

The Impact of Livestock Production

A Case Study of Three Missouri Counties

Ann Ulmer and Ray Massey
Agricultural Economics Extension

Two seemingly contradictory economic developments are taking place in Missouri. The number of cropland acres harvested is declining while the total value of agricultural products sold is increasing.

The number of acres of cropland in a county normally remains constant or declines. New land can come into production only if pasture, hay or forest land is converted. Conversion is uncommon because most productive land has already been identified and is being used to grow crops. Increasing revenue from a constant or declining number of acres requires that the receipts per acre increase. Fluctuating crop prices can cause temporary increases in receipts. However, to sustain increased revenues per acre requires changing to higher valued crops such as horticulture crops. Widespread adoption of horticulture crops is unlikely given a number of productive and economic factors.

From where, then, is the increase in the value of agricultural products coming? It comes from livestock sales! The number of hogs sold in the state has almost doubled and the number of poultry has increased by almost seven times over the last 15 years. If agricultural receipts are going to rise, or continue to rise, the most likely driver will be increasing livestock production.

An analysis of county agricultural receipts, and property and sales tax receipts indicates that increases in livestock production from 1987 to 2002 account for most of the economic growth. Of the 50 counties that had increased agricultural receipts, only two, Mississippi and Pemiscot, did not have significant increases in livestock receipts. Livestock production is the most obvious way to increase agricultural revenues in Missouri.

The following is a comparison of three Missouri counties, two of which experienced a dramatic change in agricultural commodities produced. In 1987, Carroll, Pettis and Vernon counties each had between 1,000 and

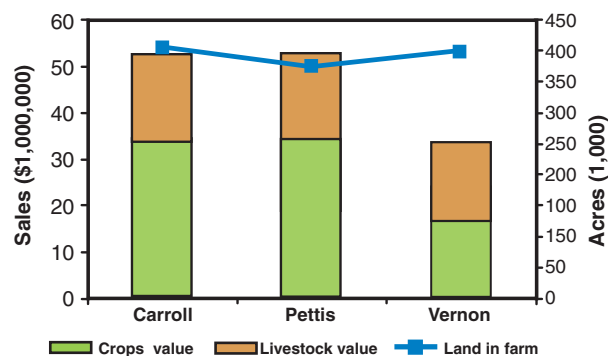


Figure 1. Market value of crops and livestock sold and acres of farmland in 1987.

Source: Census of Agriculture

1,250 farms on 375,000 to 405,000 acres of land. Each county produced a relatively diverse set of agricultural products, including crops and livestock. Figure 1 shows the similarities among the counties in acreage of land farmed and the market value of agricultural products sold in each county in 1987.

The population in each of the three counties decreased from the 1980 census to the 1990 census, 3 percent in Pettis, 4 percent in Vernon and 11 percent in Carroll. However, between 1990 and 2000, Pettis and Vernon counties experienced an increase in population of 11 percent and 7 percent, respectively. During the same 10 years Carroll county population continued to decrease but at a slower rate of 4 percent.

Between 1992 and 1997 Pettis County experienced a huge influx in the number of poultry in the county. The number of hogs in Vernon county increased by almost 13 times during this same time period. With the increase in animal agriculture in Pettis and Vernon counties, the number of acres of cropland harvest did not change significantly from 1987 to 2002. The number of farms in the three counties has remained relatively stable as Pettis County has lost 3 percent of farms while Carroll County gained 7 percent and Vernon County gained 12 percent.

The number of head of livestock sold in the three counties changed significantly from 1987 to 2002. The number of cattle sold increased by almost 8 percent in Pettis, 9 percent in Vernon and 16 percent in Carroll over

About the authors

Ann Ulmer is an extension associate with the Commercial Agriculture Program.

Ray Massey is an associate professor of agricultural economics with the Commercial Agriculture Program.

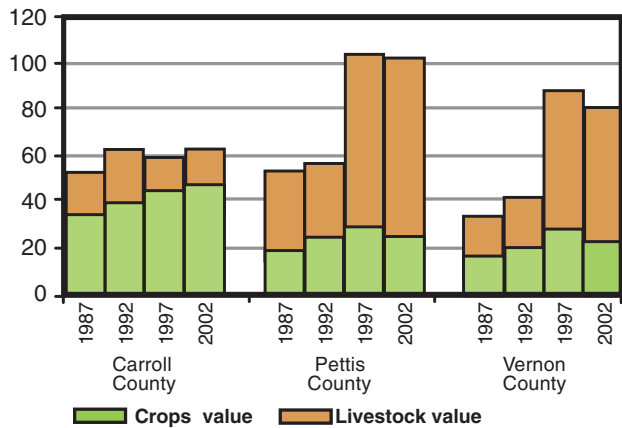


Figure 2. Market value of agricultural products sold 1987-2002.
Source: Census of Agriculture

the 15 years. The number of hogs sold decreased by 43 percent in Carroll and increased by 26 percent in Pettis and 3,496 percent in Vernon. There were only about 34,000 head of hogs sold in Vernon county in 1987 and by 2002 there were over 1.2 million head sold. There was a similar situation with poultry production in Pettis County. In 1987 none of the three case study counties reported poultry production. By 2002 Pettis County sold over 19.2 million birds while Carroll and Vernon counties reported no significant poultry sales.

The most apparent change besides the total number of animals was in the market value of agricultural products sold (Figure 2). The market value of crops in Carroll County has continued to increase at a relatively steady pace while the value of livestock sold is declining. However, in Pettis and Vernon counties, the value of crops sold remained relatively stable from 1987 to 2002. During this same period, the value of livestock sold more than doubled in Pettis County and almost tripled in Vernon County. The total value of agricultural products sold in these two counties has increased considerably due primarily to increases in livestock production.

Increases in agricultural production impact the local economy. This can be observed in local sales tax collections. Sales tax receipts change due to changes in tax rates or volume of products and services sold. To observe increases in economic activity (products and services

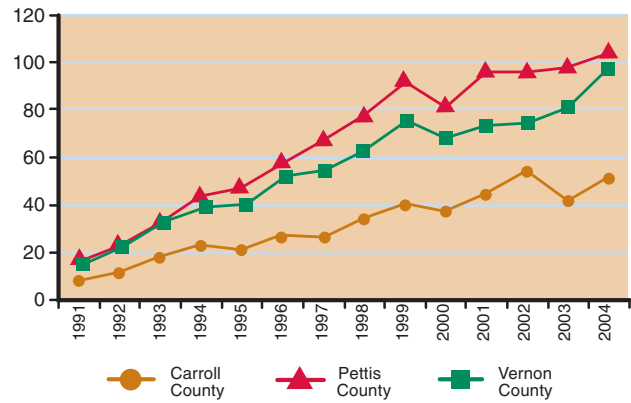


Figure 3. Percent change in local sales tax receipts.

Note: Assumes a sales tax rate of 1%.

Source: Economic and Policy Research Center, University of Missouri-Columbia

sold), tax receipts assuming a 1 percent sales tax are used. Figure 3 shows changes in local sales tax receipts assuming a sales tax of 1 percent. The local sales tax collections have increased by about 100 percent in both Pettis and Vernon counties while increasing only 50 percent in Carroll County. The impact on tax receipts may also be understated due to current sales tax exemptions on livestock sales, purchase of animal feeds and medications and use of farm machinery.

Conclusion

With a finite land base, increases in crop production will occur from technological advances. These changes have been occurring at a steady yet measured pace. Producers looking for options to add additional income and value to production in order to be able to generate additional income are likely to find that animal production offers the greatest opportunities.

Animal agriculture added a considerable amount of value to agricultural products sold in Pettis and Vernon counties. The difference in market value of agricultural products is significant between the counties with increases in confined animal operation and the county with no increase in animal agriculture. The value of crop production is increasing in Carroll County but at a much slower rate than is seen by the two counties with increased animal production.

Comparison of agricultural industries in three Missouri counties, 1987-2002.

	Carroll County			Pettis County			Vernon County		
	1987	1992	2002	1987	1992	2002	1987	1992	2002
Number of farms	1,013	919	1,081	1,323	1,225	1,249	1,251	1,249	1,265
Acres of land in farms	404,480	377,000	417,080	372,422	359,434	366,132	396,638	402,202	388,549
Average size of farm in acres	399	410	386	281	293	293	317	322	307
Total acres of harvested cropland	237,149	228,553	241,641	173,820	182,868	184,121	166,752	177,555	176,589
Market value of agricultural products sold (\$1,000)	52,637	62,039	61,824	52,789	56,042	104,015	33,310	41,392	87,731
Market value of crops sold (\$1,000)	33,871	39,243	47,082	19,029	24,666	29,268	16,304	20,228	27,607
Market value of livestock sold (\$1,000)	18,766	22,795	14,742	33,760	31,376	74,746	17,006	21,164	60,124
Percent of operators with principal occupation farming (1)	66	64	58	52	52	50	54	52	47
Percent of operators working 200 or more days off farm	25	29	37	38	37	39	36	36	41
Livestock (numbers)									
Cattle and calves sold	19,526	19,030	22,694	31,211	30,059	31,176	27,504	29,557	27,718
Hogs and pigs sold	90,892	123,009	60,596	134,311	126,399	163,085	33,716	77,414	1,003,187
Broilers and other meat-type chickens sold	(D)	0	(D)	0	(D)	(D)	0	(D)	(D)
Crops									
Corn for grain or seed (bushels)	6,226,712	7,693,352	6,478,651	2,742,149	3,878,278	3,247,695	1,506,339	2,323,022	2,560,549
Wheat for grain (bushels)	395,591	1,814,232	1,561,622	276,614	1,369,864	1,221,463	238,021	1,599,069	1,133,616
Soybeans for beans (bushels)	4,691,483	4,138,565	4,033,032	2,558,477	2,381,858	2,525,963	1,886,722	1,588,709	2,158,997
County general revenue own sources - taxes (2)	—	(NA)	635,000	—	1,834,000	3,054,000	—	658,000	907,000
Local sales tax collection (3)	—	788,000	5,186,000	—	896,000	7,144,000	—	1,093,000	8,374,000

Data source: Census of Agriculture except were noted.

Notes:

- (1) The principal occupation of the operator(s) is the occupation at which an operator spent the majority of his/her time.
- (2) Census of Governments.
- (3) Sales tax receipts per 1 percent – Economic and Policy Analysis Research Center, University of Missouri-Columbia.
- (D) Withheld to avoid disclosing data for individual farms.