- Nitrogen
- Phosphate
- Blended
- GMO vs. non-GMO
- Cereals/grains, oilseed, vegetable, horticulture, fruit
- Insecticide, herbicide, fungicide
- Generic vs. branded
- Adjuvants
- Additives
- Micronutrients
- Biostimulants
- Adjuvants
- Additives
- Tractors/combines
- Spray equipment
- Blenders
- Precision ag eq.

**Competitor examples**
- CF Industries
- Koch
- Mosaic
- PotashCorp
- Uralalkali
- Yara
- Beck’s Hybrids
- DuPont Pioneer
- Groupe Limagrain
- Monsanto
- Nufarm
- Syngenta
- BASF
- Bayer
- Dow
- FMC
- Syngenta
- Adama
- Kronos
- Verdesian
- Wolf-Trax
- AGCO
- CHN Industrial
- John Deere
- Klaas
- Kubota
- Mahindra

**Commodity exposure**
- Low NG prices
- Fertilizer market benefits from increasing demand in Asia-Pacific
- Increasing supply in Eastern Europe
- Consolidation in asset intensive subsectors
- High exposure

**Industry issues**
- Seed market has been affected by the GMO vs. non-GMO debate as GMO seeds have drastically improved yield but spark concerns for growers and consumers
- Growth in seed treatment
- High R&D costs
- Sector consolidation
- Global consolidation
- Generic substitution – declining rate of innovation
- Sustainability
- Increasing supply from Eastern Europe
- Specialty crop inputs market benefits from increased need for higher yield
- Large integrated fertilizer and chemical companies are actively acquiring specialty companies
- ROI can be difficult to definitively prove
- High exposure

**Note:** Growth numbers are forecasted CAGRs through 2021–22
Source: EY-Parthenon internal materials, secondary research
Crop market value chain segmentation
The most fragmented subsegment of the input provider market are the nitrogen and phosphate fertilizer sectors

Global input provider market sizes by input type
2016

Fertilizer (207m tons)
53m tons
Potash
Mosaic
Belaruskali
Potash-Corp
Uralkali
112m tons
Nitrogen
CF
Group DF
Yara
42m tons
Phosphate
Vale
K+S
ICL
K+S

Chemicals ($52b)
$25b
Herbicide
Monsanto
DuPont
Syngenta
Bayer
Dow
BASF

$15b
Insecticide
DuPont
Syngenta
Bayer
Dow
BASF
Nufarm

$12b
Fungicide
Bayer
DuPont
Syngenta
Monsanto

Seed
$48b

$106b
Combines/tractors
Deere
CNH
Kubota
Foton
YTO
AGCO
CLAAS

Source: Company annual reports; secondary research
Crop market value chain segmentation
Consolidation in the US ag retailer market has increased, while ag equipment dealers remain highly fragmented

<table>
<thead>
<tr>
<th>US agriculture retailer market</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Market size</strong></td>
</tr>
<tr>
<td><strong>Ag retailers</strong></td>
</tr>
<tr>
<td><strong>Cooperatives</strong></td>
</tr>
<tr>
<td><strong>Dealers</strong></td>
</tr>
<tr>
<td><strong>Growers</strong></td>
</tr>
</tbody>
</table>

Note: Growth numbers are forecasted CAGRs through 2021–22
Source: EY-Parthenon internal materials; secondary research
Crop market value chain segmentation
Retailer space is experiencing continued consolidation as the top 40 retailers in the space represent ~$35b in revenue

Equipment, retailer and grower market sizes by subcategory
2016

Dealers***

US market
6,000–7,000 storefronts

100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%

1,751 outlets
1,751 outlets

Retailers (top 40)** – $35b

US market
2,027 outlets

199 outlets

Growers – $213b

100%

100%

Share of farms

Share of production

Share of farms

Share of production

Small family

Midsize family

Large-scale family

Small family

Midsize family

Large-scale family

Corporate

Concentration index

High concentration

High fragmentation

Note: **US only. Displayed are the top 40 retailers/wholesalers/cooperatives which account for >80% of the US storefront count. There are between 4,000–5,000.

***US only. As of 2009, dealers with fewer than 5 storefronts made up more than 80% of the total. Top 11 dealers by storefront shown here.

Source: Company annual reports; secondary research
Upstream services in agriculture include agronomy, financial services and software as a service in the form of workflow services and precision ag.

### Ag services market (upstream services)

<table>
<thead>
<tr>
<th></th>
<th>Agronomy</th>
<th>Financial services</th>
<th>Workflow services</th>
<th>Precision ag</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Market size</strong></td>
<td>N/A</td>
<td>~$375b in US farm debt</td>
<td>N/A</td>
<td>$2b (2013 US)</td>
</tr>
<tr>
<td><strong>Growth</strong></td>
<td>Stable</td>
<td>Stable</td>
<td>High</td>
<td>Projected US growth: 14% CAGR through 2018</td>
</tr>
<tr>
<td><strong>Fragmentation</strong></td>
<td>High</td>
<td>Dependent on submarket</td>
<td>Dependent on submarket</td>
<td>High</td>
</tr>
<tr>
<td><strong>Relevant segmentation</strong></td>
<td>Retailer-based agronomists, Independents</td>
<td>Financing: Equipment, crop inputs, farmland, OEMs, government, cooperatives, commercial banks, Insurance: Crop vs. other lines</td>
<td>Example submarkets (wide range of functionalities offered): Enterprise resource planning, Farm management, Point of sale, Research databases</td>
<td>High</td>
</tr>
<tr>
<td><strong>Competitor examples</strong></td>
<td>Traditional retailers: CPS, Growmark, Helena, Independent certified crop advisers</td>
<td>American Farm Mortgage, Farm Credit System, John Deere Financial, MPCI program, Rabobank, USDA/FSA</td>
<td>AGDATA, FarmWorks, Flowfinity, Granular, Sage ERP, SST, SureHarvest</td>
<td>Examples (highly fragmented): aWhere, Climate Corp., FarmersEdge, FieldScripts, John Deere, Tremble</td>
</tr>
<tr>
<td><strong>Commodity exposure</strong></td>
<td><img src="#" alt="Low exposure" /></td>
<td><img src="#" alt="Low exposure" /></td>
<td><img src="#" alt="Low exposure" /></td>
<td><img src="#" alt="Low exposure" /></td>
</tr>
<tr>
<td><strong>Industry issues</strong></td>
<td>Leveraging technology and data, Affiliation with retailers, High fragmentation</td>
<td>Depressed farmer incomes and land values, Reduced investment environment</td>
<td>Increasing complexity of farm operations, Fragmented supplier landscape, Integration with precision agriculture offerings</td>
<td>Depressed farmer incomes, Proving ROI, Need for user friendly interfaces and platforms, Fragmented market, Data/privacy issues</td>
</tr>
</tbody>
</table>

Source: EY-Parthenon internal materials; USDA; FCA Economic Report; Crop Life
Crop market value chain segmentation
Downstream market includes processing, trading, transportation and storage

<table>
<thead>
<tr>
<th>Ag services market (downstream services)</th>
<th>Processors</th>
<th>Trading/logistics</th>
<th>Storage assets</th>
<th>Transportation assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Market size</td>
<td>N/A</td>
<td>Global commodity trader market size: &gt;$1t</td>
<td>Grain storage market size: ~10b bushels in storage</td>
<td>Market size: 30% of all ton-miles moved on US transportation system</td>
</tr>
<tr>
<td>Growth</td>
<td>Dependent on submarket</td>
<td>Stable</td>
<td>Stable</td>
<td>Dependent on submarket</td>
</tr>
<tr>
<td>Fragmentation</td>
<td>Moderate</td>
<td>Low</td>
<td>Medium</td>
<td>Medium high</td>
</tr>
<tr>
<td>Relevant segmentation</td>
<td></td>
<td>Charterers, Commodity traders, Logistics providers, Freight forwarders</td>
<td>Fertilizer storage, Grain storage, Grain elevators, Post-frame construction, Silos</td>
<td>Barge, Containers (for specialty ag), Dry bulk (grains), Ports/terminals, Rail, Tankers, Truck</td>
</tr>
<tr>
<td>Competitor examples</td>
<td>Archer Daniels Midland Company, Bunge, Cargill, Dreyfus, Olam, Valero</td>
<td>Agrex, Cargill, CME, Tumac Commodities</td>
<td>Bunge, Cargill, Conagra, Farmland Industries</td>
<td>CSX Corporation, DryShips, Ingram Barge</td>
</tr>
<tr>
<td>Commodity exposure</td>
<td>![Low exposure]</td>
<td>![Low exposure]</td>
<td>![Low exposure]</td>
<td>![Low exposure]</td>
</tr>
<tr>
<td>Industry issues</td>
<td>Future biofuel policies, Volatile farm to product spreads, Continued focus on nutrition, sustainability, organic foods and traceability</td>
<td>Uncertain US trade policies, Integration with processing, storage and transportation, Increasing role of technology, automation and logistics services</td>
<td>Record high production years and historically high stocks</td>
<td>Overcapacity remains in shipping market, Congested infrastructure, Continued investment in capacity expansion and logistics optimization</td>
</tr>
</tbody>
</table>

Source: EY-Parthenon internal materials, USDA, CNBC, Thomson Reuters, Pollock
About EY-Parthenon

Parthenon joined Ernst & Young LLP on August 29, 2014. EY-Parthenon is a strategy consultancy, committed to bringing unconventional yet pragmatic thinking together with our clients’ smarts to deliver actionable strategies for real impact in today’s complex business landscape. Innovation has become a necessary ingredient for sustained success. Critical to unlocking opportunities is EY-Parthenon’s ideal balance of strengths – specialized experience with broad executional capabilities – to help you optimize your portfolio of businesses, uncover industry insights to make investment decisions, find effective paths for strategic growth opportunities and make acquisitions more rewarding. Our proven methodologies along with a progressive spirit can deliver intelligent services for our clients, amplify the impact of our strategies and make us the global advisor of choice for business leaders.

About EY-Parthenon’s Private Equity practice

Private equity firms are constantly looking to make better-informed investment decisions, improve portfolio company performance and increase realized value. Over the last 15 years, our private equity strategy professionals have worked with clients to address these challenges utilizing our deep sector knowledge and efficient and flexible processes to complete more than 2,500 strategic due diligence projects around the globe. We have a winning combination for the entire range of private equity strategy and transaction needs.

Contact us

Sean Levy
Managing Director
EY-Parthenon, Ernst & Young LLP
sean.levy@parthenon.ey.com
+1 202 327 7386

Greg Miller
Managing Director
EY-Parthenon, Ernst & Young LLP
greg.miller@parthenon.ey.com
+1 617 478 4668

Rob Dongoski
Partner
Global Agribusiness Leader
Ernst & Young LLP
rob.dongoski@ey.com
+1 312 879 4352

Follow us for regular updates

Twitter | @EY_Parthenon
Facebook | facebook.com/EYParthenon/
LinkedIn | linkedin.com/company/ey-parthenon

www.parthenon.ey.com
About EY

EY is a global leader in assurance, tax, transaction and advisory services. The insights and quality services we deliver help build trust and confidence in the capital markets and in economies the world over. We develop outstanding leaders who team to deliver on our promises to all of our stakeholders. In so doing, we play a critical role in building a better working world for our people, for our clients and for our communities.

EY refers to the global organization, and may refer to one or more, of the member firms of Ernst & Young Global Limited, each of which is a separate legal entity. Ernst & Young Global Limited, a UK company limited by guarantee, does not provide services to clients.

EY-Parthenon refers to the combined group of Ernst & Young LLP and other EY member firm professionals providing strategy services worldwide. For more information about our organization, please visit parthenon.ey.com.

Ernst & Young LLP is a client-serving member firm of Ernst & Young Global Limited operating in the US.

© 2017 Ernst & Young LLP.
All Rights Reserved.

This material has been prepared for general informational purposes only and is not intended to be relied upon as accounting, tax or other professional advice. Please refer to your advisors for specific advice.