Agricultural and Construction Equipment 2014 Outlook

Federal Reserve Bank of Chicago
2013 Outlook Symposium
December 6, 2013
Agenda

• Agricultural Machinery
  – Current Situation
  – Demand Factors
  – 2014 Outlook

• Construction and Mining Machinery
  – Current Situation
  – Demand Factors
  – 2014 Outlook

• Impact of Emission Regulations

• Questions and Comments
Agricultural Equipment Markets
Current Situation

• Commodity Prices Down But Relatively High Level
• Government Direct Payments Slowing
• Ethanol – Will Use 30% Of Corn Crop
• Land Prices Continue Up
• Farmers Have Strong Balance Sheets
WW Food Price Index

Source: United Nations
Government payments to farm producers, 2003-2013F

$ billion

- All other payments 3/
- Conservation payments
- Payments that are a function of crop prices 2/
- Fixed payments 1/

F = Forecast.
1/ Production flexibility contract payments and direct payments whereby payment rates are fixed by legislation.
2/ Counter-cyclical payments, average crop revenue election (ACRE) payments, loan deficiency payments, marketing loan gains, and certificate exchange gains in which commodity payment rates vary with market prices. The certificate exchange program ended after making payments for the 2009 crop year.
3/ All other payments include disaster relief payments, tobacco transition payments, and dairy program payments.

Data as of November 26, 2013.
Net farm income and net cash income, 2000-2013F

$ billion

Net cash income

Net farm income

F = Forecast.
Data as of November 26, 2013.
Retail Sales Farm Tractors vs. Net Farm Income
(units)

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Farm Tractor Sales vs. Housing Starts

(units)

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Farm Tractor Inventories
(units)

- < 40 hp
- 40 < 100 hp
- 100+ hp

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Farm Equipment Inventory to Sales Ratio
(units)

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# Estimated U.S. Farm Equipment Sales

(units)

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>Forecast 2013</th>
<th>% Chg 13 vs. 12</th>
<th>Forecast 2014</th>
<th>% Chg 14 vs. 13</th>
</tr>
</thead>
<tbody>
<tr>
<td>2WD Farm Tractors</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt; 40 hp</td>
<td>83,999</td>
<td>84,594</td>
<td>92,207</td>
<td>96,697</td>
<td>4.9%</td>
<td>104,000</td>
<td>8%</td>
</tr>
<tr>
<td>40 &lt; 100 hp</td>
<td>48,318</td>
<td>50,036</td>
<td>54,276</td>
<td>54,128</td>
<td>-0.3%</td>
<td>53,000</td>
<td>-2%</td>
</tr>
<tr>
<td>100 hp &gt;</td>
<td>26,971</td>
<td>27,427</td>
<td>31,732</td>
<td>30,583</td>
<td>-3.6%</td>
<td>27,525</td>
<td>-10%</td>
</tr>
<tr>
<td>Total 2WD</td>
<td>159,288</td>
<td>162,057</td>
<td>178,215</td>
<td>181,408</td>
<td>1.8%</td>
<td>184,525</td>
<td>2%</td>
</tr>
<tr>
<td>4 WD Farm Tractors</td>
<td>5,784</td>
<td>5,977</td>
<td>6,935</td>
<td>6,810</td>
<td>-1.8%</td>
<td>5,789</td>
<td>-15%</td>
</tr>
<tr>
<td>Total Tractors Sold</td>
<td>165,072</td>
<td>168,034</td>
<td>185,150</td>
<td>188,218</td>
<td>1.7%</td>
<td>190,313</td>
<td>1%</td>
</tr>
<tr>
<td>Combines</td>
<td>10,678</td>
<td>9,898</td>
<td>9,820</td>
<td>10,049</td>
<td>2.3%</td>
<td>9,547</td>
<td>-5%</td>
</tr>
</tbody>
</table>

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Construction And Mining Machinery Markets
Construction and Mining Machinery

Current Situation

- Housing starts improving slowly
- Non-residential markets gaining for 3 consecutive years
- Heavy – publicly funded projects down
- Mining orders plunged
- Commodity prices down slightly
- Mining companies curtailed investments, rebuilding balance sheets
- Rental companies buying heavily
- Highway legislation extended, to be flat to down slightly
U.S. Construction Put-In-Place

(millions of dollars)
Construction Employment

![Graph showing construction employment trends from 2003 to 2013.]
Privately Owned Housing Starts: 1-Unit Structures (HOUST1F)
Source: U.S. Department of Commerce: Census Bureau

Shaded areas indicate US recessions.
2013 research.stlouisfed.org
Highway Construction
(same slide used 2 years ago)

• Political football, extended in 2 year increments.
• Portrayed as Jobs Bill
• Current Program Funded at 2009 Level
  – MAP-21 (consolidates 5 Federal programs)
Mineral Commodities

Stabilized at a High Level
Finished Goods Inventories, Machinery

Value of Manufacturers' Inventories, by Stage of Fabrication: Finished Goods for Durable Goods Industries: Machinery (A33SF1)
Source: U.S. Department of Commerce: Census Bureau

Shaded areas indicate US recessions. 2013 research.stlouisfed.org

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Caterpillar WW Dealer Retails
(% Change, 3 Month MOV)
Caterpillar Monthly North America Dealer Retail Sales
(% change not including mining)
North America Dealer Retails

Caterpillar vs. Komatsu
## Estimated U.S. Construction Machinery Market

(units)

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Asphalt Pavers</td>
<td>1,051</td>
<td>1,167</td>
<td>1,285</td>
<td>1,275</td>
<td>-0.8%</td>
<td>1,340</td>
<td>5.1%</td>
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<tr>
<td>Compactors</td>
<td>3,945</td>
<td>3,900</td>
<td>4,115</td>
<td>4,315</td>
<td>4.9%</td>
<td>4,530</td>
<td>5.0%</td>
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<tr>
<td>Cranes</td>
<td>632</td>
<td>1,255</td>
<td>1,660</td>
<td>1,830</td>
<td>10.2%</td>
<td>2,050</td>
<td>12.0%</td>
</tr>
<tr>
<td>Crawler Tractors</td>
<td>4,400</td>
<td>5,010</td>
<td>5,440</td>
<td>5,700</td>
<td>4.8%</td>
<td>6,100</td>
<td>7.0%</td>
</tr>
<tr>
<td>Hydraulic Excavators</td>
<td>21,285</td>
<td>32,120</td>
<td>38,175</td>
<td>39,000</td>
<td>2.2%</td>
<td>42,300</td>
<td>8.5%</td>
</tr>
<tr>
<td>Loader Backhoes</td>
<td>12,050</td>
<td>14,435</td>
<td>15,025</td>
<td>16,000</td>
<td>6.5%</td>
<td>15,200</td>
<td>-5.0%</td>
</tr>
<tr>
<td>Motor Graders</td>
<td>1,800</td>
<td>2,100</td>
<td>2,495</td>
<td>2,695</td>
<td>8.0%</td>
<td>2,800</td>
<td>3.9%</td>
</tr>
<tr>
<td>Haulers - Rigid</td>
<td>775</td>
<td>780</td>
<td>910</td>
<td>895</td>
<td>-1.6%</td>
<td>850</td>
<td>-5.0%</td>
</tr>
<tr>
<td>Haulers - Articulated</td>
<td>850</td>
<td>1,800</td>
<td>2,000</td>
<td>1,300</td>
<td>-35.0%</td>
<td>1,500</td>
<td>15.4%</td>
</tr>
<tr>
<td>RT Forklifts</td>
<td>3,748</td>
<td>9,400</td>
<td>14,110</td>
<td>15,090</td>
<td>6.9%</td>
<td>15,800</td>
<td>4.7%</td>
</tr>
<tr>
<td>Rubber Tracked Loaders</td>
<td>11,300</td>
<td>19,000</td>
<td>21,000</td>
<td>23,200</td>
<td>10.5%</td>
<td>25,500</td>
<td>9.9%</td>
</tr>
<tr>
<td>Skid Steer Loaders</td>
<td>30,030</td>
<td>35,006</td>
<td>40,019</td>
<td>41,027</td>
<td>2.5%</td>
<td>45,000</td>
<td>9.7%</td>
</tr>
<tr>
<td>Wheel Loaders</td>
<td>10,880</td>
<td>16,265</td>
<td>18,500</td>
<td>19,000</td>
<td>2.7%</td>
<td>21,000</td>
<td>10.5%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>102,746</td>
<td>142,238</td>
<td>164,734</td>
<td>171,327</td>
<td>4.0%</td>
<td>183,970</td>
<td>7.4%</td>
</tr>
</tbody>
</table>
Rentals

• Becoming more “normal” to rent
• Tier IV concerns will favor rent vs. buy
• Fleets getting larger
• Rental companies must deal with issue of higher residual value risk
Rental Revenue vs. Construction Employment

[Graph showing the relationship between rental revenue and construction employment from 1984 to 2014. The graph indicates a positive correlation between the two, with peaks and troughs that align with economic cycles.]
Construction Employment vs. Rental Revenues
($ per employee)
Impact of Emission Regulations On Equipment Demand

Regulated Markets vs. Less Regulated Markets
Off-Highway Emissions Evolution.

Tier 1/Stage 1 (1996)

Tier 2/Stage II (2001)

Tier 3/Stage IIIA (2005)

Tier 4 Interim/Stage IIIB (2011)

Tier 4 Final/Stage IV (2014)
1996 Tier I Diesel Engine
The New “Normal”

MANUFACTURER

INVENTORY

RENTAL FLEET

CUSTOMER

Traditional Distributor

Rental Company

NEW

USED

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## Importance for residual values

<table>
<thead>
<tr>
<th>Estimated Annual Exports of Used Machines To Tier III Markets</th>
<th>Quantity of Machines (units)</th>
<th>Estimated Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Estimated U.S. Construction Equipment Park</td>
<td>3,000,000</td>
<td></td>
</tr>
<tr>
<td>Estimated Used Fleet Sold Annually</td>
<td>600,000 to 900,000</td>
<td>20% to 30%</td>
</tr>
<tr>
<td>Estimated Fleet Sold Annually at Auctions</td>
<td>180,000 to 270,000</td>
<td>30%</td>
</tr>
<tr>
<td>Auctioned Machines Sold to Tier III markets</td>
<td>18,000 to 27,000</td>
<td>10%</td>
</tr>
</tbody>
</table>
Equipment Seller’s Dilemma
Value of Used Machine Same No Matter What Tier Level

Price paid by emerging market customer

New Chinese Machines Less Than Used Machines From No.America

24% residual
30% residual

Tier III  Tier IVi  Tier IV final

Year 1  Year 2  Year 3  Year 4  Year 5  Year 6  Year 7

20000  40000  60000  80000 100000 120000 140000

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Equipment Demand

• 2012 demand pulled forward 15%
• 2013 demand lowered by 10% or more
• 2014 forward, regulations will shave 10% to 15% off “normal” peak
• Section 179 Uncertainty
Export Market Absence = Increased Supply of Tier IV Equipped Machines

Forecast Construction Spending and Equipment Consumption
3 Scenarios
Beyond 2012

• World markets will split along emission regulation lines. Silo markets.
• Expect used equipment residual values to drop in North America.
• Rentals will become the main channel-to-market for many types of equipment.
• Electrics will become the new green.
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