Farm Balance Sheet Uses

AAE 320

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Goal

- How to construct and interpret common Financial Ratios for Liquidity and Solvency
- Present typical ratio values by farm type
  - Current Ratio and Debt:Asset
- Suggestions for where to go for more information

What use is a Balance Sheet?

- Can see where assets and liabilities are and their relative sizes
- Can look at changes if have balance sheets from previous years—see if you're gaining
- Typically focus on ratios to look at Liquidity and Solvency of the business
- Ratios control for differences in business size

Current Ratio and Liquidity

- Measures ability to meet current financial obligations as they come due without disrupting normal business
  - Ability to generate cash in the short-term
- Current Ratio =

  Current Assets/Current Liabilities
- Example: 1.4 or 40%

Current Ratio

- Too low: cash flow problems, if asset prices change or costs suddenly arise (repairs), can have trouble meeting current liabilities
  - Don’t want to sell 1 acre to put new roof on barn
- Too high: holding too much cash, current assets typically have lower returns than if put capital into other longer term productive assets or market
  - Income lost by keeping cash “under the mattress”
  - Parable of the talents: buried gold in ground

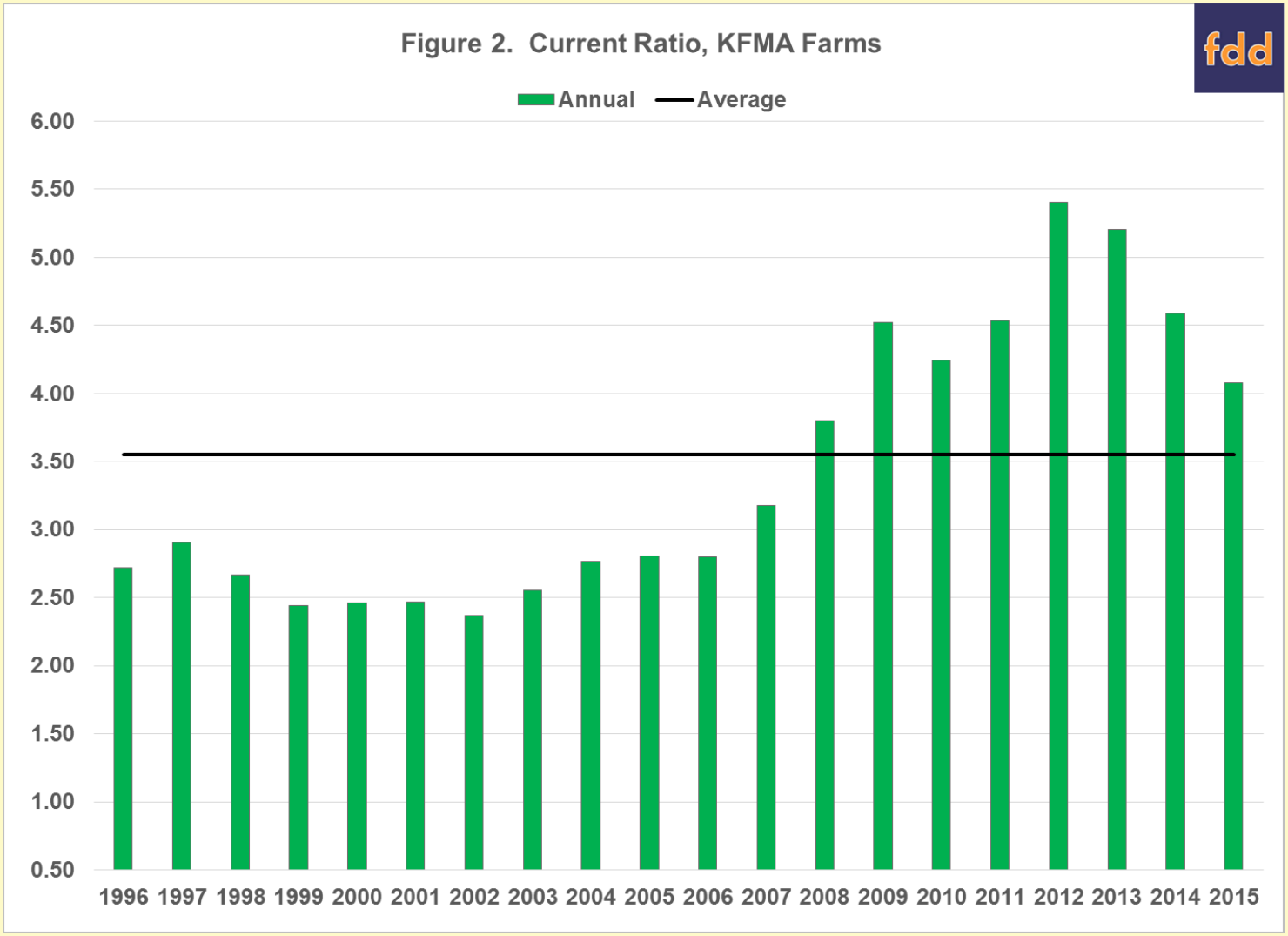
What are typical current ratios?

- IL Farm Business Farm Management Program of 2,166 IL farms in 1996
- Fairly typical by farm types
Farm Type	Median Current Ratio
Hogs	2.03
Grain	1.81
Beef	1.57
Dairy	1.33

What's a good Current Ratio?

- Iowa State University Extension:
  - Typically farms with adequate liquidity have current ratios > 2.0
  - Farms with continuous sales (dairy) often have current ratio as low as 1.5
  - Beef feeding farms have low current ratios
  - Farms with concentrated sales (cash grain) need current ratio as high as 3.0 early in year
- Ohio State University Extension: Measures of Dairy Farm Competitiveness: 1.3 is competitive

Kansas Farm Management Assoc. Farmers



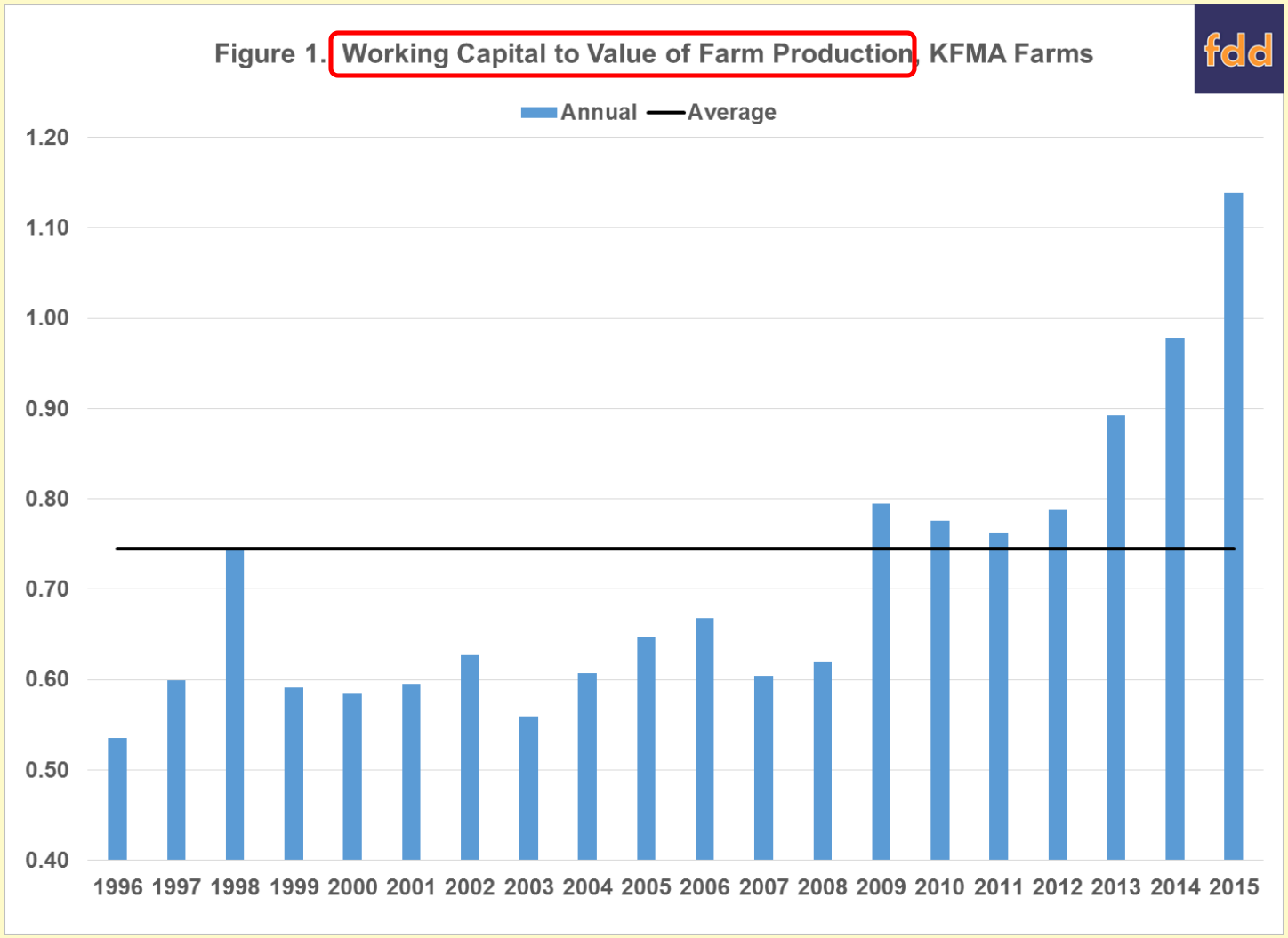
Examining Trends in Liquidity for a Sample of Kansas Farms:
http://farmdocdaily.illinois.edu/2016/07/examining-trends-in-liquidity-sample-kansas-farms.html

Working Capital vs Current Ratio

- Working Capital =

  Current Assets – Current Liabilities
- Measures the margin of safety in dollars (not ratio or %) to meet short-term liabilities
- For cross farm comparisons (or to track your farm over time if changing in size) need to relate it to size of business in some way, that's why use current ratio
  - $10,000 not much for a 5000 acre farm, but may be more than enough for a 20 cow dairy
  - This why most use Current Ratio
  - Alternative: divide by total revenue or value of production to tie to the "size" of the business

Kansas Farm Management Assoc. Farmers



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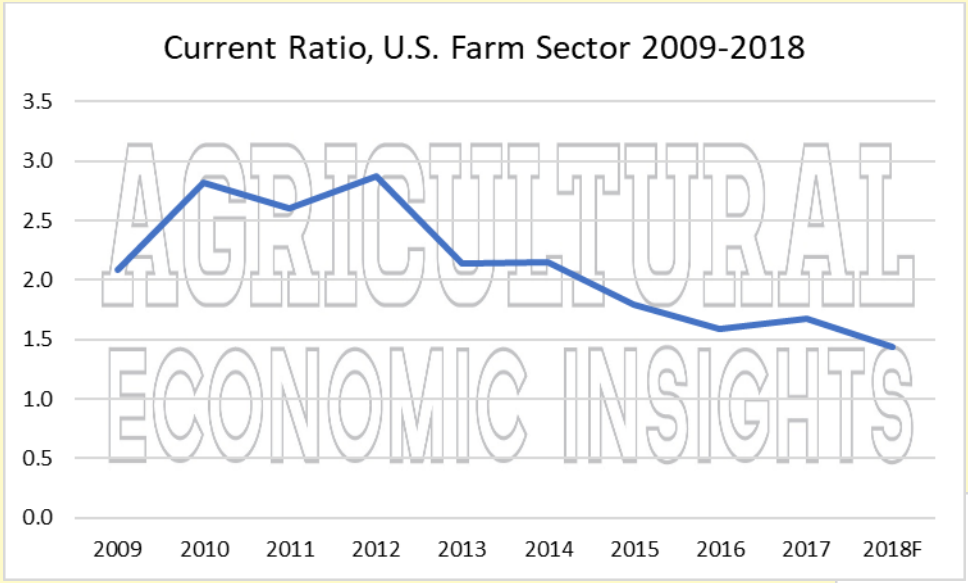
University of Minnesota FinBin (2015)

Financial Standards Measures
(Farms Sorted By Farm Type)

	Avg. Of All Farms	Crop	Dairy	Hog	Beef	Crop and Dairy	Crop and Hog	Crop and Beef	Other
Number of farms	3036	1491	372	53	161	85	43	240	585
Liquidity									
Current ratio	1.66	1.76	1.84	1.68	1.27	1.82	1.62	1.49	1.50
Working capital	226,854	278,878	155,255	631,863	108,602	193,197	388,903	159,770	157,990
Working capital to gross inc	29.7 %	39.7 %	14.5 %	21.0 %	17.0 %	24.6 %	27.7 %	28.9 %	26.6 %
Solvency (market)									
Farm debt to asset ratio	40 %	38 %	42 %	49 %	50 %	41 %	47 %	39 %	44 %
Farm equity to asset ratio	60 %	62 %	58 %	51 %	50 %	59 %	53 %	61 %	56 %
Farm debt to equity ratio	0.68	0.60	0.73	0.95	1.02	0.69	0.90	0.64	0.79

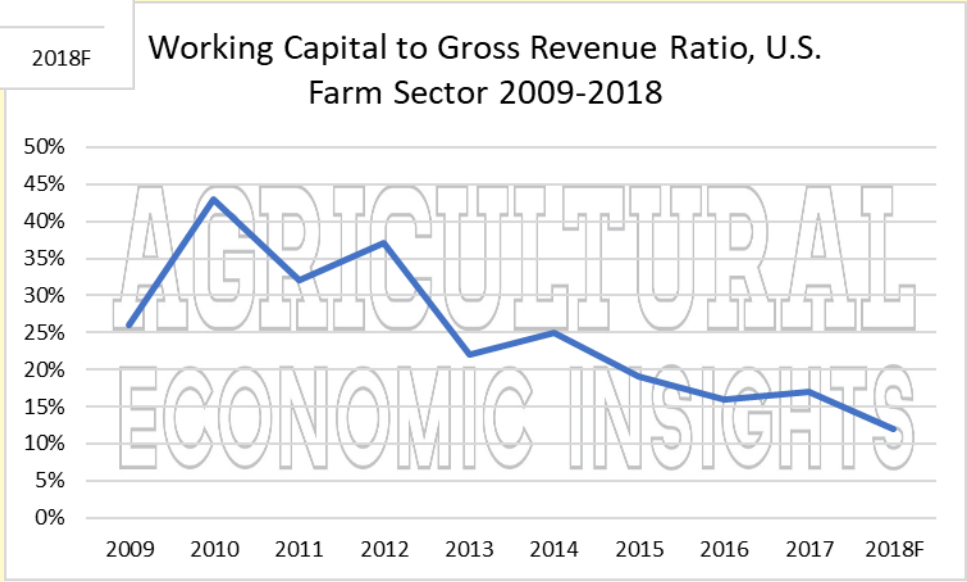
- https://finbin.umn.edu/
- Mostly farms in MN, plus NE, MO

Liquidity Trends for US Farm Sector



Farm Financial Conditions Trend Weaker Again (Brent Gloy, Oct 15, 2018)

https://ageconomists.com/2018/10/15/farm-financial-conditions-trend-weaker-again/



Solvency

- Measures relative relationships among assets, liabilities, and equity to assess “health” of firm
- Could the farm’s debts be paid off if foreclosed?

  Requires that Assets > Liabilities
- Measured by three ratios
  - Debt to Asset Ratio
  - Equity to Asset Ratio
  - Debt to Equity Ratio
- Given any one ratio, you can derive the others, so each is a different way to look at Solvency

Debt to Asset Ratio

- Debt/Asset = Total Liabilities/Total Assets
- Proportion (or %) of business assets owed to lenders (i.e. % the bank owns)
- 0.70 means you owe 70% of farm assets to lenders (bank owns 70%)
- 1.0 means debts = assets
  - Means owner equity is zero, bank owns 100%
- > 1.0 means business is insolvent

Equity to Asset Ratio

- Equity/Asset = Total Equity/Total Assets
- Proportion (or %) of assets owned
- 0.45 means you own 45% of farm
- 1.0 means equity = assets so owner has no liabilities (he/she owns all equity)
  - Own 100% of the farm
- < 0 means business is insolvent—has no or negative equity

Debt to Equity Ratio

- Debt/Equity = Total Liabilities/Owner Equity
- Proportion of financing provided by lenders relative to that provided by owner equity
- 1.0 means you and your lenders are providing equal proportion of financing
- 0.75 means for each dollar of equity financing you provide, your lender provides $0.75 of financing
- 1.8 means for each dollar of equity financing you provide, your lender provides $1.80 of financing
- Very large Debt/Equity ratio implies very small equity and potential for insolvency

Relation between Ratios

- Given any of these three financial ratios, you can derive the others
- Basic Accounting Identity must hold

  Assets = Liabilities + Equity

  Assets = Debts + Equity
- Notation: A = D + E
  - Debt/Asset = D/A
  - Equity/Asset = E/A
  - Debt/Equity = D/E

Relation between Ratios

- A = D + E Divide by A: 1 = D/A + E/A

  Debt/Asset + Equity/Asset = 1, or

  Equity/Asset = 1 – Debt/Asset

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- (D/A)/(E/A) = D/E, or

  Debt/Equity = Debt-to-Asset/Equity-to-Asset
- Rearrange and use D/A and D/E connection

  Debt/Asset = Debt/Equity/(1 + Debt/Equity)

  Equity/Asset = 1/(1 + Debt/Equity)

Typical Solvency Ratios

- IL Farm Business Farm Management Program of 2,166 IL farms in 1996

  Debt to Asset Ratios

Farm Type	Upper 25%	Median	Lower 25%
Hogs	0.44	0.30	0.16
Grain	0.46	0.29	0.15
Beef	0.52	0.31	0.17
Dairy	0.50	0.36	0.23

WI Center for Dairy Profitability

WI Dairy Balance Sheet for 2000

Size (cows)	Debt/Asset	Equity/Asset	Debt/Equity
< 50	23%	77%	30%
51-75	24%	76%	32%
76-100	29%	71%	41%
101-150	31%	69%	45%
151-250	49%	51%	95%
> 250	53%	47%	112%

UW Extension
Managing in Difficult Times

Measure	Strong	Stable	Weak
Current Ratio	> 1.5	1.0 – 1.5	< 1.0
Debt:Asset	< 30%	30% - 70%	> 70%
Equity:Asset	> 70%	70% - 30%	< 30%
Debt:Equity	< 42%	42% - 230%	> 230%

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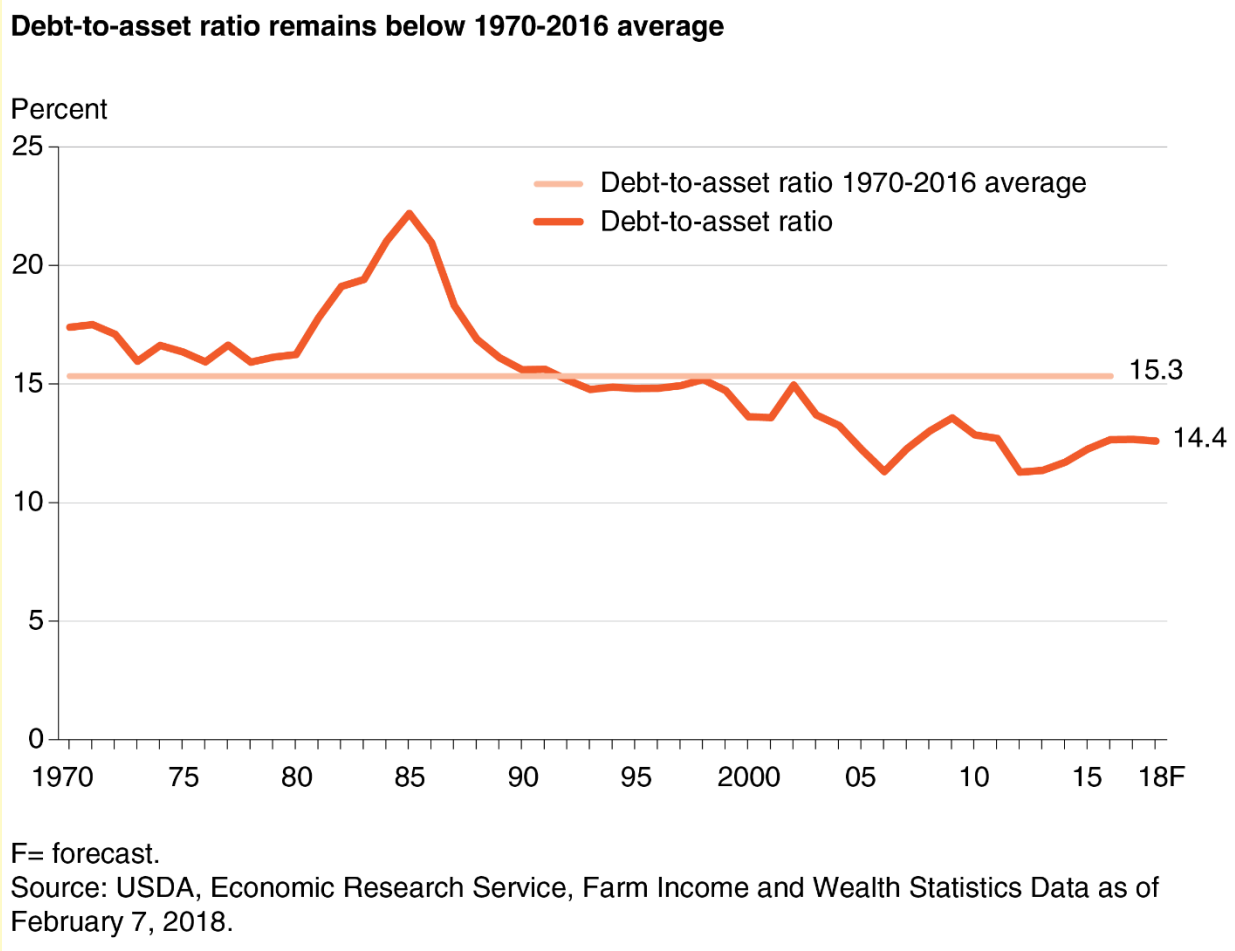
US Farm Sector Debt to Asset Ratio



Source: USDA ERS Current Indicators of Farm Sector Financial Health (Feb 2018)
https://www.ers.usda.gov/amber-waves/2018/july/current-indicators-of-farm-sector-financial-health/

More Information

- Provide a quick list/overview of what sort of information is available on farm finance
- Farm Financial Standards Council
- University Extension: UW and other states
- UW Center for Dairy Profitability

Farm Financial Standards Council

- Home page: http://www.ffsc.org/index.html
- Mission: "To provide education and a national forum to facilitate the development, review, communication and promotion of uniformity and integrity in both financial reporting and the analytic techniques useful for effective and realistic measurement of the financial position and the financial performance of agricultural producers."
- *Financial Guidelines for Agricultural Producers*

  http://www.ffsc.org/html/guidelin.htm
- Recommendations of how to prepare Farm Financial Balance Sheet with several examples
- The source for this sort of information

UW Center for Dairy Profitability

- Homepage: http://www.cdp.wisc.edu/
- Focuses mostly (not exclusively) on dairy
- Lots of materials, some financial, the midst of updating
  - Financial analysis reports have become dated
- WI dairy data as Farm Balance Sheets for comparison and benchmarking

  http://www.cdp.wisc.edu/Financial%20Benchmarks.htm
- AgFA (Agricultural Financial Advisor) becoming FarmBench
- Collect, analyze, and store financial data, create farm specific benchmarks and reports

  http://cdp.wisc.edu/AgFAnew2.htm

Neighboring States

- University of Minnesota: Center for Farm Financial Management

  http://www.cffm.umn.edu/
- Sell/Support FINPACK: “The most comprehensive computerized farm financial planning and analysis system available“

Neighboring States

- Iowa State University: AgDecision Maker
  http://www.extension.iastate.edu/agdm/homepage.html
- University of Illinois: FarmDoc
  http://www.farmdoc.uiuc.edu/
- Both have sections on Farm Finance with several publications and decision aids

Summary

- Financial Ratios: Liquidity and Solvency
- Focused on Current Ratio and Debt:Asset
  - How to construct and interpret
- Typical values by farm type
- Where to go for more information