

Kansas NFI Predictions

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A rebound in NFI for 2023 but a downturn in 2024?

	Net Farm Income			
	2021	2022	2023(p)	Est 2024
NFI	\$ 342,936	\$ 190,336	\$ 250,238	\$ 72,513
% Change		-44%	31%	-71%



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It's a difficult time to make predictions

Quickly changing conditions

- Grain prices
- Expenses
- Crop conditions (i.e., weather effects)

Russia/Ukraine conflict

- Russia is a major exporter of fertilizer
- Exports of oil and gas

When did farmers actually market their grain and buy their inputs

- Buying fertilizer late this year worked out well

Great variability among regions

- Especially for a state like Kansas
- Wheat yields this last year are a good example

My 2022 prediction was pretty close



Weather is a big factor this year

That seems to be the story every year in Kansas

Probably below average yields (see my yield prediction talk)

- Not as bad as 2022

Wheat yields came out better than expected but as a result of fewer harvested acres

Is the drought situation coming to an end?

- El Niño this year could result in more moisture, especially in western Kansas during the winter months



Predictions for revenue

	2021	2022	2023(p)	Est 2024
Income				
Beef	\$ 71,026	\$ 81,007	\$ 105,309	\$ 115,840
Dairy-livestock	103	-	-	-
Dairy-milk	394	-	-	-
Sheep	192	88	88	88
Swine	3,167	3,641	3,641	3,641
Poultry and eggs	264	219	219	219
Other livestock	871	1,769	1,786	1,786
Custom feeding	4,152	4,410	4,718	4,718
Ad hoc pmt - Livestock	3,595	-	-	-
minus Feed purchased	23,853	31,319	39,148	43,063
Livestock VFP	\$ 59,911	\$ 59,815	\$ 76,614	\$ 83,230
Corn	304,315	253,982	195,778	173,144
Grain sorghum	66,004	34,272	35,252	34,202
Soybeans	261,849	197,463	206,983	200,807
Sunflowers	714	216	-	-
Wheat	138,985	139,529	149,886	138,697
Hay and forage	18,014	25,196	27,716	30,488
Other crop	-	-	-	-
Govt payment (farm bill only)	17,842	25,568	8,747	-
Ad hoc pmt - Crops	42,169	-	-	-
Crop ins proceeds	15,799	147,745	195,576	66,193
Machine work	14,906	14,930	15,079	15,833
Other income and hedging	30,819	38,758	40,696	41,510
Crop VFP	\$ 911,418	\$ 877,660	\$ 875,715	\$ 700,874
TOTAL VFP	\$ 971,328	\$ 937,475	\$ 952,329	\$ 784,104

Higher beef revenue

Government payments will be highly dependent on the base acres within a farm and the region of the state

- There are some very high payouts for corn base in western KS

Crop insurance is dependent on producers buying full coverage

Grain revenue for 2024 is based on futures prices

- Normal yields assumed for 2024 as well

Predictions for expenses

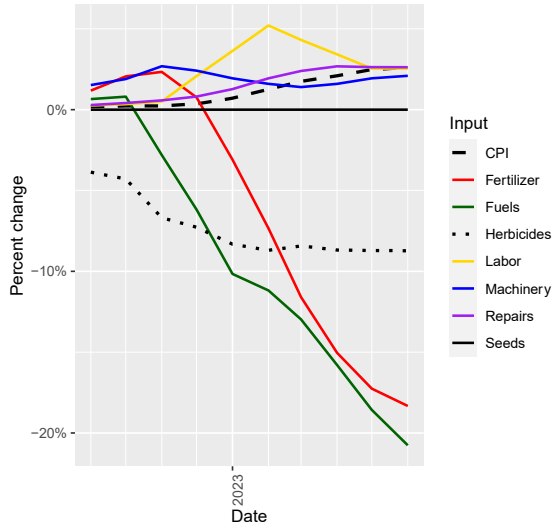
Expenses				
Hired Labor	23,332	25,335	25,446	26,784
Machinery Repairs	59,596	63,151	63,203	65,250
Irrigation Repairs	1,857	2,767	2,905	2,992
Building Repairs	3,751	3,935	4,132	4,256
Seed/Other Crop Expenses	78,226	81,700	78,632	83,262
Crop Insurance	24,557	32,131	32,640	33,321
Fertilizer-Lime	100,413	155,254	119,768	110,637
Machine Hire	25,647	25,133	25,225	25,713
Organization Fees, Publications	5,438	5,594	5,412	5,538
Vet-Med-Drugs	3,610	3,538	3,715	3,826
Misc Crop Expense	3,455	4,113	4,186	4,317
Misc Livestock Expense	2,426	2,677	2,811	2,895
Dairy Expense	45	-	-	-
Gas-Fuel-Oil	28,541	39,802	30,301	28,861
Irrigation Energy	3,679	6,758	5,407	4,866
Real Estate Taxes	11,493	11,827	12,063	12,305
Personal Property Taxes	2,435	2,667	2,600	2,687
General Farm Insurance	14,212	15,608	15,542	16,059
Utilities	6,807	7,105	7,006	7,249
Cash Farm Rent	49,563	51,295	53,859	56,552
Herbicide-Insecticide	80,174	98,939	96,986	102,409
Conservation	2,530	2,194	2,003	2,067
Auto Expense	838	866	763	724
Other expenses	(15)	57	57	57
Total Operating Expenses	\$ 532,612	\$ 642,445	\$ 594,663	\$ 602,628
Interest paid	20,379	21,325	22,391	22,391
Depreciation - machinery	68,012	75,270	76,775	78,311
Depreciation - buildings	7,389	8,099	8,261	8,261
Total Farm Expenses	\$ 628,392	\$ 747,139	\$ 702,091	\$ 711,591

Lower fertilizer and fuel prices should help with farm expenses

- These price declines may not show up until 2024 however
- This past year, it was more profitable to wait and buy fertilizer
- Buying fertilizer can be one of the most tricky decisions for a farmer to make
- Need to ensure a supply vs an estimate of price trends

Change in expenses since last year

USDA Price Indexes Relative to 2022-09-01



Inflation (the CPI index) is probably at a 4 to 5% rate now

- Cooling off some
- Is the official number low?

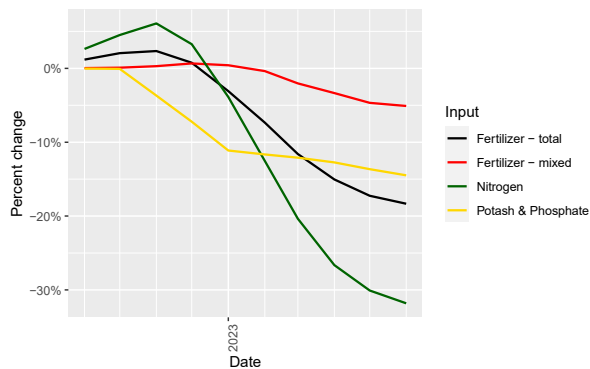
Big declines in fertilizers and fuels and herbicides

Most of the other categories follow a similar pattern to the CPI index

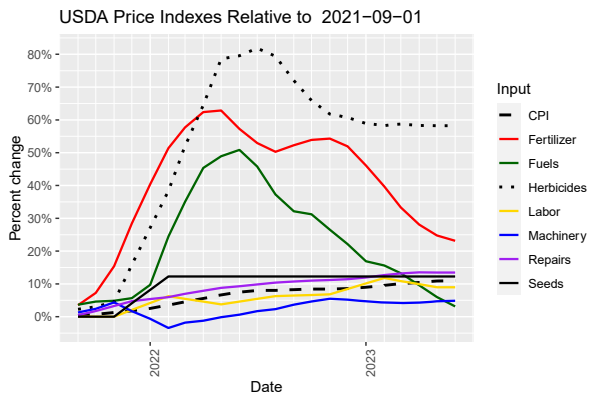


Change in expenses since last year (#2)

USDA Fertilizer Indexes Relative to 2022-09-01



Change in expenses from 2 years ago



Fertilizer prices peaked in mid 2022 and have been declining since

- Fertilizer is still 20% higher than 2 years ago

Herbicides prices are up 60% over 2 years

- Most of that increase happened in 2022

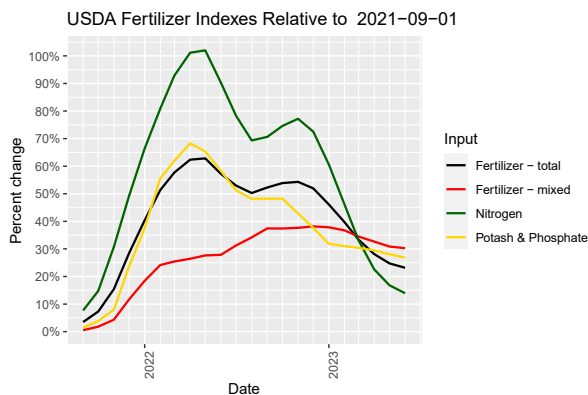
Fuel costs are about where they were 2 years ago.

Machinery has not increased as much as inflation over the last 2 years

- It's all relative though

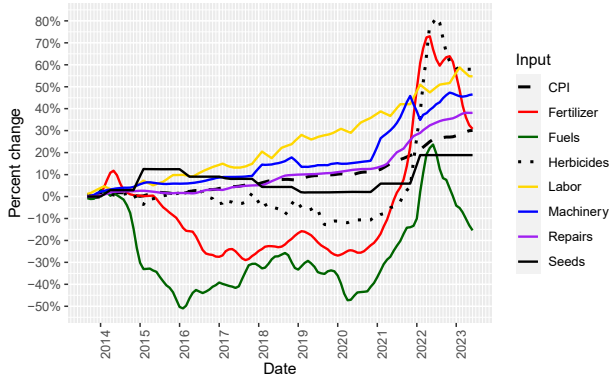


Change in expenses since 2 years ago (#2)



Change in expenses from 10 years ago

USDA Price Indexes Relative to 2013-09-01



It's all relative to the starting base year

Inflation (CPI index) was fairly low until the last 2 year

- Overall prices are now 30% higher than 10 years ago

Fertilizers and fuels are closely related (discussed later)

- Prices can be very volatile
- Will we ever have relatively cheap fertilizer like we did from 2017 to 2021 again?

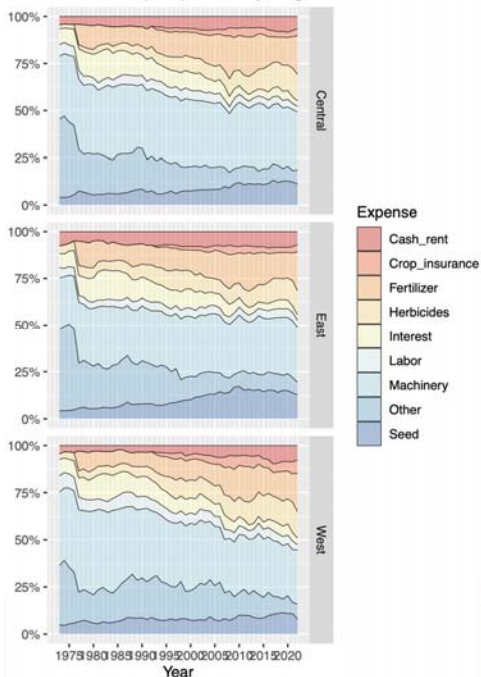
The bad news for farmers is that most inputs seem to increase faster than the inflation rate

- Exceptions include fuel and seeds



What is the allocation of farm expenses?

Percent Crop Expenses by Region



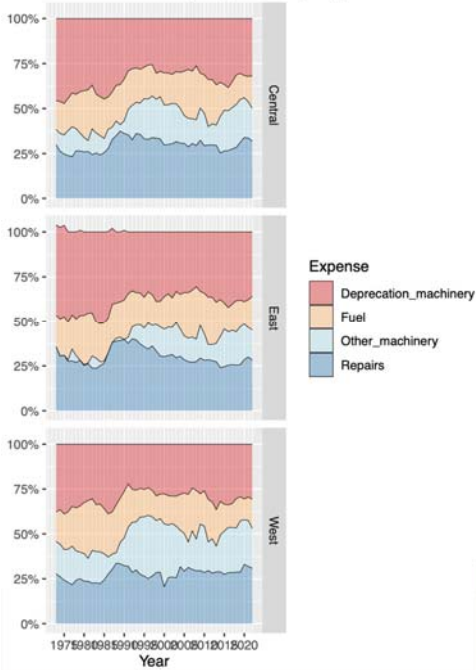
Comparison of Major Crop Expenses by Area
Percent of Total Expenses - 1978 and 2020

	Year	Machinery	Fertilizer	Seed	Labor	Herbicide	Interest	Cash rent	Crop insurance
Central									
	1978	36.5%	11.8%	6.8%	4.9%	2.4%	13.2%	4.4%	0.0%
	2022	30.7%	20.6%	11.2%	2.9%	14.1%	2.9%	6.5%	3.6%
East									
	1978	30.2%	13.3%	6.2%	3.8%	5.7%	10.6%	5.4%	0.0%
	2022	29.3%	20.8%	12.7%	3.8%	12.9%	2.9%	7.0%	3.8%
West									
	1978	41.8%	9.2%	7.3%	6.2%	4.4%	11.5%	3.2%	0.0%
	2022	28.7%	20.2%	8.0%	2.7%	14.2%	3.4%	7.7%	7.0%

Machinery is still the biggest expense category but getting smaller
 Fertilizer expenses have increased greatly
 Interest expense is relative small now but has been much higher in the past – One of the issues from the 1980's farm crisis

A closer look at machinery expenses

Percent Machinery Expenses by Region



Comparison of Machinery Expenses by Area
Percent of Total Machinery Expenses - 1978 and 2022

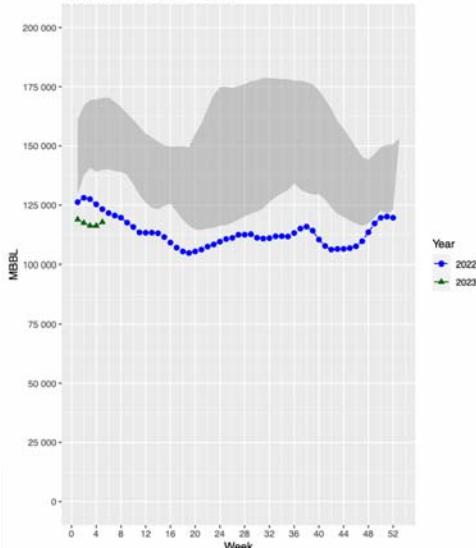
Year	Depreciation	Fuel	Repairs	Other
Central				
1978	42.1%	19.1%	26.5%	12.3%
2022	31.8%	18.1%	31.9%	18.3%
East				
1978	48.5%	20.7%	27.0%	3.8%
2022	35.8%	19.1%	28.3%	16.9%
West				
1978	35.5%	24.0%	24.3%	16.3%
2022	30.7%	16.2%	30.8%	22.3%

Depreciation is the biggest factor of machinery costs (which is the biggest factor of total farm expenses)

The relative wt of depreciation has gone down which could reflect bigger equipment, higher operating costs, and no-till/minimum till production

Diesel stocks

U.S. Diesel Stocks by Week for 2022 and 2023
Range for previous 5 years in gray



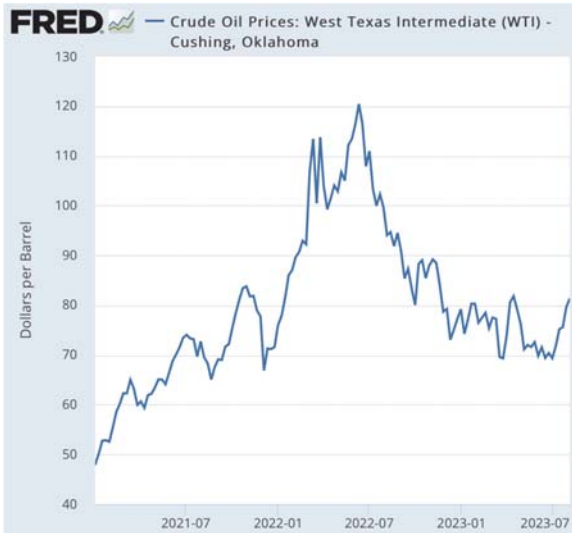
Improving diesel stocks have lowered the price spread between gas and diesel

Tight refinery capacity remains a problem

What will happen with the push to electric vehicles?

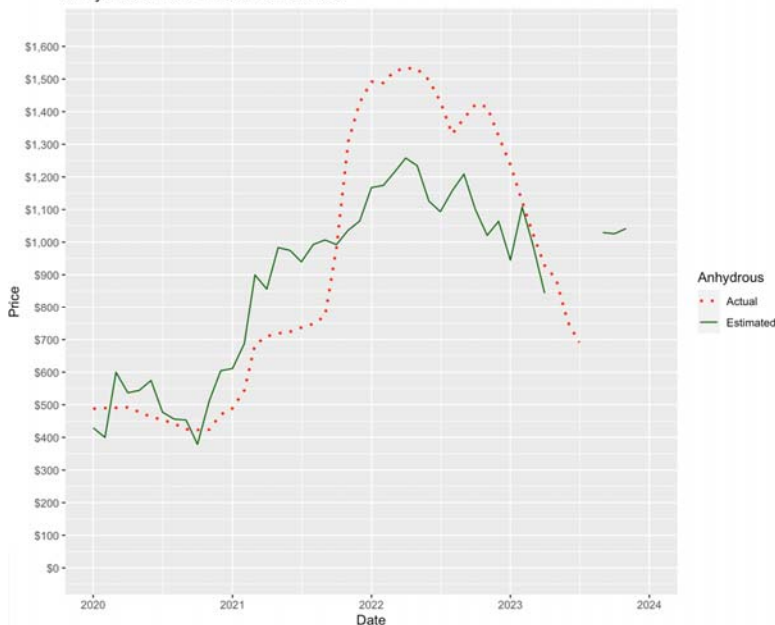
- CA will ban the sale of all diesel trucks by 2036
- All trucks in CA must be zero emission by 2042
- More diesel for ag?

Gas and Diesel and Oil



Fertilizer prices

Anhydrous Price - Actual vs Predicted



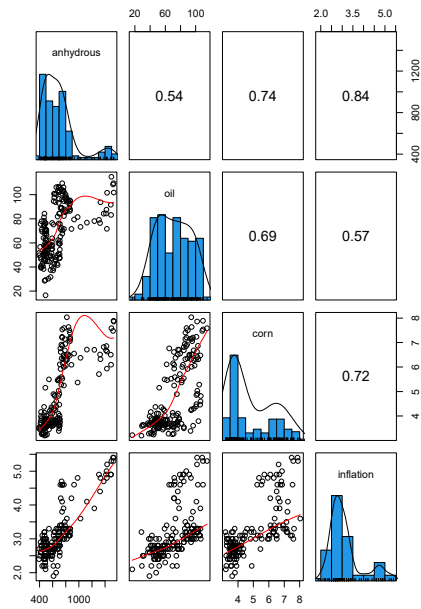
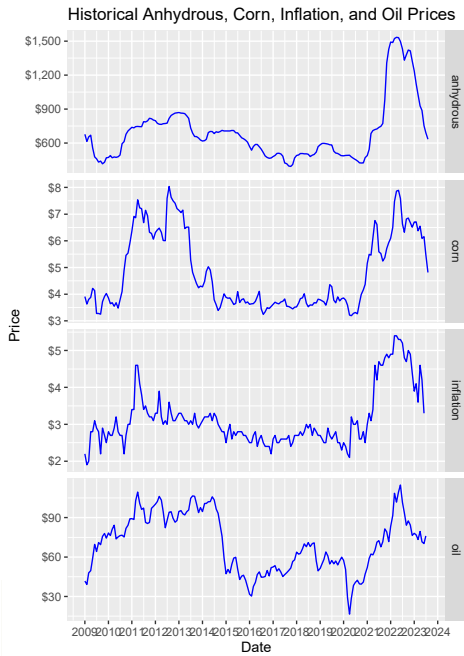
Prediction model

$$AA = -318 + 2.7 * \text{Oil (lag 6 mo)} + 47.7 * \text{Corn} + 184.3 * \text{Inflation (lead 2 mo)}$$

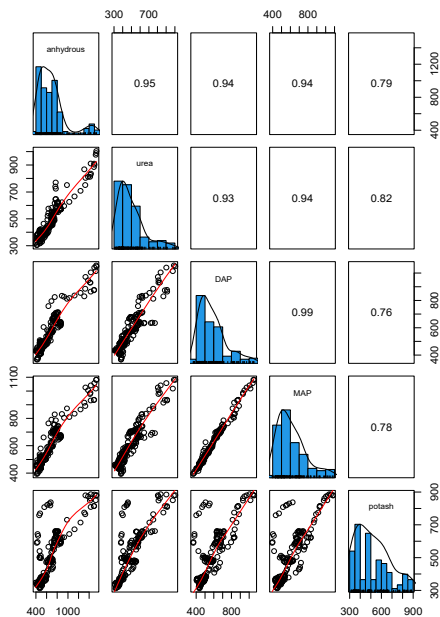
What is the bottom for N prices?

- Declines in corn, oil, and inflation have been leading AA prices lower.
- Likely greater upside risk rather than downside risk
 - In other words, I think the bottom on fertilizer prices is in sight

Factors in AA price model



All fertilizers are highly correlated



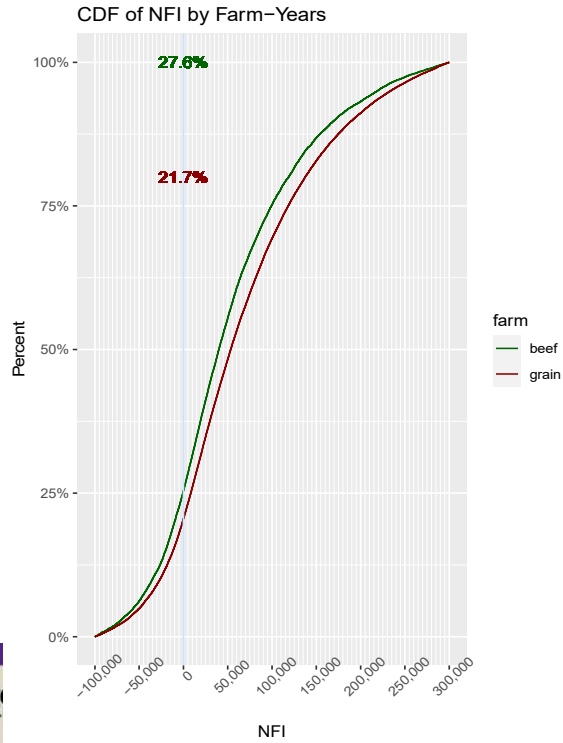
It should be no surprise that the nitrogen fertilizers are highly correlated

What is surprising is that Potash is strongly correlated with the other fertilizers

The Russia/Ukraine war remains a major concern

- Russia is one of the largest exporters of oil plus all the major fertilizers
- N supply should not be a concern in the US since it is made from natural gas
- US is self sufficient for Phosphate rock (P)
- US is NOT self sufficient for Potash (K)
 - Import from Canada but Russia is a major supplier

How are farms doing?

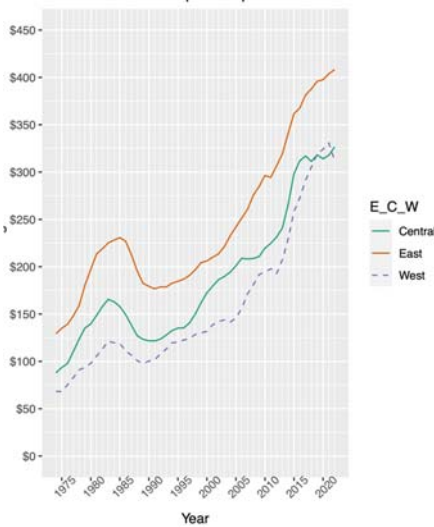


Historically the median farm income has been about \$50K

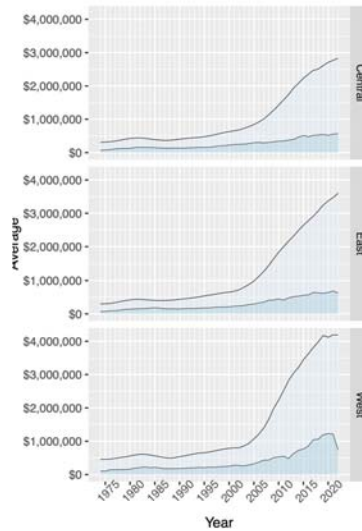
Grain farms are doing slightly better than beef farm



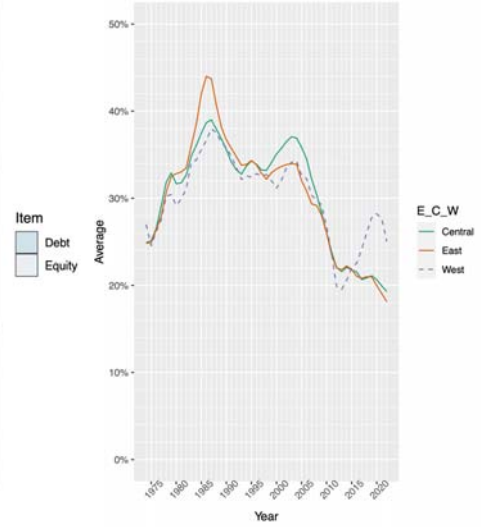
Kansas Farm Debt per Crop Acre



Kansas Balance Sheet by Region



Kansas Debt/Asset Ratio



Similar to the 1980's



Thank you!

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