Machinery Investment by Level of Farm Profitability

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Net Farm Income for Kansas Farm Management Association grain farms can vary greatly from operation to operation. Some farms are very profitable while others struggle to earn a profit. Figure 1 shows the average Net Farm Income for these operations when the farms are broken into three groups. The farms are ranked in order of Net Farm Income each year and the top 33 percent of farms are labeled "High" farms. The middle third of farms according to Net Farm Income are labeled "Med" farms while the bottom third of farms are labeled "Low" farms.

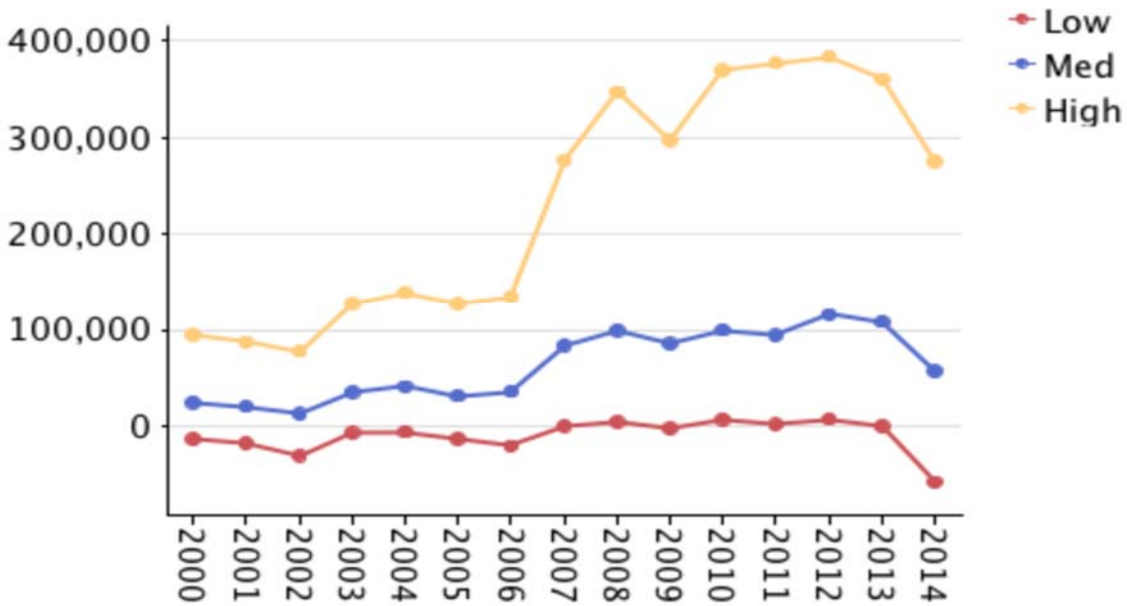

Figure 1. Average Net Farm Income for the High-Third, Middle-Third, and Low-Third of Kansas Grain Farms

As Figure 1 illustrates, the bottom third of KFMA grain farms typically have an average Net Farm Income around $0. In 2014, this group of farms had one of their worst years with an average Net Farm Income approaching $-60,000. The middle third of KFMA grain farms typically has an average Net Farm Income of between $50,000 and $100,000. The highest third of KFMA grain farms often has Net Farm Income well above $100,000. During the period of high grain prices from 2007 to 2013, many of these top producing farms earned net farm income above $300,000.

One question to consider when comparing these groups for Net Farm Income differences is whether machinery investment levels contributed to any of the differences in Net Farm Income levels. The rest of the figures in this analysis use the same farm groupings as shown in Figure 1. As Figure 2 illustrates, machinery investment in nominal terms increased greatly from 2000 to 2014. Part of this is due to inflation in machinery prices and part is because of farmers buying more and newer equipment during the period from 2007 to 2013; when Net Farm Income was higher than normal for most grain farms.

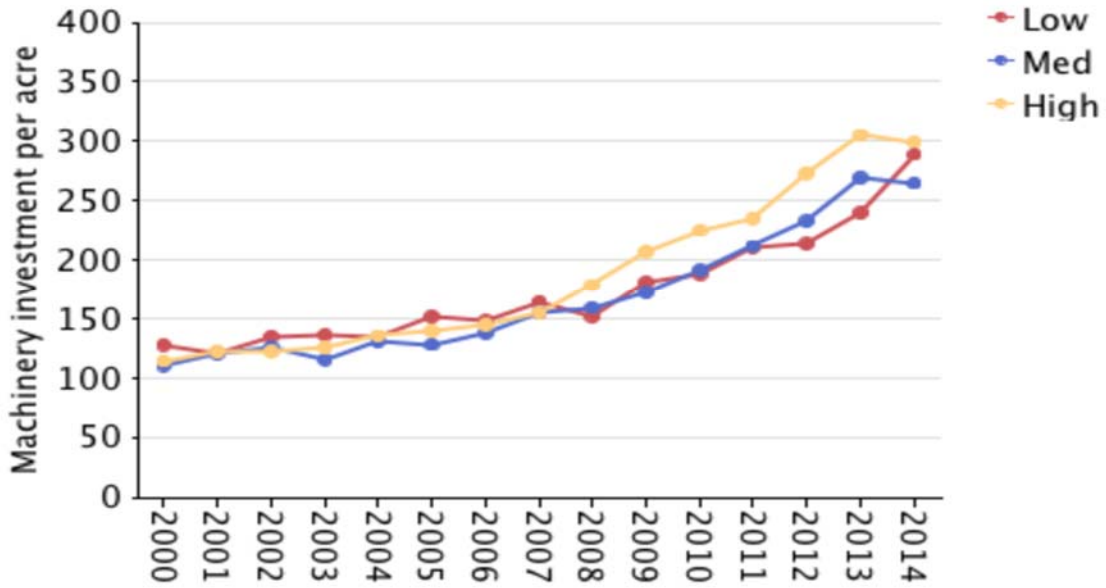

Figure 2. Machinery Investment per Acre for Kansas and for Farm Profitability Level

However, when comparing the three farm profitability levels for differences in machinery investment, trends are more difficult to observe. As shown in Figure 2, for the period from 2000 to 2007, there was very little difference among the levels of machinery investment for the three profitability groups. After 2007, the high third of farms had more machinery investment than the other two groups. This investment was often up to $50 per acre, or greater. However, this machinery investment gap was likely the result rather than the cause of the profitability difference. Because the high profitability group earned so much greater net farm income from 2007 onward, these farms likely used some of that extra income to upgrade their farm equipment.

Figure 2 is for all Kansas farms. Because of rainfall differences across the state, land in the eastern part of the state is farmed more intensely than in the western part of the state. These regional difference might be hiding some of the machinery differences. Thus, Figures 3, 4, and 5 show how machinery investment levels for the three profitability groups varies by regions across Kansas (eastern, central, and western Kansas).

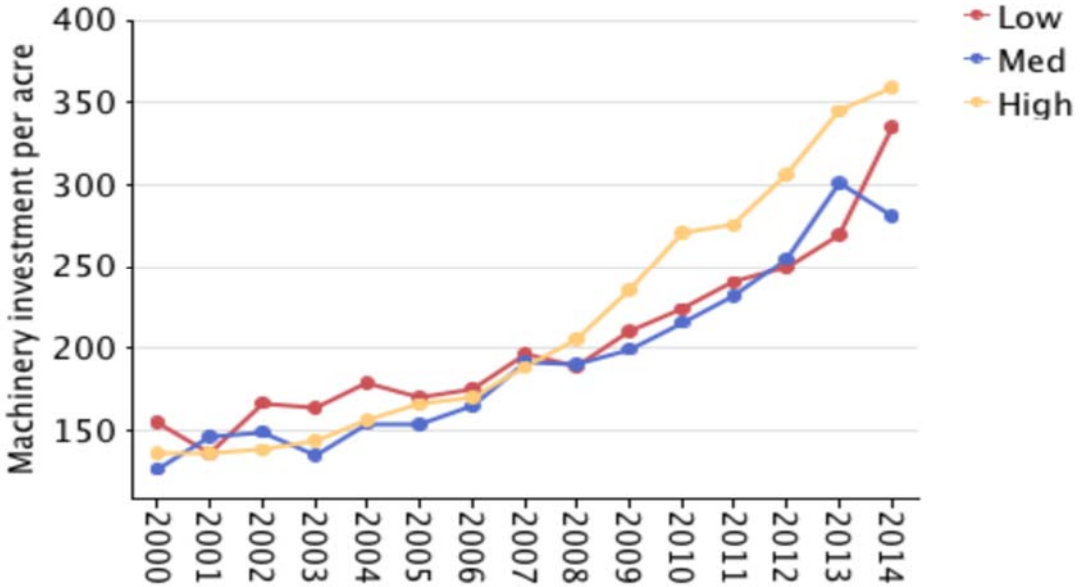

Figure 3. Machinery Investment per Acre for Eastern Kansas and for Farm Profitability Level

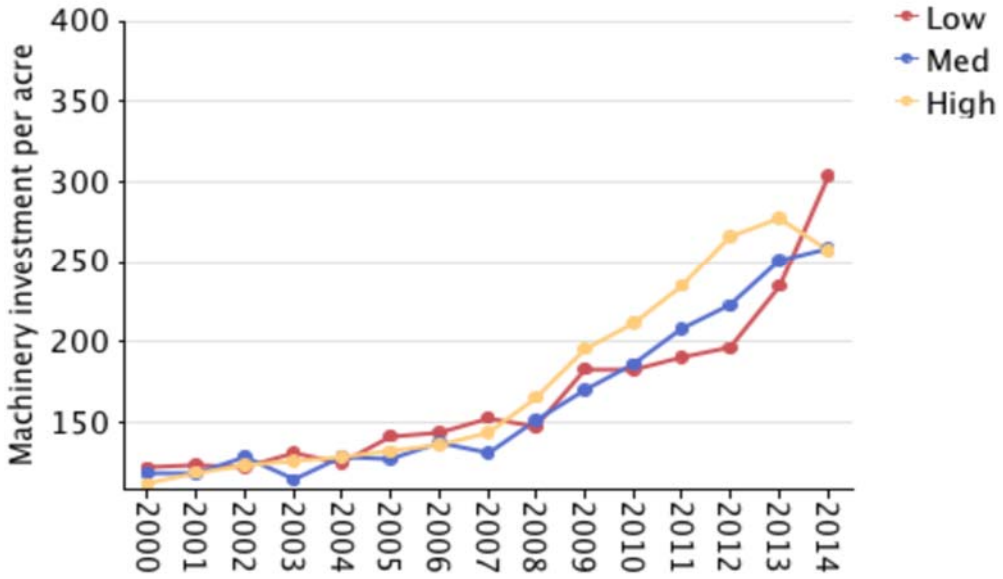

Figure 4. Machinery Investment per Acre for Central Kansas and for Farm Profitability Level

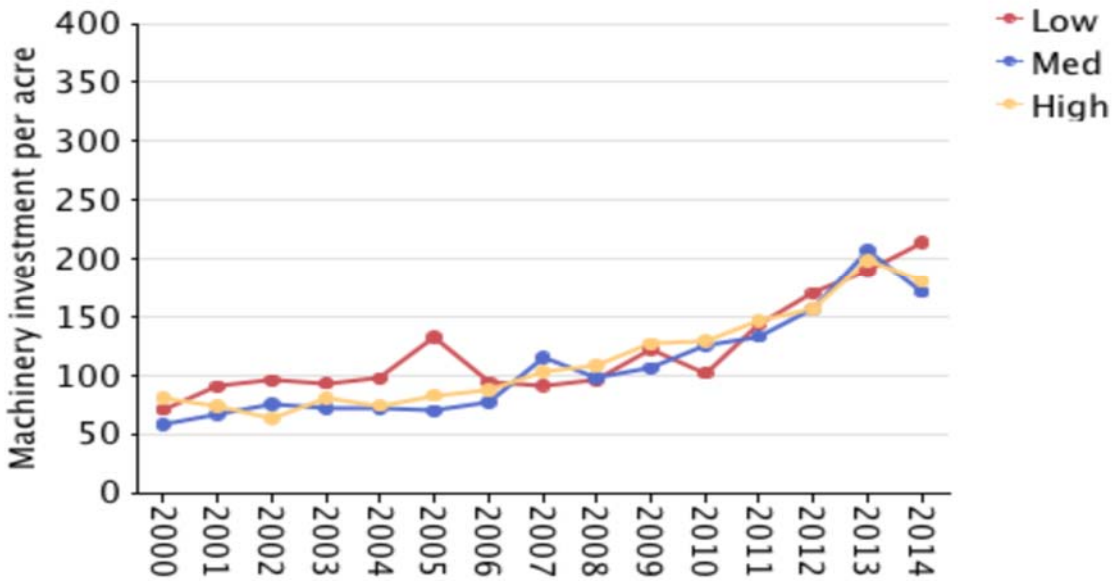

Figure 5. Machinery Investment per Acre for Western Kansas and for Farm Profitability Level

When looking at Figures 3, 4, and 5 as a group, it is easy to see that the level of machinery investment varies by the level of farming intensity. The eastern third of the state has farm machinery level above $350 per acre while the western third of the state has machinery levels of around $200 per acre.

Despite these regional differences, differences between the low, medium, and high profitability in each of the last three figures closely resembles the results shown in Figure 2. That is until 2007, when all three groups had similar level of machinery investments and then there were some minor differences occurring after that point. Again, the differences that did appear are probably the result and not the cause of the profitability differences as many farmers used their higher than normal profits to buy more equipment.

One of the ideas at the start of the analysis was that perhaps too much machinery by the lowest third of farms led to these farms being in the lowest profitability group. However, this appears to be not true as from 2000 to 2007 all three groups had similar levels of farm machinery investment. After 2007, the most profitable farms had the greatest level of machinery investment per acre. It doesn't appear as if this higher investment in machinery curtailed their profitability.

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