

因子投資介紹與發展

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日期：2017.10

簡報大綱

▼ 國外Smart Beta的發展與定義



▼ 法人運用市場調查



▼ 自造因子投資 Step By Step

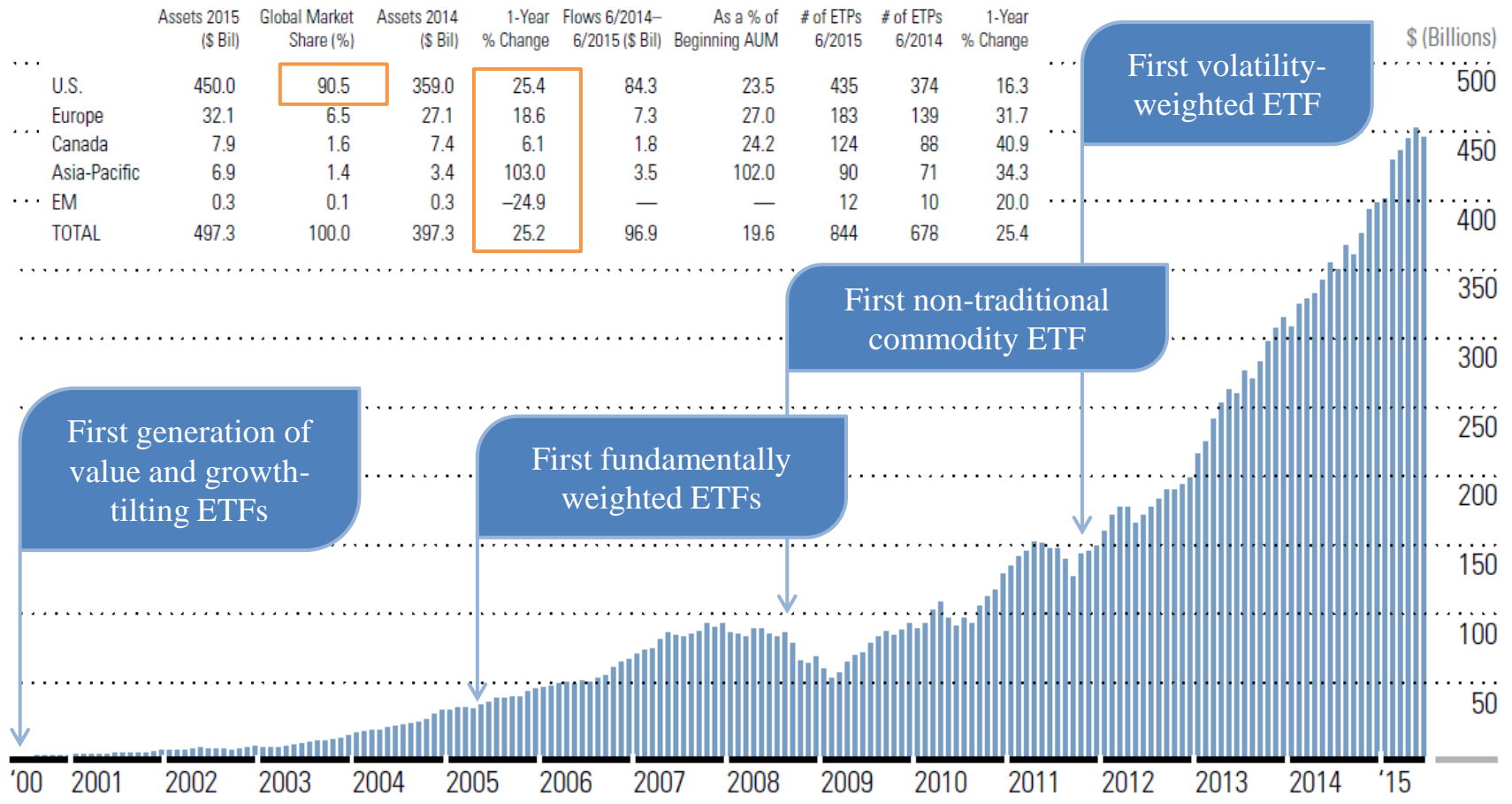


▼ Smart Beta ETF符合你的理財需求?



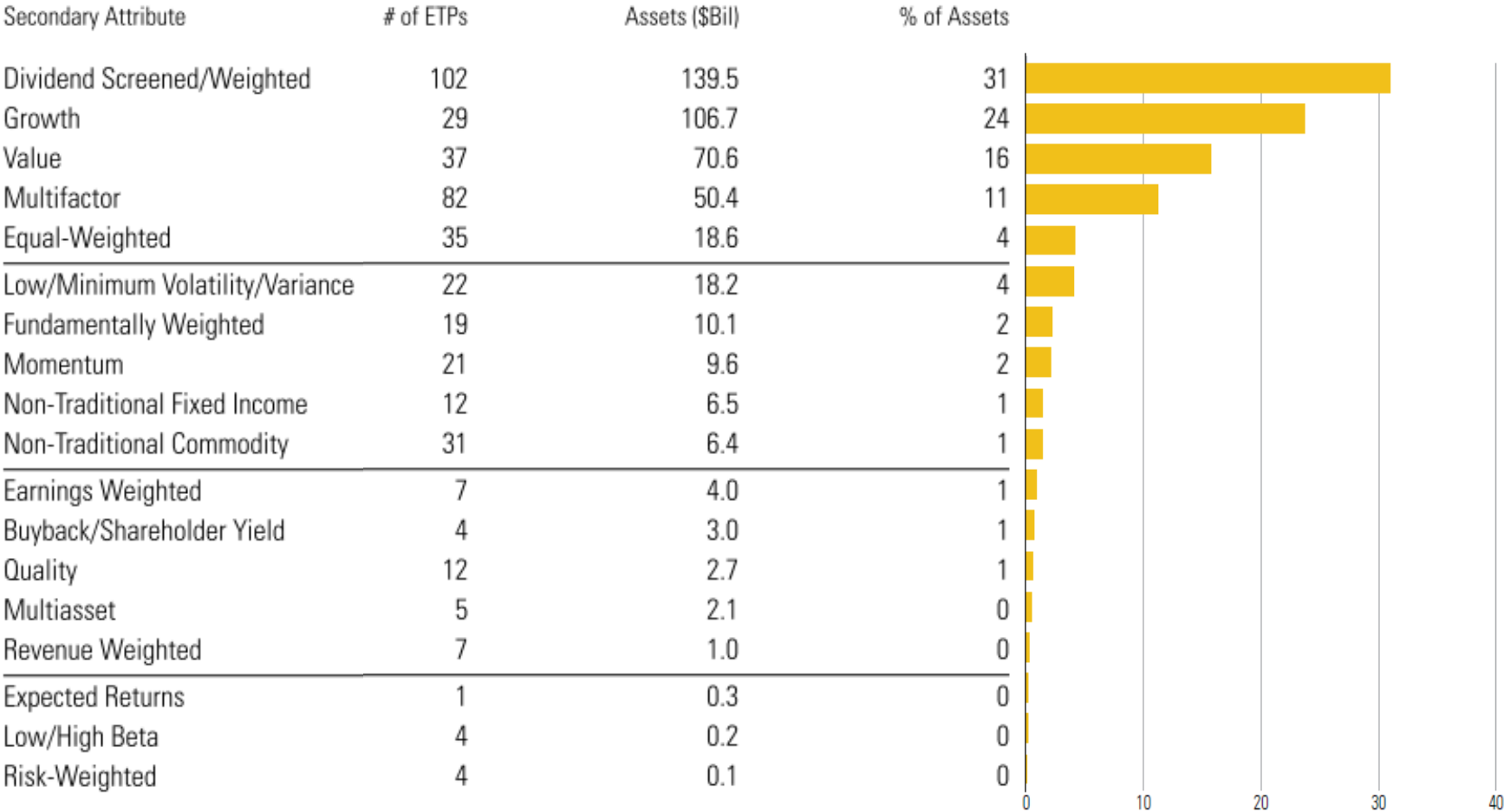
國外Smart Beta的發展 Smart Beta產品的定義

全球Smart Beta ETP 資產快速成長



Source: Morningstar Direct, Morningstar Research. Data as of 6/30/15.

United States Market Share by Smart Beta Attribute



Source: Morningstar Direct, Morningstar Research. Data as of 6/30/15.

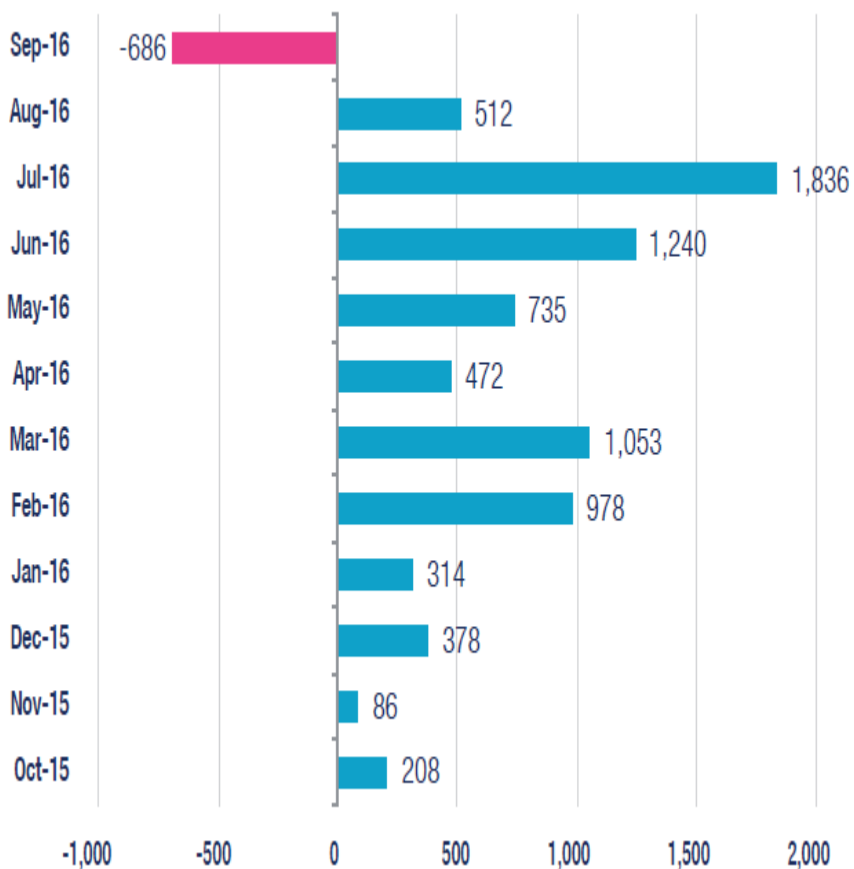
美國市場各類資產Smart Beta列表

| ASSET | FOCUS | AUM(十億美金) | WEI% |
|--------------------|------------------------|-----------|-------|
| Equity | Large Cap | 219.9 | 36.7% |
| | Total Market | 113.1 | 18.9% |
| | High Dividend Yield | 79.1 | 13.2% |
| | Small Cap | 55.7 | 9.3% |
| | Mid Cap | 48.0 | 8.0% |
| | Financials | 9.1 | 1.5% |
| | Theme | 7.5 | 1.2% |
| | Health Care | 7.2 | 1.2% |
| | Energy | 6.2 | 1.0% |
| | Technology | 6.2 | 1.0% |
| | Industrials | 2.9 | 0.5% |
| | Consumer Cyclical | 2.8 | 0.5% |
| | Basic Materials | 1.8 | 0.3% |
| | Extended Market | 1.8 | 0.3% |
| | Utilities | 1.7 | 0.3% |
| | Consumer Non-cyclicals | 1.6 | 0.3% |
| | Real Estate | 0.6 | 0.1% |
| | Micro Cap | 0.1 | 0.0% |
| Telecommunications | 0.0 | 0.0% | |
| Fixed Income | Broad Market | 12.0 | 2.0% |
| | TIPS | 2.5 | 0.4% |
| | High Yield | 1.6 | 0.3% |
| | Preferred Stock | 0.6 | 0.1% |
| | Investment Grade | 0.4 | 0.1% |
| | Agency MBS | 0.0 | 0.0% |
| Treasury | 0.0 | 0.0% | |
| Commodity | Broad Market | 7.8 | 1.3% |
| | Grains | 0.1 | 0.0% |
| | Gold | 0.1 | 0.0% |
| | Silver | 0.0 | 0.0% |
| | Livestock | 0.0 | 0.0% |
| | Softs | 0.0 | 0.0% |
| | Carbon Credits | 0.0 | 0.0% |
| Asset Allocation | Target Risk | 2.5 | 0.4% |
| | Target Outcome | 2.8 | 0.5% |
| Alternatives | Global Macro | 1.3 | 0.2% |
| | Long/Short | 0.3 | 0.0% |
| Currency | Developed Markets | 0.9 | 0.1% |
| | Emerging Markets | 0.0 | 0.0% |

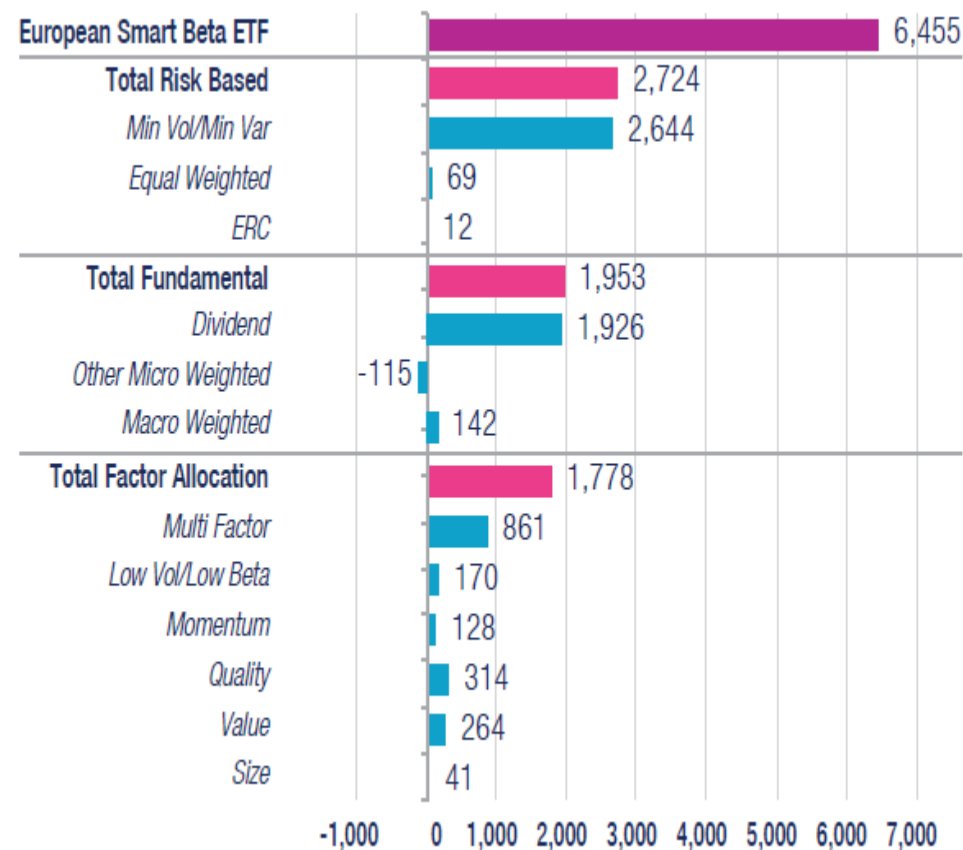
| 檔數 | SELECTION CRITERIA | AUM(10億) |
|-----|-------------------------|----------|
| 253 | Multi-Factor | 268.6 |
| 109 | Fundamental | 115.8 |
| 79 | Dividends | 109.2 |
| 106 | Market Cap | 29.2 |
| 21 | Committee | 15.2 |
| 76 | Proprietary | 14.9 |
| 3 | U.S. Dollar-Denominated | 11.7 |
| 55 | Fixed | 9.0 |
| 10 | Volatility | 8.6 |
| 24 | Momentum | 5.2 |
| 9 | Earnings | 2.8 |
| 5 | Market Value | 2.7 |
| 21 | Liquidity | 1.7 |
| 3 | Share Buybacks | 1.5 |
| 10 | Technical | 1.4 |
| 3 | Beta | 0.8 |
| 2 | Interest Rates | 0.1 |
| 檔數 | WEIGHTING SCHEME | AUM(10億) |
| 142 | Multi-Factor | 223.8 |
| 67 | Market Cap | 123.4 |
| 75 | Dividend | 87.0 |
| 159 | Tiered | 50.5 |
| 127 | Equal | 49.3 |
| 49 | Fundamental | 28.2 |
| 24 | Volatility | 9.5 |
| 36 | Proprietary | 7.2 |
| 29 | Fixed | 5.8 |
| 28 | Momentum | 5.7 |
| 6 | Earnings | 2.7 |
| 7 | Revenue | 1.5 |
| 18 | Technical | 1.3 |
| 4 | Production | 1.2 |
| 5 | Market Value | 0.7 |
| 1 | Beta | 0.6 |
| 12 | Liquidity | 0.1 |

歐洲市場Smart Beta資金流

MONTHLY NET NEW ASSETS ON EUROPEAN SMART BETA ETFs



YTD NET INFLOWS ON EUROPEAN SMART BETA ETFs BY CATEGORY



Sources: Monthly data in EURM from 01/10/2015 until 30/09/2016, Bloomberg, Lyxor IAM

亞洲區Smart Beta發展各具特色

日本: Quality
澳洲: Dividend

大中華區: Dividend
南韓: Multi-Factor

資產佔組別(%)

| 第二級分類 | 資產規模 | | 資產佔組別(%) | | | | | | | | | | 亞太區 整體 | 過去1年 資金流向 | |
|-----------|------------|---------------|-------------|------------|------------|------------|-------------|------------|------------|------------|------------|------------|------------|--------------|------------|
| | ETP數目 | (10億美元) | 澳洲 | 中國 | 香港 | 印度 | 日本 | 馬來西亞 | 新西蘭 | 新加坡 | 南韓 | 台灣 | | | 泰國 |
| 質量型 | 14 | 5,918 | 0.8 | 0.0 | 0.1 | 0.0 | 55.4 | 0.0 | 0.0 | 0.0 | 0.3 | 0.0 | 0.0 | 56.5 | 57.9 |
| 股息篩選或加權 | 33 | 1,974 | 10.3 | 1.1 | 1.2 | 0.0 | 1.0 | 0.1 | 0.6 | 0.1 | 1.7 | 2.8 | 0.0 | 18.8 | 10.5 |
| 多因子 | 19 | 1,421 | 0.4 | 0.0 | 0.1 | 0.0 | 10.8 | 0.0 | 0.0 | 0.0 | 2.2 | 0.0 | 0.0 | 13.6 | 23.6 |
| 價值型 | 24 | 372 | 0.2 | 0.6 | 0.6 | 0.0 | 0.6 | 0.0 | 0.2 | 0.0 | 1.5 | 0.0 | 0.0 | 3.6 | 1.9 |
| 低/最小波幅/方差 | 7 | 277 | 0.0 | 0.0 | 0.0 | 0.0 | 1.7 | 0.0 | 0.0 | 0.0 | 0.9 | 0.0 | 0.0 | 2.6 | 4.1 |
| 等權重 | 11 | 212 | 0.9 | 0.4 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.0 | 0.3 | 0.0 | 0.0 | 2.0 | 1.4 |
| 基本面加權 | 5 | 103 | 0.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 1.0 | 0.6 |
| 增長型 | 5 | 74 | 0.0 | 0.4 | 0.1 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.1 | 0.0 | 0.0 | 0.7 | 0.1 |
| 非傳統商品 | 1 | 41 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.4 | 0.0 | 0.0 | 0.4 | 0.1 |
| 動能型 | 4 | 28 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.0 | 0.0 | 0.3 | -0.1 |
| 多元化資產 | 2 | 28 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.3 | 0.0 | 0.0 | 0.3 | -0.1 |
| 低/高啤打 | 3 | 19 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.2 | 0.0 | 0.0 | 0.2 | -0.1 |
| 預期回報 | 1 | 9 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 | 0.0 | 0.0 | 0.1 | 0.0 |
| 回購/股東收益率 | 1 | 5 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.1 |
| 總數 | 130 | 10,480 | 13.3 | 2.4 | 2.1 | 0.1 | 69.4 | 0.1 | 1.3 | 0.1 | 8.4 | 2.8 | 0.0 | 100 | 100 |

資料來源：Morningstar Direct, Morningstar Research. 數據截至2016年6月30日。

台灣勞退基金資金運用情況 採用另類Beta增益

新制勞工退休基金

截至 104 年 9 月底

單位：新台幣元

| 項 目 | 金 額 | 占基金運用比例 (%) |
|------|-----------------|-------------|
| 國內投資 | 780,887,957,400 | 52.75 |
| 國外投資 | 699,398,870,699 | 47.25 |

| 資產類別 | 主動指數量化 | 項目 | 權重% | 目前淨資產(美元) |
|------|--------|--------------|--------|----------------|
| 股票 | 主動 | 全球股票型 | 4.3% | 661,481,838 |
| | 主動 | 亞太（日本除外）股票型 | 3.3% | 503,699,206 |
| | 主動 | 全球新興市場股票型 | 5.9% | 917,582,721 |
| | 指數量化 | 全球增值股票 | 8.7% | 1,340,484,530 |
| | 指數量化 | 全球被動股票型 | 4.8% | 734,607,798 |
| | 指數量化 | 全球基本面指數被動股票型 | 6.9% | 1,071,756,952 |
| | 指數量化 | 全球低波動指數被動股票型 | 6.7% | 1,038,869,432 |
| | 指數量化 | 全球高股利增值股票型 | 9.4% | 1,459,482,903 |
| | 指數量化 | 全球高品質被動股票型 | 2.7% | 414,225,639 |
| 債券 | 主動 | 全球債券型 | 12.0% | 1,858,798,082 |
| | 主動 | 全球新興市場債券型 | 6.7% | 1,043,122,446 |
| | 主動 | 全球信用債券型 | 7.4% | 1,148,130,659 |
| | 指數量化 | 全球增值債券 | 6.8% | 1,054,121,498 |
| 另類 | 主動 | 全球不動產股票型 | 11.8% | 1,818,534,125 |
| | 主動 | 全球基礎建設有價股票型 | 2.6% | 397,625,003 |
| | | | 100.0% | 15,462,522,832 |

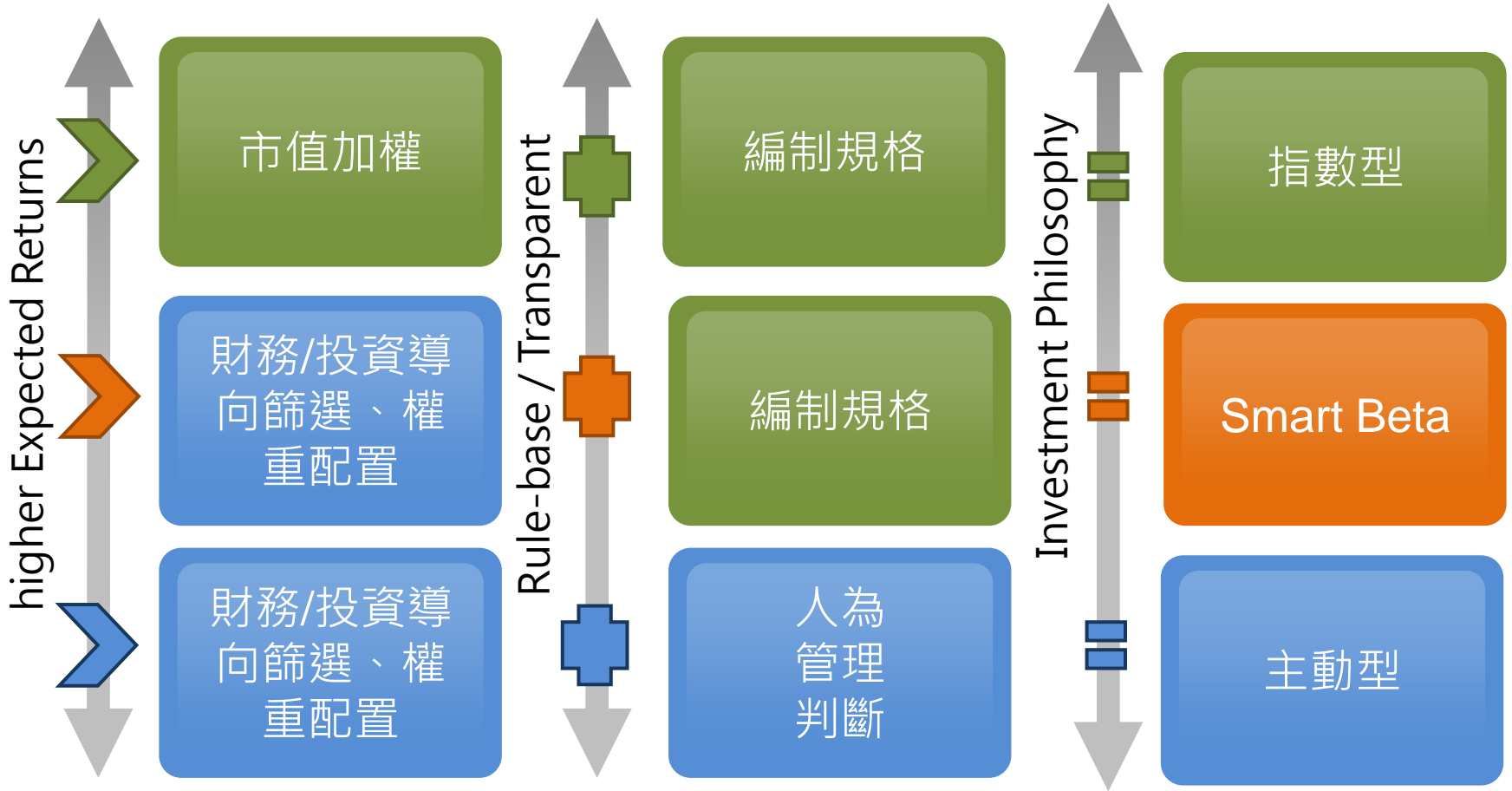
| 項目 | 權重% | 目前淨資產(美元) |
|----|-------|---------------|
| 股票 | 52.7% | 8,142,191,019 |
| 債券 | 33.0% | 5,104,172,685 |
| 另類 | 14.3% | 2,216,159,128 |

| 項目 | 權重% | 目前淨資產(美元) |
|------|-------|---------------|
| 主動 | 54.0% | 8,348,974,080 |
| 指數量化 | 46.0% | 7,113,548,752 |

資料來源：勞工退休基金運用情況報告（104年截至09月底止）、元大投信整理

Smart Beta定義

Smart beta is like an artificial intelligence version of an active manager.



Smart Beta讓投資更Smart

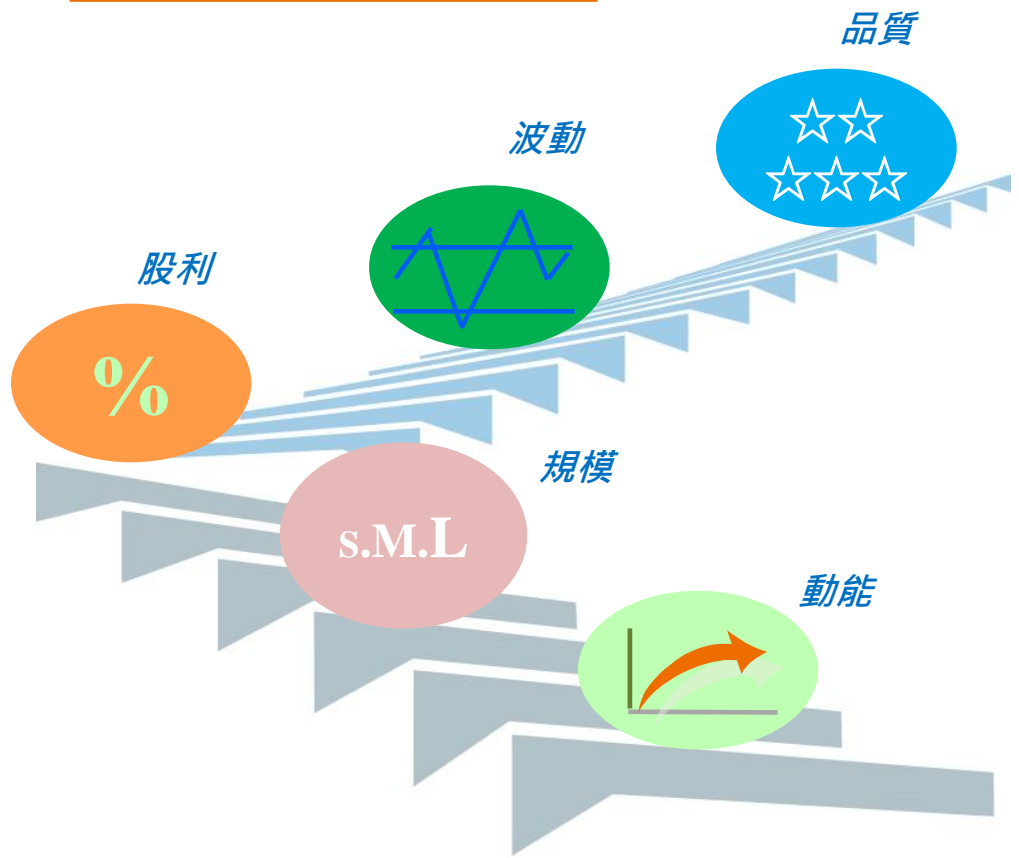


什麼是智選(Smart Beta)指數？

不同於傳統指數編製方法，只要加入幾項關鍵因子，挑選出企業來進行指數編製，就可能優於原本的指數表現。

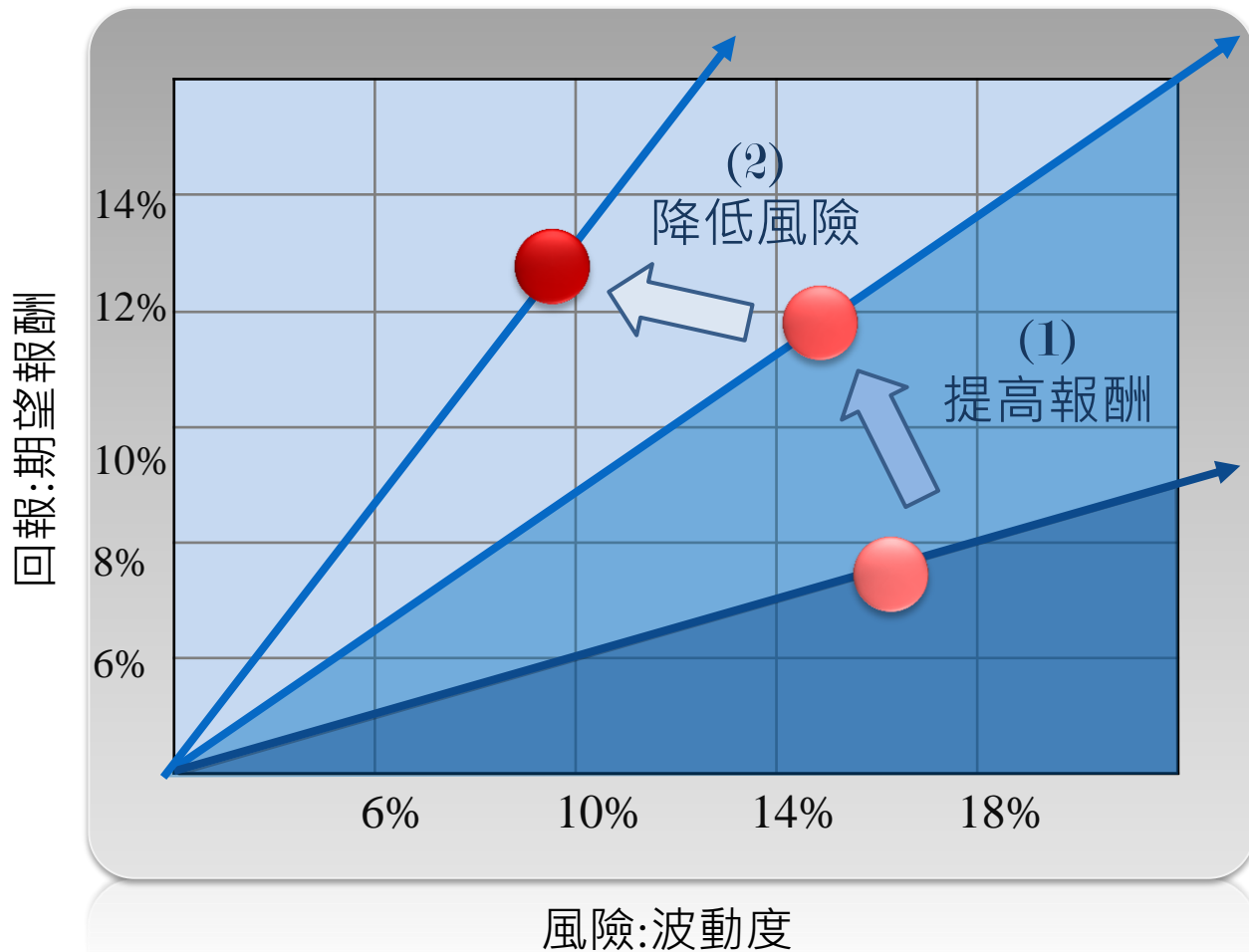
簡單的說智選指數是傳統指數的進化版，加入一些條件後，讓績效能有較佳的表現。

只要加入一些因子，
就可以讓指數的表現更好



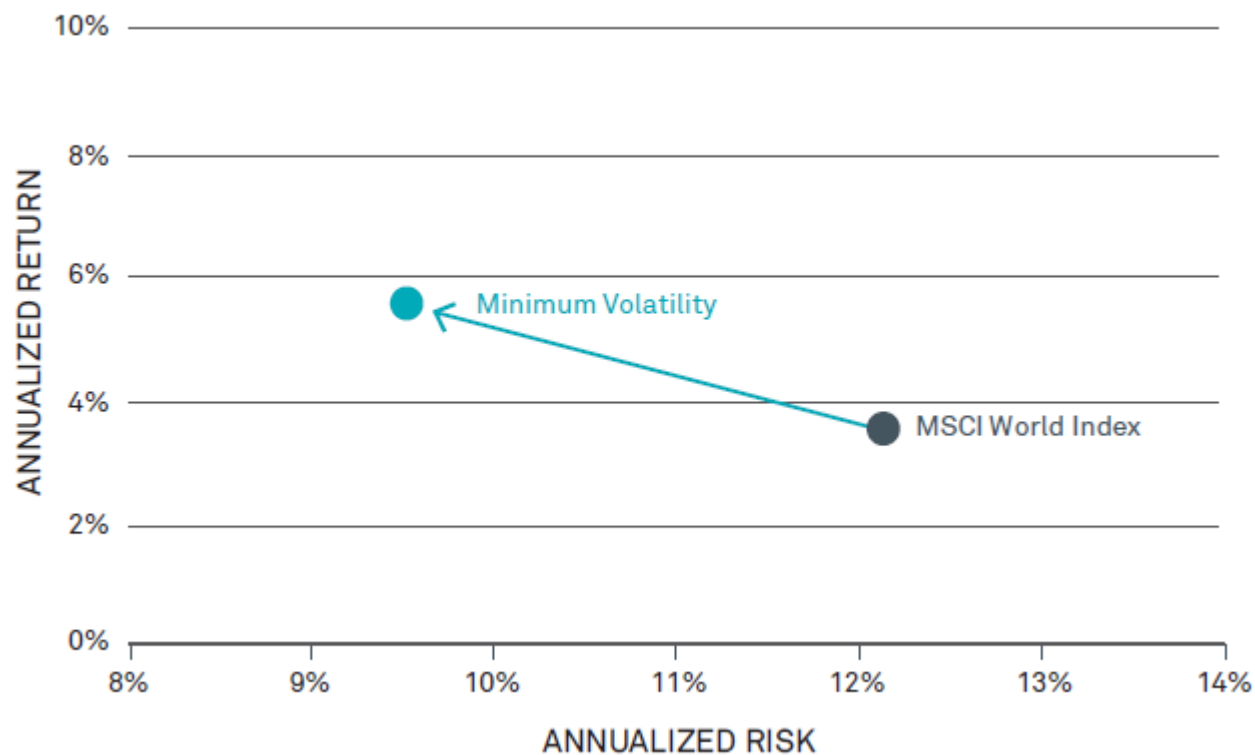
Smart Beta特色

中長期達到更佳的风险調整後報酬表現



低波動因子可降低波動風險

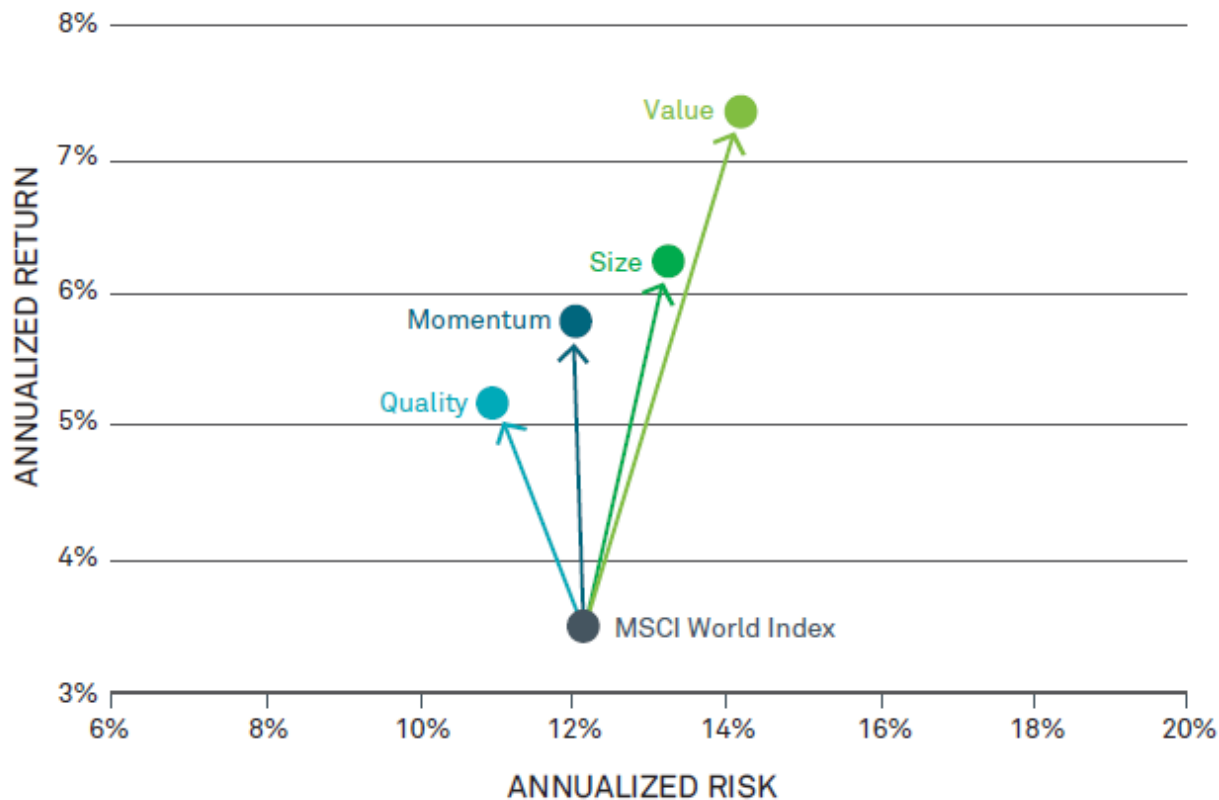
January 2001 - December 2015



資料來源：MSCI Inc. 日期: 2015/12/31

基本面與動能因子尋求超額報酬

January 2001 - December 2015

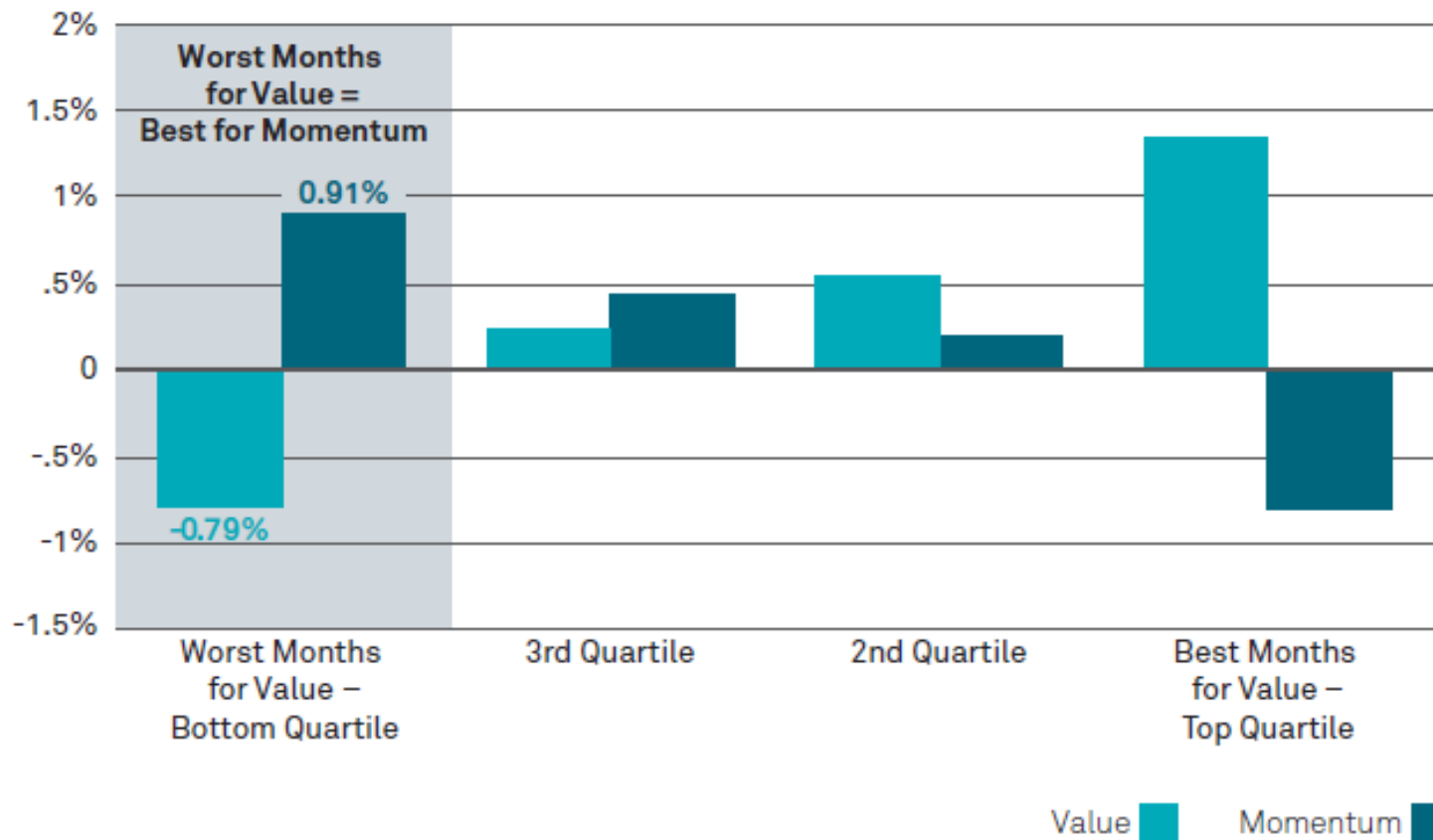


資料來源：MSCI Inc. 日期: 2015/12/31

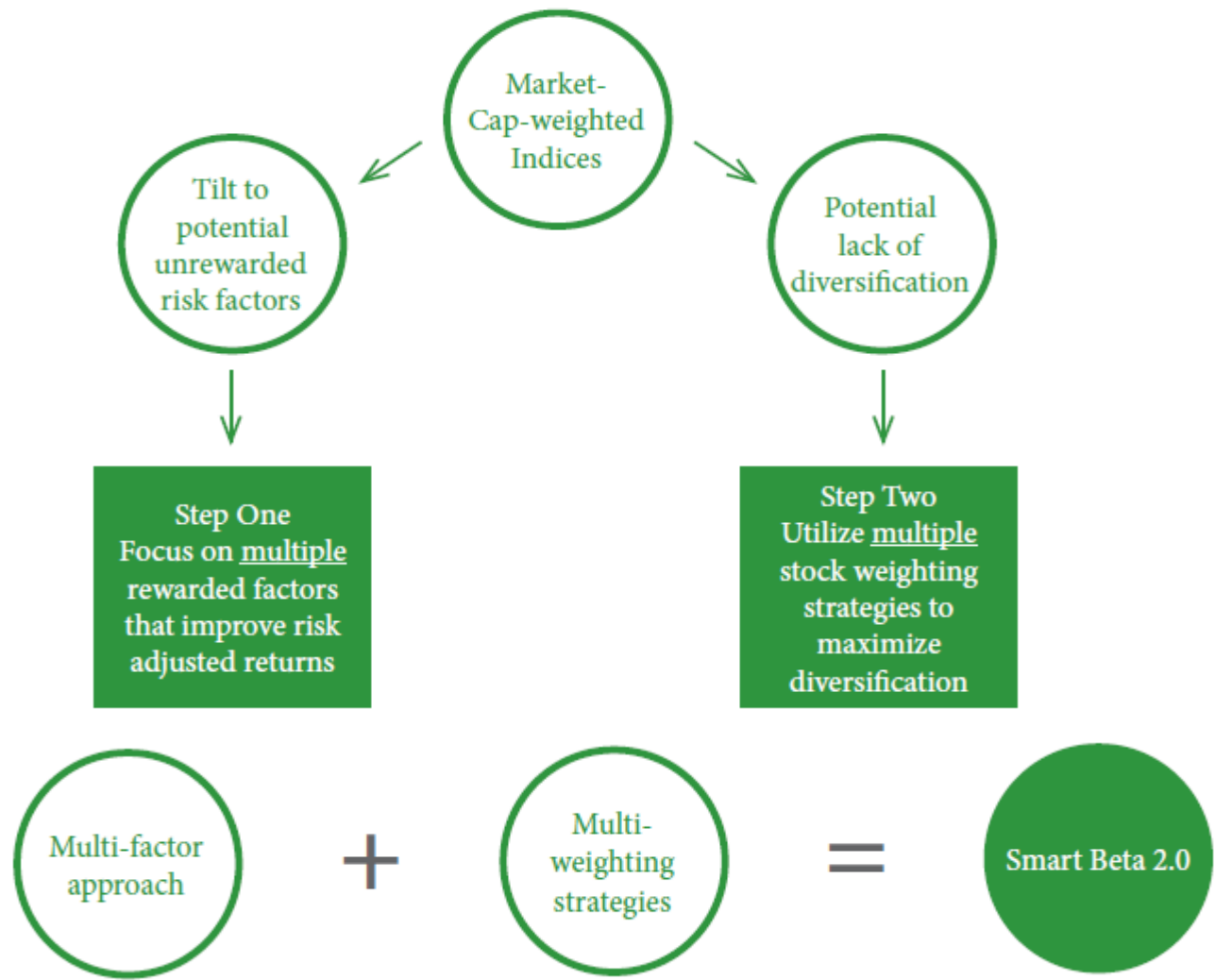
因子間具有互補與循環特性

MOMENTUM AND VALUE

Excess Returns over MSCI World Index - Sorted by Performance Jan 2001 - Dec 2015



Smart Beta技術 → 選股 + 配置



資料來源：EDHEC北方高等商學院 網址<http://www.scientificbeta.com/#/>。日期：2016/5。

法人運用市場調查

2017 Smart Beta 法人應用結論

目的

- 降低風險
- 提升報酬
- 創造現金收益

類型

- 綜合多因子

應用

- 品質篩選提升
報酬風險比

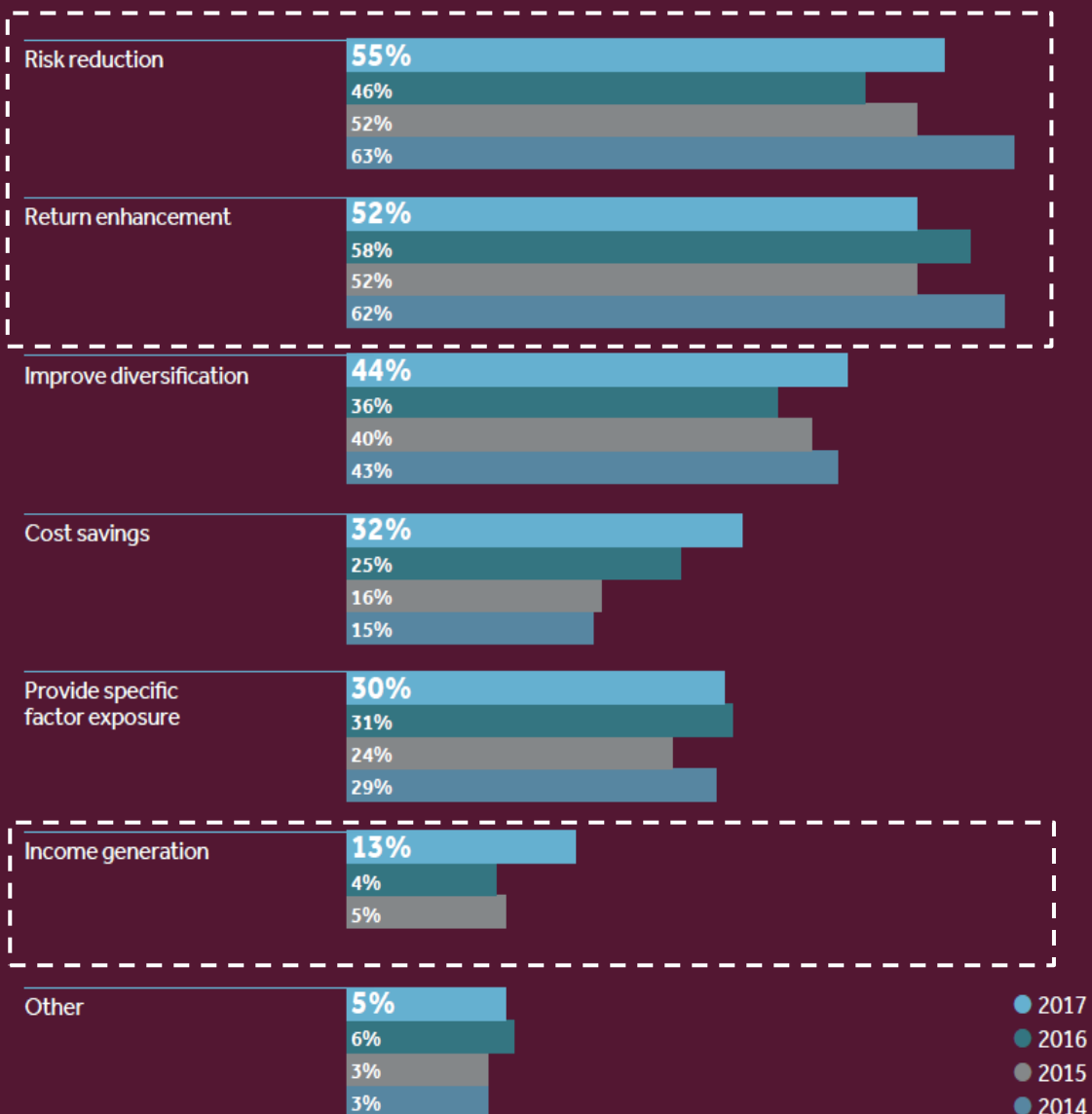
■ 法人採用Smart Beta的目的為

- 1)降低風險
- 2)提升報酬

■ 2017年法人利用Smart Beta來創造現金收益的比例上升

資料來源：FTSE Russell · Smart Beta 2017
Global Survey Findings from Asset Owners

What investment objectives initiated evaluation of smart beta strategies?

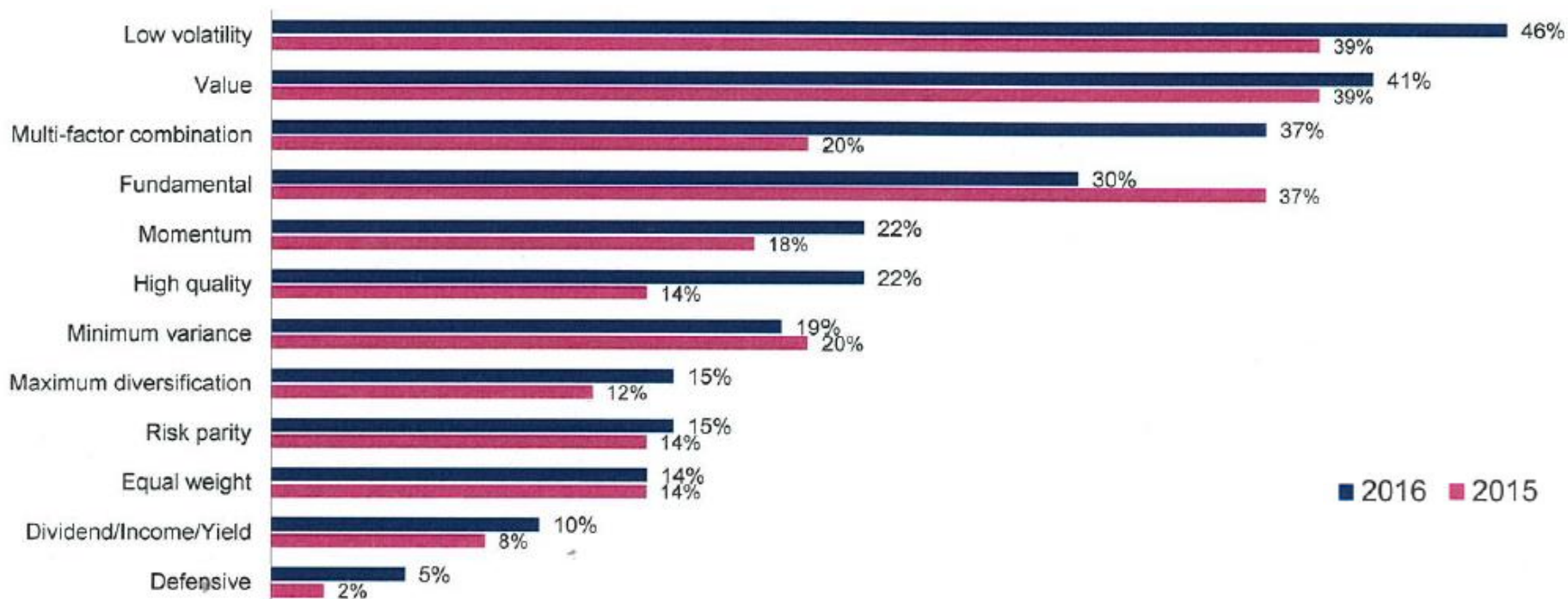


Multi-pick; Segment = Have a smart beta allocation, evaluated and decided not to implement, currently evaluating smart beta

"Income generation" was not asked in 2014.

市場使用SMART BETA戰略性策略

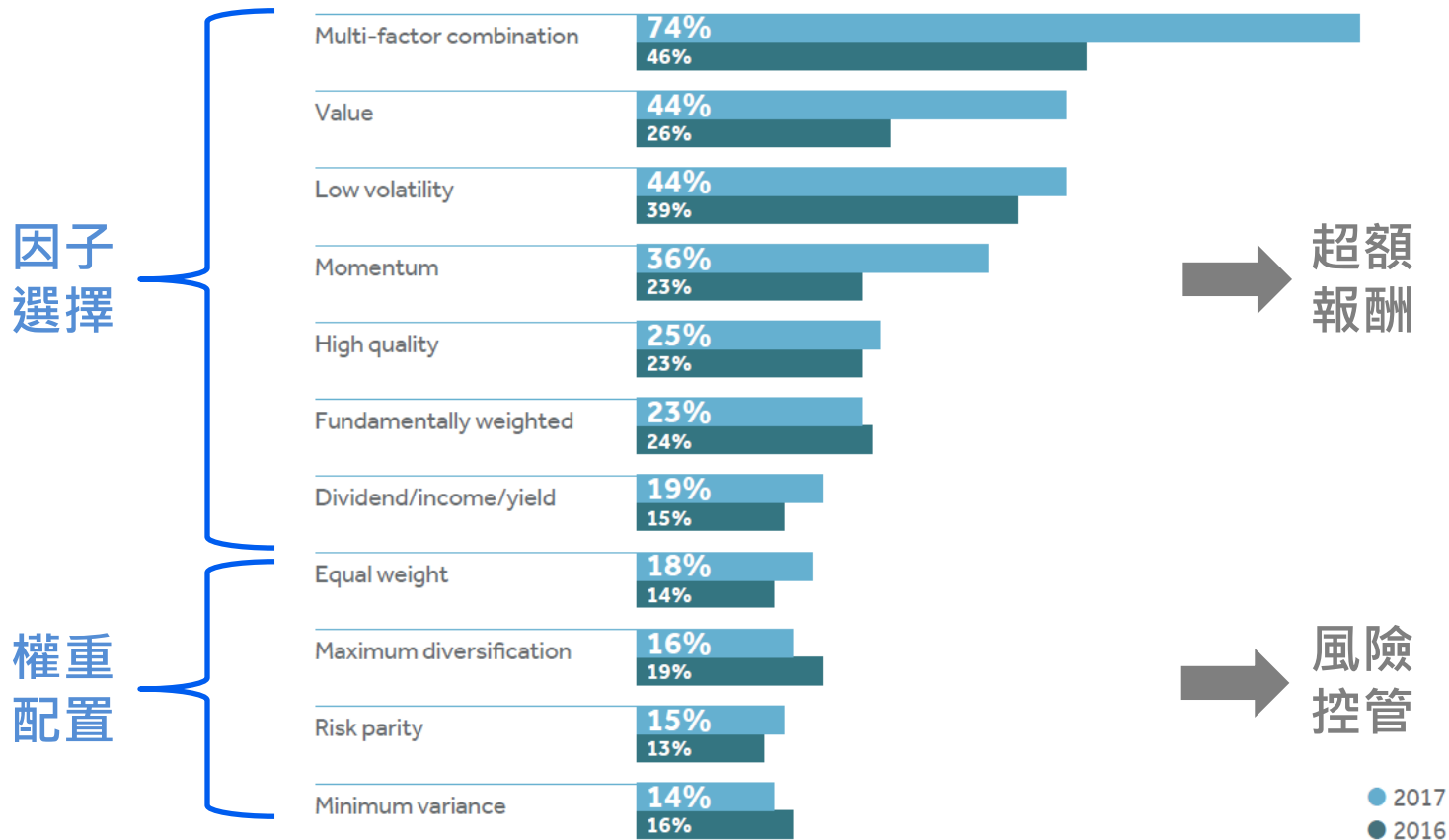
- SMART BETA隨著市場認同提升，2016資產持有者策略主要增加為低波動、高質量、趨勢及多因子。



Source: FTSE

綜合多因子為法人主要評估採用的Smart Beta

What smart beta strategies are you currently evaluating?

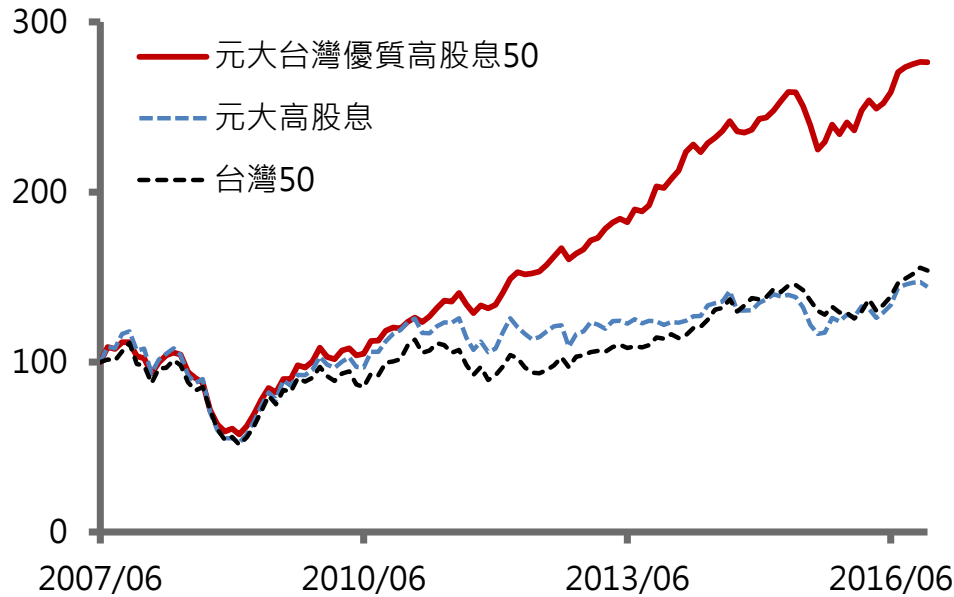


Multi-pick. Segment = Have a smart beta allocation AND currently evaluating smart beta, no existing smart beta allocation AND currently evaluating smart beta

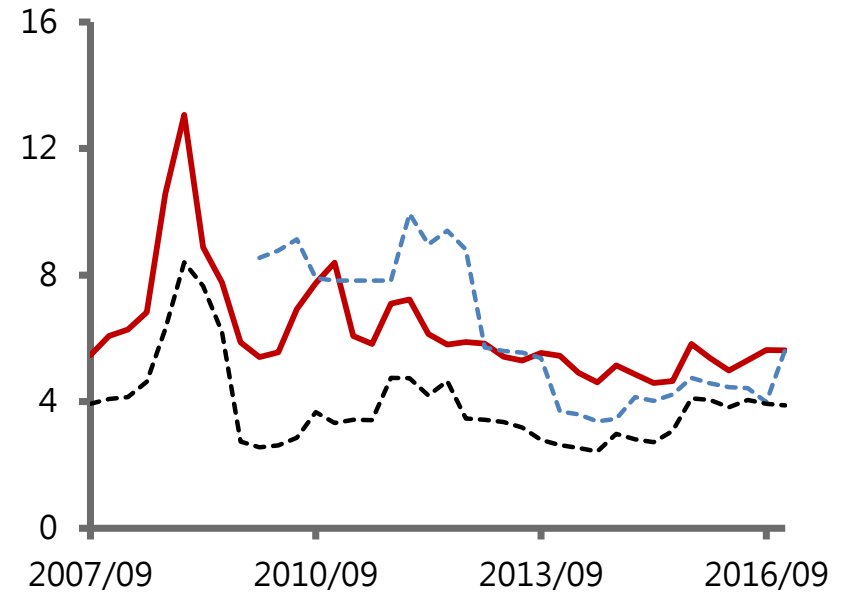
資料來源：FTSE Russell · Smart Beta 2017 Global Survey Findings from Asset Owners

Smart Beta範例:高息+品質+低波

累積含息報酬



股利殖利率(%)



| | 年化報酬率 | 年化波動度 | Sharp Ratio | 股利率%(近一年) | 年化周轉率(雙邊) |
|-------------|-------|-------|-------------|-----------|-----------|
| 元大台灣優質高股息50 | 11% | 16% | 0.73 | 5.39 | 398% |
| 元大高股息 | 7% | 20% | 0.33 | 4.63 | |
| 台灣50 | 7% | 19% | 0.38 | 3.92 | |

以上年化預期報酬及年化波動度僅為歷史資料模擬投資組合之結果(未扣除經保費相關費用)，
 不代表本投資組合之實際報酬率及未來績效保證，不同時間進行模擬操作，其結果亦可能不同。
 期間：2007/6/29 ~ 2016/12/20

指數編製規則與投組制定

母股票池
台灣上市市值前250大股票

股利篩選
· 股息率：TOP 60%

品質篩選

- 營運穩定：樣本前 80%
- 權益報酬率(ROE)：樣本前 80%
- 歷史報酬：前一年報酬 > -30%
- 股息率：小於30%
- 股利發放率： $0\% \leq x \leq 100\%$

優質遴選Top 50
以獲利能力、權益報酬率(ROE)、股息率、營運現金流量綜合分數排序選出前50檔股票

台灣高股息低波動
· 權重配置：min Volatility

150

80

50

50

計算公式

| | |
|------------|------------------|
| 股息率 | 每股股利 / 股價 |
| 營運穩定 | [近期盈餘波動性] / 權益資本 |
| 權益報酬率(ROE) | 最近一季淨利/權益 |
| 歷史報酬 | 過去一年之價格變動 |
| 股利發放率 | 每股股利 / 每股盈餘 |
| 獲利能力 | 最近四季稅後純益 / 股價 |
| 營運現金流量 | 最近四季營運現金流動總和/ 股價 |

· 單一個股最高不超過10% · 持有50隻股票
· 指數每年6、12月調整

同類型指數比較

台灣指數公司
特選高股息低波動指數
· 權重配置：最小化風險配重

臺灣證券交易所
臺灣低波動高股息指數
· 權重配置：現金股利率加權

公司品質

股利篩選

最小波動化配置

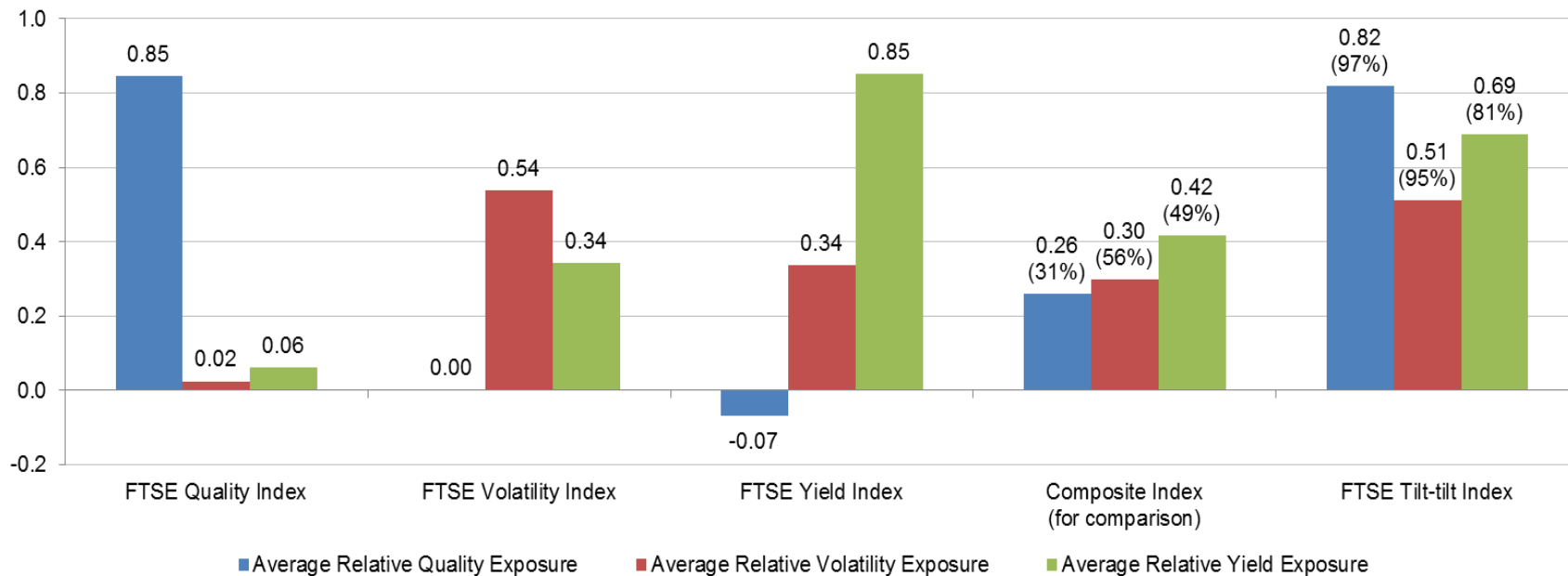
股利篩選

較低波動

體質佳 + 股利高 + 最小波動

股利高 + 較低波動

Mixed vs Integrated Multifactor



FTSE Quality Index: FTSE Quality Factor (Asia Pacific ex Japan)

FTSE Volatility Index: FTSE Volatility Factor (Asia Pacific ex Japan)

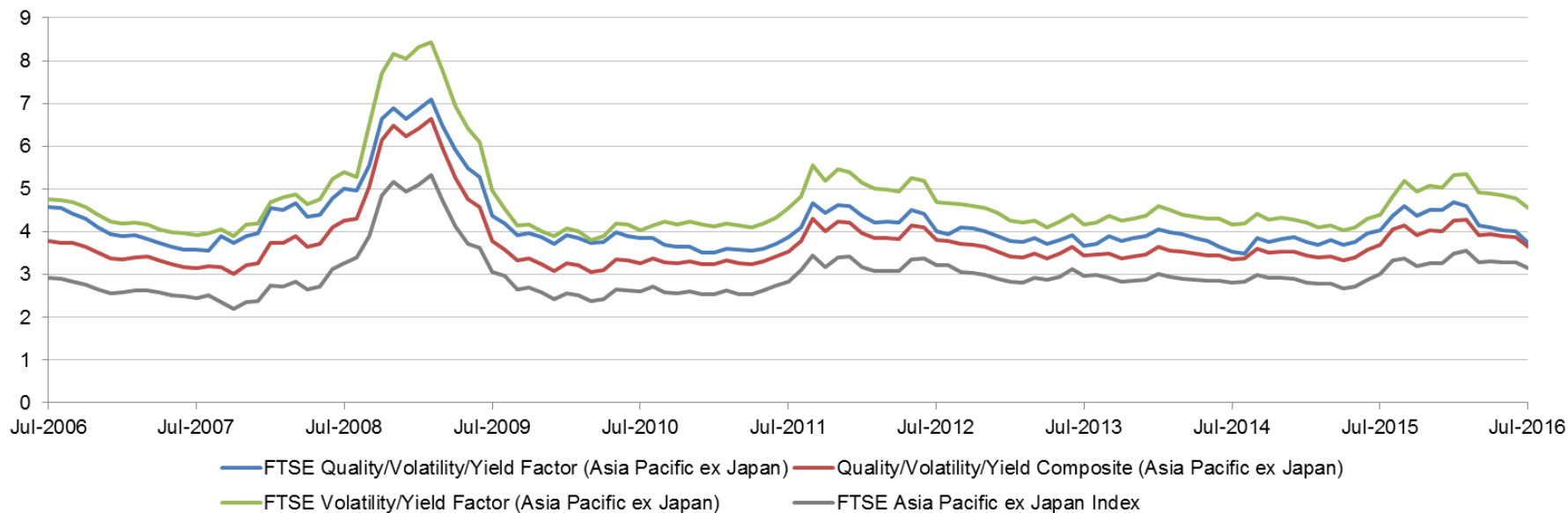
FTSE Yield Index: FTSE Yield Factor (Asia Pacific ex Japan)

Composite Index: Quality/Volatility/Yield Composite (Asia Pacific ex Japan)

FTSE Tilt-tilt Index: FTSE Quality/Volatility/Yield Factor (Asia Pacific ex Japan)

xx (xx%): Average relative factor exposure (as a percentage of the average relative factor exposure of the corresponding single factor index), e.g. 0.82 (0.82 / 0.85 = 97%)

Dividend Yield藉由多因子提升



Source: FTSE Russell. Monthly data from July 2006 to July 2016.

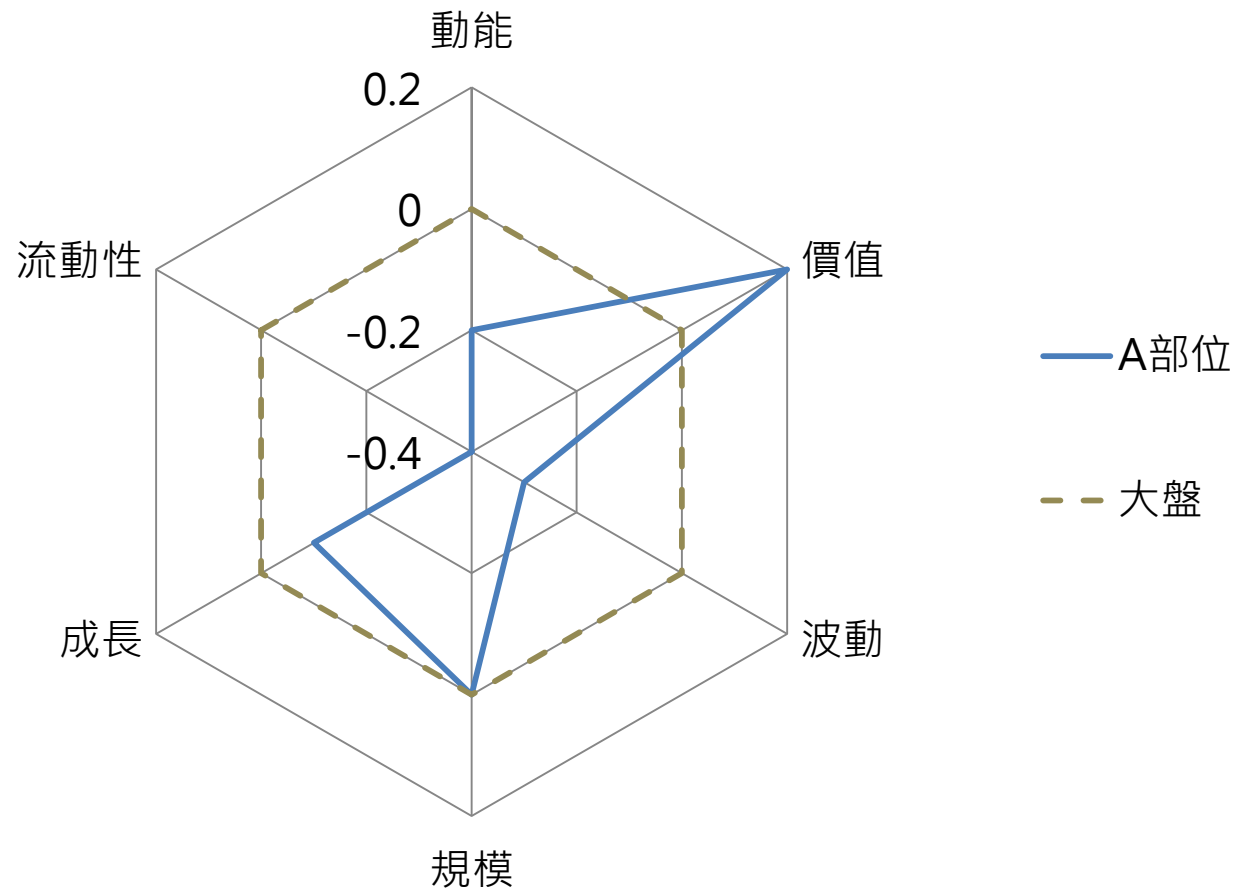
自造因子投資 Step By Step

Step1 : 以因子衡量投資目標

Step2 : 量化工具研究與分析

Step3 : 數據回測與投資檢討

利用因子分析想要達到的投資目標



投資情境研判尋找適合Smart Beta因子

| | | | | | |
|--|-----|---|---|-----|--|
| <p>Bull Market</p> <ul style="list-style-type: none"> ▪ High Beta ▪ Buy Back ▪ Fundamental ▪ Momentum | vs. | <p>Bear Market</p> <ul style="list-style-type: none"> ▪ Low Volatility ▪ High Quality | <p>Credit Spread Narrows</p> <ul style="list-style-type: none"> ▪ High Beta ▪ Fundamental | vs. | <p>Credit Spread Widens</p> <ul style="list-style-type: none"> ▪ Low Volatility ▪ High Dividend |
| <p>Increasing Fed Funds Target</p> <ul style="list-style-type: none"> ▪ Momentum ▪ High Beta | | <p>Decreasing Fed Funds Target</p> <ul style="list-style-type: none"> ▪ High Dividend ▪ Low Volatility | <p>Higher Market Volatility</p> <ul style="list-style-type: none"> ▪ Low Volatility ▪ High Quality ▪ Momentum | | <p>Lower Market Volatility</p> <ul style="list-style-type: none"> ▪ High Beta ▪ Buyback |
| <p>Yield Curve Steepens</p> <ul style="list-style-type: none"> ▪ High Quality ▪ Low Volatility | | <p>Yield Curve Flattens</p> <ul style="list-style-type: none"> ▪ High Beta ▪ Value | <p>Falling Oil Prices</p> <ul style="list-style-type: none"> ▪ High Quality ▪ Low Volatility | | <p>Rising Oil Prices</p> <ul style="list-style-type: none"> ▪ High Beta ▪ Momentum |

資料來源：元大投信(2017/09)

經濟成長 VS 通膨環境下對應的因子

| Long-run Sensitivities to Macroeconomic Risk | | | Key Points of ETP Selection |
|--|--|--|-----------------------------|
| Real GDP growth risk | Outperform when economic growth is strong | Outperform when economic growth is weak | Style Category (Allocation) |
| | <ul style="list-style-type: none"> ▶ Equal Weighted ▶ Momentum ▶ Risk Weighted ▶ Value Weighted ▶ Small Cap | <ul style="list-style-type: none"> ▶ High Dividend Yield ▶ Quality ▶ Minimum Volatility | |
| Inflation risk | Outperform when inflation is rising | Outperform when inflation is falling | Trading Volume |
| | <ul style="list-style-type: none"> ▶ Equal Weighted ▶ Momentum ▶ High Dividend Yield ▶ Quality ▶ Risk Weighted ▶ Small Cap | <ul style="list-style-type: none"> ▶ Minimum Volatility | Tracking Error |
| | | | Expense Ratio |

Source: Smart Beta Guide, BlackRock.

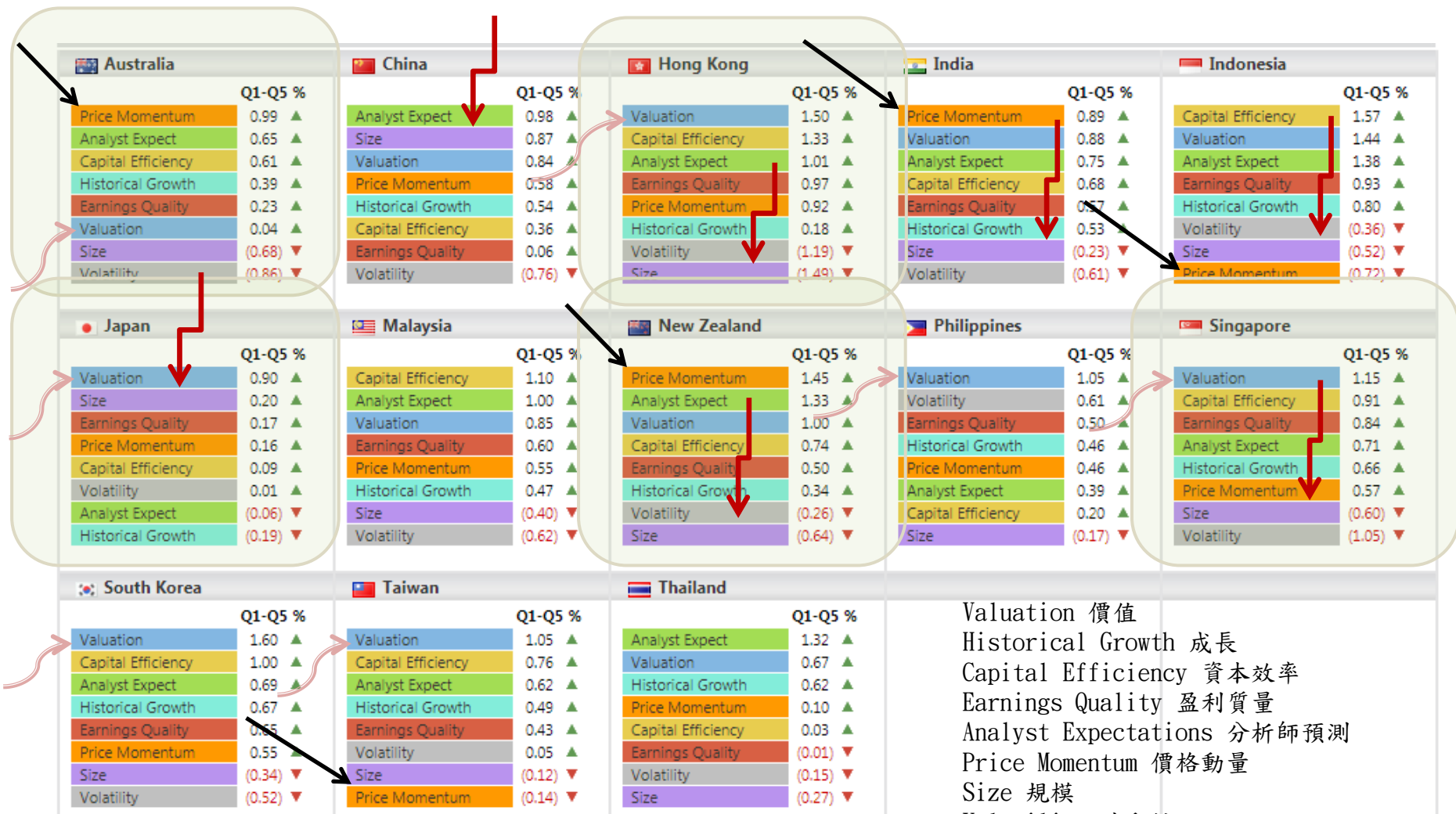
工具(1):多因子數據資料庫

| | | | | |
|----------------|--|--|---|---|
| 估值 VALUE | 估值 Valuation | | 成長 Historical Growth | |
| | Companies over and under valued using common multiples | Book to Price FCF / Price EBITDA / EV E / P Div / Price Sales / EV | Companies having strong YoY growth by Earnings, Cash Flow, and Assets | 1Y Chg FCF / Assets 1Y Chg OCF / Assets 1Y Chg Sales Turnover 1Y Chg EPS Sustainable Growth |
| 質量 QUALITY | 資本效率 Capital Efficiency | | 盈利質量 Earnings Quality | |
| | Companies maximizing shareholder value by optimizing capital structure and return on capital | Return on Equity CF ROIC LT Debt to Equity Capital Acquisition Ratio 1Y Chg Shares Out | Companies with strong management quality and healthy earnings | Cash Conversion Cycle Net Profit Margin WC Accruals Accrual Ratio - CF Net Income Stability |
| 動量 MOMENTUM | 分析師預測 Analyst Expectations | | 價格動量 Price Momentum | |
| | Companies liked or disliked by analysts that follow the stock | Long Term Growth Analyst Diffusion SUE Num FY1 EPS Rev | Companies chased by investors for strong long-term outperformance and short-term rebounds | 12M - 1M Price Mom 1M Price Reversal 1M Price High Low 9M Price Momentum 5D Price Reversal |
| 風險 RISK | 規模 Size | | 波動率 Volatility | |
| | Companies that are relatively smaller, generally considered as fundamentally risky | Log Market Cap Log TTM Sales | Companies having higher price fluctuations, generally considered as technically risky | 12M Realized Volatility 1MVol 60M CAPM Beta 90DCV |

Source: S&P Global Market Intelligence. For Illustrative Purpose Only.

從多因子資料庫縱觀亞太區市場特殊性

過去十年各風格指標/因子的每月平均報酬率差距



Valuation 價值
 Historical Growth 成長
 Capital Efficiency 資本效率
 Earnings Quality 盈利質量
 Analyst Expectations 分析師預測
 Price Momentum 價格動量
 Size 規模
 Volatility 波動性

Source: S&P Global Market Intelligence, data as of Aug 2017. For Illustrative Purpose Only.

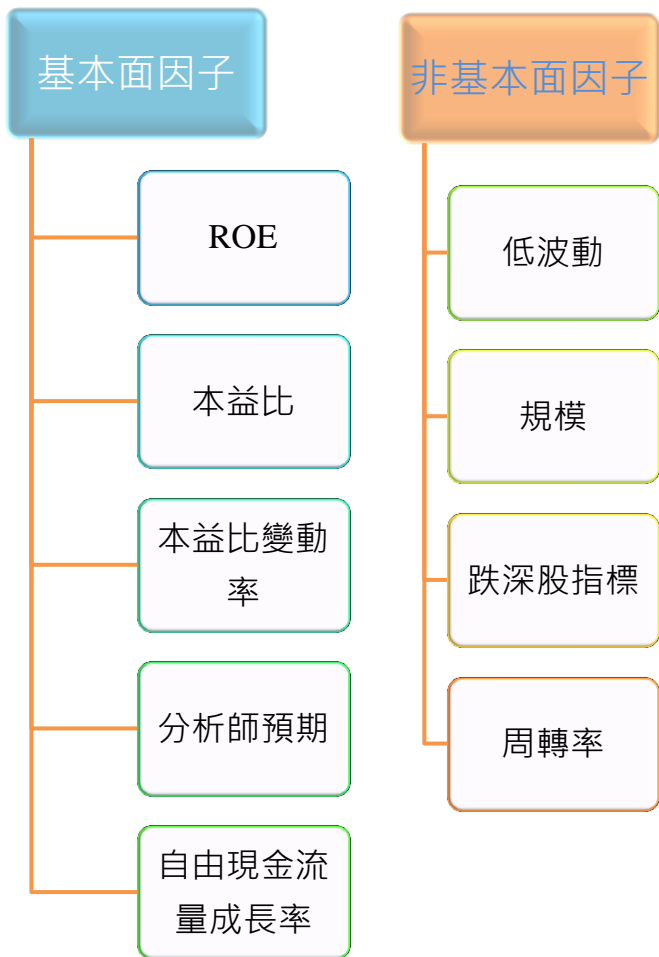
工具(2):因子超額報酬月份與各年度表現

Active Returns (Calculated on profit realization dates)

| Time | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | Total |
|------|--------|--------|--------|--------|-------|--------|--------|--------|--------|--------|--------|--------|-------|
| 2007 | | 0.29% | 1.52% | 0.30% | 0.34% | 0.05% | 0.65% | 1.47% | 0.31% | 0.79% | 0.33% | 0.76% | 6.81% |
| 2008 | 2.19% | -0.14% | 0.92% | 0.07% | 0.92% | 0.26% | -0.38% | 0.18% | 0.57% | 0.85% | -0.49% | -0.27% | 4.70% |
| 2009 | 0.41% | 0.62% | 0.88% | 0.69% | 0.60% | 1.14% | 0.54% | 0.95% | -0.72% | 0.86% | 0.94% | 0.39% | 7.31% |
| 2010 | 0.48% | 0.19% | -0.34% | 0.18% | 0.46% | 0.61% | 0.04% | 1.32% | 0.48% | 0.71% | 0.91% | 1.03% | 6.07% |
| 2011 | 0.37% | 0.40% | 1.08% | 0.47% | 0.66% | 1.47% | 1.94% | 1.00% | -0.39% | -0.26% | 0.29% | 0.52% | 7.56% |
| 2012 | -0.46% | 0.50% | 1.34% | 1.95% | 0.81% | 0.24% | 1.39% | 0.74% | 0.20% | 0.66% | 0.53% | 0.54% | 8.42% |
| 2013 | 0.21% | 0.65% | 0.96% | -0.12% | 0.28% | 0.74% | 0.49% | 0.36% | -0.15% | -0.20% | 0.91% | -0.18% | 3.94% |
| 2014 | 0.26% | -0.01% | 0.34% | 1.23% | 1.01% | -0.10% | 0.37% | -0.17% | 0.80% | 0.68% | 0.01% | 0.07% | 4.48% |
| 2015 | -0.03% | 0.22% | 0.78% | -0.02% | 0.26% | -0.33% | 0.01% | 0.57% | 0.04% | 0.56% | 0.97% | 0.29% | 3.35% |
| 2016 | -0.43% | -0.05% | -0.46% | 0.07% | 0.98% | 0.12% | -0.27% | 0.35% | | | | | 0.32% |
| 勝率 | 67% | 70% | 80% | 80% | 100% | 80% | 80% | 90% | 67% | 78% | 89% | 78% | |

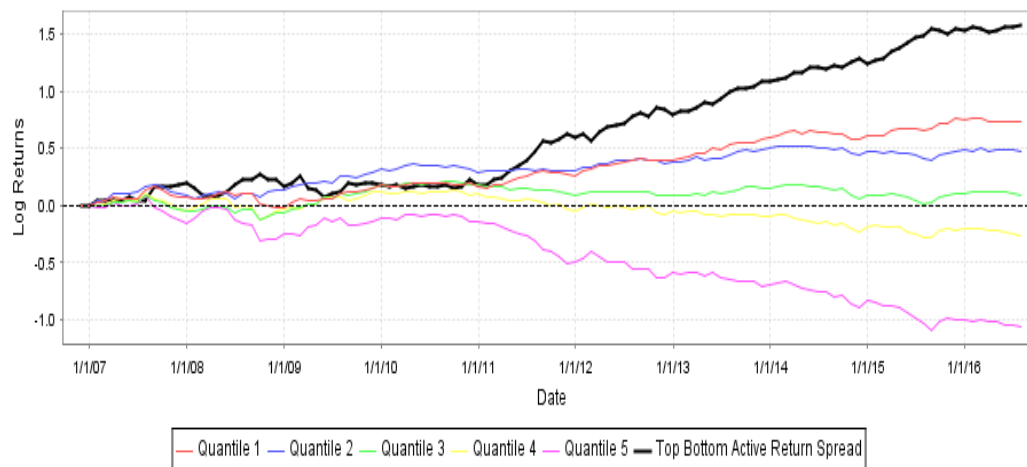
*2016年8月資料計算至8/24

工具(3):因子分群(Q1-Q5) 判斷因子表現

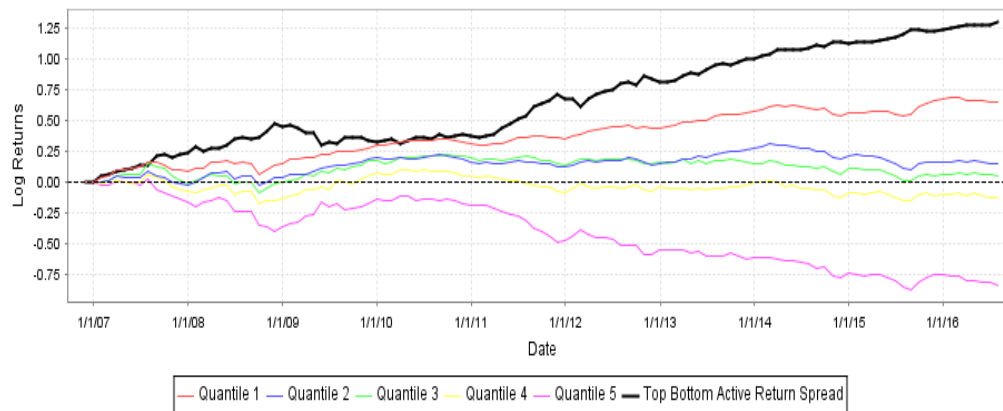


資料來源：S&P Capital IQ

ROE因子 Cumulative Active Returns

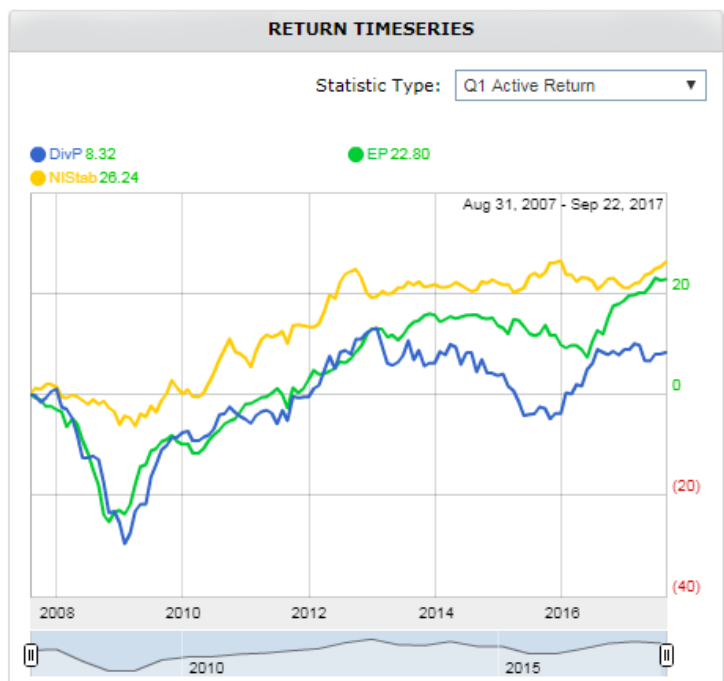


低波動因子 Cumulative Active Returns



工具(4): 因子IC統計數值與勝率

| Style | Factor | Q1 | Ann Spread% | Q1 Hit | Avg IC | IC T-Stat | % Pos IC |
|-------|-------------|------|-------------|--------|--------|-----------|----------|
| Val | Div / Price | 0.42 | 4.89 | 56.3 | 0.03 | 3.75 | 65 |
| Val | E / P | 0.5 | 11.7 | 60.5 | 0.04 | 5.82 | 73.33 |
| EQ | Net Incom | 0.51 | 4.51 | 56.3 | 0.03 | 3.6 | 63.33 |
| Vol | 12M Real | -0.2 | -7.11 | 40.34 | -0.06 | -4.21 | 31.67 |



Source: S&P Global Market Intelligence, data as of Aug 2017. For illustrative purpose only.

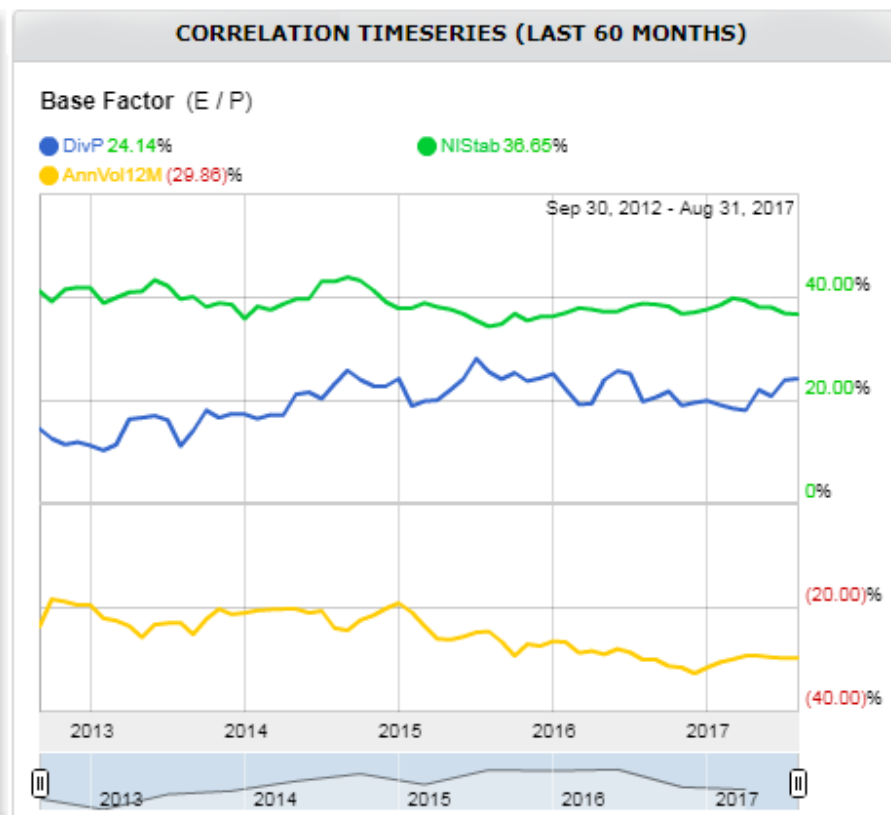
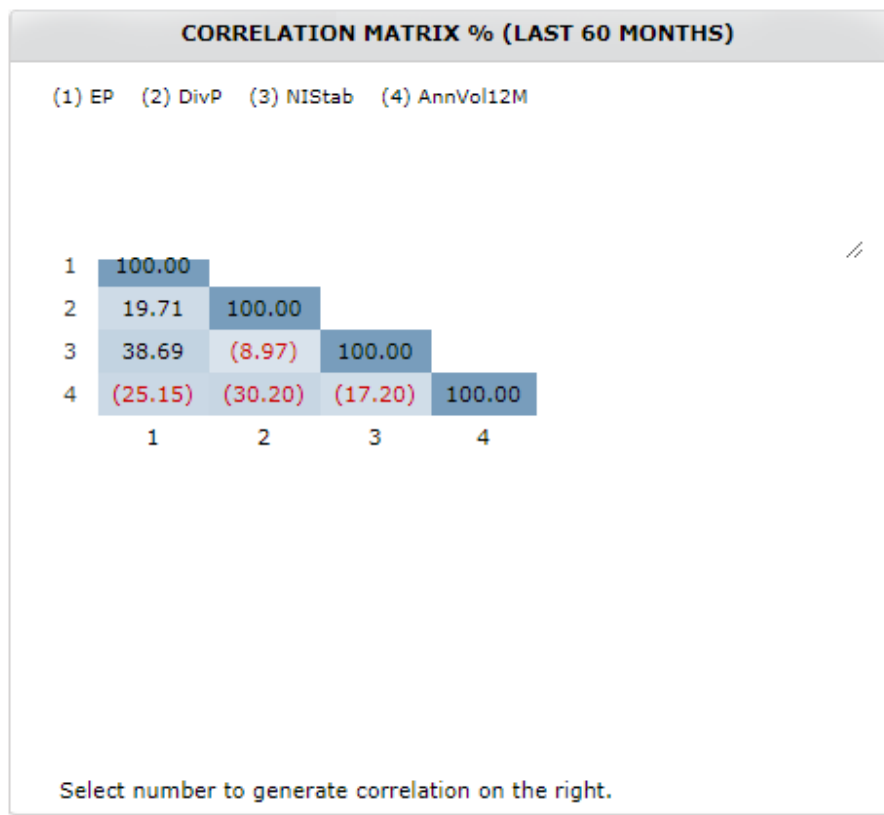
工具(5):因子合成 相關性是另一個考量重點

低波動在市場波動時表現好
 股利率因子在市場從谷底恢復時表現好

| 年分 | 股利率因子 | 品質因子 | 低波動因子 |
|------|-------|------|-------|
| 2006 | 15% | 4% | 3% |
| 2007 | 3% | 1% | -11% |
| 2008 | -80% | -47% | -28% |
| 2009 | 54% | 33% | 0% |
| 2010 | 13% | 12% | 2% |
| 2011 | -13% | -10% | -1% |
| 2012 | 27% | 19% | 17% |
| 2013 | 21% | 27% | 31% |
| 2014 | 5% | 8% | 17% |
| 2015 | 3% | 12% | 14% |
| 2016 | 16% | 6% | 5% |
| 2017 | 11% | 12% | 13% |

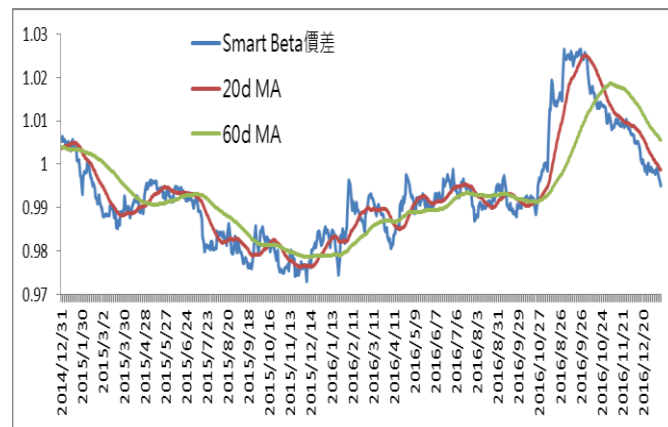
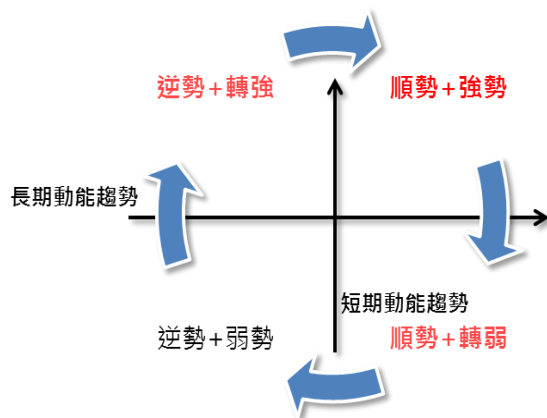
資料來源：S&P Capital IQ, Asia DM, 元大投信整理

各因子在亞太區DM相關系數的比較



Source: S&P Global Market Intelligence, data as of Aug 2017. For Illustrative Purpose Only.

工具(6) 量化擇時指標 因子強弱勢模組



強弱勢輪動訊號

長短動能情境指標

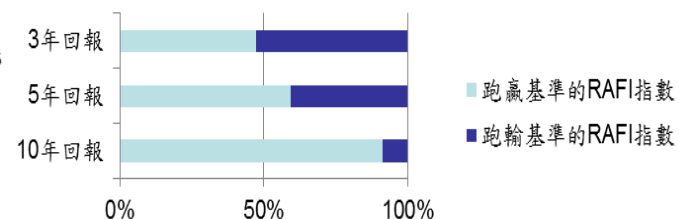
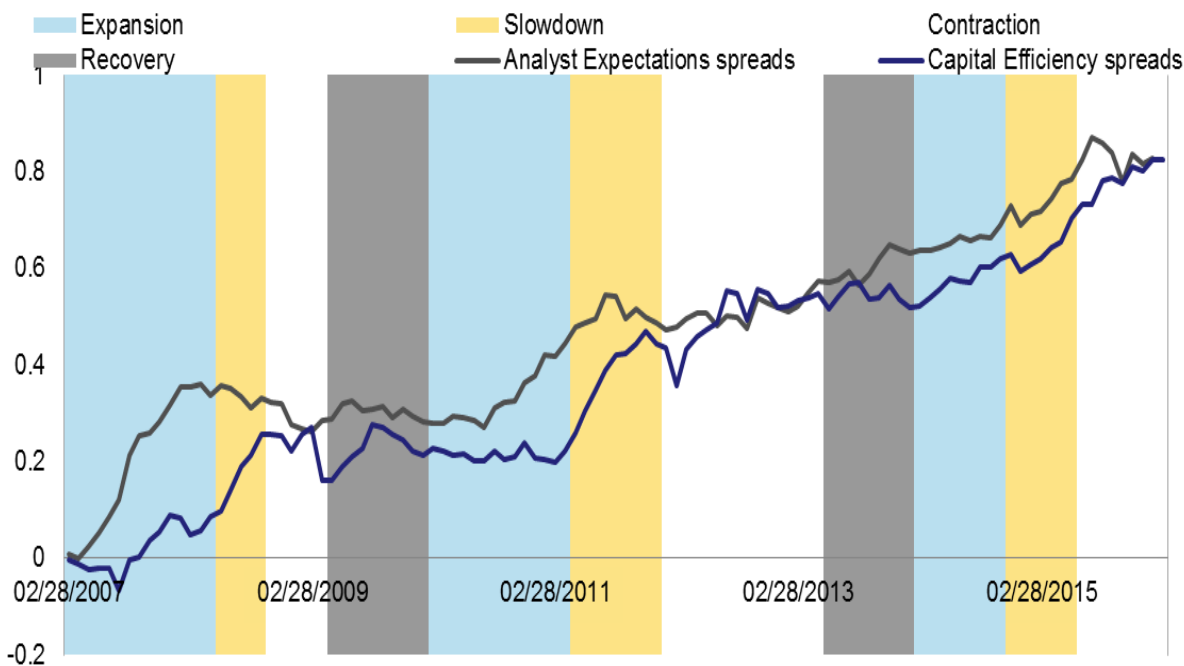
價差趨勢技術分析

| | LV | QUAL | Value | Growth | Div |
|-----------|----|------|-------|--------|-----|
| 強弱勢輪動訊號 | O | - | - | - | X |
| 長短期動能情境指標 | - | X | X | X | - |
| 價差趨勢策略 | O | X | X | X | X |
| 總和 | O | X | X | X | X |

資料來源：元大投信

Smart Beta長短線表現懸殊- 因子擇時

股市高點通常出現在景氣擴張及降溫期；股市低點通常出現在景氣衰退期
 分析師預測因子在景氣擴張及恢復期表現強勢；盈餘品質因子在景氣降溫及衰退期表現強勢



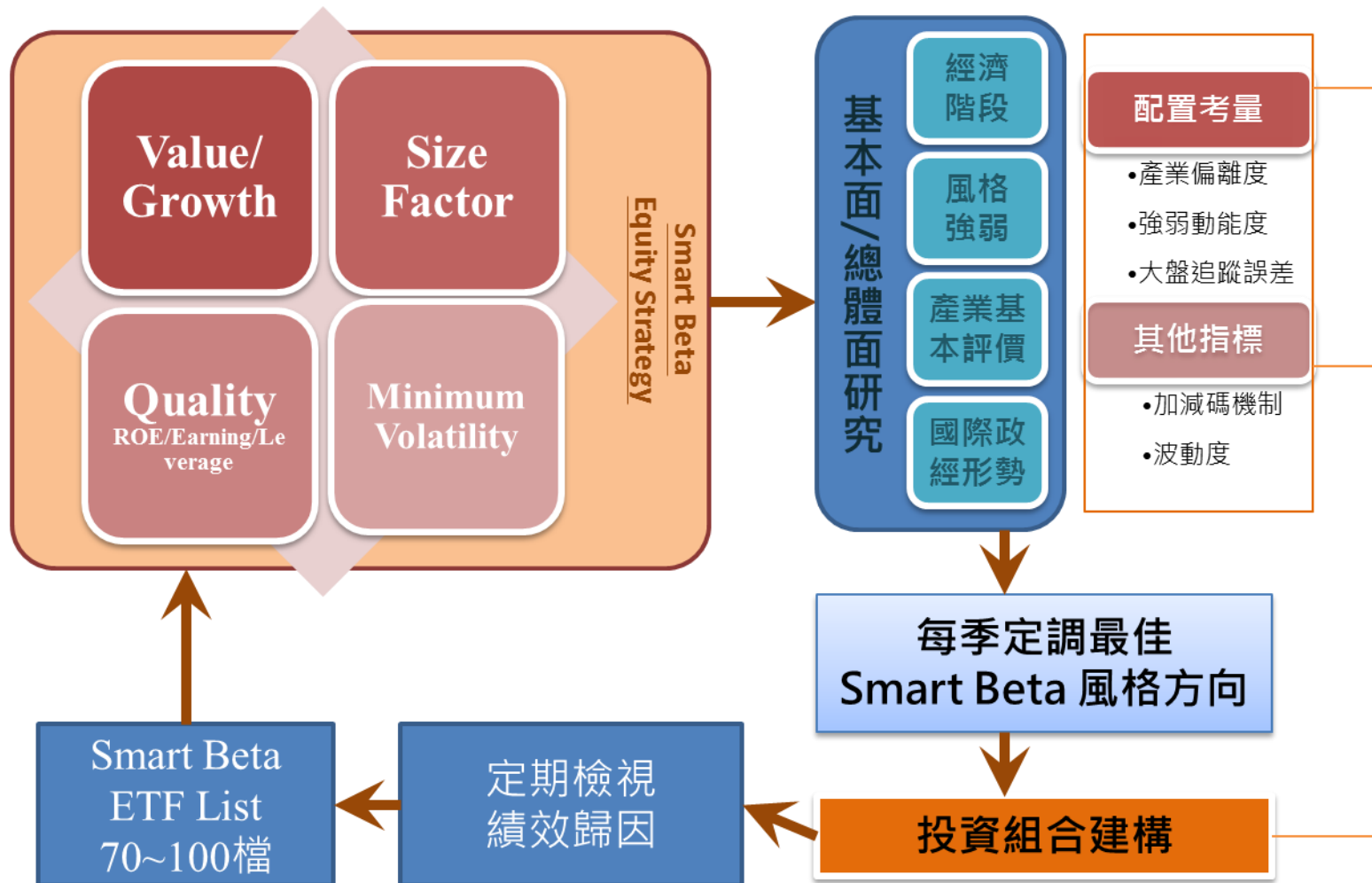
| IR | Analyst Expectations | Capital Efficiency |
|-------------|----------------------|--------------------|
| Expansion | 2.22 | 0.45 |
| Slowdown | 0.87 | 4.19 |
| Contraction | 0.23 | 0.98 |
| Recovery | 1.14 | -0.28 |

投組模擬回測結果與比較



| Portfolio Measures | EP | DP | 12MVol | NIStab | All Combined |
|-----------------------------|--------|--------|--------|--------|--------------|
| Annualized Sharpe Ratio | 0.384 | 0.426 | 0.454 | 0.386 | 0.534 |
| Realized Standard Deviation | 20.8% | 15.7% | 14.3% | 16.7% | 14.7% |
| Annual Rate of Return | 7.98% | 6.67% | 6.51% | 6.45% | 7.83% |
| Turnover | 269.7% | 208.8% | 210.4% | 194.5% | 236.1% |
| Max Drawdown | 65% | 64% | 44% | 54% | 51% |

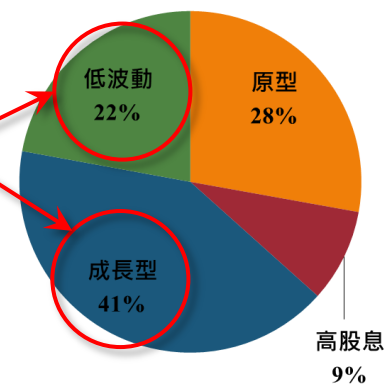
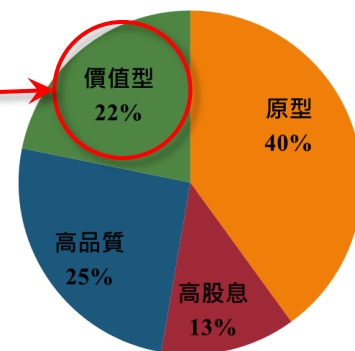
定期檢視與績效歸因



資料來源：元大投信(2017/09)

美股Smart Beta操作實例

- 啟用Smart Beta強弱勢模組，用以判讀美股替代標的，進行增益。
- 以價值型、高股息、高品質取代部分美股部位。
- 2017/2起，主要以成長型ETF為主要投資美股標的。



資料來源：XQ; 元大投信 資料日期：2016/11/01~2017/10/10

相對應於固定收益之因子

相同行為特性 = 相同異常報酬現象

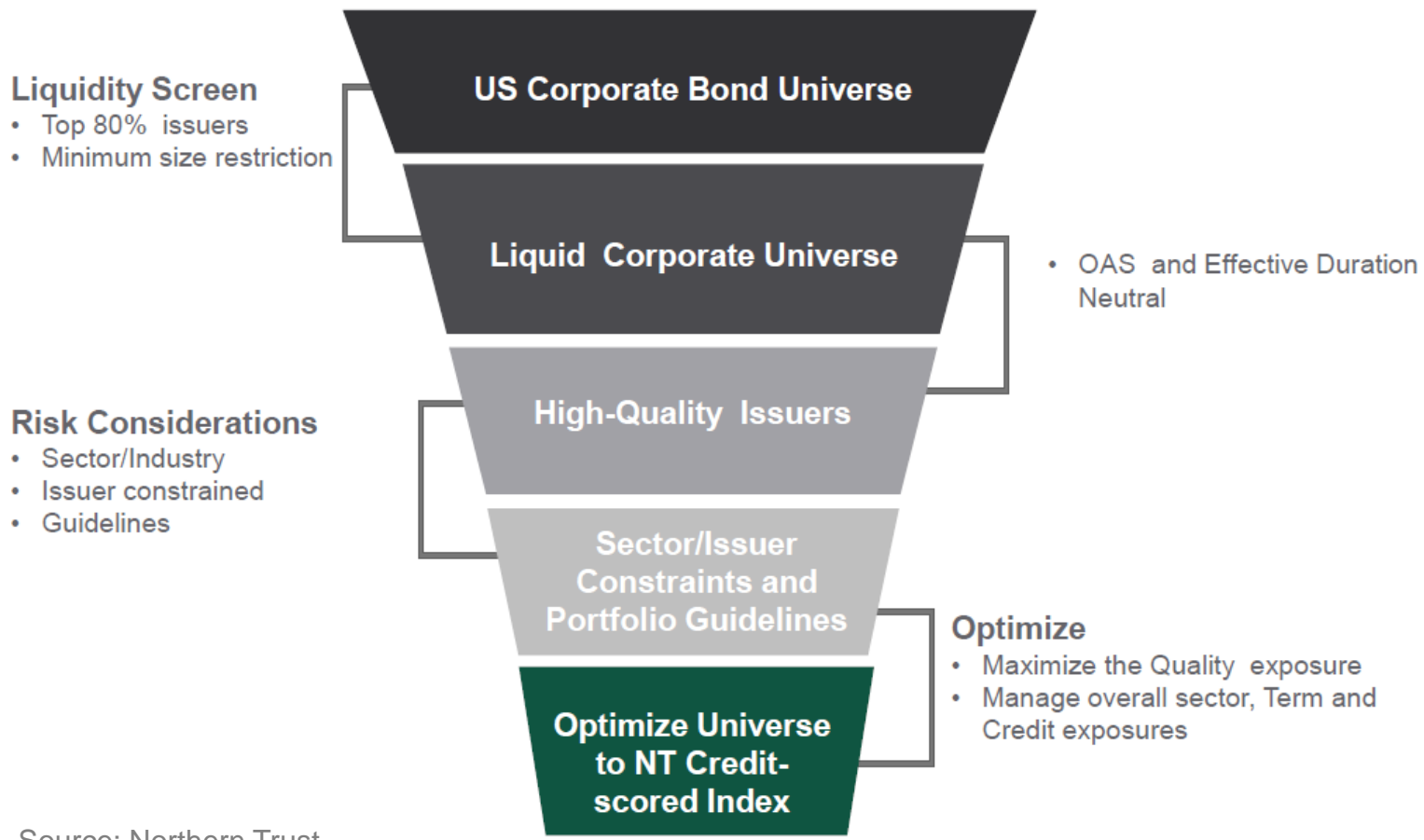
因為人類大部分行為特性相同，因此適用在股票的因子也可以應用於固定收益證券

| | Size | Value | Momentum | Volatility | Quality | Carry |
|--------------|---|--|---|---|---|-------|
| EQUITY | Market capitalization | P/E, P/B, P/CF, normalized earnings, prospective earnings | Price changes, sentiment, etc. | Individual stock volatility, skewness, hi-low metrics, et. | NT Proprietary Equity Quality Score | n/a |
| | ↓ | ↓ | ↓ | ↓ | ↓ | ↓ |
| FIXED INCOME | Total issuer debt outstanding, individual bond size | Residual of regression of log OAS on log distance to default | Price changes (3, 6, 12-1), trailing 6-month bond excess return | OAS volatility, yield volatility, DTS, book value of debt/(bv debt + mv equity) | NT Proprietary Fixed Income Quality Score | OAS |

Source: Northern Trust

高品質因子運用

Northern Trust 美國信用評分投資等級債指數設計原理即加入高品質評估機制，以防暴露在不必要的風險



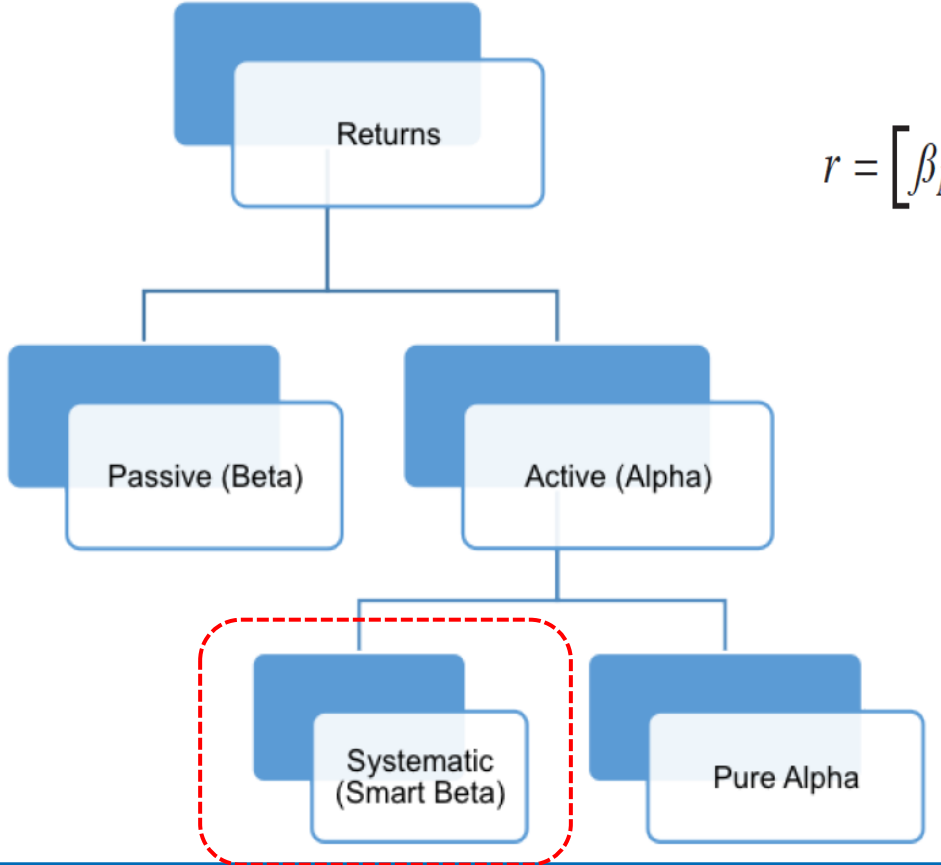
Source: Northern Trust

Smart Beta ETF符合你的理財需求?

Case Study: High Dividend Yield ETFs

Smart Beta在你的投組中扮演的腳色

Grinold and Kahn: Sources of Equity Returns



Ross's Arbitrage Pricing Theory

$$r = \left[\beta_{Market} \quad \beta_{Style} \quad \beta_{Industry} \quad \beta_{Country} \right] \begin{bmatrix} f_{Market} \\ f_{Style} \\ f_{Industry} \\ f_{Country} \end{bmatrix} + \epsilon,$$

$$r = \beta_R f_R + \epsilon$$

10 LARGEST SMART-BETA ETFs

IWF

iShares Russell 1000
Growth ETF

AUM
\$30.47B

INCEPTION DATE
5/22/00

IWD

iShares Russell 1000
Value ETF

AUM
\$29.21B

INCEPTION DATE
5/22/00

VTV

Vanguard Value
Index Fund

AUM
\$22.40B

INCEPTION DATE
1/26/04

VIG

Vanguard Dividend
Appreciation Index Fund

AUM
\$22.33B

INCEPTION DATE
4/21/06

VUG

Vanguard Growth
Index Fund

AUM
\$21.38B

INCEPTION DATE
1/26/04

DVY

iShares Select
Dividend ETF

AUM
\$16.23B

INCEPTION DATE
11/3/03

VYM

Vanguard High Dividend
Yield Index Fund

AUM
\$15.20B

INCEPTION DATE
11/10/06

USMV

iShares Edge MSCI
Min Vol USA ETF

AUM
\$15.14B

INCEPTION DATE
10/18/11

SDY

SPDR S&P
Dividend ETF

AUM
\$14.52B

INCEPTION DATE
11/8/05

IVW

iShares S&P 500
Growth ETF

AUM
\$13.77B

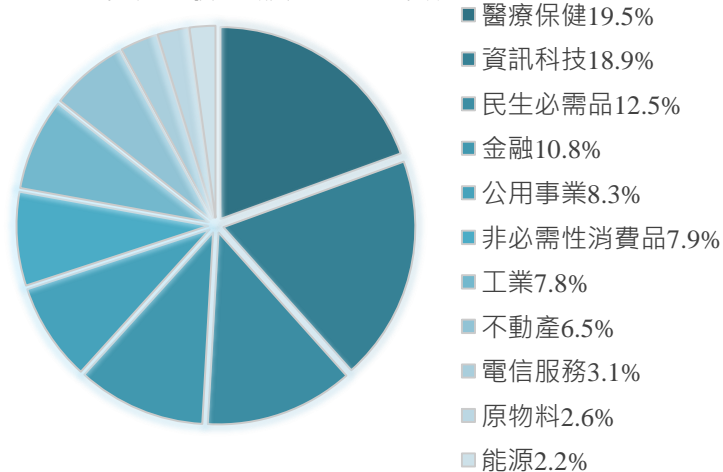
INCEPTION DATE
5/22/00



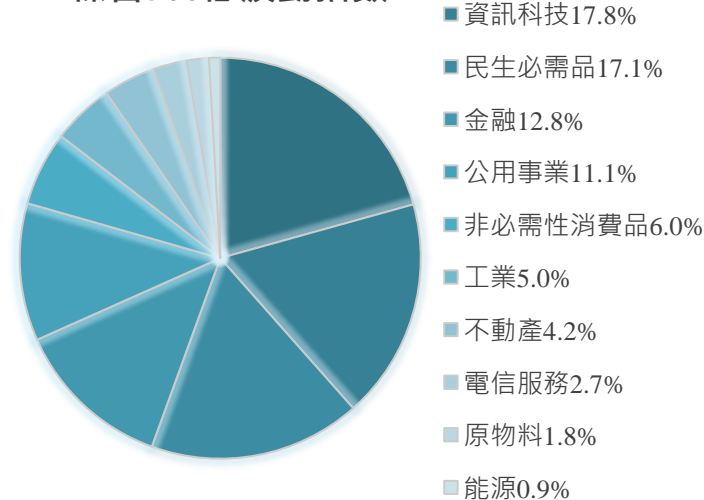
因子名稱類似的Smart Beta ETF特性表現一樣？

| | MSCI美國 最小波動性指數 | 標普500 低波動指數 | 標普500 市值加權指數 (比較基準) |
|--------------------|-----------------------|--------------------|---------------------------|
| 近五年 年化波動(%) | 8.6 | 9.2 | 10.3 |
| 2007年報酬(%) | 4.3 | 0.6 | 5.5 |
| 2008年報酬(%) | -25.7 | -21.4 | -37.0 |
| 2009年報酬(%) | 18.4 | 19.2 | 26.5 |
| 2010年報酬(%) | 14.7 | 13.4 | 15.1 |
| 2011年報酬(%) | 12.9 | 14.8 | 2.1 |
| 2012年報酬(%) | 11.2 | 10.3 | 16.0 |
| 2013年報酬(%) | 25.3 | 23.6 | 32.4 |
| 2014年報酬(%) | 16.5 | 17.5 | 13.7 |
| 2015年報酬(%) | 5.6 | 4.3 | 1.4 |
| 2016年報酬(%) | 10.7 | 10.4 | 12.0 |
| 指數 編製特色 成分股數 | 極小化 投資組合風險 約180 | 低波動 股票組合 100 | 市值加權 500 |

MSCI美國最小波動性指數



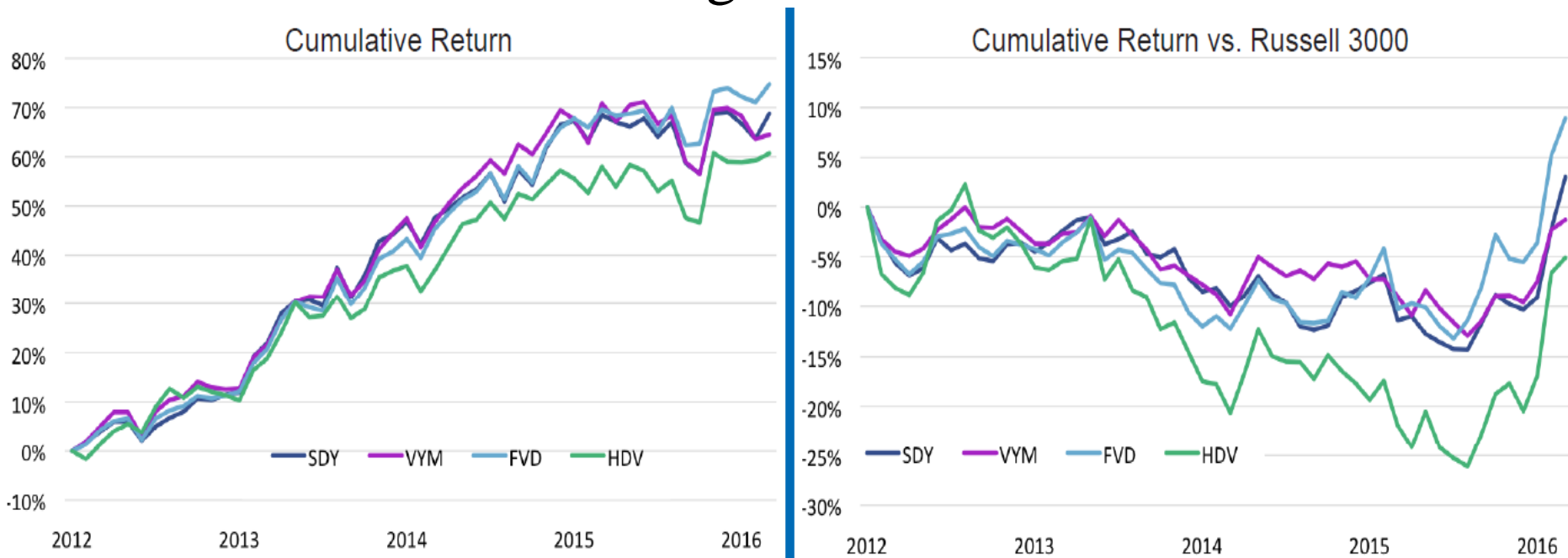
標普500低波動指數



資料來源：Bloomberg, MSCI, S&P, 元大投信整理

Case Study : High Dividend Yield ETFs

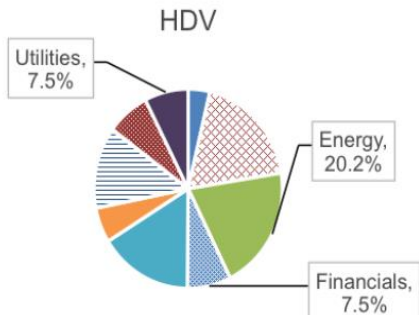
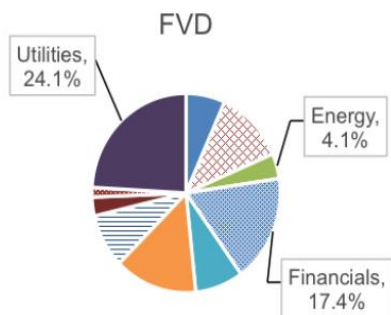
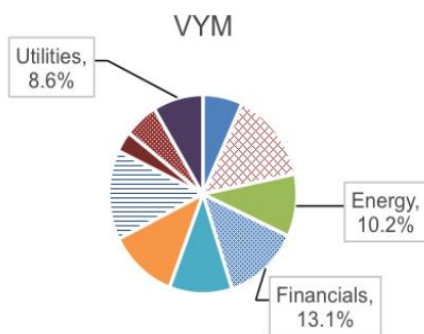
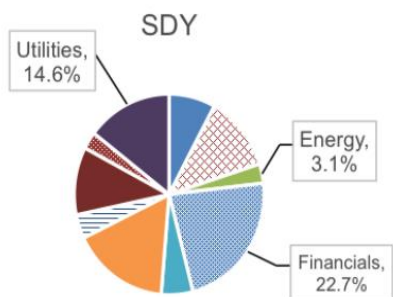
- **SDY:** SPDR S&P Dividend ETF
- **VYM:** Vanguard High Dividend Yield ETF
- **FVD:** First Trust Value Line Dividend Index Fund
- **HDV:** iShares Core High Dividend



Source: Axioma Research

Characteristics of Dividend Yield ETFs

| | Market Cap* | Market Cap** | P/E ratio*** | P/B ratio*** | Debt/ Equity** | Dividend Yield* |
|-----|-------------------|-------------------|--------------|--------------|----------------|-----------------|
| SDY | \$45,928,173,732 | \$15,060,490,425 | 20.88 | 2.80 | 0.88 | 2.75% |
| VYM | \$140,820,087,828 | \$114,700,672,874 | 18.06 | 2.48 | 0.90 | 3.26% |
| FVD | \$48,726,153,704 | \$22,547,056,289 | 20.12 | 2.53 | 0.91 | 3.01% |
| HDV | \$168,019,539,807 | \$163,596,206,052 | 18.63 | 2.83 | 0.60 | 3.41% |



| SPDR Dividend ETF (SDY) | Weight | Dividend Yield |
|-------------------------|--------|----------------|
| Top 5 Stocks | | |
| AT&T INC | 2.04% | 4.80% |
| CATERPILLAR | 1.87% | 3.84% |
| QUESTAR CORP | 1.80% | 3.39% |
| CHEVRON CORP | 1.78% | 4.49% |
| REALTY INCOM | 1.75% | 3.65% |
| Total # names | | |
| | 107 | |
| Percent in | | |
| Top 5 | 9.2% | |
| Top 10 | 17.3% | |
| Top 25 | 37.1% | |

| Vanguard High Dividend (VYM) | Weight | Dividend Yield |
|------------------------------|--------|----------------|
| Top 5 Stocks | | |
| MICROSOFT CO | 5.00% | 2.34% |
| EXXON MOBIL | 4.11% | 3.45% |
| GENERAL ELEC | 3.51% | 2.89% |
| JOHNSON & JO | 3.51% | 2.73% |
| WELLS FARGO | 2.91% | 3.05% |
| Total # names | | |
| | 426 | |
| Percent in | | |
| Top 5 | 19.0% | |
| Top 10 | 32.0% | |
| Top 25 | 55.3% | |

| First Trust Value Line Dividend (FVD) | Weight | Dividend Yield |
|---------------------------------------|--------|----------------|
| Top 5 Stocks | | |
| CLECO CORP N | 0.59% | 2.90% |
| TRANSCANADA | 0.54% | 4.07% |
| PUBLIC STORA | 0.54% | 2.36% |
| HANOVER INS | 0.53% | 1.87% |
| AVALONBAY CM | 0.53% | 2.63% |
| Total # names | | |
| | 195 | |
| Percent in | | |
| Top 5 | 2.7% | |
| Top 10 | 5.4% | |
| Top 25 | 13.3% | |

| iShares High Dividend Index (HDV) | Weight | Dividend Yield |
|-----------------------------------|--------|----------------|
| Top 5 Stocks | | |
| EXXON MOBIL | 9.46% | 3.45% |
| VERIZON COMM | 7.32% | 4.10% |
| JOHNSON & JO | 6.45% | 2.73% |
| CHEVRON CORP | 6.38% | 4.49% |
| PFIZER INC | 5.57% | 3.78% |
| Total # names | | |
| | 76 | |
| Percent in | | |
| Top 5 | 35.2% | |
| Top 10 | 58.9% | |
| Top 25 | 88.3% | |

Decomposition of Active Risk

| | Active % of Variance (Covariance Distributed) | | | |
|----------------------|---|---------------|---------------|---------------|
| | SDY | VYM | FVD | HDV |
| Total Active Risk | 100.00% | 100.00% | 100.00% | 100.00% |
| Specific Active Risk | 13.20% | 16.15% | 4.85% | 22.90% |
| Factor Active Risk | 86.80% | 83.85% | 95.15% | 77.10% |
| Style | 44.05% | 51.14% | 54.05% | 40.56% |
| Dividend Yield | 2.30% | 5.33% | 1.48% | 2.44% |
| Earnings Yield | -0.20% | 1.23% | 0.31% | 0.34% |
| Exch Rate Sens | 3.02% | 1.02% | 0.87% | 0.72% |
| Growth | 1.56% | 4.96% | 1.30% | 2.33% |
| Leverage | 0.03% | -0.86% | 0.11% | -0.68% |
| Liquidity | 0.57% | 3.99% | 6.02% | 2.28% |
| Mkt Sens | 27.97% | 22.73% | 42.89% | 20.87% |
| MT Momentum | -0.57% | 0.27% | 2.14% | 0.55% |
| MidCap | -1.79% | 0.44% | -1.15% | 0.12% |
| Profitability | -0.05% | -0.58% | -1.13% | 0.33% |
| Size | 10.08% | 5.12% | 5.23% | 5.96% |
| Value | 0.17% | 0.03% | -0.22% | -0.01% |
| Volatility | 0.95% | 7.44% | -3.80% | 5.30% |
| Industry Total | 42.62% | 32.64% | 41.01% | 36.25% |

Decomposition of Active Risk : Top 5 Industries

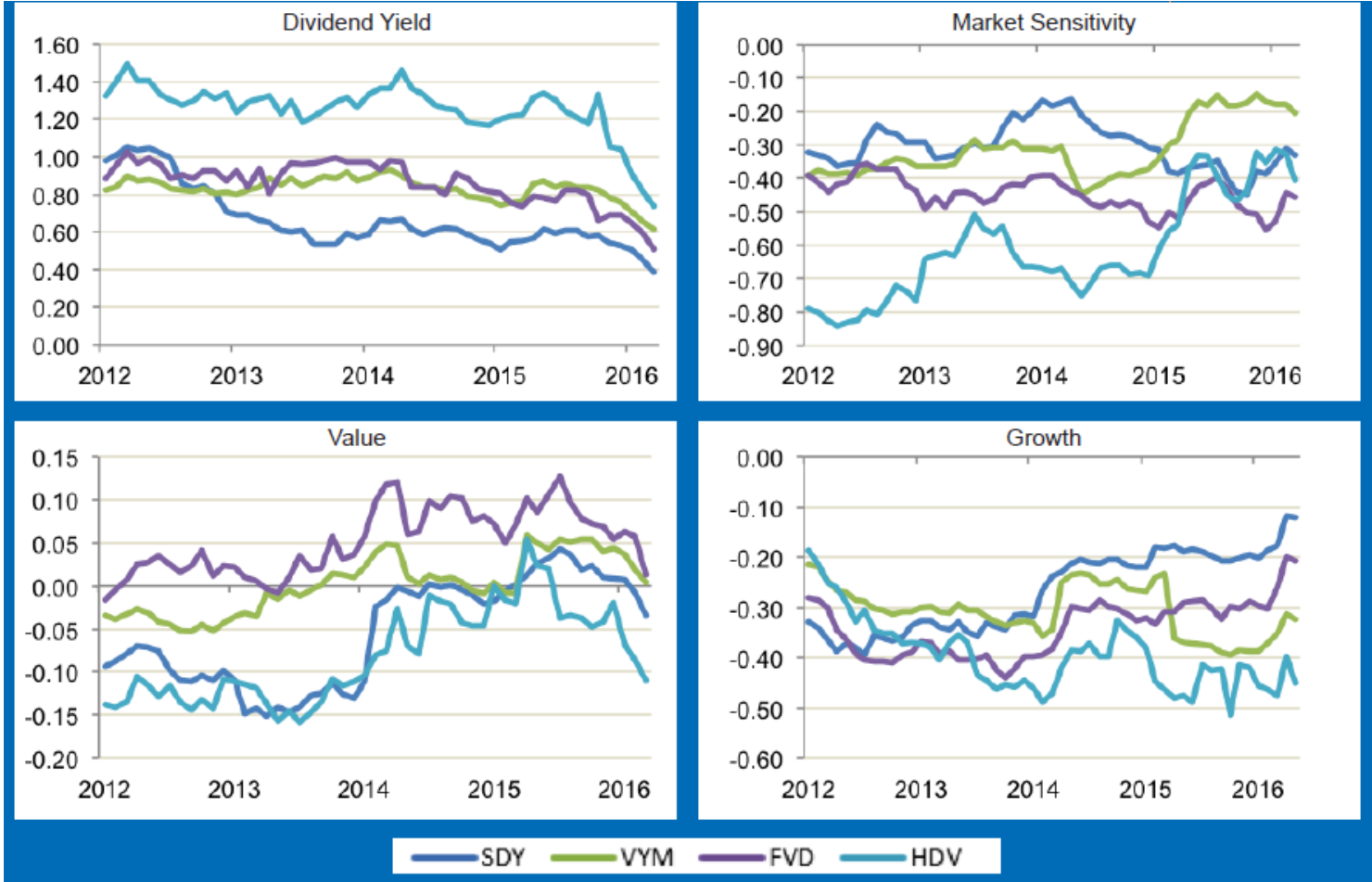
| SDY | |
|----------------|----------------------|
| Industry | Active % of Variance |
| Gas Utilities | 10.25% |
| Multi Utils | 6.72% |
| Software | 3.11% |
| Internet Sw&Sv | 3.05% |
| Machinery | 2.58% |

| VYM | |
|--------------------|----------------------|
| Industry | Active % of Variance |
| Electric Utilities | 5.57% |
| Oil, Gas | 4.30% |
| Internet Sw&Sv | 3.73% |
| Multi Utilities | 3.72% |
| Tobacco | 3.53% |

| FVD | |
|--------------------|----------------------|
| Industry | Active % of Variance |
| Electric Utilities | 14.69% |
| Multi Utils | 9.82% |
| Gas Utilities | 6.16% |
| Water Utilities | 1.82% |
| Internet Sw&Sv | 1.67% |

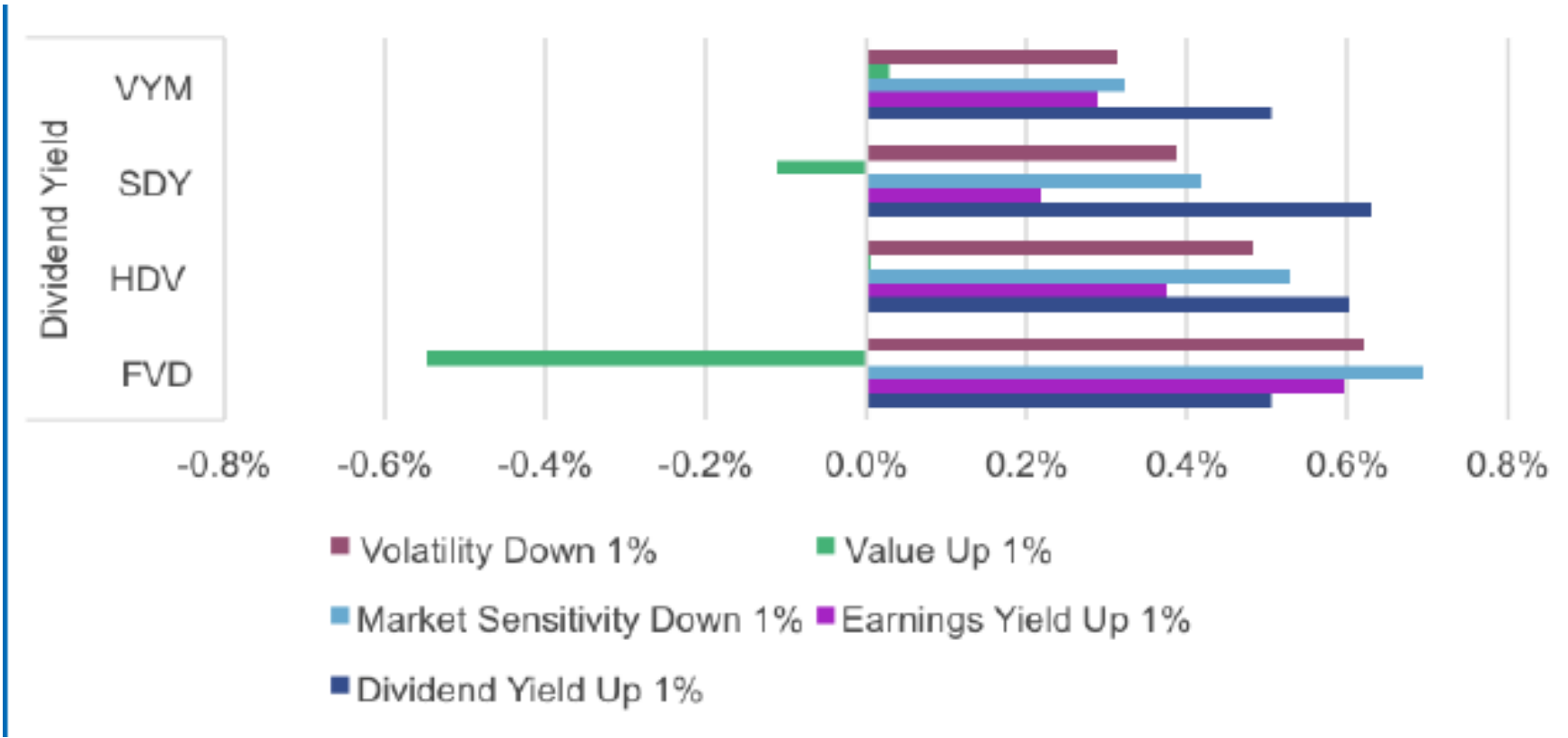
| HDV | |
|-----------------|----------------------|
| Industry | Active % of Variance |
| Oil, Gas | 13.84% |
| Tobacco | 5.49% |
| Multi Utils | 2.47% |
| Pharma | 2.23% |
| Household Prods | 2.14% |

High Dividend ETF Value Exposures Through Time



Stress Tests

- Different stress scenarios
 - Volatility (factor down 1%) / Value (up 1%) / Market Sensitivity (down 1%) / Earnings Yield (up 1%) / Dividend Yield (up 1%)



Factor Attribution

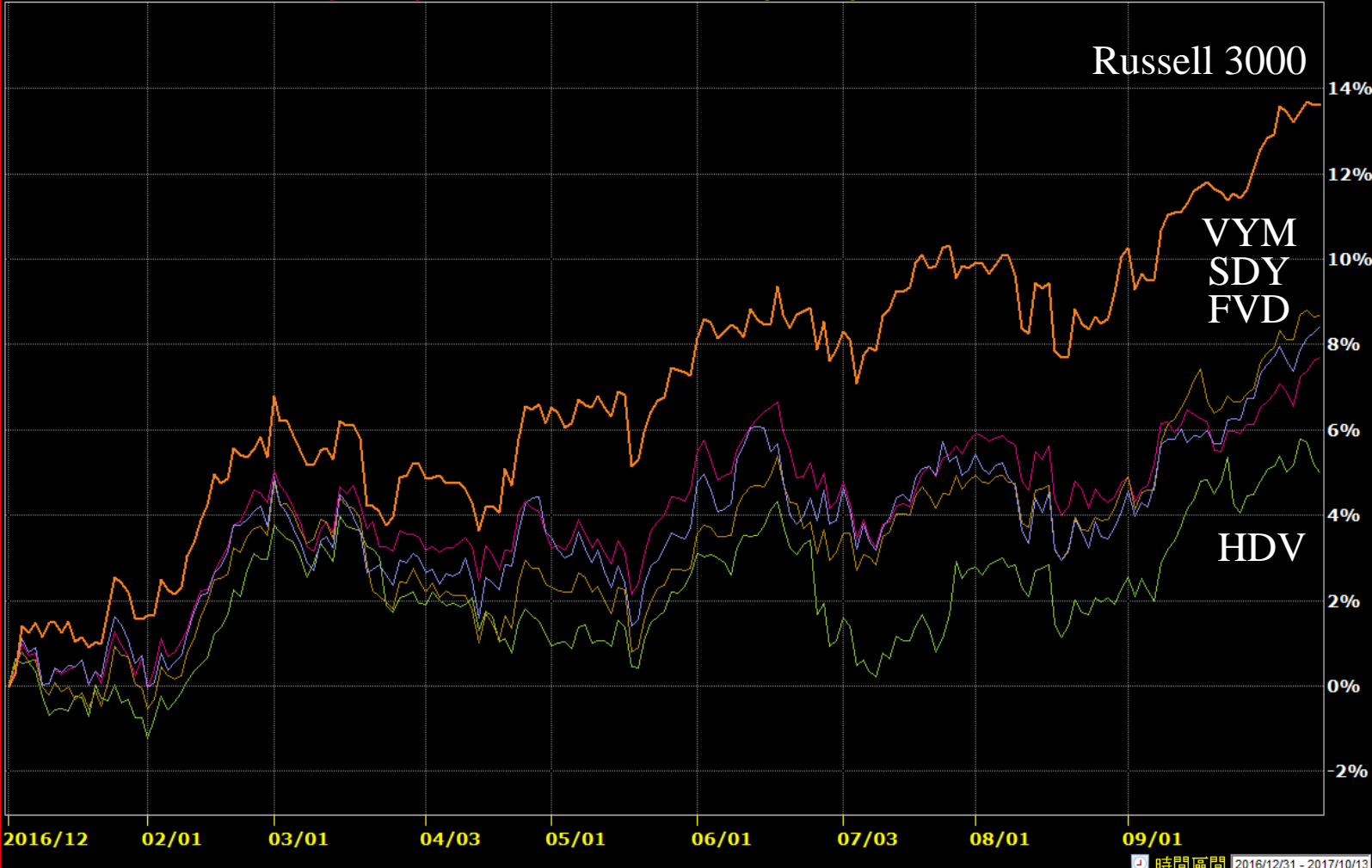
| Source of Return | Contribution | | | |
|------------------|--------------|--------|--------|--------|
| | SDY | VYM | FVD | HDV |
| Portfolio | 15.18% | 14.14% | 15.85% | 13.41% |
| Benchmark | 14.45% | 14.45% | 14.45% | 14.45% |
| Active | 0.73% | -0.31% | 1.40% | -1.03% |
| Specific Return | -0.97% | -0.41% | -0.72% | -2.54% |
| Factor Contr. | 1.71% | 0.10% | 2.12% | 1.51% |
| Style | 1.65% | 0.01% | 1.10% | -0.19% |
| Dividend Yield | -0.83% | -0.91% | -1.00% | -1.49% |
| Earnings Yield | -0.04% | 0.40% | 0.24% | 0.25% |
| Exch Rate Sens | 0.07% | -0.07% | -0.02% | -0.08% |
| Growth | -0.01% | 0.06% | -0.01% | 0.00% |
| Leverage | 0.02% | -0.03% | 0.01% | -0.10% |
| Liquidity | -0.04% | -0.12% | -0.19% | -0.10% |
| Mkt Sens | 1.13% | 0.76% | 1.58% | 1.48% |
| MT Momentum | -0.38% | -0.35% | -0.51% | -0.56% |
| MidCap | -0.28% | 0.10% | -0.18% | 0.14% |
| Profitability | -0.06% | 0.04% | -0.33% | 0.24% |
| Size | 0.94% | -0.92% | 0.90% | -1.20% |
| Value | -0.22% | -0.07% | -0.03% | -0.22% |
| Volatility | 1.35% | 1.12% | 0.64% | 1.44% |
| Industry | 0.09% | 0.10% | 1.05% | 1.36% |

Factor Attribution : Top 4 Industries

| SDY | | VYM | | FVD | | HDV | |
|---------------------|--------|-----------------|--------|-----------------|--------|--------------------|--------|
| Top 4 Industries | | | | | | | |
| Oil, Gas | 0.59% | Pharmaceuticals | 0.54% | Oil, Gas | 0.30% | Pharmaceuticals | 1.23% |
| Energy Eq & Svc | 0.31% | Energy Eq & Svc | 0.25% | Energy Eq & Svc | 0.29% | Tobacco | 0.58% |
| Comp & Periph | 0.19% | Tobacco | 0.14% | Multi Utilities | 0.20% | Energy Eq & Svc | 0.30% |
| Hshld Durables | 0.16% | Beverages | 0.12% | Comp & Periph | 0.20% | Comp & Periph | 0.21% |
| Multi Utilities | 0.11% | Comm Equip | 0.07% | Metals & Mining | 0.11% | Beverages | 0.16% |
| Bottom 4 Industries | | | | | | | |
| Pharmaceuticals | -0.15% | Media | -0.08% | Airlines | -0.08% | Media | -0.13% |
| Machinery | -0.16% | Hlth Care Svcs | -0.12% | Software | -0.08% | Electric Utilities | -0.25% |
| Chemicals | -0.21% | Biotechnology | -0.37% | Div Fin Svc | -0.10% | Biotechnology | -0.34% |
| Biotechnology | -0.37% | Oil, Gas | -0.61% | Biotechnology | -0.32% | Oil, Gas | -0.58% |
| Software | -0.11 | Airlines | -0.07% | Life Sci Svcs | -0.06& | Hlth Care Svcs | -0.13% |

2017年這4檔高息ETF表現?

Vanguard Russell 3000 ETF(VTHR.US) 2017/10/13 成交 117.2900 漲跌 ▼0.0200 漲幅% -0.02% 單量 200 總量 4900
 Vanguard Russell 3000 ETF 117.2900 (+13.60%) SPDR S&P Dividend ETF 92.7900 (+8.45%) Vanguard High Dividend Yield ETF 82.3600 (+8.70%)
 First Trust Value Line Dividend 30.1900 (+7.71%) iShares Core High Dividend ETF 86.3700 (+5.01%)





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