Structural transformation of the US farm sector

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Most U.S. farms are small, but large farms account for most production

Distribution of farms, value of production, and land operated by farm type, 2015

Percent of U.S. farms, acres operated, or value of production

- Small family farms: 89.7%
- Midsize family farms: 6.1%
- Large-scale family farms: 6.1%
- Nonfamily farms: 2.9%
- Other farms: 1.3%

Number of farms

- Small family farms: 23.0%
- Midsize family farms: 48.4%
- Large-scale family farms: 42.4%
- Nonfamily farms: 10.6%
- Other farms: 22.8%

Value of production

Profitable farms exist across all sizes, but their share increases with sales.

Farms by operating profit margin (OPM) and farm type, 2015

Percent of farms in each group

<table>
<thead>
<tr>
<th>Category</th>
<th>Small family farms</th>
<th>Moderate family farms</th>
<th>Midsize family farms</th>
<th>Large family farms</th>
<th>Very large</th>
<th>Nonfamily farms</th>
<th>All farms</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retirement</td>
<td>21.9</td>
<td>6.7</td>
<td>14.2</td>
<td>5.9</td>
<td>13.9</td>
<td>31.6</td>
<td>18.5</td>
</tr>
<tr>
<td>Nonfarm-occupation</td>
<td>63.6</td>
<td>73.6</td>
<td>77.7</td>
<td>58.5</td>
<td>46.0</td>
<td>31.6</td>
<td>69.1</td>
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<tr>
<td>Low-sales</td>
<td>77.7</td>
<td>5.2</td>
<td>13.5</td>
<td>22.9</td>
<td>24.1</td>
<td>11.2</td>
<td>4.9</td>
</tr>
<tr>
<td>Moderate-sales</td>
<td>58.5</td>
<td>17.2</td>
<td>36.6</td>
<td>24.1</td>
<td>26.4</td>
<td>3.6</td>
<td>4.9</td>
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<tr>
<td>Midsize family farms</td>
<td></td>
<td></td>
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<tr>
<td>Large</td>
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<td>Very large</td>
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<tr>
<td>Nonfamily farms</td>
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<tr>
<td>All farms</td>
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</tbody>
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Operating profit margin (OPM) = 100% X (net farm income + interest paid – charge for operator and unpaid labor – charge for management) ÷ gross farm income.

What do we mean by structural transformation?

• Shifts of production to larger farms
• Increasing organizational complexity in farming
  – Multi-farm firms
  – Multiple ownership entities in farm firms
  – Farms in contractual networks
  – Farm tasks performed by non-farm firms
  – Value-added activities on farms
• Increasing differentiation of farm commodities in response to consumer demand for product attributes or production processes
Farm size: Consider the distribution of US crop farms

It is highly skewed

Most acreage, and most crop production, are on farms with at least 1,000 acres (405 hectares).

Median = 50
Mean = 261
Midpoint = 1,296

(The midpoint is a median, where half of all acres are on larger farms, and half on smaller.)
The size distribution is getting more skewed as land shifts to larger farms

Mean farm size increases a little, as total cropland falls 13% and number of farms with cropland falls 23%.

Number of very large and very small farms increase, offset by fewer farms in the middle.

But the midpoint doubles, as cropland shifts to larger farms.

Source: Economic Research Service calculations, from USDA census of agriculture
In crops, the shift to larger farms is persistent. It is also ubiquitous, across almost all field crops as well as fruit and vegetable crops, and across almost all states.

Half of all harvested acres are on farms that harvest more than the midpoint, and half are on farms that harvest less.

Source: ERS calculations, from unpublished census of agriculture records.
But shifts in livestock are more episodic, and sometimes radical

Note dramatic changes in hogs and pigs, egg layers, and milk cows

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<tbody>
<tr>
<td><strong>Sales Midpoint: number of head sold or removed in year</strong></td>
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<tr>
<td>Broilers</td>
<td>300,000</td>
<td>480,000</td>
<td>681,600</td>
<td>680,000</td>
</tr>
<tr>
<td>Fed cattle</td>
<td>17,532</td>
<td>38,000</td>
<td>35,000</td>
<td>38,369</td>
</tr>
<tr>
<td>Hogs and pigs</td>
<td>1,200</td>
<td>11,000</td>
<td>30,000</td>
<td>40,000</td>
</tr>
<tr>
<td><strong>Inventory Midpoint: Number of head in herd/flock</strong></td>
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<tr>
<td>Beef cows</td>
<td>89</td>
<td>100</td>
<td>110</td>
<td>110</td>
</tr>
<tr>
<td>Egg layers</td>
<td>117,839</td>
<td>300,000</td>
<td>872,500</td>
<td>925,975</td>
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<tr>
<td>Milk cows</td>
<td>80</td>
<td>140</td>
<td>570</td>
<td>900</td>
</tr>
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</table>

Source: ERS calculations from National Agricultural Statistics Service, Census of Agriculture
Integrator: operates sow and cropping farms, a feed mill, and a trucking business; Provides contract growers with pigs & feed; uses marketing contracts to sell hogs to packers.

Contract growers (30).
Raise hogs under production contracts with integrator. Uses manure for their own corn and soybeans. Markets crops to local processor and elevators.

Many firms: linked by contracts; perform specialized farm tasks; some are farms, some are not.

Contracts cover about 40% of US ag production, with particularly high coverage of hogs and poultry.

Most large US farms lease equipment, hire custom service providers, use labor contractors, rent land.

Custom Service Providers
Spraying and manure application for contract growers; Harvesting for contract growers; Sow management services for the integrator; Linked to growers and integrator through contracts.
US livestock production now commonly takes place within a network of contracts.
Summing up:

U.S. farm consolidation is ...

• Long-term, ongoing and widespread

• Drivers
  – Technology: better & faster equipment, pest management practices
  – Organizational innovations: specialization of production into stages (hogs), via contracts, via hiring custom services
Further Thoughts? Comments?

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Chart of Note: