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從風險角度透視另類資產投資

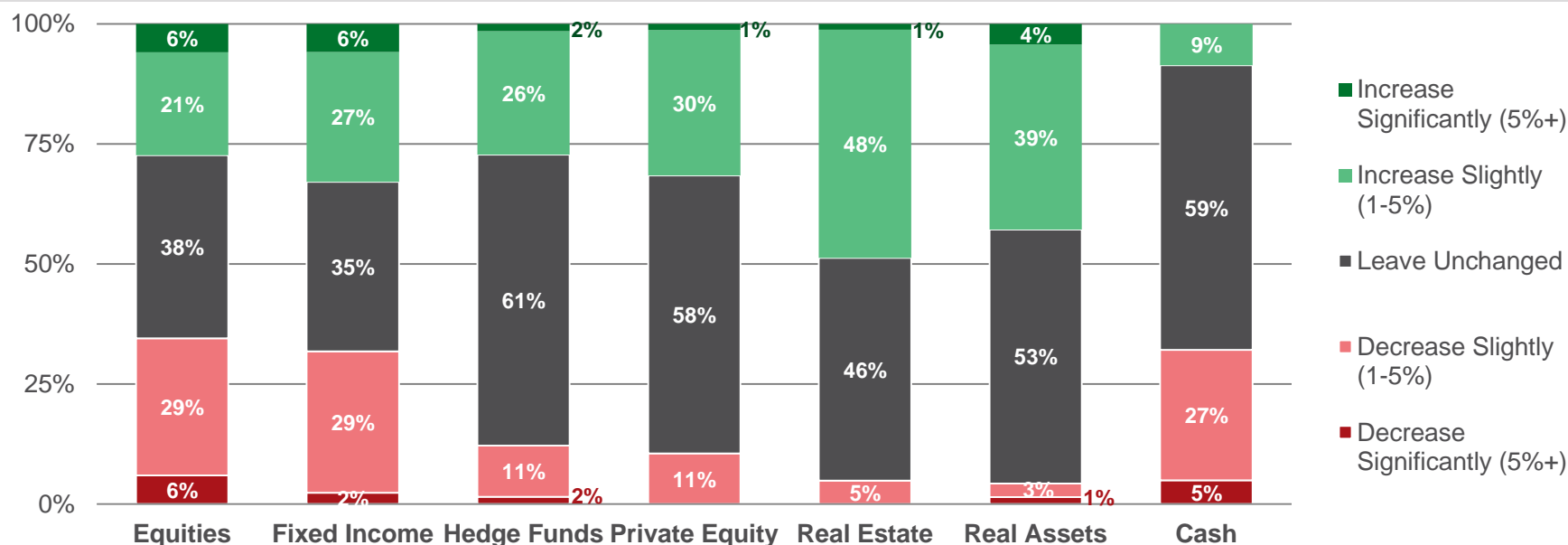張宇翔，**CFA**
客戶解決方案部

2014年10月

在當前低利率的市場環境下，另類投資產品越來越受到投資者的關注

根據BlackRock於2013年底對100個機構投資者進行的問卷調查顯示，投資者對於在2014年投資另類資產的熱情很高

▸ 接近半數的機構預計在2014年會提高房地產的投資比重

▸ 超過四成的機構預計會提高對於實体資產(Real Asset)的投資

▸ 31%的機構計劃增加對於私募股權的投資

▸ 28%的機構計劃增加對於對沖基金的投資

預期2014年的資產配置變化 (百分比)

資產類別	Increase Significantly (5%+)	Increase Slightly (1-5%)	Leave Unchanged	Decrease Slightly (1-5%)	Decrease Significantly (5%+)
Equities	6%	21%	38%	29%	6%
Fixed Income	6%	27%	35%	29%	2%
Hedge Funds		26%	61%	11%	2%
Private Equity	2%	30%	58%	11%	2%
Real Estate	1%	48%	46%	5%	
Real Assets	1%	39%	53%	3%	1%
Cash	4%	9%	59%	27%	5%

Survey question: "During 2014, how do you anticipate changing your allocations to the following? Are you likely to…?"

Results based on BlackRock Institutional Rebalancing Flash Survey, Dec. 2013 with 87 participants (59% pension plans, 23% insurers, 17% other; 43% Americas, 32% EMEA, 25% APAC; 15% AUM under $20b, 40% AUM of $20-49b, 15% $50-99b, 30% over $100b). For each asset class, participants indicated their re-allocation plans by selecting: Increase or Decrease Significantly (>5%), Increase or Decrease Slightly (1-5%), or Leave Unchanged. Sub-sample sizes are directional and representative and not statistically significant
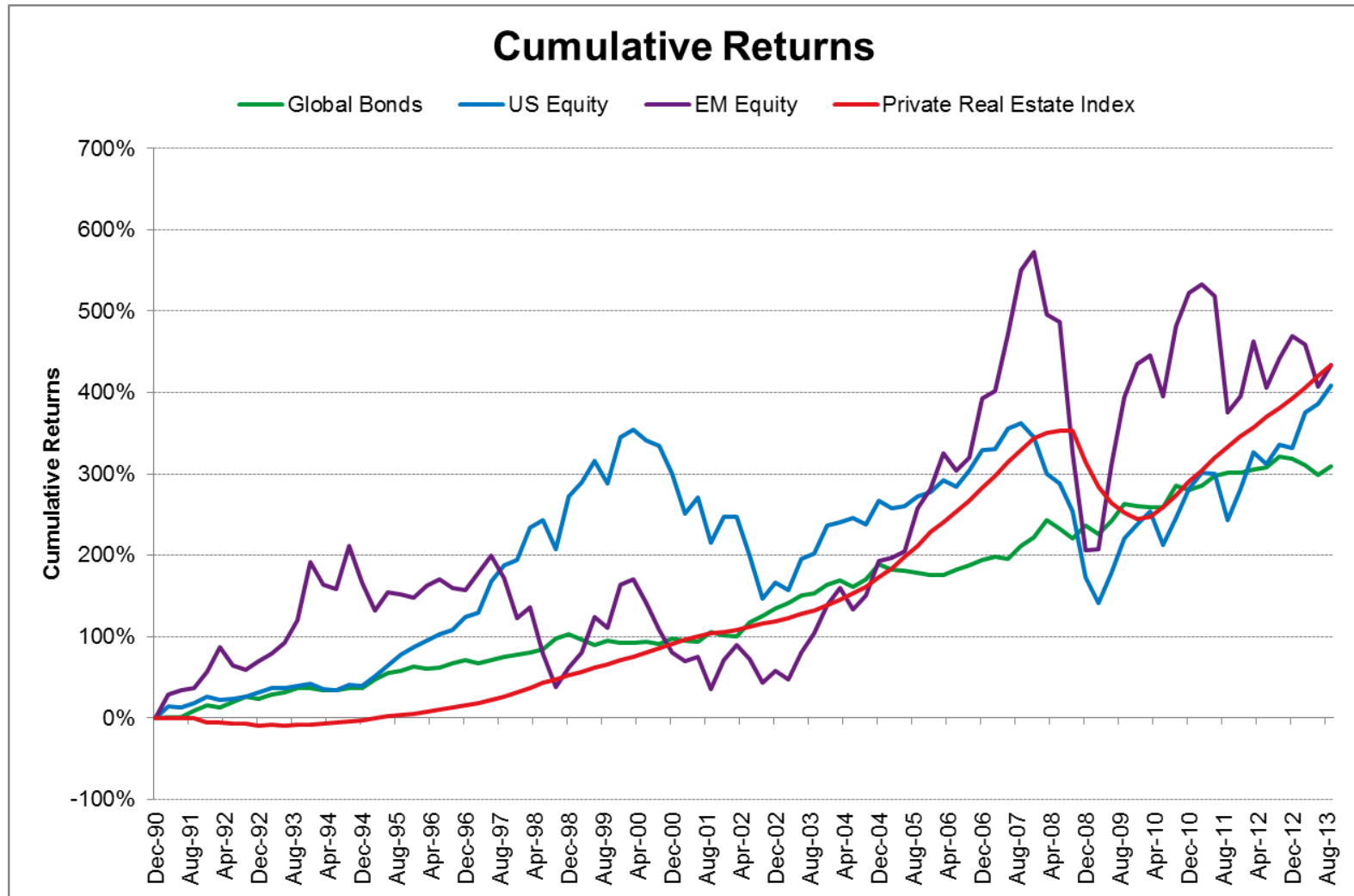
投資另類資產的四大動因

獲取超額收益
（流動性溢價 + Alpha)

資產分散化

對冲通膨風險

提供另類的Beta曝險

Source: BlackRock

示例：對於房地產投資的評估

Cumulative Returns

Legend: Global Bonds, US Equity, EM Equity, Private Real Estate Index

Source: BlackRock, quarterly return as of September 2013
Global Bonds is modelled with Barclays Global Aggregate Index; US Equity is modelled with S&P 500 Index; EM Equity is modelled with MSCI EM Index; Private Real Estate Index is modelled with NCREIF Property Index

基於季度收益的標準差如下（未經年化處理）:

Global Bonds	US Equity	EM Equity	Private Real Estate Index
3.1%	8.0%	13.5%	**2.5%**

相關係數如下:

	Global Bonds	US Equity	EM Equity	Private Real Estate Index
Global Bonds	1.00			
US Equity	-0.01	1.00		
EM Equity	-0.10	0.67	1.00	
Private Real Estate Index	-0.11	0.15	-0.06	1.00

這樣的結論看起來合理嗎?

Source: BlackRock, quarterly return as of September 2013
Global Bonds is modelled with Barclays Global Aggregate Index; US Equity is modelled with S&P 500 Index; EM Equity is modelled with MSCI EM Index; Private Real Estate Index is modelled with NCREIF Property Index

評估另類資產投資的挑戰

另類資產投資的特殊性使得對於另類資產的風險衡量面臨許多挑戰

信息缺乏	另類資產管理人公佈的信息透明度差異很大
數據的頻率	收益和投資組合信息往往只能有月度或者季度的數據
收益平滑現象	對於低流動性另類資產投資而言，報告的收益波動性往往比實際內生的波動性要低
季節性	由於受房地產以及實體資產的估值周期影響，這類資產的投資收益往往呈現很強的季節性，從而導致與其他資產的相關係數被低估
特殊因素	傳統的風險因子模型可能不能夠全面的描述另類資產投資的獨特性，比如對沖基金的風格類型因素，房地產投資的獨特行業因素等

如何應對這些挑戰?

▶ 量化調整

▶ 風險模型框架

Source: BlackRock

量化調整：去平滑化

收益平滑現象會導致低估投資產品的波動性，相關係數以及**beta**

量化調整的方式包括

▶ 使用更低頻率的數據，比如用年度數據而非季度數據

▶ 時間序列去平滑化

▶ 針對同期及前期因子共同進行回歸分析

多元自回歸分析

	Real Estate		Private Equity	
	Beta	P-Value	Beta	P-Value
AR(1)	0.63	0.00	0.39	0.00
AR(2)	0.19	0.03	0.21	0.06
R2	0.62		0.28	

$$\sigma^* = \sigma \sqrt{\frac{(1+a_1)}{(1-a_1)}} \sqrt{\frac{(1+a_2)}{(1-a_2)}} \cdots \times \sqrt{\frac{(1+a_n)}{(1-a_n)}}$$

其中:
σ =　　名義波動性
σ^* =　　經去平滑處理後的波動性
a_n =　　與n期前的自回歸相關係數

年化標準差比較
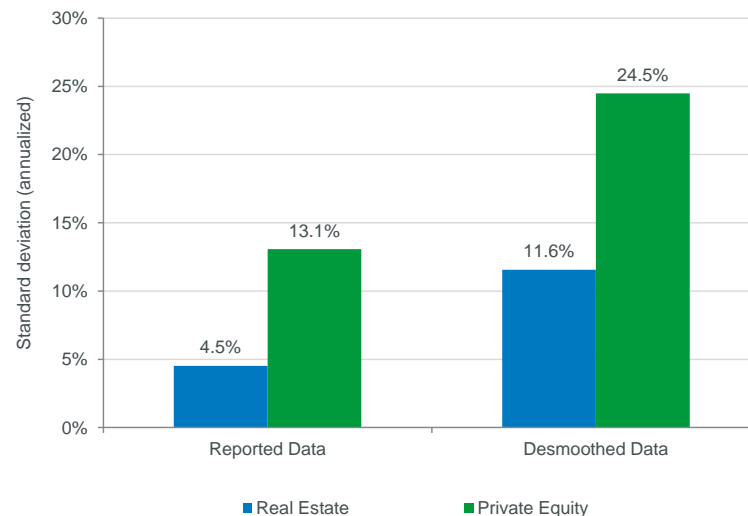
Source: NCREIF (January 1978 – December 2011), Venture Economics Buyout/VC (January 1996 – September 2011), BlackRock calculation

Budhraja, Vineet and Rui J.P. de Figueiredo, Jr. "How Risky Are Illiquid Investments?" *Journal of Portfolio Management* (Winter 2005), pp. 83-93.

Geltner, David. "Estimating Market Values from Appraised Values without Assuming an Efficient Market." *Journal of Real Estate Research* (Summer 1993), pp. 325-345.

量化調整：去平滑化（續）

針對同期及前期因子共同進行回歸分析

▶ 可以包含解釋變量前期的影響

對標普500指數的回歸分析

Lag	Real Estate				Private Equity			
	Contemporaneous		Including Lagged		Contemporaneous		Including Lagged	
	Beta	P-Value	Beta	P-Value	Beta	P-Value	Beta	P-Value
N=0	0.02	0.30	0.02	0.27	0.54	0.00	0.53	0.00
N=1			0.04	0.05			0.16	0.00
N=2			0.06	0.01			0.17	0.00
N=3			0.06	0.01			0.12	0.03
N=4			0.06	0.01			0.12	0.04
N=5			0.04	0.05			0.01	0.82
N=6			0.02	0.29			-0.03	0.62
Total	0.02		0.30		0.54		1.07	
R2	0.01		0.21		0.48		0.63	

☐ Statistically significant at 95% confidence

Beta值的比較
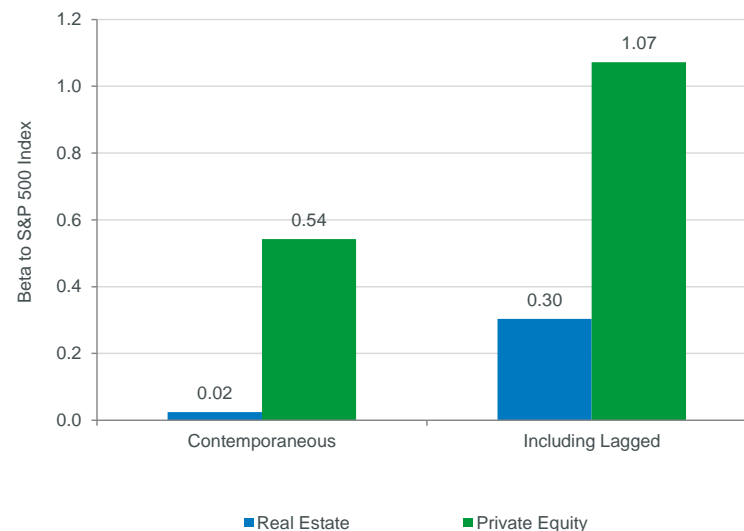
Source: NCREIF (January 1978 – December 2011), Venture Economics Buyout/VC (January 1996 – September 2011), BlackRock calculation

Anson, Mark. "Performance Measurement in Private Equity: Another Look." *Journal of Private Equity* (Summer 2007), pp. 7-21.

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量化調整：去季節化

季節性數據可能導致錯誤估計收益的波動性，並且導致低估相關係數和**beta**

量化調整的方式包括

▸ 使用更低頻率的數據，比如用年度數據而非季度數據

▸ 時間序列去季節化

$$R_{i,j}^{*} = \frac{(MAV - MAV_i)}{MAV} \times \frac{R_j}{4} + R_{i,j}$$

其中:
R_{i,j} = 在第i季度, 第j年的報告收益
$R_{i,j}^{*}$ = 在第i季度, 第j年的經季節調整的收益
MAV = 平均絕對值

房地產投資指數: NCREIF Value-Added Index

報告的投資收益

NCREIF Property ρ = 0.87

4Q Return Reported

經去季節化調整的投資收益

NCREIF Property ρ = 0.94

4Q Return Deseasonalized
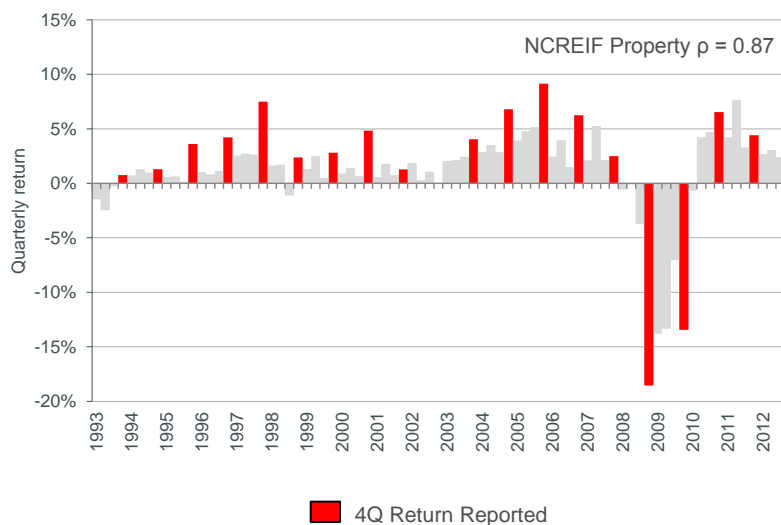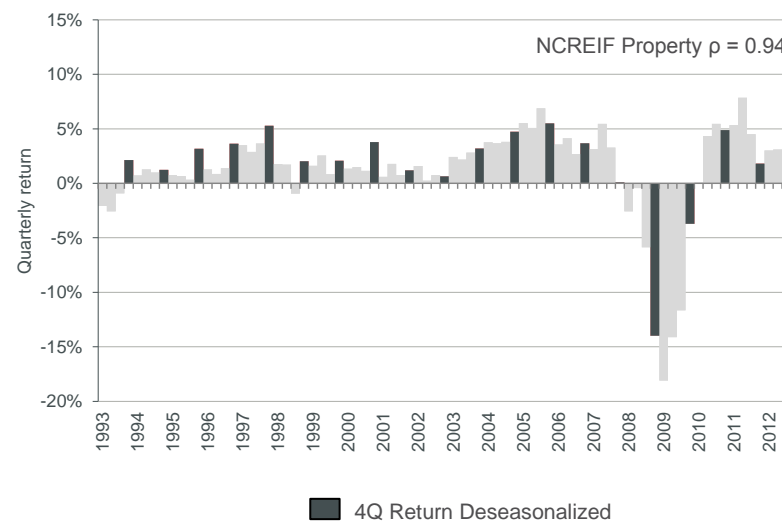
Source: NCREIF, January 1993 – September 2012

風險因子模型：我們如何對另類資產投資建模

我們認為適用於另類資產投資的風險模型應該:

▶ 關注於內生的經濟本質風險，而非帳面的會計收益

▶ 在考慮另類資產投資的特殊性基礎上，盡可能多使用公開市場數據

▶ 提供一個靈活的框架以使得不同透明度的信息都可以得到支持

對沖基金
建模的方法基於不同的信息透明度（可以是基於收益的分析，基於投資風格的分析，也可以是基於具體持有證券的分析）

非公開市場投資
基於投資組合的特徵來定義曝險（例如行業，地區等信息）

靈活的建模方式，隨著數據和信息的增加可以不斷增加建模的細緻程度

Source: BlackRock

風險因子庫示例

私募股權風險因子

地區
- World
- North America
- EMEA
- Asia Pacific
- Latin America

國家
- Australia
- Canada
- China
- Denmark
- France
- Germany
- India
- Israel
- Italy
- Japan
- Netherlands
- Norway
- South Korea
- Spain
- Sweden
- United Kingdom
- United States

市值規模
- Large
- Mid
- Small
- Micro

行業
- Consumer Discret.
- Consumer Staples
- Energy
- Financials
- Healthcare
- Industrials
- Informational Tech
- Materials
- Telecommunications
- Utilities

信息技術產業
- Internet
- Software
- Biotech
- Semiconductor
- Computer

房地產風險因子

已開發國家地區
- World
- World ex US
- Americas
- North America
- EMEA
- Europe
- Europe x UK
- Asia
- Asia Pacific

發展中國家地區
- EM - World
- EM - Americas
- EM - EMEA
- EM - Europe
- EM - Asia Pacific
- EM – ME & Africa

類型
- Apartment
- Industrial
- Office
- Retail

國家
- Australia
- Hong Kong
- Japan
- United Kingdom
- United States

對沖基金風險因子

股權
- Equity
- Australia Equity
- Canada Equity
- Eurozone Equity
- Japan Equity
- UK Equity
- US Equity
- Equity Sector
- Energy Equity Sector
- Financials Equity Sector
- Health Care Equity Sector
- Technology Equity Sector
- Equity Style
- Small Cap Equity
- Emerging Market Equity
- EM China Equity
- EM Europe Equity
- EM Far East Equity
- EM India Equity
- EM Latin America Equity
- Equity Long-Dated Vol

利率
- Rates
- Swap Spread
- Yield Curve Barbell
- Yield Curve Slope

信貸
- Credit – Commercial
- Credit – Corporate
- Credit – Sovereign
- US Credit
- Capital Structure Loans
- CDS Basis
- Credit Quality

商品
- Agriculture
- Industrial Metals
- Natural Gas
- Oil
- Precious Metals

貨幣
- Currency USD

對沖基金風格
- Convertible Bond Valuation
- Currency Carry
- Merger Arbitrage
- Trend-Following
- Widely-Held Equity

Source: BlackRock, as of October 2014

針對私募股權的分析示例

前瞻性的風險分析報告

▸ 基於風險因子曝險

▸ 相關係數矩陣基於2003年1月至2012年5月的等權重月度數據

▸ 基礎貨幣為美元

年化標準差

Europe buyout partnership	37.7%
N. America venture partnership	31.0%
N. America buyout deal	78.2%
Asia Pacific venture deal	104.9%
Diversified PE fund of funds	29.5%

風險因子分析

Europe buyout partnership
N. America venture partnership
N. America buyout deal
Asia Pacific venture deal
Diversified PE fund of funds

■ Equity ■ Geography ■ Currency
■ Capitalization ■ Sector ■ Idiosyncratic

對於**MSCI World Index Local**的**beta值**

Europe buyout partnership	1.93
N. America venture partnership	1.48
N. America buyout deal	2.34
Asia Pacific venture deal	1.39
Diversified PE fund of funds	1.88

對於**MSCI World Index Local**的相關係數

Europe buyout partnership	0.93
N. America venture partnership	0.72
N. America buyout deal	0.45
Asia Pacific venture deal	0.20
Diversified PE fund of funds	0.96

For illustrative purpose only
Source: BlackRock, as of May 2012, the illustrative example is based on generalized illustrative exposure example only, it does not represent any actual fund exposure or performance

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投資管理人的選擇也對於另類投資的成功至關重要

投資管理人的選擇也是投資另類資產的非常重大的風險因素

▶ 歷史數據顯示，在私募股權領域，前**25%**的基金的投資回報率和後**25%**的基金的回報率差異巨大

▶ 在對沖基金和其他另類資產領域情況也是如此

對管理人的選擇風險很難直接用風險模型評估，它需要一個更全面的分析框架

U.S. Private Equity
15-Year pooled horizon performance by fund quartile[1]

EMEA Private Equity
15-year pooled horizon performance by fund quartile[1]

■ 1st Quartile   ■ 2nd Quartile   ■ 3rd Quartile   ■ 4th Quartile
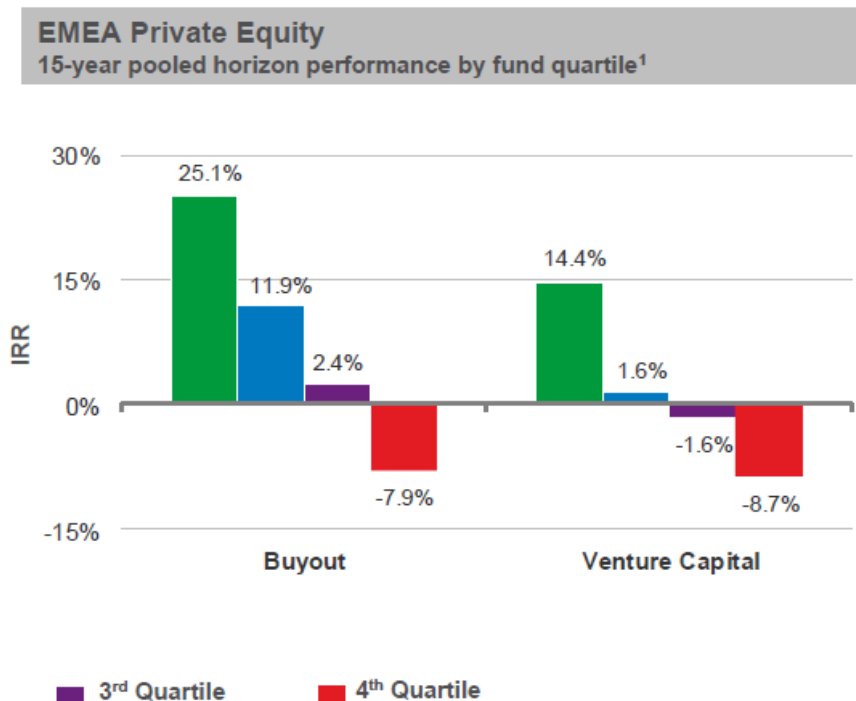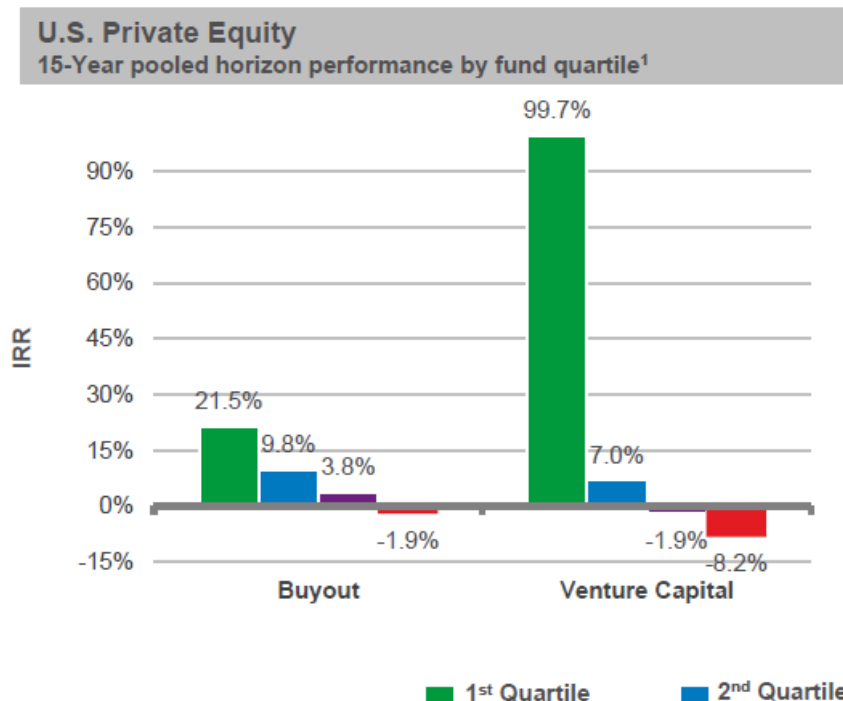
1 Thomson Reuters' Thomson ONE Pooled Horizon IRRs for the 15-year periods ended 31 March 2013 for All US Buyout and Venture Capital Funds and 31 December 2012 for all EMEA Buyout Funds and Venture Capital Funds. Private equity returns are internal rates of return net to investors after fees and carried interest. Private equity returns are derived from the Thomson ONE database as of 24 September 2013, which contains a representative sample of the private equity universe. Cash flows collected from investors and general partners are used to calculate IRRs based on cash-in/cash-out returns, with consideration of the net asset value of the remaining partnership holdings. The IRR is an annualized compounded rate of return calculated using monthly cash flows and annual valuations. Performance data reflects past performance and does not guarantee future results.

管理人選擇評估框架

我們的管理人選擇評估框架體系致力於尋找出管理人通過主動管理而創造價值的真實因素

- ▶ 管理人的風格應當符合整體投資組合的目標
- ▶ 合理區分運氣與技術成分，確保管理人的投資表現是可持續的
- ▶ 管理人選擇評估應當是一個持續性的過程，並且能夠儘早發現潛在問題

候選管理人名單

持續性的跟蹤分析

定性分析:
通過對管理人的盡職調查來充分理解管理人的投資過程

管理人選擇及整體投資組合構建

定量分析:
通過對過往投資表現以及投資組合的分析來判斷管理人的風格

Source: BlackRock

總結

1. 另類投資領域有著很大的投資機會，但是要充分享受另類投資的價值則需要一個完善的投資風險評估框架

   ▶ 對另類投資的風險收益能夠做出真實的評估

   ▶ 確保整體投資組合的風險是：分散的，有目的性的，與投資信念一致的

2. 數量化的方法以及風險因子模型能夠對另類資產投資提供更清晰的透視

3. 量化模型之外的管理人因素也是另類資產投資的關注重點

4. 從一個另類資產的收集者**(collector of alternatives)**變成一個真正的另類投資的管理者**(manager of alternatives)**

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