



LIMITED-SCOPE PERFORMANCE AUDIT REPORT

Agricultural Land Valuation: Evaluating the Potential Impact of Changing How Agricultural Land is Valued in the State

AUDIT ABSTRACT

State law requires the value of agricultural land be based on its use value—a value derived from the landlord’s net income—rather than its fair market value. The Division of Property Valuation within the Department of Revenue uses a complex formula and a large amount of data to calculate agricultural land values. In determining agricultural property values, state law also requires an eight-year average of net income to help ensure land values and the property taxes they produce remain stable. We tested the impact increasing the number of years in the calculation would have on agricultural property values for a single land type in a sample county and found it would produce more stable values. However, increasing the number of years also results in values that increasingly lag current crop prices, yields, and mixes. Moreover, increasing the number of years would likely result in reduced property values because crop prices are not adjusted for inflation. In addition, the assessed values produced by the formula do not necessarily reflect actual income for individual landowners because they are based on county averages. Finally, our findings cannot be projected because we only tested one type of land in one county.

**A Report to the Legislative Post Audit Committee
By the Legislative Division of Post Audit
State of Kansas
October 2017**

From the Legislative Post Auditor:

This limited-scope audit was authorized by the Legislative Post Audit Committee at its April 2017 meeting. It addresses the following question: How would increasing the number years used to calculate the average value of agricultural land affect the property's value and taxation?

To answer this question, we interviewed officials at the Division of Property Valuation within the Department of Revenue and faculty in the Department of Agricultural Economics at Kansas State University. We also reviewed research and data from both organizations. Because of data limitations and the complexity of the valuation formula, we were only able to create an estimate for one land type in one county.

We conducted this performance audit in accordance with generally accepted government auditing standards. Those standards require that we plan and perform the audit to obtain sufficient, appropriate evidence to provide a reasonable basis for our findings and conclusions based on our audit objectives. Overall, we believe the evidence obtained provides a reasonable basis for our findings and conclusions based on our audit objectives.

Generally accepted government auditing standards require us to assess the sufficiency and appropriateness of any computer-processed data we use to support our audit findings. The Division of Property Valuation and Kansas State faculty were helpful in providing us the data we requested, but the data we received were only sections of much larger data sets. Because of the size of the original data sets and the limited scope of this audit, we were not able to conduct robust data reliability work nor recalculate every component of the valuation formula as we originally intended. Based on the limited data reliability assessment we conducted, we do not think the data we used were so grossly inaccurate or incomplete that they would substantively affect the findings and conclusions in the report. However, limitations with the data and the complexity of the formula did limit our ability to quantify the effect of increasing the number of years used to calculate agriculture property values.

Audit standards require that we report on any work we did related to internal controls, but a review of internal controls was not part of the scope of the audit as approved by the Legislative Post Audit Committee.

This audit was requested by Representative Adam Smith and conducted by Meghan Flanders. Justin Stowe was the audit manager. If you need any additional information about the audit's findings, please contact Meghan at (785) 296-3792.

Sincerely,



Scott Frank
Legislative Post Auditor
October 6, 2017

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How Would Increasing the Number of Years Used to Calculate the Average Value of Agricultural Land Affect the Property's Value and Taxation?

Background Information

The Division of Property Valuation within the Department of Revenue oversees the valuation of all real property, including agricultural land. The Kansas Constitution establishes various categories of land based on its use (e.g., commercial, residential, and agriculture). County Appraisers are responsible for determining which constitutional category a piece of land belongs in for valuation purposes. There are four sub-categories of agricultural land used for valuation purposes: dry cultivated land, irrigated cultivated land, tame grassland, and native grassland. In 2016, the total of all agricultural land in the state was valued at \$2.3 billion, which accounted for about 7% of the value of all real property in the state.

Agricultural land values are used by counties to calculate property taxes. State law requires all real property, including agricultural land, to be valued annually for tax purposes. The Division of Property Valuation annually values agricultural land and reports those values to the appropriate county property appraiser. The county property appraiser certifies the values to the county clerk for calculation of the property tax owed. Each county has its own rate for property taxes which can include levies for public works, conservation districts, hospitals and more.

In 1985, the Legislature established two important statutory requirements for how agricultural land is valued. K.S.A 79-1476 specifies that the director of property valuation is empowered to administer a statewide program of reappraisal of all real property within the state. In addition, K.S.A. 79-1476 requires that:

- **The value of agricultural land is based on its use value—a value derived from the landlord's net income—rather than its fair market value.** The appraised value of agricultural land is based on the potential productivity of the type of agricultural land being appraised. The Department of Agricultural Economics at Kansas State University, in cooperation with the Division of Property Valuation, has developed procedures for determining the value of agricultural land. Each sub-category of agricultural land class requires different method for determining its value. The specific factors depend on the sub-category, but can include things like the Kansas Soil Rating for Plant Growth, the Kansas Irrigated Productivity Index, the crop mix, crop yields, crop prices, landlord's share of crop, landlord's share of expenses, production costs, and management fees.
- **Net income is based on an eight-year average to help ensure land values and property taxes are stable over time.** Using an eight-year average minimizes the year-to-year effects that drought, natural disasters, and other factors can have on agricultural land values. Kansas State University, in cooperation with the Division of Property Valuation, has developed a methodology to calculate this eight-year average. The method uses historic cost factors such as seed prices, herbicides prices, and equipment costs, as well as historic income factors including crop mix, yields, and prices, to determine the average net income of agricultural land over the eight-year period.

Using an eight-year average to calculate property values helps ensure property taxes remain stable, but also results in property values that lag current market trends. Increasing the stability of property values may be beneficial to farmers who pay the taxes and counties that

receive them. However, the increased stability of these values results in property tax levels that reflect past, rather than current trends. Division of Property Valuation officials told us they sometimes receive complaints when current market prices for crops are lower than in previous years (because individuals are paying higher taxes than they would based on current market trends). Conversely, a Kansas State official sometimes hears complaints when current market prices are higher than in past years (because counties receive fewer taxes than they would based on current market trends).

Legislators requested this audit because they were interested in knowing what effect increasing the number of years used to calculate property values might have on taxes.

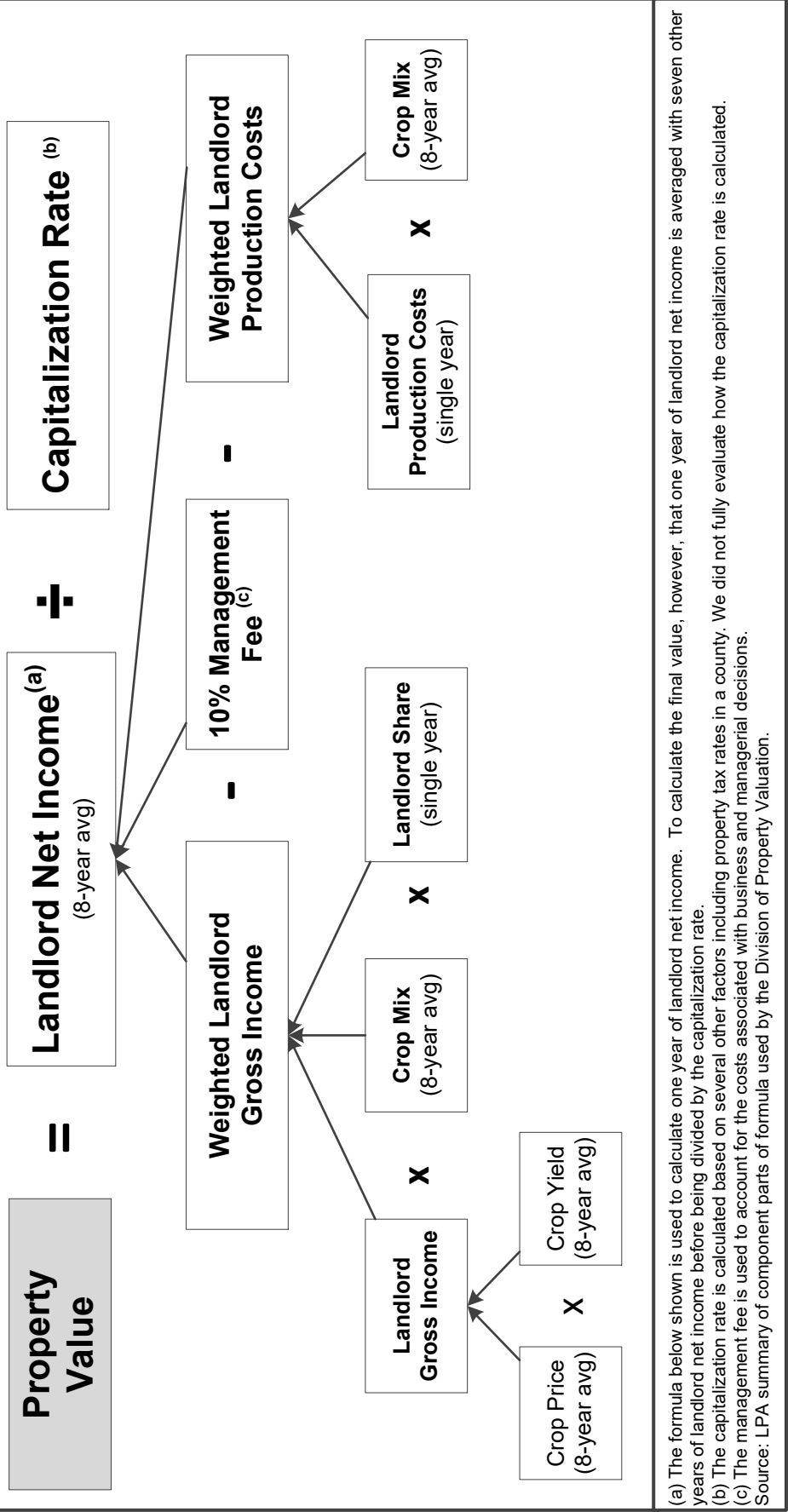
Finding #1: The Division of Property Valuation Uses a Complex Formula and a Large Amount of Data to Calculate Agricultural Land Values

The Division of Property Valuation’s valuation formula includes at least seven variables which require data from at least eight different sources. The Department of Agricultural Economics at Kansas State University, in cooperation with the Division of Property Valuation, has developed procedures for determining the value of agricultural land following the guidelines set for in K.S.A. 79-1476. Variables in the formula include things like crop prices, crop mixes, landlord share, and landlord production costs. The data for those variables is collected from various sources such as landowner and supplier surveys, the National Agricultural Statistics Service, and the U.S. Department of Agriculture’s Farm Service Agency. As an example, **Figure 1-1** on the next page shows the primary components of the formula for valuing dry cultivated land—the largest sub-category of cultivated agricultural land in the state. As the figure shows, numerous income and expense variables are used to ultimately calculate a property’s value.

Because eight-year averages are used for several variables in the formula, a single property value for a single county can require more than 1,000 data points to calculate. 15 years of data are required to calculate the landlord net income for one type of property in one county. Also, not only are eight years of landlord net income averaged together, but within each year of landlord net income, eight years of crop prices, mixes and yields are also averaged. Finally, multiple crops are often included within one county’s land type. Consequently, a single property value can require more than 1,000 data points to calculate.

Given the large number of data points involved in these calculations, we were only able to evaluate the net income portion of the valuation formula in the time allotted for this audit. We recognize that the capitalization rate is also a significant component of the formula, but were not able to fully evaluate how it is calculated.

Figure 1-1
Formula Used by the Property Valuation Division to Calculate Agriculture Property Values



(a) The formula below shown is used to calculate one year of landlord net income. To calculate the final value, however, that one year of landlord net income is averaged with seven other years of landlord net income before being divided by the capitalization rate.
 (b) The capitalization rate is calculated based on several other factors including property tax rates in a county. We did not fully evaluate how the capitalization rate is calculated.
 (c) The management fee is used to account for the costs associated with business and managerial decisions.
 Source: LPA summary of component parts of formula used by the Division of Property Valuation.

Finding #2: Increasing the Number of Years Used to Calculate Agricultural Property Values Would Produce More Stable Values in Lane County

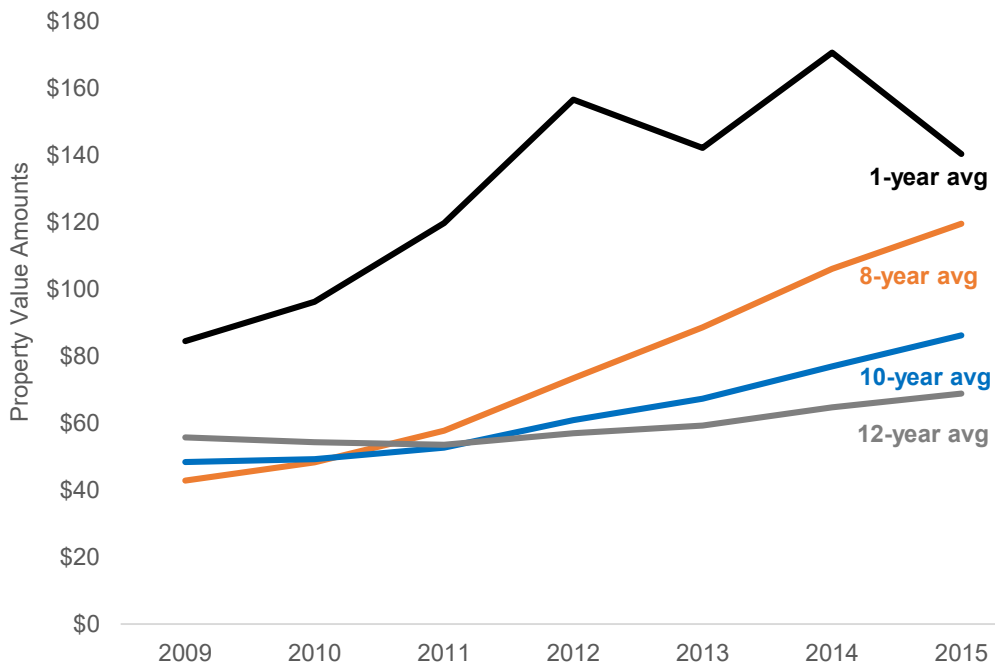
We evaluated the effect of increasing the number of years used to calculate a value for dry cultivated land in Lane County. The 8-year average of net landlord income include 8-year averages of crop mixes, prices, and yields. For our analysis, we recalculated the landlord net income for each year with 8-, 10- and 12-year crop prices. However, to simplify the calculations, crop mixes were held constant at 8-year averages because test work showed there was not significant a difference between an 8-, 10- and 12-year average. Crop yields were held constant at 8-year averages because of limitations in the data that were available. If significant differences exist in 8-, 10-, and 12-year crop yield averages, then holding this variable constant could distort the effect of using more years to calculate property value.

Increasing the number of years used to calculate property values for dry cultivated land in Lane county resulted in much more stable values. *Figure 1-2* on the next page shows the difference between calculating property values based on 8-, 10- and 12-year averages of net landlord income. We also included a one-year value to show the trend in yearly income over time. As the figure shows, property values based on the 12-year average were more stable than those based on the 8- or 10- year averages. *Figure 1-3* on the next page summarizes the range of values produced by using these different year averages. The top and bottom lines extending from each box represent the highest and lowest value in the range. As *Figure 1-3* shows, the range in values produced using an 8-year average is considerably larger than the range produced using a 12-year average. As the figure shows, the more years of data are averaged, the subsequent range in property values is significantly reduced.

Our analysis was limited by the complexity of the formula and the volume of data necessary for recalculations. We originally planned to recalculate 10- and 12-year averages for three counties. We were not able to do this because of the limited scope and timeframe for this audit. However, we were able to analyze dry cultivated land in Lane County. Lane County was one of the three initial counties division staff had suggested and was selected arbitrarily from among the three. However, we chose dry cultivated agricultural land because officials at the Division of Property Valuation told us it is about 40% of the agricultural land in Kansas. Officials also reported that cultivated land tends to have more variation in values than grasslands, which are based on rental income.

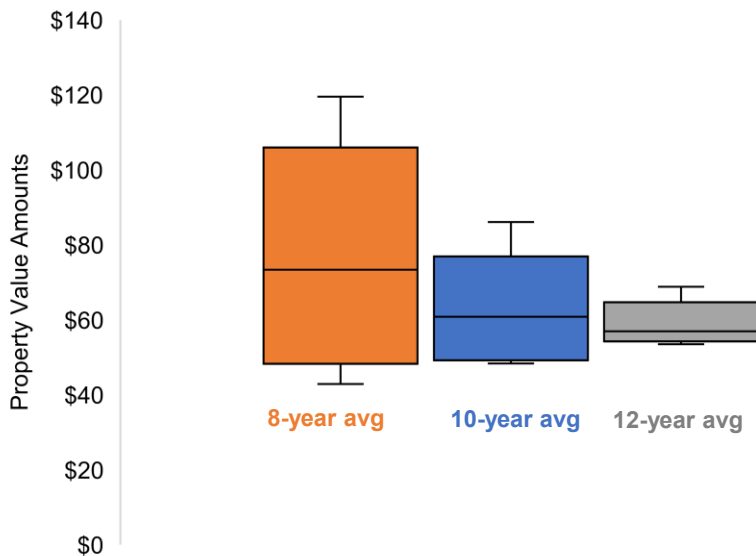
Because results of our analysis are based solely on information for a single land type in Lane county, the results of this finding are not projectible statewide. Although we think the results are likely to generally represent the effects of increasing the years used to calculate property values, the actual results of doing so will vary considerably based on prior year trends in crop prices, yields, mixes, and landowner expenses.

Figure 1-2
Comparison of Using 1-, 8-, 10-, and 12-Year Averages for
Calculating Property Values in Lane County



Source: LPA Analysis of data provided by K-State and the Department of Property Valuation (audited).

Figure 1-3
Range of Values Using 8-, 10-, and 12-year Averages

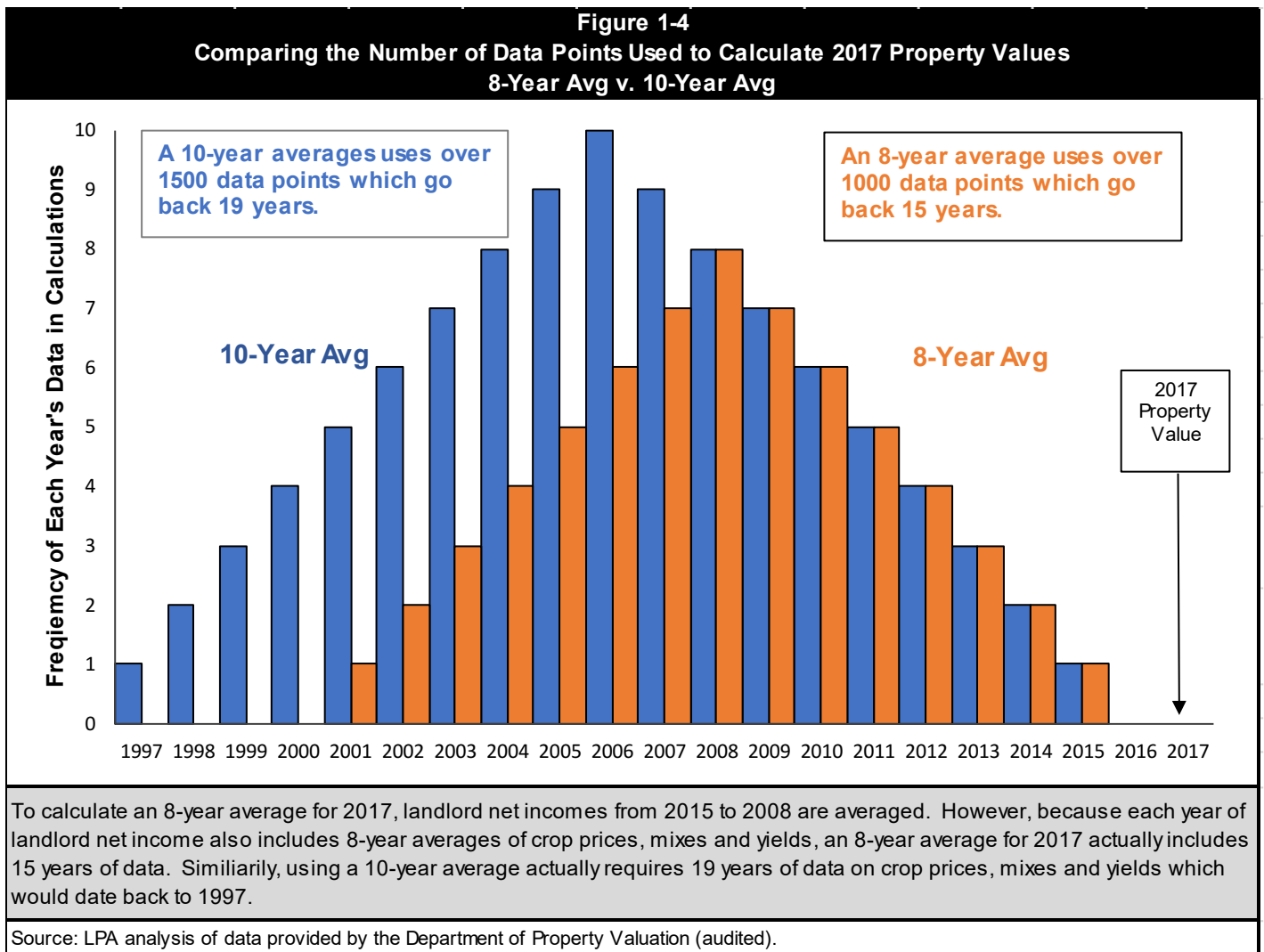


The top and bottom lines extending from each box represent the highest and lowest value in the range. The shaded box represents the middle 50% of the values. The line in the middle of each shaded box represents the median value.

Source: LPA analysis of data provided by K-State and the Department of Property Valuation (audited).

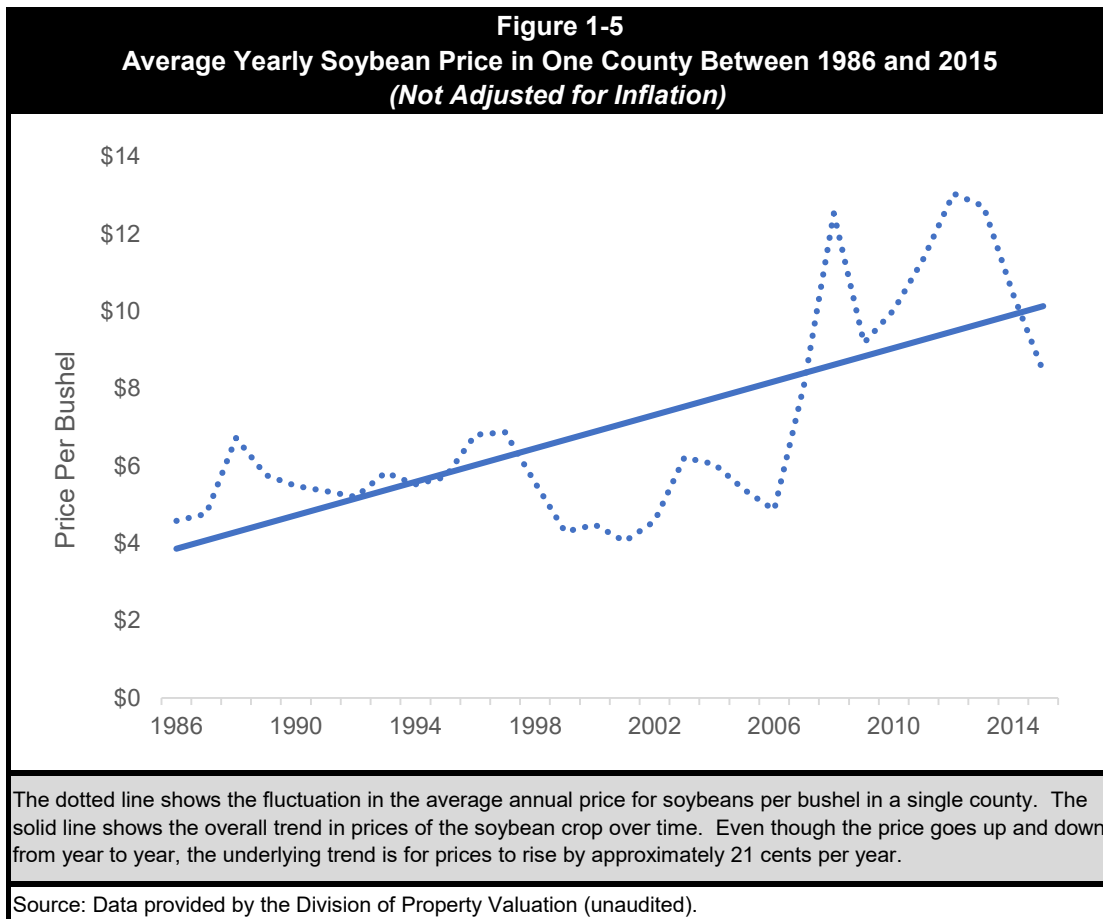
Finding #3: Increasing the Number of Years Used to Calculate Property Values Results in Values that Increasingly Lag Current Crop Prices, Yields, and Mixes

If the number of years used to average the net income were increased, trends in crop yields, crop prices, and crop mixes would increasingly reflect past and not current trends. The reason for this is twofold: there would be additional years of past data and more weight would be placed on years further in the past. **Figure 1-4** below shows the difference in the amount of years of data used for an 8-year average versus a 10-year average. As the figure shows, moving from an 8-year to a 10-year average significantly increases the number of data points (a total increase of more than 500 data points) and places much greater emphasis on older, and less current, data.



Finding #4: Increasing the Number of Years Used to Calculate Property Values Would Likely Result in Reduced Property Values Because Crop Prices are Not Adjusted for Inflation

Prices for crops fluctuate from year to year. However, the overall trend in prices will be upward over time because of inflation. For example, **Figure 1-5** below shows the average yearly prices for soybeans in a single county for the last 28 years. Over the years the prices go up and down. However, the trend line shows that overall the prices have increased during that time period.



The Division of Property Valuation does not adjust crop prices for inflation when calculating the landlord net income. Because inflation is almost always greater than zero, adjusting each of the years' crop prices for inflation would almost always increase crop prices in prior years. This in turn would increase landlord net income and ultimately increase property values. However, because crop prices are not adjusted for inflation, increasing the number of years used to calculate property values would reduce property values.

Finding #5: The Assessed Values Produced by the Formula Do Not Necessarily Reflect Actual Income for Individual Landowners

Almost all of the crop price, mix, yield, and expense information used by the division to calculate property values are based on county averages. Data is gathered from multiple sources to calculate these averages by county. Consequently, landowners with crop prices, mixes, yields, or expenses that are not average will be assigned values that do not represent the actual uses, costs, or productivity of their land. Because of time constraints, we could not evaluate the magnitude of this issue, but it clearly depends on how much variation there is within a county for all the variables used in the valuation formula. An official at the Division of Property Valuation said they have not done any work to assess the impact of using averages in these calculations because the statute currently requires the use of averages. Moreover, division staff told us that averages are used intentionally to ensure that a property's value is not affected by the individual business practices of a particular landlord. Although we understand why that makes sense from a valuation perspective, we think it is important to note that this method can result in landowners paying taxes that do not reflect their actual net income levels.

Recommendations

We had no recommendations for this audit.

Potential Issues for Further Consideration

We identified one issue that might be worth evaluating in more detail, but because of the limited scope of the audit, we did not have time to fully develop these issues. Although we had unresolved questions about the following issues, more audit work would be needed to determine whether they represent an actual problem or not.

- 1. Division of Property Valuation officials expressed concern that it may not be feasible to recalculate past property values using more than eight-year averages.** Changes to the formula typically are implemented on a rolling basis, starting with the year of the change and moving forward. This means prior years of landlord net income typically are not recalculated to the new standard being implemented. If a new 10- or 12-year average were enacted on a rolling basis, the full effect of the additional stabilization would not be seen for 10 or 12 years (depending on which length was chosen). Implementing new averages retroactively would require recalculation of past values. However, one official reported it may not be possible to retroactively implement a 10- or 12-year average because of the amount of work that would be required to recalculate not only the individual year landlord net incomes, but the underlying crop price, mix and yield averages.

Agency Response

On September 7, 2017, we provided copies of the draft audit report to the Division of Property Valuation within the Kansas Department of Revenue for their review. The division was not required to submit a formal response because the audit did not contain any recommendations. We also provided a copy to the Department of Agricultural Economics at Kansas State University for technical clarifications. We made several minor changes and clarifications to the final report as a result of the organizations' reviews, but those changes did affect any of our findings or conclusions.

Division of Property Valuation officials generally agreed with the audit's conclusions. The division did not submit a formal response.