INVESTMENTS 101: ALTERNATIVE INVESTMENTS
TRUSTEE EDUCATION SEMINAR

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BASIC CONCEPTS
WHAT IS AN ASSET?

• **What is an asset?**
  – A resource with economic value that a corporation owns or controls expecting that it will provide benefits in the future.

• **What is an asset class?**
  – A group of securities that have similar characteristics, act similarly in the marketplace and are subject to the same regulations.
  – Each asset class reflects different risk and return characteristics and perform different in the market environment.
  – Assets can be broken down further within **Traditional** asset classes and **Alternative** asset classes.
## TRADITIONAL ASSETS VS. ALTERNATIVE ASSETS

<table>
<thead>
<tr>
<th>Traditional Assets</th>
<th>Alternative Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Equity (Stocks)</td>
<td>• Private Equity</td>
</tr>
<tr>
<td>• Fixed Income (Bonds)</td>
<td>• Private Debt</td>
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<tr>
<td>• Public Real Estate (REITs)</td>
<td>• Private Real Estate</td>
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<tr>
<td>• Commodities</td>
<td>• Real Assets</td>
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<td>• TIPS</td>
<td>• Hedge Funds</td>
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<tr>
<td></td>
<td>• Global Asset Allocation &amp; Risk Parity</td>
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</table>
PRIVATE EQUITY
PRIVATE EQUITY OVERVIEW

- **Private Equity** is a source of investment capital provided by institutions and high net worth individuals for the purposes of acquiring interests in companies and/or products.

- **Its role in a portfolio** is as a return enhancer, with the premium earned over other investment options serving to compensate for the liquidity risk.

- **Large investable universe**
  - Over $400 billion raised annually across strategies in each of the last three years.
  - Over $3 trillion in assets under management, including portfolio value and un-invested capital.

- **Two components of private equity/private debt return:**
  - **Capital Appreciation:** Derived from an increase in the value of an asset between acquisition and sale.
  - **Current Income:** Derived from portfolio company operations, loans, and leases.

- **Investment diversification**
  - Not fully correlated with public equities.
  - Access to smaller companies and wider range of strategies.

Source: Preqin. Fundraising and market size data as of December 31, 2016.
### HOW IS PRIVATE EQUITY DIFFERENT FROM PUBLIC EQUITY?

<table>
<thead>
<tr>
<th><strong>Public Equity</strong></th>
<th><strong>Private Equity</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Daily liquidity</td>
<td>Illiquid, 10+ year closed funds</td>
</tr>
<tr>
<td>Invested immediately</td>
<td>Invested over time</td>
</tr>
<tr>
<td>Daily valuations</td>
<td>Quarterly valuations</td>
</tr>
<tr>
<td>Market pricing</td>
<td>Estimated fair value</td>
</tr>
<tr>
<td>Fees as a % of NAV</td>
<td>Fees as % of commitment</td>
</tr>
<tr>
<td>Regulated reporting</td>
<td>Transparency varies</td>
</tr>
<tr>
<td>Benchmark managed</td>
<td>Managed for alpha</td>
</tr>
<tr>
<td>Some activism</td>
<td>Active value creation</td>
</tr>
</tbody>
</table>
MECHANICS OF INVESTING IN PRIVATE EQUITY

Fund Manager

Limited Partner
Limited Partner
Limited Partner
Limited Partner

Capital Calls
Distributions

Fund General Partner or Managing Member

Carried Interest
Management Fees

Investment
Realization

Portfolio Company
Portfolio Company
Portfolio Company
Portfolio Company
Portfolio Company
PRIVATE EQUITY ECONOMIC RETURN DRIVERS

- **Private equity managers have multiple levers to create value:**
  - Buying low and selling high (multiple arbitrage)
  - Growing EBITDA (through organic revenue growth, cost cutting and making acquisitions)
  - Using leverage

- **Portfolio investments are made throughout the capital structure of target companies**

- **Returns are generated through capital appreciation and current income**
  - Capital appreciation is realized through the eventual sale of a company
  - Current income is derived from portfolio company operations, loans and leases, with loans typically structured to have rate adjustments and equity kickers

- **Leverage can amplify (positively and negatively) returns from current income and capital appreciation**
SPECTRUM OF PRIVATE EQUITY STRATEGIES

Private Equity is not a 'one size fits all' investment class

It offers a broad range of strategies (and risk/return profiles) that can be customized based on specific investment objectives

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>Strategy Focus</th>
<th>Typical Return Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Venture</td>
<td>Early stage innovative / disruptive companies</td>
<td>15% - 20% IRR, 2.0x TVPI</td>
</tr>
<tr>
<td>Growth Equity</td>
<td>Expansion Capital for small, growing businesses</td>
<td>15% - 20% IRR, 1.7x TVPI</td>
</tr>
<tr>
<td>Buyouts</td>
<td>Investments to restructure or expand established companies</td>
<td>17% – 20% IRR, 1.8x TVPI</td>
</tr>
<tr>
<td>Special Situations</td>
<td>Investments in mature businesses that may be profitable or unprofitable</td>
<td>15% – 20% IRR, 1.8x TVPI</td>
</tr>
<tr>
<td>Mezzanine</td>
<td>Subordinated debt to grow or restructure companies</td>
<td>8% -12% IRR, 1.4x TVPI</td>
</tr>
<tr>
<td>Opportunistic Credit</td>
<td>Investment strategy involving various credit-linked opportunities</td>
<td>13% - 17% IRR, 1.3x-1.8x TVPI</td>
</tr>
<tr>
<td>Direct Lending</td>
<td>Primarily floating rate senior and/or unitranche (senior and subordinated debt in one instrument) debt capital used for various situations</td>
<td>8% - 12% IRR, 1.3x-1.5x TVPI</td>
</tr>
<tr>
<td>Distressed Debt</td>
<td>Companies with Bad Balance sheets</td>
<td>10% - 20% IRR, 1.7x TVPI</td>
</tr>
<tr>
<td>Secondaries</td>
<td>Exchange of Limited Partnership interest in established PE partnerships</td>
<td>10% - 15% IRR, 1.5x TVPI</td>
</tr>
<tr>
<td>Energy</td>
<td>E&amp;P, transmission, storage, etc. of energy sources</td>
<td>10% - 20% IRR, 1.8x TVPI</td>
</tr>
</tbody>
</table>
FUND MANAGER FEES

FUND MANAGER FEES FOR PRIVATE EQUITY ARE HIGHER AND MORE COMPLEX THAN PUBLIC EQUITY FUNDS

• **Annual Management Fee**
  - Charged as a percentage of commitment (fixed fee) during the investment period
  - Charged as a percentage of net invested capital or NAV after the investment period
  - Generally 1.5%-2.0% fee rates

• **Fund Expenses**
  - One-time fund formation and ongoing administrative and operating costs
  - Can add another 0.3%-1.0% to annual expenses

• **Preferred Return**
  - Rate of return LPs need to achieve before GP can earn carried interest
  - Typically computed on amounts invested and amounts paid for fees to the GP
  - Generally 8%, but can vary by strategy and manager clout

• **Carried Interest**
  - Performance fee paid to the fund manager for profits generated on investments
  - Paid only on realized investments (not on unrealized gains)
  - Generally 20% of realized investment gain
  - Can be lower for lower return strategies or higher for “premium” managers
TYPICAL CLOSED-END FUND LIFECYCLE

• Fundraising, (0 – 2 years)
  – The time period that is used by the manager to raise sufficient funds for the strategy
  – Limited Partners make an initial “Commitment” to the fund

• Investing (years 1 – 5)
  – This is time period that managers use to source investment opportunities. The Fund will make investments during the “Investment Period,” generally the first four or five years of a fund’s life
  – Business plans are put into place as the manager seeks to add value. If an investment does not meet expectations the managers will take steps to mitigate the impact of losses
  – Current income may be paid out during the Investment Period (depending on the strategy), though early distributions may be recalled
  – Limited Partners fund their initial commitments as capital is called over time

• Harvesting (years 4 – 8)
  – The time period that managers use to exit the investments through one-off asset sales, portfolio company sales, IPOs, and other exit opportunities
  – The proceeds of the realizations are distributed to the fund’s investors according to a predetermined schedule, or distribution waterfall, which includes the payment of carried interest to the manager (if applicable)

• Liquidating (years 7 – 12)
  – The manager uses this time to exit the remaining investments in the portfolio
  – If the fund life is extended beyond its initial term (as stated in fund legal documents), management fees may be negotiated lower
THE “J-CURVE” OF PRIVATE EQUITY CASH FLOWS AND RETURNS

- **Cash flow pattern of investing in private equity**
  - **Years 1-3 returns are negative**, little income is generated, management fees are collected on committed (not invested) base, business plans established but improvements not yet impacting valuations
  - **Years 3-5 returns flatten out and gradually turn positive** as notable improvement in company financials justify valuation increases, debt refinancing may generate distributions and some income is received
  - **Years 5-10 returns spike** as many assets are sold and accumulated increases in value are reflected, and income is received
  - **Years 11-13 flatten out** as residual assets are liquidated
  - **All years combined** leads to what has been termed the "J-Curve."
PRIVATE EQUITY GENERAL TERMS

- **Carried Interest** - The share of profits that the fund manager is due once it has returned the cost of investment to investors.
- **Commitment** - Every investor in a private equity fund commits to investing a specified sum of money in the fund partnership over a specified period of time. The fund records this as the limited partnership’s capital commitment. The sum of capital commitments is equal to the size of the fund.
- **DPI** - A ratio of the amount of capital distributed (D) to investors over the amount of capital called from (or Paid In by) investors.
- **EBITDA** - Earnings Before Interest, Taxes, Depreciation and Amortization. Commonly used as a proxy for annual cash flow and often used as the denominator in a ratio to express the valuation of a company (TEV/EBITDA).
- **IRR** - Internal Rate of Return. A time-weighted return expressed as a percentage. IRR uses the present sum of cash drawdowns (money invested), the present value of distributions (money returned from investments) and the current value of unrealized investments.
- **Management fee** - This is the annual fee paid to the general partner. It is typically a percentage of limited partner commitments to the fund and is meant to cover the basic costs of running and administering a fund.
- **Preferred return** - Minimum returned distributed to the limited partners until the time when the general partner is eligible to deduct carried interest. The preferred return ensures that the general partner shares in the profits of the partnership only after investments have performed well.
- **TVPI** - A ratio of the Total Value (TV) of all distributions and current net asset value over the amount of capital called from (or Paid In by) investors.
- **TEV/EBITDA** - common valuation metric for companies, expressed as a ratio of the Total Enterprise Value over an annual EBITDA amount.
INVESTMENT FRAMEWORK AND PLANNING: BUILDING A PRIVATE EQUITY PROGRAM

- In constructing a private markets portfolio there are several key considerations that impact the allocation

<table>
<thead>
<tr>
<th>Decision</th>
<th>Implementation Considerations</th>
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</table>
| **Investment Objectives**               | • Committee will develop an Investment Policy with goals and guidelines around return objectives, current income and/or capital appreciation, risk and volatility tolerances, liquidity requirements and performance benchmarks  
  • Target allocation will determine commitment pace at a high level  
  • Annual investment plan will determine size of private equity commitments and investment strategy and manager selection based on environment and opportunities available |
| **Investment Thesis**                   | • Short term investment objective  
  • Long-term objective  
  • Opportunistic objective                                                                                                                                                                                                                                                                                                                                     |
| **Investment Strategy**                 | • Strategy diversification will impact returns and can mitigate the “J-Curve” while managing macro-economic risk  
  • Manager selection has a dramatic impact upon returns; diversification across managers can help mitigate idiosyncratic manager risk                                                                                                                                                                                                                           |
| **Market Opportunity & Vintage Year Considerations** | • Vintage year diversification is critical to the program’s success  
  • Mitigate vintage year risk through steady commitment pacing  
  • Fund managers control timing of investment acquisitions & dispositions based on market opportunities  
  • LPs can sparingly use secondary sales to lessen exposures |
## SPECTRUM OF PRIVATE EQUITY INVESTMENT STRATEGIES

<table>
<thead>
<tr>
<th>Private Equity Investment Style / Overview</th>
<th>Investment Strategy</th>
<th>Sector Exposure</th>
<th>Considerations</th>
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</table>
| **Venture Capital**                       | Minority equity investments in startup businesses that are perceived to have significant growth potential | Technology Software Biotech Healthcare Consumer CleanTech | • Vintage year is important  
• Access to the highest quality managers is paramount  
• Risk of failure is high |
| **Growth Equity**                         | Minority expansion capital for small, growing businesses that are generating cash flow and profits. Generally, these investments have less exposure to technology and leverage risk | Diversified Business Services Technology Healthcare Industrial Consumer | • Execution risk is high  
• Lack of control positions |
| **Buyouts**                               | Investments in established companies that require capital to expand and/or restructure | Diversified Business Services Technology Healthcare Industrial Consumer | • Generally high leverage  
• Operational control is key to execution |
| **Special Situations**                    | Investments in mature businesses that may be profitable or unprofitable. Investments are often in the equity of the acquired business. | Diversified Business Services Technology Healthcare Industrial Consumer | • Operational control is key to execution  
• Businesses may have more going concern risk than buyouts |
# Spectrum of Private Equity Multi-Manager Investment Strategies

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</table>
| **Co-Investments**                         | Investments in established companies that require capital to expand and/or restructure | Highly diversified across underlying deals and managers | • Generally high leverage  
• Co-Investors will not typically have much oversight for investments |
| • Return driver: appreciation and income  |                     |                 |                |
| • Expected IRR: 14%-16%                    |                     |                 |                |
| • Expected TVPI Multiple: 1.8x-2.0x        |                     |                 |                |
| • Time Horizon: 5-7 years                  |                     |                 |                |
| **Secondary Fund of Funds**                | Private equity interests are generally purchased at a discount of NAV from motivated owners of private equity interests. The interests purchased are generally venture and buyout fund and/or company interests with limited exposure to unfunded capital commitments | Highly diversified across underlying managers | • Limited alpha producing opportunities  
• Most value is generated at time of purchase through discounts and underwriting quality  
• Long lived funds due to diversification |
| • Return driver: appreciation              |                     |                 |                |
| • Expected IRR: 14%-18%                    |                     |                 |                |
| • Expected TVPI Multiple: 1.5x             |                     |                 |                |
| • Time Horizon: 2-3 years                  |                     |                 |                |
| **Primary Fund of Funds**                  | Investments as LP commitments to underlying funds diversified across vintage, strategy, and geography | Highly diversified across underlying managers | • Limited alpha producing opportunities  
• Long lived funds due to diversification  
• Passive investments  
• Lower fees minimize impact of double layer |
| • Return driver: appreciation              |                     |                 |                |
| • Expected IRR: 10%-16%                    |                     |                 |                |
| • Expected TVPI Multiple: 1.6x-1.8xx       |                     |                 |                |
| • Time Horizon: 5-10 years                 |                     |                 |                |
### SPECTRUM OF PRIVATE DEBT INVESTMENT STRATEGIES

<table>
<thead>
<tr>
<th>Private Debt Investment Style / Overview</th>
<th>Investment Strategy</th>
<th>Sector Exposure</th>
<th>Considerations</th>
</tr>
</thead>
</table>
| **Mezzanine**                          | Primarily fixed rate subordinated (the level of financing senior to equity and below senior debt) debt obligations made to non-investment grade borrowers to effect buyout, M&A or other growth strategies | Companies in a variety of industries that are backed by Private Equity Managers (Sponsored) or not backed by a Private Equity Manager (Sponsor-less) | • Fund economics play a role in returns  
• Manager has limited recourse due to subordinated position in capital structure |
| • Return driver: current income and appreciation  
• Expected IRR: 14%-16%  
• Expected TVPI Multiple: 1.6x-1.7x  
• Time Horizon: 5-7 years | | |
| **Opportunistic Credit**               | Investment strategy involving various credit-linked opportunities such as distressed debt, performing and non-performing loans, structured products (CLOs, CDOs), hard assets | Diversified exposure through various access points. Instruments include publicly traded debt securities, private debt, trade claims, mortgage debt, common and preferred stock and commercial paper | • Thematic  
• Esoteric investments |
| • Return driver: current income and appreciation  
• Expected IRR: 13%-17%  
• Expected TVPI Multiple: 1.3x-1.8x  
• Time Horizon: 1-4 years | | |
| **Distressed (Control)**               | Debt investments with the intent to take equity control of companies that have typically defaulted on debt obligations and are in need of financial and operational restructuring. | Diversified | • Window of opportunity tends to be short lived |
| • Return driver: appreciation and income  
• Expected IRR: 15%-17%  
• Expected TVPI: 1.3x-1.8x  
• Time Horizon: 3-6 years | | | |
| **Distressed Debt (non-control)**     | Debt investments in companies that have typically defaulted on debt obligations and are in need of financial and operational restructuring. | Diversified exposure through various access points. Securities can include common and preferred shares, bank debt, trade claims (goods owed) and corporate bonds | • Vintage year is important  
• Window of opportunity tends to be short lived |
| • Return driver: appreciation  
• Expected IRR: 13%-17%  
• Expected TVPI Multiple: 1.3x-1.8x  
• Time Horizon: 1-4 years | | | |
| **Direct Lending**                     | Primarily floating rate senior and/or unitranche (senior and subordinated debt in one instrument) debt capital used for various situations: facilitating changes in ownership through leveraged buyouts or recapitalizations, financing acquisitions, or enabling growth | Companies in a variety of industries that are backed by Private Equity Managers (Sponsored) or not backed by a Private Equity Manager (Sponsor-less) | • Fund economics play a role in returns  
• Vintage year is important  
• Floating rates, shorter holding periods |
| • Return driver: income  
• Expected IRR: 8%-12%  
• Expected TVPI Multiple: 1.3x-1.5x  
• Time Horizon: 2-4 years | | |
REAL ESTATE
REAL ESTATE OVERVIEW

• **Institutional quality/commercial real estate is property intended to generate a return from rental income and/or capital appreciation**
  – Can be publicly traded or privately held
  – Strategies exist spanning the risk/return spectrum from stabilized core real estate to development-oriented opportunistic real estate
  – Main property types include apartments, office buildings, shopping centers, hotels, industrial properties, etc.

• **Two components of real estate return:**
  – **Current Income**: Derived from tenant rents/leases that typically increase with inflation
  – **Capital Appreciation**: Increase in the value of an asset between acquisition and sale

• **Leverage can amplify (both positively and negatively) returns from current income and capital appreciation**
REAL ESTATE AS PART OF AN INVESTMENT PLAN

**Pros:**
1. Low historical correlation to stocks and bonds
2. Provides diversification benefits to the overall portfolio
3. Provides both current income and the potential for capital appreciation (each of which can be enhanced with leverage)
4. Over the long term, provides a partial hedge against inflation as certain components of real estate are sensitive to inflation
5. Offers a spectrum of investment strategies (with different return and risk expectations) that can be customized to meet plan objectives

**Cons:**
1. Investments are generally illiquid, particularly during falling markets (excluding public REIT investments)
2. Limited and imperfect benchmarks exist to gauge investment performance
3. Valuations are based on underlying transaction markets which have limited transparency and property appraisals can lag real-time market valuations
4. Investments outside of the base currency are affected by currency movements
5. The use of leverage amplifies negative performance
PRIVATE REAL ESTATE STYLES DEFINED

- **Debt**
  - Income-focused
    - Private debt instruments (commercial mortgages and construction)
    - Credit quality is the key of borrowers, tenants, and refinancing sources
    - Managed more like fixed income than real estate
    - Construction and mortgage loans promote job creation

- **Equity**
  - Core
    - The most common private equity investment strategy (e.g., the large, open-end commingled funds)
    - Well located, well built properties with stabilized occupancy
    - Majority of total return contributed by current income; less from appreciation
    - Portfolios are generally diversified by property type, geography, and economic drivers
    - Leverage typically low (10-30%)
  - Value Added (US and Foreign)
    - Focused on creating value by physically renovating and/or re-tenanting “problem” properties
    - Majority of total return contributed by value appreciation - limited current income
    - Includes closed-end and open-end commingled funds
    - Leverage – Moderate
  - Opportunistic
    - The riskiest investment strategy, with the potential for the highest returns
    - Strategies include ground-up development and reworking distressed portfolios
    - Negative cash flows initially, with virtually all the return coming from capital appreciation (J-curve)
    - Some portfolios include international investments
CORE PROPERTY TYPES SECTORS

Office, retail, multifamily, industrial and, to a lesser extent, hotels, are generally viewed as the primary or “core” real estate sectors

<table>
<thead>
<tr>
<th>Sector</th>
<th>Example Property Types</th>
<th>Key Economic Drivers</th>
<th>Lease Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Office</td>
<td>CBD Office, Suburban office</td>
<td>Job growth, Employment rate, Productivity rates</td>
<td>Longer-term leases that can lag current market lease rates which produces step-ups or step-downs at lease maturity, Credit quality of tenants, lease lengths</td>
</tr>
<tr>
<td>Retail</td>
<td>Regional malls, Shopping centers, Factory outlet centers</td>
<td>Consumer spending, Employment rate, Job growth</td>
<td>Leases frequently contain a base rent plus percent of the gross sales, Longer-term leases that can lag current market lease rates which produces step-ups or step-downs at lease maturity, Credit quality of tenants, lease lengths</td>
</tr>
<tr>
<td>Multifamily / Apartment</td>
<td>High-rise apartment, Garden style apartment</td>
<td>Demographic trends, Home ownership rates, Employment rate, Job growth</td>
<td>Leases are typically 1-2 years and adjust quickly to current market conditions</td>
</tr>
<tr>
<td>Industrial</td>
<td>Warehouse / distribution, Flex industrial, Trans-shipment, R&amp;D space</td>
<td>Business inventory levels, Import / export volumes, Employment rate, Job growth</td>
<td>Longer-term leases that can lag current market lease rates which produces step-ups or step-downs at lease maturity, Releasing requires smaller or minimal tenants improvements</td>
</tr>
<tr>
<td>Hotel / Lodging*</td>
<td>Full-service, Limited service, Extended stay</td>
<td>Business spending / travel, Consumer spending / leisure travel, Employment rate, Job growth</td>
<td>Leases are nightly and hotels have high fixed operating costs, Property net operating income more volatile relative to other property sectors, Asset management is critical</td>
</tr>
</tbody>
</table>

* Although the hotel / lodging sector is frequently included as a “core” real estate sector, the risk / return profile of the sector is higher than the other four “core” real estate sectors
# Non-Core Property Types

Healthcare, senior housing, self-storage and other more niche sectors are frequently viewed as secondary or “non-core” real estate sectors.

<table>
<thead>
<tr>
<th>Sector</th>
<th>Example Property Types</th>
<th>Sector Economic Drivers</th>
<th>Lease Considerations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Healthcare</td>
<td>• Medical office&lt;br&gt;• Hospitals&lt;br&gt;• Life science</td>
<td>• Healthcare spending&lt;br&gt;• Demographic trends</td>
<td>• Longer-term leases that can lag current market lease rates which produces step-ups or step-downs at lease maturity</td>
</tr>
<tr>
<td>Senior Housing</td>
<td>• Independent living&lt;br&gt;• Assisted living&lt;br&gt;• Dementia care&lt;br&gt;• Alzheimer’s care&lt;br&gt;• CCRCs&lt;br&gt;• Skilled nursing</td>
<td>• Demographic trends&lt;br&gt;• Healthcare spending&lt;br&gt;• Home prices (specifically for entrance fee CCRCs and independent living)</td>
<td>• Leases (or rents) vary per product type and level of care&lt;br&gt;• Private pay versus government subsidized is important consideration&lt;br&gt;• CCRCs can use entrance fee models where an incoming resident provides an “entrance deposit” which is fully or partially refundable at move-out</td>
</tr>
<tr>
<td>Self-Storage</td>
<td>• General self storage&lt;br&gt;• RV / boat storage&lt;br&gt;• Container storage</td>
<td>• Consumer spending&lt;br&gt;• Business spending</td>
<td>• Leases are typically short term (monthly) and rental rates are adjusted on a daily / weekly basis relative to market conditions</td>
</tr>
<tr>
<td>Student Housing</td>
<td>• Multifamily-style properties near large universities</td>
<td>• Demographic trends</td>
<td>• Properties have very high turnover (near 100% per year)&lt;br&gt;• Co-signers are frequently required for students</td>
</tr>
<tr>
<td>Other Niche Sectors</td>
<td>• Manufactured homes&lt;br&gt;• Data centers&lt;br&gt;• Marinas&lt;br&gt;• Ski resorts&lt;br&gt;• Single industry buildings</td>
<td>• Varies per property type</td>
<td>• Lease terms vary per property type</td>
</tr>
</tbody>
</table>
RELATIVE EXPECTED RISK RETURN PROFILE OF REAL ESTATE SECTORS AND GEOGRAPHIC / MARKET FOCUS

Notes:
- Debt-related strategies can span the illustrative risk / return spectrum depending on the specific strategy
- Manager-specific risk, operations and leverage can skew expected risk / return profile
HEDGE FUNDS
WHAT IS A HEDGE FUND?

• **Definition:** An alternative investment vehicle accessed by accredited investors that invests across a broad range of securities using leverage, shorting, and locked-up capital to earn active return.

• **NEPC groups hedge funds across four primary sub-strategies: equity-linked, credit-linked, event driven and global macro.**
  - Sector vs. generalist
  - Geographic specialists
  - Quantitative vs. fundamental strategies

• **Typically owned and managed by private partnerships, hedge funds are generally less transparent and have fewer regulations than traditional investments.**

• **Compensation structure:** managers are paid a management fee (1.0% to 2.0% of the Fund NAV annually) and a performance fee (usually 10% to 20% of profits). Typically, hedge fund managers report returns net of fees.
WHY INVEST IN HEDGE FUNDS?

**Diversification:**
- Hedge funds can provide diversification benefits to a total portfolio through historically low correlations to traditional asset classes

**Risk-adjusted returns:**
- May provide investors with better risk-adjusted returns and a “smoother ride” through historically lower volatility and smaller drawdowns relative to other risk assets

**Access to non-traditional strategies:**
- Hedge funds utilize strategies and implementation tools less available to traditional investment vehicles
  - Broad flexible mandates or specialized niche strategies
  - Use of shorting and leverage
  - Illiquid investments

Past performance is no guarantee of future results
## COMPARISON TO OTHER INVESTMENT STRUCTURES

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<tr>
<th></th>
<th>Long-Only Funds</th>
<th>Hedge Funds</th>
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<tbody>
<tr>
<td><strong>Value proposition</strong></td>
<td>Market dependent; Benchmark oriented</td>
<td>Skill based; Benchmark agnostic</td>
</tr>
<tr>
<td><strong>Type of exposure</strong></td>
<td>Long only</td>
<td>Flexible exposure: long or short, market neutral</td>
</tr>
<tr>
<td><strong>Investing style</strong></td>
<td>Style constraints (value, growth, etc.)</td>
<td>Broad guidelines, few constraints</td>
</tr>
<tr>
<td><strong>Instruments traded</strong></td>
<td>Predominately publicly traded stocks and bonds</td>
<td>Stocks, bonds, derivatives (futures, swaps, options), privates</td>
</tr>
<tr>
<td><strong>Leverage employed</strong></td>
<td>Usually none</td>
<td>Frequently employ leverage, varies by manager/strategy</td>
</tr>
<tr>
<td><strong>Alignment of interests</strong></td>
<td>Varied co-investment amount and ownership position</td>
<td>Large manager co-investment, ownership position</td>
</tr>
<tr>
<td><strong>Liquidity</strong></td>
<td>Frequent liquidity</td>
<td>Restricted liquidity</td>
</tr>
<tr>
<td><strong>Business model</strong></td>
<td>Scalable</td>
<td>Capacity constrained</td>
</tr>
</tbody>
</table>
BENEFITS & RISKS VS. TRADITIONAL INVESTMENT STRUCTURES

Pros:
• Incentive structure focused on performance during all market environments
• Potential for uncorrelated returns to traditional asset classes
• Strategies often reduce overall portfolio volatility and drawdowns
• Potentially superior capital preservation vehicles

Cons:
• Complicated entities, more challenging to evaluate managers
• Liquidity constraints
• Less transparent
• Higher fees
• Can be difficult to access top managers
• Potential for higher “headline risk”
• Regulatory environment in flux
## SUB-STRATEGIES EXPLAINED

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Definition</th>
</tr>
</thead>
</table>
| Equity-Linked  | • Managers combine a long portfolio with the short sale of stocks  
• Portfolios range from net short to net long, depending on market conditions  
• Aggressive funds may capture returns by exceeding 100% exposure while conservative funds mitigate market risk by maintaining net exposures of between 0-50% |
| Credit-Linked  | • Managers invest across the spectrum of fixed-income/credit assets ranging from sovereign bonds and corporate debt to securitized products, seeking to capitalize on both yield/income and capital appreciation.  
• Strategies utilizes quantitative and qualitative analysis to identify mispricings  
• Can be directional (focused on a single security) or relative value (focused on relationship between securities)  
• Examples include credit long/short, capital structure arbitrage, convertible arbitrage, and fixed income arbitrage; some overlap with distressed-oriented event-driven strategies |
| Event-Driven   | • Managers invest in situations with the expectation that a near term event will act as a catalyst changing the market's perception of a company, thereby increasing or decreasing the value of its equity or debt  
• Events include, bankruptcies, financial restructurings, mergers, acquisitions and spin-offs  
• Three types of event disciplines: merger arbitrage, distressed securities and special situations |
| Global Macro   | • Trade highly liquid instruments, long and short, including currencies, commodities, fixed income instruments and equity indices  
• Low correlation to traditional and alternative asset classes  
• Discretionary strategies employ broad analysis of economic, financial and political data to identify themes  
• Systematic strategies use algorithmic models to analyze historical data, both technical and fundamental |
| Multi-Strategy | • Managers employ a diversified portfolio with various investment approaches  
• Strategies may include convertible arbitrage, merger arbitrage, and fixed income arbitrage positions  
• Managers can over or under-weight different strategies to capitalize best on current investment opportunities |

Please see Appendix for detail on each sub-strategy
HEDGE FUND GENERAL TERMS

- **Hedge Fund:**
  - A private partnership where the General Partner receives management and incentive fees in exchange for investment performance. In pursuing its investment strategy and goals, the General Partner has a more flexible investment mandate and set of investable instruments at his disposal.

- **Long position:**
  - Owning a security – goal is to buy low, sell high (up movement is good)

- **Short position:**
  - Selling a security – goal is to sell high, buy low (down movement is good)

- **Arbitrage:**
  - The simultaneous purchase and sale of an asset in order to profit from a difference in the price

- **Gross Exposure:**
  - Aggregate of long and short investment positions in relation to the Net Asset Value (NAV)

- **Net Exposure:**
  - Difference between the long and short positions

- **Alpha:**
  - The value added or subtracted by a fund manager. Usually calculated with reference to a benchmark.

- **Beta:**
  - Market driven performance

- **Leverage:**
  - Increasing exposure to markets (both long and short) by borrowing or use of derivatives.
RISK-RETURN COMPARISON

<table>
<thead>
<tr>
<th>Source: eVestment, HFR Database as of 12/31/2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>60/40 Stock/Bond Portfolio represents 60% MSCI World and 40% Barclays Agg</td>
</tr>
<tr>
<td>Past performance is no guarantee of future results</td>
</tr>
</tbody>
</table>
PORTFOLIO DIVERSIFICATION BENEFITS

<table>
<thead>
<tr>
<th>Historical Correlation</th>
<th>HFRI Fund Weighted Composite Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>S&amp;P 500</td>
<td>0.73</td>
</tr>
<tr>
<td>MSCI World</td>
<td>0.75</td>
</tr>
<tr>
<td>BarclaysAgg</td>
<td>0.09</td>
</tr>
<tr>
<td>BofA ML HY</td>
<td>0.65</td>
</tr>
</tbody>
</table>

- **Over the long-term, hedge funds have demonstrated lower correlation to traditional asset classes**
  - Higher correlation to equities for HFRI Fund Weighted Composite (FWC) Index reflective of increased exposure to equity strategies

- **Incorporating hedge funds into an investment portfolio has historically aided in reducing volatility while preserving and/or improving return**

Sources: eVestment, HFR, data calculated from 1/31/1990 through 12/31/2018
Past performance is no guarantee of future results
Hedge funds have preserved capital effectively during large drawdown periods

Source: eVestment, HFR, as of 12/31/2018
60/40 Stock Bond Portfolio represents 60% MSCI World and 40% Barclays Agg
Past performance is no guarantee of future results
Historically, hedge funds have effectively preserved capital during market crises.

- **US Presidential Election Indecision**
- **9/11 Terrorist Attacks**
- **Enron and WorldCom Bankruptcies**
- **Bear Market Bottom**
- **Subprime Mortgage Crisis**
- **Recessionary Fears**
- **Post Lehman bankruptcy / Credit Meltdown**
- **Taper Tantrum**
- **Q4 2018**

### Performance During Crisis

- **HFRI FWC**
- **50-30-20***
- **60 - 40**
- **S&P 500**
- **MSCI WORLD**
- **Barclays Agg**

### Average Return During Market Crisis

- **HFRI Fund Weighted**
- **50-30-20***
- **60 - 40**
- **MSCI WORLD**
- **S&P 500**
- **Barclays Agg**

*50-30-20 represents a portfolio of 50% MSCI World 30% Barclays Agg and 20% HFRI Fund Weighted Composite

**60-40 represents a portfolio of 60% MSCI World and 40% Barclays Agg

Past performance is no guarantee of future results.
REAL ASSETS
WHAT ARE REAL ASSETS?

• **What are Real Assets?**
  – Real Estate
  – Commodities
  – Timber
  – Inflation-linked products
  – Treasury Inflation Protected Securities (TIPS), inflation-sensitive equities, etc.

• **Why invest in Real Assets?**
  – Diversification
  – Offers “real” (after inflation) return

• **Challenges**
  – Liquidity – depends on the strategy
    • Liquidity can also impact the correlation to periods of rising inflation
  – Return expectations
    • Generally have lower expected returns than equities
    • Can underperform traditional markets for extended periods of time
      • Is now the right time for inflation protection?

• **Goal of real assets: help the portfolio maintain purchasing power through periods of rising inflation**
# Real Asset Sub-Sectors and Investment Structures

<table>
<thead>
<tr>
<th>Public Market or Liquid Strategies</th>
<th>Private Market or Illiquid Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>US TIPs</td>
<td></td>
</tr>
<tr>
<td>Emerging Markets Currency/Bonds</td>
<td></td>
</tr>
<tr>
<td>Real Estate</td>
<td>Real Estate</td>
</tr>
<tr>
<td>Energy</td>
<td>Energy</td>
</tr>
<tr>
<td>Commodities</td>
<td>Commodities (Metals &amp; Mining)</td>
</tr>
<tr>
<td>Infrastructure</td>
<td>Infrastructure</td>
</tr>
<tr>
<td>Timber</td>
<td>Timber</td>
</tr>
<tr>
<td>Agriculture</td>
<td>Agriculture</td>
</tr>
</tbody>
</table>

- **Active and Passively Managed Funds**
- **Open-end and Closed-End PE Funds**
“CORE” REAL ASSET SECTORS

- The following sectors of Real Assets generate a higher percentage of returns from current income and/or have lower expected returns.

<table>
<thead>
<tr>
<th>Sector</th>
<th>Example Property Types</th>
<th>Key Return Drivers</th>
</tr>
</thead>
</table>
| Core Infrastructure | - Roads/Parking
  - Ports
  - Midstream Energy/Utilities
  - Water/Waste Water | - GDP growth
  - Monopolistic markets with high barriers to entry which limits competition |
| Farmland        | - Row Crops
  - Permanent Crops
  - Protein
  - Dairy | - Biological growth
  - Crop prices
  - Land value |
| Timber          | - Timberland – diversified by region and species           | - Biological Growth
  - Timber price
  - Land value |
"OPPORTUNISTIC" REAL ASSET SECTORS

- The following sectors of Real Assets can be classified as "opportunistic" since capital appreciation typically drives returns

<table>
<thead>
<tr>
<th>Sector</th>
<th>Example Property Types</th>
<th>Sector Economic Drivers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Upstream/ Midstream Energy</td>
<td>• Oil and Gas E&amp;P</td>
<td>• GDP growth</td>
</tr>
<tr>
<td></td>
<td>• Oilfield/Pipeline services</td>
<td>• Commodity price movements</td>
</tr>
<tr>
<td></td>
<td>• Pipelines/Storage</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Transmission/Distribution</td>
<td></td>
</tr>
<tr>
<td>Metals and Mining</td>
<td>• Precious metals (gold, silver)</td>
<td>• GDP Growth</td>
</tr>
<tr>
<td></td>
<td>• Base metals (copper, zinc)</td>
<td>• Commodity price movements</td>
</tr>
<tr>
<td></td>
<td>• Development mostly, some production</td>
<td></td>
</tr>
<tr>
<td>Opportunistic Infrastructure</td>
<td>• Greenfield/Brownfield projects consisting of multiple</td>
<td>• GDP growth</td>
</tr>
<tr>
<td></td>
<td>expansion or consolidation of services</td>
<td>• Regulated Markets</td>
</tr>
<tr>
<td></td>
<td>• Government concessions or incentives</td>
<td>• Government incentives</td>
</tr>
<tr>
<td>Power Generation/ Renewables</td>
<td>• Coal Plants</td>
<td>• GDP growth</td>
</tr>
<tr>
<td></td>
<td>• Natural Gas Plants</td>
<td>• Regulatory initiatives</td>
</tr>
<tr>
<td></td>
<td>• Solar</td>
<td>• Government incentives</td>
</tr>
<tr>
<td></td>
<td>• Wind</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Hydro</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Biomass, Nuclear, others</td>
<td></td>
</tr>
</tbody>
</table>
RELATIVE EXPECTED RISK RETURN PROFILE OF REAL ASSET SECTORS

Illustrative Risk / Return Profile

- Viewed as more risky with higher return expectations and greater capital appreciation
- Viewed as less risky with lower return expectations more current income

Note: Debt-related strategies can span the illustrative risk / return spectrum depending on the specific strategy
Note: Manager specific risk, operations and leverage can skew expected risk / return profile
GLOSSARY

• **Index:**
  – A statistical composite that measures changes in the economy or in specific financial markets, usually expressed relative to a base year. Some well-known indexes include the Dow Jones, S&P 500, NASDAQ, Russell and Consumer Price Index (CPI).

• **Benchmark:**
  – Any basis of measurement, such as an interest rate or an index of stock performance, that is used as a reference point for purposes of comparison.

• **Rebalance:**
  – To sell existing investments and buy new investments in order to maintain the agreed-upon asset mix. A discipline to facilitate “buy low/sell high.”
  – However when you buy low the price can go lower, and you can sell high when the price ends up rising higher
  – However, problems can arise when:
    • You sell an investment and the price rises
    • You buy an investment and the price falls

• **Beta**
  – The degree to which a portfolio moves in tandem with the benchmark index.
  – A measure of the overall market’s risk
    • The market’s Beta is 1.0 by definition
      – A portfolio with a beta of 0.5 is half as risky as the market
      – A portfolio with a beta of 2.0 is twice as risky as the market
• **J-Curve Effect**
  - A diagram where the curve falls at the outset and eventually rises to a higher point, thus creating the shape of a “J”. In Private Equity, funds experience negative returns for the first several years as the portfolio raises capital. If the fund is well managed, it will recover from its losses and gain higher returns, making the J shape.

![Sample J-Curve on $10 Million Investment](image)

• **Vintage Year**
  - The year in which the first influx of investment capital is delivered to a project or company. Investors can use the vintage year of an investment to further explain its returns.
PRIVATE EQUITY: BUILDING BLOCKS (5-7 YEARS)

Source: NEPC

*Private Equity is a derived composite of 34% US Buyout, 34% US Growth, 8.5% US Secondary, 8.5% US Venture, 15% Non-US PE.
REAL ASSETS: ASSUMPTIONS

### Real Assets Building Blocks

<table>
<thead>
<tr>
<th>Block</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Illiquidity</strong></td>
<td>The additional return expected for investments carrying liquidity risk</td>
</tr>
<tr>
<td><strong>Premium</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Valuation</strong></td>
<td>The expected change in price of the underlying asset reverting to a long-term real average or terminal value assumption</td>
</tr>
<tr>
<td><strong>Inflation</strong></td>
<td>Incorporates the inflation paths as defined by TIPS breakeven expectations and NEPC expected inflation assumptions</td>
</tr>
<tr>
<td><strong>Real Earnings Growth</strong></td>
<td>Reflects market-specific real growth for each equity asset class as a weighted-average derived from index country revenue contribution and forecasted GDP growth</td>
</tr>
<tr>
<td><strong>Real Income</strong></td>
<td>Represents the inflation-adjusted income produced by the underlying tangible or physical asset</td>
</tr>
</tbody>
</table>

### Asset Class Performance

<table>
<thead>
<tr>
<th>Asset Class</th>
<th>5-7 Year Return</th>
<th>Change 2019-2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commodities</td>
<td>4.25%</td>
<td>-0.50%</td>
</tr>
<tr>
<td>Midstream Energy</td>
<td>8.25%</td>
<td>+1.00%</td>
</tr>
<tr>
<td>REITs</td>
<td>6.75%</td>
<td>+0.25%</td>
</tr>
<tr>
<td>Core Real Estate</td>
<td>6.00%</td>
<td>+0.25%</td>
</tr>
<tr>
<td>Non-Core Real Estate</td>
<td>7.00%</td>
<td>-</td>
</tr>
<tr>
<td>Private RE Debt</td>
<td>5.75%</td>
<td>N/A</td>
</tr>
<tr>
<td>Private Real Assets: Energy/Metals</td>
<td>9.50%</td>
<td>+1.50%</td>
</tr>
<tr>
<td>Private Real Assets: Infrastructure/Land</td>
<td>6.25%</td>
<td>+0.25%</td>
</tr>
</tbody>
</table>
REAL ASSETS: BUILDING BLOCKS (5-7 YEARS)

Source: NEPC
**HEDGE FUND INDUSTRY COMPOSITION**

**Hedge Fund Strategies**  
Industry Size - $3.1 trillion*

- **Equity Linked** 28%  
  - Long/Short Equity  
  - Equity Arbitrage  
  - Short Bias  
  - Emerging Market Equity

- **Credit Linked** 27%  
  - Relative Value  
  - Long/Short Credit  
  - Fixed Income Arbitrage  
  - Emerging Market Debt

- **Event Driven** 26%  
  - Distressed Securities  
  - Merger Arbitrage  
  - Special Situations  
  - Multi-Strategy Event Driven

- **Global Macro** 19%  
  - Discretionary  
  - Systematic  
  - Volatility Strategies  
  - Synthetic Strategies

- **Multi-Strategy**

*Source: HFR Industry Report as of 12/31/2018, using NEPC classifications*
It is important that investors understand the following characteristics of non-traditional investment strategies including hedge funds and private equity:

1. Performance can be volatile and investors could lose all or a substantial portion of their investment
2. Leverage and other speculative practices may increase the risk of loss
3. Past performance may be revised due to the revaluation of investments
4. These investments can be illiquid, and investors may be subject to lock-ups or lengthy redemption terms
5. A secondary market may not be available for all funds, and any sales that occur may take place at a discount to value
6. These funds are not subject to the same regulatory requirements as registered investment vehicles
7. Managers may not be required to provide periodic pricing or valuation information to investors
8. These funds may have complex tax structures and delays in distributing important tax information
9. These funds often charge high fees
10. Investment agreements often give the manager authority to trade in securities, markets or currencies that are not within the manager’s realm of expertise or contemplated investment strategy
DISCLOSURES


- The opinions presented herein represent the good faith views of NEPC as of the date of this presentation and are subject to change at any time.

- The comments provided herein should be considered a general overview and do not constitute investment advice, are not predictive of any future market performance, are not provided as a sales or advertising communication, and do not represent an offer to sell or a solicitation of an offer to buy any security.

- Information used to prepare this report was obtained directly from various external sources. While NEPC has exercised reasonable professional care in preparing this report, we cannot guarantee the accuracy of all source information contained within or the completeness of such information.

- All investments carry some level of risk. Diversification and other asset allocation techniques do not ensure profit or protect against losses.

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- Past performance is no guarantee of future results.