Alternative Investments

Natural Resources

Exam Focus

- Features and investment characteristics of raw land, timberland, and farmland
- Features and investment characteristics of commodities
- Sources of risk, return, and diversification among natural resource investments

Natural Resources

Natural resources: commodities and raw land used for agriculture and timber

- **Direct investment** is buying the natural resource; requires the costs of carry
- **Indirect investment** via ETFs, limited partnerships, REITs, swaps, and futures

Commodities

- **Hard commodities** are mined and extracted (e.g., oil, copper)
- **Soft commodities** are grown (e.g., grains, livestock)

Timberland involves the ownership of raw land and the harvesting of timber

- **Farmland** is also a form of investment for crops, solar, and wind uses

Land Investments

Farmland, timberland, and raw land are illiquid assets with a distinct location and unique features:

- **Developed land** may generate cash flow streams from leasing the assets
- **Less developed land** includes farmland, timberland, and raw land

Sources of return include both income and potential price appreciation:

- Farm lease payments for an *owner*
- Farm operating income for an *owner-operator*
- Farm timberland income, mineral, and drilling royalties

Land Investments vs. Real Estate

Limited focus on improving the land

- **Quality of the soil**, the climate, and geology (mineral rights)
  - *Real estate focuses on the value of buildings, construction, and development*

Location of the land

- **Proximity to transportation:** expenses incurred transporting commodities
  - *Transportation expenses can be significant component of a commodity price*
- **The closer to markets**, the higher the price of the land
  - *Real estate values are also driven by location*

Timberland

Timberland investment management organizations (TIMOs)

- Specialist knowledge is required to **manage a forest** over its life cycle
- Many institutional investors do not have this expertise
- TIMOs **manage timberland investments** on behalf of institutional investors

Analysis and acquisition

TIMOs also help investors in **analysis** and **acquisition** of suitable investments

- Timberland has a limited number of potential buyers and sellers

Raw Land, Farmland, and Timberland

Feature	Raw Land	Farmland	Timberland
Return driver	price of land	harvest quantities, commodity prices, land price	biological growth, harvest quantities, lumber prices, land price
Revenue	price appreciation, lease revenue	sale of crops, price appreciation, lease revenue	sale of trees and wood, price appreciation, lease revenue
Value	physical location	physical location, growth cycle, soil quality	physical location, quality of timber, timber phase
Main risks	best alternative use	weather factors and climate change, biological factors, diseases	
Owners	direct, partnership	direct, partnership, REITs	direct, partnership, REIT, and TIMO

Timberland and Farmland Investments

Investment features: "everyone eats and requires shelter"

- Income from crops and land has inflation protection
- Insulation from financial market volatility (e.g., 2007–2009)

Timberland is usually a large-scale investment of several thousand acres

- Long growth cycle, control over harvest timing, flexibility to wait

Farmland is bought in smaller sizes

- Short growth cycles; row and permanent crops, pastureland for livestock
- Wide variety of foodstuffs: spices, nuts, fruits, vegetables, corn, wheat

Farmland and Timberland Risks

Farmland risks

- Illiquid investment
- Unexpected changes in the weather
- Rights to water
- Nature conservation income and responsibilities

Timberland and climate risk

- Change in temperature: fire risk, change in growth patterns
- Frequency of extreme weather events: wind and storms affecting trees
- Pests and diseases may increase and require interventions

Natural Resources: Question

Which of the following statements provides the *most accurate* description of timberland investment management organizations?

A. TIMOs are entities that use their forest investment expertise to analyze and acquire suitable timberland holdings on behalf of institutional investors.

B. TIMOs are investment funds that raise money from individual investors to buy timberland.

C. TIMOs are entities that only facilitate direct ownership of timberland by institutional investors.

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Source: CFA Institute. Used with permission.

Natural Resources: Question

Which of the following natural resource investments is *least likely* to use the real estate investment trust (REIT) ownership structure?

A. Farmland.

B. Raw land.

C. Timberland.

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Source: CFA Institute. Used with permission.

Natural Resources: Question

Which of the following measures is *best* used to assess the potential for portfolio diversification when adding farmland or timberland to a portfolio of traditional assets?

A. Returns of other asset classes.

B. Volatility of other asset classes.

C. Correlation between other asset classes.

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Features of Commodity Investments

Direct vs. indirect commodity investments

- **Direct** commodity investments involve buying, transporting, storing, and insuring the commodity, known as the **costs of carry**
- **Indirect** commodity investments are via commodity derivatives and commodity funds

Commodity returns

- Commodities do not generate income
- Investors seek to benefit from **price appreciation**, rather than using the asset
- Governments intervene with price subsidies, mineral rights, taxes, royalties

Commodity Characteristics

Commodity sectors

- **Energy:** oil, natural gas, coal, and electricity
- **Base metals:** aluminum, zinc, lead, and tin
- **Precious metals:** gold, silver, and platinum
- **Agriculture:** grains, livestock, coffee
- **Other:** carbon credits, forest products, freight

Physical location, grade, and quality

- For example, grades of crude oil and delivery locations
- Physical commodities incur carry costs and unwelcome tax obligations
- Governments intervene with price subsidies, mineral rights, taxes, royalties

Commodity Derivatives

Most **commodity investing** is via commodity derivatives

- *Commodity futures:* exchange traded
- *Commodity forwards:* over-the-counter markets
- *Options on futures:* exchange traded

Benefits to investors

- Avoid carrying the commodity and any unwelcome tax issues
- **Exchange traded:** less counterparty credit risk, liquid markets, clear prices
- Initial margin, variation margin, daily MtM, leverage within futures contracts

Other Forms of Commodity Investment

Exchange-traded products (ETPs) are suitable for investors seeking simplified forms of trading through a standard brokerage account:

- **Exchange-traded funds (ETFs)**
- **Exchange-traded notes (ETNs)**

Commodity trading advisers (CTAs) are managed futures funds:

- Managed futures funds gain exposure via futures rather than direct investments
- Active long and short positions using fundamental and technical trading signals
- Often **separately managed accounts (SMAs)** for individual investors

Commodity Pricing

The no-arbitrage relationship is used to price commodity forwards.

If a commodity is bought today in the spot market, and carried for one year, what costs are incurred, and benefits gained?

- Funding cost: to borrow funds, or opportunity cost of using your own funds
- Carry costs: transportation, storage, and insurance
- Convenience yield: the benefit of owning a commodity to manufacturers who need the commodity as an input to their production process
  - If supply is short, with low inventory levels, **convenience yield is high**
  - If supply is plentiful, with high inventory levels, **convenience yield is low**

No-Arbitrage Relationship

Buy and carry the commodity for one year

- Borrowing at the risk-free rate
- Buying the commodity at the spot price
- Carrying the commodity for one year; incurring the carry costs
- Benefiting from the convenience yield (if appropriate)

Fair value of a long one-year commodity derivative contract

$$\text{forward price} = \text{spot} \times e^{(\text{risk free} + \text{carry costs} - \text{convenience yield}) \times \text{time}}$$

Fair Value of a Commodity Forward

Costs of carry increase the price of the forward

- **Funding cost** of borrowing or the **opportunity cost** of using your own funds
- Carry costs increase each month the commodity is stored

Benefits of carry reduce the price of the forward

- **Convenience yield** of holding the commodity benefits a manufacturer in the production process

In summary, **the fair value** of a commodity forward reflects the costs and benefits of carry over the period.

Commodities: Question

Which of the following statements is most correct about investors seeking commodity exposure through a commodity trading adviser (CTA)?

A. The investor is seeking to make direct investment in commodities.

B. The investor is seeking to benefit from an income stream from commodities.

C. The investor is seeking to profit from specific directional trends in commodity futures contracts.

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Backwardation Markets

Backwardation

- Reflects supply shortages
- Spot price rises above the futures price curve
- A downward-sloping futures price curve
  - Say the spot is 100, and the 1–6 month futures prices are 95, 90, 85, 80, 75, 70
  - A **long 6-month futures position at 70** will roll up for a profit as time passes, assuming no changes to market structure

Spot price > futures price

- Convenience yield > cost of carry

Contango Markets

Contango

- Reflects plentiful supply
- Spot price is lower than the futures price curve
- An upward-sloping futures price curve
  - Say the spot is 100, and the 1–6 month futures prices are 105, 110, 115, 120, 125, 130
  - A **short 6-month futures position at 130** will roll down for a profit over time
  - A **long 6-month futures position at 130** will roll down for a loss over time

Spot price < futures price

- Carry costs > convenience yield

Commodities: Question

Which of the following describes a non-cash benefit of holding a physical commodity rather than a derivative contract on the same commodity?

A. Interest.

B. Convenience yield.

C. Storage.

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Commodities: Risk and Return

Supply and demand factors for commodities

- Influenced by global supply and demand and state of the **global economy**
- Demand from the **end users** of commodities, **economic growth**
- Producers cannot alter commodity supply levels quickly
- The **required infrastructure** for commodity producers is high
- **Uncertainty** of the weather and geopolitics

Risk and return of commodities

- **High volatility** with the potential for **high returns**
- Convenience yield > cost of carry

Commodities: Question

Which type of investor is likely to prefer investing in commodities using exchange-traded products?

A. Those seeking simplified trading through a brokerage account.

B. Those seeking to gain access to dynamic commodity trading strategies.

C. Those seeking expertise in a specific commodity sector.

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Natural Resources and Diversification

Commodities are an inflation hedge

- Some commodities are **components of inflation** (e.g., energy and food)
- **Volatility** of **energy** and **food** commodity prices is much higher than reported consumer inflation, which is computed based on many products
- Commodities perform well when **inflation is higher**
- Commodities perform less well when **inflation is lower**
- In stable inflation environments, commodity returns tend to be **low but positive**

Inflation Hedging and Diversification Benefits

Portfolio diversification

- Farmland, timberland, and commodities have **potential for diversification**
- Historically **low correlations** with traditional asset classes
- All three show approximately **zero correlations** with global bonds
- **Timberland** has lowest correlation with global stocks
- **Farmland** has next-lowest correlation with global stocks
- **Commodities** have some exposure to the business cycle, so have a higher correlation, but still provide diversification benefits
- Commodities indices are heavily driven by the **energy sector**
- Farmland and timberland have **high correlation** with each other

Commodities: Question

Which of the following statements most correctly reflects commodity supply and demand fundamentals?

A. Supply of commodities adjusts equally to demand for commodities.

B. Supply of commodities adjusts more rapidly than does demand for commodities.

C. Supply of commodities adjusts more slowly than does demand for commodities.

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Solutions

Natural Resources: Question

Which of the following statements provides the *most accurate* description of timberland investment management organizations?

A. TIMOs are entities that use their forest investment expertise to analyze and acquire suitable timberland holdings on behalf of institutional investors.

B. TIMOs are investment funds that raise money from individual investors to buy timberland.

C. TIMOs are entities that only facilitate direct ownership of timberland by institutional investors.

Timberland requires asset-specific expertise, and TIMOs use their expertise to analyze and acquire timberland holdings, either directly or indirectly, for institutional investors.

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Natural Resources: Question

Which of the following natural resource investments is *least likely* to use the real estate investment trust (REIT) ownership structure?

A. Farmland.

B. Raw land.

C. Timberland.

Raw land is typically acquired through direct ownership or a partnership structure. Also, raw land has no inherent income stream, and returns accrue purely from price appreciation—making the income pass-through REIT structure less relevant.

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Natural Resources: Question

Which of the following measures is *best* used to assess the potential for portfolio diversification when adding farmland or timberland to a portfolio of traditional assets?

A. Returns of other asset classes.

B. Volatility of other asset classes.

C. Correlation between other asset classes.

A and B are incorrect because returns and volatility strictly reflect reward and risk for the asset class without consideration as to how the asset class performs compared to other asset classes.

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Commodities: Question

Which of the following statements is most correct about investors seeking commodity exposure through a commodity trading adviser (CTA)?

A. The investor is seeking to make direct investment in commodities.

B. The investor is seeking to benefit from an income stream from commodities.

C. The investor is seeking to profit from specific directional trends in commodity futures contracts.

Commodity trading advisers devise trading strategies using derivative contracts on commodities that are focused on predicting upcoming bull or bear trends.

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Commodities: Question

Which of the following describes a non-cash benefit of holding a physical commodity rather than a derivative contract on the same commodity?

A. Interest.

B. Convenience yield.

C. Storage.

In market environments in which physical inventories of a commodity become low, investors in that commodity will prefer to hold the physical asset rather than a derivative contract with the asset as an underlying. The premium on the spot price resulting from this preference is called the convenience yield.

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Commodities: Question

Which type of investor is likely to prefer investing in commodities using exchange-traded products?

A. Those seeking simplified trading through a brokerage account.

B. Those seeking to gain access to dynamic commodity trading strategies.

C. Those seeking expertise in a specific commodity sector.

B is incorrect because it describes investors who choose to use commodity trading advisors. C is incorrect because this type of investor will choose a specialized commodity fund for its expertise.

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Commodities: Question

Which of the following statements most correctly reflects commodity supply and demand fundamentals?

A. Supply of commodities adjusts equally to demand for commodities.

B. Supply of commodities adjusts more rapidly than does demand for commodities.

C. Supply of commodities adjusts more slowly than does demand for commodities.

Commodity supply adjusts slowly to demand because of long production times; for example, agricultural crops require a growing cycle.

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