

## INSIGHTS

# INVESTMENT OPPORTUNITIES IN AGRICULTURE FINANCE

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**Diversifying portfolio credit  
exposures with privately financed  
farm loans.**

## Diversifying portfolio credit exposures with privately financed farm loans.

While many institutional investors are familiar with the investment opportunities associated with financing private real estate, most tend to focus on commercial real estate assets, such as office buildings, apartments, retail spaces, industrial properties and hotels. However, they may be overlooking another compelling segment of the market: agriculture finance. In this paper, we will examine the attractive investment characteristics of agriculture finance, current market dynamics and key considerations for investing in the asset class.

# DID YOU KNOW?

**\$3.4 T**

U.S. farm real estate assets are forecasted to reach in 2023.

Approximately 30%<sup>1</sup> of U.S. farms actively hold debt, nearly 68% of which is represented by real estate mortgages, consisting of about \$355<sup>2</sup> billion in outstanding loans.

**The private investment potential is considerable:**

Historically high net spreads, strong risk/return profiles and low correlations.

<sup>1</sup> U.S. Department of Agriculture, Economic Research Service and National Agricultural Statistics Service; 2011 Agricultural Resource Management Survey.

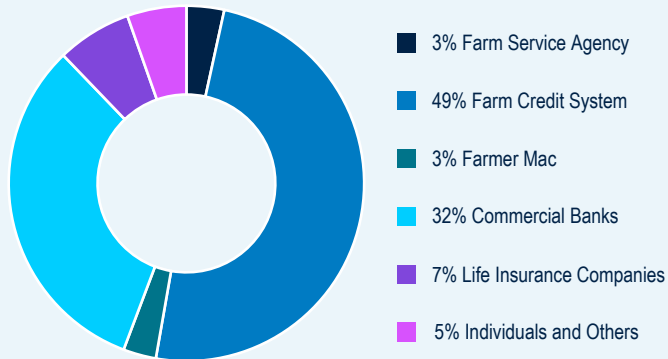
<sup>2</sup> U.S. Department of Agriculture (USDA) Economic Research Service (ERS), as of February 7, 2024.

## WHAT is agriculture finance?

Many U.S. farmers access credit as a normal course of business at various points throughout their production cycles. This can include short-term loans to help finance the planting and harvesting of crops, medium-term loans or leases to finance farm machinery and mortgages to finance land purchases and capital improvements. Investing in this debt offers an effective way to tap into a major sector of the U.S. economy that is experiencing secular growth.

### Total Farm Real Estate Debt Reached \$334B in 2022, Sourced by a Diverse Range of Lenders

Market share by lender of total farm real estate debt, 2022



Source: U.S. Department of Agriculture, (USDA) Economic Research Service (ERS).  
Data as of February 7, 2024.

## HOW do agriculture loans become investable assets?

Farmers can access loan financing through several sources. Many of these lenders offer these specialized credits as investment opportunities to institutional investors:

- **Government-sponsored entities** (GSEs), such as the Farm Service Agency, the Farm Credit System and the Federal Agricultural Mortgage Corporation (“Farmer Mac”), historically have been the largest sources of agriculture loans and offer investment access through securitization. These are typically issued as bonds through broker deals and can be sold directly or offered as part of a bond fund. They tend to have a relatively low yield advantage to Treasuries and may be callable.
- **Commercial banks** also have been a large source of financing but do not generally provide direct investment access to these types of loans. National banks and community banks provide capital to the agriculture sector primarily through operating revolving lines of credit and short-term business loans. Rural community banks may source and service loans for secondary buyers, such as Farmer Mac.
- **Some life insurance companies** have direct agriculture finance origination platforms and may include these loans as sleeves within broader commercial real estate funds available for investment as well as through customizable loan portfolios.
- **Private lending institutions** are a relatively newer lending source for the industry that provides farmers with alternative access to capital, often focusing on non-investment-grade credits, that also typically offer investment opportunities through funds and customizable loan portfolios. A long-standing but shrinking segment of term financing comes from individual landowners that carry a note back on a property sale.

Within the spectrum of agriculture loan types, investors tend to focus on real estate mortgages in the segment, on both a whole loan and securitized basis, with most operating and machinery debt traditionally financed by banking institutions.

## WHY consider adding agriculture loans to an investment portfolio?

Agriculture loans typically provide investment returns through interest income and auxiliary fees, such as origination and prepayment charges. In most cases, investors receive consistent payments as borrowers pay back the loans with the income produced from the farm. This provides a potentially attractive source of high current income supported by the inherent value of agriculture real estate.

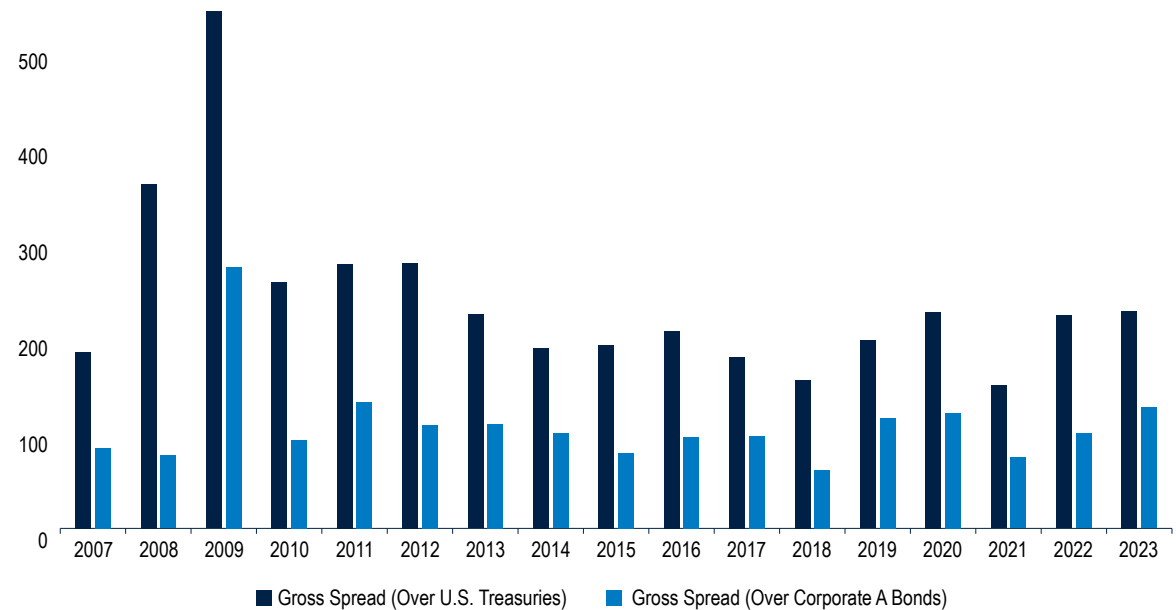
The segment's investment characteristics (based on our own affiliate investor data/representative loan portfolios) have offered a number of potentially additive and differentiating benefits for investors looking to diversify their portfolio credit exposures.



### HISTORICALLY HIGH SPREADS RELATIVE TO OTHER FIXED INCOME ASSETS:

Agriculture loans have consistently provided a premium spread over U.S. Treasuries (gross spread<sup>3</sup>) and A-rated corporate debt.

**Agriculture Loans Have Offered an Attractive Income Advantage**  
Spreads Over U.S. Treasuries and A-rated Corporate Debt, 2007–2023 (Basis Points)



Source: PGIM Real Estate. Data as of December 31, 2023.

<sup>3</sup> Gross spread at time of origination of comparable duration.

**2 A NATURAL COMPLEMENT TO COMMERCIAL REAL ESTATE LOANS WITH A LOWER RISK PROFILE:**

The higher coupon rates offered by agriculture loans have been broadly comparable to commercial mortgage loans but at lower loan-to-value (LTV) ratios with slightly longer durations. As detailed in the table on the right, average LTV levels are roughly 20% below those of commercial loans, and below the 50% mark on average. This differentiator lowers the overall risk profile of agriculture loans relative to their commercial counterparts.

**Agriculture Loans Can Help Diversify Commercial Real Estate Loan Allocations**

Agriculture Loan vs. Commercial Real Estate Loan Production Averages, 2007–2023

|  | Gross spread | Coupon | LTV | Debt service coverage ratio | Average duration (years) | Loan term (years) | Average deal size |
|--|--------------|--------|-----|-----------------------------|--------------------------|-------------------|-------------------|
| <b>Agriculture Production</b>            | 201          | 4.33%  | 46% | 2.38                        | 7.14                     | 11.57             | \$11M             |
| <b>Commercial Real Estate Production</b> | 204          | 4.14%  | 64% | 2.41                        | 6.48                     | 8.95              | \$50M             |

Source: PGIM Real Estate. Data as of December 31, 2023.

**3 A LONG HISTORY OF PRODUCING STABLE RETURNS:**

Agriculture loans have offered investors a compelling total return source over the long term, particularly on a risk-adjusted basis, outperforming traditional stock and bond assets, private real estate and public REITs on a Sharpe ratio basis.

**Agriculture Loans Have Delivered Attractive Long-Term Risk/Return Characteristics**

Historical Performance (Q1 2004 to Q4 2023)

|   | Agriculture loans | Private real estate | Public REITs | S&P 500 | Bonds |
|---|-------------------|---------------------|--------------|---------|-------|
| <b>Average annual total return</b>              | 4.58%             | 7.22%               | 8.27%        | 9.69%   | 3.17% |
| <b>Standard deviation</b>                       | 5.61%             | 12.55%              | 20.77%       | 17.07%  | 4.89% |
| <b>Number of quarters with negative returns</b> | 18                | 12                  | 24           | 21      | 23    |
| <b>Sharpe ratio</b>                             | 0.75              | 0.79                | 0.42         | 0.58    | 0.42  |

Source: PGIM Real Estate. Data as of December 31, 2023.

**4 LOW CORRELATIONS TO OTHER ASSET CLASSES:**

Agriculture loans have exhibited lower to negative correlations relative to many other asset classes, providing potential diversification benefits to a broader portfolio.

**Agriculture Loans Have Provided Diversifying Characteristics**

Historical Performance (Q1 2004 to Q4 2023)

|   | Agriculture loans | Private real estate | Public REITs | S&P 500 | Bonds |
|---|-------------------|---------------------|--------------|---------|-------|
| <b>Correlation to agriculture loans</b> | 1.00              | -0.22               | 0.48         | 0.39    | 0.77  |

Source: NCREIF, Barclays, PGIM Real Estate. Data as of December 31, 2023.

Past performance is not a guarantee or a reliable indicator of future results. Private Real Estate is represented by NCREIF ODCE. Public REITs is represented by NAREIT All Equity REIT Index. Bonds is represented by Bloomberg Barclay's US Aggregate.

No investment strategy or risk management technique can guarantee returns or eliminate risk in any market environment. Diversification does not assure a profit or protect against loss in declining markets.

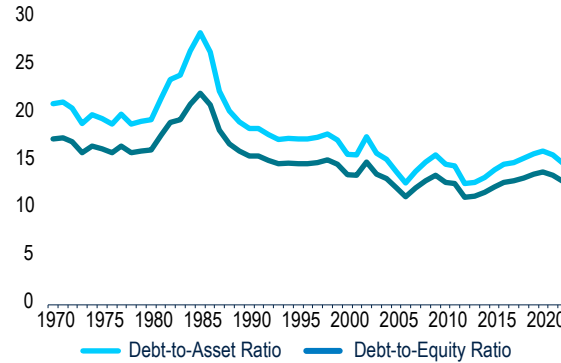
## 5 ATTRACTIVE BORROWER RISK PROFILES:

The overall credit health of the Farm sector has remained quite strong in recent years. Overall the U.S. farm Sector balance sheet remains healthy, with modest debt-to-asset ratios since their peaks in the 1980s. Net farm income, subject to commodity price fluctuations, has been steadily trending up over the past two decades.

### Farm Balance Sheets, on Average, Remain Quite Healthy

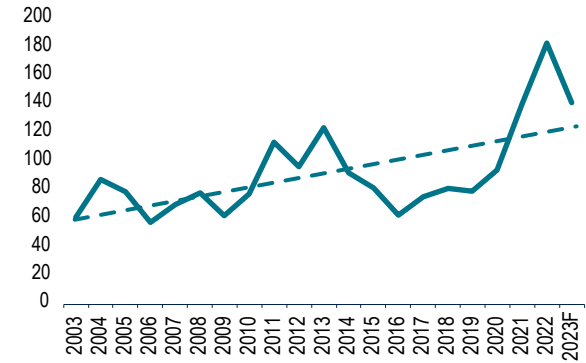
#### U.S. Farm Sector Solvency Ratios Remain Healthy with Debt-to-Asset Ratios at Historic Low Levels

U.S. Farm Sector Solvency Ratios, 1970-2023F



#### Net Farm Income Trending Higher, 2003-2021

Net Farm Income (USD Billions), Inflation Adjusted



Source: U.S. Department of Agriculture, Economic Research Service, Farm Income and Wealth Statistics. Data as of November 30, 2023.

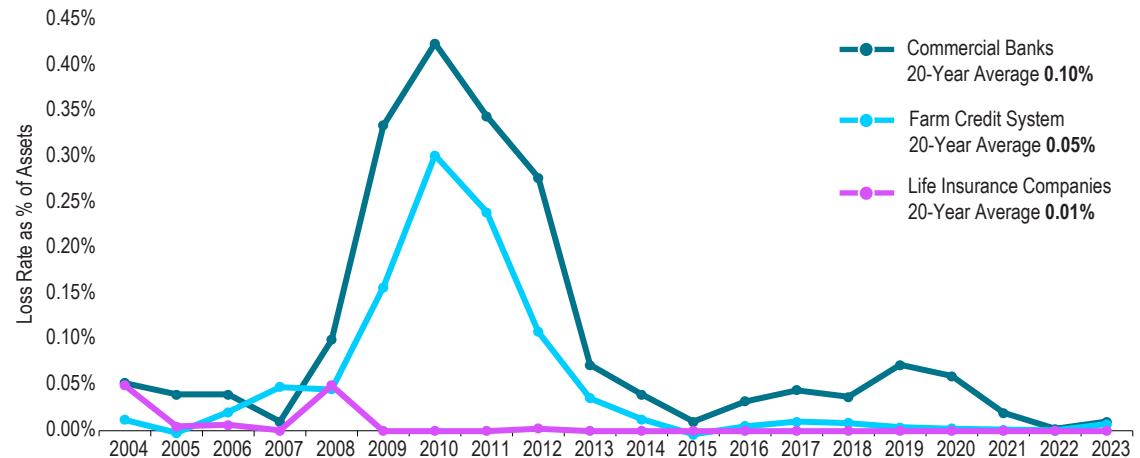
Forecasts are not guaranteed and may not be a reliable indicator of future results.

## 6 LOW HISTORICAL LOSS RATES:

Given the importance of the underlying land assets to borrowers' livelihood, agriculture lenders have historically experienced relatively low charge-off rates, with long-term averages nearing almost 0% and remaining well below 1% even during periods of elevated financial market stress, such as the dot.com crash in the early 2000s and the years following the 2008 global financial crisis.

While it is not unusual for these loans to experience higher delinquencies relative to more traditional commercial real estate properties due to crop cycles and greater cash flow fluctuations, there tend to be much fewer actual defaults and with higher recoveries.

### Farm Real Estate Loans Have Experienced Low Loss Rates, with Life Insurance Companies Exhibiting the Lowest Loss Rates Compared to Industry Peers



Source:

Commercial Banks: Board of Governors of the Federal Reserve System; seasonally adjusted charge-off rates (net of recoveries) for farmland loans as a percentage of average farmland loans.

Farm Credit System: Farm Credit Banks Funding Corporation Annual Information Statements; charge-off rates (net of recoveries) for agriculture real estate mortgage loans as a percentage of average agriculture real estate mortgage loans.

Life Insurance Companies: American Council of Life Insurers (ACLI) Mortgage Loan Portfolio Profile Annual Report; principal losses incurred on agriculture properties foreclosed as a percentage of total agriculture loans outstanding.

## WHO is investing?

Given its attractive investment characteristics, agriculture finance has attracted growing interest from pension funds, insurance companies and other institutional investors. A carefully constructed portfolio of these credits may offer a compelling solution for many investors.

Loan portfolios can be customized to address specific investor needs and objectives.

Loan portfolio level construction can be built around various types of properties and crops, geographical diversification, with exposures to differing commodity cycles and export/domestic distribution attributes, and with some added potential safety nets through government programs.

Depending on the investor's objectives, yield hurdles, duration targets and floating and fixed rate structures can be accommodated when aligned with an investment manager with a robust origination network.

## TYPICAL INVESTOR PROFILES:

- **Interested in participating in the agriculture sector:** U.S. agriculture is one of the most important and fundamentally necessary sectors of the global economy. As expounded in the following section, the U.S. agriculture industry is a key contributor in feeding the world's population and continues to benefit from favorable growth and supply/demand dynamics. These favorable dynamics include a continually expanding world population, a shrinking arable land base, increasing demand for protein in developing economies, health and wellness trends and demand for biofuels. Agriculture finance offers unique exposure to the sector for long-term investors and can help provide a potential hedge against inflation, given the segment's direct link to food and commodity prices. Increasingly, agriculture investment is also closely linked to sustainability and climate initiatives.
- **Seeking a higher-return/lower-volatility credit profile:** Agriculture loans historically have generated higher returns with lower volatility relative to traditional asset classes with similar credit profiles.
- **Looking to diversify private credit exposures:** Perhaps an investor already holds larger allocations to other private market segments, such as commercial real estate. Or they may find that their current allocations are not truly reflective of the broader loan market. As a major sector of the U.S. economy, agriculture is largely missing in many investment portfolios.
- **Considering investment alternatives for asset/liability management:** Agriculture loans offer a long history of producing stable, substantially higher cash flows compared to many types of traditional assets used in liability-driven investing strategies. This may help expand return potential while mitigating overall downside risk.
- **Subject to insurer risk-based capital (RBC) requirements:** These credits typically involve lower RBC treatments that can make them particularly attractive to insurance companies.

No investment strategy or risk management technique can guarantee returns or eliminate risk in any market environment. Diversification does not assure a profit or protect against loss in declining markets.

## U.S. AGRICULTURE: POTENTIAL ADVANTAGES OF INVESTING IN U.S. FARMLAND

The U.S. is a leading producer and top exporter of some of the world's most important agricultural commodities and benefits from a large domestic market and low per-unit production cost of several major crops. It has one of the largest cropland areas in the world with over 895 million acres<sup>4</sup> and produced more than \$250 billion in annual crop sales.<sup>5</sup> The industry is also a major growth driver of the U.S. economy, accounting directly and indirectly for nearly 30% of U.S. jobs and \$7.43 trillion in economic impact.<sup>7</sup>

<sup>4</sup> Farms and Land in Farms 2021 Summary, February 2022.

<sup>5</sup> Excludes animals and processing.  
Source: U.S. Department of Agriculture, National Agricultural Statistics Service.  
Data as of 2021.

<sup>6</sup> 2023 Food and Agriculture Industries Economic Impact Study, March 2022.

<sup>7</sup> U.S. Census Bureau International Database.

The U.S.'s large size, remarkably diverse farming landscape, generally strong crop yields and favorable per-unit production costs across key crops allow it to maintain a sustainable global competitive advantage in agriculture. The industry's powerful legacy is supported by a number of key strengths:

### 1. Optimal geographic conditions:

The U.S. has extensive farm areas with favorable and diverse climatic and soil conditions that support the production of an incredibly wide variety of crops.

### 2. Highly developed infrastructure:

Transportation infrastructure is a key variable in the movement of farm goods, and the U.S. benefits from one of the most advanced networks of highways, railroads and seaports strategically located around the country.

### 3. Well-capitalized farm economy:

The U.S. is home to major commodity exchanges and a deep set of private- and government-sponsored financial institutions that provide consistent capital to the farm sector. This financial infrastructure facilitates farmland production through credit and risk transfers.

### 4. Advanced farm technology:

Growth in farm productivity and crop quality has been driven by transformative research supported by both the government sector and private sector, with major advancements and continued development of sophisticated technologies that have helped farms to become more profitable, efficient and environmentally friendly.

### 5. Major exporter benefiting from global population growth:

The fact is it's a large, rapidly growing—and very hungry—world. Over the past 10 years, the global population has climbed by more than 800 million to 8 billion, and it is projected to grow by another 1.7 billion by 2050.<sup>7</sup> These people will need to be fed. Demand is also being shaped by changing diet preferences, including a move toward healthier diets and higher protein consumption. And it's not just about human food. Crops are used in animal feed, biofuels and processed into a wide range of products.

### 6. Strong domestic demand trends:

U.S. agriculture benefits from one of the largest domestic markets in the world. It also is an export powerhouse, leading the world in the production of common and highly consumed grains, such as corn and soybeans, as well as highly valued crops, such as almonds, producing 78% of the world's supply (see page 9).





### The U.S. Is a Production and Export Powerhouse

Select U.S. Commodity Production and Exports Rankings (2022/2023)

|                  | PRODUCTION<br>(million metric tons) |         |          | U.S. RANKING |         |
|------------------|-------------------------------------|---------|----------|--------------|---------|
|                  | U.S.                                | WORLD   | U.S. (%) | PRODUCTION   | EXPORTS |
| <b>ROW</b>       |                                     |         |          |              |         |
| Corn             | 348.8                               | 1,151.4 | 30.3%    | 1            | 2       |
| Soybeans         | 116.4                               | 383.0   | 30.4%    | 2            | 2       |
| Wheat            | 44.9                                | 783.8   | 5.7%     | 5            | 5       |
| Cotton           | 3.2                                 | 24.9    | 12.8%    | 3            | 1       |
| <b>PERMANENT</b> |                                     |         |          |              |         |
| Apples           | 4.5                                 | 78.8    | 5.7%     | 4            | 4       |
| Fresh Oranges    | 2.5                                 | 47.5    | 5.2%     | 6            | 5       |
| Table Grapes     | 0.9                                 | 27.4    | 3.1%     | 8            | 7       |
| Walnuts          | 0.7                                 | 2.6     | 25.1%    | 2            | 1       |
| Orange Juice     | 0.1                                 | 1.6     | 8.0%     | 3            | 4       |
| Almonds          | 1.2                                 | 1.5     | 77.8%    | 1            | 1       |
| Pistachios       | 0.5                                 | 0.8     | 63.5%    | 1            | 1       |

Source: Foreign Agricultural Service USDA, PGIM Real Estate.

Agriculture finance offers a unique way to tap into the investment potential of U.S. farmland by focusing on privately financed real estate loan opportunities.

**\$520.6B** Total farm sector debt is forecasted to rise in 2023.

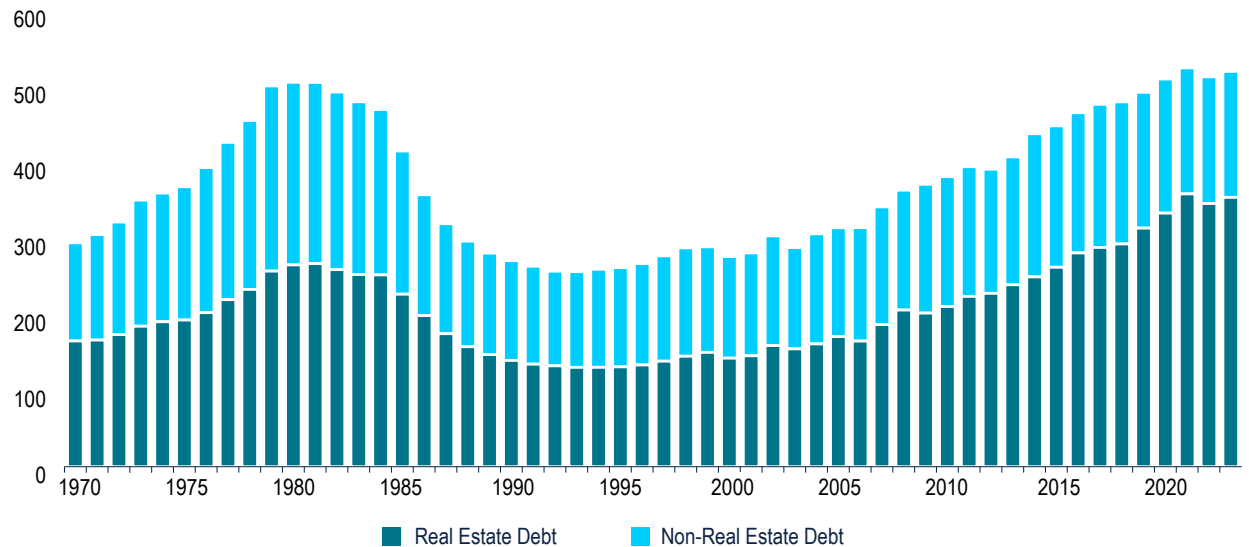
With nearly 70% represented by \$355 billion in real estate mortgages and just over 30% in \$165.7 billion in non-real estate loans.<sup>8</sup>

<sup>8</sup> U.S. Department of Agriculture, Economic Research Service, Farm Income and Wealth Statistics. Data as of November 30, 2023.

# UNDERSTANDING THE MARKET LANDSCAPE

## ROBUST CREDIT MARKET

**U.S. Farms Are Projected to Hold \$520.2 Billion in Total Debt in 2023, Mostly in Real Estate Loans**  
U.S. Farm Sector Debt, Inflation Adjusted, 1970-2023F (USD Billions)



Source: U.S. Department of Agriculture, Economic Research Service. Farm Income and Wealth Statistics. Data as of August 31, 2023.

Note: F = forecast. Forecasts are not guaranteed and may not be a reliable indicator of future results. Real values are adjusted for inflation using the U.S. Bureau of Economic Analysis Gross Domestic Product Price Index (BEA API series code: A191RG) rebased to 2023 by U.S. Department of Agriculture, Economic Research Service.

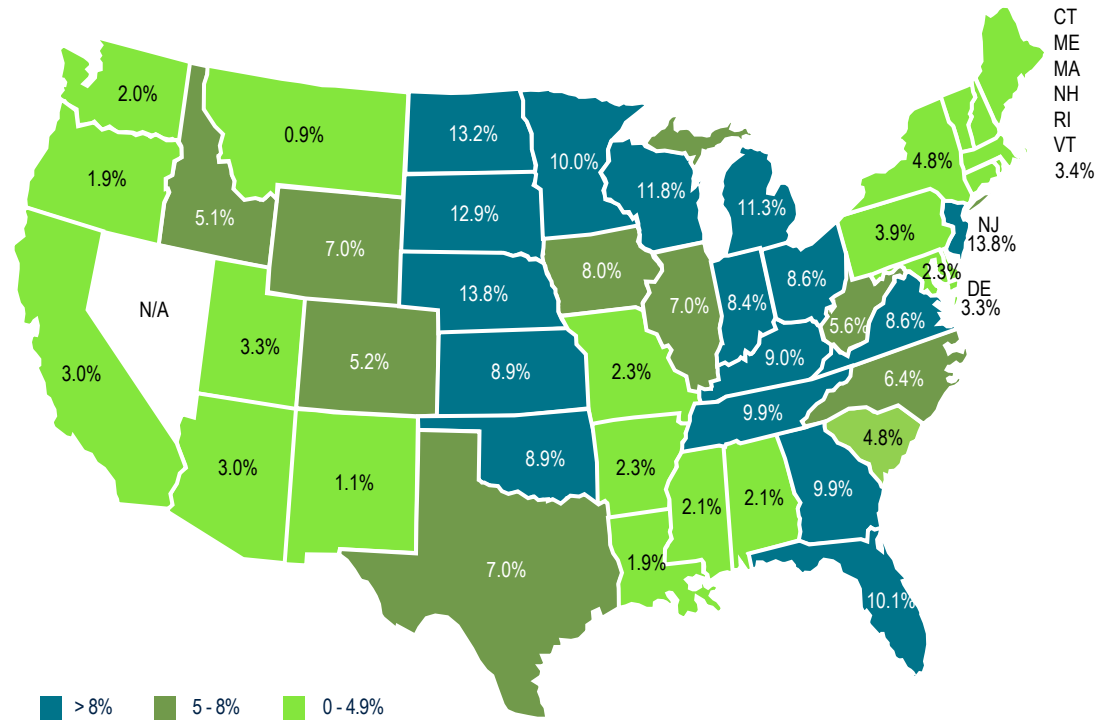
This large and growing credit market has been supported by broadly rising property values, with U.S. farmland posting positive real estate gains in 12 out of the past 14 years, evidence of the sector’s effectiveness in preserving investor capital under various market conditions.

**\$3.4T**

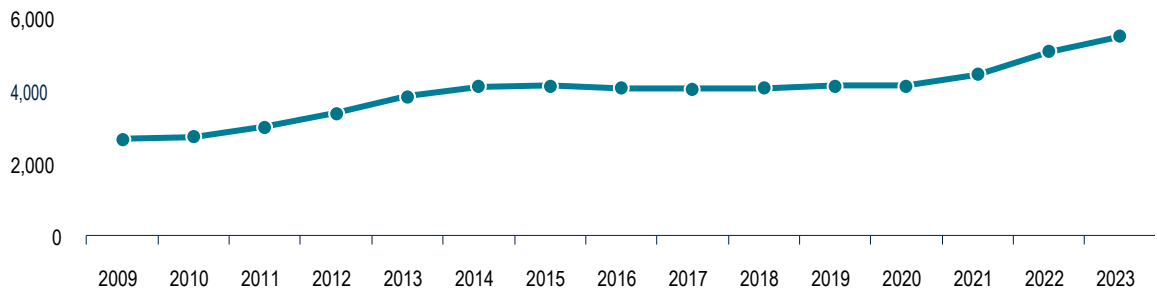
Overall farm real estate assets (both land and its attachments) are estimated to have grown to \$3.4 trillion in 2023,<sup>9</sup> up from \$2.4 trillion in 2014 and representing roughly 84% of total farm sector assets.<sup>10</sup>

## RIISING LAND VALUES

**Cropland Values Vary Widely Across the U.S. But Have Increased Across the Board**  
Percent Change in Cropland Value by State (2022/2023)



**Average Cropland Value, United States (Dollars per Acre)**  
Historical Performance, Q1 2007 to Q3 2023



Source: U.S. Department of Agriculture. Land values as of August 4, 2023.

<sup>9</sup> U.S. Department of Agriculture, Economic Research Service. Farm Sector Income & Finances: Assets, Debt, and Wealth, November 30, 2023.

<sup>10</sup> U.S. Department of Agriculture, National Agricultural Statistics Service – Farms and Land in Farms 2021 Summary (February 2022).

As a private lender, it is critical to be familiar with these differences and understand how to assess the potential impact on loan opportunity and creditworthiness.

## UNIQUE OR CUSTOMIZED LOAN STRUCTURES

Agriculture real estate loans tend to be structured somewhat differently than other types of institutional real estate assets. For example, commercial real estate loans that are secured by assets such as office buildings, apartment buildings or hotels are typically a non-recourse, single-purpose legal entity as the borrower and a single property on one legal parcel of land. In contrast, there are usually multiple components in each of these areas with agriculture real estate loans.

### Recourse obligations and multiple legal entities:

Many agriculture real estate loans are recourse obligations to the individuals/entities that own the land. It is not unusual for borrowers to have multiple legal entities, such as LLCs, LPs, GPs, corporate entities and individuals, as obligors to help shield liability. Multiple entities are also common with many farm families as an estate planning tool.

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### Multiple legal parcels:

Agriculture real estate loans are often secured by multiple legal parcels. Most of these land parcels are easily severable and salable to help alleviate cash flow issues or default, without threatening the ongoing viability of the farming operation.

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### Supplemental loans:

Many agriculture borrowers will request supplemental loans to facilitate development, capital improvements and expansion of their operation. In many cases, these loans are priced at a premium given the captive nature of the business.

### Primary credit underwriting criteria

Primary credit underwriting metrics for agriculture real estate loans tend to be similar to commercial real estate loans: loan-to-value ratios, debt service coverage ratios (both global and security coverage ratios), debt-to-asset ratios, etc. In our own underwriting experience, we have found that debt-to-asset ratios and total coverage ratios are often the strongest indicators of potential default, while loan-to-value ratios are often the strongest indicator of potential principal loss.

In addition, thorough due diligence requires experienced knowledge around industry-specific factors such as the nuances of farmland valuations, often complex water rights, differing crop cycles (and potential risks) and supply chain considerations. Ongoing credit surveillance can also be key to long-term success, which is why an investor should seek a seasoned investment manager with strong asset management experience and surveillance policies that regularly reassess the credit rating of a loan portfolio on a regular basis.

### How to invest

Most institutional investors interested in investing in agriculture finance usually work with a professional manager who is able to curate a loan portfolio designed to match their investment objectives.

### What to look for:

- Extensive experience in the segment with a strong origination network
- Proven performance track record through multiple farming and economic cycles
- Effective sourcing, due diligence, underwriting and restructuring/recovery capabilities
- Ability to deliver a well-diversified portfolio across property types, crop types and regions
- A deep understanding of both the agriculture equity and credit sides of the business
- Robust corporate investment policies and procedures
- Prudent leverage exposures in line with portfolio size and investor needs

An experienced manager can be a valuable partner in helping to navigate the agriculture finance market and build the right loan portfolio for your needs.

No investment strategy or risk management technique can guarantee returns or eliminate risk in any market environment.

### Conclusion

Agriculture finance presents a unique opportunity for investors to diversify their portfolios while contributing to the growth and stability of the farming sector. These loans function as a critical lifeline for farmers and agricultural businesses, providing them with the necessary capital to help sustain and advance their operations. By acting as a financing source, investors can directly support farmers and participate in the backbone of the global food supply chain, especially as new technologies and on-farm innovation require additional capital.

As an investment, agriculture loans have historically delivered compelling, steady yields and long-term risk-adjusted performance, making them appealing for investors seeking stable return sources. They also have tended to be less correlated to many asset classes, helping to enhance overall diversification, as well as potentially helping to mitigate broader market volatility exposure, as food demand tends to remain relatively stable even during economic downturns. With all of this in mind, the asset class can offer investors a compelling way to expand opportunity in their credit portfolios, while also helping to cultivate sustainable growth in a vital sector that nourishes the world.

## IMPORTANT INFORMATION

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