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The Status and Changing Face of

OHIO AGRICULTURE

Summary of Ohio Farm Trends 1997–2017

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EXECUTIVE SUMMARY

Ohio has always been an important agricultural state. In 2017, Ohio was ranked in the top 10 states for production of grains, nursery and greenhouse crops, hogs and pigs, and horses. Ohio farms raised farm commodities worth over $9 billion. A recent study estimated that Ohio's combined food and agriculture sectors generated almost $50 billion in gross product and roughly 900,000 jobs in 2015 (DiCarolis et al. 2017).

While agriculture remains a significant economic engine and dominates the rural landscape, the first two decades of the 21st century have been a time of rapid change for farmers in Ohio. This report pulls together data from several sources to summarize state-level trends in farm numbers, farm sales, land use, workforce characteristics, and economic performance between 1997 and 2017. Because of the diversity of Ohio agriculture—a state that contains farms of nearly every size, type, and configuration—we explore how these changes have affected different types of farms in different ways.

We also explore how economic and technological forces of change have contributed to the rapid restructuring of Ohio's farm sector. Like the rest of the nation, most farm output in the state now comes from a relatively small number of large commercial family farm operations that continually need to expand their scale to survive on persistent small profit margins. At the same time, Ohio has a growing and thriving population of relatively small (usually part-time) farms. Meanwhile, operators of mid-sized family farms who do not have significant off-farm income are disappearing from the landscape. These changes are actively re-shaping and changing the local economies and social structure of Ohio's rural communities.

TRENDS IN FARM NUMBERS

Farm Numbers and Land Used for Different Crops

- The number of farms in Ohio has remained relatively stable over the last 20 years. There have been significant changes, however, in the size and composition of farms and the types of commodities produced.
- Corn and soybeans are the most economically important crops raised in Ohio. Over the last 20 years, acres of soybeans harvested increased by more than 20%, but fewer farms raised soybean (indicating that soybean production has become more consolidated on fewer large farms). The number of farmers raising corn dropped by almost 40% over the same period, while acres of corn harvested declined by about 4%.
- Hay and haylage are the most widely raised crops on Ohio farms, and acres of hay harvested remained relatively stable over the last 20 years.
- Small grain production declined rapidly since 1997, with acres of oats and barley, wheat, and vegetables and orchards decreasing by 76%, 54%, and 33%, respectively. The number of farms raising oats and wheat declined by nearly 80% and 60%, respectively.
- The net effect of these changes has been an agricultural landscape with less diverse crop rotations. Over the last 20 years, the number of corn and soybean farms raising wheat, oats, barley, or perennial forages has steadily declined.

Trends in Livestock Production

- Beef remains the most widely raised type of livestock in Ohio, with more than 24,000 cow-calf farms in business in 2017. This represents a 10% drop since 1997. Over the same period, cattle inventories declined by roughly 5%.
- Milk cow numbers rose slowly between 1997 and 2017, but as the average size of herds increased the number of dairy farms dropped by over 40%. Stagnant milk prices between 2016 and 2019 contributed to unusually rapid rates of farm exit in recent years.
- Poultry production is expanding in Ohio. Over the same time period, the number of farms raising poultry more than doubled. The number of broilers raised nearly tripled, while the number of laying hens rose more slowly.
- Similarly, the number of hogs raised in Ohio increased by over 50% between 1997 and 2017. However, the number of farms that raise hogs commercially dropped by more than 25%.

- Growth in the broiler and hog industry is tied to rapid expansion in the integrated poultry and hog sectors. Ohio integrators include companies that are part of global supply chains as well as firms that operate and market regionally.

Farm Number Trends by Farm Size

- While farm numbers have been relatively stable overall, the distribution of farms by size category has been changing.

- In terms of acres, the average farm in Ohio got smaller over the last 20 years, declining by 4% to 179 acres in 2017. Small farms proliferated, while mid-sized farms operating between 50 and 499 acres declined rapidly, dropping from 57% to 44% of all Ohio farms. The proportion of farms with over 500 acres remained relatively stable (at roughly 9% of all farms).

- In terms of sales, over half (53%) of all Ohio farm operators had gross farm sales under $10,000 in 2017, but these farms were responsible for only 1% of total sales. Another third of farms had sales between $10,000 and $99,999, and 8% reported sales between $100,000 and $249,999.

- A relatively small share of Ohio farms (5%) had sales over $250,000, with these operations producing 80% of all farm sales in the state. The largest 2% of farms (with sales over $500,000) were responsible for over two-thirds of all farm output in 2017 (up from just 36% of the total in 1997).

Entry and Exit Rates in Ohio Agriculture

- The net change in farm numbers in Ohio is a reflection of much larger flows of farms exiting from the sector, balanced by the number of farm entrants who are starting new operations.

- The estimated farm exit rate averaged about 11% annually in the early 2000s; this dropped to roughly 8% in the 2010s.

- The rate of new farm entry declined slowly between 1997 and 2012, but increased between 2012 and 2017 (to 11%, higher than exit rates) resulting in a net increase in the number of farms.

THE OHIO FARM WORKFORCE

Age, Gender, and Years of Experience

- The farming community is getting older. The average age of operators increased from 54 to 58 years old over the last 15 years. Farmers over 55 increased from 46% of farm operators in 2002 to 62% in 2017. Just 7% of farm operators in Ohio are under 35 years old.

- The last 15 years saw a dramatic increase in the proportion of women who identify as the principal farm operator, rising from 10% in 2002 to 21% in 2017.

- The United States Department of Agriculture defines a “beginning farmer” as an individual who has been farming 10 years or less, regardless of age. In 2017, 24% of Ohio farmers were considered beginning farmers.

Off-farm Income and Employment

- Off-farm employment remains an important livelihood strategy for Ohio farm households, with over 60% of principal operators working off-farm in 2017. Two-thirds of those with off-farm work had jobs involving 200 or more days working off the farm.

- From 1997–2017, reliance on full-time work dropped slightly in Ohio, from 48% to 41%.

- In 2012, income from farming represented less than 25% of the total household’s income on most Ohio farms (68%). Meanwhile, about 12% of farm households depended on farm income for 75 to 100% of their total household income.

Use of Hired Farm Labor

- In 2017, 21% of Ohio farms used any hired workers (8% hired full-time workers) and 6% used contract laborers. The share of farms using hired help decreased slightly between 1997 and 2017.

- Dairy farms are the most reliant on hired labor, with half reporting hired labor expenses. Roughly a third of hog and vegetable farms paid hired workers, and a quarter of fruit, poultry, and grain farms had some hired worker expenses in 2017.

- Farms in Ohio that employed farm workers reported spending an average of $37,752 on hired labor expenses in 2017. Adjusting for inflation, the average expenses on farms using hired labor increased by nearly 60% between 1997 and 2017. Average expenses on contract workers nearly tripled from $6,223 in 1997 to $16,765 in 2017.

Business Enterprise Type

- Most Ohio farms were independent single-family farm businesses, with 87% organized as sole proprietorships, 6% organized as partnerships, and 4% organized as corporations (most of which were family corporations).

- Over the last 20 years, partnerships have become less common, while family corporations and other enterprise types grew.

LAND USE

- Ohio has almost 14 million acres devoted to agriculture. Between 1997 and 2017, land used for farming decreased by almost 800,000 acres (-5%), with the majority of the decrease occurring between 1997 and 2011. In recent years, estimates of land in farming increased.

- Over the long-term, urban sprawl and changes in the farm economy have led to a loss of farmland. Since 1970, 3.7 million acres of Ohio farmland were removed from production.

- The average size of farms increased from 149 to 196 acres between 1970 and 1992 but has declined slowly since then to 179 acres in 2018.

Land Tenure

- Roughly 60% of Ohio's farmland is operated by the owner. The rest is operated by someone who rents the land. There has been a slight increase in the share of owner-operated farmland over the last 10 years.

- Most farms in Ohio are full-owner farms (who own all of the land they operate), and the share of full-owner farms increased from 62% in 1997 to 70% of all farms in 2017.

- Part-owner farms are operations that own a portion and rent the rest of their farmland. While the share of farms that are part-owners has declined slightly in recent years, part-owner farmers operate the bulk (75%) of the state's harvested cropland and generate the majority of gross farm sales.

ECONOMICS

Agricultural Sales

- Sales of all Ohio agricultural products totaled $9.3 billion in 2017. Over the last 20 years, farm sales increased 24% for crops and 37% for livestock and livestock products (adjusting for inflation).

- Farm sales in Ohio peaked in 2012, reflecting high commodity prices at that time. As commodity prices declined, so did the value of agricultural product sales. Between 2012 and 2017, the inflation adjusted value of sales of all agricultural products dropped by 13%. Sales of crops declined by 23%, while sales of livestock and livestock products increased by 6%.

- Until the 1950s, vegetable and wheat sales often exceeded sales of corn and soybeans. Since 1975, corn and soy sales have soared and are now three to seven times higher than specialty crops and wheat.

- Dairy products were the most important source of livestock sales in Ohio from the 1940s through 2012. Beginning in 2006, sales of poultry and eggs expanded rapidly and are generally higher than dairy receipts in most years.

- Sales of hogs and beef have been significant sources of farm income since the early 1900s. Hog and beef sales slowly declined from the 1960s through the early 2000s but have expanded again since 2002.

Net Farm Income

- In 2017, Ohio farm households generated gross farm receipts of $10.1 billion and spent a total of $7.8 billion on production expenses, resulting in total net farm cash income of $2.3 billion. Over the last 20 years, adjusting for inflation, gross farm sales rose by 34%, but since expenses increased more rapidly (38%), net farm income grew by only 19%.

- Net farm cash income (for the sector as a whole) dropped to nearly zero in 2016 but has risen slowly in the last two years. Receipts from sales of agricultural commodities are the primary source of cash income, but government farm program payments to farmers account for most of the rest of cash income, particularly during periods of farm financial stress.

- Over half of Ohio's farms reported net losses in 2017. Most small farms with sales under $10,000 have negative cash income. About a quarter of farms with sales between $10,000 and $249,999 experienced negative net cash returns. Larger farms (with sales over $250,000) were generally profitable, but 8–12% of this group had net losses in 2017.

- The year 2017 also saw relatively high numbers of farms with negative net cash income, a situation that likely has worsened over the last two years as farm prices and farm income have fallen due to declining commodity prices associated with trade tensions and other factors.

Cost-Price Squeeze

- Since the 1970s, the prices farmers receive for their products have increased much more slowly than the prices they pay for their inputs. This "cost-price squeeze" has forced farmers to increase the scale of their operations and improve productivity in order to maintain the same level of net income. This trend accounts for much of the high level of financial stress many Ohio farms have experienced in recent years.

Value of Land and Buildings

- The value of farm real estate almost doubled in Ohio over the last 20 years (adjusting for inflation). In 2017, cropland sold for an average of $5,780 per acre, while pasture ground was worth $3,050 per acre.

- After steady growth since the 1990s, Ohio's farmland value declined (in real terms) between 2015 and 2017. Evidence suggests that land prices have increased again in 2018 and 2019.

Debt-to-Asset Ratios

- In 2017, Ohio farms had a debt-to-asset ratio of 11.6%, up 4.2% from 2004. Tighter profit margins and reduced net income contributed to this rise. The overall debt-to-asset ratio on Ohio farms is slightly lower than the national average.

Returns to Assets and Equity

- Between 2004 and 2017, net returns on farm assets on Ohio farms was positive for all years except for three periods (2004/5, 2008/9, and 2016/17). The rate of return on equity was negative in seven out of the last 14 years. While most Ohio farms are solvent, persistent low returns on assets and equity has been below 2% during the each of the last 15 years. Low profitability rates are related to the prevalence of small hobby farms in Ohio.

Conclusions

Ohio's agricultural landscape is diverse, both in terms of the types of crops and livestock produced and the demographics of the producers themselves. As efforts across Ohio mobilize to assist farmers with the current financial downturn, it is helpful to situate current conditions within long-term trends in Ohio agriculture and to understand the unique context and issues different types of farmers face.

The 1980s farm crisis was defined as a "crisis of debt." Today's farm crisis can be defined as a "crisis of income," as farm prices and farm income decline while the cost of inputs remain stable and high. The current farm crisis of income is not only shaped by tariffs and weather, but is also affected by long-term major changes in the structure of agriculture and consolidation in the larger agri-food supply chain.

Ohio farmers experienced dramatic shifts in weather, markets, and supply chain disruptions in 2019 and 2020. While comparable official data for recent years are not yet available, efforts to help producers survive this agricultural downturn will benefit from analyzing the current situation within the context of long-term trends and appreciating the diversity of Ohio's farms.

INTRODUCTION

In recent years, farmers in Ohio have faced growing challenges from changes in markets, depressed commodity prices, extreme weather, and urban development pressure.

In 2019, a harsh winter and historically high spring and early summer rainfall led to damage in hay fields, delays in the planting of major crops, and inability to harvest early season crops in a timely manner. Tariffs on exported farm products have led to declines in soybean and corn prices and contributed to uncertainty about the long-term security of global trade relationships. Growing attention to harmful algal blooms and other water quality challenges has led to calls for farmers to reduce runoff of nutrients and pathogens from farm fields. In 2020, the COVID-19 pandemic has disrupted supply chains and left many farmers facing low prices and challenges finding markets for their products.

While the pressures faced by Ohio farmers have been unusually harsh in the last year or two, it can be helpful to situate the current stress in the context of long-term trends in farming and land use in the state. This report summarizes data from multiple public sources and examines farm trends from 1997–2017 with a focus on farm numbers, agricultural land use, livestock, farm labor, and the general economic conditions in Ohio's farm economy. To get a broader understanding of these trends, we examine data going back to the 1940s in some instances, and where possible, we situate Ohio within the context of national trends.

On the one hand, the picture painted by these data demonstrates the resiliency and survival skills of many Ohio farm operators and their families. The output of almost every major commodity has continued to grow over the last 20 years, and the economic importance of agriculture and the food processing sector remains critical to the state. Nearly all farms are still independent family-run businesses who own most of their land, provide the majority of the labor, and make the important management decisions on a day-to-day basis.

The data also highlight the diversity of Ohio agriculture—a state that contains farms of nearly every size, type, and configuration. While farm commodities (corn, soybeans, poultry, and beef) sold to conventional markets dominate the sector, Amish farms, farmers who raise organic crops or livestock, and farms raising specialty crops sold directly to consumers or local institutions are an important and growing part of our agricultural sector.

On the other hand, these data highlight the ways that economic and technological forces have led to the rapid restructuring of our farm and food sectors. Most farm output comes from a relatively small number of large commercial family farm operations who continually need to expand their scale to survive on persistently small profit margins. While the state also has a growing and thriving population of relatively small (usually part-time) farms, the operators of mid-sized farms who do not have significant off-farm income are disappearing from the landscape. These changes are actively re-shaping and changing the local economies and social structure of Ohio's rural communities.

Current farm stress is also shaped by major changes in recent decades in the structure of agriculture and the larger agri-food supply chain. Efforts to help producers survive this agricultural downturn will benefit from analyzing the current situation within this long-term story as it provides important context for building approaches to long-term resilience among Ohio's farm population.

TRENDS IN FARM NUMBERS

Over the last two decades, the number of farms in Ohio has remained relatively stable (Figure 1 and Table 1), with a decline of only 1% between 1997 and 2017. In the most recent five years, farm numbers in the state actually increased by 3.1%.

Farm Numbers by Farm Type

Trends in overall farm numbers can disguise changes in the composition of farms over time. The number of farms producing a wide range of commodities is also listed in Table 1 and Figure 1. While farm numbers overall are stable, there were significant changes in the types of commodities produced on Ohio farms over the last 20 years.

Since 1997, the number of farms producing oats and wheat in Ohio declined by nearly 80% and 60%, respectively. Over the same time period, significant drops were also seen in the number of farms raising milk cows (-42%), corn (-38%), soybeans (-13%), and cow-calf beef operations (-10%).

Meanwhile, the number of farms producing poultry (layers and broilers) increased by 150% and the number of vegetable and orchard crop farms grew by 14% and 5%, respectively. The number of farms producing hay and haylage has remained relatively stable (increasing by just 1% between 2002 and 2017).

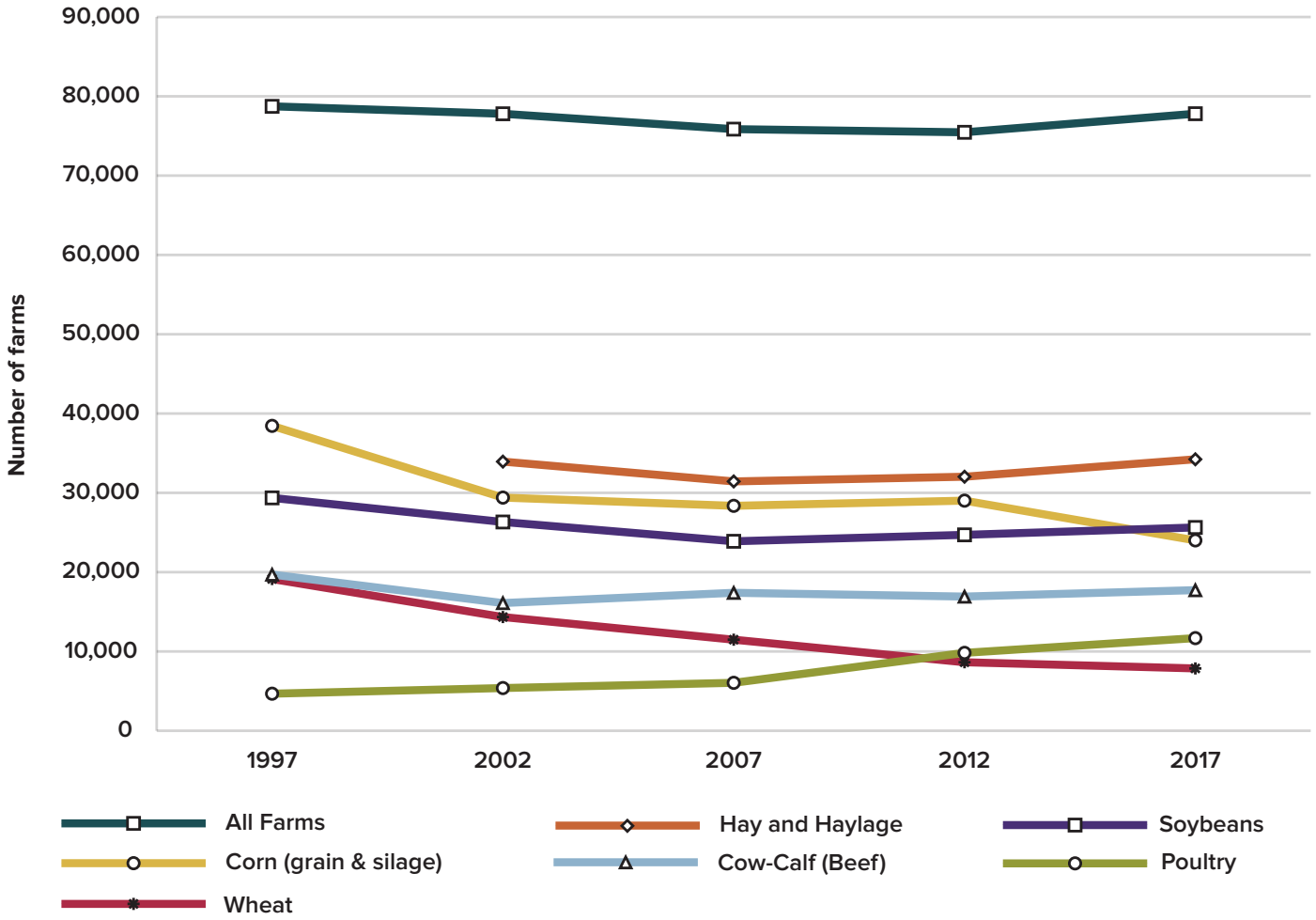
These trends reflect consolidation in some sectors wherein a smaller number of farms produce larger amounts of key commodities (like corn, soybeans, and milk). Growth in poultry farming results from both expansion in existing production and the entry of new farms into commercial broiler or egg laying production.

Table 1. Number of Farms Raising Different Crops and Livestock (Top 10)

	1997	2002	2007	2012	2017	% change 1997-2017	% change 2012-2017
All Farms	78,737	77,797	75,861	75,462	77,805	-1.2	3.1
Hay and Haylage	n.a.	33,939	31,440	32,032	34,230	n.a.	6.9
Soybeans	29,365	26,327	23,892	24,704	25,636	-12.7	3.8
Corn (grain & silage)	38,446	29,401	28,364	29,017	24,005	-37.6	-17.3
Cow-Calf (beef)	19,696	16,104	17,398	16,922	17,733	-10.0	4.8
Poultry (layers & broilers)	4,675	5,387	6,046	9,823	11,682	149.9	18.9
Wheat	19,134	14,340	11,485	8,639	7,861	-58.9	-9.0
Dairy	5,714	4,754	3,650	4,008	3,346	-41.4	-16.5
Vegetables	2,566	2,323	2,873	2,440	2,916	13.6	19.5
Orchard Crops	1,709	1,654	1,462	1,406	1,801	5.4	28.1
Oats	6,186	3,865	2,800	3,160	1,276	-79.4	-59.6

n.a. = not available

Figure 1. Number of Farms in Ohio (Overall) and Number Producing Top Six Commodities



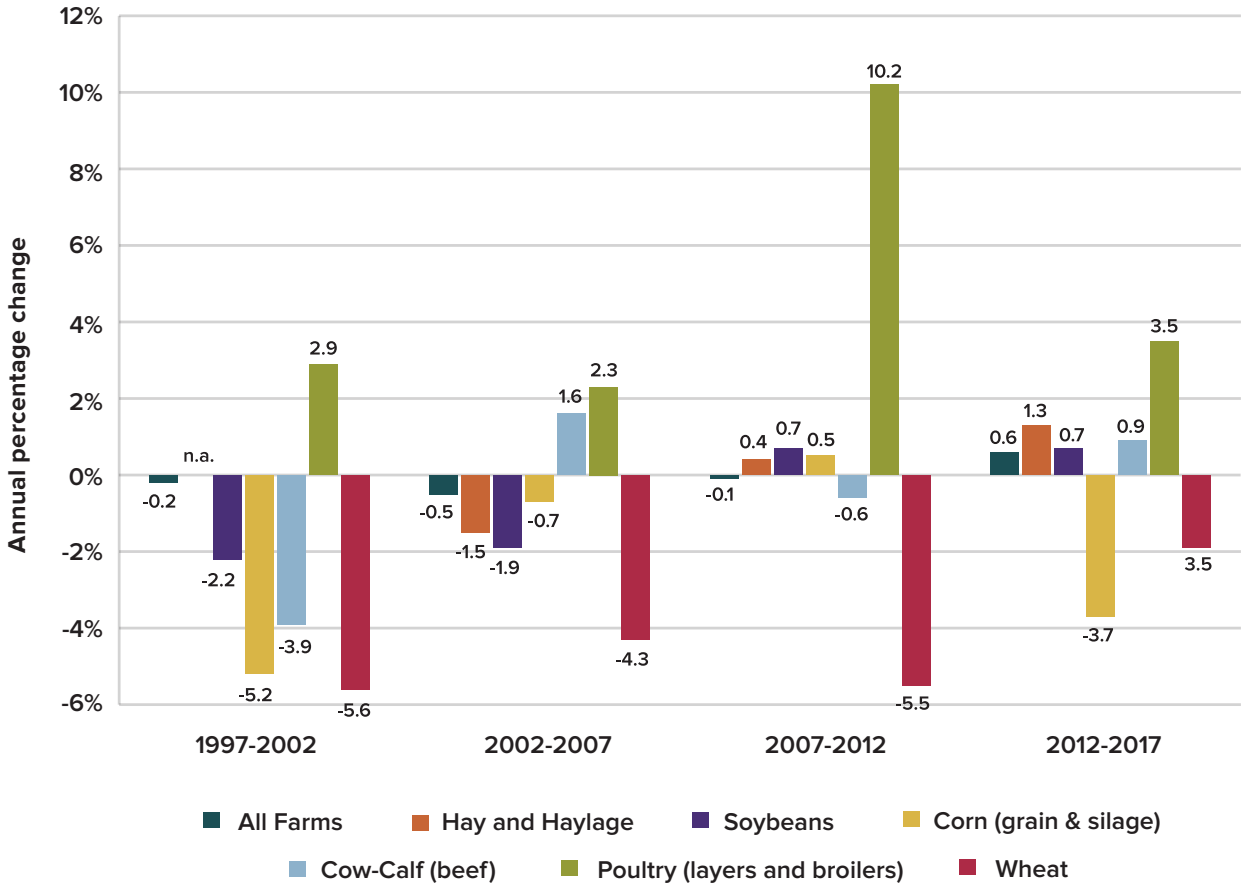
Producers of different commodities also experienced different rates of entry and exit in each of the five-year time periods between agricultural censuses since 1997. Figure 2 below shows the annualized percent of change in the number of Ohio farms by farm type between 1997 and 2017. Overall, the rate of change of farm numbers has been limited, with the highest rates of exit between 2002 and 2007 at 0.5% per year and with an entry of 0.6% per year between 2012 and 2017.

As seen in Figure 2, the rates of change in the number of farms raising the top six commodities vary. Poultry (layers and boilers) and wheat have experienced the most dramatic changes in the number of farms but in opposite directions. Poultry experienced a net gain every period with a peak in growth at 10% annually between 2007 and 2012, and at least 2% growth per year during the other time periods. Meanwhile, the number of wheat farms experienced a net loss each period, with two five-year periods experiencing more than 5% net losses per year (1997–2002 and 2007–2012).

The numbers of farms raising hay and haylage, soybeans, and cow-calf (beef) have followed similar patterns with losses in the late 1990s and early 2000s, followed by smaller net gains in the late 2000s and mid-2010s.

The number of corn farms declined most rapidly between 1997 and 2002 (-5% per year) and between 2012 and 2017 (-4% per year), though losses of corn farm numbers slowed between 2002 and 2012 (-1% per year) and actually grew by 0.5% per year between 2007 and 2012.

Figure 2. Annualized Percentage Change in the Number of Farms Raising Different Commodities in Ohio over Five-Year Census Periods



The Ohio State University College of Food, Agricultural, and Environmental Sciences

Farms by Major Farm Enterprise Type

While many Ohio farms produce multiple commodities, it can be revealing to examine trends in farms based on the particular commodities that generate most of their income. Table 2 highlights how different types of farms have fared over the last 15 years in Ohio. During this time period, the number of farms who rely on the sale of poultry/eggs and sheep/goats increased by more than 70%, while those selling fruits and vegetables, hay, and beef calves all increased by more than 20%. By contrast, the number of farms who rely on the sale of tobacco, dairy, and greenhouse/nursery crops all declined between 27 and 97%, and the number of cattle feedlots dropped by over 83%. In general, the number of farms that rely on the sale of crops increased by 5%, while those that rely on the sale of livestock declined by 7% since 2002. These trends reversed slightly in the last 5 years (with all types of livestock farms increasing, except dairy farms).

Table 2. Number of Farms by Farm Type, 2002-2017 (Based on a Farm's Most Important Source of Income)

FARM TYPE: Based on commodity that produces most farm income	2002	2007	2012	2017	% change 2002–2017	% change 2012–2017
(number of farms)						
CROP FARMS						
Oilseeds and Grains	24,104	24,492	25,392	24,881	3.2	-2.0
Hay	14,633	16,533	18,425	17,953	22.7	-2.6
Fruits and Vegetables	2,459	2,672	2,112	3,037	23.5	43.8
Greenhouse/Nursery	2,955	2,115	1,680	1,733	-41.4	3.2
Tobacco	1,088	241	109	29	-97.3	-73.4
(subtotal crops)	*45,239*	*46,053*	*47,718*	*47,633*	*5.3*	-0.2
LIVESTOCK FARMS						
Beef (cow/calf)	10,526	12,297	11,445	12,978	23.3	13.4
Sheep and Goats	1,932	2,227	2,188	3,123	61.6	42.7
Dairy	3,771	2,955	2,850	2,171	-42.4	-23.8
Poultry and Eggs	1,000	1,650	1,472	1,704	70.4	15.8
Hogs and Pigs	1,781	1,594	1,170	1,309	-26.5	11.9
Cattle Feedlots	4,191	1,890	548	695	-83.4	26.8
Other Livestock or Mixed Livestock	9,357	7,195	8,071	8,192	-12.5	1.5
(subtotal livestock)	*32,558*	*29,808*	*27,744*	*30,172*	*-7.3*	*8.8*

Farm Number Trends by Farm Size

Overall trends in farm numbers can disguise a reshuffling in the relative numbers of different sized farms in Ohio. Table 3 presents information about the number and percentage of Ohio farms in different size categories (measured both by acres and volume of farm sales) between 1997 and 2017.

In 2017, the average farm size in Ohio was 179 acres, 8 acres *fewer* than in 1997 (a 4.3% decrease). This decline is largely a reflection of the growth in the number of farms with less than 50 acres (almost half of all farms in 2017). Meanwhile, mid-sized farms between 50 and 499 acres declined over this 20-year period, dropping from 57% to 44% of all Ohio farms. The number of farms with over 500 acres remained relatively stable (at roughly 8–9% of all farms).

Trends in farm numbers by farm sales class presents a similar overall story. In 2017, over half (53%) of farm operators had gross farm sales under $10,000 (which the USDA also classifies as a hobby farm), while 33.3% of farmers had sales between $10,000 and $99,999, and 8.3% had sales ranging from $100,000 to $249,999. (The two latter sales categories reflect more serious commercial activity, but are still categorized by the USDA as "small farms.")

A relatively small proportion of Ohio farms (5%) had sales over $250,000 in 2017, but their operations produced 80% of all farm sales in the state. The largest 2% of farms (with sales over $500,000) were responsible for over two-thirds of all farm output in 2017. At the other end of the spectrum, farms with sales under $10,000 represented 53.1% of all farms, but generated only 1% of total Ohio farm sales.

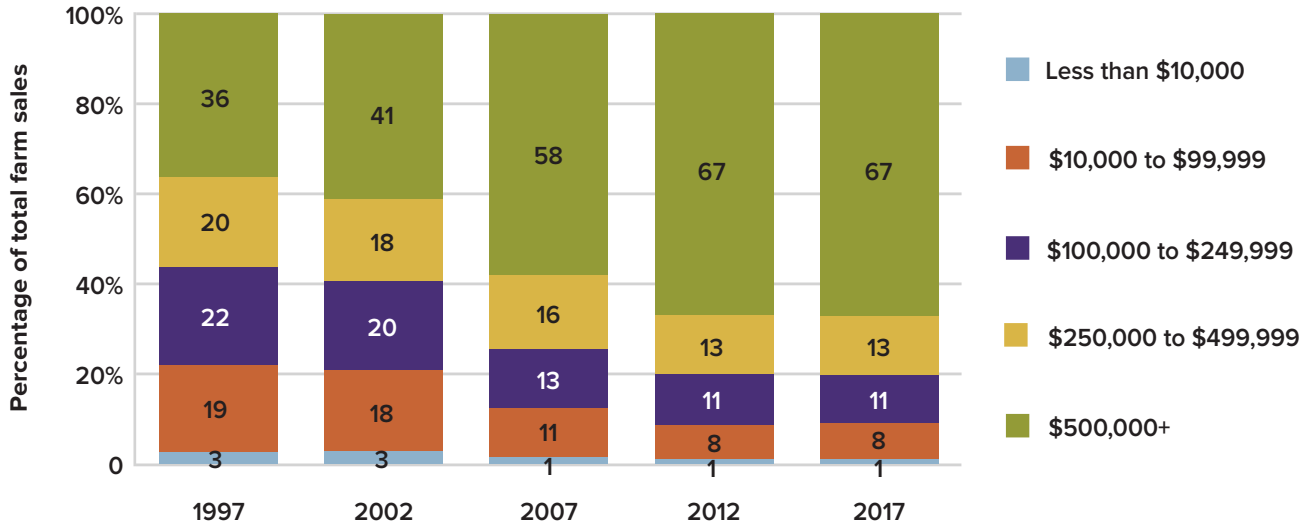
The concentration of production among large farms has increased through time while the importance of medium-scale farms has decreased (Figure 3). In 1997, mid-sized farms with sales between $100,000 and $499,999 produced over 42% of all farm output. By 2017, these farms in combination produced just 24% of total sales. Correspondingly, over the last 20 years, farm operations with sales of $500,000 or more have greatly gained in importance. They went from generating 36% of the farm sales in 1997 to generating 67% of the sales in 2017 (a 30.8 percentage point increase). Meanwhile, farms with sales under $100,000 became economically less important to the farm sector, with their contributions to total sales in Ohio dropping from 22% to just 9% over the same time period.

Notably, the relative importance of farms in each sales category have changed little in the last five years (2012–2017). This may suggest changes in market or policy conditions that have allowed mid-sized farms to regain their footing. However, given concerns in agricultural communities and the popular press about a resurgence of farm exits among mid-sized commercial operations in 2018 and 2019, the slowdown in farm exits between 2012 and 2017 may have been a temporary pause.

Table 3. Changes in Average Farm Size and Distribution of Ohio Farms by Acres and Sales Classes

	1997	2002	2007	2012	2017	Net Change (in %)	
						1997–2017	2012–2017
Average Farm Size (acres)	187	187	184	185	179	-4.3	-3.2
Acreage Class (% of all farm operators)							
1 to 49 acres	34.4	39.5	42.4	41.1	47.4	13.0	6.3
50 to 179 acres	38.5	35.3	34.0	35.6	30.4	-8.0	-5.2
180 to 499 acres	18.4	16.2	14.8	15.0	13.6	-4.8	-1.4
500 to 999 acres	5.8	5.5	5.3	4.9	5.1	-0.7	0.2
1,000 to 1,999 acres	2.3	2.7	2.7	2.4	2.5	0.2	0.1
2,000 acres or more	0.6	0.8	0.9	1.0	1.0	0.4	0.0
Farm Sales Class (% of all farm operators)							
Less than $10,000	55.7	52.6	56.3	60.0	53.1	-2.6	-6.9
$10,000 to $99,999	26.5	27.1	27.8	28.6	33.3	6.8	4.7
$100,000 to $249,999	7.8	9.3	7.5	6.9	8.3	-0.5	-0.5
$250,000 to $499,999	4.4	4.9	4.3	2.9	3.5	-0.9	0.6
$500,000 or more	5.5	6.1	4.1	1.5	1.8	-3.7	-0.3
Percent of Total Farm Sales by Farm Size (sales class)							
Less than $10,000	2.5	2.7	1.4	0.9	1.1	-1.4	0.2
$10,000 to $99,999	19.4	18.0	11.1	7.7	8.0	-11.4	0.3
$100,000 to $249,999	21.8	19.8	13.1	11.3	10.6	-11.3	-0.7
$250,000 to $499,999	20.0	18.3	16.3	13.1	13.2	-6.8	0.1
$500,000 or more	36.3	41.2	58.1	67.1	67.1	30.8	0.0

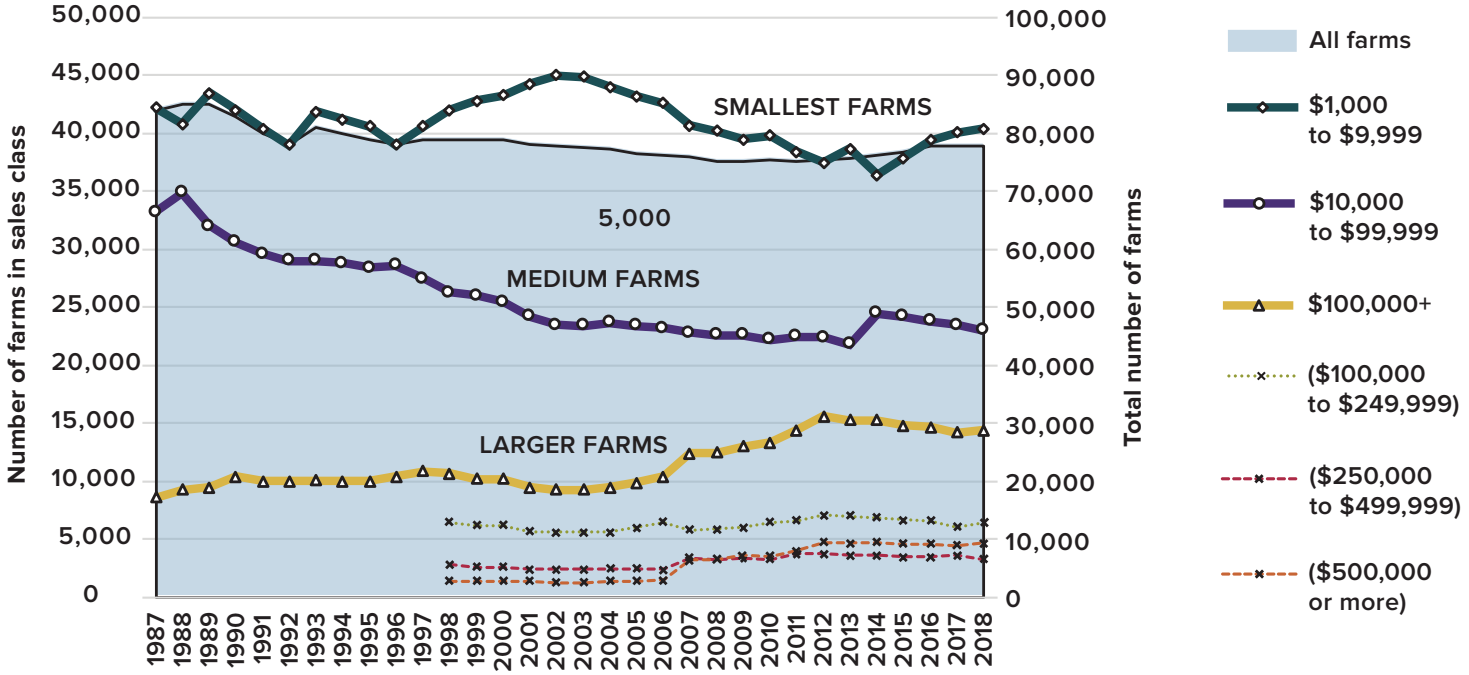
Figure 3. Percentage of Total Farm Sales by Farm Size (Sales Class)



While Agricultural Census data provides the most authoritative estimate every five years, the National Agricultural Statistics Service (NASS) also makes annual estimates of farm numbers in each state. A longer time series based on these NASS data shows similar trends in Ohio toward a farm sector with bimodal distribution in which mid-sized farms become less common compared to smaller and larger operations.

Using NASS data, Figure 4 illustrates how the number of small farms (sales <$10,000) did not change much over the last 30 years in Ohio, while the number of medium-sized farms (sales between $10,000 and 99,000) dropped significantly over the same time period. The number of large farms (sales over $100,000) increased by 50% since 1987, with the most rapid growth occurring on farms with gross sales exceeding $500,000. Since 2015, the number of small farms in Ohio has increased significantly, while the number of large and medium-sized farms has declined slightly.

Figure 4. Trends in Ohio Farm Numbers, by Sales Class, 1987–2018

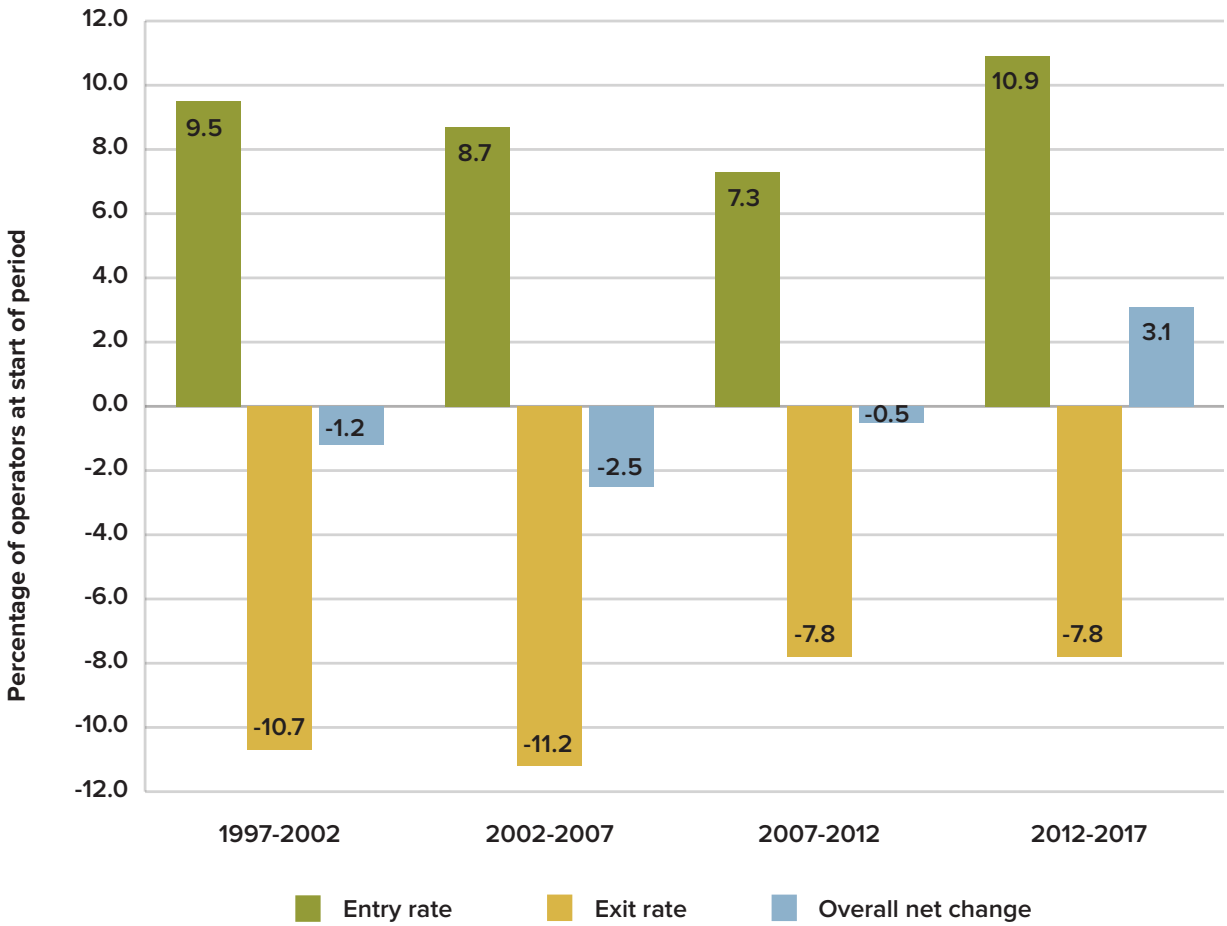


ENTRY AND EXIT RATES IN OHIO AGRICULTURE

The net change in farm numbers in Ohio is the result of a much larger flow of farms exiting from the sector, balanced by farm entrants who are starting new operations. The Census of Agriculture asks farmers how long they have been on their current farm. We can use this information to calculate the number of "new entrants" (people who were not farming five years earlier), and then estimate the number of farms that must have exited from agriculture to produce the overall net changes we observe across census observations.

Figure 5 shows the estimated five-year rates of entry and exit and the overall net changes in farm numbers between 1997 and 2017. The rate of net decline in the number of Ohio farms slowed down between 2002 and 2012 (from -0.5 percentage point per year during the first census period to -0.1 percentage point per year during the second census period). Starting in 2012, there was a reverse in the trend with a net gain in the number of farms (+0.6 percentage point per year during the third census period). The slowing down in the loss of farms might be best explained by a slowing down of the exits out of the agricultural sector (-2.2 percentage points per year during the first census period and -1.6% percentage points per year during the second census period) as the annual rate of entry was somewhat stable (+1.7 percentage points per year in the first period and +1.5 percentage points per year in the second period). The net gain in farms between the last two census periods might be explained by the increase in the annual rate of entry (from +1.5 percentage points per year in the second period to 2.2 percentage points per year in the third period) as the rate of exit remained constant (-1.6 percentage points per year during the second and third periods).

Figure 5. Estimated Rate of Entry, Exit, and Net Change for Ohio Operators



FARM WORKFORCE

Information about the workforce helps us understand the human dimensions of these trends. The agricultural census is also a good source of data to track changes in the sociodemographic characteristics of farmers, farm families, and farm workers.

Age and Gender

Table 4 shows trends in the age and gender of primary operators on Ohio farms between 2002 and 2017.[1] Principal operators are the people who make most important day-to-day decisions on farms. Results suggest that the farming community is getting older, with the average age of operators increasing from 54 to 58 years old over the last 15 years. Farmers over 55 have increased from 46% of farm operators in 2002 to 62% in 2017. The relatively low entry of young people into agriculture is reflected in the fact that just 7.3% of farm operators are under 35 years old. The share of operators under 55 years old all declined over this period, with an acceleration of the loss of operators in the 45–54 year old category between 2012 and 2017.

While farm operators are getting older, the last 15 years has seen a dramatic increase in the proportion of women who identify as the principal farm operator. The proportion of women farmers increased from 10% in 2002 to 21% in 2017 and most of this increase occurred within the last five years.[2]

Table 4. Percentage of Principal Farm Operators in Ohio by Age and Gender, 2002–2017

	2002	2007	2012	2017	% change 2002–2017	% change 2012–2017
Average age of operator	53.8	55.7	56.8	57.7	7.2	1.6
Age						
Under 25 years old	1.0	0.5	0.6	0.5	-0.4	-0.1
25 to 34 years old	5.9	5.7	6.4	6.8	0.8	0.4
35 to 44 years old	20.0	13.7	11.7	12.1	-7.9	0.4
45 to 54 years old	27.6	28.2	24.4	18.6	-9.0	-5.8
55 to 64 years old	22.9	25.6	28.3	28.9	6.1	0.6
65 years old or more	22.7	26.4	28.7	33.1	10.4	4.5
Gender						
Male principal operator	90.2	88.0	88.5	79.3	-13.8	-10.9
Female principal operator	9.8	12.0	11.5	20.7	13.8	10.9

[1]Comparable data for 1997 are not available.
[2]Changes in census methodology that shifted from a focus on a single operator per farm to a method that captures information about the multiple operators that are often involved in farm decision making may account for some of this change. However, the data here reflected only the gender of the principal operator (the person identified on the census form as making most management decisons), so is an accurate accounting of female-led farms In the 2017 census, the terminology shifted from principal operator to primary principal operator.

Years of Experience

The USDA defines a "beginning farmer" as an individual who has been farming 10 years or less (regardless of age). Table 5 shows the number of years primary operators have been on their current farm in each of the last four censuses. In 2017, roughly three-quarters of farmers had been present on their farms for more than 10 years, meaning that 24% were considered beginning farmers. (Most beginning farmers had been on their farm between five and nine years). Between 2012 and 2017, the proportion of beginning farmers in Ohio rose (after reaching a low point in 2012).

Table 5. Percentage of Principal Operators by Years Operating Current Farm, 2002–2017

	2002	2007	2012	2017	% change 1997–2017	% change 2012–2017
2 years or less	3.1	3.2	2.9	4.5	1.4	1.6
3 or 4 years	6.4	5.5	4.4	6.4	0	2.0
5 to 9 years	16.5	14.6	12.7	13.0	-3.5	0.3
10 years or more	74.0	76.7	80.0	76.1	2.1	-3.9

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Off-farm Income and Employment

Table 6 shows the proportion of principal operators with and without off-farm employment. Off-farm employment remains an important livelihood strategy for farm households, with over 60% of principal operators working off-farm in 2017. Two-thirds of those with off-farm work had jobs involving 200 or more days working off the farm. Between 1997 and 2017, there was a slight shift toward less reliance on off-farm work (particularly full-time work) among Ohio farm operators. This may reflect the growing share of farm operators who are above retirement age.

Table 6. Percentage of Farms by Number of Days Worked Off-Farm by Principal Operator

	1997	2002	2007	2012	2017	% change 1997–2017	% change 2012–2017
None	35.0	39.8	32.9	36.7	38.8	3.8	2.1
Any	65.0	60.2	67.1	63.3	61.2	-3.8	-2.1
(Less than 200 days)	17.0	15.6	23.0	19.8	20.3	3.3	0.3
(200 or more days)	48.0	44.5	44.1	43.5	40.9	-7.0	-2.6

Another indicator of the importance of off-farm employment to Ohio farm families is reflected in a census question that asks farm operators to list their primary occupation. Table 7 shows that less than half of farmers (42%) consider farming to be their occupation. Over the last 20 years, this has seen little change.

Table 7. Percentage of Farms by Primary Occupation of Principal Operator

	1997	2002	2007	2012	2017	% change 1997–2017	% change 2012–2017
Farming	42.2	44.1	43.1	43.9	42.5	0.3	-1.4
Other	57.8	55.9	56.9	56.1	57.5	-0.3	1.4

Finally, Table 8 shows the proportion of total household income that came from farming between 2002 and 2012.[3] In 2012, income from farming represented less than 25% of the total household's income on most Ohio farms (68%). Meanwhile, about 12% of farm households depended on farm income for 75% to 100% of their total household income. Over the 10-year period from 2002 to 2012, the share of farm households who depend on farming for over half of their household income decreased slightly (from 13.5% to 12.1%).

Table 8. Percentage of Farms by Share of Principal Operator's Household Income from Farming, 2002–2012

	2002	2007	2012
Less than 25 percent	66.2	71.4	68.1
25 to 49 percent	10.8	9.2	9.6
50 to 74 percent	9.5	8.8	10.2
75 to 99 percent	5.8	6.0	6.8
100 percent	7.7	4.6	5.3

[3]The USDA did not report information on dependence on farm income at household level in 1997 or 2017.

Use of Hired Farm Labor

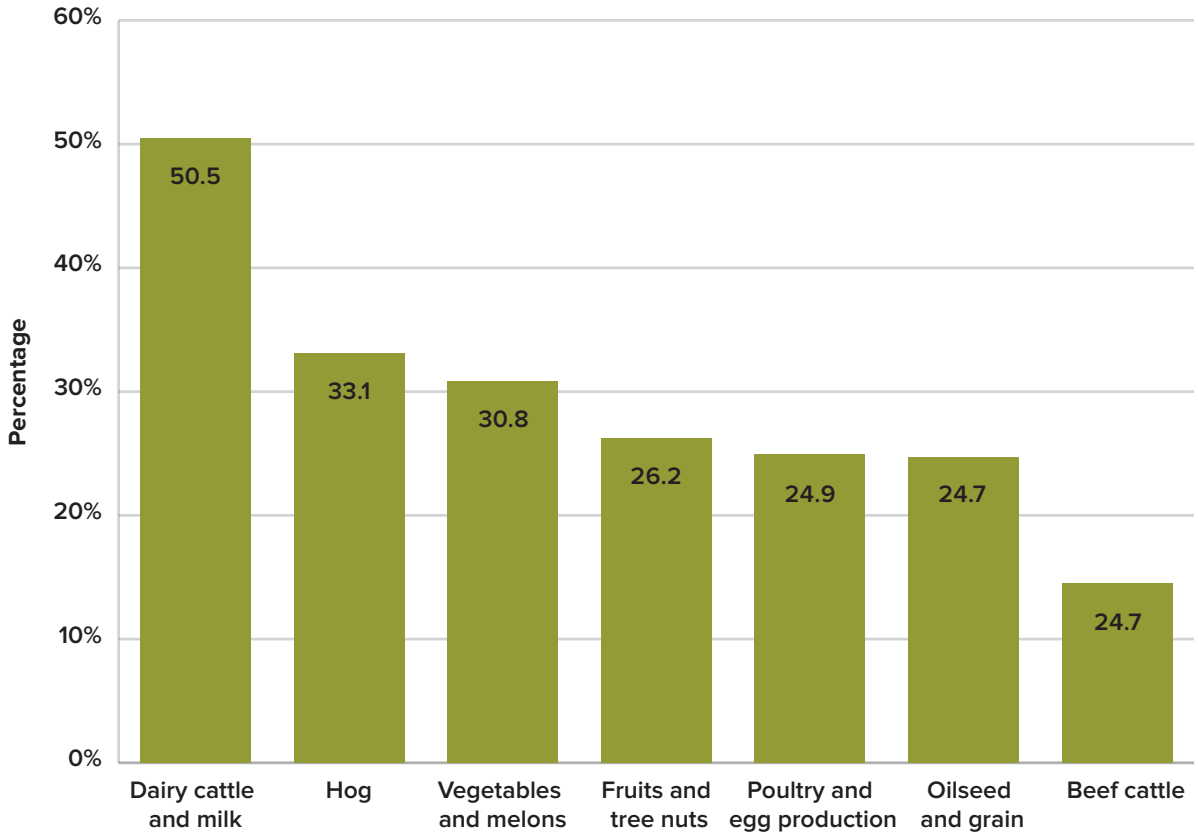
Table 9 shows the proportion of Ohio farm businesses using hired farmworkers or custom labor. In 2017, 21% of farms had any hired labor, and 8% hired full-time workers. The share of farms with both any hired labor and full-time hired workers decreased between 1997 and 2017 (respectively -5.5 percentage points and -2.0 percentage points). Another 6% of Ohio farmers used contract laborers (which are counted separately from hired workers). Contract labor may include custom work for field operations or farmer contracts with separate firms or individuals who hire farm workers directly. Farms in Ohio that employed any workers reported spending an average of $37,752 on hired labor expenses in 2017. Although the proportion of farms using hired workers declined between 1997 and 2017, after adjusting for inflation, the average expenses on farms using hired labor increased by $13,873 between 1997 and 2017. Similarly, among those farms who used contract workers, farmers spent $16,765 on contract labor in 2017. While the proportion of farms using contract workers was down slightly, average expenses on contract workers nearly tripled from $6,223 in 1997.

Table 9. Percentage of Ohio Farm Businesses With Hired Labor Expenses and Average Expenses

	1997	2002	2007	2012	2017	Net change 1997–2017	Net change 2012–2017
Farms with any hired labor (%)	26.3	21.3	18.5	22.6	20.8	-5.5	-1.8
Farms reporting any full-time hired workers (%)	10.3	6.7	6.5	8.8	8.3	-2.0	-0.5
Average expense per farm on hired labor ($)	23,878	29,798	34,644	33,044	37,752	13,874	4,708
Farms with contract labor (%)	6.4	5.9	4.9	5.7	6.2	0.27	0.5
Average expense per farm on contract labor ($)	6,223	8,048	12,062	13,188	16,765	10,542	3,577

Figure 6 shows the proportion of Ohio farms that employed farmworkers in 2017, broken down by farm type. Dairy farms are the most reliant on hired labor, with half reporting hired labor expenses. Roughly a third of hog and vegetable farms paid hired workers, and a quarter of fruit, poultry, and grain farms had some hired worker expenses. Beef farms are the least reliant on hired labor.

Figure 6. Percentage of Ohio Farms With Hired Labor in 2017, by Farm Enterprise Type



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Business Enterprise Type

Table 10 shows the distribution and changes in business structure and organization among Ohio farms between 1997 and 2017. Most farms were independent single-family farms, with 87% organized as individual or family sole proprietorships. About 6% were organized as partnerships, with 4% organized as corporations (most of which were family corporations). The remaining farms used other forms of organization, including co-ops, state-owned farms, or institutional farms. Over the last 20 years, partnerships have become less common, while family corporations and other enterprise types grew in prevalence.

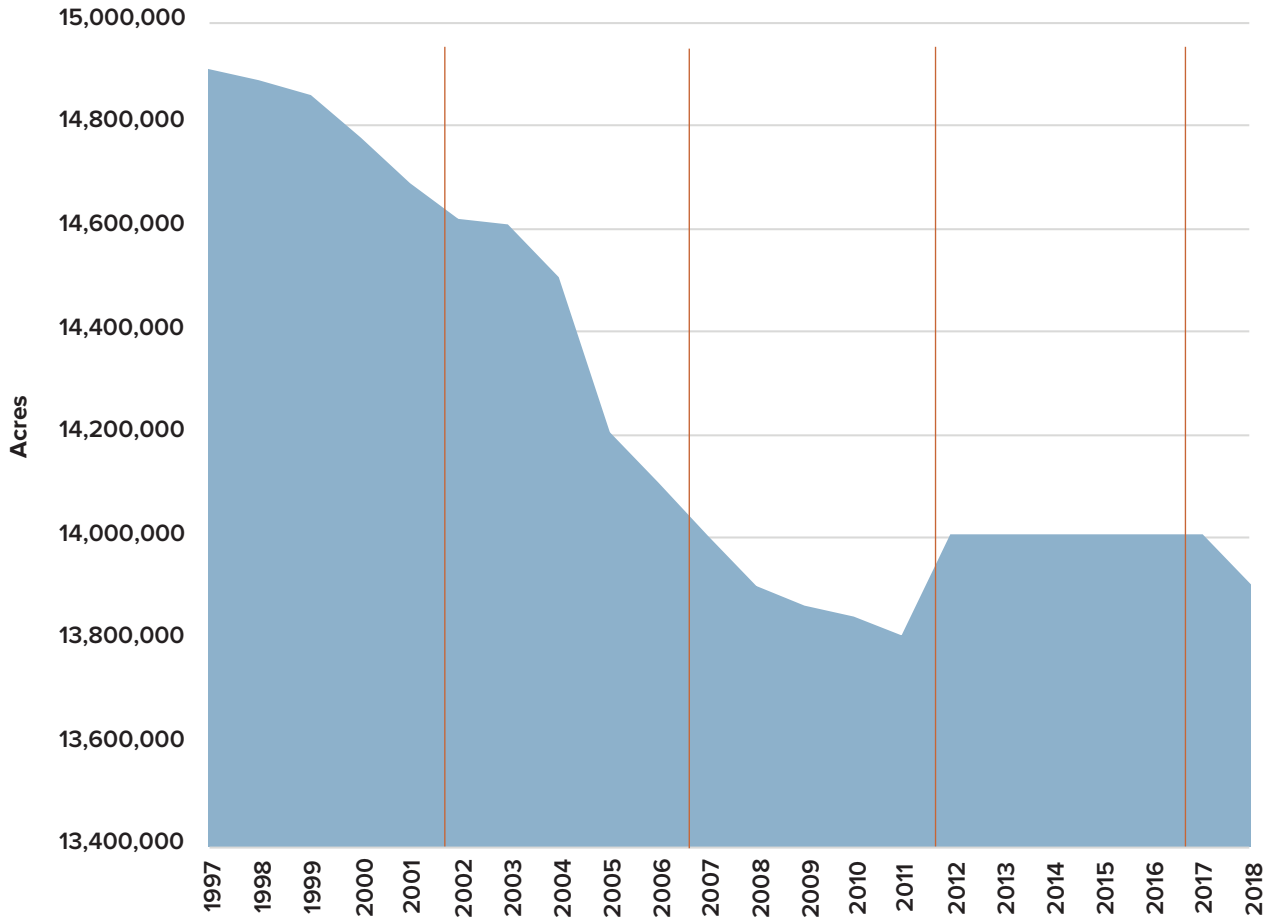
Table 10. Percentage of Ohio Farms by Business Organizational Type

	1997	2002	2007	2012	2017	% change 1997-2017	% change 2012-2017
Sole proprietorship (individual or family)	87.8	91.1	87.5	88.7	87.4	-0.4	-1.3
Partnership	8.9	5.9	7.6	6.1	6.2	-2.7	0.0
Corporation	2.8	2.4	3.9	3.7	4.3	1.5	0.6
(Family corporation)	*2.5*	*2.2*	*3.6*	*3.3*	*3.8*	1.3	0.5
(Non-family corporation)	*0.3*	*0.2*	*0.3*	*0.3*	*0.5*	0.2	0.1
Other (co-op, state, institutional)	0.6	0.7	1.0	1.5	2.2	1.6	0.6

LAND USE

Figure 7 shows the total acres of land in farming between 1997 and 2018.[4] In 2017, there were 13.97 million acres in farming. Between 1997 and 2017, the number of farmland acres decreased by 772,733 (-5.2%), with the majority of the decrease occurring between 1997 and 2011, and a slight rebound in recent years.

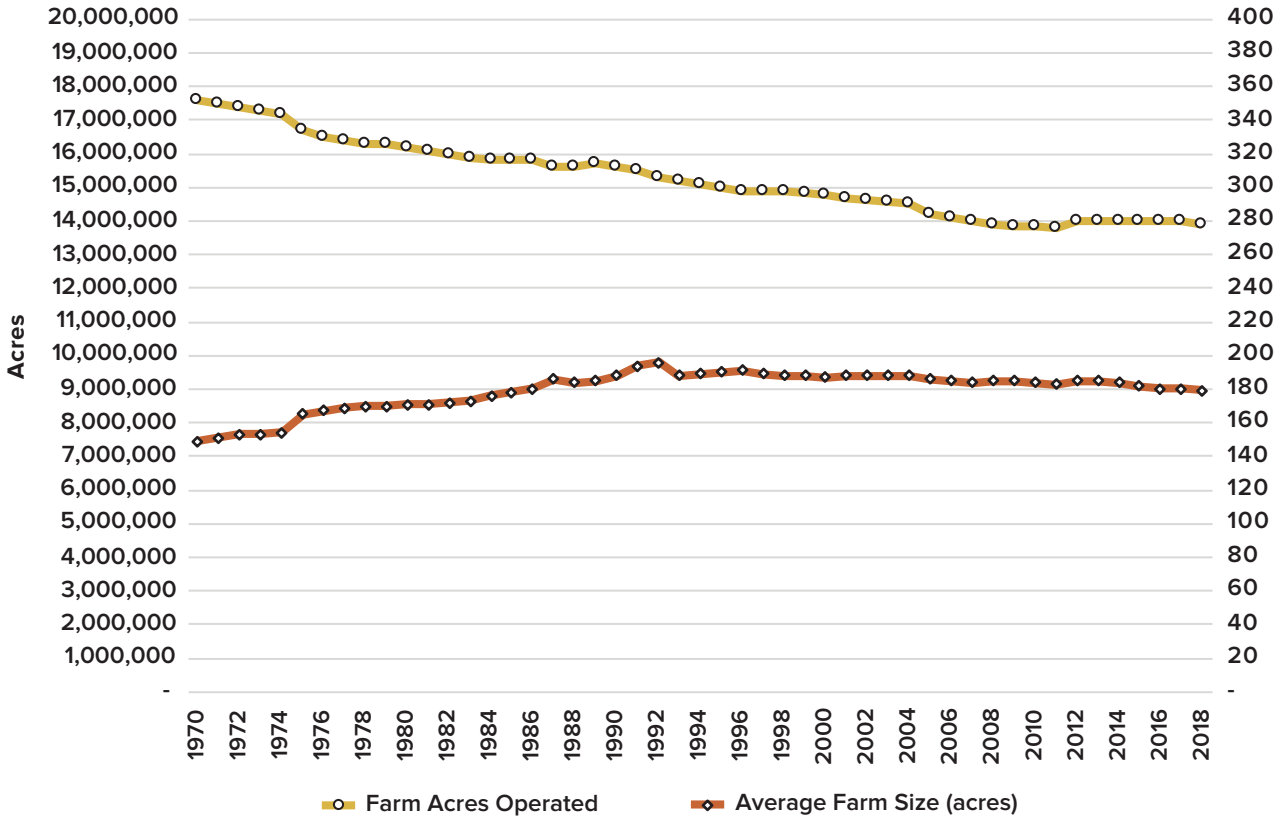
Figure 7. Total Acres of Land in Farming in Ohio, 1997–2018



For a longer historical perspective, Figure 8 shows trends since 1970 in farmland operated and average farm size in Ohio. Over the last 48 years, 3.7 million acres of farmland were removed from production. The average size of farm increased from 149 to 196 between 1970 and 1992, but has declined slowly since then to 179 in 2018.

[4] Here we report annual data from NASS since it provides a more nuanced picture and is consistent with Census of Agriculture numbers in census years (denoted by vertical red lines).

Figure 8. Farmland Trends in Ohio, 1970–2018



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Changes in Land Used for Different Crops

The number of acres where different crops were harvested between 1997 and 2017 in Ohio are shown in Table 11 and Figure 9.

In 2017, soybeans were the most prevalent crop harvested in Ohio (with 5.1 million acres), followed by corn for grain and silage (3.5 million acres), hay and haylage (1.1 million acres), and wheat (426,579 acres). Vegetables and orchard crops comprised just under 50,000 acres in 2017, with oats and barley providing most of the remaining harvested cropland (22,087 acres).

Over the last 20 years, soybeans have become much more important to Ohio agriculture (increasing harvested acres by more than 20%), while overall acres in corn production declined by 4%. Acres in corn production declined particularly quickly (-10%) between 2012 and 2017, as the relative economic returns from soybeans exceeded that of corn during that period. While soybean acres increased, the number of farms raising soybeans declined 12% over the last 20 years, indicating that soybean production has become more consolidated on fewer farms operating more acres.

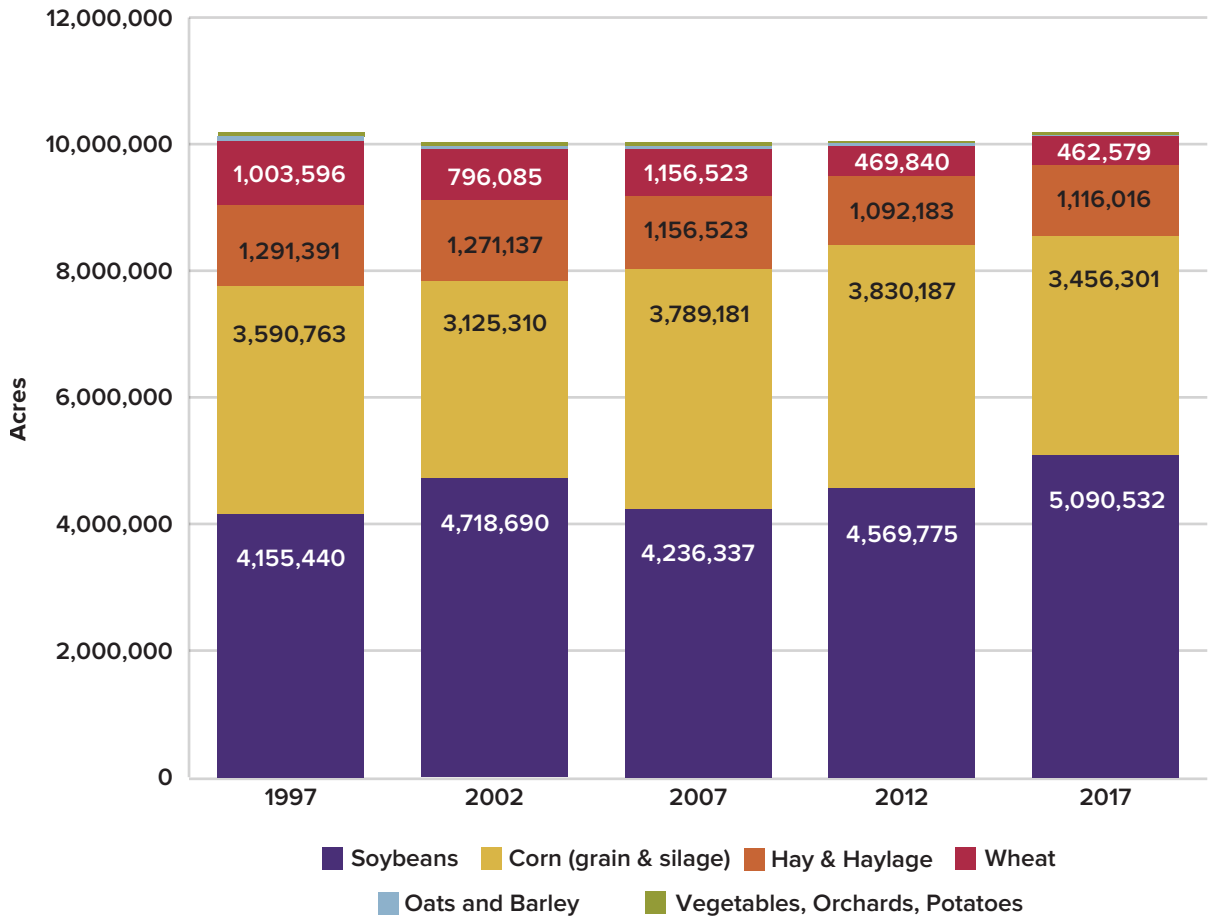
The production of most other crops declined significantly over the last 20 years, with acres of oats and barley, wheat, and vegetables and orchards decreasing by 76%, 54%, and 33% respectively. The net effect of these changes has been an agricultural landscape with less diverse crop rotations. Over the last 20 years, the number of corn and soybean farms raising wheat, oats, barley, or perennial forages has declined.

While the number of farms raising fruits, vegetable, and orchard crops increased in Ohio over the last 20 years (Table 1, above), the acres devoted to these crops declined by almost a third. This suggests that smaller acreage producers (including many Amish) have become a more dominant part of the specialty crop sector over this period of time.

Table 11. Acres Harvested, by Major Crop

						% change	
	1997	2002	2007	2012	2017	1997–2017	2012–2017
Soybeans	4,155,440	4,718,690	4,236,337	4,569,775	5,090,532	22.5	11.4
Corn (grain & silage)	3,590,763	3,125,310	3,789,181	3,830,187	3,456,301	-3.7	-9.8
Hay & Haylage	1,291,391	1,271,137	1,156,523	1,092,183	1,116,016	-13.6	2.2
Wheat	1,003,596	796,085	732,106	469,840	462,579	-53.9	-1.5
Oats and Barley	92,589	60,896	49,342	49,725	22,087	-76.1	-55.6
Vegetables, Orchards	69,328	63,551	60,324	47,114	46,393	-33.1	-1.5

Figure 9. Harvested Acres of Cropland in Ohio, by Major Crop Type



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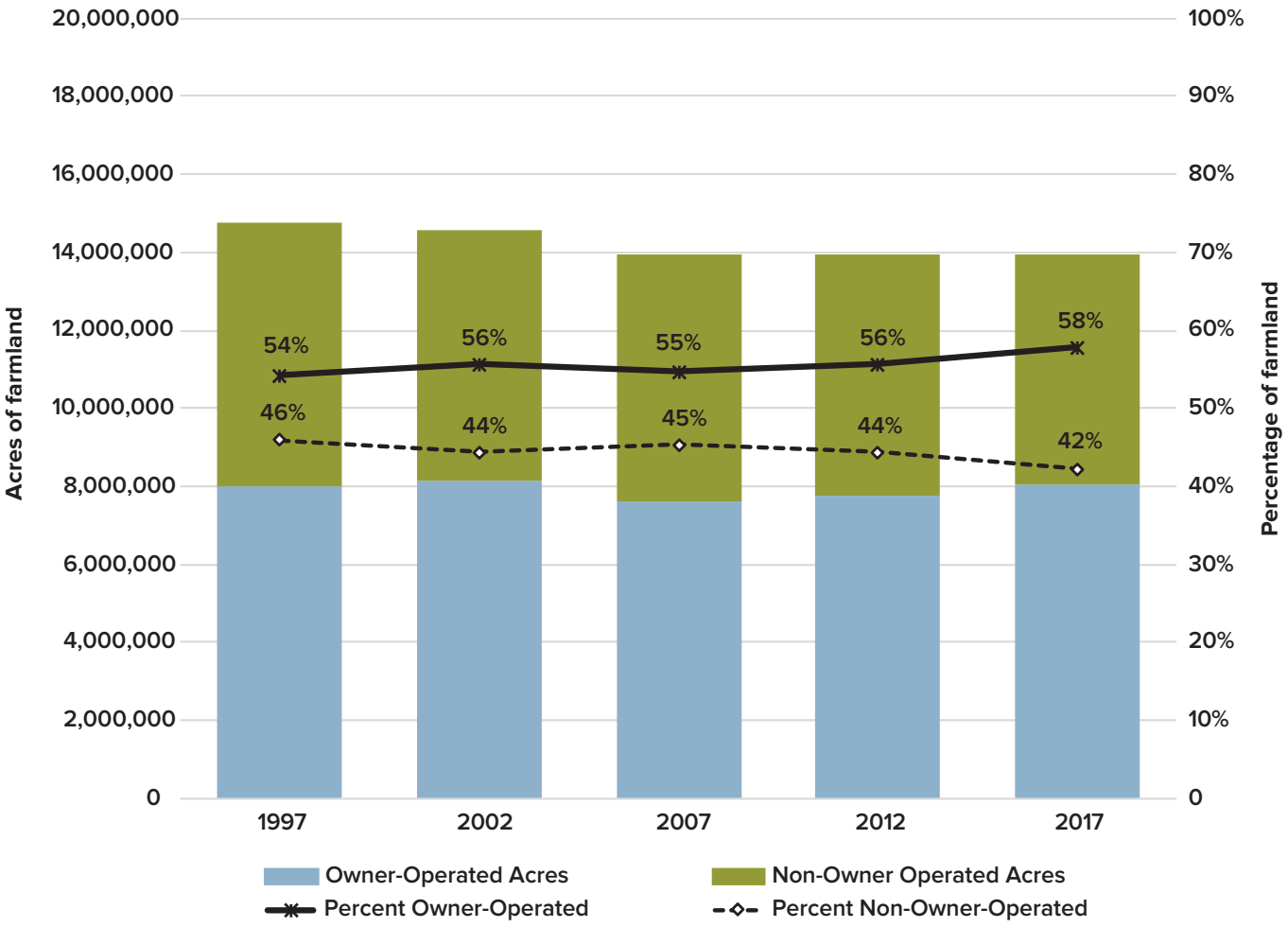
Land Tenure

In 2017, about 14 million acres were farmed in Ohio (a number that has remained fairly stable for 20 years). While most farmland in Ohio is still operated by the owner, a large fraction of land is rented to the operator (Figure 10). In 2017, 8 million of these acres were operated by the landowner, representing 58% of the land in farming. There has been a slight increase in owner-operatorship statewide over the last 10 years.

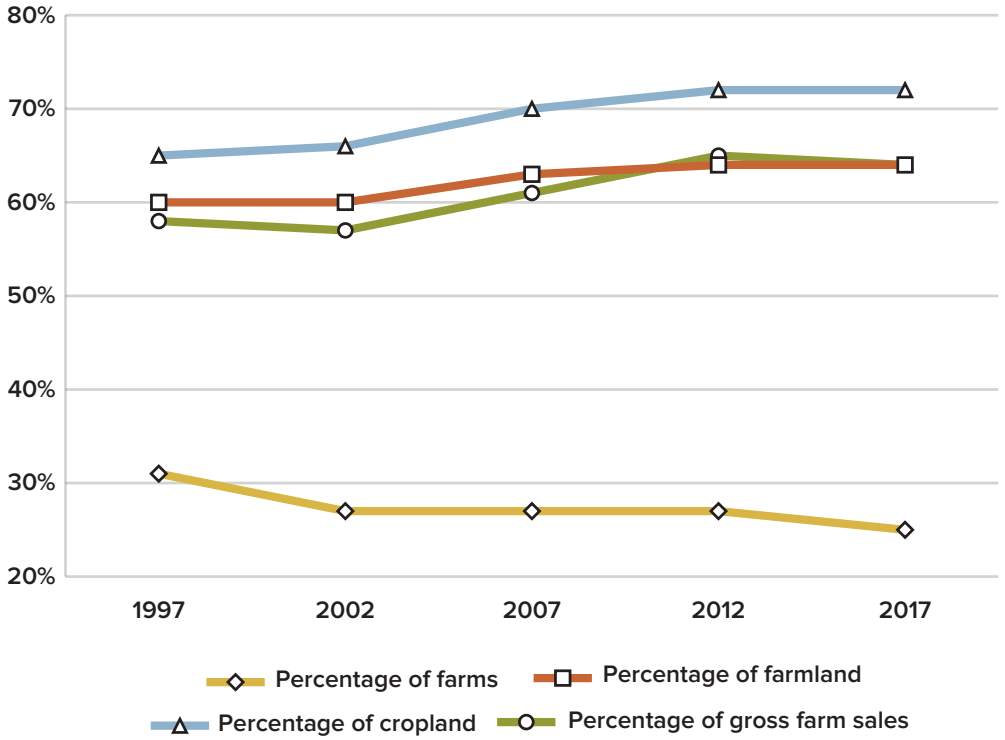
Figure 10. Trends in Farmland Acres Operated by Owners Versus Renters in Ohio



Similarly, most farms in Ohio are full-owner farms (farmers who own all of the land they operate)—and the share of full-owner farms increased from 62% in 1997 to 70% of all farms in 2017. While full-owner farms still dominate the farming population, part-owner farms—those who own some farmland, but also rent some of the land that they operate—operate most of the farmland acreage (Figure 11).

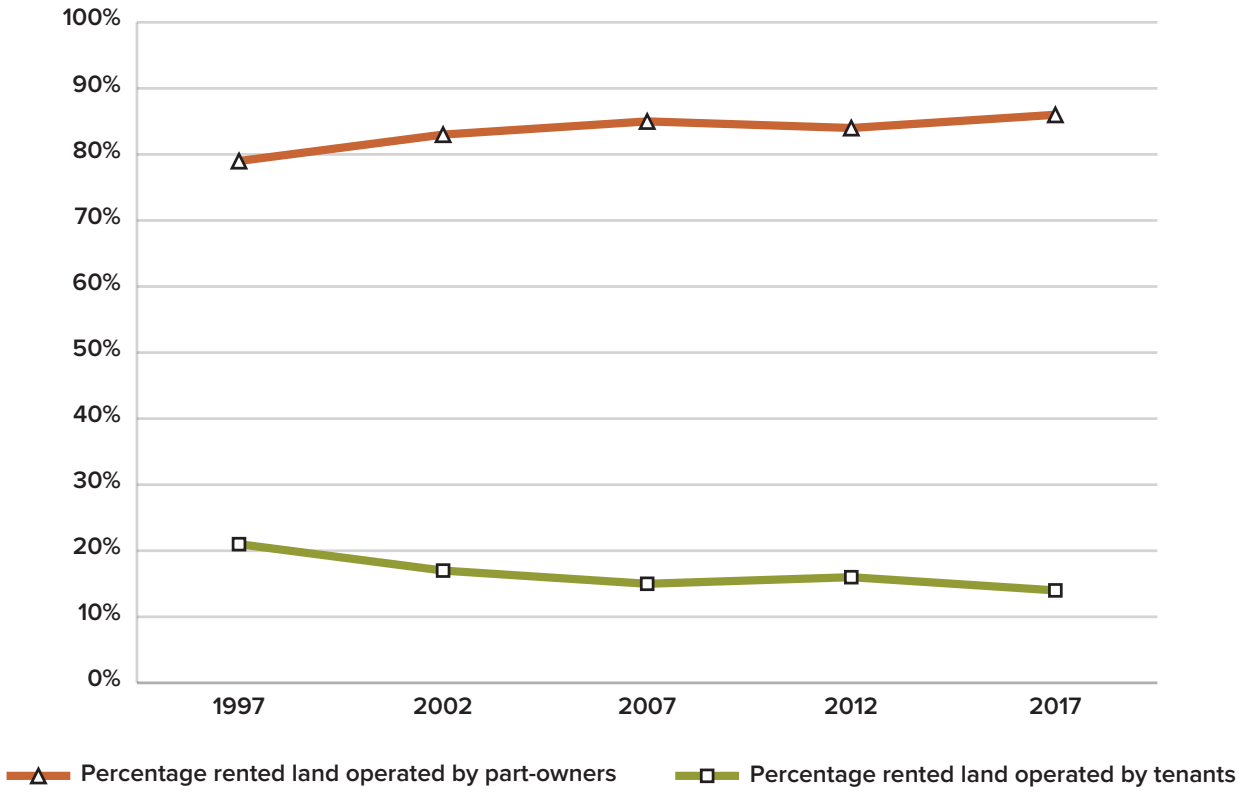
Moreover, while the share of farms that are part-owners has declined slightly (from 29% to 25% of all farms), part-owners have become more important in terms of farmland and cropland operated, operating 75% of all harvested cropland in 2017. Part-owner farms are also responsible for the largest and a growing share of gross farm sales—producing two-thirds of all Ohio farm sales in 2017.

Figure 11. Importance of Part-Owner Farms in Ohio



The role of full-tenant farms—those who rent all of the land that they operate—remains relatively small in Ohio and decreased in importance over the last 20 years. Figure 12 shows the percentage of rented farmland in Ohio by farm operator tenure status. In 2017, 86% of the rented land was operated by part-owners, and 14% was operated by tenant farmers. Over the 20-year period, the proportion of rented land operated by tenants decreased by 7 percentage points.

Figure 12. Percentage of Rented Farmland in Ohio by Operator Tenure Status



Trends in Livestock Production

Table 12 shows trends in livestock inventory on Ohio farms. In 2017, Ohio farms raised roughly 29 million layers, 17 million broilers, 2.6 million hogs, and 1.3 million cattle (including 270,000 milk cows, 300,681 beef cows, and 760,000 other cattle). Between 1997 and 2017, the number of broilers nearly tripled, while the hog inventory increased by over 50%. The total number of milk cows and laying hens raised in the state increased more slowly (by 3–10%), while the numbers of beef cattle declined by roughly 5%.

Growth in the broiler and hog industry is tied to rapid expansion in the integrated poultry and hog sectors, in which individual farms build and operate large production facilities and contract with an integrator/firm, which provides feed and purchases the output at a predetermined price. Ohio integrators include companies that are part of global supply chains as well as firms that operate and market regionally.

Table 12. Livestock Inventory on Ohio Farms, by Type of Livestock (Number of Head)

	1997	2002	2007	2012	2017	% change 1997–2017	% change 2012–2017
Cattle							
Beef cows	316,494	260,702	293,757	277,949	300,681	-5.0	7.6
Milk cows	260,686	261,759	271,938	267,857	269,069	3.2	0.5
Other Cattle*	759,957	718,151	706,707	696,487	714,490	-6.0	2.5
Hogs	1,687,708	1,422,966	1,831,084	2,058,503	2,561,252	51.8	19.6
Poultry							
Layers	26,164,360	30,759,965	27,070,109	28,312,692	28,868,147	10.3	1.9
Broilers	6,088,612	5,878,909	10,021,948	12,194,024	16,604,195	172.7	26.6

**Includes calves, steers, heifers, and bulls.*

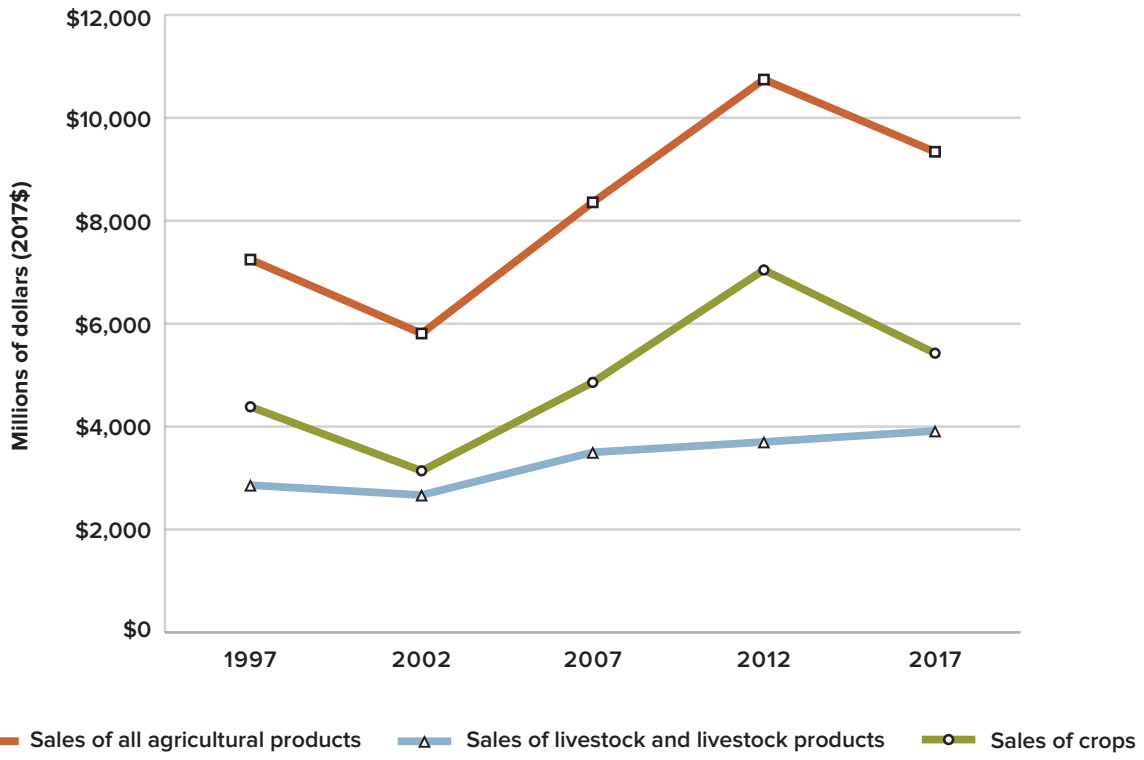
ECONOMICS

Value of Farm Sales

Figure 13 shows the sales of Ohio agricultural products between 1997 and 2017, adjusted for inflation.[5] Sales of all agricultural products totaled $9,341 million in 2017. Just under 60% ($5,426 million) involved sales of crops, with another $3,915 million from sales of livestock and livestock products.

Over the last 20 years, farm sales increased 23.8% for crops and 36.8% for livestock and livestock products, but have varied from year to year. Farm sales peaked in 2012, reflecting high commodity prices at that time. As commodity prices declined, so did the sales of agricultural products. Between 2012 and 2017, the inflation adjusted value of sales of all agricultural products and sales of crops decreased respectively by 13% and 23% while the sales of livestock and livestock products increased by 6%.

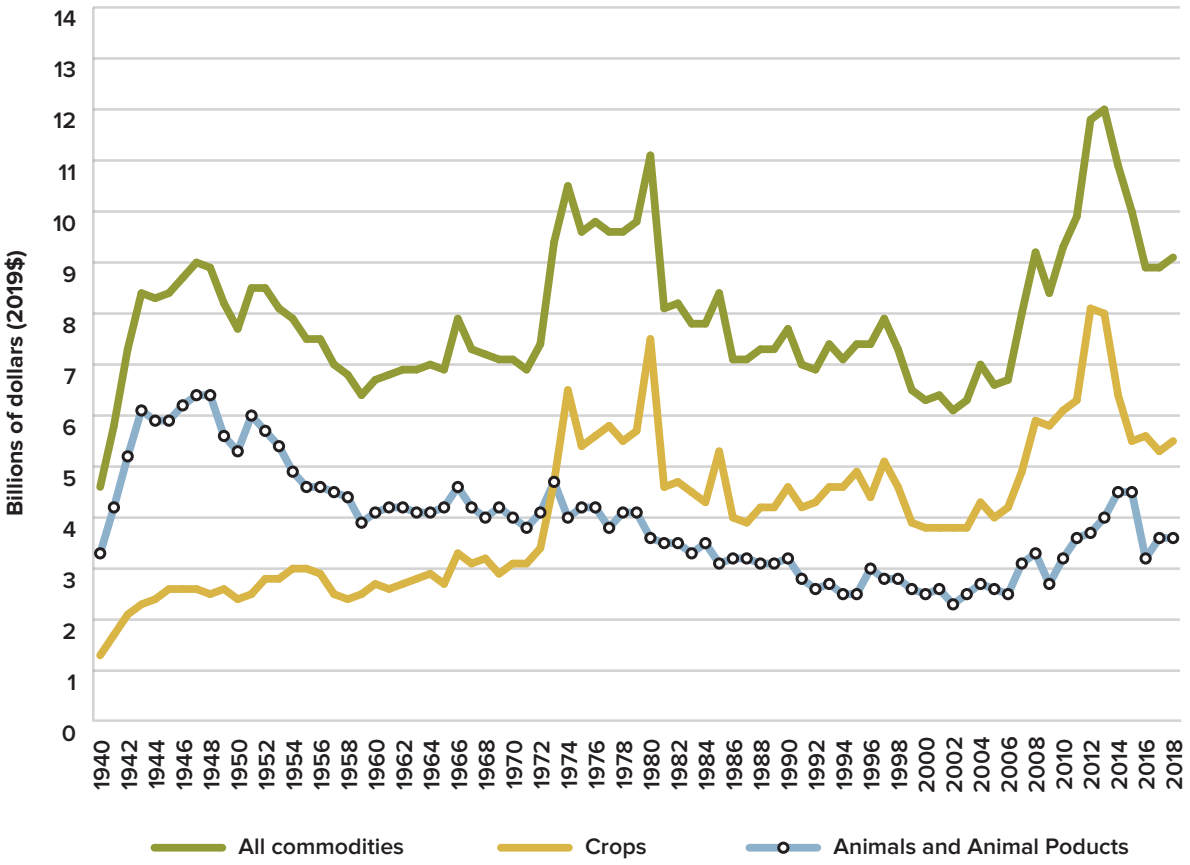
Figure 13. Sales of Agricultural Products in Ohio



While the balance of income from the sales of crops and livestock has fluctuated over the last 20 years (with a peak in crop income in 2012), it can be helpful to look at a longer-term dataset to situate these shifts in historical perspective. The USDA NASS has issued annual estimates of farm income by commodity for each state since the early 20th century. Figure 14 shows the estimated receipts in Ohio from sales of crops and livestock between 1940 and 2018 (adjusted for inflation). In current 2019 dollars, the total sales of all farm products peaked at just over $12 billion in 2013 (surpassing the previous peak from the late 1970s). However, between 2013 and 2018, receipts from sales of farm commodities dropped by 24%.

Livestock products dominated farm income in the mid-20th century. However, since 1972, Ohio farmers have made more money from the sales of crops than livestock. The decline in farm receipts in the last four to five years affected both crops and livestock.

Figure 14. Farm Income from Sales of Crops and Livestock, 1940–2018



Details, including income from specific crops and livestock products, are shown in Figures 15 and 16. One obvious pattern is the dramatic rise of corn and soybean sales in Ohio beginning in the early 1970s. Until 1964, vegetable and wheat sales often exceeded sales of corn and soybeans. However, since 1975, corn and soy sales have been three to seven times higher than specialty crops and wheat. Adjusting for inflation, specialty crop and wheat sales have also been static or slowly declining over the last 75 years, while corn and soybeans have witnessed more dramatic swings from year to year. The rapid drop in Ohio farmer income from crop sales in the last five years primarily reflects a drop in sales of corn and soybeans. However, in percentage terms, specialty crop and wheat sales have dropped nearly in half between the late 2000s and 2018.

From a long-term perspective, the volume of sales for each type of livestock or livestock products have followed different trends over the last 75 years. Hog production in the 1940s dominated farm livestock receipts, but slowly declined through the early 2000s (then expanded again between 2010 and 2014). Poultry sales declined in the mid-20th century, but have been expanding fairly steadily over the last 20 years (with a notable drop in the last few years after peaking in 2014). Dairy farm receipts have slowly trended down (with a significant amount of volatility over the last 20 years), but remain higher than beef or hog receipts. Beef sales were fairly steady between 1950 and 1980, but declined by over half between 1978 and 1994. Since the mid-1990s, beef sales have generally increased (with a downturn in recent years).

Figure 15. Sales of Crops in Ohio, 1940–2018

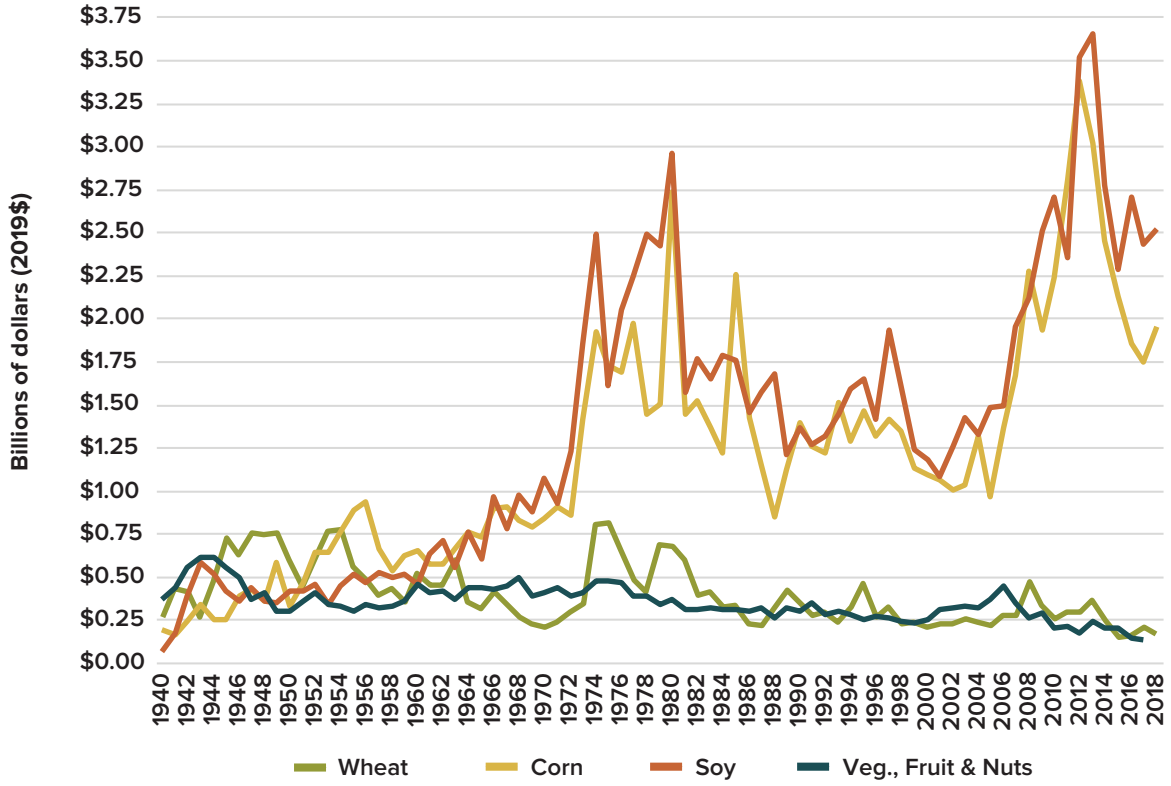
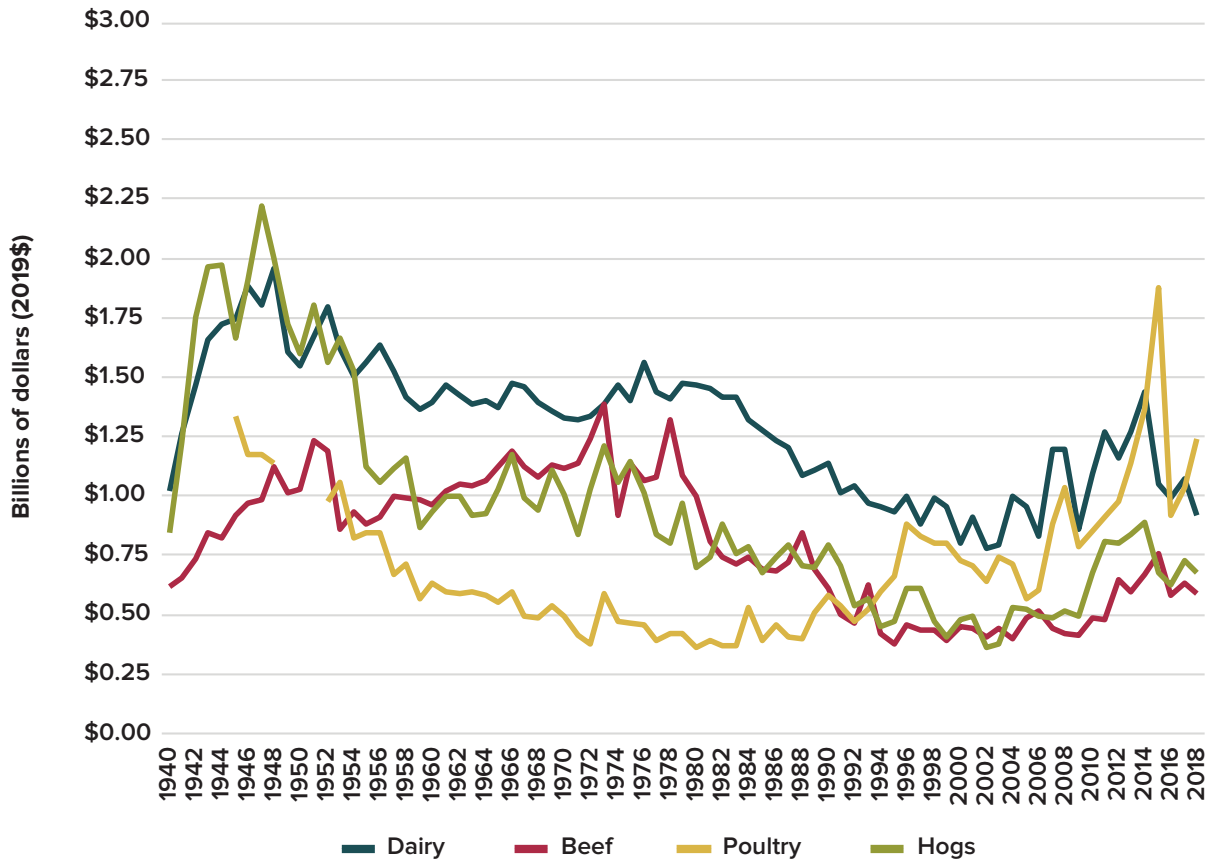


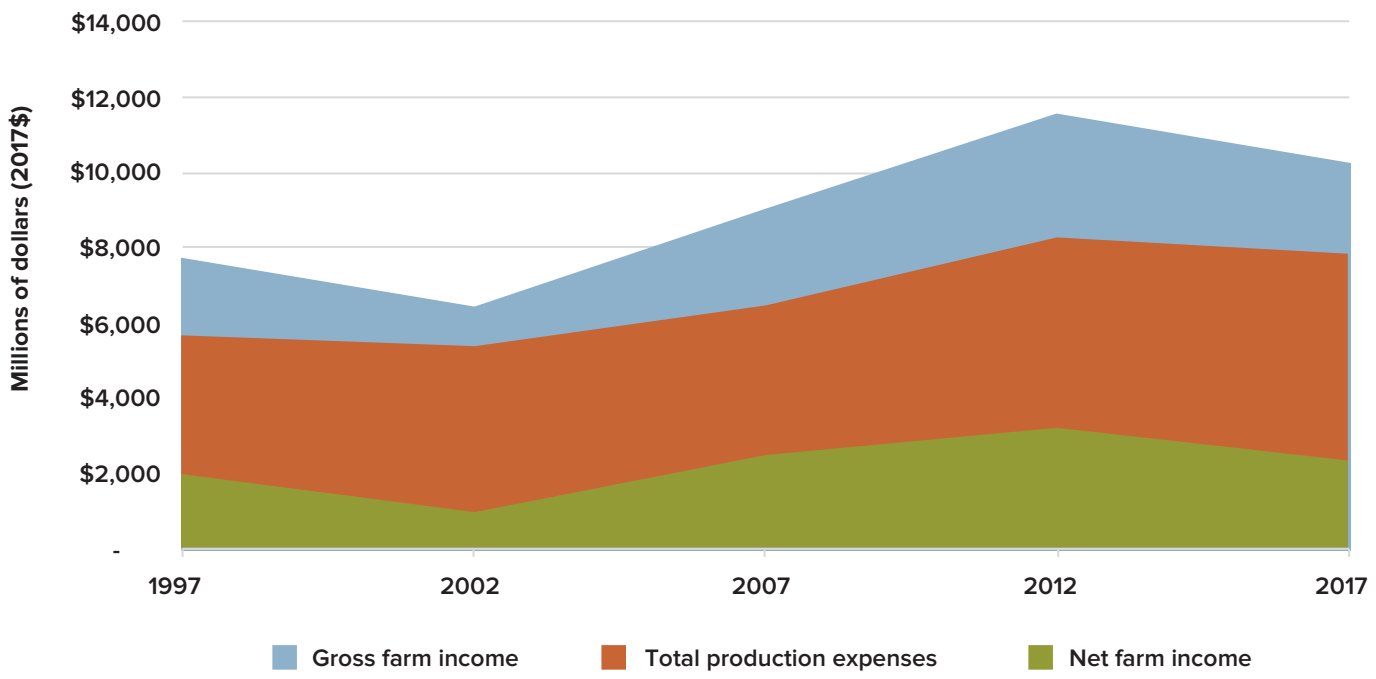
Figure 16. Sales of Livestock and Livestock Products in Ohio, 1940–2018



Net Farm Income

Figure 17 shows the aggregate gross sales[6], farm expenses, and net farm income in Ohio between 1997 and 2017. In 2017, for example, Ohio farm households generated gross farm receipts of $10,147 million and spent a total of $7,838 million on production expenses. This resulted in total net farm cash income of $2,309 million. Over the last 20 years, adjusting for inflation, gross farm sales rose by 34%, but since expenses increased more rapidly (38%), net farm income grew by only 19%. Over the last five years, gross sales dropped by 12%, but net farm income declined 28% because expenses did not fall as fast as gross income.

Figure 17. Aggregate Gross and Net Farm Cash Income in Ohio



A more detailed assessment of recent trends in gross income, farm expenses, and net cash income on Ohio farms is shown in Figure 18. The data reflect annual estimates for Ohio by USDA NASS and extend from 2010 to 2018. These data suggest that net farm cash income (for the sector as a whole) dropped to nearly zero in 2016, but has risen slowly in the last two years. Receipts from sales of agricultural commodities are the primary source of cash income (dotted line in Figure 18), but government farm program payments to farmers account for most of the rest of cash income (and have generally increased in times of low prices and farm financial stress).

[6] Which is also shown in Figure 4 above.

Figure 18. Cash Income, Cash Expenses, and Net Cash Returns to Ohio Farms, 2010–2018

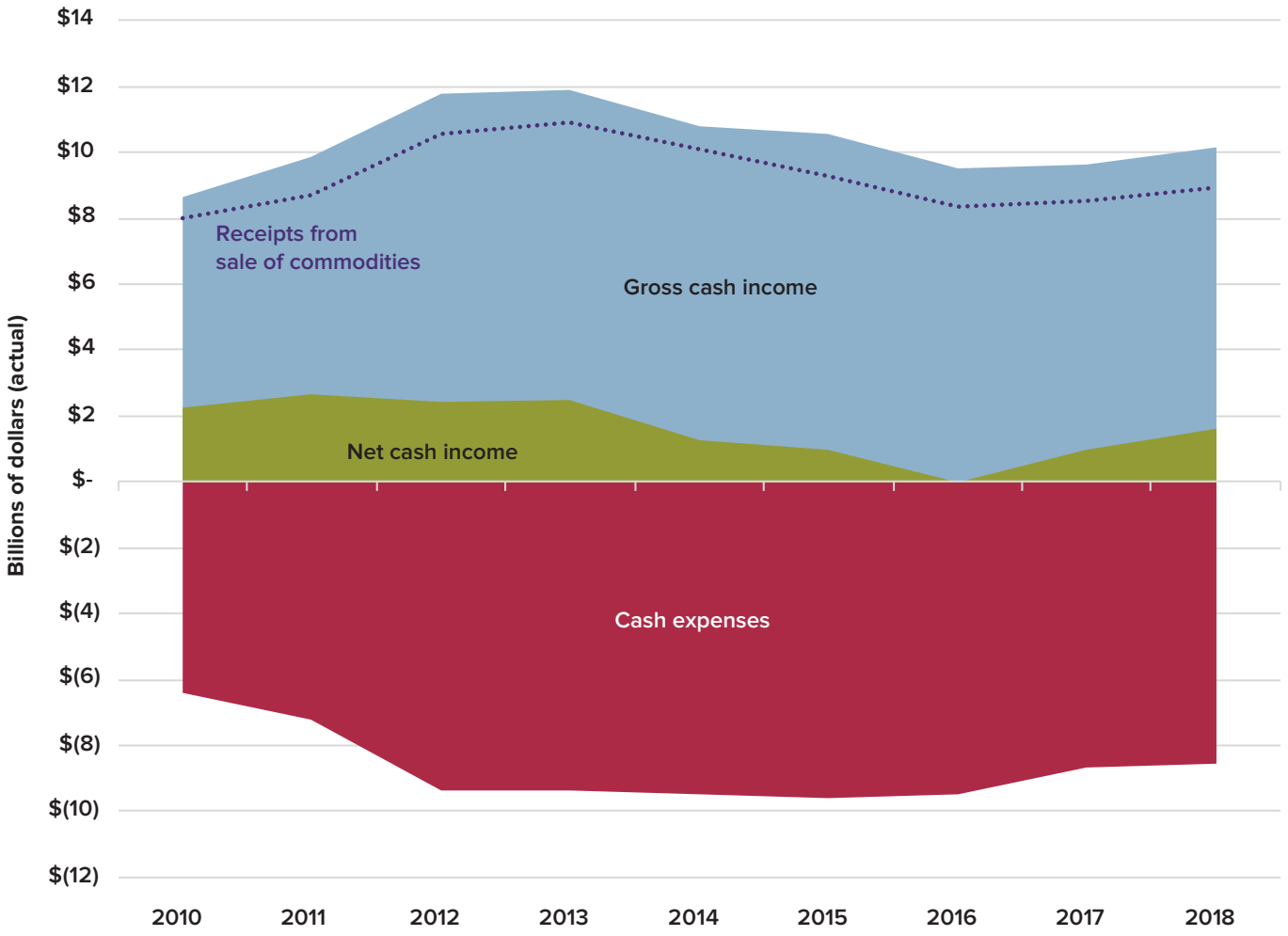


Figure 19 shows the share of Ohio farms with net losses (negative net cash income) from farming between 1997 and 2017 by size of farm (farm sales class). In 2017, over half of Ohio farms reported net losses.

Small farms were much more likely to have negative cash income. Roughly three-fourths of very small farms (gross farm sales under $10,000) reported net losses, but many of these operations farm for lifestyle reasons, and do not count on farming to support their household. About a quarter of more commercially oriented small farms (with sales between $10,000 and $249,999) experienced negative net cash returns. A smaller, but still significant, percentage of moderate and large farms had net losses in 2017 (12% of farms with sales $250,000 to $499,999 and 8% of farms with sales $500,000 and over).

Looking at changes over the last 20 years, the share of farms with net losses peaked in 2002. The most recent census year (2017) also saw relatively high numbers of farms with negative net cash income, a situation that likely has worsened over the last two years as farm prices and farm income has declined due to declining commodity prices associated with trade tensions and other factors.

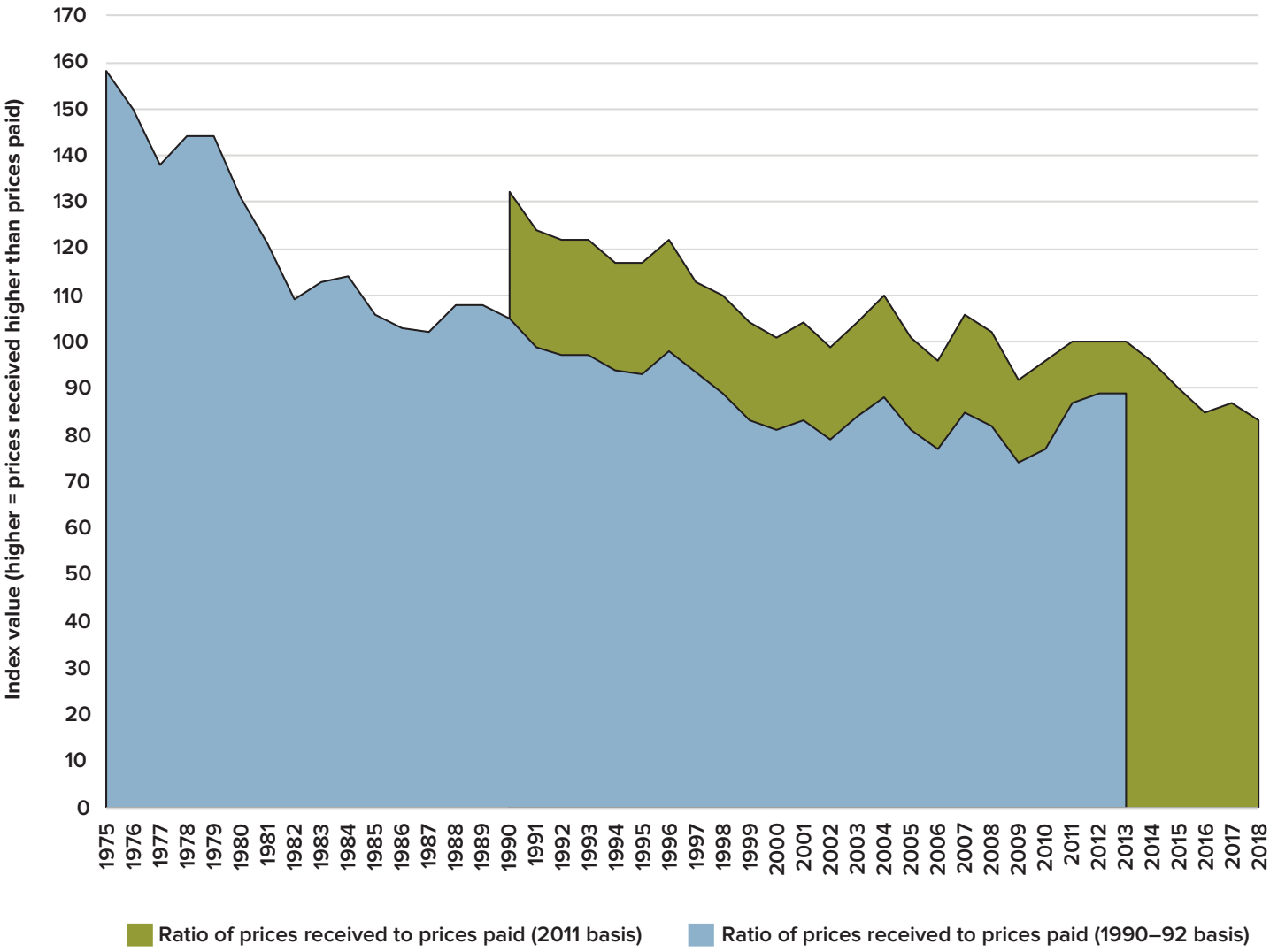
Figure 19. Percentage of Ohio Farms With Net Losses from Farming by Sales Class

Cost-Price Squeeze

The data in Figure 20 show how composite indexes of prices paid and prices received by farmers in the United States have changed over the last 45 years. Prices Paid (PP) indexes reflect the relative market price for 450 key agricultural inputs used to produce crops and livestock (agricultural chemicals, farm machinery, feed, fuel, seed, etc.). Prices Received (PR) indexes reflect a standardized average of market prices for 100 crop and livestock commodities. Both indexes provide a value compared to a base period. The ratio of PR to PP shows how relative prices have changed over time. In other words, lower values of the PR/PP ratio reflect situations where the price farmers pay for inputs is rising faster than the prices they receive for their output.

In the United States, the prices farmers have received for their products since the mid-1970s have increased much more slowly than the prices they have to pay for their inputs. This “cost-price squeeze” has forced farmers to increase the scale of their operations and improve productivity to maintain the same level of net income. Pressure from expenses that rise faster than income accounts for much of the high level of financial stress many U.S. (and Ohio) farms have experienced in recent years.

Figure 20. Index of Prices Paid and Received by U.S. Farmers, 1975–2017

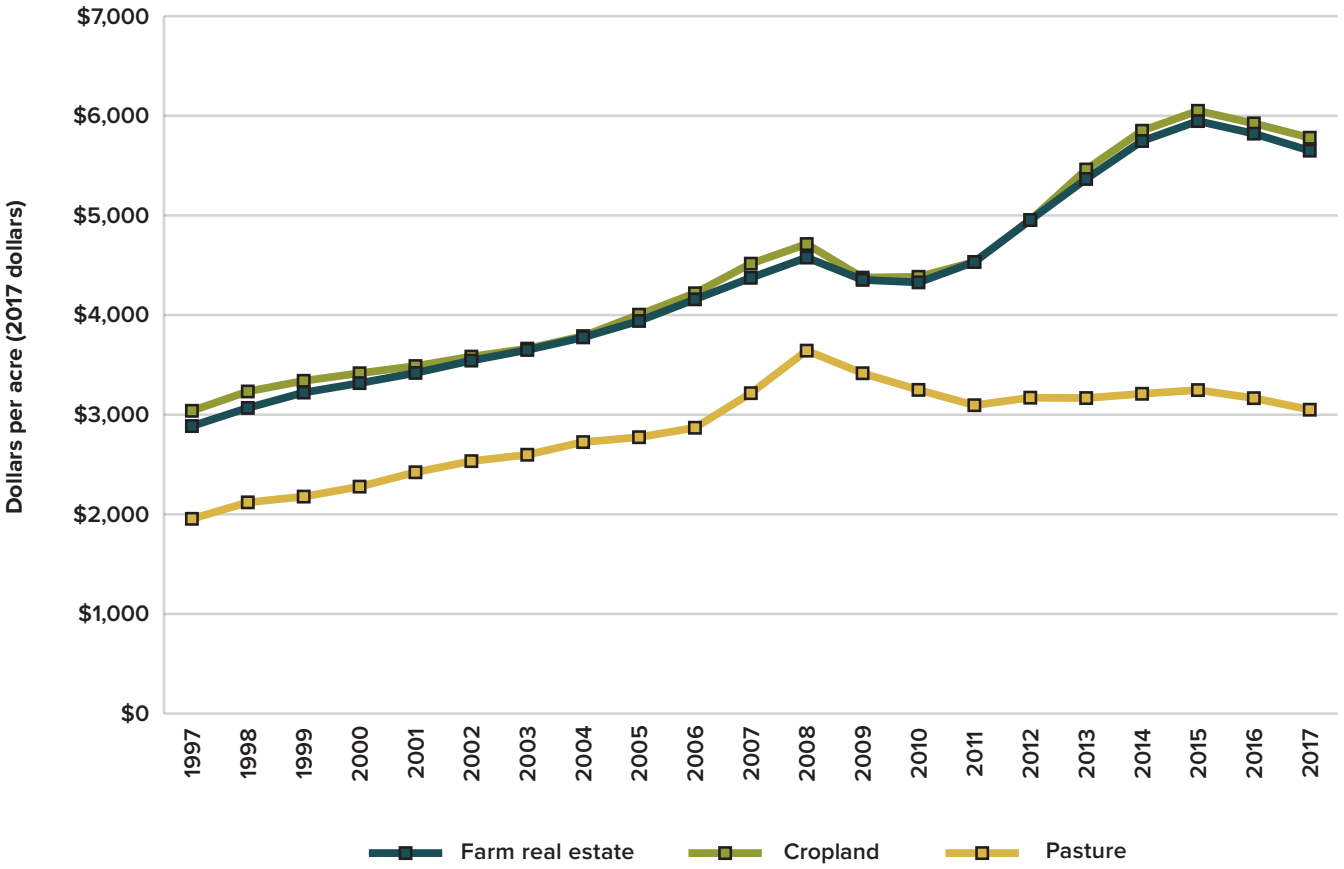


Value of Land and Buildings

Figure 21 shows the yearly value of Ohio farm real estate, cropland, and pasture in Ohio between 1997 and 2017. In 2017, the value of farm real estate (the value of all land and buildings on farms) and the value of cropland were fairly close at respectively $5,650 and $5,780 per acre while the value of pasture was $3,050 per acre. Adjusted for inflation, over the last 20 years, the value of farm real estate almost doubled in Ohio. The increase in the value of pasture was not as steep (+56%). After continued growth between 1997 and 2008, the farm real estate and land values decreased for a few years. Then the value for farm real estate and cropland increased again starting in 2010 and began to plateau in 2015, while the value for pasture decreased by 4% between 2012 and 2017.

As farm incomes declined since 2013, so did farm real estate after 2015 in many states. This trend in Ohio has been reversed since 2018 with farm real estate showing positive but modest growth rates. As the farm sector continues to undergo an agricultural downturn, farm real estate seems to have stabilized.

Figure 21. Value of Farm Real Estate, Cropland, and Pasture in Ohio



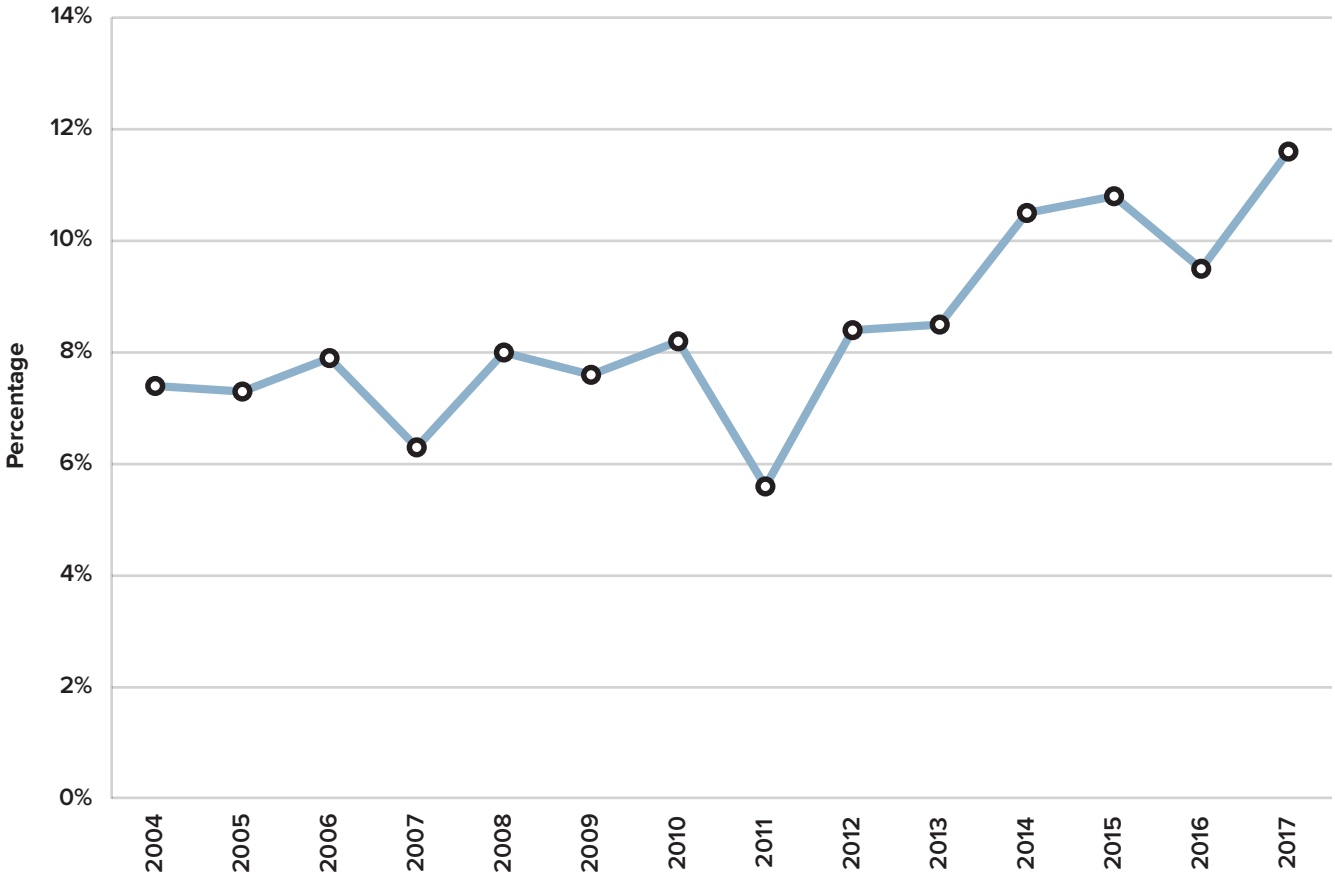
Debt-to-Asset Ratios

Figure 22 shows the debt-to-asset ratio on Ohio farms between 2004 and 2017. The debt-to-asset ratio is a measure of the total amount of debt held by farms, divided by the total value of all farmland, buildings, and machinery (or the proportion of the farm sectors' assets that are financed through debts). Changes in the debt-to-asset ratio can reflect either increases or decreases in the amount of debt held by farmers, or a shift in the value of their assets (usually gains or losses in the market value of farmland, their most significant asset).

A related measure is the debt-to-equity ratio which reflects the amount of debt relative to the amount of equity farmers have in their property. As with homeowners, lenders are wary about allowing borrowers to accumulate debts that are too large relative to their equity. High debt-to-equity ratios reflect a growing share of farms that are highly leveraged and vulnerable to a downturn in property values.

In 2017, Ohio farms had a debt-to-asset ratio of 11.6% and since 2004, the ratio has increased by 4.2 percentage points. With the decline in farm income since 2013, Ohio farmers' debt-to-asset ratios have increased slightly due to tighter profit margins and increased need for new or refinanced debt. High levels of debt-to-asset ratios are a sign that farmers are increasingly reliant on debt to support their operations.

Figure 22. Debt-to-Asset Ratio on Ohio Farms, 2004–2017

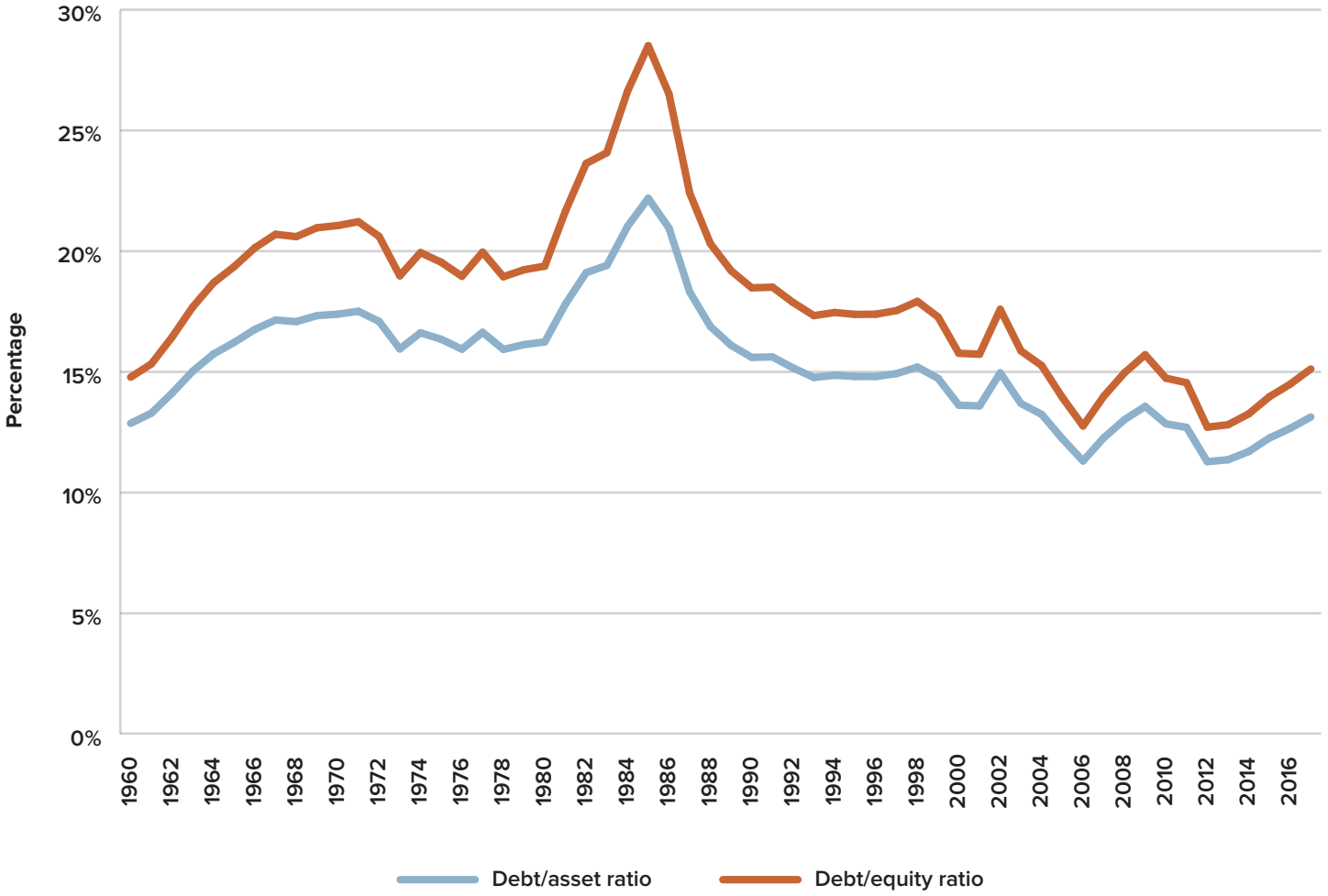


The debt-to-asset ratios during the last few years have been at historic lows as compared to the 1980s farm crisis. Data for the United States as a whole are illustrated from 1960 to 2017 in Figure 23. It is worth noting that in recent years, the overall debt-to-asset ratio on Ohio farms is slightly lower than the national average. In addition, debt-to-asset and debt-to-equity ratios in the United States and Ohio are on par with those of the 1960s.

During the 1960s, both ratios increased in the United States. During the 1970s, these ratios were fairly stable before spiking in the 1980s as farmland values crashed and interest rates soared during what is often called the last "farm crisis."

Since the 1990s, the ratios have actually decreased slightly and are now on par with those of the 1960s. Between 1960s and mid-1990s, the gap between the debt to asset ratio and debt to equity was around 3.4 points and since then, that gap has decreased to 2.0 points.

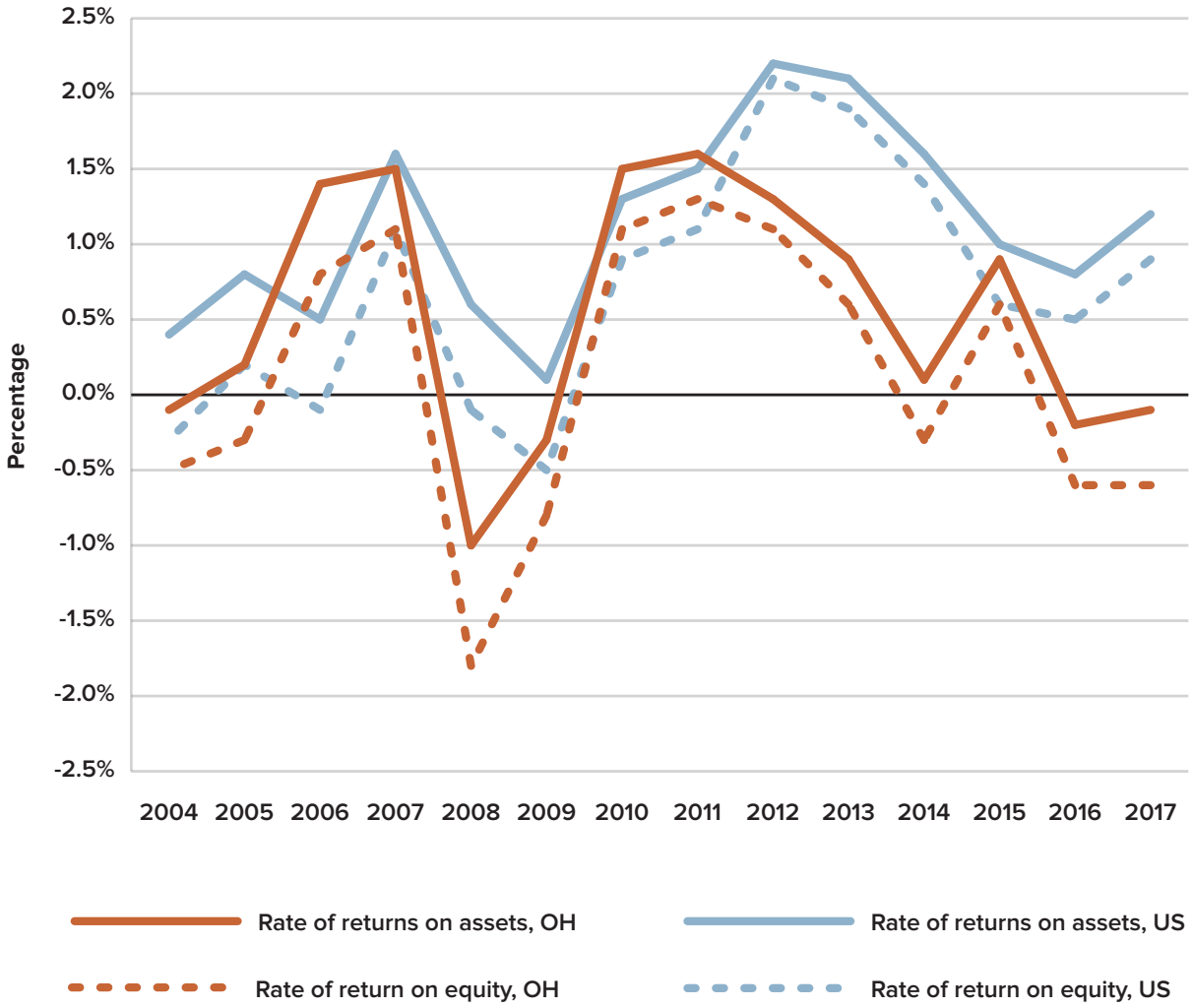
Figure 23. U.S. Farm Sector Solvency Ratios, 1960–2017



Returns to Assets and Equity

Figure 24 shows the rate of return on assets and equity between 2004 and 2017 on Ohio farms. The rate of return on assets is a measure of net earnings generated by the farm operation, divided by the value of their assets (mostly land and buildings). Between 2004 and 2017, the return on assets rate was positive for all years except for three periods (2004/5, 2008/9, and 2016/17). The rate of returns on equity is a similar measure in which net returns are divided by owner equity (the value of farm assets minus their outstanding debt liabilities). The rate of returns on equity in Ohio overall followed a similar trajectory as the rate of returns on assets albeit with lower rates. The rate of return on equity was negative in seven out of the last 14 years. While most Ohio farms have solvency (debt-to-asset) ratios that are not unusually high in historical perspective, persistent low returns on assets and equity is concerning since it has been below 2% during the entire last 15 years. Most of these low profitability rates are because of the prevalence of small hobby farms that do not depend on or prioritize profitability.

Figure 24. Rates of Return on Ohio Farms, 2004–2017



CONCLUSIONS

Ohio's agricultural landscape is diverse, both in terms of the types of crops and livestock produced and the demographics of the producers themselves. As efforts across Ohio mobilize to assist farmers with the current financial downturn, it is helpful to situate current conditions within long-term trends in Ohio agriculture and to understand the unique context and issues different types of farmers face.

The 1980s farm crisis was defined as a "crisis of debt." Today's farm crisis can be defined as a "crisis of income," as farm prices and farm income decline while the cost of inputs remain stable and high. The current farm crisis of income is not only shaped by tariffs and weather, but is also affected by long-term major changes in the structure of agriculture and consolidation in the larger agri-food supply chain. Efforts to help producers survive this agricultural downturn will benefit from analyzing the current situation within the context of long-term trends and appreciating the diversity of Ohio's farms.

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