Growth Rates of KFMA Farm Assets and Equity

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Introduction

As farms in Kansas and across the country become larger, more than just the acreage base changes. Assets and equity both increase as well. The addition of more purchased land will increase the amount of farm assets but the asset base is also increased by any retained earnings and additional contributions of capital. Farm equity is not changed by the initial purchase of farmland but the equity position does start to improve as the debt on land purchases is paid back.

One question facing those working with farm families is how quickly is the asset and equity base of a farm changing. This can be important as farm families transition from one generation to the next. If a family has two children, one who plans to farm and another who doesn't, the family may want to treat their children equally but still leave the farm business to the child who is farming. This situation implies that the farm family arrange other assets for the non-farming child. Without some idea of how quickly the farm assets and equity will grow, planning becomes difficult.

This paper examines the growth rates of assets and equity for farms in the nine crop reporting districts of Kansas to see how these rates have changed at different points in time.

Procedure and Data

Data for the value of assets and equity come from the Kansas Farm Management Association. In this paper, rates of growth are computed from some year in the past to the asset and equity values in 2017. The rates of growth are computed by calculating the Compound Annual Growth Rate (CAGR). The formula for this is:

$$CAGR = \left(\frac{EV}{BV}\right)^{\frac{1}{n}} - 1$$

where:

EV=End value (i.e., 2017 value)

BV=Beginning value

n=Number of years

It can be thought of as the growth rate that gets you from the initial investment value to the ending investment value if you assume that the investment has been compounding at that rate per year over that time frame.

To calculate the rates shown in Tables 1 and 2, the rates are calculated for each farm and then the median value is reported in the tables. There must be 10 or more farms for a region for a given year in order to show a value.

The number of farms representing a value in the table varies by year. For a given year, all farms that had assets and equity values both in 2017 and in the given year were used. Thus, the number of farms gets smaller as the starting year goes back farther. Because the growth rates are first calculated on the farm level, this implies that KFMA has a near continuous set of useable financials for a farm back to the year in question.

Tables 1 and 2 list the compound annual growth rates of farm equity and farm assets from the starting year in the left hand column. Caution: The rates shown are the compound annual growth rates for the entire time from the starting year until 2017. The individual rows of

the tables should be looked at independently. That is, the rate shown is not just for that year but for all years from the starting year until 2017.

As an example, in Table 1 for Northwest, the CAGR for farm equity starting in 2009 is 11.6%. This means that if you started farming in 2009, your equity increased by 11.6% for each year from 2009 until 2017. It did not just increase by that amount in 2009 only.

For 2010 in the same region in Table 1, equity increased at a compound annual rate of 5.8% for each year from 2010 until 2017. The Table is **NOT** saying that equity increased by 11.6% in 2009 and 5.8% in 2010.

Another point to keep in mind is that land values in the KFMA system are only adjusted every five years. This might cause some years to have a higher or lower CAGR relative to other years.

Results

The compound annual growth rates for equity are typically greater than the rates for assets as might be expected. Unless farms are buying a lot of land and adding debt, both assets and equity will benefit from rising land values and retaining farm income. However, because equity is less than assets, the rate of increase will be larger for equity. Paying down debt will also make the rate of equity change higher than the asset change.

The period of high grain prices in the early 2000's help to improve the CAGR for both assets and equity due to higher land values. These higher land values help to inflate the CAGRs reported in the tables for all years 2009 and earlier.

For farm families looking to match non-farm assets with farm assets, a CAGR of 6% to 10% for non-farm investments is probably a realistic goal. Looking back 20 years to 1997, we see that the CAGR for equity has a range of 4.4% to 12.6%. For assets, the range is 3.9% to 8.9%.

Table 1. Median Compound Annual Growth Rate for Farm Equity by Crop Reporting District (Note: Each number represents the annualized growth rate from the starting year in the year column through 2017. It is NOT the rate just for that year - see the text)

	West			Central			East		
Year	North-west	West Central	South-west	North Central	Central	East Central	North-east	East Central	South Central
2016	0.3%	0.7%	0.8%	-0.9%	0.0%	1.6%	-0.4%	1.6%	1.4%
2015	-1.7%	-0.1%	-1.0%	-1.0%	0.0%	1.6%	0.5%	1.6%	0.0%
2014	6.2%	5.1%	0.8%	9.2%	8.9%	4.9%	6.0%	4.9%	6.8%
2013	6.0%	5.7%	0.2%	7.2%	6.4%	5.1%	6.1%	5.1%	4.4%
2012	3.9%	5.2%	0.5%	7.4%	7.8%	5.8%	6.1%	5.8%	6.1%
2011	5.1%	6.0%	2.2%	6.8%	8.3%	5.8%	6.6%	5.8%	7.4%
2010	5.8%	6.9%	6.4%	8.6%	7.9%	5.7%	7.0%	5.7%	6.7%
2009	11.6%	13.6%	7.6%	13.5%	11.5%	8.7%	10.7%	8.7%	9.3%
2008	11.7%	12.9%	7.3%	12.9%	11.8%	8.7%	10.1%	8.7%	8.9%
2007	11.6%	12.4%	7.2%	13.1%	11.6%	9.1%	9.8%	9.1%	9.5%
2006	12.5%	13.5%	9.3%	13.4%	12.5%	9.3%	10.5%	9.3%	10.8%
2005	12.3%	11.7%	7.7%	12.7%	12.3%	8.4%	9.7%	8.4%	9.2%
2004	14.3%	14.7%	8.5%	13.5%	13.4%	10.4%	11.8%	10.4%	9.7%
2003	11.7%	13.9%	8.0%	12.5%	12.7%	10.7%	12.2%	10.7%	9.3%
2002	12.3%	13.4%	7.4%	12.1%	12.4%	11.0%	11.1%	11.0%	8.9%
2001	10.8%	11.3%	6.4%	11.3%	12.1%	9.6%	10.2%	9.6%	8.6%
2000	12.3%	10.8%	5.0%	10.9%	11.4%	9.4%	9.6%	9.4%	7.9%
1999	11.8%	10.3%	4.6%	10.3%	10.2%	9.1%	9.0%	9.1%	7.9%
1998	12.4%	10.2%	5.0%	10.3%	10.5%	8.8%	9.2%	8.8%	8.4%
1997	12.6%	11.4%	4.4%	10.9%	9.7%	7.6%	8.8%	7.6%	7.2%
1996	10.3%	8.2%	5.1%	10.1%	9.8%	7.7%	8.2%	7.7%	8.0%
1995	10.3%	9.8%	5.4%	9.7%	10.3%	8.4%	8.4%	8.4%	8.0%
1994	11.8%	11.6%	4.9%	9.6%	9.8%	8.4%	8.4%	8.4%	8.0%
1993	9.8%		4.5%	9.4%	9.8%	7.7%	8.2%	7.7%	7.7%
1992	9.9%		4.7%	9.4%	9.6%	7.9%	7.6%	7.9%	8.2%
1991	9.8%		4.7%	9.8%	9.3%	7.8%	7.2%	7.8%	8.6%
1990	9.4%		4.8%	11.4%	8.5%	7.7%	7.2%	7.7%	9.8%
1989	9.7%		3.8%	11.8%	9.0%	8.0%	7.4%	8.0%	9.8%
1988	9.1%		4.4%	11.1%	7.9%	7.7%	6.6%	7.7%	9.2%
1987			4.4%	11.1%	9.0%	7.6%	6.8%	7.6%	8.8%
1986			4.6%	8.7%	9.3%	7.9%	6.8%	7.9%	8.8%
1985			4.5%	8.6%	8.6%	7.7%	6.7%	7.7%	8.6%
1984			3.5%	6.3%	7.7%	6.8%	6.4%	6.8%	7.2%
1983			3.0%	7.3%	7.5%	7.0%	5.9%	7.0%	6.8%
1982			3.1%	8.0%	7.6%	6.1%	5.7%	6.1%	6.6%
1981			2.8%	6.8%	7.4%	5.8%	5.0%	5.8%	6.5%
1980			3.4%	6.5%	7.1%	5.5%	5.6%	5.5%	6.3%
1979			3.7%	6.2%	7.3%	5.4%	6.1%	5.4%	6.4%
1978			3.6%	6.7%	6.8%	6.2%	5.7%	6.2%	6.9%
1977				8.1%	6.8%	6.5%	6.1%	6.5%	7.2%
1976			4.4%		7.9%	5.8%	5.9%	5.8%	7.5%
1975			3.9%		4.5%	5.5%	5.5%	5.5%	6.3%
1974			4.7%		6.3%	5.3%	5.3%	5.3%	
1973			4.5%		5.2%	5.3%	5.4%	5.3%	6.3%

Table 2. Median Compound Annual Growth Rate for Farm Assets by Crop Reporting District (Note: Each number represents the annualized growth rate from the starting year in the year column through 2017. It is NOT the rate just for that year - see the text)

	West			Central			East		
Year	North-west	West Central	South-west	North Central	Central	East Central	North-east	East Central	South Central
2016	1.1%	1.1%	1.2%	-0.7%	-0.1%	1.2%	-0.3%	1.2%	1.3%
2015	-0.1%	-0.7%	0.7%	-0.9%	-0.6%	1.0%	0.4%	1.0%	-0.2%
2014	5.1%	4.1%	0.6%	6.8%	6.3%	4.8%	6.0%	4.8%	5.2%
2013	6.2%	4.9%	0.6%	6.6%	5.9%	5.2%	6.1%	5.2%	3.4%
2012	4.4%	6.6%	0.2%	5.4%	6.8%	5.4%	6.1%	5.4%	4.3%
2011	5.4%	5.1%	1.8%	5.7%	7.0%	5.0%	5.7%	5.0%	5.8%
2010	6.2%	6.3%	3.1%	7.1%	7.4%	4.4%	6.4%	4.4%	5.6%
2009	10.5%	11.3%	6.4%	11.1%	9.6%	6.4%	8.9%	6.4%	7.5%
2008	10.6%	9.6%	5.8%	10.2%	9.2%	6.8%	8.7%	6.8%	8.2%
2007	10.8%	9.8%	5.0%	10.2%	9.6%	7.3%	8.6%	7.3%	8.5%
2006	11.5%	9.7%	6.5%	10.5%	9.8%	7.7%	8.3%	7.7%	8.7%
2005	10.5%	9.9%	5.5%	10.6%	9.0%	7.2%	8.2%	7.2%	8.2%
2004	11.4%	10.2%	5.8%	10.8%	9.6%	8.5%	9.9%	8.5%	8.2%
2003	10.6%	10.5%	5.8%	10.8%	9.3%	8.7%	9.7%	8.7%	7.4%
2002	10.5%	9.8%	5.7%	10.7%	9.5%	8.5%	9.3%	8.5%	7.6%
2001	8.9%	8.2%	4.9%	9.8%	8.8%	7.6%	8.3%	7.6%	7.3%
2000	8.8%	7.8%	4.0%	9.3%	8.6%	7.3%	8.0%	7.3%	6.6%
1999	9.0%	7.9%	3.9%	9.0%	8.0%	7.3%	7.9%	7.3%	7.0%
1998	8.7%	7.5%	4.4%	9.2%	8.0%	7.1%	7.7%	7.1%	7.0%
1997	8.7%	7.7%	3.9%	8.9%	7.7%	6.4%	7.2%	6.4%	6.6%
1996	8.1%	7.2%	3.9%	8.9%	8.0%	6.5%	7.3%	6.5%	6.2%
1995	8.1%	7.8%	4.2%	8.5%	8.0%	6.9%	7.2%	6.9%	7.1%
1994	8.2%	7.7%	4.0%	8.9%	8.0%	6.5%	7.0%	6.5%	6.3%
1993	7.4%		3.8%	9.0%	7.8%	6.5%	7.0%	6.5%	6.1%
1992	7.8%		4.3%	8.8%	7.9%	6.7%	6.4%	6.7%	7.1%
1991	8.3%		3.7%	8.4%	7.5%	6.9%	6.4%	6.9%	7.0%
1990	7.8%		3.9%	8.7%	7.9%	6.3%	6.5%	6.3%	7.7%
1989	6.8%		3.2%	8.8%	7.4%	5.7%	6.6%	5.7%	7.3%
1988	6.2%		4.0%	8.7%	7.3%	6.2%	6.0%	6.2%	7.0%
1987			4.1%	9.0%	7.5%	5.5%	5.8%	5.5%	7.2%
1986			3.6%	7.9%	7.2%	5.6%	5.6%	5.6%	6.8%
1985			3.6%	7.1%	7.3%	5.5%	5.5%	5.5%	6.4%
1984			2.6%	5.8%	6.4%	5.2%	4.8%	5.2%	5.9%
1983			2.7%	5.5%	6.1%	4.9%	4.5%	4.9%	5.9%
1982			2.5%	6.2%	5.9%	4.1%	4.2%	4.1%	5.4%
1981			2.1%	5.2%	6.6%	4.3%	4.3%	4.3%	5.7%
1980			2.5%	5.0%	5.9%	4.5%	5.3%	4.5%	5.6%
1979			2.8%	4.9%	5.8%	4.1%	5.3%	4.1%	5.3%
1978			2.7%	5.5%	5.3%	4.9%	5.1%	4.9%	4.8%
1977				5.9%	5.0%	5.4%	5.3%	5.4%	5.9%
1976			3.6%		5.6%	5.2%	5.1%	5.2%	6.1%
1975			3.3%		4.5%	5.1%	5.2%	5.1%	5.0%
1974			4.1%		5.8%	4.9%	5.7%	4.9%	
1973			4.2%		4.7%	4.8%	5.2%	4.8%	5.2%