

Second quarter 2020

[Update] Why farmland now?

*Amidst unprecedented market volatility,
a durable and consistent investment with
compelling upside*

SUMMARY

- Considered a safe haven investment, farmland has proven to be a reliable store of value through times of economic tumult — exhibiting durable valuations and attractive levels of income, uncorrelated to competing assets.
- Financial yields from farmland are inherently tied to food prices, which have not been negatively impacted during previous pandemics, and have been supported by stable supply-demand dynamics to-date in the current pandemic; thus, farmland investments can be expected to remain a strong inflation hedge.
- Despite ongoing shifts in where people are consuming foodstuffs, transitioning to home-cooking and away from dining out, farmland return characteristics are not expected to differ compared to past downturns.
- Independent of the benefits farmland offers to portfolios in light of the impacts of COVID-19, it is a compelling time to invest in farmland due to imminent productivity gains and the associated influence on farmland returns.

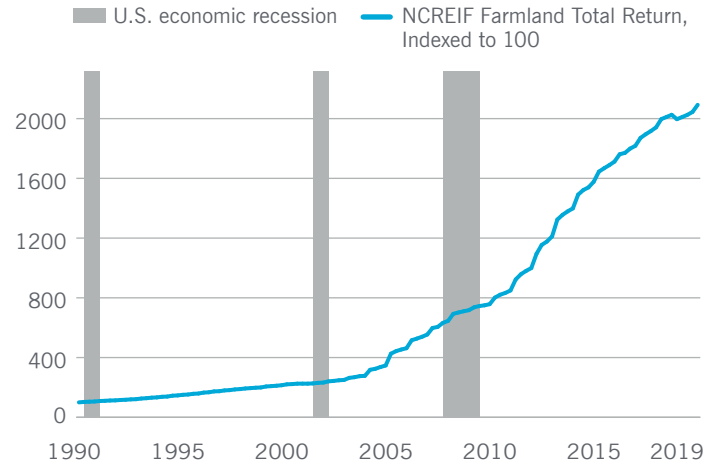
WHY FARMLAND NOW

Financial markets are responding to the current limited visibility and uncertainty, both severely exacerbated by the coronavirus pandemic, by retreating towards safe haven investments such as U.S. treasuries (where yields have declined below 1%), gold and certain currencies (e.g. the U.S. dollar). Even prior to coronavirus, farmland investment provided a compelling alternative to traditional asset classes. Farmland has a history of exhibiting unique value durability and income levels through economic downturns.

Historically, farmland has been uncorrelated to the economic cycle and experiences substantially less volatility compared with broad market indices and traditional asset classes. Westchester does not anticipate that farmland will behave substantially differently to current market conditions than it has to analogous market precedents. Farmland has a history of preserving capital in times of economic downturns, and is currently delivering annual income returns above government bond yields in developed countries (see charts 1 and 2).

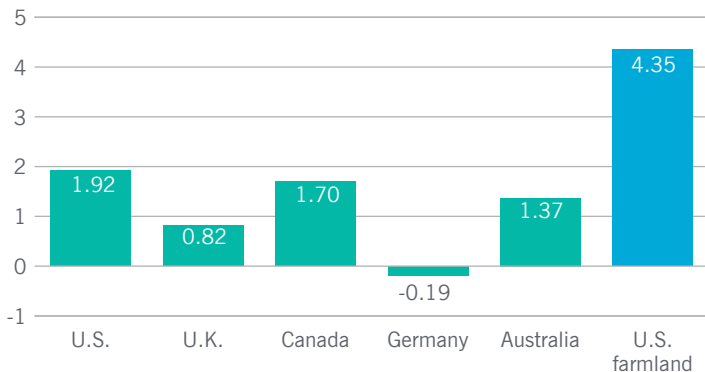
During the 2008 financial crisis — the most comparable contemporary proxy to the current crisis — negative consequences were experienced across most sectors of the global economy. However, this period was relatively profitable for the agricultural sector, resulting in strong farm-gate profitability and higher agricultural land values. Kuethe et al. demonstrated that in the

Chart 1: Resilience to the economic cycle



Source: NCREIF

Chart 2: 10-year government bond rates relative to U.S. farmland yield (%)



Source: U.S. Farmland NCREIF Annual data to 31 Dec 2019, bond yields as of 31 Dec 2019

four-year period leading up to the 2008 financial crisis and the four-year period after the crisis, farmland consistently produced positive returns, outperforming U.S. treasuries, the Dow Jones, and the S&P 500 over the 8-year period.¹

Even before COVID-19, with reductions in bond yields, investors were seeking returns elsewhere. This fact, coupled with the low cost of borrowing — also a product of the low interest rate environment — has significantly increased investor demand for real assets, including farmland. The result has been strong value appreciation over recent years, which in certain cases has outpaced the asset’s earnings potential and resulted in yield compression.

However, despite mild compression, farmland yields and overall Sharpe ratio remain attractive compared to other financial products.

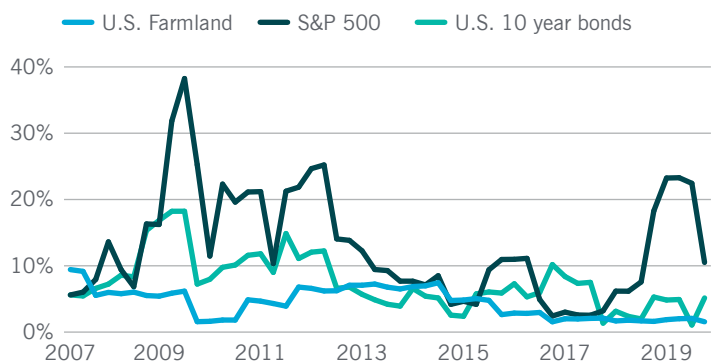
When relative return volatility is considered in addition to expected returns, the case for farmland becomes even more compelling. U.S. farmland returns have experienced a similar level of volatility as U.S. 10-year bonds and significantly lower volatility than equities (as measured by the S&P 500 index; see chart 3). Despite its comparable return volatility, farmland has consistently outperformed 10-year bonds, delivering significantly higher yields (see chart 2).

As a result of its superior risk-adjusted return, farmland can be viewed as a powerful diversifier within an investment portfolio. Farmland’s low volatility becomes particularly valuable in periods of financial uncertainty, such as now. During periods of economic adjustment, the asset, unlike other financial products, has proven to be extremely resilient. Chart 1 demonstrates the strength of farmland returns over three decades despite periods when the U.S. and/or global economy was in recession.

U.S. farmland has delivered only one quarter of negative returns since 1999 (-0.01% in the first quarter of 2002). Importantly, during periods in which the S&P 500 declined, farmland delivered positive returns (see chart 4). The durability

Chart 3: Farmland as an asset class offers lower volatility in a rising volatility world

Annualized volatility of select assets vs. average U.S. Farmland



Source: Bloomberg, LTM data to 12 August 2019, NCREIF, LTM data to 31 Dec 2019

and negative correlation of farmland returns to economic cycles is driven by essentiality of food to survival to a growing population, supplied by a limited land resource base.

With the spread of coronavirus, there are concerns that food security could be jeopardized; however, there is no current evidence to validate this concern. During other pandemics, including SARS, the avian influenza and MERS, food prices rose. Coronavirus is not yet causing food shortages or significant price hikes.³ Prices for staple crops (like wheat, maize, and rice) have remained relatively stable since the outbreak. Historically, economic slowdowns have not materially impacted demand for basic food commodities.

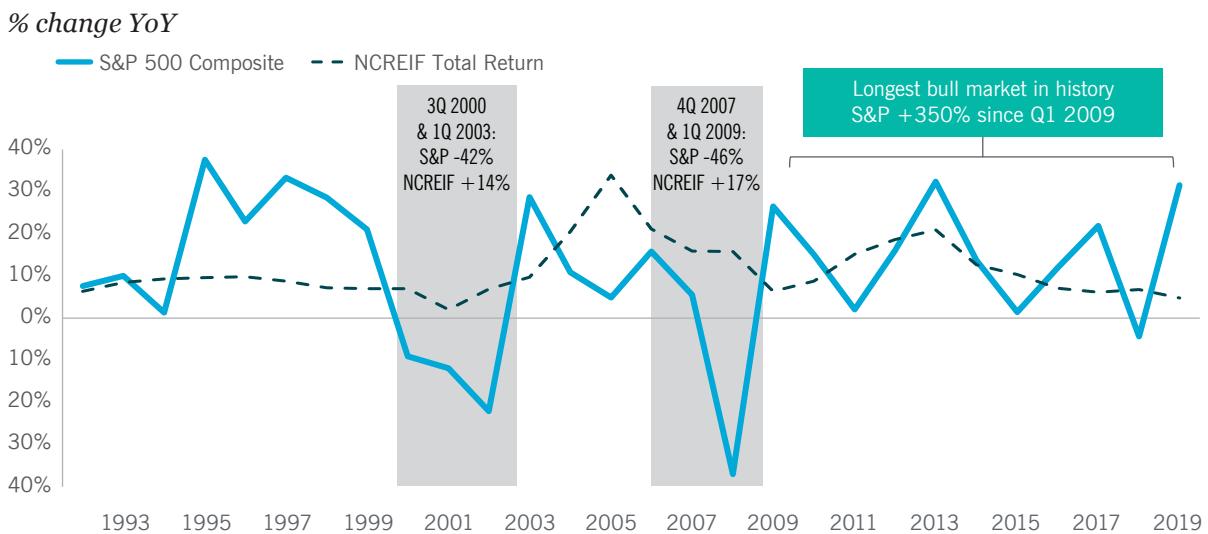
Conversely, there are also concerns that land values could be damaged by the current crisis. Westchester does not anticipate that coronavirus will negatively impact short-term farmland values. If supply chain disruptions cause dislocations in commodity prices (e.g. commodity prices fall), the ultimate impact on land values will depend on whether the market views the dislocation as temporary or protracted. If viewed as temporary, farmland markets would not price in lower commodity prices; if longer-term, lower commodity prices could be reflected in farmland values (all else equal). However, the negative impact on farmland values would likely be offset by productivity gains (discussed later in the paper) and lower interest rates, with central banks

around the world strongly considering or actively implementing monetary stimulus measures.

Independent of the benefits farmland offers to portfolios in light of the impacts of coronavirus, it is a compelling time to invest in agriculture due to expected imminent productivity gains as new technologies come to market. (The link between the introduction of new agriculture technologies, productivity and farmland returns is examined in detail in Westchester's 1Q 2020 research note, *The drivers of farmland values: An analysis of global row crop farmland pricing.*)

The relationship between the introduction of new technologies and adoption rates is shown in chart 5. Over the last century, the introduction of key agricultural technologies, and the resultant adoption rates, successively increased their impact on Total Factor Productivity (TFP). TFP measures changes in the efficiency by which inputs are transformed into outputs. For example, TFP doubled in the 1990s to just over 1.5% per annum, following the introduction and adoption of herbicide tolerant corn, relative to what was achieved in the 1970s and 1980s (see chart 6). The current proliferation of agricultural technologies being introduced to farmers is unparalleled. However, if historical trends hold, there will be a lag between the introduction of these technologies and subsequent adoption and impact on productivity and returns, albeit likely shorter in duration than historical lags (see chart 5). The current position of farmers relative to new, not yet

Chart 4: Farmland has been a reliable store of value & return throughout market cycles



Source: NCREIF, Haver Analytics. It is not possible to invest in an index. Performance for indices does not reflect investment fees or transactions costs.

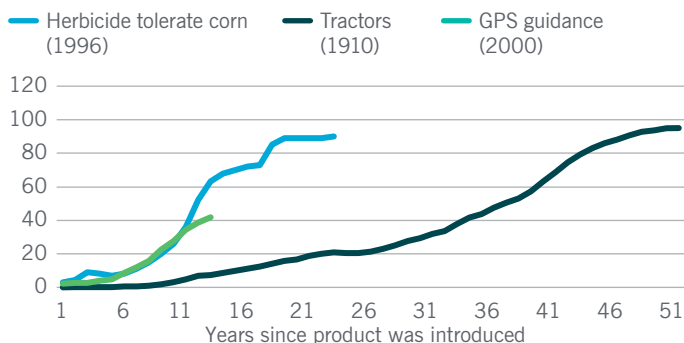
adopted technologies makes for compelling entry timing into the asset class.

The durability and consistency of farmland returns is unparalleled across investment alternatives. Fundamental return characteristics remain intact, with upside potential on the horizon in the form of productivity advancements. Farmland possesses a number of unique characteristics, including

strong yields, low volatility, negative correlation to other assets instead of equities, and a resilience to economic cycles. These factors create a compelling case for the inclusion of the asset class in a diversified investment portfolio.

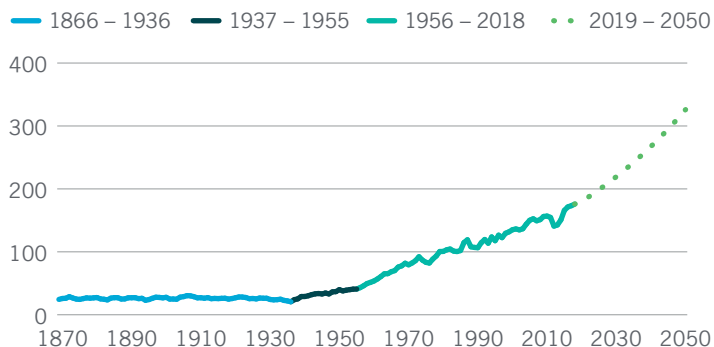
Originally published in Q3 2019, this paper was updated to address market impacts related to the coronavirus pandemic.

Chart 5: Adoption rates of technology in U.S. agriculture (%)



Source: USDA Economic Research Service, American Economic Association

Chart 6: U.S. corn yield (bushels/acre)



Source: <https://www.agry.purdue.edu/ext/corn/news/timeless/yieldtrends.html>

For more information, please visit our website, nuveen.com/westchester.

Sources

1 Kuethe T.H. et al. (2013): Farmland versus Alternative Investments before and after the 2008 Financial Crisis. Journal of the ASFMRA p.120-131

Recommend further reading:

- Elworthy, F. (2018): Volatility to Explain High Historical Farmland Returns. The Property Chronicle. May 9th
- Ibbotson, R.G.; Kaplan P.D. (2000): Does Asset Allocation Policy explain, 40, 90 or 100 percent of Performance. Association for Investment Management and Research. Jan/Feb 2000. p.26-33
- Key, N. (2018): Productivity Increases with Farm Size in the Heartland Region. USDA-ERS
- Painter, M.J. (2015): Assessing the Required Risk Premium for North American Farmland Investment. Journal of ASFMRA, p.15-33
- Sands, R. et al. (2014): Global Drivers of Agricultural Demand and Supply. USDA ERS
- Sorensen, A.A.J. et al. (2018): Farms under Threat: The State of America’s Farmland. Washington D.C. American Farmland Trust
- Wang S., et al. (2015): Agricultural Productivity Growth in the United States: Measurement, Trends, and Drivers, ERR-189, U.S. Department of Agriculture, Economic Research Service, July 2015.

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A word on risk

As an asset class, agricultural investments are less developed, more illiquid, and less transparent compared to traditional asset classes. Agricultural investments will be subject to risks generally associated with the ownership of real estate-related assets, including changes in economic conditions, environmental risks, the cost of and ability to obtain insurance, and risks related to leasing of properties.

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