



AGRICULTURAL INVESTMENTS

FARMLAND INVESTING



November 12, 2019



MAKING THE INVESTMENT CASE

SUSTAINED LONG-TERM PERFORMANCE

Farmland has consistently performed well against stocks, bonds, and real estate over the last 20 years.

HISTORICAL ANNUALIZED RETURN ^{1,2}					
	FARMLAND	TIMBERLAND	REAL ESTATE	STOCKS	BONDS
1-Year	6.7%	3.4%	6.7%	-4.4%	0.0%
3-Year	6.7%	3.2%	7.2%	9.3%	2.1%
5-Year	8.6%	5.0%	9.4%	8.5%	2.5%
7-Year	11.7%	6.0%	9.8%	12.7%	2.1%
10-Year	11.2%	3.8%	7.5%	13.1%	3.5%
15-Year	14.4%	7.2%	8.9%	7.8%	3.9%
20-Year	12.4%	6.4%	8.6%	5.6%	4.5%

PERFORMANCE: BEST SECOND-BEST

HISTORICAL RISK-ADJUSTED VOLATILITY METRICS (20-YEAR) ¹					
	FARMLAND	TIMBERLAND	REAL ESTATE	STOCKS	BONDS
St. Deviation ³	7.6%	6.6%	8.4%	17.5%	3.6%
Sharpe Ratio	1.17	0.47	0.64	0.21	0.31
Max 1-YR Return	33.9%	19.4%	20.2%	32.4%	11.6%
Min 1-YR Return	2.0%	-5.2%	-17.0%	-37.0%	-2.0%
Neg Returns (# yrs)	0	3	2	5	2

PERFORMANCE: BEST SECOND-BEST

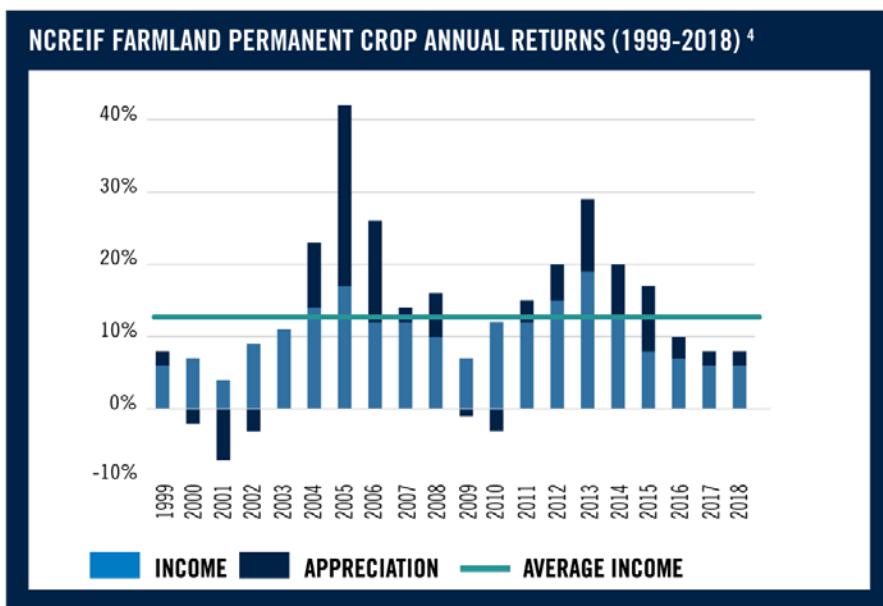


FARMLAND HAS PRODUCED THE
HIGHEST ANNUAL RETURNS
AND SHARPE RATIO
OVER THE LAST 20 YEARS

MAKING THE INVESTMENT CASE

HIGH INCOME AND TOTAL RETURN

Direct farming operations and leases have provided a steady source of income return. Productivity gains and commodity price increases drive appreciation gains. Strong crop prices and robust net farm income have boosted farmland values significantly over the last 20 years.



PERMANENT CROPS

HAVE GENERATED TOTAL ANNUAL AVERAGE RETURNS OF

14.4%

10.3%
INCOME

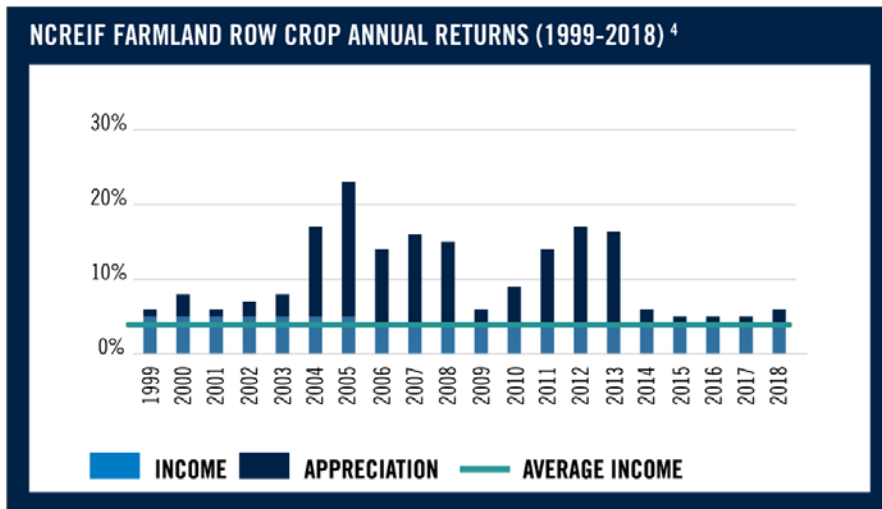
3.9%
APPRECIATION

OVER THE LAST 20 YEARS

MAKING THE INVESTMENT CASE

HIGH INCOME AND TOTAL RETURN

Direct farming operations and leases have provided a steady source of income return. Productivity gains and commodity price increases drive appreciation gains. Strong crop prices and robust net farm income have boosted farmland values significantly over the last 20 years.



ROW CROPS

HAVE GENERATED TOTAL ANNUAL AVERAGE RETURNS OF

10.7%

4.4%
INCOME

6.1%
APPRECIATION

OVER THE LAST 20 YEARS

MAKING THE INVESTMENT CASE

ASSET CLASS DIVERSIFICATION

Low or negative correlations to other asset classes such as stocks and bonds make farmland a powerful diversifier in a mixed-asset portfolio.

ANNUAL RETURN CORRELATIONS (20-YEAR) ¹

	FARMLAND	TIMBERLAND	REAL ESTATE	STOCKS	BONDS
Farmland	1.00	0.77	0.48	0.11	-0.26
Timberland		1.00	0.50	0.11	-0.31
Real Estate			1.00	0.09	-0.01
Stocks				1.00	-0.47
Bonds					1.00

MAKING THE INVESTMENT CASE

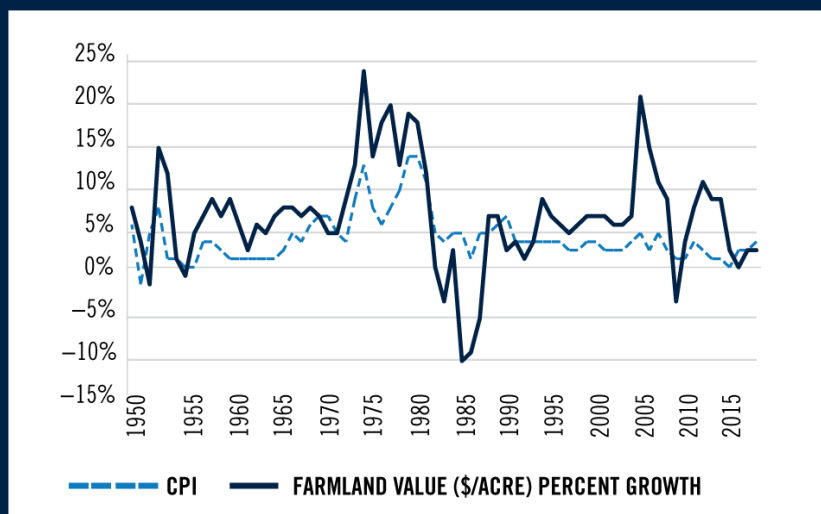
INFLATION HEDGE

Farmland is a real asset that has proved to be a better store of wealth than stocks or government bonds in periods of higher inflation.

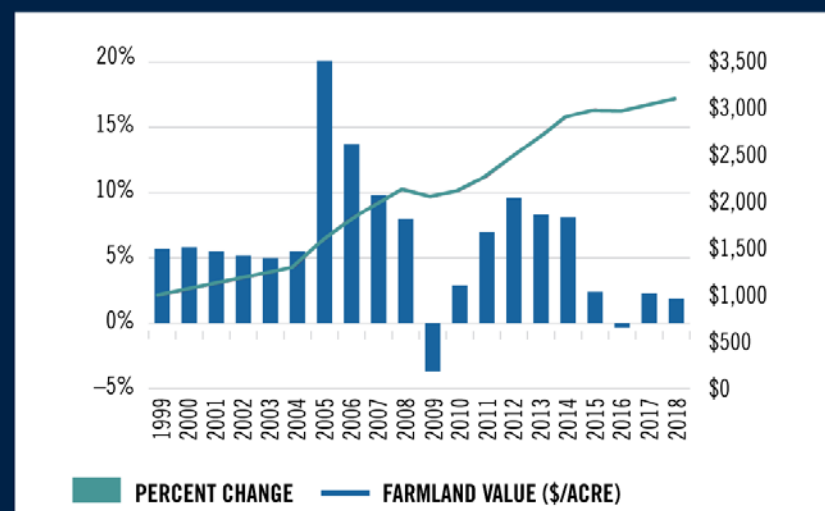
CAPITAL PRESERVATION

Farmland has posted positive returns over the past 20 years, proving effective in preserving capital under various market conditions.

FARMLAND VALUE PERCENT GROWTH VERSUS INFLATION (1948-2018) ⁶



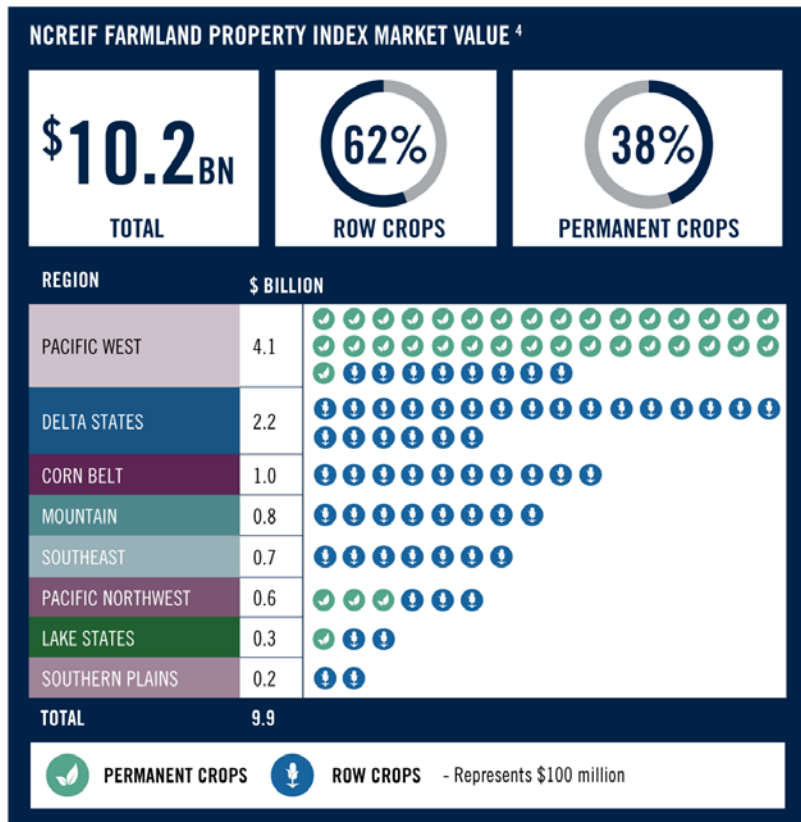
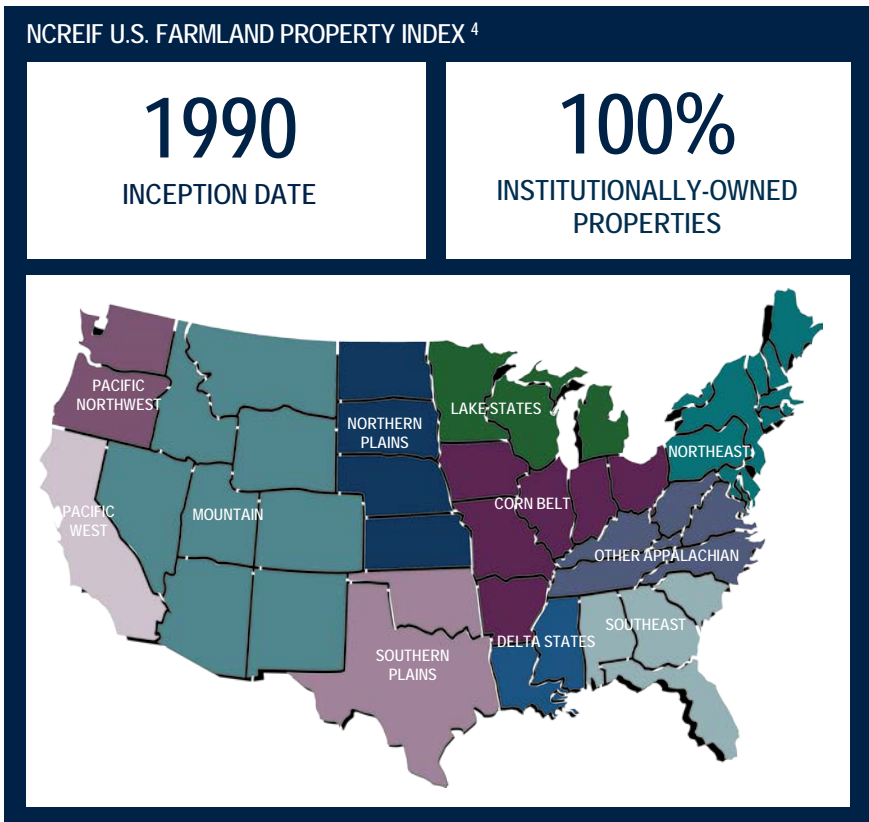
FARMLAND VALUES \$/ACRE AND ANNUAL PERCENTAGE CHANGE (1999-2018) ⁶



MAKING THE INVESTMENT CASE

ABILITY TO BENCHMARK PERFORMANCE

NCREIF Farmland Property Index provides transparency and allows investors to benchmark manager performance.



COMPETITIVE ADVANTAGES OF INVESTING IN THE U.S.

PRODUCTION & EXPORT POWERHOUSE

Leading producer and a top exporter of some of the worlds' major commodities further supported by robust domestic market

SELECT U.S. COMMODITY PRODUCTION AND EXPORTS RANKINGS (2017/2018) ⁷

ROW	PRODUCTION			RANKING	
	US	WORLD	U.S. (%)	PRODUCTION	EXPORTS
Corn	366.3	1,101.2	33.3%	1	1
Soybeans	123.7	360.1	34.3%	1	2
Wheat	51.3	733.0	7.0%	6	2
Cotton	18.4	118.9	15.5%	3	1
PERMANENT					
Apples	5.0	68.6	7.4%	3	3
Fresh Oranges	5.0	51.8	9.7%	4	3
Table Grapes	1.0	22.2	4.6%	6	3
Walnuts	0.6	2.0	31.4%	2	1
Orange Juice	0.3	2.0	16.5%	2	4
Almonds	1.1	1.4	80.5%	1	1
Pistachios	0.5	0.8	55.4%	1	1

COMPLETE COMMERCIAL BASE

Large, well established agricultural suppliers as well as large and well-recognized processors and marketing firms that can provide long-term contracts for commodity production

OPTIMAL GEOGRAPHIC CONDITIONS

Extensive, supply-constrained farm areas with favorable and diverse climatic and soil conditions for the productions of a wide variety of major crops



400+
COMMODITIES
GROWN⁹

82%
OF WORLD'S ALMOND
SUPPLY GROWN¹⁰

1 OF
ONLY **5**

GLOBAL REGIONS WITH
A MEDITERRANEAN
GROWING CLIMATE⁹

ADVANCED INFRASTRUCTURE

One of the most advanced networks of strategically-located highways, railroads and seaports



MISSISSIPPI RIVER IS THE PREMIER CONDUIT FOR
TRANSPORTING COMMODITIES TO EXPORT MARKETS ¹¹

WELL-CAPITALIZED FARM ECONOMY

Home to major commodity exchanges and a deep set of private and government-sponsored financial institutions that provide consistent capital to farm sector

WHY NOW IS A GOOD TIME TO INVEST

TECHNOLOGY DRIVING PRODUCTIVITY

Farm productivity growth has been driven by government and private sector-supported research. The U.S. is also home to innovation start ups focused on farming information technology, robotics, and automation.

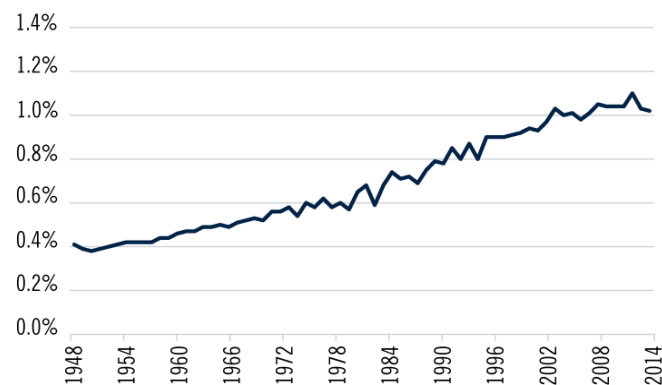
FARM TECH
INVESTMENT REACHED
\$6.7 BILLION
OVER THE LAST
5 YEARS ¹²

FUNDING FOR FARM ROBOTICS,
MECHANIZATION AND EQUIPMENT
STARTUPS JUMPED **56%** REACHING
\$368 MILLION
IN 2018 ¹³



**NUT CROPS ARE
MECHANICALLY HARVESTED**

TOTAL FACTOR PRODUCTIVITY GROWTH OF U.S. AGRICULTURE (1948-2015) ¹⁴

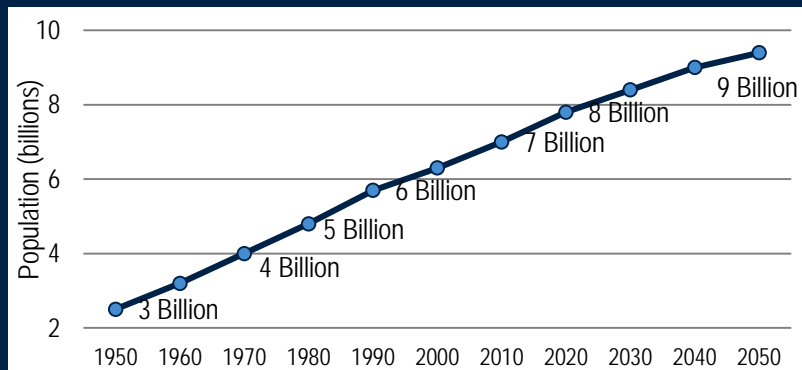


WHY NOW IS A GOOD TIME TO INVEST

TECHNOLOGY DRIVING PRODUCTIVITY

Increasing global demand for higher value added crops that are healthy and nutritious coupled with improved incomes and expanding diets

WORLD POPULATION: 1950-2050 ¹³



97% OF FARMS ARE OPERATED BY **FAMILIES** ^{5,15}

GROWING INSTITUTIONAL OPPORTUNITIES

An aging farmer generation, fractional family ownership structure, and technological advances requiring sizable capital investment will natural transition farmland holdings from individuals to institutions



**U.S.
FARMER**

61%
ARE PART-TIME ⁵

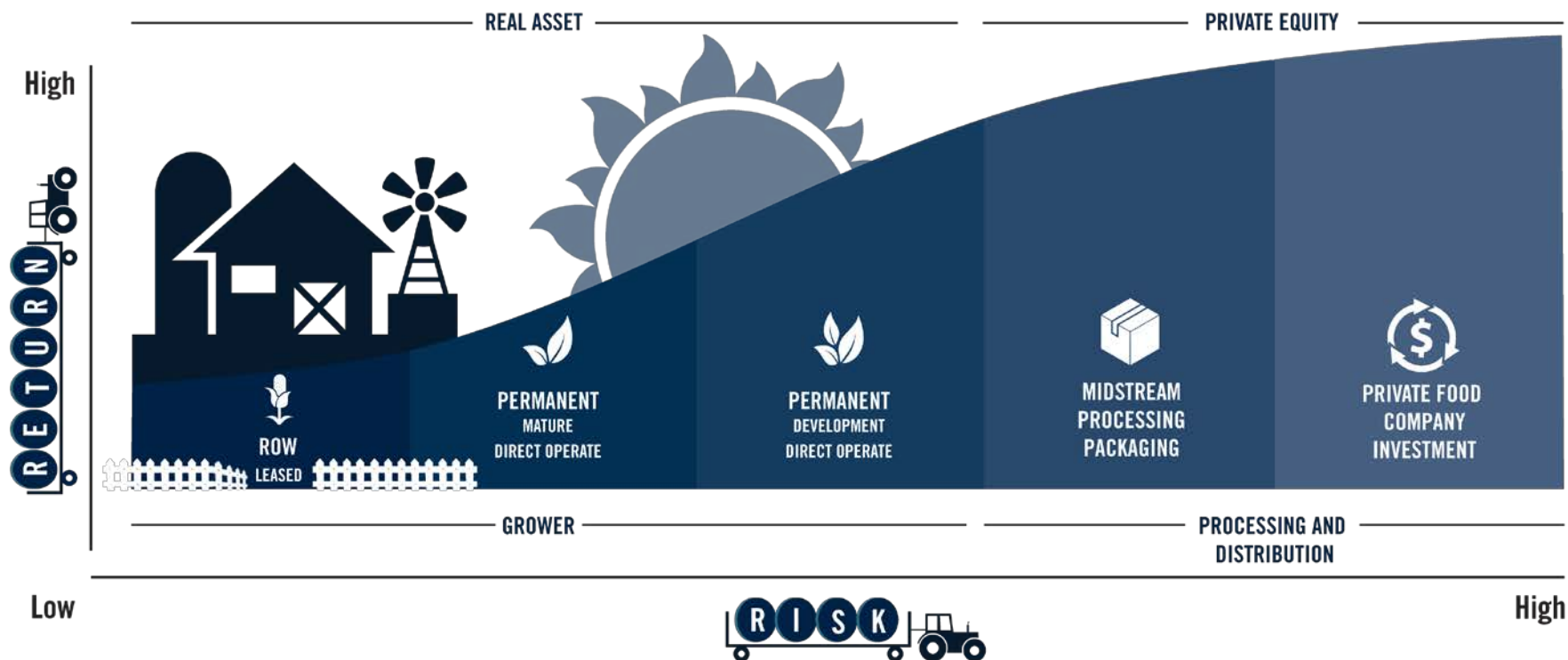
58
AVERAGE AGE ⁵

PORTFOLIO STRUCTURING



PORTFOLIO STRATEGY

Client return objectives and risk tolerance form the starting point for agricultural portfolio construction and influence whether the strategy is real asset- or private equity-driven





- **Farmland investments have proven beneficial in institutional portfolios over the past 20 years**
- **Despite recent headwinds, multiple factors support increased institutional investment**
- **Investors should consider their investment objectives when analyzing investment strategies**
- **Food for thought:
If NCREIF is providing support for investment, should the investments then be consistent with NCREIF?**

All returns shown are gross of fees. Past results are not a guarantee or an accurate indicator of future results. Data as of December 2018 unless otherwise noted. ¹ Supporting indices: (1) Farmland: NCREIF Farmland Index, (2) Timberland: NCREIF Timberland Index, (3) Real Estate: NCREIF Property Index, (4) Stocks: S&P 500 Index, (5) Bonds: Bloomberg Barclays US Aggregate Bond Index. Sources: NCREIF, S&P, Barclays Global Investors, PGIM Real Estate. ² Benchmark returns over different time periods ending December 2018. ³ Standard deviation is based on annual returns. ⁴ The reported aggregate NCREIF Farmland Index AUM does not tie to the summation of the detailed AUM by NCREIF regions due to rounding and constraints imposed by masking in the publicly available data. Sources: NCREIF Farmland Index, PGIM Real Estate. ⁵ Source: NASS USDA, 2017 Census of Agriculture. ⁶ Sources: USDA Economic Research Service, PGIM Real Estate. ⁷ Source: Foreign Agricultural Service USDA, PAI Research. ⁸ In million metric tons. ⁹ Source: California Department of Food and Agriculture. ¹⁰ Source: 2017 Almond Almanac, Almond Board of California. ¹¹ Source: USDA / Federal Grain Inspection Service 2017 Annual Report. ¹² Source: Source: Pitchbook, Finistere Ventures, 2018 Agtech Investment Review. ¹³ Source: Agfunder AgriFood Tech Investing Report - Year in Review 2018 ¹⁴ USDA Economic Research Service as of December 2015. ¹⁵ U.S. Census Bureau, International Data Base. ¹⁶ Includes families, family partnerships, and family corporations.

For more information on the role of U.S. farmland in institutional portfolios, visit: pgim.com/insights/pgim-expertise/Diversity-of-Real-Assets

Jamie Shen



Jamie Shen, is the Chief Investment Officer of Prudential Agricultural Investments. She leads the equity team in managing the portfolio of agricultural properties. She is located in San Francisco, CA. Prior to joining Prudential, Jamie was an Executive Vice President and Practice Leader of Alternative Investments Consulting with Callan Associates where she had overall responsibility for Real Assets Consulting services. While Jamie's particular focus was on agriculture and real estate, she oversaw research and implementation of real estate, timber, infrastructure and agricultural asset classes. Prior to Callan, Jamie was a Principal with The McMahan Group, a San Francisco based-management consulting firm specializing in real estate enterprises. Jamie has worked in the real estate consulting groups of both Arthur Andersen and Ernst & Young. Jamie received her BS in Business Administration from the Walter A. Haas School of Business at the University of California, Berkeley. Jamie served on the Editorial Board of The Institutional Real Estate Letter. She has been a long-time member of the Pension Real Estate Association (PREA) and served on the Executive Committee of the PREA Board of Directors.

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Notes on Aggregate Portfolio Returns: Performance figures do not reflect the deduction of investment advisory fees. A client's return will be reduced by the advisory fees and any other expenses it may incur in the management of its investment advisory account. The collection of fees produces a compounding effect on the total rate of return net of management fees. As an example, the effect of investment management fees on the total value of a client's portfolio assuming (a) quarterly fee assessment, (b) \$1,000,000 investment, (c) portfolio returns of 8% a year, and (d) 1.00% annual investment advisory fee would be \$10,416 in the first year, and cumulative effects of \$59,816 over five years and \$143,430 over ten years.

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NCREIF Farmland Index: The NCREIF Farmland Index is a quarterly time series composite return measure of investment performance of a large pool of individual agricultural properties acquired in the private market for investment purposes only. All properties in the Farmland Index have been acquired, at least in part, on behalf of tax-exempt institutional investors - the great majority being pension funds. As such, all properties are held in a fiduciary environment. Reinvestment of dividends is not applicable to this asset class. Note: A benchmark Index is not professionally managed, does not have a defined investment objective, and does not incur fees or expenses. Investors cannot invest directly in an index. Source of the Benchmark: NCREIF - National Council of Real Estate Investment Fiduciaries.

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