The Role of Assets

Table of Contents

Domestic Equity

DEFINITION

- Ownership interest in publicly traded companies headquartered in U.S.
- Shares are SEC registered

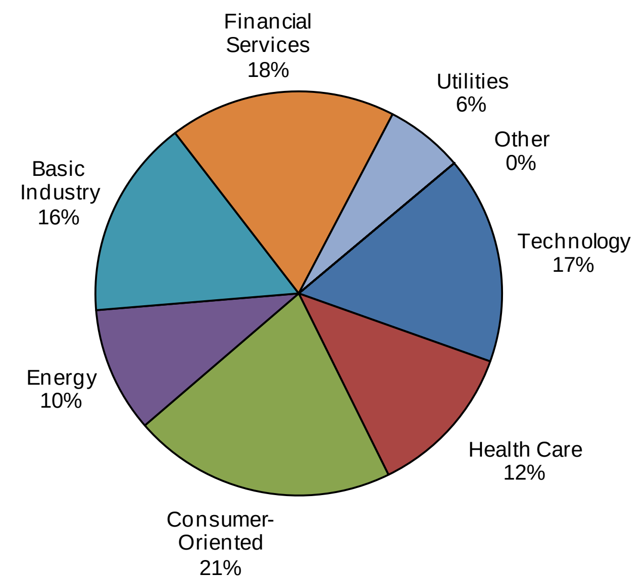
SIZE OF MARKET

- $11.6 trillion total market capitalization as of 06/30/2010 - Russell 3000

STRATEGIC ROLE

- High long-term real returns
- Hedge against active (pre-retirement) liabilities

SECTOR BREAKDOWN OF RUSSELL 3000
(percentage of market cap as of 06/30/2010)



Source: Russell/Mellon Analytical Services

Domestic Equity

CHARACTERISTICS

- Relatively high returns (long-term)
- Relatively high volatility (standard deviation of returns)
- Relatively high liquidity
- Diversification

IMPLEMENTATION

- Passively managed portfolios used to capture market returns
- Actively managed portfolios expected to add value over passive funds
- Size of aggregate portfolio may impact implementation choice(s)

OPERATIONS

- Securities held by Master-Custodial bank
- Electronic transfer of securities through DTC
- Electronic trading systems, crossing networks, program trading available
- Independent market prices readily available daily from exchanges for listed securities
- Stocks traded over-the-counter can be daily-priced by market makers
- Numerous small capitalization stocks require considerable effort to vote proxies

Domestic Equity

COSTS RANKED IN ORDER OF MAGNITUDE

• Management fees for external managers
• Transaction costs
• Systems and custody costs
• Staff salaries/benefits/administration
• Consultant and legal costs

RISKS

• Absolute risk - possible magnitude of price decline
• Liability hedging risk - risk that assets will not increase when liabilities increase
• Regulatory risk - changes may adversely affect markets
• Tax risk - changes may adversely affect markets
• Liquidity risk - difficulty trading securities under adverse market conditions
• Firm specific risk - unique risks associated with a specific firm
• Tracking risk - magnitude of performance deterioration from a benchmark
• Time horizon - horizon too short to weather cycles
• Benchmark risk - benchmark not appropriate proxy

International Equity

DEFINITION

- Ownership interest in companies headquartered outside the U.S.
- Publicly traded securities but subject to foreign registration requirements

SIZE OF MARKET (as of 06/30/2010)

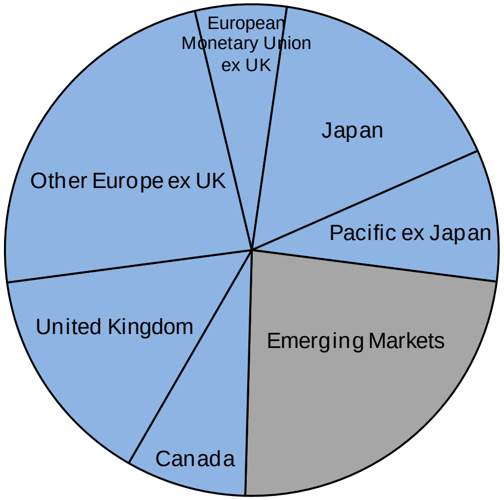
- The total market capitalization for the Morgan Stanley Capital International ACWI ex-U.S. Index is now approximately $12.9 trillion
- The total market capitalization for the Morgan Stanley Emerging Markets Index is now approximately $3.0 trillion

STRATEGIC ROLE

- Increase overall portfolio diversification, less than fully correlated with other assets, improving risk-return tradeoff
- Increase investment opportunities
- Increase total return

ACWI FREE EX-USA
(as of 06/30/2010)

Developed Markets – 76.7%



Emerging Markets – 23.3%

Source: MSCI, Blue Book, Red Book June 2010

International Equity

CHARACTERISTICS

Developed Markets

- Relatively high real long-term returns
- Relatively high liquidity
- Relatively high volatility
- Correlation with U.S. equities is about 0.60-0.80, depending on frequency of analysis
- Currency adds to volatility but can be hedged, which mutes the diversification benefits

Emerging Markets

- Higher expected returns due to economic growth potential
- Liquidity risk is significant
- High volatility
- FX markets not sufficiently developed to hedge currency risk
- Limited access to markets
- Market information less abundant than for developed markets
- Correlation between emerging markets and EAFE index is surprisingly low

International Equity

IMPLEMENTATION

- Externally managed active portfolios
- Externally managed passive portfolios
- External management beneficial due to high level of staffing and expertise necessary to follow foreign stock and currency market
- Active management has at times produced better results outside U.S.

OPERATIONS

- DOT-style trading systems still in infancy
- Electronic trading systems, crossing networks, available but do not provide any real volume at present
- Liquidity varies widely in Non-U.S. equity markets
- Settlement mechanisms continue to improve with a trend towards shorter settlement periods
- Independent market prices not readily available in some markets
- Tax reclamation

International Equity

COSTS RANKED IN ORDER OF MAGNITUDE

- Management fees (average 50-75 basis points, whereas passive is much lower)
- Transaction costs (approximately 50 basis points)
  - Broker commissions are becoming the least significant component of execution costs
  - Spread and Market impact higher than the U.S. market
  - Timing: cost of a delayed execution from time decision is made to buy/sell
  - Ticket costs higher: $25 to $100 versus $10 to $25 per transaction in the U.S.
  - Transaction taxes
- Withholding taxes
- Currency-overlay management fees (5 to 6 basis points)
- Custodial fees (approximately 3.3 basis points)
  - Maintaining sub-custodial networks in local markets
  - Operational issues dominated by local market regulations
  - Master custodian integrates information from local sub-custodians creating longer lead time and increased error rate in reporting
- Consultant fees
- Staff salaries

International Equity

RISKS

- Market risk - price decline
- Structural risk from deflation
- Currency risk
- Counterparty risk
- Liquidity risk
- Political risk
- Liability hedging risk
- Liabilities denominated in U.S. dollars
- Benchmark risk
- Regulatory risk
- Firm specific risk

Frontier Markets

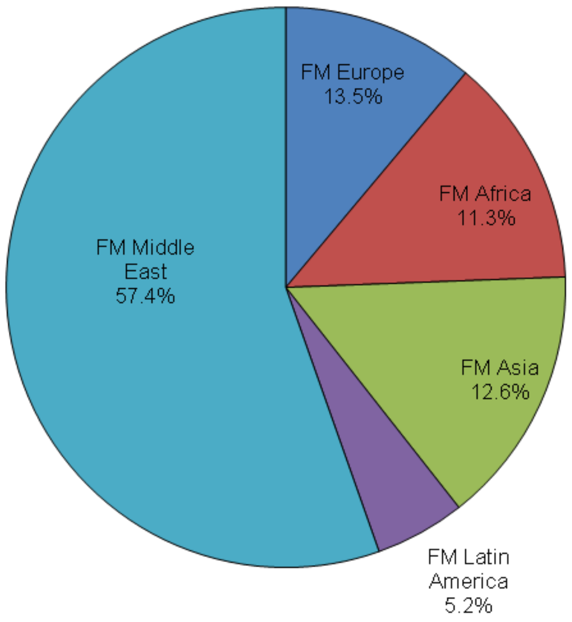
DEFINITION

- Securities markets in the least developed of the emerging markets
- Frontier markets include countries with the following characteristics:
  - High difficulty of access for outside investors
  - High presence of risk factors (political and economic)
  - The potential for strong returns and crushing declines
  - Mexico and Taiwan are generally considered emerging markets while Zimbabwe, Jamaica, and Kenya are considered frontier markets
- Political factors are especially important to the trading and valuation of securities traded in frontier markets

SIZE OF MARKET

- $104.0 billion total market capitalization as of 6/30/2010 – MSCI Frontier Market Index

REGION BREAKDOWN OF MSCI FRONTIER MARKET INDEX
(percentage of market cap as of 6/30/2010)



Source: MSCI Barra

Frontier Markets

STRATEGIC ROLE

- Increase overall portfolio diversification, less than fully correlated with other assets, improving risk-return tradeoff
- Increase investment opportunities
- Increase total return

CHARACTERISTICS

- Higher expected returns due to economic growth potential
- Liquidity risk is significant
- High volatility
- FX markets not sufficiently developed to hedge currency risk
- Limited access to markets
- Market information less abundant than for developed and emerging markets
- Low correlation with developed and emerging markets

IMPLEMENTATION

- Externally managed active portfolios
- Externally managed passive portfolios
- External management beneficial due to high level of staffing and expertise necessary to follow foreign stock and currency market
- Active management has at times produced better results outside U.S.

Frontier Markets

OPERATIONS

- DOT-style trading systems still in infancy
- Electronic trading systems, crossing networks, available but do not provide any real volume at present
- Liquidity varies widely in Non-U.S. equity markets
- Settlement mechanisms continue to improve with a trend towards shorter settlement periods
- Independent market prices not readily available in some markets
- Tax reclamation

COSTS RANKED IN ORDER OF MAGNITUDE

- Management fees (average 65 -150 basis points, whereas passive is much lower)
- Transaction Costs (approximately 50 basis points)
    - Broker commissions are becoming the least significant component of execution costs
    - Spread and Market impact higher than the U.S. market
    - Timing: cost of a delayed execution from time decision is made to buy/sell
    - Ticket costs higher $25 to $100 versus $10 to $25 per transaction in the U.S.
    - Transaction taxes
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- Consultant fees
- Staff salaries

Frontier Markets

RISKS

- Market risk - price decline
- Structural risk from deflation
- Currency risk
- Counterparty risk
- Liquidity risk
- Political risk
- Liability hedging risk
- Liabilities denominated in U.S. dollars
- Benchmark risk
- Weak regulatory frameworks
- Firm specific risk
- Undercapitalization
- Foreign ownership restrictions

LIST OF COUNTRIES

Frontier Europe
Bulgaria
Croatia
Estonia
Kazakhstan
Lithuania
Romania
Serbia
Slovenia
Ukraine
Frontier Africa
Kenya
Mauritius
Nigeria
Tunisia
Frontier Asia
Jordan
Lebanon
Babgkadesh
Pakistan
Sri Lanka
Vietnam
Frontier Latin America
Argentina
Trinidad and Tobago
Frontier Middle East
Bahrain
Kuwait
Oman
Qatar
United Arab Emirates

Source: MSCI Barra

Global Equity

DEFINITION

- Ownership interest in publicly traded companies
- Shares are registered across a variety of different regulatory bodies
- A market-weighted combination of U.S. and non-U.S. markets

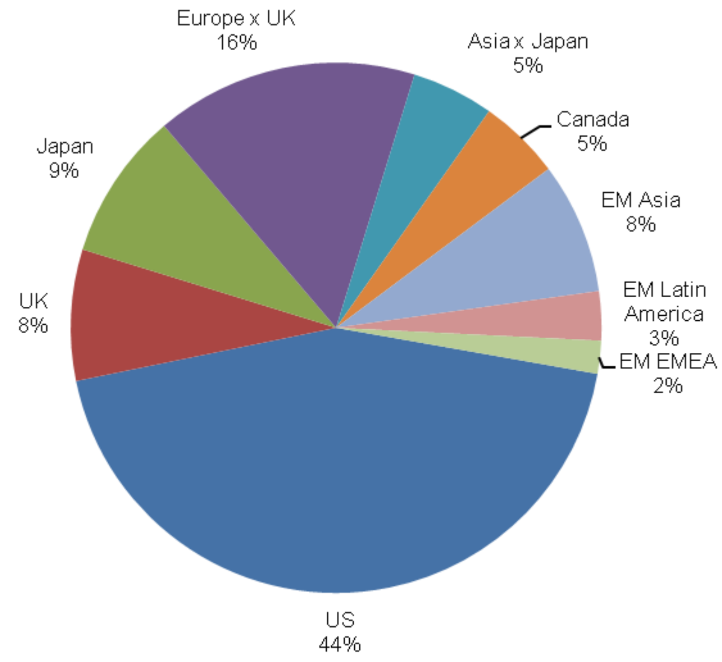
SIZE OF MARKET

- $26.0 trillion total market capitalization as of 06/30/2010 – MSCI ACWI World IMI Index

STRATEGIC ROLE

- Key rationale to adopting global equity framework is declining dominance of U.S. equity market over the next several decades
- Global equity market correlations have increased, rendering regional decision less important
- Global equity is (i) a recognition of stronger long-term economic growth outside of the U.S. and (ii) a broadening of the opportunity set for asset managers

BREAKDOWN OF GLOBAL EQUITY
(percentage of market cap as of 06/30/2010)



Source: MSCI ACWI World

Global Equity

CHARACTERISTICS

- See characteristics of Domestic Equity and International Equity asset classes
- Currency management is a more crucial consideration given that typical U.S. investors will shift approximately 33% to 50% of its U.S. equity assets to non-U.S. mandates

IMPLEMENTATION

- Initial framework for implementation will be to shift asset allocation among U.S. and non-U.S. managers to conform to market weighting allocations of broader policy benchmarks
- Active global management has been in existence for some time, but not at the scale of traditional non-U.S. equity management. Empirical results of recent track records indicate favorable added value produced by managers having relatively high levels of investment discretion.
- Global indexing relatively straightforward, but global mandates also relatively small scale compared to more traditional U.S. large cap and non-U.S. developed markets mandates. Over time, global index mandates should increase at a reasonable pace.
- Global mandates rely heavily upon external management expertise
- Performance attribution and benchmark selection (hedged vs. unhedged or USD vs. local) is critical to develop understanding of risks and drivers of investment performance

OPERATIONS

- See Domestic Equity and International Equity

Global Equity

COSTS RANKED IN ORDER OF MAGNITUDE

- Very similar to Domestic Equity and International Equity mandates:
  - Management fees
  - Transaction costs
    - Broker commissions
    - Spread and market impact
    - Timing: cost of a delayed execution
    - Ticket costs
    - Transaction taxes
  - Withholding taxes
  - Potential currency-overlay management fees
  - Custodial fees
    - Maintaining sub-custodial networks in local markets
    - Operational issues dominated by local market regulations
    - Master custodian integrates information from local sub-custodians creating longer lead time and increased error rate in reporting
  - Consultant fees
  - Staff salaries
  - One key trend: the merging of exchanges and trading technology across the globe. Estimated savings in merging U.S. and European exchange technologies/functions: $50 billion/year. *(source: Deutsche Bank)*

RISKS

- Same risks as associated with Domestic and International Equity
- Investors should explicitly consider currency risk management in their global equity investment policies

Domestic Fixed Income

DEFINITION

- Loans in U.S. dollars of companies, governmental entities or agencies, banks, insurance companies, with finite lives domiciled in the U.S. or issued in the U.S.

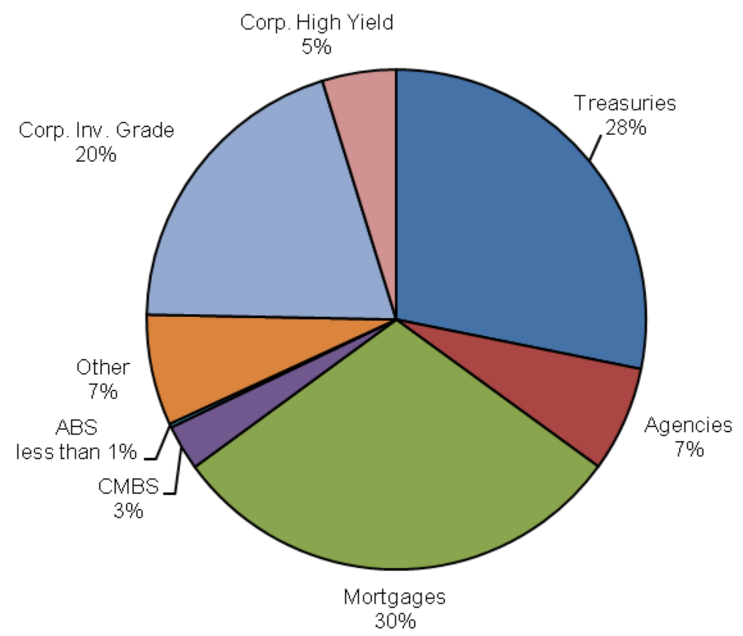
SIZE OF MARKET

- $16.8 trillion total market capitalization as of 06/30/2010 – Barclays Capital Universal

STRATEGIC ROLE

- Diversification within a multi-asset class, total return portfolio
- Hedge against a long duration accrued liability
- Current income

SECTOR BREAKDOWN OF BC UNIVERSAL
(percentage of market cap as of 06/30/2010)



Source: Barclays Capital, Global Family of Indices June 2010

Domestic Fixed Income

CHARACTERISTICS

- Medium volatility asset class
- Relatively high liquidity
- Broadly diversified by market sector, quality, and maturity

IMPLEMENTATION

- Variety of implementation options:
  - Core only
  - Core-satellite approach
  - Sector specialties
  - Liability orientation

OPERATIONS

- Securities held by Master-Custodial Bank
- Large part of market (including all government securities) are Fed Wireable
- Most of the market (U.S. Treasury and pass-through certificates) prices are readily available
- Bonds with less publicly available information (corporates and CMO’s) can be priced by securities brokers

Domestic Fixed Income

COSTS RANKED IN ORDER OF MAGNITUDE

- Management fees
- Transaction cost
- System and custody cost
- Staff salaries/administration

RISKS

- Duration risk - price volatility from a change in overall interest rates
- Convexity risk - negative convexity is the risk of price declines being greater than the price increase due to interest rates moving equally up versus down
- Default or credit risk - the uncertainty surrounding the borrower's ability to repay its obligations
- Structure risk - risk that arises from the options implicit in bonds (like call ability and sinking funds) or the rules that govern cash flow differ from expectations
- Sector risk - risk of holding sectors that are in different proportions than the benchmark
- Liquidity risk - cost of trading in a security which is reflected in the bid-ask spread or the cost of selling due to cash flow needs
- Reinvestment risk - the uncertainty surrounding future yield opportunities to invest funds which come available due to call, maturities, or coupon payments
- Benchmark risk - risk of the benchmark being inappropriate
- Yield curve risk - price changes induced by changes in the slope of the yield curve

International Fixed Income

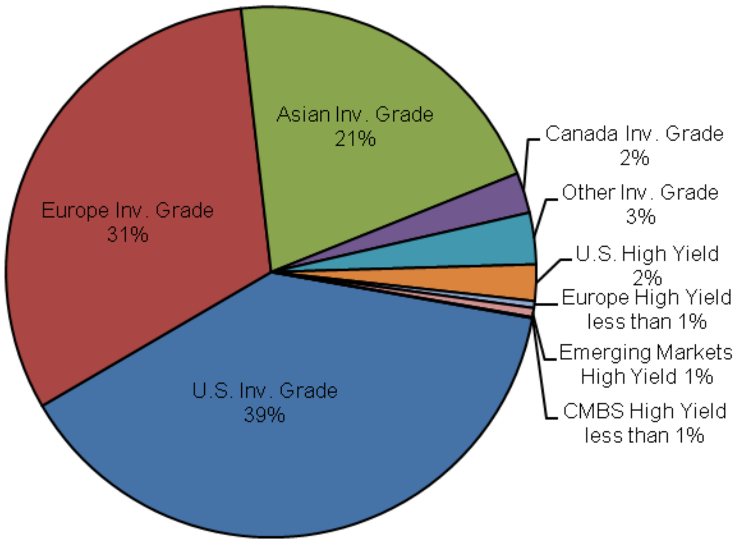
DEFINITION

- The debt obligations of companies, government entities, or supra-national agencies domiciled outside the U.S., issued in a currency other than the U.S. dollar
- Markets consist primarily of bonds issued by the central governments of major developed economies

SIZE OF MARKET (as of 06/30/2010)

- Depending on the benchmarks analyzed, the global bond market contained nearly nineteen thousand issues from 45 markets with an aggregate market value of approximately $36.6 trillion. Fifty-nine percent of the global bond market is non-U.S.
- Non-U.S. markets are changing drastically due to changes in the Euro, Japan’s huge increase in outstanding government debt, and the evolution of new credit markets, particularly in Europe.

SECTOR BREAKDOWN OF BC MULTIVERSE
(percentage of market cap as of 06/30/2010)



Source: Barclays Capital, Global Family of Indices June 2010

International Fixed Income

STRATEGIC ROLE

- Not highly correlated with other asset classes, provides diversification to U.S. assets
- Provides improvement in the total portfolio's risk/return tradeoff at same levels of risk
- Hedge against unexpected domestic inflation
- Possibility of return enhancement through active management

CHARACTERISTICS

- Medium or average volatility; lower if hedged
- There is a large currency component to international fixed income returns
- The developed markets are extremely liquid. Many issues of less developed markets are also relatively liquid.
- Less than fully correlated with other asset classes
- High historic yields
- Broadly diversified by country but dominated by the G-6 markets: Japan, Germany, France, Italy, the U.K., and Canada

International Fixed Income

IMPLEMENTATION

- Emphasis on active management, allowing swift execution of market allocation strategies
- Emphasis on external management, due to the high level of staffing and expertise necessary to follow foreign bond and currency markets
- Currency allocations are actively managed by portfolio managers
- The U.S. investor cannot receive the local market return
- If hedge out international currency in non-U.S. bond portfolio, portfolio result is domestic interest rates, with more expensive fees and operational costs

OPERATIONS

- Individual markets vary as to settlement procedures and custody arrangements. All markets included in the principal indices have sufficient depth and liquidity to be highly investable.
- Market exposure can be achieved or modified through derivative instruments
- Settlement is normally in the local currency of the specific bond market
- There is increasing movement to the global convention of “T+3” settlement
- The master custodian consolidates information from local sub-custodians, generally causing reporting times to be longer than for U.S. securities. Pricing is also difficult in relation to U.S. securities.

International Fixed Income

COSTS RANKED IN ORDER OF MAGNITUDE

- External management fees (base fee 7.5 bps, normal fee 13.0 bps)
- Custody costs (approximately 3.3 bps) and withholding taxes (as high as 36 bps)
- Transaction costs (approximately 4 bps)
- Staff costs
- Consultant fees

RISKS

- Currency risks:
  - The risk of currency movements vs. the dollar for each market. Currency may contribute greatly to return and lowers correlation.
  - Counterparty risk
- Fixed income risks:
  - The primary risk associated with local bond returns is volatility related to unexpected changes in: inflation, the business cycle, interest rates, and the availability of credit
  - Other bond market risks include:
    - Political risk (sovereign risk, regulatory risk)
    - Event risk
    - Counterparty risk
    - Liquidity risk

Alternative Investments: Private Equity

DEFINITION

- Equity or equity-linked securities in operating companies that are not publicly traded on a stock exchange
- Types of investment strategies:
  - *Leveraged buyout (LBO)* – acquisition of a company with the use of financial leverage
  - *Venture capital* – investment in typically less mature companies, for launch, early development, or expansion
  - *Growth capital* – investment in mature companies looking for capital to expand, restructure, enter new markets
  - *Mezzanine* – subordinated debt/preferred equity used to reduce amount of equity capital required to finance LBOs
  - *Distressed* – equity securities of financially stressed companies
  - *Secondaries* – investment in existing private equity assets
- Types of structures:
  - *Direct investment* – direct purchase of equity securities of a private company
  - *Direct fund* – pool of capital formed to make direct investments
  - *Fund-of-funds* – pool of capital formed to make investments in direct funds

STRATEGIC ROLE

- Enhance total portfolio return – expected long-term premium of 3-5% over a broad public equity index
- Improve funded status with returns in excess of actuarial interest rate
- Reduce total portfolio risk through diversification and negotiation of terms and conditions:
  - Lower covariance of returns with other asset classes

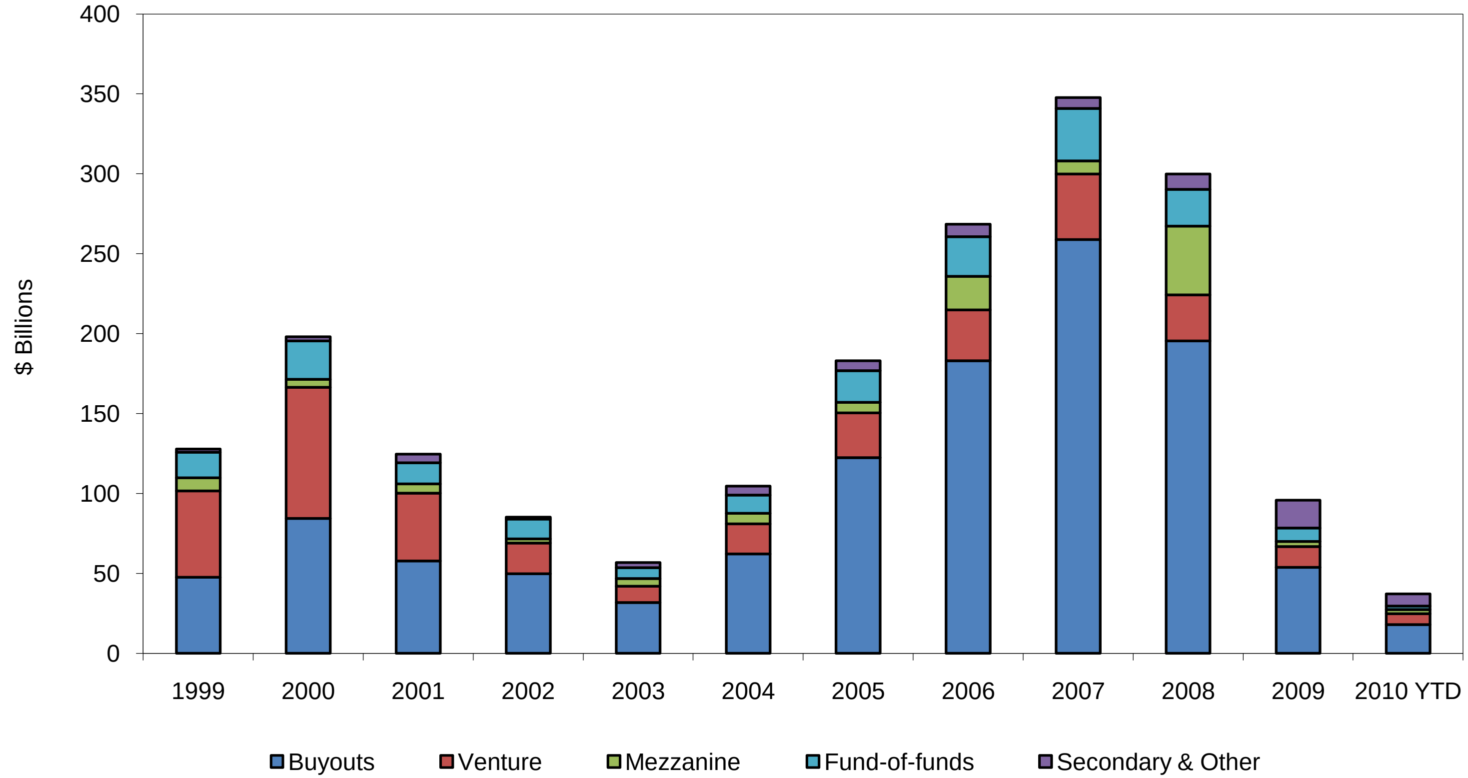
CHARACTERISTICS

- Illiquid, long-term time horizon (7-12 year closed-end partnerships)
- Quality of the managers selected is the key determinant of success
- High volatility of returns compensated by higher expected returns
- Encompasses three stages: fundraising, portfolio construction and investment, exit and return realization

Alternative Investments: Private Equity

COMMITMENT AND INVESTMENT TRENDS IN THE PRIVATE EQUITY MARKETS

COMMITMENTS TO U.S. PRIVATE EQUITY PARTNERSHIPS



Source: The Private Equity Analyst (data as of May 2010)

Alternative Investments: Private Equity

IMPLEMENTATION

- Investment policy development
- Portfolio Construction (partnership selection/due diligence)
- Negotiation of terms and conditions
- Monitoring and administration

OPERATIONS

- Custody
  - Securities held by limited partnerships, not by custodian banks
- Cash flow management
  - Capital called from investors (new investments, fees)
  - Capital distributed to investors (realized investments, dividends, interest)
- Fair value pricing – FASB 157 mark-to-market hierarchy
  - Level 1 – quoted prices found in public markets (NYSE, NASDAQ, etc.)
  - Level 2 – inputs other than prices that are observable for the asset (matrix pricing, yield curves, indices)
  - Level 3 – unobservable inputs that reflect fund manager's assumptions
- Performance reporting
  - General partner financial reports available quarterly and annually (audited)
  - Custodian reconciliation and reporting available quarterly and annually
  - Consultant investment performance monitoring and reviews available quarterly and annually
- Exit options
  - Initial public offering (IPO)
  - Sale to another entity (i.e. strategic and financial buyers)

Alternative Investments: Private Equity

COSTS RANKED IN ORDER OF MAGNITUDE

- General partner fees and profit sharing
- Consultant fees
- Master custody costs
- Staff salaries/benefits/administration

RISKS

- *Liquidity risk* – absence of liquidity and appropriate exits could significantly increase time horizon
- *Firm specific risk* – unique risks associated with a specific firm
- *Leverage risk* – historical excess use of leverage and current inability to secure financing may adversely affect LBOs
- *Manager selection risk* – selecting managers that fail to deliver top performance results
- *Diversification risk* – inability to properly diversify the portfolio by vintage year, industry groups, geography
- *Tax risk* – changes may adversely affect markets
- *Regulatory risk* – changes may adversely affect markets
- *Strategy risk* – continuing applicability of investment strategy in context of capital flows

Alternative Investments: Real Estate

DEFINITION

- A right or interest in land, improvements, or real property

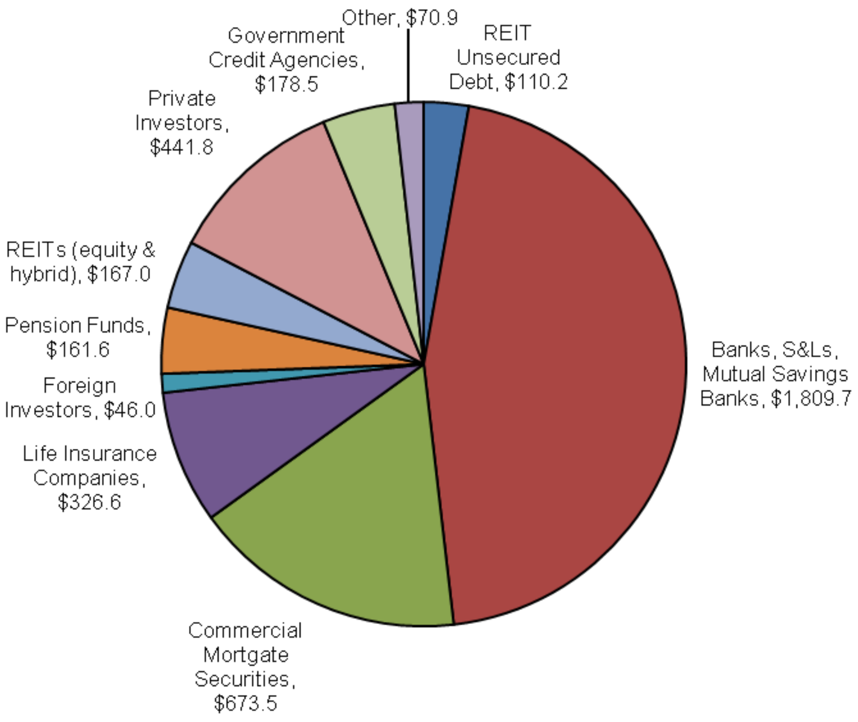
SIZE OF MARKET

- $4.0 trillion total U.S. Real Estate Capital (both debt and equity) as of 06/30/2009 - ULI & PricewaterhouseCoopers

STRATEGIC ROLE

- Reduces risk of composite multi-asset portfolios through diversification
- Relatively low correlations to domestic equity, international equity, and fixed income markets
- Can serve as a possible inflation hedge during periods of high inflation
- Provides an attractive return relative to fixed income asset class in periods of low to moderate inflation
- Potential for high returns in niche opportunities

REAL ESTATE CAPITAL SOURCES BREAKDOWN
(in billions)



Source: Urban Land Institute and PricewaterhouseCoopers, Emerging Trends in Real Estate 2010

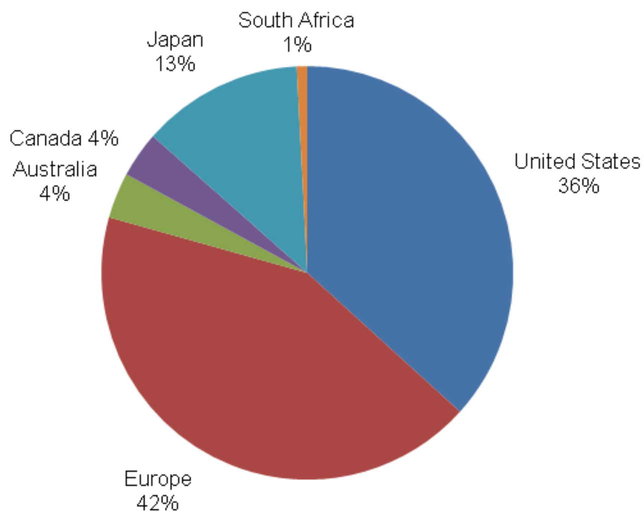
*Figures are as of 2Q2009 or in some cases projected through the second quarter

Alternative Investments: Real Estate

CHARACTERISTICS

- Risk - volatility of private real estate falls between publicly-traded debt and publicly-traded equities
- Returns - nominal returns are expected to fall between equities and fixed income
- Iliquidity - transactions require a significantly longer period to execute than other asset classes
- Inefficient Market - information affecting real estate asset valuation and market trading is not rapidly, accurately, or efficiently reflected or interpreted in its pricing

Distribution of Global Real Estate Equity



Source: Investment Property Databank Global Property Index, Results for the year to 31st December 2009

Alternative Investments: Real Estate

IMPLEMENTATION

- Market Pricing Inefficiencies - translates into acquisition delays due to extensive, up-front due diligence requirements to justify pricing
- High Transaction Costs and Delays - on both a dollar and timing basis due to the private market nature and the inherent legal deal structure complexities
- Units of Trade Size Concern - asset “lumpiness” can result from the inability to acquire real estate assets at specific quantities
- Personnel Commitment - sizable “up-front” overhead requirements, either in-house and/or outside, in order to understand and react to the “local” real estate market dynamics of each asset at acquisitions

OPERATIONS

- High Management Intensity - unlike securities, each individual asset must be intensely managed in order to maximize its return potential
- Personnel Commitment - sizable “ongoing” overhead requirements, either in-house and/or outside, in order to understand and react to the “local” real estate market dynamics of each asset to enhance its value during its holding period
- Control Requirements - sizable financial, accounting, legal, and documentation controls must be committed internally and/or externally due to the “active and private” nature of the asset class
- Iliquidity - extensive lag time in executing sales strategies
- Valuation - slow, difficult, and historical data biased

Alternative Investments: Real Estate

COSTS RANKED IN ORDER OF MAGNITUDE*

- Property management fees
- Asset management fees (fixed or fixed plus incentive based)
- Acquisition/disposition fees
- Other transactional/ongoing costs (real estate consultants; legal; mechanical, electrical, and structural engineering; environmental engineering; seismic engineering; appraisal & performance measurement costs)
- Staffing costs

RISKS

- Property type risks - negative changes in demand/supply conditions by property type
- Location risks - local market condition relative to the adverse changes surrounding a property, or in discovery of hazardous underlying conditions, such as toxic waste
- Tenant credit risks - failure by a tenant to pay what is contractually owed
- Physical/functional obsolescence - negative influences on buildings due to technological changes, outdated layout and design features, and physical depreciation
- Interest rate risk - higher rates can negatively impact both sales strategies and leveraged properties at refinancing
- Reinvestment risk - in a declining rental rate market, cash flow received may not be reinvested at the same level
- Business cycle risk - as economies slow down, there may be less demand for space
- Inflationary risk - rent levels may not always keep up with rising operating expense levels
- Iliquidity - inability to effectively liquidate a property into cash
- Natural disaster risk - weather, floods, earthquake

*Those investors that must pay for most of these services at market prices on the outside are at a disadvantage over investors that have some of these capabilities in house.

Alternative Investments: Hedge Funds

DEFINITION

- **<u>Hedge funds are not an asset class</u>**
  - Hedge funds are a type or style of asset management that is generally skill-based (ALPHA)
  - Hedge fund management is not homogeneous (not many common factors)
- Hedge funds are commonly considered alternative investments because they:
  - Have higher fees and performance related fees
  - Illiquid
  - Are privately structured and limited to "sophisticated" investors
- Hedge Funds may contain significant financial leverage and contain other risk factors including:
  - Financial leverage (use of margin accounts and short-term loans)
  - Instrument leverage (use of derivatives that magnify returns)
    - Short sales
    - Lack of transparency
    - Less regulatory oversight
- Span a broad array of strategies, producing a range of risk/volatility and returns from high to low
- Exhibit return behaviors that may be independent from other asset classes

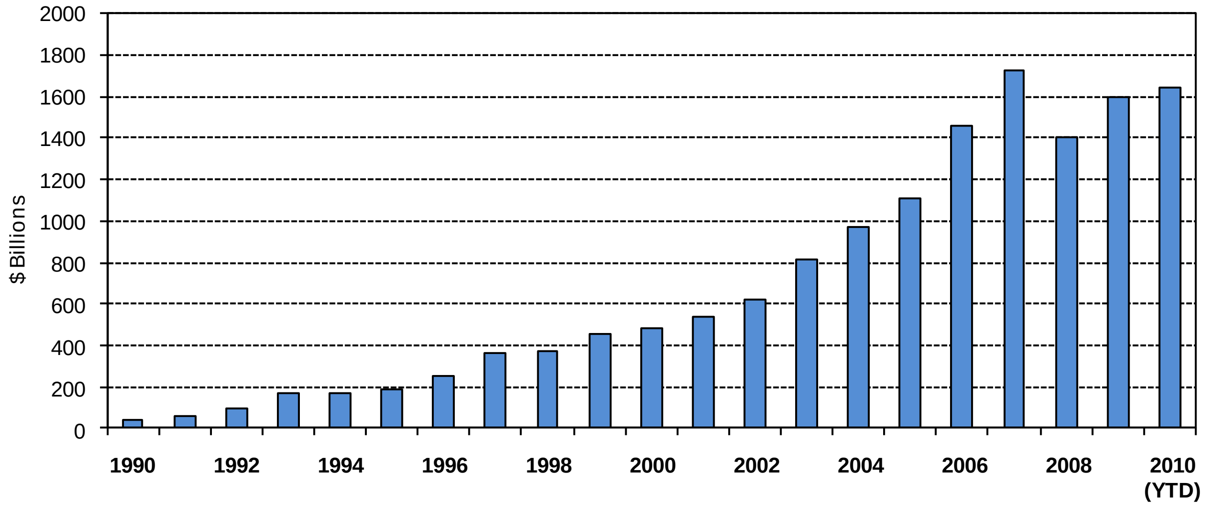
STRATEGIC ROLE

- Low correlation to other major asset classes
- Potential for attractive risk-adjusted returns
- Claim ability to add value throughout market cycles

Alternative Investments: Hedge Funds

CHARACTERISTICS AND ATTRIBUTES

CAPITAL ALLOCATED TO HEDGE FUNDS
(as of 6/30/2010)

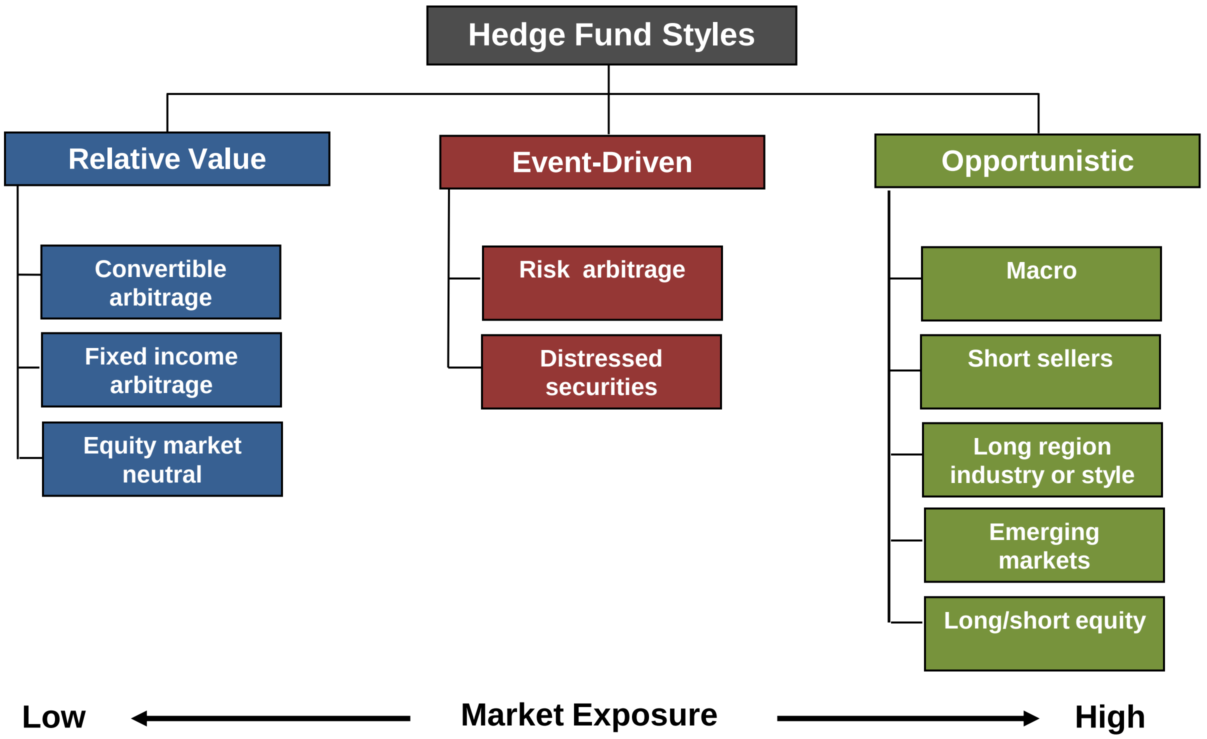


- Hedge funds have exhibited significant growth
  - Estimates vary significantly
  - Projected to be more than 8,000 managers
  - Estimated to be over $1.65 trillion in capital, before leverage
  - Pace of commitments to hedge funds continues to grow but stabilizing

Source: HFR

Alternative Investments: Hedge Funds

CHARACTERISTICS AND ATTRIBUTES



- Hedge funds span many investment styles
- Manager styles can be organized by market exposure

Alternative Investments: Hedge Funds

CHARACTERISTICS AND ATTRIBUTES

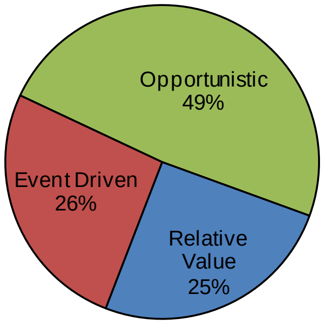
Strategies	Definition
Relative Value	
Convertible Arbitrage	Invests in the convertible securities of a company. A typical investment is to be long the convertible bond and short the common stock of the same company. Positions are designed to generate profits from the fixed income security as well as the short sale of the stock, while protecting the principal from market moves.
Fixed Income Arbitrage	Fixed income arbitrage managers seek to exploit pricing anomalies within and across global fixed income markets and their derivatives, using leverage to enhance returns. In most cases, fixed income arbitrageurs take offsetting long and short positions in similar fixed income securities that are mathematically, fundamentally or historically interrelated. The relationship can be temporarily distorted by market events, investor preferences, exogenous shocks to supply or demand, or structural features of the fixed income market.
Equity Market Neutral	Equity market-neutral is designed to produce consistent returns with very low volatility and correlation in a variety of market environments. The investment strategy is designed to exploit equity market inefficiencies and usually involves being simultaneously long and short matched equity portfolios of the same size within a country. Market neutral portfolios are designed to be either beta or currency-neutral or both. Equity market-neutral is best defined as either statistical arbitrage or equity long/short with zero exposure to the market.
Event Driven	
Risk Arbitrage	Risk arbitrage (also known as merger arbitrage) specialists invest simultaneously in long and short positions in both companies involved in a merger or acquisition. In stock swap mergers, risk arbitrageurs are typically long the stock of the company being acquired and short the stock of the acquiring company. In the case of a cash tender offer, the risk arbitrageur is seeking to capture the difference between the tender price and the price at which the target company's stock is trading.
Distressed Securities	Distressed securities funds invest in the debt or equity of companies experiencing financial or operational difficulties or trade claims of companies that are in financial distress, typically in bankruptcy. These securities generally trade at substantial discounts to par value. Hedge fund managers can invest in a range of instruments from secured debt to common stock. The strategy exploits the fact that many investors are unable to hold below investment grade securities.
Opportunistic	
Macro	Macro hedge funds pursue a base strategy such as equity long/short or futures trend following to which large scale and highly leveraged directional bets in other markets are added a few times each year. They move from opportunity to opportunity, from trend to trend, from strategy to strategy.
Short Sellers	The short selling discipline has an equity as well as fixed income component. Short sellers seek to profit from a decline in the value of stocks. In addition, the short seller earns interest on the cash proceeds from the short sale of stock.
Long Region, Industry, or Style	Traditional equity fund structured like a hedge fund; ie, uses leverage and permits managers to collect an incentive fee. Focus of the fund could be a specific geographic region (i.e., Japan) , industry (i.e., technology) or style (i.e., growth)
Emerging Markets	Emerging market hedge funds focus on equity or fixed income investing in emerging markets as opposed to developed markets. This style is usually more volatile not only because emerging markets are more volatile than developed markets, but because most emerging markets allow for only limited short selling and do not offer a viable futures contract to control risk. The lack of opportunities to control risk suggests that hedge funds in emerging markets have a strong long bias.
Long/Short Equity	Long/short strategies combine both long as well as short equity positions. The short positions have three purposes, which can vary over time or by manager. First, the short positions are intended to generate alpha. This is one of the main differences when compared with traditional long-only managers. Stock selection skill can result in doubling the alpha. A long/short equity manager can add value by buying winners as well as selling losers. Second, the short positions can serve the purpose of hedging market risk. Third, the manager earns interest on the short as he collects the short rebate.

Alternative Investments: Hedge Funds

CHARACTERISTICS AND ATTRIBUTES

- **Market dominated by Opportunistic (Long/Short)**
  - **Long/short strategies** combine both long as well as short equity positions. The short positions have three purposes:
    - Generate alpha
    - Hedge market risk
    - Earn interest on the short as the manager collects the short rebate

BREAKOUT OF HEDGE FUND INDUSTRY
by Major Strategy Type By Assets
(as of 6/30/2010)



Source: HFR

Alternative Investments: Hedge Funds

CHARACTERISTICS AND ATTRIBUTES

- A key distinction between hedge funds and "traditional" managers is their ability to hold "short" positions and the goal of generating an absolute rate of return
- Spectrum of manager styles and approaches:
  - Opportunistic
  - Even-driven
  - Relative value
- Range of performance targets
  - Absolute return targets (i.e., 10%-20% per year)
  - Relative return targets (i.e., T-Bills + 4% over a market cycle)
- Higher costs than traditional asset management
  - Commonly 2% management fee with a 20% performance fee
  - Fees are, in most instances, not negotiated, commingled pools utilized
- Lower liquidity than traditional asset management, commonly
  - Quarterly redemptions with restrictions
  - One-year "lock-up"
  - More liquid that other alternative investments – (private equity, real estate)

Alternative Investments: Hedge Funds

IMPLEMENTATION

Three General Approaches

- Include as a segment of an existing asset class
  - Commonly a segment of the Alternative Investment asset class
    - Adds consistency and some liquidity to otherwise privately-held strategies
  - Also could replace equities, fixed income, cash, etc., depending upon targeted risk and return objectives
- Treat as a new asset class
  - Allocation level typically relies on optimization techniques
  - Key role is largely as diversifier versus other asset classes
  - Strategies with higher return objectives have higher exposure to underlying asset classes (i.e., more “directional”)
- An alpha “overlay” to existing asset classes
  - Must be material to have impact within overall asset class portfolio
  - Utilizes significant amount of highly liquid derivatives to obtain market exposure
  - Assumption of “zero beta” to underlying asset class returns

Investment Vehicle Options

- Individual Hedge Funds - typically partnerships in which you select a specific strategy for each fund - macro, risk arbitrage, equity market neutral, etc.
- Multi-Strategy Funds - fund that invests in multiple hedge fund strategies of a single firm
- Fund of Hedge Funds - fund that invests across multiple strategies by investing in multiple independent hedge funds

Alternative Investments: Hedge Funds

OPERATIONS

- Custody - for fund of funds - ownership of underlying funds held by Fund of Hedge fund Managers. Assets of individual hedge funds typically held in offshore bank.
- Pricing - market prices available to underlying managers daily from exchanges for listed securities. For privately held securities, investments carried at cost until significant event.
- Reporting
  - Lack of disclosure
    - Not regulated by the SEC
    - Hedge funds disclose only limited amounts of investment data
  - Monthly performance estimates
  - Consultant monitoring and investment performance reports available quarterly and annually
  - Manager monitoring, investment performance, and financial reports available quarterly and annually
  - Audited financial reports available annually

Alternative Investments: Hedge Funds

COSTS RANKED IN ORDER OF MAGNITUDE

- Manager fees and profit sharing
- Master custody costs
- Staff salaries/benefits/administration
- Consultant fees

RISKS

- There are several risks unique to hedge funds:
  - Disclosure risk
  - Partnership mortality risk (average life of partnership - 3 yrs.)
  - Financial leverage risk (mitigated to some degree by ERISA)
  - Return dispersion risk
- Other risks:
  - Event risk
    - Correlations tend to increase during global shocks
  - Manager selection risk
  - Complexity risks (of process, of transactions, of securities)
  - Personnel risks (hedge funds are usually run by smaller firms)
  - Asset growth (too large an asset base threatens nimbleness)
  - Liquidity risk
  - Fraud risk
  - Custody of assets - assets held in someone else's name, rather than in custodial bank

Alternative Investments: Infrastructure

DEFINITION

- Infrastructure assets are the physical structures, facilities and networks which provide essential services to the public
- Services provided are crucial to the economic productivity of a community
- Assets are either privately owned or owned/operated by government entities
- Brownfield assets – existing structures
- Greenfield assets – newly developed structures
- Infrastructure Subsectors
    - *Transportation* – Bridges, Railways, Roadways, Seaports, Transit Systems, Tunnels
    - *Ports* – Airports, Barges, Seaports, Terminals
    - *Energy Resources* – Clean Energy, Hydrocarbons, Gas, Geothermal, Wind-Generated, Water-Generated, Nuclear, Transmission and Distribution
    - *Utilities* – Electricity, Gas, Pipelines, Storage and Distribution, Power Transmission
    - *Water* – Water Treatment, Distribution, Storage, Desalination and Other Water Related Investments
    - *Communications* – Broadcast and Wireless Towers, Cable Systems and Satellite Networks
    - *Social Infrastructure* – Educational Facilities, Healthcare Facilities, Judicial Buildings, Military Housing

Alternative Investments: Infrastructure

SIZE OF MARKET

- The need for infrastructure investment is significant due to decades of severe underinvestment in both economic and social infrastructure assets and networks. Significant investment is needed throughout the world:

United States	$2.2 trillion needs to be invested in the next 5 years[1]
Canada	Infrastructure gap ranges between C$50 billion and C$125 billion[2]
Europe	>$1 trillion needs to be invested over the next 5 years[3]
BRICS	$390 billion per year is needed between 2006 – 2010[4]
N-11	$120 billion per year is needed between 2006 – 2010[4]

- Estimated average annual world infrastructure requirements (additions and renewal) for selected sectors (2000 – 2030)[5]

Type of Infrastructure	2000-2010 ($ Billion)	2010-2020 ($ Billion)	2020-2030 ($ Billion)
Road	$220	$245	$292
Rail	49	54	58
Telecoms[1]	654	646	171
Electricity[2]	127	180	241
Water[3]	546	772	1,037
Total	**$1,596**	**$1,897**	**$1,799**

1. Estimates apply to the years 2005, 2015, and 2025.
2. Transmission and distribution only.
3. Only OECD countries, Russia, China, India and Brazil are considered here.

Sources:
1. American Society of Civil Engineers, *2009 Report Card for America's Infrastructure*.
2. Canadian Council for Public-Private Partnerships.
3. Organization for Economic Co-operation and Development (OECD).
4. Goldman Sachs Economics Research (BRICS includes Brazil, Russia, India and China; N-11 includes Bangladesh, Egypt, Indonesia, Iran, Korea, Mexico, Nigeria, Pakistan, Philippines, Turkey and Vietnam.
5. Brookfield Redding: *Infrastructure Goes Global,* August 2009.

Alternative Investments: Infrastructure

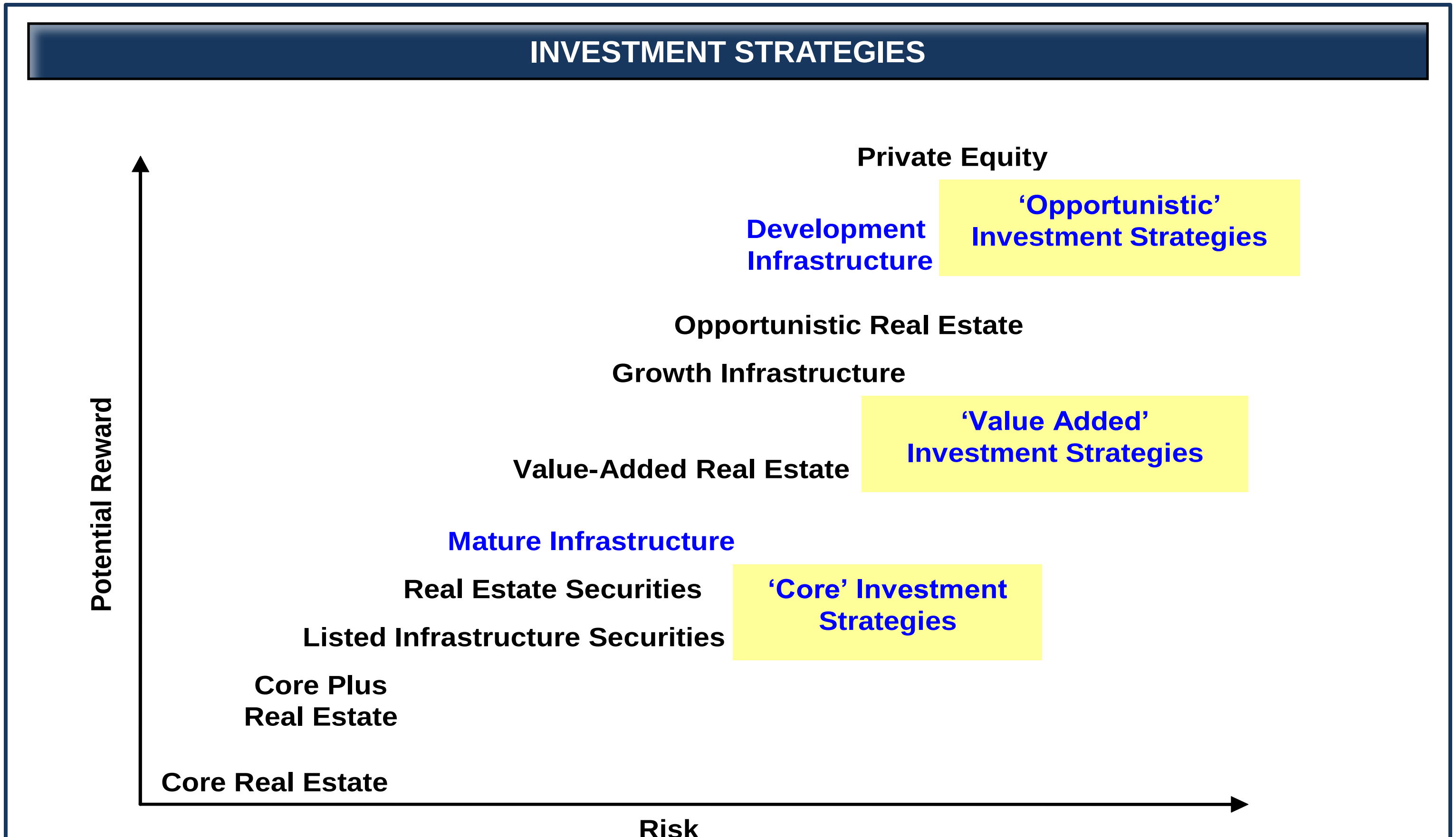
STRATEGIC ROLE

- Generate competitive risk adjusted returns relative to other asset classes with less dependence on asset appreciation
- Provides portfolio diversification with low correlation to traditional asset classes
- Facilitates duration hedging as long lived assets can match liability duration with 25 to 99 year cash flows
- Provides inflation protection as the revenues of the underlying assets are typically linked to CPI

CHARACTERISTICS

- *Long life assets* – Capital intensive assets with 25 to 99 year concessions, match for liability duration
- *Inflation protection* – Revenues typically linked to CPI
- *Monopoly or quasi monopoly* – High barriers to entry due to scale and capital cost
- *Steady and predictable cash flow* – Produce strong and predictable yields
- *Low correlation* – Provides portfolio diversification, low beta
- *Inelastic demand* – Predictable demand with little volatility, less susceptibility to economic downturns
- *Limited commodity risk* – Not subject to commodity pricing
- *Insensitive to changes in technology* – Low risk of redundancy or technology obsolescence
- Investments are usually illiquid and involve a long (10 to 20 year) holding period
- Investments are equity securities
- Some securities are publicly traded and some investments are privately-held

Alternative Investments: Infrastructure



Source: RREEF Research
For illustrative purposes only.

Alternative Investments: Infrastructure

IMPLEMENTATION

Investment Vehicle Options

- Publicly Listed Securities
  - Provides immediate access to the market
  - Can build global portfolio for diversification
  - High correlation to the market
  - Heavy asset concentration on utilities, energy and transportation
  - High liquidity
- Unlisted Funds and Co-investments
  - Slower access to the market
  - Diversify by utilizing multiple managers with differing strategies
  - Concessions of 25 to 99 years
  - Low correlation to the market
  - Illiquidity – Exit strategies are developing; assets can be sold via IPOs or sold to strategic buyers
- Direct Investments
  - Longer transaction period due to deal supply, competition, structure and regulatory approval
  - Diversification by investing in various subsectors
  - Low correlation to the market
  - Diversify by utilizing multiple managers with differing strategies
  - Illiquidity – Exit strategies are developing; assets can be sold via IPOs or sold to strategic buyers
- Debt Funds

Internal Process

- Policy Development
- Due Diligence
- Negotiation of Terms and Conditions
- Staffing Needs
- Monitoring
- Strategy Formulation
  - Sector definition
  - Risk tolerance
  - Investment criteria
  - Greenfield vs. Brownfield
  - Routes to market
- Management Selection
  - Experience
  - Track record
  - Team size
  - Partnership relationships
  - Deal flow and fees

Alternative Investments: Infrastructure

OPERATIONS

- *Custody* – Underlying assets held in operating companies
- *Pricing* – Publicly listed securities are priced in the market daily
- *Pricing* – Privately-held investments carried at cost until significant event. Securities should be frequently valued by third party sources.
    - Exits
    - IPO
    - Sale to other entities/strategic buyers
- *Reporting*
    - Internally generated transaction reports available monthly/quarterly
    - General partner monitoring and investment performance reports available quarterly and annually
    - Master custodial pricing and reporting available monthly, consisting of carried/market value of investments
    - Audited partnership financial reports available annually for all partnerships

Alternative Investments: Infrastructure

COSTS RANKED IN ORDER OF MAGNITUDE

- General partner fees and profit sharing
- Consultant fees
- Master custody costs
- Staff salaries/benefits/administration

RISKS

- *Leverage* – Deals with leverage between 40% and 80% can transform low risk assets into risky investments. Changes in the credit environment alter refinancing risk.
- *Market inefficiencies* – Over $100 million was raised from 2006 to 2007. Competitive auctions lead to overpaying. There is a limited history and track record in the U.S. infrastructure space.
- *Political and headline risk* – Public acceptance and understanding of infrastructure needs to expand. In addition, the political landscape in every state and municipality differs.
- *Regulatory risk* – Regulated assets are subject to government changes.
- *Construction and development* – Project overruns and delays should be shared with construction partners. Volume/demand risk for new developments can alter.
- *Labor issues* – Greenfield projects could generate new jobs while the privatization of brownfield assets could eliminate skilled labor members. Adherence with Responsible Contracting and Public Outsourcing Policies are crucial.
- *Asset control* – Stipulations via concession agreements limit some management control (pricing, growth, decision approvals, etc.). Asset control needs to be appropriately priced.
- *Firm specific risk* – Unique risks are associated with specific firms.