

FALL  
2017



# Understanding Farmland Investments







**P**ension funds and institutional investors understandably seek assets that offer strong returns and meaningful diversification for their portfolios. Additionally, pension investors typically seek relatively longer-duration investments that also hold values well in periods of uncertain inflation. Farmland has emerged as a potential asset class of interest as its historical performance is exceptionally strong and displays low or negative correlation with traditional equity returns and positive correlation with inflation. It can be, however, a somewhat complicated asset to acquire, manage, and dispose of because of the low turnover and relatively unique transactions involved. When included in traditional mixed-asset portfolios, farmland offers substantial diversification potential and typically improves risk efficiency and thus still warrants consideration for inclusion in investment portfolios in the future.

Returns to farmland investments are driven by a complex set of factors including variables that affect expectations about agricultural returns, macro-economic conditions, market structure, and policy; farmland prices also exhibit

substantial variation across locations as a result of urban influence, agricultural production practices, crop suitability, and state and local policies. In addition, several key characteristics of the farm real estate market and agricultural production more generally make farmland distinct from other asset classes. As access to the asset class becomes more routine, it is important to examine the performance and potential role in diversifying a traditional portfolio. This article outlines the characteristics of the sector and the performance of farmland investments, identifies some key factors influencing its future, and discusses its potential future role in pension fund and institutional investor portfolios.

### Scale and Composition

The US agricultural sector has an aggregate value of just over \$3 trillion as of mid-2017, according to the US Department of Agriculture Economic Research Service (USDA-ERS), and about 84% of that total is held in real estate (Exhibit 1). Amazingly, total debt is only \$390 billion, or 12.7% of asset



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**Exhibit 1: Select Balance Sheet Characteristics of US Agriculture Sector (In Millions Except Ratios)**

	1970	1980	1990	2000	2010	2013	2015	2017
<b>Farm Assets</b>	<b>\$278,823</b>	<b>\$1,000,422</b>	<b>\$840,609</b>	<b>\$1,203,215</b>	<b>\$2,170,832</b>	<b>\$2,776,110</b>	<b>\$2,909,653</b>	<b>\$3,074,869</b>
Real Estate	\$202,418	\$782,820	\$619,149	\$946,428	\$1,660,114	\$2,251,002	\$2,395,363	\$2,556,932
Non-Real Estate	\$76,405	\$217,602	\$221,459	\$256,787	\$510,718	\$525,108	\$514,290	\$517,937
<b>Farm Debt</b>	<b>\$48,501</b>	<b>\$162,432</b>	<b>\$131,116</b>	<b>\$163,930</b>	<b>\$278,931</b>	<b>\$315,332</b>	<b>\$356,738</b>	<b>\$389,965</b>
Real Estate	\$27,238	\$85,272	\$67,633	\$84,724	\$154,065	\$185,161	\$208,769	\$242,418
Non-Real Estate	\$21,263	\$77,160	\$63,483	\$79,206	\$124,865	\$130,172	\$147,969	\$147,547
<b>Equity</b>	<b>\$230,322</b>	<b>\$837,990</b>	<b>\$709,493</b>	<b>\$1,039,285</b>	<b>\$1,891,902</b>	<b>\$2,460,777</b>	<b>\$2,552,915</b>	<b>\$2,684,904</b>
<b>Selected Indicators</b>								
Debt/Equity	21.1%	19.4%	18.5%	15.8%	14.7%	12.8%	14.0%	14.5%
Debt/Assets	17.4%	16.2%	15.6%	13.6%	12.8%	11.4%	12.3%	12.7%
Real Estate/Equity	87.9%	93.4%	87.3%	91.1%	87.7%	91.5%	93.8%	95.2%
Real Estate/Assets	72.6%	78.2%	73.7%	78.7%	76.5%	81.1%	82.3%	83.2%
Real Estate D/Total D	56.2%	52.5%	51.6%	51.7%	55.2%	58.7%	58.5%	62.2%

Source: USDA-ERS

**Exhibit 2: Asset Return Characteristics**

Asset/Index	Annual Average Return	Standard Deviation	Coefficient of Variation	Correlation
<b>1980–2016</b>				
<b>US Avg. 32 States</b>	<b>8.55%</b>	<b>5.32%</b>	<b>0.621</b>	<b>1</b>
S&P500	8.19%	15.87%	1.936	–0.132
NASDAQ	9.63%	25.14%	2.611	–0.118
EAFE	6.11%	20.61%	3.375	–0.281
AAA	7.56%	2.82%	0.374	–0.059
TCM10Y	6.32%	3.23%	0.510	–0.013
Mort30F	8.10%	3.40%	0.420	–0.022
All REITS	10.29%	17.08%	1.659	–0.043
Gold	2.18%	16.09%	7.391	–0.128
CPI	3.10%	2.10%	0.679	0.390
<b>1990–2016</b>				
<b>US Avg. 32 States</b>	<b>9.27%</b>	<b>3.54%</b>	<b>0.381</b>	<b>1</b>
S&P500	6.84%	17.22%	2.519	–0.122
NASDAQ	9.15%	26.93%	2.942	–0.157
EAFE	1.76%	19.99%	11.377	0.027
AAA	6.15%	1.57%	0.254	0.153
TCM10Y	4.74%	1.85%	0.391	0.250
Mort30F	6.39%	1.76%	0.275	0.252
All REITS	9.74%	18.68%	1.918	–0.150
NCREIF Total Farmland	11.85%	6.66%	0.562	0.634
Gold	3.91%	14.29%	3.654	0.049
CPI	2.41%	1.13%	0.471	0.223
<b>2000–2016</b>				
<b>US Avg. 32 States</b>	<b>9.09%</b>	<b>4.36%</b>	<b>0.480</b>	<b>1</b>
S&P500	2.48%	18.31%	7.390	–0.166
NASDAQ	1.65%	26.69%	16.216	–0.226
EAFE	–0.26%	21.85%	–84.108	–0.023
AAA	5.23%	1.11%	0.212	0.205
TCM10Y	3.60%	1.20%	0.334	0.409
Mort30F	5.37%	1.27%	0.237	0.377
All REITS	10.88%	19.19%	1.763	–0.166
NCREIF Total Farmland	13.69%	7.58%	0.554	0.721
Gold	8.08%	14.99%	1.855	0.043
CPI	2.12%	1.03%	0.487	0.288

Source: USDA–ERS

values. Perhaps even more surprisingly, real estate debt is proportionally lower at only 62% of total debt at \$242 billion—and that number has actually increased recently from its low of roughly 50%. The relatively low aggregate leverage represents a potentially attractive feature in terms of aggregation and return leverage, but historically, isolated ownership and low cash flow relative to total returns have limited the ability to actively manage the capital structure in individual holdings. The USDA-ERS

also reports that, in aggregate, farmland has increased in value at an annual rate of 6.5% since 2010 and by 4.6% in 2017. These capital gains rates are in addition to annual income and reflect the highly diversified nature of US agriculture in total. Row crop farms have had cyclically lower performance recently, and

permanent crops have had better recent experiences, for example, but what may be of most interest is the performance of a fairly diversified institutional investor.

### Returns Performance

Data on individual farmland performance are somewhat difficult to assemble; most farmland is held by individuals, and return data are not collected or reported to any single source. Moreover, agricultural income is determined only annually in most cases because of the yearly production cycle of most crops. However, the USDA does conduct annual surveys of farm-level performance with a wide array of indicators included, and NCREIF publishes an aggregated index across its reporting members that own and manage farmland, both of which allow important indicators of financial performance to be examined.

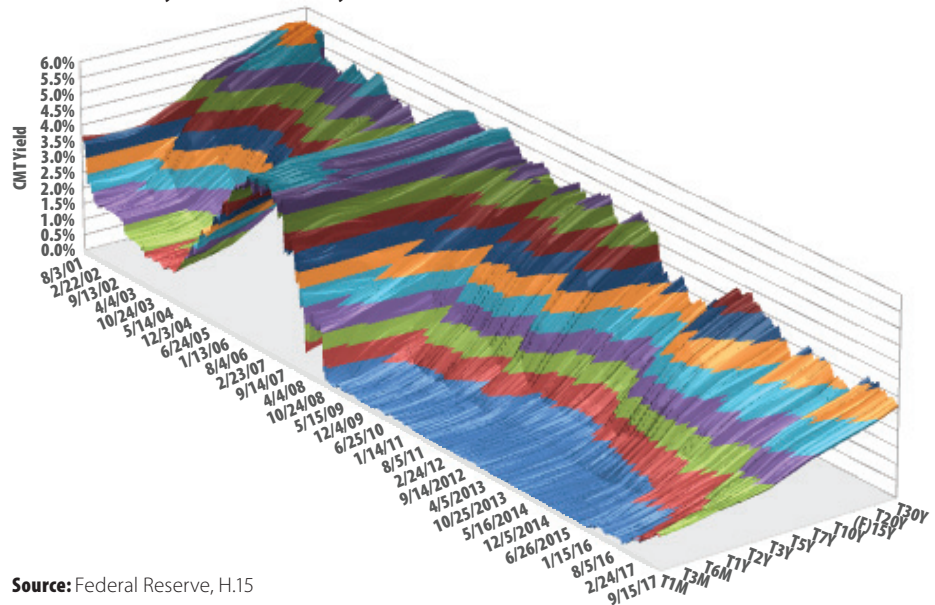
Exhibit 2 provides returns to farmland investments (income plus capital gain less property taxes) across various subperiods along with summary correlation measures of aggregate farmland returns to other key investment categories. Among the observations are that farmland has very competitive returns in aggregate but, more notably, has displayed a negative correlation with equities, a near-zero correlation with fixed income investments, and a positive correlation with inflation for virtually any subperiod examined. These features are relatively stable across each of the subperiods and are key in assessing the impact of inclusion of farmland in a traditional investment portfolio.<sup>1</sup>

1. These results are constructed from aggregate USDA state-level data across the 32 states with the greatest value of agricultural production and include results of all farms, not just commercial-scale operations. In comparison to NCREIF returns, which are more representative of farms managed as active investments, the aggregated USDA-based returns tend to be as much as 200 bps lower, but they also display less variability because of the larger universe of investments represented. The NCREIF Total Farmland Returns series is available from 1991 to the present. Equity index returns include only changes in index values.

## Does the Farmland Market Make Sense?

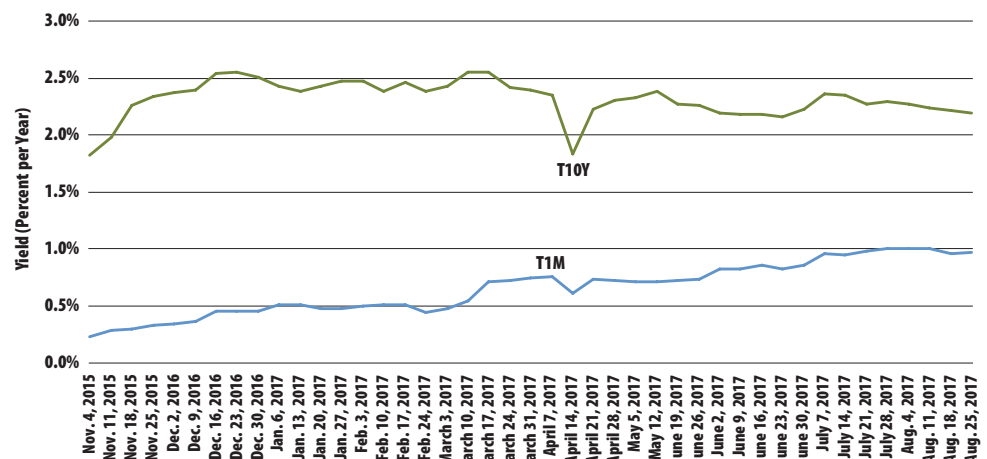
At a basic level, farmland markets should behave similarly to other income-generating assets and have prices that reflect the underlying expectations about future income, income growth potential, and the cost of capital supporting the investment in the asset. In row crop regions of the US, asset values had a remarkably common pattern of appreciation through roughly 2014, with varying declines for a couple of years thereafter. Many observers of land markets in the Midwest have begun to indicate that a soft bottom seems to be forming and have noted that overall price changes have been less responsive relative to current incomes than is typical in other real asset markets. Questions that often arise are why farmland prices (and return patterns) seem to respond less to changes in current income than other assets, and what implied cap rates seem to be generated. A somewhat overly simplified explanation is that each year's income is simply a realization from a set of possible values, largely a result of weather and current world demand–supply fundamentals and that these patterns take several years to adjust on a world basis. In other words, the expectation of future income, its growth, and the cost of controlling invested capital move slowly because of the long duration and non-depreciable nature of the underlying asset. An analogy that is sometimes made is that current income is to long-term expected returns as weather is to climate. Realizations of the former (income or weather) are used in the formation of expectations of the

**Exhibit 3: Treasury Yield Curve, Weekly (8/31/17 to 9/15/17)**



Source: Federal Reserve, H.15

**Exhibit 4: CMT10 and CMT1 Treasury Spread Yields (November 2016–August 2017)**



Source: Federal Reserve, H.15

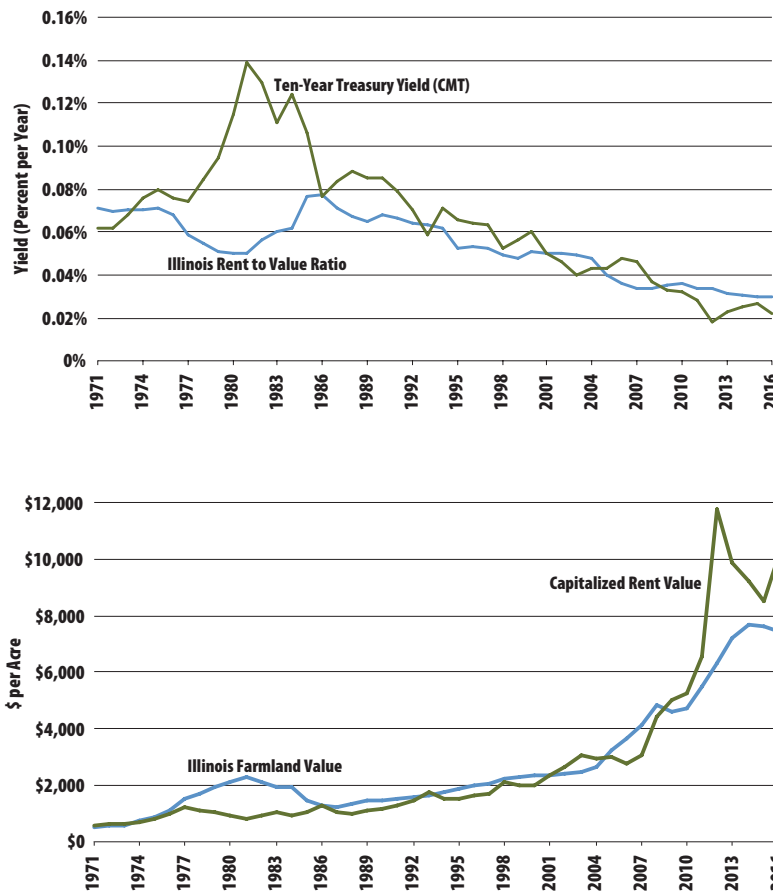
latter (expected long-term income or climate), but it takes a great deal of information and perhaps several years to fully adjust expectations.

On the cap rate side of the argument, a couple of graphic representations are provided for context. First, Exhibit 3 shows a long period of weekly US Treasury yields. As is well understood, the post-crash short end of the yield curve has been at his-

torically very low, stable levels. The liquidity “puddle” that seems to have formed at the short end of the yield curve only recently had its front periods elevated through the series of Federal Open Market Committee rate increases. Exhibit 4 compares the one-year and ten-year constant maturity terms (CMT) on the yield curve since one month prior to the first post-crash rate increase in December



**Exhibit 5: Farmland Capitalization Rate, CMT10, and Income Relationships, 1971–2016**



**Sources:** Federal Reserve, H.15, ERS, and author's calculations

2016. What is most notable might be that the compression of rate spreads and economy-wide “multiple expansion” that many regard as the new norm do not seem to have been affected in clear fashion by each of the rate increases. Interpreted another way, it seems that each of the rate increases was fairly well anticipated and consistent with the understood cost of capital driving asset values. In a more direct manner, Exhibit 5 shows two related concepts using Illinois farmland as an example. The top chart shows the implied cap rate against the ten-year Treasury yield, and the bottom chart shows implied

asset values against actual when current income is simply divided by the most recent ten-year CMT rate. In the top chart, it seems that the farmland current yield is fairly consistent with the CMT10 except in the early 1980s, when the divergence from fundamentals was fueled by idiosyncratic policies and lending practices that do not exist today. In the bottom chart, it is notable that farmland values did not fully respond to increases in incomes that occurred in the mid-2010s but rather displayed a more measured response consistent with an understanding that the income realizations seemed greater

than the longer-term expectations. While space prevents a more complete presentation of the nuances of these arguments, a summary of this information seems to be that farmland markets are indeed reasonably rational and do not seem to be set up for an irrational period of high or low returns relative to longer-term fundamentals.

### Market Issues: What’s the Ticker Symbol for Farmland?

Given the previous discussion and the historical performance of the asset class, one might expect it to be offered in a deeply traded and well-understood platform. However, there remains a different form of the “equity puzzle” in this asset class—one that has begun to change but with a pace toward a more-complete financialization that is difficult to predict. In simplest terms, there is no broadly available, well-functioning equity market for agricultural real estate, and individual owners still represent a large share of operators. There have been great advances in development of ag-related funds and institutional platforms for holding ag investments, and there is an increasing acceptance of greater separation of ownership and operation. These hold the promise of providing steps toward more standardization or access to equity investments in the asset space, but the total fraction of the \$3 trillion sector represented in these cases remains fairly small.

Another feature of the asset class that helps demystify why return premiums seem to have been



sustained is that there is incredibly low primary turnover in farmland markets. A 2013 study by the University of Illinois showed that only about 1% of farmland turns over at arm's length each year. Considerably more has changing title, but the majority is a result of estate settlements within families and transfers among related parties. Simply put, it is a difficult asset to acquire at scale in a short period of time, and the "excess returns" that may appear to exist in naïve assessments of historical performance represent market frictions and liquidity premia to a large extent. Additionally, the acquisition and management platforms required to meaningfully operate in this space represent substantial investments and cannot be expected to exist for one-time rebalancing efforts. TIAA is among a select few that have made a significant commitment to the infrastructure needed to operate in this space and has done so with an internationally active scope as well. Other notable firms have also begun to emerge to create aggregated holdings through special purpose vehicles and farmland funds with management company wraparounds. The interest in this activity and the set of structures is evident by the roughly 600–700 attendees at each year's Global Ag-Investing conference.

In addition to the growing existence of farmland fund management companies and fund platforms, publicly traded farmland REITs have also emerged as vehicles to allow investments to be made into the asset class. Although

the two most visible publicly traded in the US (Farmland Partners [FPI] and Gladstone [LAND]) have begun to make inroads, they are each still very small relative to the scale of the sector. Still, these REITs are viewed as critically important efforts in the ongoing maturation of the market and the eventual development of an equity market that allows direct access to returns from investments in farmland.

### Future Issues

The investment thesis for farmland and base connections to the importance of feeding the world's growing population seems stable in the long term if access to the asset class becomes more routine. In simplest terms, the locations of populations will remain relatively fixed, but the density will continue to increase. Likewise, locations where land is suitable for crop production are very fixed, with continued intensification highly likely. Water resources, even if made more variable through time, are likely to be increasingly constrained but are not especially mobile. Thus, the remaining major factor influencing demand for productive farmland is the growth in standards of living for emerging populations as the caloric quality increases, as higher-quality proteins are consumed, and as food grains are diverted to feed grains for animal units. Technological innovations for genetic improvements that increase yields and improve input efficiency measured in terms of cost of inputs/unit of output have been dramatic over the past 50

years and show no signs of slowing. At the same time, consumer concerns about food safety and increased preferences for greater information about and choice of the production technologies employed in food production likewise seem to have great and perhaps increasing momentum. The impacts of these types of movements are unclear but tend not to result in less spending on food in total. Emerging technologies related to remote sensing, improved input usage, and monitoring of demand and supply channels favor scale of production, which in turn tends to favor greater investment and more separation between ownership and operation of assets. In short, most long-term factors will tend to promote broader access to equity investments in agriculture and the further financialization of the sector.

### Conclusion

Farmland has been a remarkably well-performing asset but historically somewhat outside the commonly considered space of investable assets. As markets continue to mature and the ability to transact in this sector improves, it is increasingly important to consider the potential role of farmland investments in pension fund and other institutional investment portfolios. ■

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