Machine Learning for Farmland Price Projections

PEAKSOIL

INDEXES

Who Is Peak Soil?

EXPANDING THE WORLD OF INVESTIBLE FARMLAND

PSI provides transaction-based farmland indexes that track the average price of farmland in 6 US states, Saskatchewan, and the Midwest.

PROVIDING DATA-DRIVEN DECISIONS

PSI's analytical tool, AccuAcre, provides data from the parcel level (fair market value, yields, soil types, crop histories) to the state level. Compare different pieces of land or compare farmland to other financial instruments.

DECODING RELATIONSHIPS WITH MACHINE LEARNING

Understand market trends with statistical analysis and machine learning. Determine the market drivers of farmland price and reduce exposure. AI derived FMV's and future values.

Characteristics Of An Asset Class

	Spot/Benchmark	Derivatives	Liquidity	Transparency	FMV	Homogeneous	Analytics
Gold	✓	✓	✓	✓	✓	✓	✓
Corn	✓	✓	✓	✓	✓	✓	✓
Oil	✓	✓	✓	✓	✓	✓	✓
S&P	✓	✓	✓	✓	✓	✓	✓
10Yr UST	✓	✓	✓	✓	✓	✓	✓
Farmland	✗	✗	✗	✗	✗	✗	✗

Features Of Peak Soil Indexes

Provide Benchmark

Timely/Consistent

Transaction-based

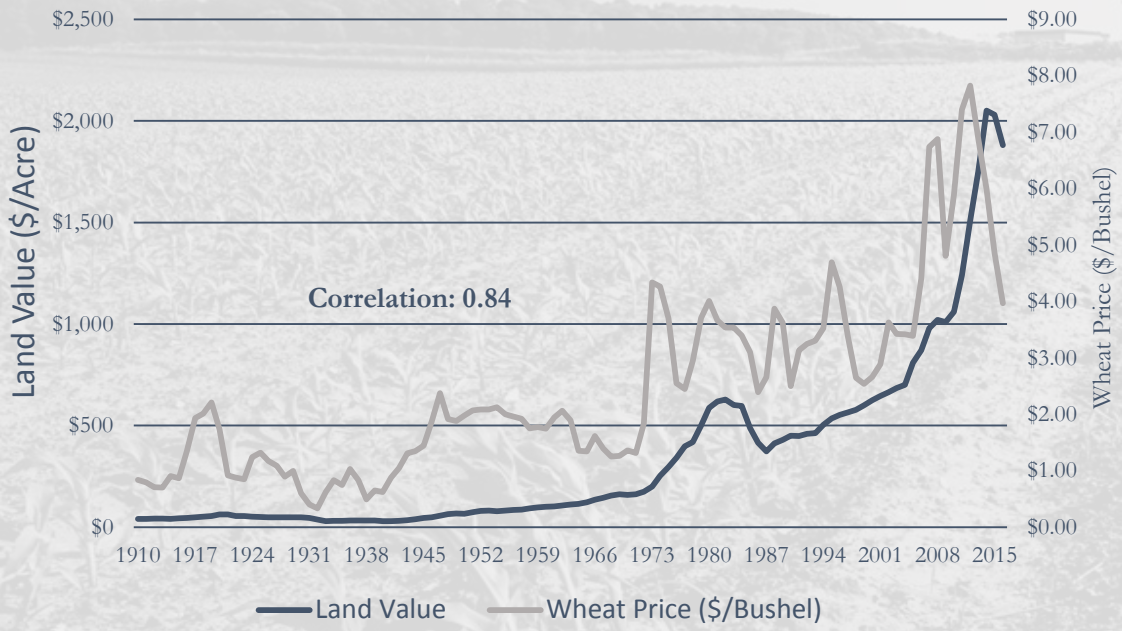
- INTRODUCE NOMINAL CONCEPT TO FARMLAND
- QUANTITATIVELY DEFINED
- DESIGNED FOR DERIVATIVE USE
- FUNCTIONALITY AND FLEXIBILITY (LOCATION, QUALITY, SIZE)
- PRODUCED WITH INTEGRITY (SAFE/SECURE/ACCURATE INDEXES)

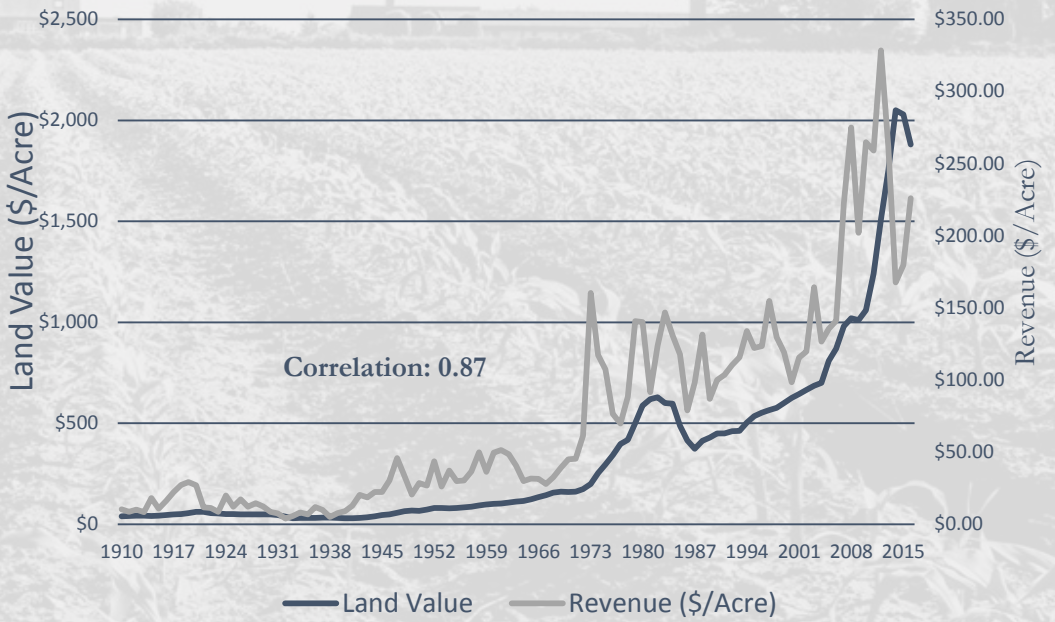
It’s Real but is it Fair?

The price movements and volatility occurring around farmland are not always priced accordingly or in a timely manner.

Long Term Correlations Decoded

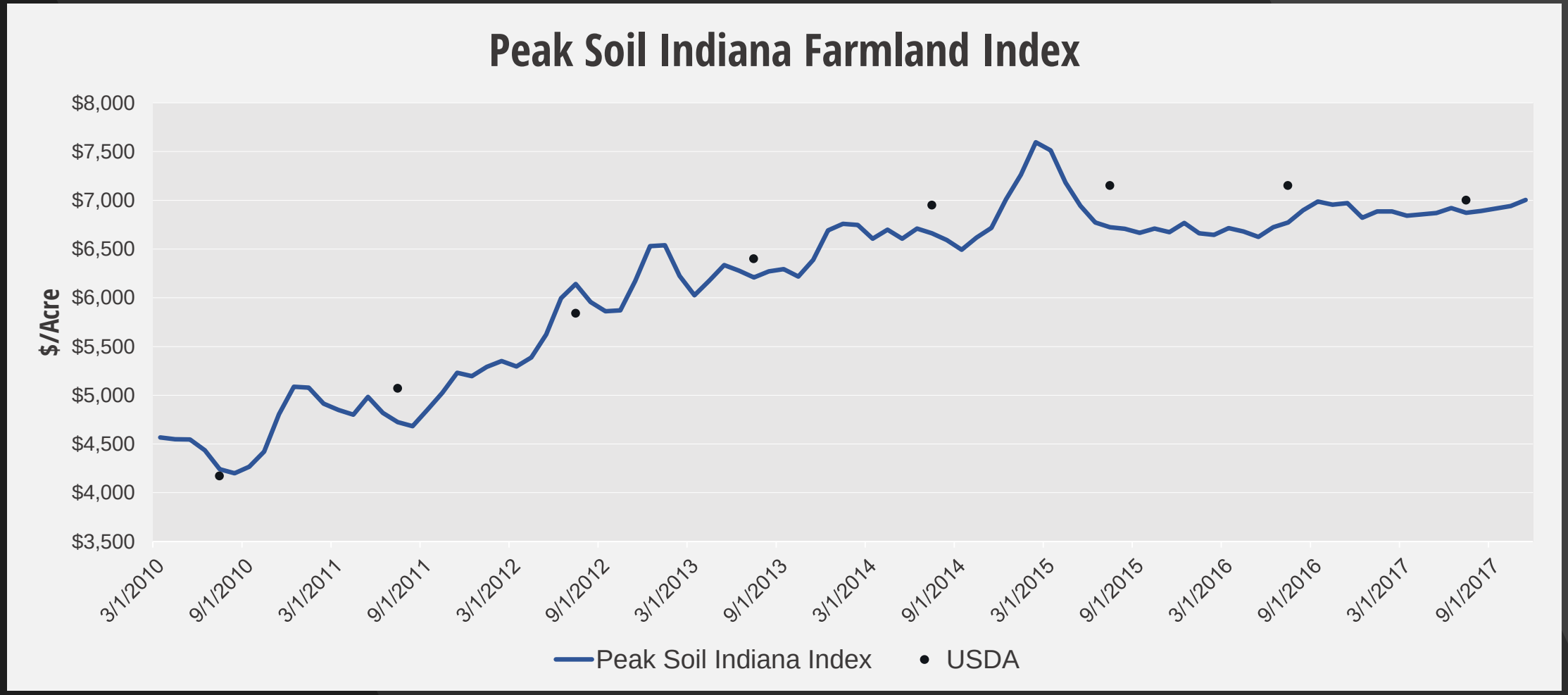
University studies relate farmland value to crops and interest rates:





Kastens, T. L. and Dhuyvetter, K. C. “Valuing and Buying US Farmland with a Consideration of Non-Ag Features” August 2011.

Indiana Index

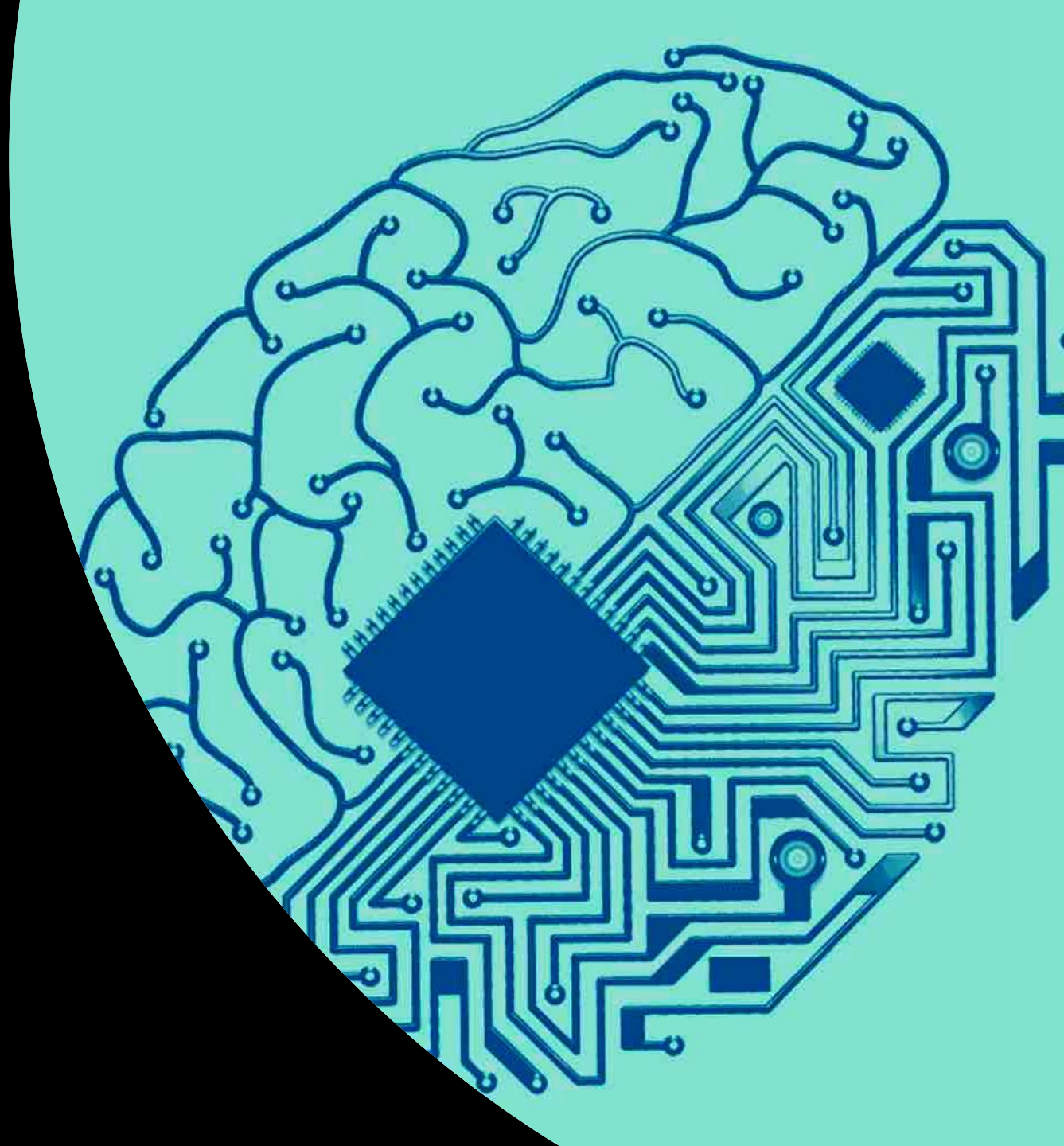


Machine Learning

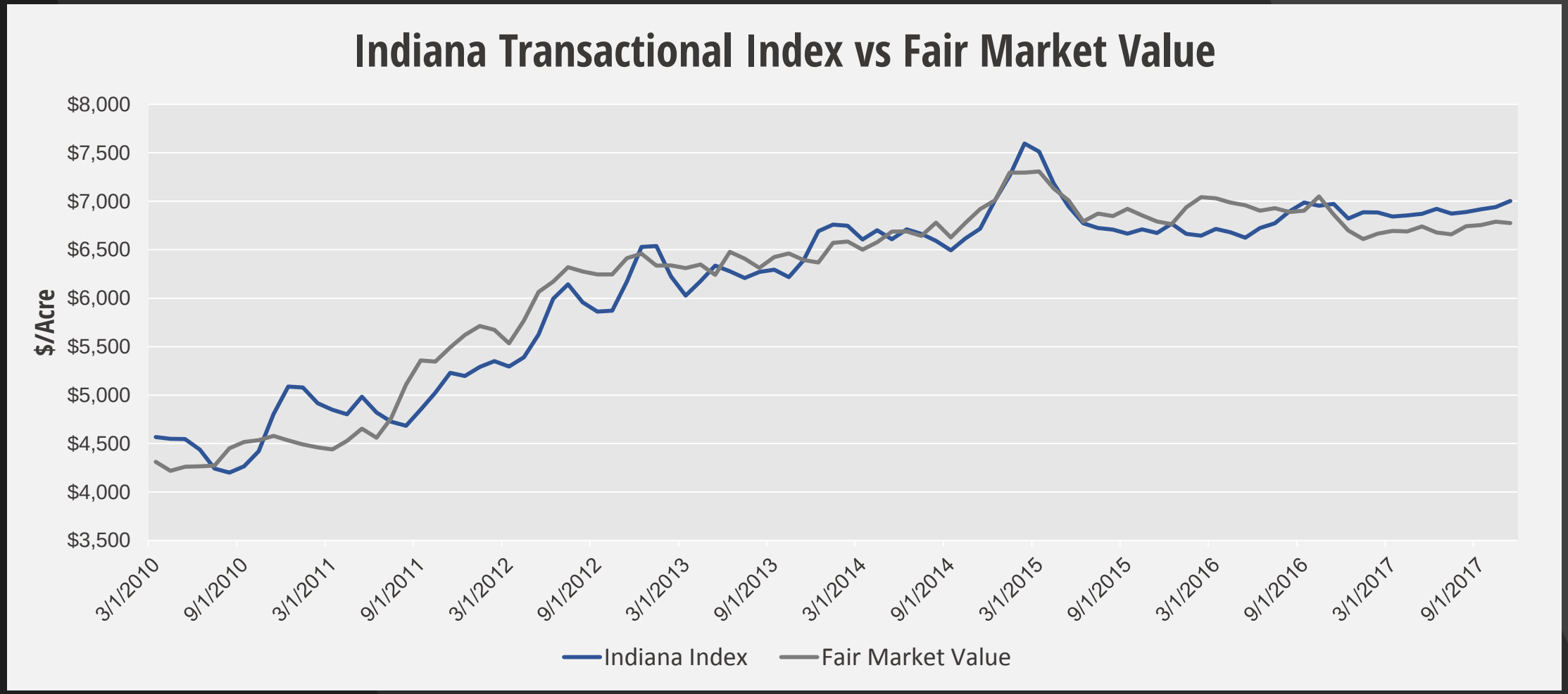
- Not a miracle solution - but not just hype!
- Excels at finding complex relationships, but needs guidance.

Inputs to find fair market values?

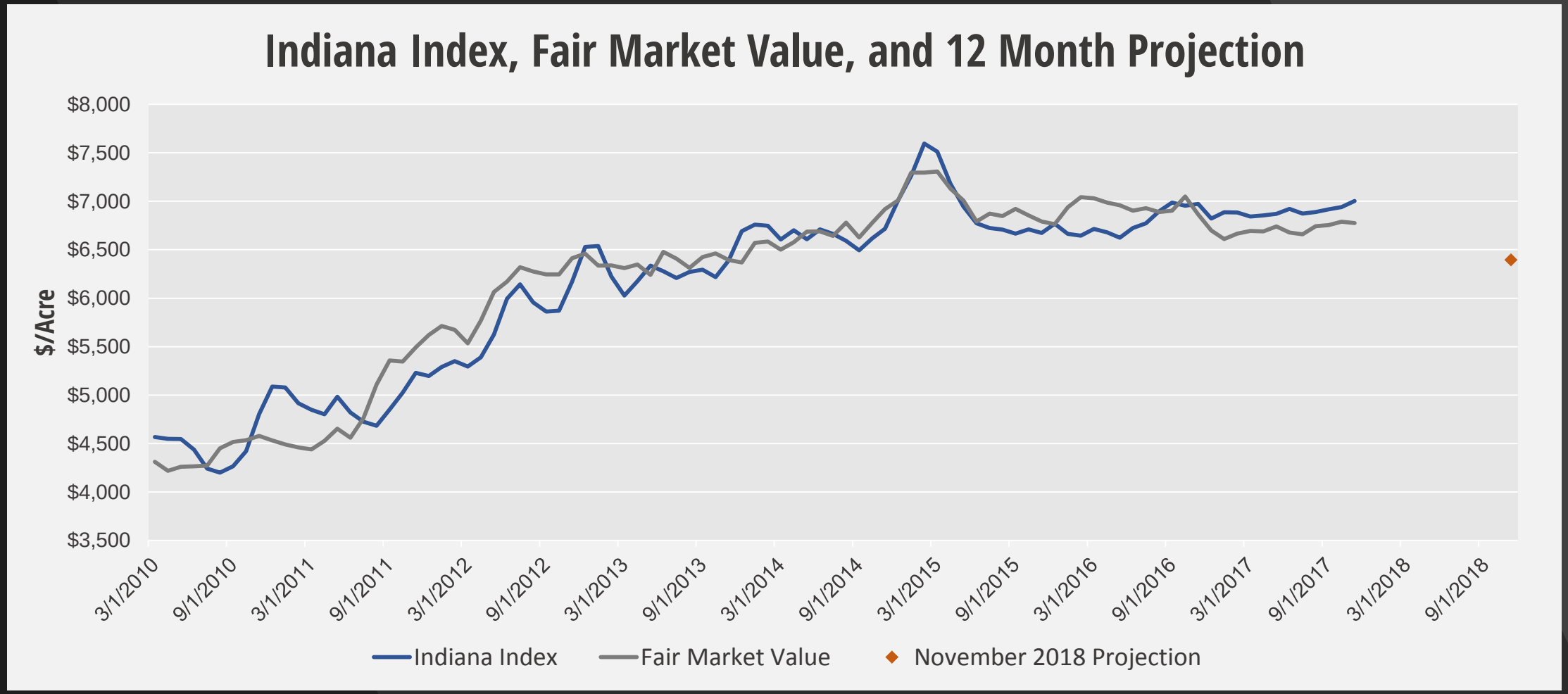
- Crop prices & interest rates
- Net farm income
- Exchange rates
- Exports & storage
- Additional commodity prices & economic indicators



Indiana Fair Market Value



One Year Projection



One Year Projection

- Current Indiana Index Price - $7,003 per acre
- Current Fair Market Value - $6,775 or about 3.2% below current transactional price
- Projected Value – November 2018 - $6,400 per acre (8.5% below index, 5.5% below FMV)

What About Other States?

- Based on correlation between Indiana and Illinois/Iowa, we would expect a drop in farmland price in these states as well.
- Iowa Index currently at $7,991 – could fall to $7,500
- Illinois Index currently at $7,398 – could fall to $7,050