SOLACTIVE EUROPEAN DEEP VALUE SELECT 50 INDEX

CORPORATE & INSTITUTIONAL BANKING

GLOBAL MARKETS

JULY 2017

BNP PARIBAS

The bank for a changing world
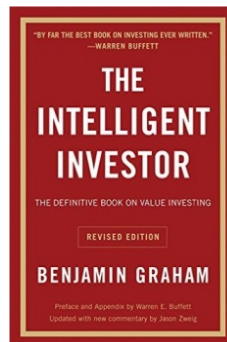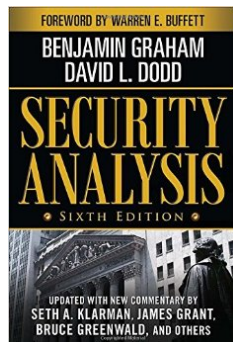
1 VALUE INVESTING

THE CONCEPT OF VALUE INVESTING (1/2)

HOW IT STARTED

BENJAMIN GRAHAM (1894 – 1976): THE FATHER OF VALUE INVESTING

Benjamin Graham was an economist and a professional investor. He began teaching the Value investment approach at Columbia Business School in 1928, which he refined through the various editions of his famous books.

LESSONS BY BENJAMIN GRAHAM

1 Value Investing is a comprehensive investment philosophy that emphasises the need to **perform in-depth fundamental analysis**, pursue long-term investment results, limit risk, and resist crowd psychology

2 **Value Investors** regard securities as a fractional ownership in the actual business, with an underlying value that does not depend on its share price

3 These investors seek stocks they believe the market has undervalued. When a company is available on a discount to its **intrinsic value** (the one that is justified by the facts: assets, earnings, dividends, etc.), it is suitable for investment

4 Since intrinsic value is an elusive concept, one must invest with a **margin of safety**: a big enough discount to allow some room for error, imprecision, bad luck or the vicissitudes of the economy and the stock market

"The investor's primary interest lies in acquiring and holding suitable securities at suitable prices."
(Benjamin Graham)

Sources: "Security Analysis" Benjamin Graham and David L.Dood, and Preface to the Sixth Edition by Seth A. Klaman.

THE CONCEPT OF VALUE INVESTING (2/2)

DOES IT WORK?

FOR BENJAMIN GRAHAM

- **A long track record and experience**
  - Benjamin Graham started his investment career in 1914 and made it through the 1929-1932 Great Crash
  - From 1936 until he retired in 1956, his Graham-Newman Corp.[1] gained **20% annually**, versus 12.2% for the stock market as a whole: **one of the best long-term track records on Wall Street history**

[1]Modern equivalent of a closed-end mutual fund.

FOR HIS STUDENTS

- **Graham's students have achieved impressive performances:**

Warren Buffett, Graham's student at Columbia Business School , described him as the second most influential person in his life after his own father (6.1% annual outperformance over the general stock market from 1976 to 2011)

Walter Schloss followed Benjamin Graham courses at night at the New York Institute of Finance (8% annual outperformance over the S&P 500 Index from 1956 to 1968)

Bill Ruane, Sequoia Fund Manager, met lifelong friend Warren Buffett at a Benjamin Graham investment seminar (7% annual outperformance over the S&P 500 Index from 1970 to 1984)

Tom Knapp and Ed Anderson, were also Graham's disciples (9% annual outperformance over the S&P 500 from 1968 to 1983)

Amongst others: Charles Munger, Rick Guerin, Stan Perlmeter, etc. All very successful investors

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THE SOLACTIVE EUROPEAN DEEP VALUE SELECT 50 INDEX

THE INDEX STRATEGY IN A NUTSHELL

SELECTION PROCESS

THE STRATEGY SELECTS STOCKS OF EUROPEAN COMPANIES THAT AIM TO PROVIDE:

Strong and stable results over time

By choosing robust companies that demonstrate high standards in terms of Valuation, Solvency and Stability

Low volatility

By removing stocks with the highest volatilities in order to enhance the risk/return profile

Stable source of income

By selecting stocks that are expected to pay dividends in the coming month

Long term replicability

By selecting highly liquid stocks that have proven their capacity for endurance and dependability
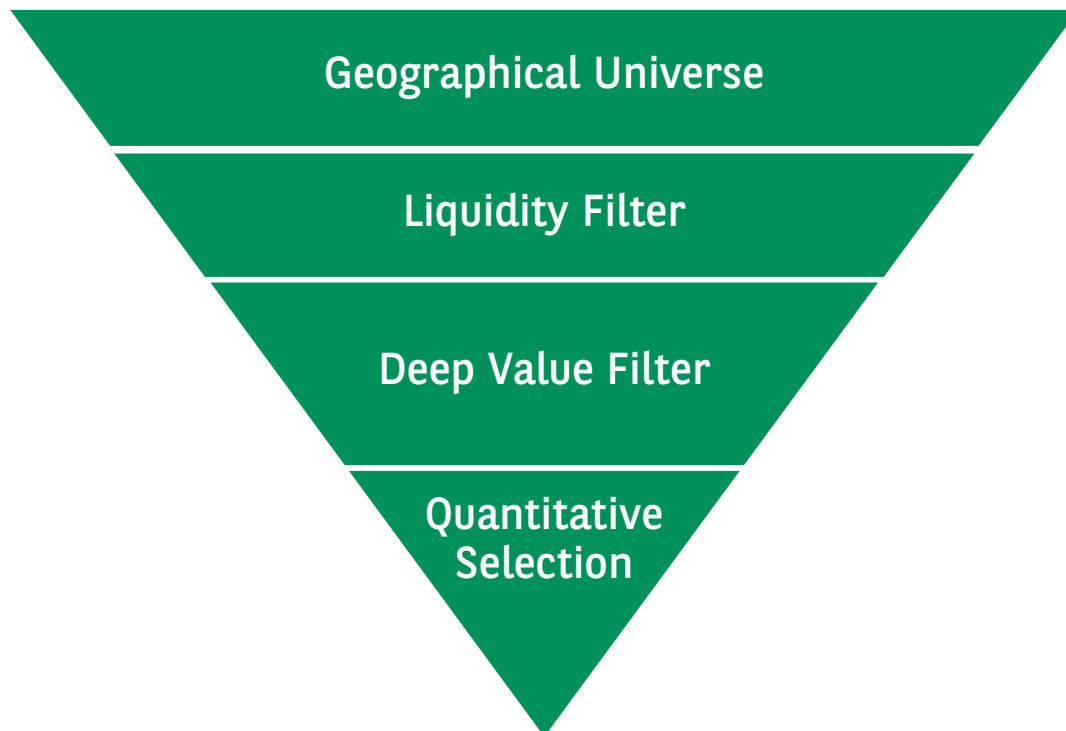
Currency	Type of index	Bloomberg code	Reuters code	Launch date
EUR	Price Return	SOLEDVSP Index	.SOLEDVSP	7th July 2015

A RIGOROUS INVESTMENT METHODOLOGY THAT AIMS TO SELECT SOUND COMPANIES, WHATEVER THE MARKET CONDITIONS

OVERVIEW OF THE SELECTION PROCESS

OVERALL SELECTION PROCESS

Geographical Universe

Liquidity Filter

Deep Value Filter

Quantitative Selection

| EUR | Equally weighted | Monthly rebalancing |

European stocks	**1000 stocks**
Liquidity[1]	**500 stocks**
Valuation, Solvency & Stability	**200+ stocks**
Dividend and Volatility filtering	
Final composition	**50 stocks**

Source: BNP Paribas, for illustrative proposes only.
[1] Average daily volume observed at or above €10M over a 20 days period.

Step 1 - THE DEEP VALUE FILTER (1/2)

HOW IT WORKS: THE 3 FUNDAMENTAL FILTERS[1]

1 VALUATION	2 SOLVENCY	3 STABILITY
Is the company's price attractive enough compared to its revenues and assets?	Is the company's financial position solid?	Are the company's earnings stable?
■ **Avoid overvalued names:** a reasonable price compared to the benefits of the last 5 years (Shiller PE[2]) ■ **Select efficient business models:** regularly posting solid profits compared to accounting value and having an earnings yield high enough to justify a long term investment	■ **Debt charge must be reasonable to avoid putting at stake the company's benefits:** company's financial expenses largely covered by their revenues ■ **Select companies able to decrease and reimburse their debts:** target companies with limited debt compared to their revenues	■ **Select companies able to generate profit in any market condition:** profits generated by the company must be positive over the previous 10 years ■ **Target companies that are able to reward investors in all market conditions:** filter on the dividends paid by the company in each of the previous 10 years

Based on the stock selection criteria recommended by Graham in "The Intelligent Investor"

[1] Please turn to slides 20 to 22 for more details. [2] Shiller Price Earnings, also called CAPE «Cyclically Adjusted Price Earnings», developed by Robert Shiller.

A FUNDAMENTALS-BASED INVESTMENT METHODOLOGY

HOW IT WORKS: THE DEEP VALUE SCORE

- **A balanced but selective approach based on analyzing companies' fundamentals according to three groups of criteria:**
  - Valuation, Solvency and Stability

- **To move to the next step of the selection process, a company must comply with the following 3 constraints:**
  (note that only companies with an average daily volume observed at or above €10M over a 20 days period appear on the Index calculator screens)
  - Deep Value Score ≥ 4
  - Valuation score ≥ 1
  - Solvency score ≥ 1

	Shiller PE	CAPE x P/B[1]	Earning Yield	Valuation	Non-Financial Financial leverage	Non-Financial Interest Cover	Financial ROE[2]	Financial EBITDA[3] Growth	Solvency	Past Dividends	Past Earnings	Stability	Deep Value Score
Rexam PLC	1	1	0	2	1	1	-	-	2	1	0	1	5
Munich Re AG	1	1	1	3	-	-	1	0	1	1	1	2	6
BAE Systems PLC	0	0	1	1	1	1	-	-	2	1	0	1	4
Compass Group PLC	1	1	0	2	1	1	-	-	2	1	0	1	5
TeliaSonena AB	1	1	1	3	1	1	-	-	2	1	1	2	7
Unilever PLC	0	0	1	1	1	1	-	-	2	1	1	2	5
Roche Holding AG	0	0	1	1	1	1	-	-	2	1	1	2	5
IMI PLC	1	1	0	2	1	1	-	-	2	1	1	2	6
Standard Life PLC	1	1	0	2	-	-	1	0	1	0	1	1	4
Wolters Kluwer	0	0	1	1	1	1	-	-	2	1	1	2	5
ARM Holdings PLC	0	0	0	0	1	0	-	-	1	1	0	1	2
SSE PLC	1	0	1	2	0	0	-	-	0	1	1	2	4

Sources: BNP Paribas and Bloomberg. For illustrative purpose only, subject to change. A "1" score in the white columns means the company had a positive mark on that criterion, if there is a "0" it means the company has not passed. The grey columns make up the sum of each filter. In the Deep Value column, the scoring scale is from 0 to 7 and is made up of the sum of the grey columns.[1] Price-to-Book. [2] Return on Equity. [3] Earnings Before Interest, Taxes, Depreciation and Amortization.

Step 2 - QUANTITATIVE FILTERING – LOW VOLATILITY AND NEXT DIVIDEND

HOW IT WORKS: THE QUANTITATIVE FILTERS

- On average, a stock with a low volatility tends to offer a superior Sharpe Ratio[1] than the market[2]
  - We rank the stocks which comply with the Deep Value filter according to their Historical Volatility[3]

Volatility Filter

- Stocks that provide recurrent income enable, on average, to secure a higher gearing within the structured product
  - We select a maximum of 25 low volatility stocks[3] which are expected to pay a dividend in the coming month

Next Div. Filter

[1] The Sharpe ratio is a measure for calculating risk-adjusted return. [2] For further details, please turn to slide 24. [3] According to their 6-month historical volatility.

	Deep Value Score	6-month Vol	Vol. Rank	Next Month Div	Final Index Constituent
Rexam PLC	5	10.82%	1	No	Yes
Munich Re AG	6	16.97%	6	No	Yes
BAE Systems PLC	4	17.56%	11	No	Yes
Compass Group PLC	5	18.77%	16	No	Yes
TeliaSonena AB	7	19.37%	22	No	Yes
Unilever PLC	5	19.83%	26	No	Yes
Roche Holding AG	5	20.05%	31	No	Yes
IMI PLC	6	20.54%	36	No	Yes
Standard Life PLC	4	22.02%	54	Yes	Yes
Wolters Kluwer	5	24.73%	108	Yes	Yes

- To reach a total of 50 stocks, we complete the selection with the least volatile stocks from the Deep Value selection
  - → There are on average 14 stocks paying a dividend in the Index composition[4] (less than 1/3rd) on a total of 50
  - → There are always more low volatility stocks in the composition than stocks paying dividends thanks to the 50% constraint

[4]Composition values based on simulations from December 2000 to April 2015.

Sources: BNP Paribas and Bloomberg. For illustrative purpose only, subject to change. A Vol. Rank of 1 is given to the company with the lowest Historical Volatility, a Vol. Rank of 2 is given to the second least volatile company, and so on. The shares of companies which rank in the bottom one-third are excluded.

BNP PARIBAS AND SOLACTIVE: AN EFFICIENT COLLABORATION

BNP Paribas, a frontrunner in Structured Products

- BNP Paribas has positioned itself as a **leader in Equity Derivatives**, by developing new products that complement investors' traditional portfolios

The Banker
Most Innovative Investment Bank for Structured Products 2015

Euromoney
Awards 2016
World's Best Bank

Risk Awards
Equity Derivatives House of the Year 2016

- These products are **enhanced** by the ability of BNP Paribas to select, hedge, price and trade **innovative** underlyings

Allocation of the right underlying to the right Structured Product

Solactive, one of the key players in the Indexing space

- Solactive is a **full service index provider** focused in offering **reactive**, **reliable** and **tailor-made** services to financial institutions

200 ETFs are tied to the indices calculated by Solactive, making it the 3rd biggest player in the US. Globally, the company has **300 clients**[1]

- Solactive has the ability to develop:
  - **Value added equity thematic indices**: Deep Value, Exporters, Brand Leaders, Low Carbon, etc.
  - **For all kinds of products**: ETF, ETN, Structured Products, etc.

Index Sponsor and Calculation Agent

[1] As of June 2016. Source: Solactive.

A valuable collaboration, capitalising on complementary skills and standards

3 PERFORMANCE AND STATISTICS

PERFORMANCE AND STATISTICS

PERFORMANCE OF THE SOLACTIVE EUROPEAN DEEP VALUE SELECT 50 INDEX VS. THE EURO STOXX 50 INDEX (PRICE RETURN)

Legend:
- Solactive European Deep Value Select 50 Index *
- EURO STOXX 50 Index **
- Index live since 07 July 2015

Return	Solactive European Deep Value Select 50 Index*	EURO STOXX 50 Index**
2002	-10.11%	-37.30%
2003	10.95%	15.68%
2004	17.51%	6.90%
2005	16.49%	21.28%
2006	23.55%	15.12%
2007	-4.14%	6.79%
2008	-38.33%	-44.37%
2009	14.32%	21.14%
2010	10.96%	-5.81%
2011	-4.44%	-17.05%
2012	10.51%	13.79%
2013	14.71%	17.95%
2014	6.57%	1.20%
2015	7.65%	3.85%
2016	-4.10%	0.70%
2017 (YTD)	5.39%	4.83%

Feb 2001 to Jul 2017	Annualised Return	Volatility	Sharpe Ratio	Max Drawdown
Solactive European Deep Value Select 50 Index*	3.49%	14.01%	0.25	-52.86%
EURO STOXX 50 Index**	-1.87%	23.96%	-	-61.56%

Sources: BNP Paribas, Bloomberg as of 31st July 2017.
*Performance of SOLEDVSP Index based on BNP performance simulations until 31st December 2009, Bloomberg simulations until the 6th July 2015, and historical data thereafter.
**Performance of SX5E Index based on historical data.
Performances stated are Price Return.
Past performance is not a guide to future performance.

INDEX COMPOSITION (AS OF 31ST JULY 2017)

Company	Sector	Country	Div Yield	Volatility	Bloomberg	ISIN
AALBERTS INDUSTRIES NV	Industrial Goods & Services	Netherlands	1.57%	15.52%	AALB NA Equity	NL0000852564
ABB LTD-REG	Industrial Goods & Services	Switzerland	3.35%	15.77%	ABBN VX Equity	CH0012221716
ADECCO GROUP AG-REG	Industrial Goods & Services	Switzerland	1.22%	16.38%	ADEN VX Equity	CH0012138605
ALLIANZ SE-REG	Insurance	Germany	4.22%	12.39%	ALV GY Equity	DE0008404005
ALLREAL HOLDING AG-REG	Real Estate	Switzerland	3.27%	13.74%	ALLN SE Equity	CH0008837566
ALSTOM	Industrial Goods & Services	France	0.83%	19.47%	ALO FP Equity	FR0010220475
BALOISE HOLDING AG - REG	Insurance	Switzerland	3.35%	13.41%	BALN VX Equity	CH0012410517
BASF SE	Chemicals	Germany	3.72%	15.86%	BAS GY Equity	DE000BASF111
BRITISH AMERICAN TOBACCO PLC	Personal & Household Goods	Britain	3.59%	20.13%	BATS LN Equity	GB0002875804
BUNZL PLC	Industrial Goods & Services	Britain	1.84%	14.21%	BNZL LN Equity	GB00B0744B38
CARNIVAL PLC	Travel & Leisure	United States	2.21%	13.44%	CCL LN Equity	GB0031215220
COLRUYT SA	Retail	Belgium	2.36%	18.80%	COLR BB Equity	BE0974256852
COMPASS GROUP PLC	Travel & Leisure	Britain	5.77%	14.87%	CPG LN Equity	GB00BD6K4575
DAIMLER AG-REGISTERED SHARES	Automobiles & Parts	Germany	5.48%	13.92%	DAI GY Equity	DE0007100000
DANONE	Food & Beverage	France	2.69%	15.79%	BN FP Equity	FR0000120644
DANSKE BANK A/S	Banks	Denmark	3.54%	15.06%	DANSKE DC Equity	DK0010274414
DIAGEO PLC	Food & Beverage	Britain	2.46%	15.36%	DGE LN Equity	GB0002374006
DISTRIBUIDORA INTERNACIONAL	Retail	Spain	3.68%	31.19%	DIA SQ Equity	ES0126775032
ELISA OYJ	Telecommunications	Finland	4.31%	15.71%	ELISA FH Equity	FI0009007884
ENAGAS SA	Utilities	Spain	5.82%	15.38%	ENG SQ Equity	ES0130960018
EURAZEO SA	Industrial Goods & Services	France	1.66%	15.06%	RF FP Equity	FR0000121121
HALMA PLC	Industrial Goods & Services	Britain	1.25%	17.97%	HLMA LN Equity	GB0004052071
HANNOVER RUECK SE	Insurance	Germany	4.69%	14.58%	HNR1 GY Equity	DE0008402215
ICA GRUPPEN AB	Retail	Sweden	3.24%	12.26%	ICA SS Equity	SE0000652216
INCHCAPE PLC	Retail	Britain	2.96%	17.91%	INCH LN Equity	GB00B61TVQ02

Source: Bloomberg and BNP Paribas as of 31st July 2017.

INDEX COMPOSITION (AS OF 31ST JULY 2017)

Company	Sector	Country	Div Yield	Volatility	Bloomberg	ISIN
INTERCONTINENTAL HOTELS GROU	Travel & Leisure	Britain	5.32%	15.77%	IHG LN Equity	GB00BD8QVH41
INVESTEC PLC	Financial Services	South Africa	3.99%	23.31%	INVP LN Equity	GB00B17BBQ50
INVESTOR AB-B SHS	Financial Services	Sweden	2.87%	14.13%	INVEB SS Equity	SE0000107419
LEGAL & GENERAL GROUP PLC	Insurance	Britain	5.35%	14.84%	LGEN LN Equity	GB0005603997
MERLIN PROPERTIES SOCIMI SA	Real Estate	Spain	3.56%	12.49%	MRL SQ Equity	ES0105025003
NOVARTIS AG-REG	Health Care	Switzerland	3.34%	15.60%	NOVN VX Equity	CH0012005267
ORANGE	Telecommunications	France	4.22%	16.07%	ORA FP Equity	FR0000133308
ORKLA ASA	Food & Beverage	Norway	3.21%	16.72%	ORK NO Equity	NO0003733800
PROXIMUS	Telecommunications	Belgium	5.05%	17.91%	PROX BB Equity	BE0003810273
RELX NV	Media	Britain	2.38%	11.28%	REN NA Equity	NL0006144495
RELX PLC	Media	Britain	2.18%	11.26%	REL LN Equity	GB00B2B0DG97
SAMPO OYJ-A SHS	Insurance	Finland	4.98%	14.31%	SAMPO FH Equity	FI0009003305
SCHRODERS PLC	Financial Services	Britain	2.70%	14.20%	SDR LN Equity	GB0002405495
SSE PLC	Utilities	Britain	6.62%	15.36%	SSE LN Equity	GB0007908733
SWEDISH MATCH AB	Personal & Household Goods	Sweden	8.98%	15.50%	SWMA SS Equity	SE0000310336
SWISS LIFE HOLDING AG-REG	Insurance	Switzerland	3.12%	14.69%	SLHN VX Equity	CH0014852781
SWISSCOM AG-REG	Telecommunications	Switzerland	4.65%	12.23%	SCMN VX Equity	CH0008742519
TELIA CO AB	Telecommunications	Sweden	6.59%	12.77%	TELIA SS Equity	SE0000667925
THALES SA	Industrial Goods & Services	France	1.71%	14.79%	HO FP Equity	FR0000121329
TOTAL SA	Oil & Gas	France	5.70%	14.45%	FP FP Equity	FR0000120271
UNIBAIL-RODAMCO SE	Real Estate	France	4.83%	14.84%	UL NA Equity	FR0000124711
VOESTALPINE AG	Basic Resources	Austria	2.57%	20.65%	VOE AV Equity	AT0000937503
VONOVIA SE	Real Estate	Germany	3.27%	13.43%	VNA GY Equity	DE000A1ML7J1
WOLTERS KLUWER	Media	Netherlands	2.10%	12.96%	WKL NA Equity	NL0000395903
ZURICH INSURANCE GROUP AG	Insurance	Switzerland	5.77%	13.42%	ZURN VX Equity	CH0011075394

Source: Bloomberg and BNP Paribas as of 31st July 2017.

2014 SECTOR & GEOGRAPHICAL COMPOSITIONS VS. THE EURO STOXX 50 INDEX

AVERAGE SECTOR COMPOSITION

Sources: Bloomberg, BNP Paribas, as of 31st December 2014.
Composition of SOLEDVSP Index based on BNP simulations.

AVERAGE GEOGRAPHICAL COMPOSITION

Sources: Bloomberg, BNP Paribas, as of 31st December 2014.
Composition of SOLEDVSP Index based on BNP simulations.

A BETTER GEOGRAPHICAL AND SECTORIAL DIVERSIFICATION THAN THE BENCHMARK

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4

RISK FACTORS

RISK FACTORS

- The Index is Price Return: dividends paid on the components of the Index are not reinvested in it. The performance of a Price Return index is lower than that of an equivalent Total Return index (where dividends are reinvested)

- The Index's dividend yield is on average higher than that of the EURO STOXX 50 Index. Investors exposed to the Index will not receive the dividends paid by the components of the Index, which could lead to an underperformance versus the EURO STOXX 50 Index (Solactive European Deep Value Select 50 Index's benchmark)

- There is no control of the tracking error embedded in the Index strategy. Therefore, the performance of the Index may have a low correlation to its benchmark on short periods of time (i.e. heading in a different direction)

- On top of that, the Index strategy has a "Value" bias, as it selects companies based on fundamental criteria: some sectors might be over-represented for instance, in comparison to the benchmark

- The Index is expressed in euros but can be composed of stocks expressed in other currencies. Consequently, there is a risk linked to the evolution of these currencies against the euro (which is not the case for the EURO STOXX 50 Index)

5 APPENDIX

SEIZE THE OPPORTUNITIES OF CHALLENGING MARKET CONDITIONS

EQUITIES VS. BONDS: MIND THE GAP

STOXX dividend yield +12m — 3.74%
Eurozone AAA Non-Fin Corporate Bond yield — 0.98%

- Euro government and corporate bonds are **very expensive** - distorted by Central Banks' exceptional intervention
- **Equities** have **higher implicit yield** in comparison to other asset classes (see chart)

Source: Exane BNP Paribas as of 30th December 2016.

- European Equities seem to offer the **best perspectives:**
  - **EUR/USD, oil and rates are down**, which has a positive impact on growth and earnings
  - **Economic revisions are reviewed on the upside**
  - **Consumer confidence has surged** since 2013 and **corporate credit is recovering**
  - **European equities are still fair value,** with an upside potential compared to US (see chart)

Source: Exane BNP Paribas, as of 15th March 2017.

IS EUROPE THE WINNER?

CAPE EU
CAPE US
CAPE EM

Long-term averages
22.98
17.56
15.98

CAPE= Cyclically Adjusted Price Earnings

EUROPEAN EQUITIES LOOK PROMISING, COMPARED TO OTHER INVESTMENT ALTERNATIVES

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ANALYSING VALUATION – BENJAMIN GRAHAM'S METHOD

> "A great company is not a great investment if you pay too much for the stock."
>
> *(Benjamin Graham)*

Performance & Valuation: select companies cheap enough vs. expected return to justify an investment

- **Avoid overvalued names:** select stocks with reasonable price versus benefits during the previous 5 years (Shiller PE)
    - Gives the current value of the stock relative to its long term track record
    - Is adjusted for any cyclical pattern (by incorporating the 5 year average)
    - Has to be below 15, no matter where it is currently positioned

- **Select efficient business models:** regularly posting solid profits compared to accounting value and having equity yield high enough to justify a long term investment
    - 'CAPE' x Price/Book: compares the market value of a company to the accounting value of its net assets, giving an idea of the premium (or discount) priced by the market relative to the company's economic "fair value"
        - Has to be below 30
        - This criteria was based on the famous **Graham number**: using the two main valuation metrics, earnings per share and book value per share, it enables to define the upper bound of the price range that a defensive investor should pay for a stock by not investing in overvalued companies
    - Earnings yield > 5%: imposes a yield high enough to support the risk of an equity investment

DEEP VALUE SELECTION CRITERIA: 2-SOLVENCY

ANALYSING SOLVENCY – BENJAMIN GRAHAM'S METHOD

"A good business generates more cash than it consumes [..] Virtually certain to grow in value."

(Benjamin Graham)

Performance & Solvency: select safe companies in order to avoid bankruptcy

- **Debt charge must be reasonable to avoid putting at stake the company's benefits:** the company's operational income must cover the debt interest expense several times
  - Net debt/EBITDA; measures the ability of a company to decrease or reimburse its debt
  - Has to be below 2

- **Select only companies able to decrease and reimburse their debts:** filter on net debt of the company relative to its gross revenues
  - Interest cover (EBIT[1]/Financial charges); gives an idea of the ability of the company to service its debt
  - Has to be above 5

- **For financial stocks, solvency filter is assessed by profitability levels (ROE) and revenue growth (EBITDA growth)**

[1] Earnings Before Interest and Taxes.

DEEP VALUE SELECTION CRITERIA: 3-STABILITY

ANALYSING STABILITY – BENJAMIN GRAHAM'S METHOD

"The sillier the market's behaviour, the greater the opportunity for the business-like investor"

(Warren Buffett)

Performance & Stability: select companies able to perform well on the long term

- **Company is profitable even in disrupted markets, to soften as much as possible the market downturn impact**
  - Profit generated by the company has to be positive over the previous 10 years

- **Company is able to reward the investor whatever the conditions, to capture income as much as possible in all market conditions**
  - Filter on the dividends paid by the company in each of the previous 10 years

THE LOW VOLATILITY ANOMALY

LIMITS TO THE CAPM

- Contrary to the Capital Asset Pricing Model (CAPM) hypothesis, the market has demonstrated a certain number of inefficiencies along the years, among which:

  - **The irrationality of some investors**: Daniel Kahneman, a Nobel Prize-winning psychologist, considers that individuals' cognitive biases impact decision-making

  - **The low volatility anomaly**: securities perceived to have the highest expected returns within a given asset class actually produced lower realized returns than low volatility stocks (see chart)

Nov 90 – Jul 15	S&P 500 TR	S&P 500 Low Vol TR	S&P 500 High Beta TR
Return	10.16%	**11.07%**	9.52%
Volatility	18.06%	**13.18%**	32.40%
Sharpe ratio	0.56	**0.84**	0.29
Max drawdown	-55.25%	**-40.40%**	-84.36%

Source: Bloomberg, July 2015. Past performance is not an indicator of future performance.

- Different kinds of «players» in the market are attracted by different kinds of stocks:

  - Short-term speculators or "lottery players" want to earn money quickly and will bet on volatile stocks, despite the higher risk

  - Long-term investors, on the other hand, will look into less volatile stocks, an often **more appropriate long-term buy-and-hold strategy** that indeed displays a **better risk/return profile** (see chart)

Source: Seeking Alpha, "The Low Volatility Anomaly: Lottery preferences"

LOW VOLATILITY STOCKS HAVE HISTORICALLY DISPLAYED A STRONGER RISK / RETURN PROFILE

DIVIDEND DISTRIBUTION AND ITS IMPACT ON STOCK PRICE

NET DIVIDENDS OF SOLACTIVE EUROPEAN DEEP VALUE SELECT 50 INDEX VS. EURO STOXX 50 INDEX (Simulations, example 2014)[1]

- Net Dividends of Solactive European Deep Value Select 50 Index
- Net Dividends of EURO STOXX 50 PR Index

Jan | Fev | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec

- ■ The Solactive European Deep Value Select 50 Index is able to secure a **higher dividend yield** than the EURO STOXX 50 PR Index and therefore may offer a higher gearing

Source: BNP Paribas, Bloomberg. Illustrative purposes only. [1]Performance simulations based on historical data from January 2014 to December 2014. Past performance is not a guide to future performance.

- ■ A dividend paid is a positive signal sent to the shareholder: it is likely to increase their trust towards the company

- ■ The shareholder's wealth in theory does not change (see illustration). Nonetheless, a dividend paid tends to have a positive impact on the market and consequently can **secure the shareholder's wealth**

- ➔ Part of the remuneration of the investor is paid upfront via this dividend

Stock 100 → 90 Stock
→ 10 Dividend

Ex-date — Time

Shareholder's Wealth | 100 | 100

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THE DIVIDEND FILTER

- The Solactive European Deep Value Index can only select a maximum of 25 low volatility companies which are expected to pay a dividend in the comping month (50% of the total Index composition)

- On average, around **25% of the companies** that compose the Solactive European Deep Value Select 50 Index are expected to pay a dividend in the coming month

Source: BNP Paribas. Illustrative purposes only. [1]Performance simulations based on historical data from December 2000 to April 2014.
Past performance is not a guide to future performance.

■ Dividend payers in composition   ■ Non dividend payers in composition

- Rather than maximizing dividends (as in a high dividend strategy), Solactive European Deep Value Select 50 Index aims at having a **good balance between income and low volatility stocks** while stabilizing the dividend along the year

  → Both these factors are able to generate value for the investor, who can benefit from a better risk/return profile thanks to the low volatility feature and from options that are generally cheaper than those on the EURO STOXX 50 Index

PERFORMANCE GENERATION THROUGH AN EQUILIBRIUM BETWEEN INCOME AND LOW VOLATILITY STOCKS

COMPANY TURNOVER WITHIN THE INDEX

COMPANY TURNOVER OF SOLACTIVE EUROPEAN DEEP VALUE SELECT 50 INDEX (SIMULATIONS, EXAMPLE 2014)[1]

☐ Companies selected less than 25% of the time

☐ Companies selected between 50% and 25% of the time

☐ Companies selected between 75% and 50% of the time

☐ Companies selected between 100% and 75% of the time

- The average turnover of the strategy during reshuffles is around 33% of the selected companies

- **Stable base of companies**: almost 60% of the selected companies are present in the portfolio more than half of the time

→ The Solactive European Deep Value Select 50 Index has a **good balance** between a stable base and companies that are reweighted in order to **seize opportunities in different market conditions**

Source: BNP Paribas, Bloomberg.
[1]Turnover values based on Solactive simulations from January 2014 to December 2014. Performance simulations are not an indicator of future performance.

A STABLE INDEX, WITH ENOUGH FLEXIBILITY TO ADAPT TO MARKET CONDITIONS

WHY EXPOSURE THROUGH OPTIONS?

- **A reminder on option prices**
  - Option prices are **positively correlated to volatility**: the lower the volatility of an underlying, the cheaper its option price
  - Option prices are **negatively correlated to dividends**: the higher the dividend paid, the lower the underlying price, and the lower its option price

- **Options offer asymmetry**
  - Options on "Low Risk" indices will, in general, offer <u>higher gearing</u> than options on the benchmark for the same premium...
  - ... Or the same gearing for a <u>lower premium</u>

➔ **Options allow investors to cash in the low volatility / next dividend "arbitrage"**

GEARING ON LOW RISK/NEXT DIV INDICES VS. THEIR BENCHMARK

Source: BNP Paribas. For illustration purposes only

STRUCTURED PRODUCT SIMULATIONS

EXAMPLE: 8-YEAR CALL OPTIONS

- Thanks to a Structured Product friendly underlying, the **gearing would have reached 90%** with the Solactive European Deep Value Select 50 Index (in comparison to only 30% with the EURO STOXX 50 Index)

- During the backtest period (see table below), the investor would have benefited from a **strictly positive return 72% of the time** with the Solactive Deep Value strategy, against 22% of the time with the benchmark

- Historically, the annual yield for the client investing in the Solactive European Deep Value Select 50 Index would have always been higher or equal to that of the EURO STOXX 50 Index (see chart below): the investor would have got, on average, **1.8% more with the Solactive European Deep Value Select 50 Index** each time the yield on the EURO STOXX 50 Index would have been strictly positive

COMPARATIVE ANNUAL YIELDS ON 8-YEAR CALL OPTIONS BOUGHT BETWEEN FEB. 2001 AND FEB. 2007

Yield* Solactive European Deep Value Select 50 Index
Yield* EURO STOXX 50 Index

Feb. 01 – Feb. 07	Solactive European Deep Value Select 50 Index	EURO STOXX 50 Index
Positive yield (in % of time)	72%	22%
Maximum yield	4.45%	1.68%
Gearing	90%	30%

Source: BNP Paribas. Simulations from 1st February 2001 to 1st February 2007.
Simulations done on current market conditions for illustrative purposes only.
* The Yield corresponds to an interest yield return of the structure.

SOLACTIVE

THE CALCULATION AGENT

Solactive is a **full service index provider** covering the entire value chain of the index business.

The company was established in September 2007 and in 8 years has become one of the **key players in the indexing space**, focusing on tailor-made indices.

IN NUMBERS

- 180 ETFs tied to indices Solactive calculates
- Calculates close to 950 indices
- 30 billion USD invested in products linked to their indices
- 3rd in the US in terms of ETFs linked to indices they calculate

ORGANIZATION

- Headquartered in Frankfurt, Solactive is managed by Steffen Scheuble, Founder, and Christian Grabbe
- Organized in 3 business units: Equity, Bonds and Complex Indexing
- The company employs 42 people in Frankfurt and London and is fully owned by its current management

The Business:

The company focuses on customised equity indices. The goal is to offer reactive, reliable and tailor-made index services to financial institutions in the areas of **index development**, **index calculation** and **index maintenance**.

→ BNP Paribas has worked with Solactive from the beginning, having already created together strong successes in Equity Indexing (e.g. various versions of our Guru indices and the Ethical Europe Equity Index)

INVESTMENT STYLES

CORE INVESTMENT STYLES

	Style	Description
	Value	The value investing approach aims at generating outperformance in the long run by selecting stocks that have lower market prices in comparison to their fundamental value. (Fama-French, 1992)[1] *Common Indicators: Low Price-Earnings Ratio, Low EBITDA/EV, Stable Dividend Yield*
	Growth	Growth investing is a strategy focused on long-term capital appreciation by selecting stocks that have an above average growth rate in terms of earnings, revenues or cash flow. (Fama-French, 1998)[2] *Common Indicators: High Earnings Growth, High ROE, Low Dividend Yield*
	Momentum	Momentum is an investment strategy based on picking winners over losers. In explicit, it aims to generate excess returns by selecting stocks with stronger past performance. (Carhart, 1997)[3] *Common Indicators: Returns 3M, 6M or 12M*
	Low Size	The low size or small cap approach targets outperformance by selecting small-capitalization stocks over large-capitalization stocks. (Banz, 1981)[4] *Common Indicators: Market Capitalization*
	Low Volatility	The low volatility strategy attempts to capture excess returns by selecting stocks with lower than average volatility or beta combined with a lower drawdown. (Baker, 2011)[5] *Common Indicators: Low Standard Deviation, Beta & Drawdown*
	Dividend Yield	The dividend investing strategy aims to provide a steady stream of income through dividends' payment by selecting stocks with higher dividend yields. (Blume, 1980)[6] *Common Indicators: High Dividend Yield*

New Investment Styles are always being developed. Examples:

	Style	Description
	Quality	Quality investing aims to outperform by selecting stocks that have higher earnings quality. It is focused on companies with stable earnings growth, low debt and low accruals. (Sloan, 1996)[7] *Common Indicators: Dividend Growth, Recurrent Earnings Growth, ROE, ROIC, Accruals*
	Economic Exposure	The economic exposure factor explores the advantages of weighting an investment strategy based on geographic revenues exposure instead of standard country or region of domicile. *Common Indicators: Revenues Distribution*

Source: BNP Paribas and MSCI Research. [1] "The Cross-section of Expected Stock Returns", Eugene F. Fama and Kenneth R. French; Journal of Finance (1992). [2] "Value versus Growth: The International Evidence", Eugene F. Fama and Kenneth R. French; Journal of Finance (1998). [3] "On Persistence in Mutual Fund Performance", Carhart, M.; Journal of Finance (1997). [4] "The Relationship between Return and Market Value of Common Stocks", Banz, R.; Journal of Financial Economics (1981). [5] "Benchmarks As Limits to Arbitrage: Understanding the Low Volatility Anomaly", Baker B., Financial Analysis Journal (2011). [6] "Stock Returns and Dividend Yields: Some More Evidence," Blume, Marshall E.; The Review of Economics and Statistics (1980). [7] "Do stock prices fully reflect information in accruals and cash flows about future earnings?", Sloan R.; Accounting Review (1996).

IMPORTANT NOTICE

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