

# Why is increasing volatility likely to benefit active managers in 2018?

## *and why focus on Quality?*

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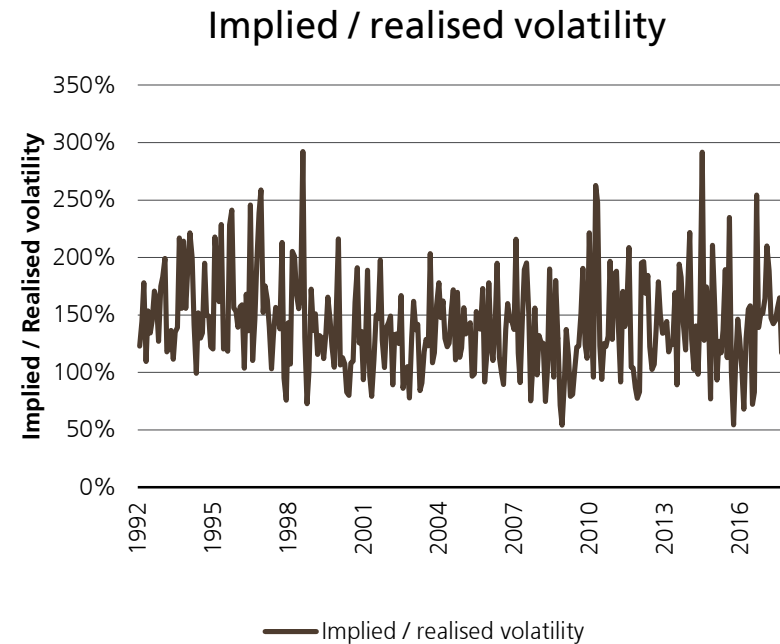
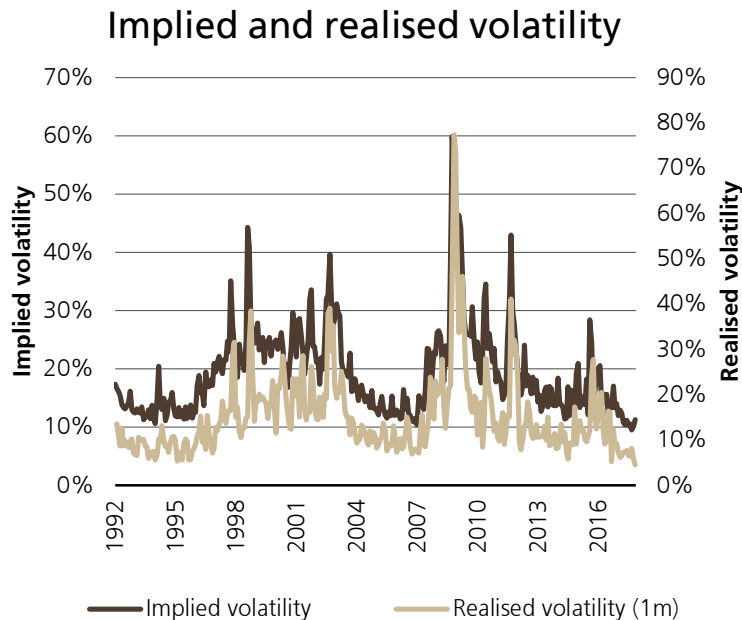
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## Section 1

Why is volatility so low, and when is it likely to increase?

# Implied vs realised: has the relationship changed?

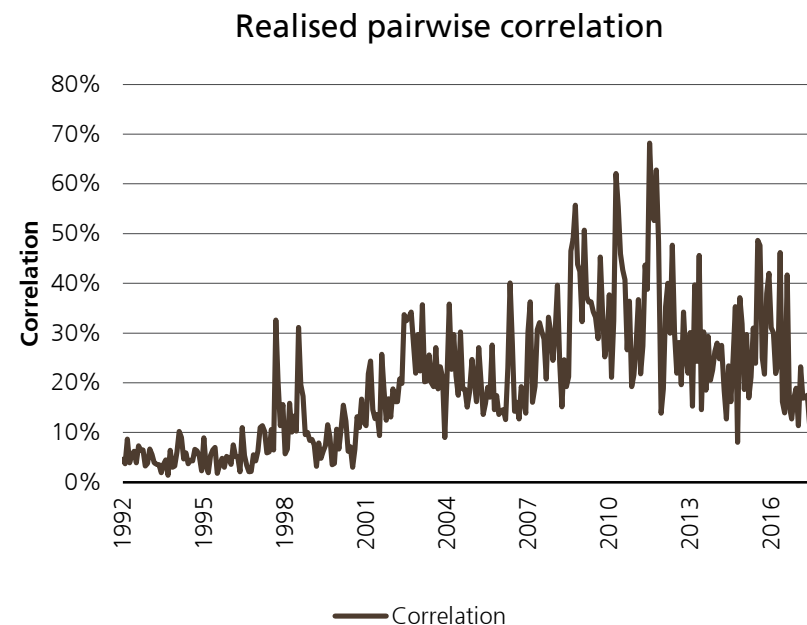
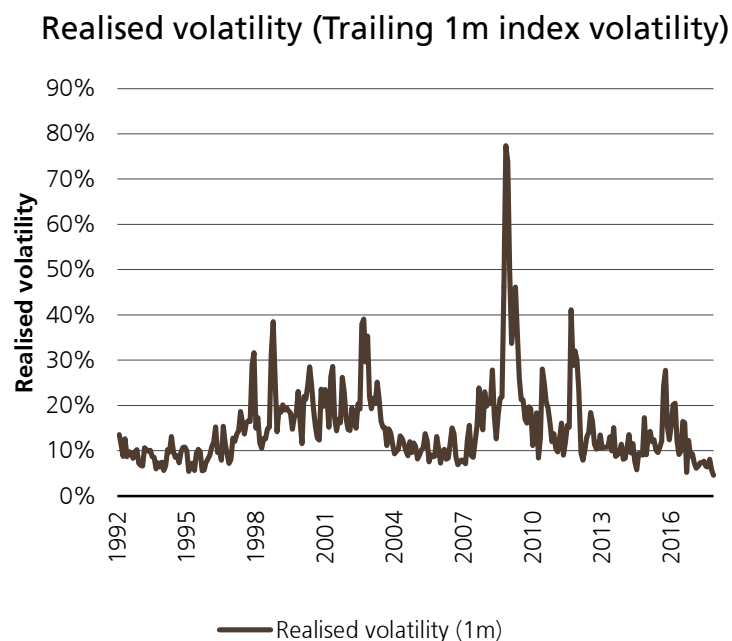
- Implied volatility = expectation of the future 30 day volatility
- Realised volatility = 30 day realised volatility
- Overall, the relationship between implied and realised has not changed
- i.e. Implied volatility is low because realised volatility is low



Source: Factset, UBS Quant Index: S&P 500

# What's driving realised volatility lower?

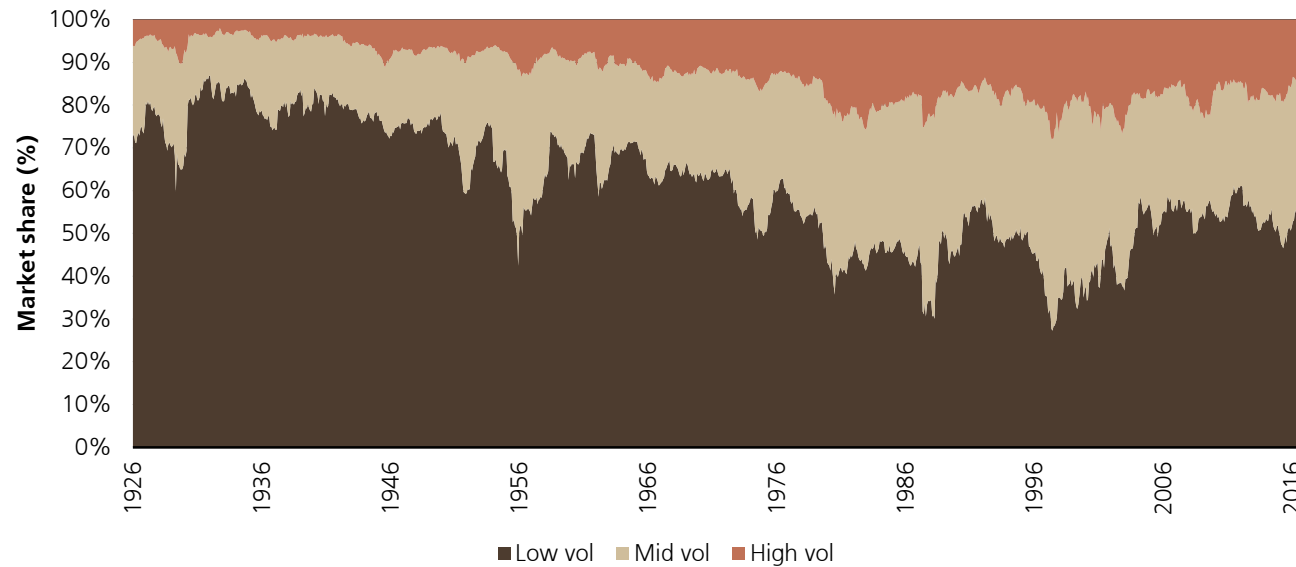
- Realised volatility is close to all-time lows
- Pairwise correlation is close to all time lows
- By definition, portfolio volatility is a function of the volatility of the stocks and the correlation of the stocks
- So, index volatility is low because the volatility of the stocks and the correlation of the stocks is low... but why?



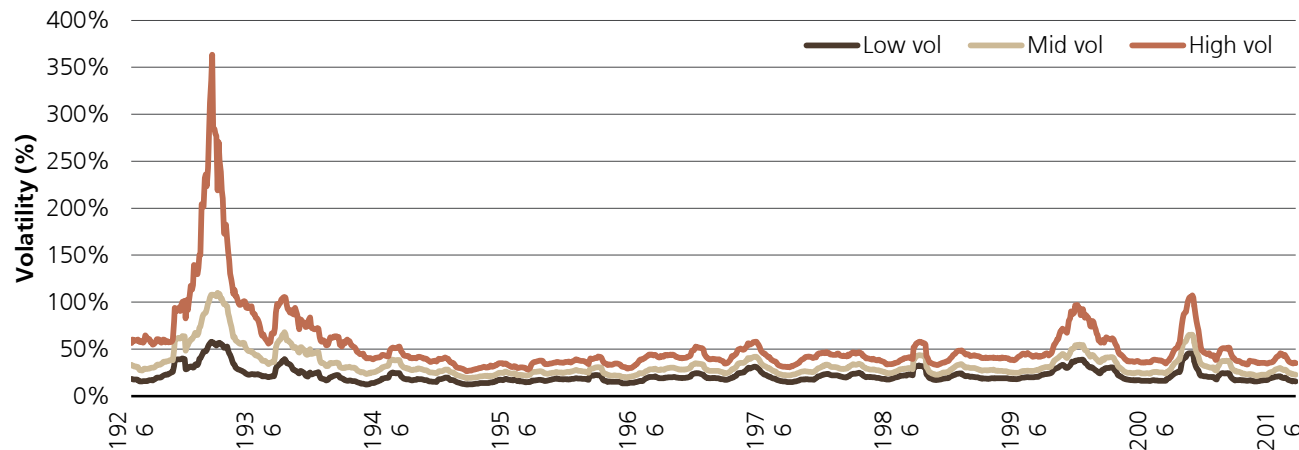
Source: UBS Quant Index: MSCI World

# Market structure changes

Weight of low, mid and high volatility stocks over time

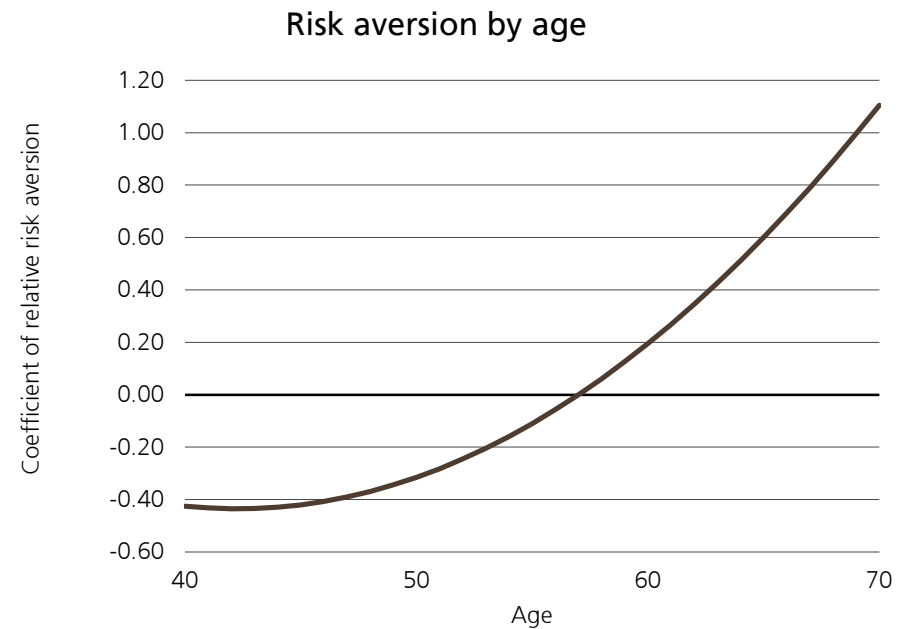
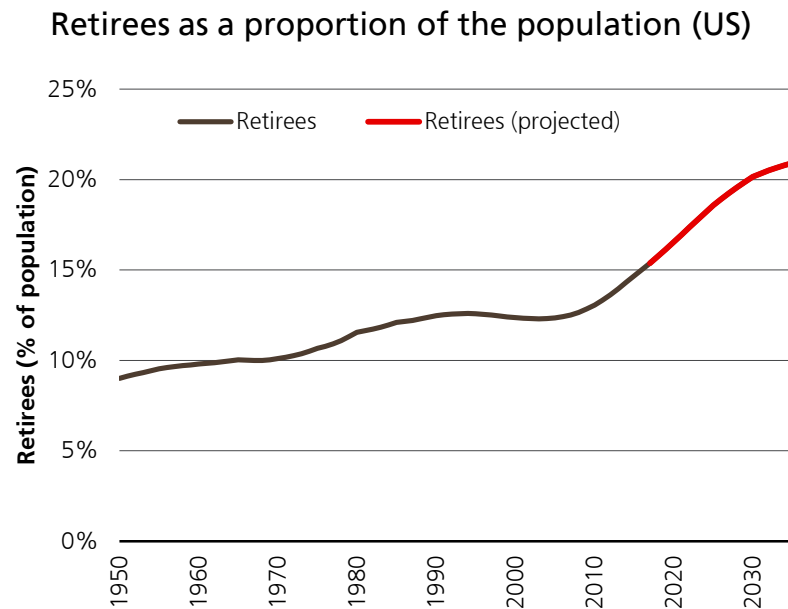


Volatility of low, mid and high volatility stocks over time (median)



# Potential causes?

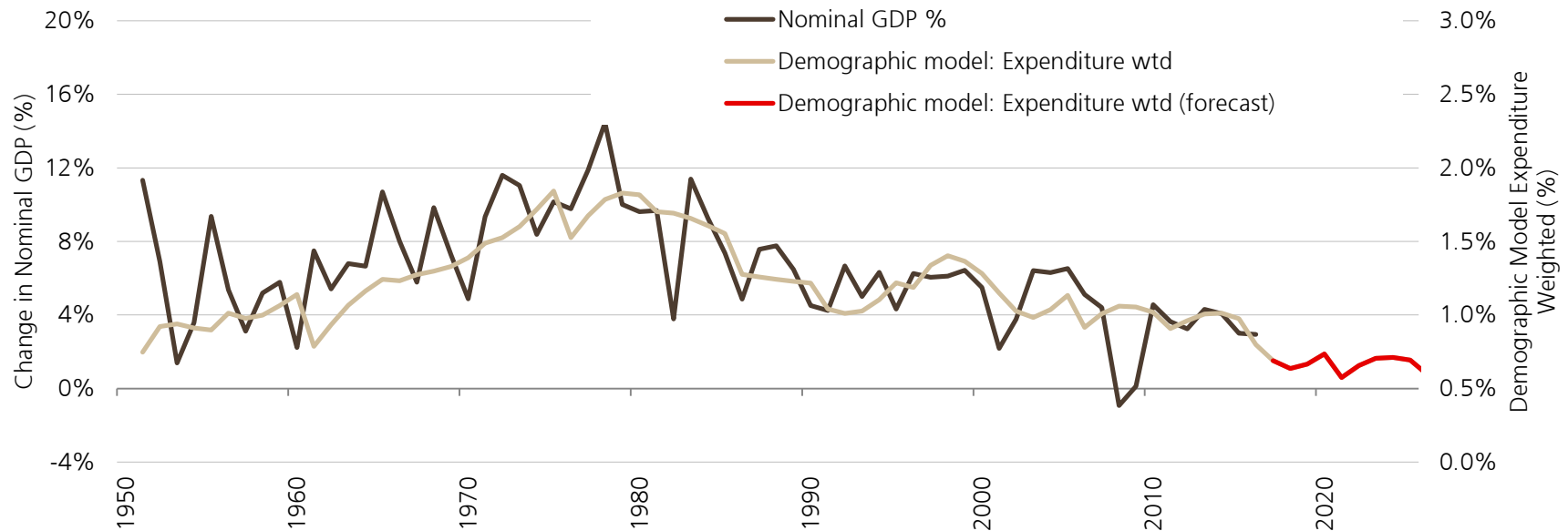
## 1. Demographics? Ageing populations globally demanding low risk income



# Potential causes?

## 2. Low interest rates?

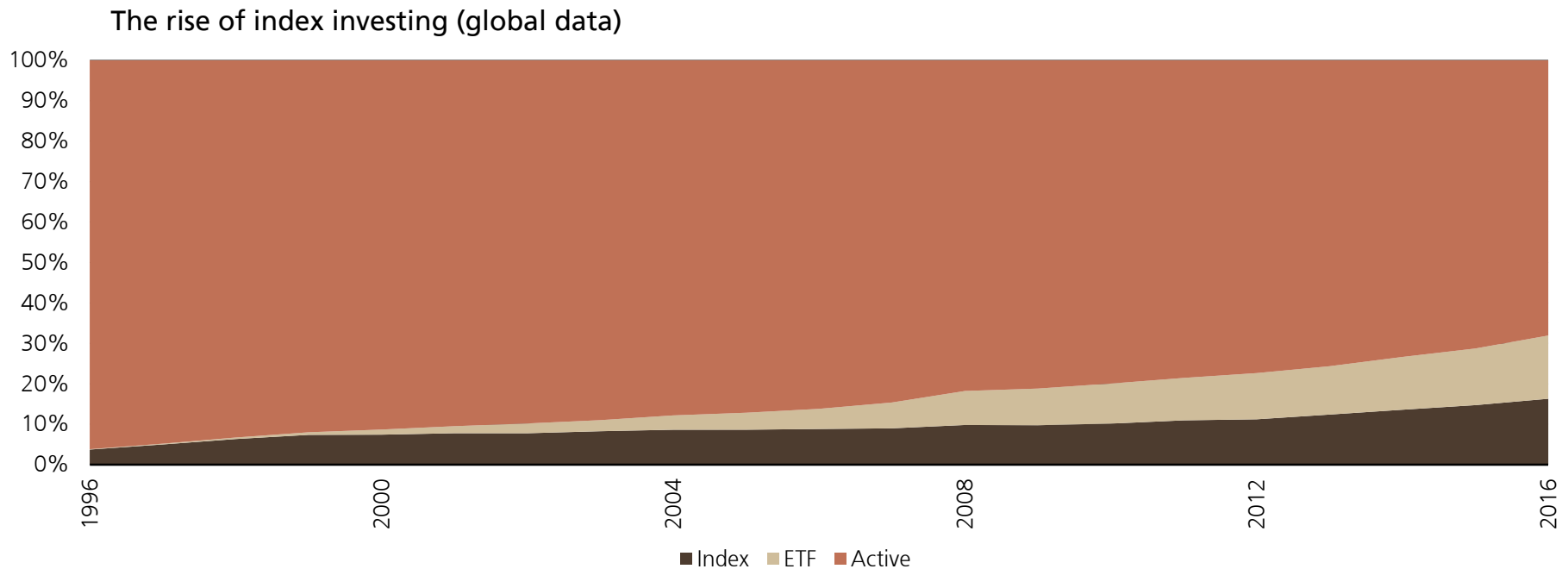
In a world of structurally lower growth and inflation we expect low growth and low returns. Perhaps investing in low volatility stocks is a rational response?



# Potential causes?

## 3. Index and low volatility investing?

Index and low volatility investing favours large cap, low volatility stocks.



Source: Haver, Lin 2009, Investment Company Institute, UBS Quant

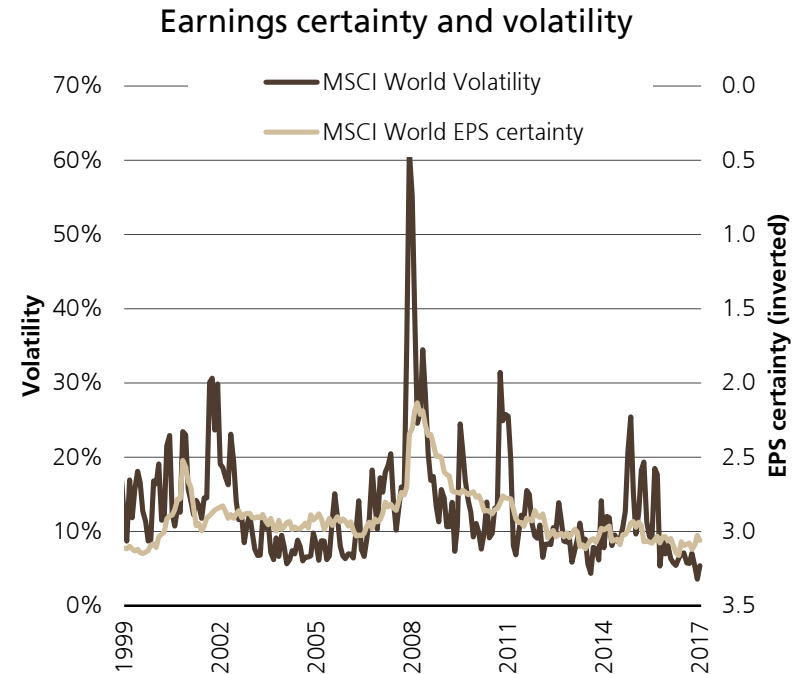
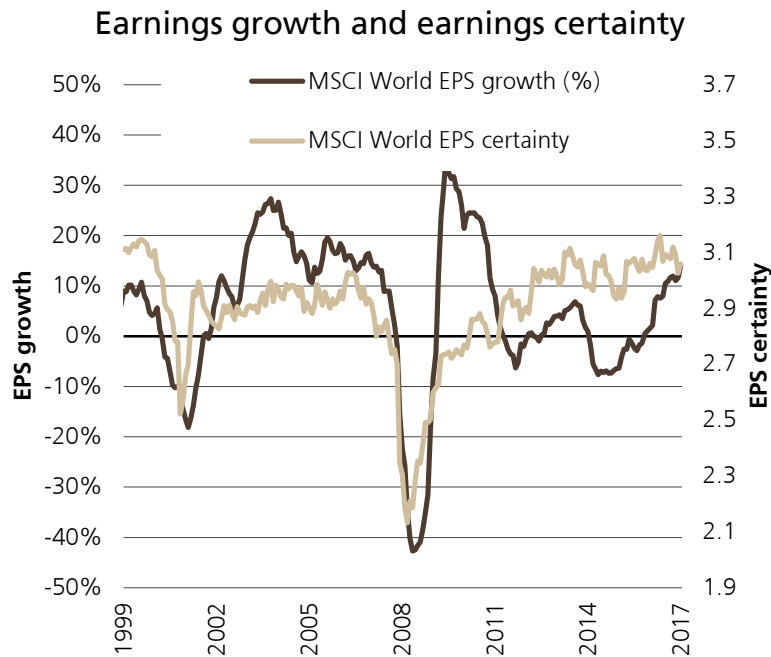
**Whilst we cannot prove which of these drivers is driving the increase in low volatility investing, we do know that all three drivers remain intact.**



# Implied vs realised: has the relationship changed?

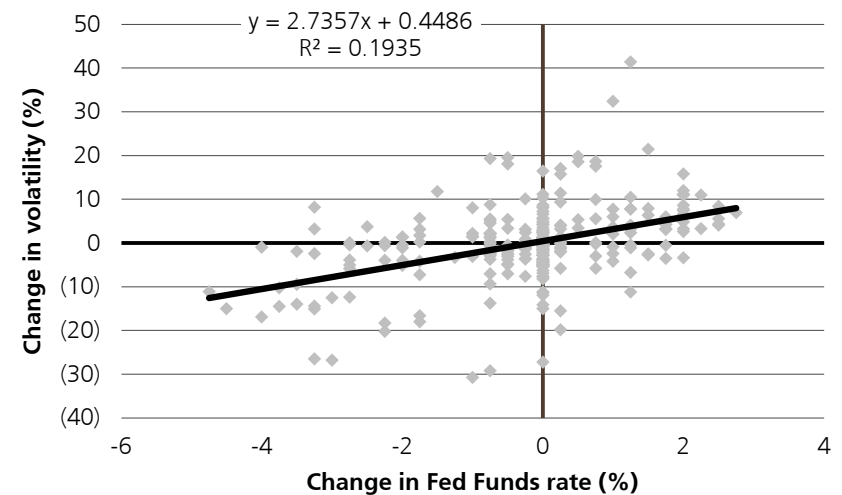
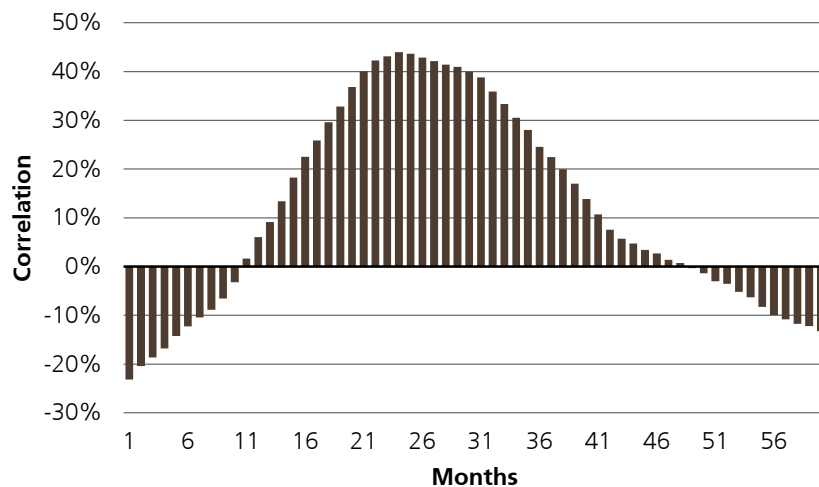
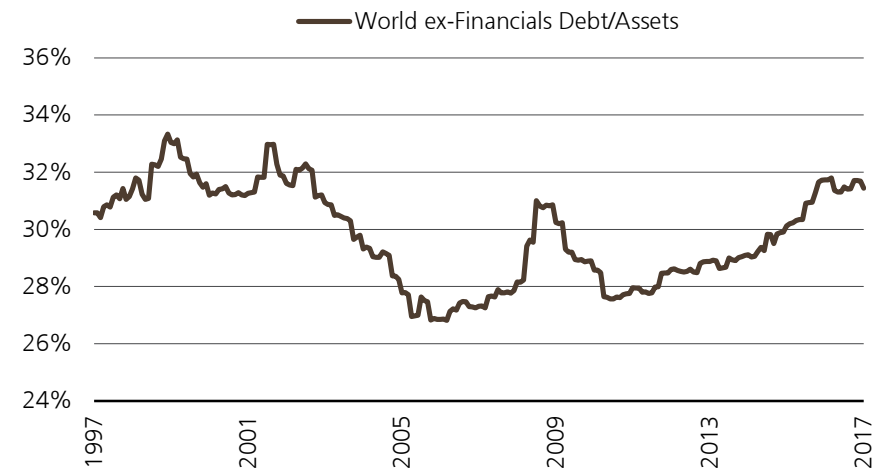
## The cyclical component

A function of earnings growth and earnings certainty



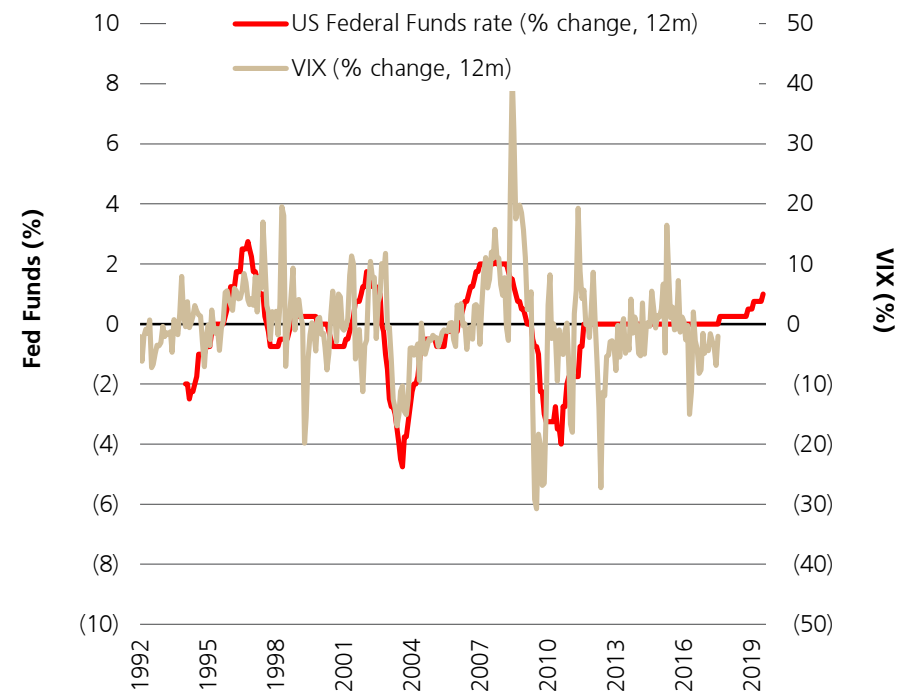
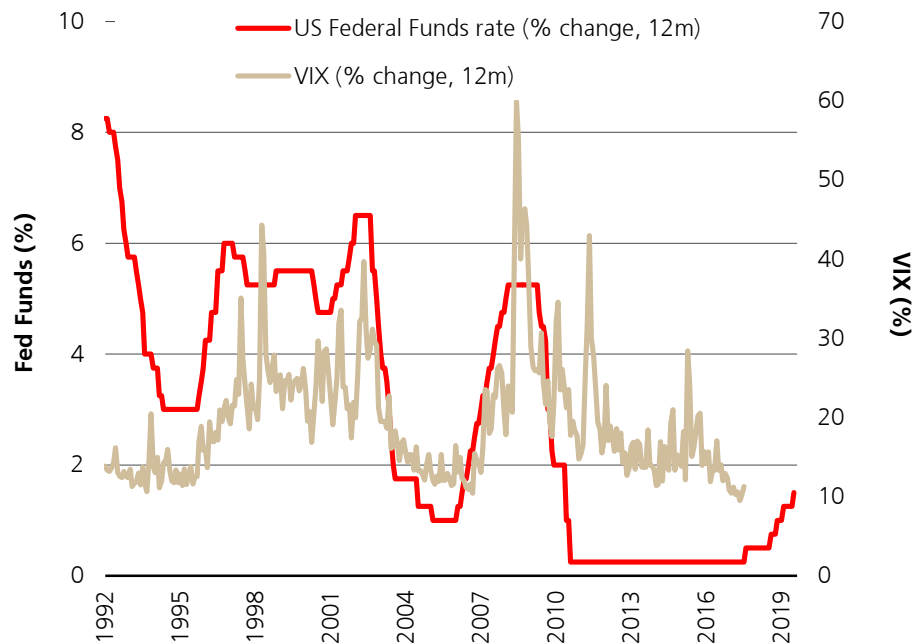
# When is volatility likely to pick up?

- The world has re-levered
- The average firm finances on a 3-5 year view
- Lagged correlation peaks at 24 months
- Fed both reacts to, and causes, the cycle



# Fed Funds rate and volatility

- The Fed Funds rate leads the VIX by 24 months
- Given that the Fed has been tightening for 24 months, we believe that volatility and hence dispersion should pick up in 2018

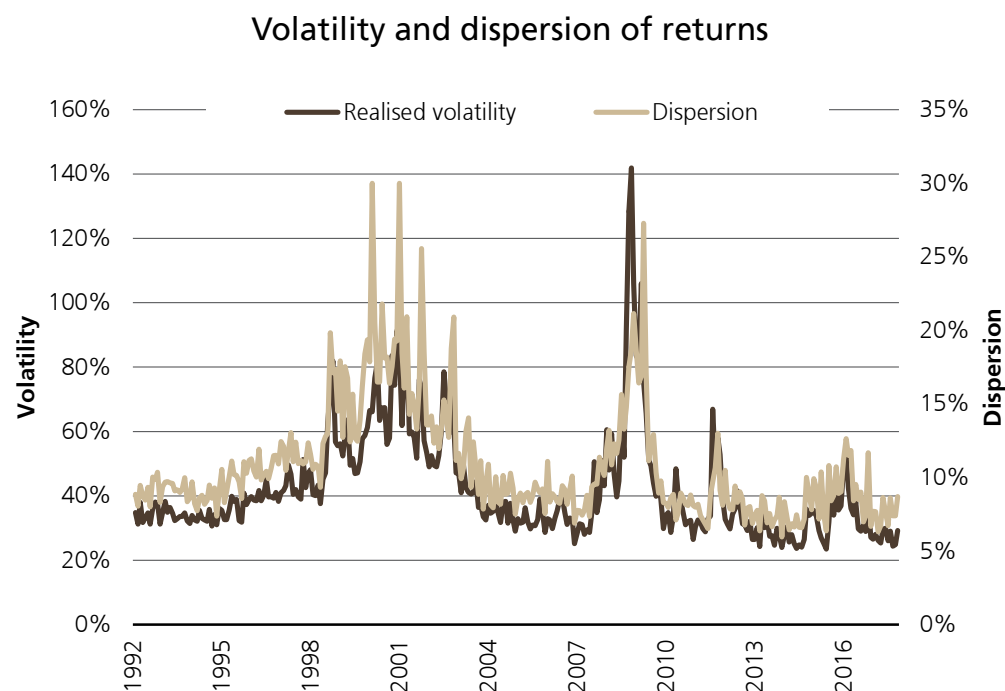


# What about dispersion?

- Volatility and dispersion are highly correlated
- There is more to dispersion than simply gearing and cost of capital.

Our US strategist, Keith Parker, recently wrote about

1. Demographic demand shifts
  2. Corporate vs consumer
  3. Margins
  4. Tax impact
  5. Technological disruption
- (see 'Who benefits from automation')



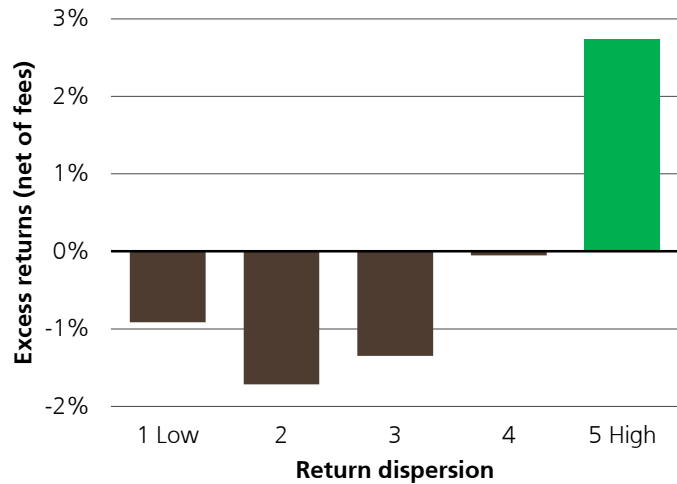
Source: Factset, UBS Quant

Section 2

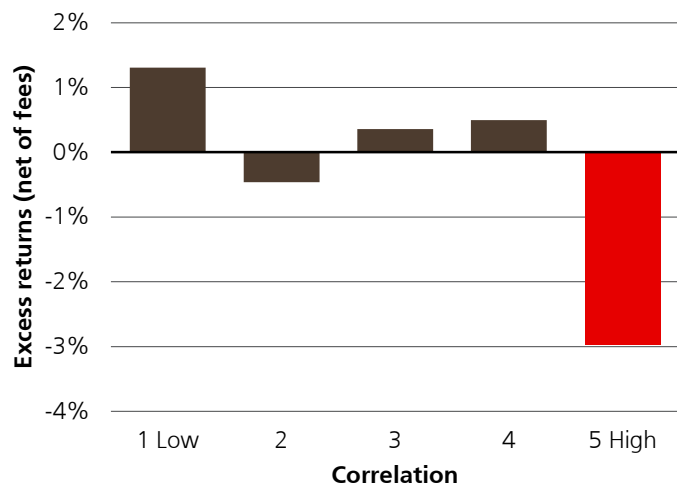
# The outlook for active management

# Understanding the opportunity for active managers

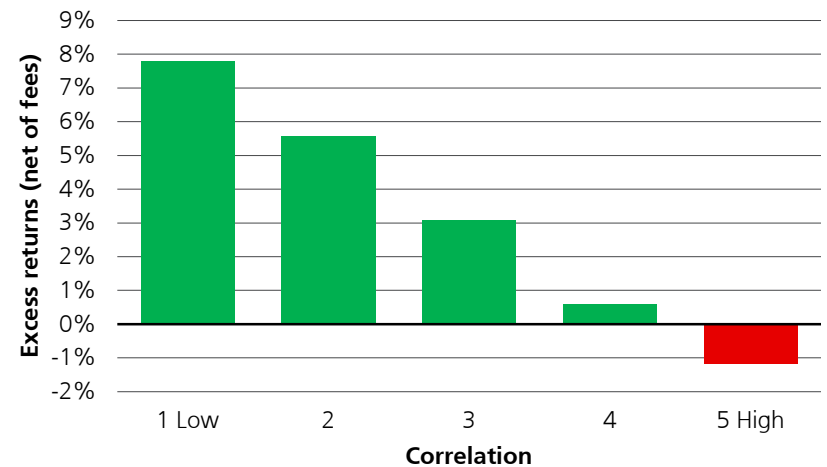
Dispersion and excess returns to active management (net of fees)



Correlation and excess returns to active management (net of fees)



Excess returns to quintile 5 of dispersion



Section 3

## Why focus on Quality?

# Why does quality work?

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- **Risk:** This assumes that high quality firms tend to be low beta, and as such represent a risk to active managers as they are likely to underperform in a rising market. Given that markets tend to increase in the long run, active managers are more likely to overweight higher beta stocks and underweight low beta stocks. Consequently, buying low beta names leads to outperformance as they are under-valued relative to their fundamentals.
- **Behavioural:** Investors persistently under-estimate the earnings persistence of high quality firms, and tend to assume mean-reversion in their estimates. Contrary to this belief, high quality firms tend to continue to perform well, whilst low quality firms tend to continue to disappoint.

How do we distinguish between high quality firms that are likely to continue to outperform versus those that are likely to revert to the mean?



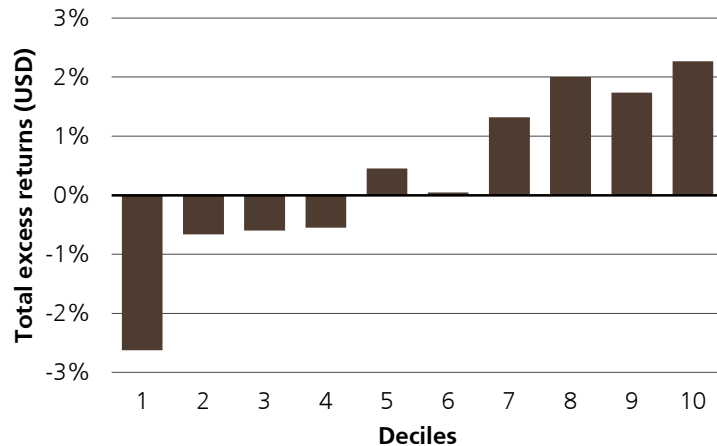
# Defining Quality

1. Linear or Binary?
2. Quadratic with certainty?
3. Theoretical or empirical?

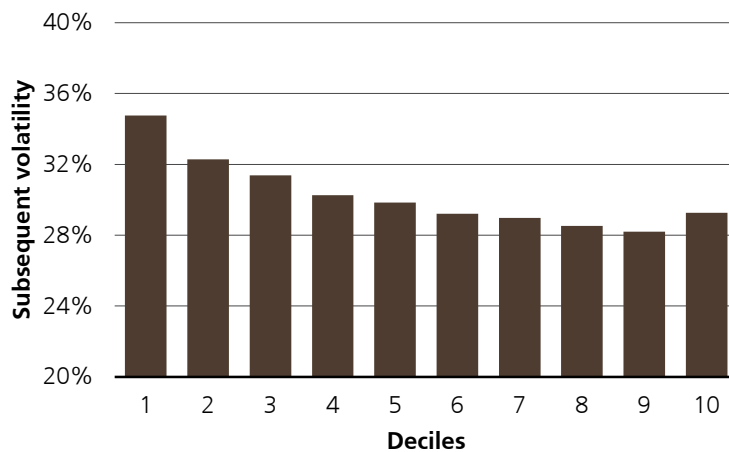
	High Quality	Delta Quality
<b>Profitability</b>		
Cash-flow to assets	Ranked	Binary
Change in cash-flow to assets		Binary
Gross profit to assets	Ranked	Binary
Change in gross profit to assets		Binary
Return on assets	Ranked	Binary
Change in return on assets		Binary
Return on assets: variation - sector neutral	Ranked	Binary
Accruals (Sloan definition)	Ranked	Binary
Change in accruals		Binary
Operating cash-flow		Binary
Cash Flow Variation	Ranked	Binary
<b>Financial health</b>		
Change in Current Ratio		Binary
Debt to Assets - sector neutral	Ranked	Binary
Change in Debt to Assets		Binary
<b>Efficiency</b>		
Change in Sales to Assets		Binary
Gross margins	Ranked	Binary
Change in gross margins		Binary
<b>Management signalling</b>		
Equity issuance	Ranked	Binary
<b>Risk</b>		
Distance to Default		Binary
Volatility		Binary

# How does Quality perform? High Quality

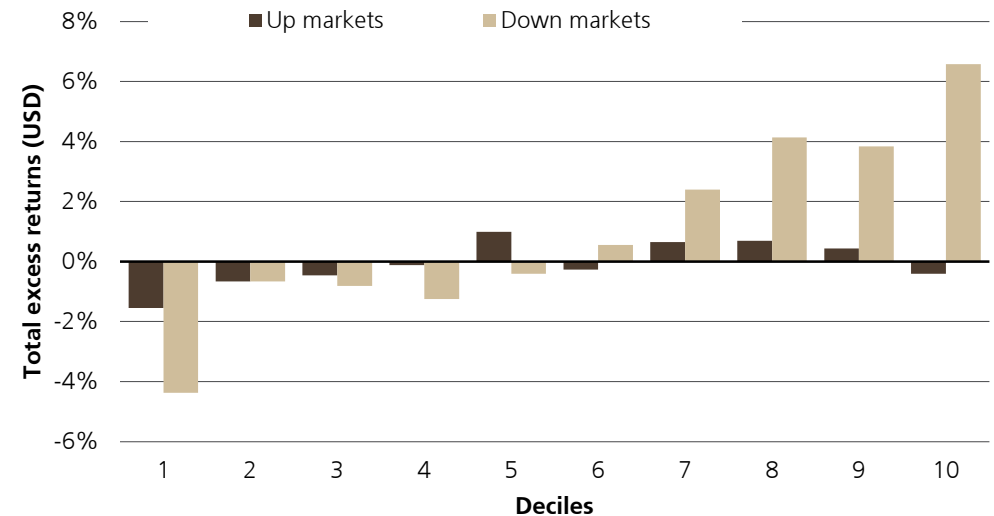
High Quality: total excess returns



High Quality: subsequent volatility (12m, monthly)

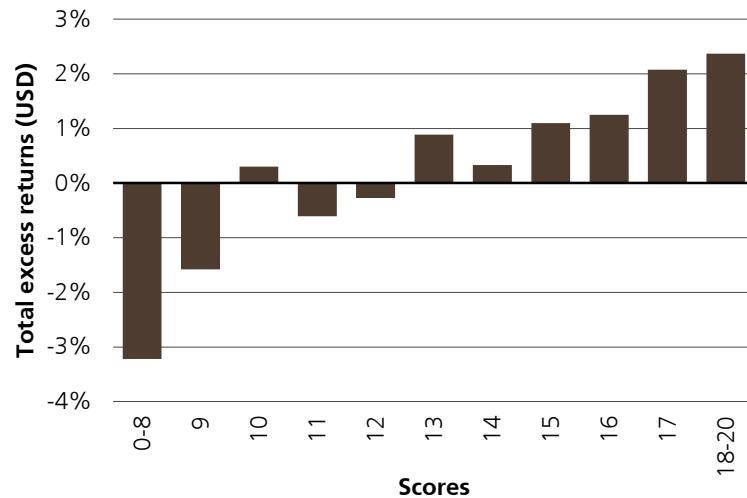


High Quality: total excess returns in up and down markets

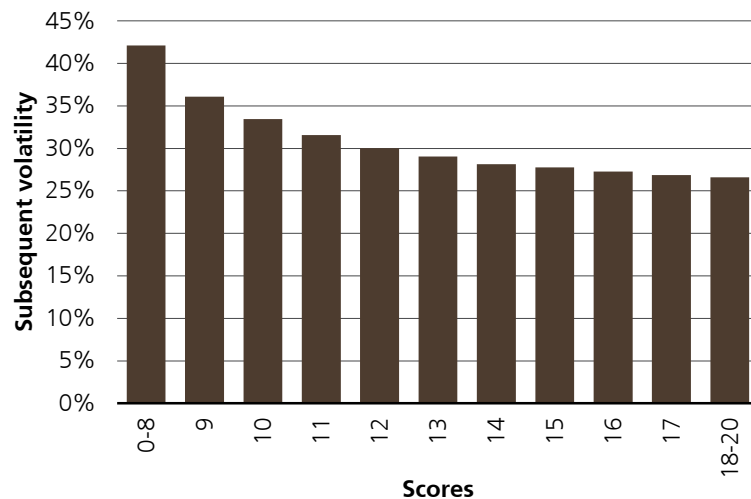


# How does Quality perform? Delta Quality

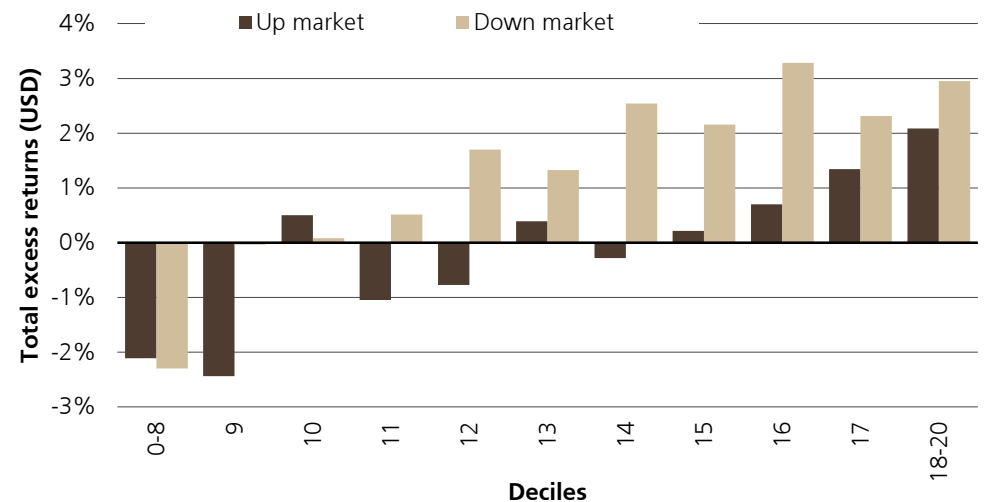
Delta Quality: total excess returns



Delta Quality: subsequent volatility (12m, monthly)

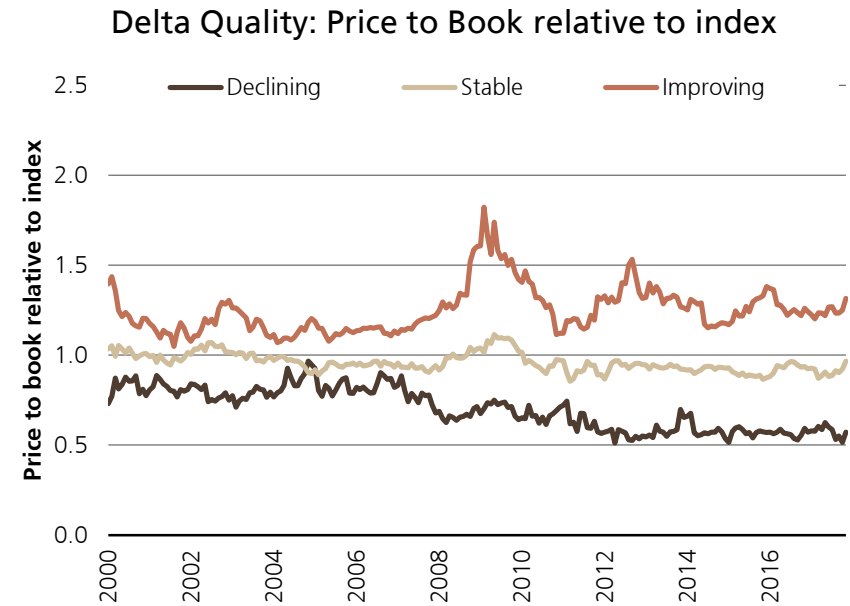
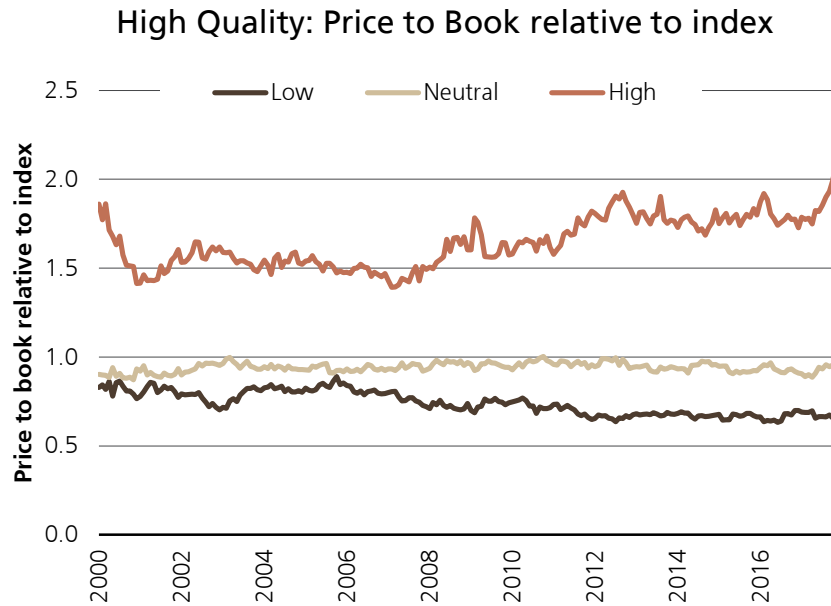


Delta Quality: total excess returns in up and down markets



# Surely it's priced?

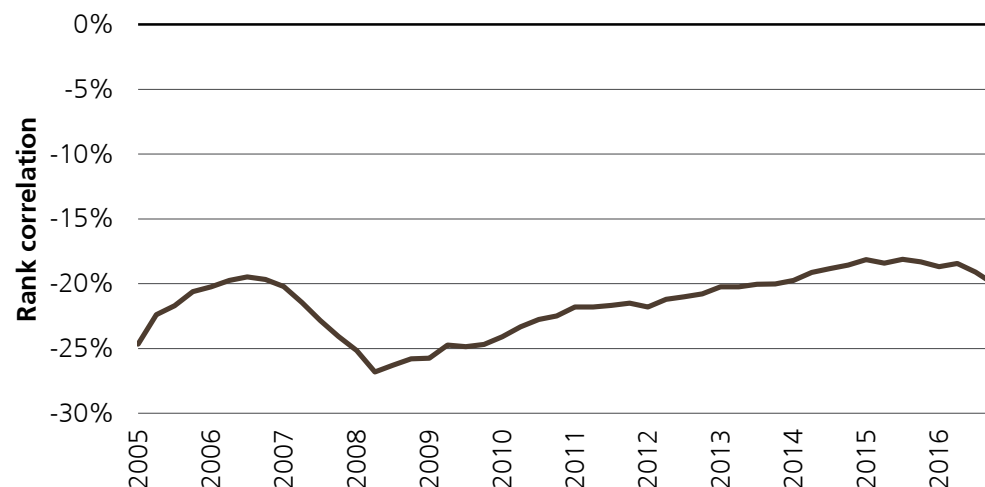
- High Quality is partially priced
- Delta Quality is not appreciated by the market



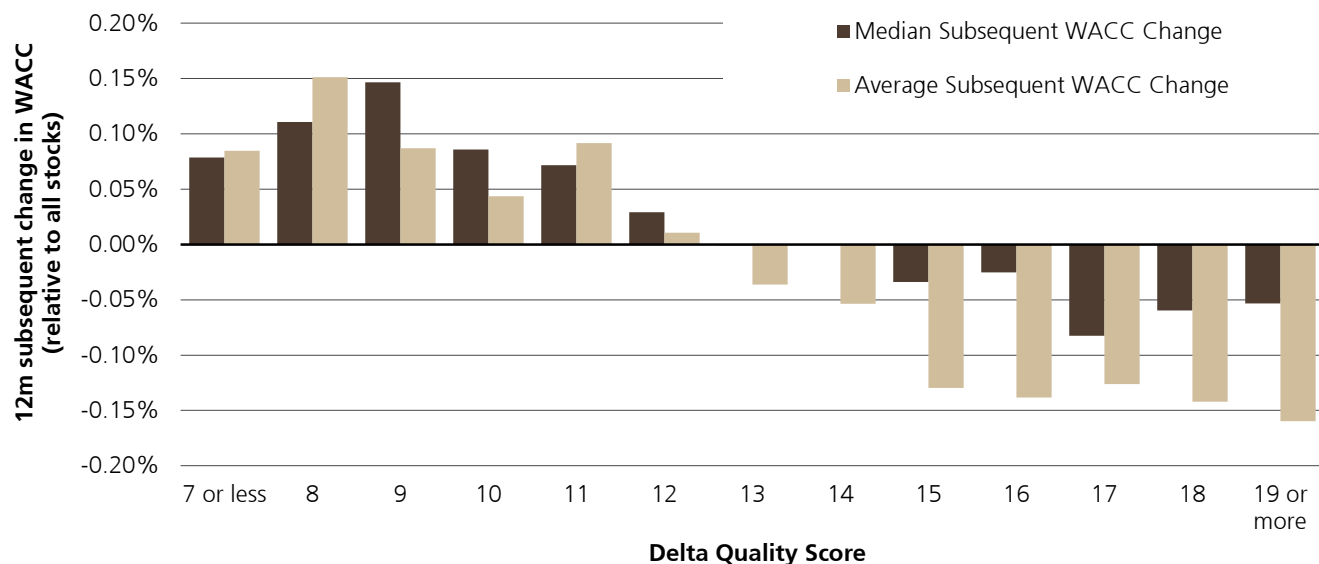
# Why we like Quality

- Analysts are good at forecasting cashflows, but are choose incorrect discount rates
- Discount rates are captured in financial statements
- Changes in financial statements are correlated with subsequent changes in WACC

Rank correlation of cashflow volatility and the WACC



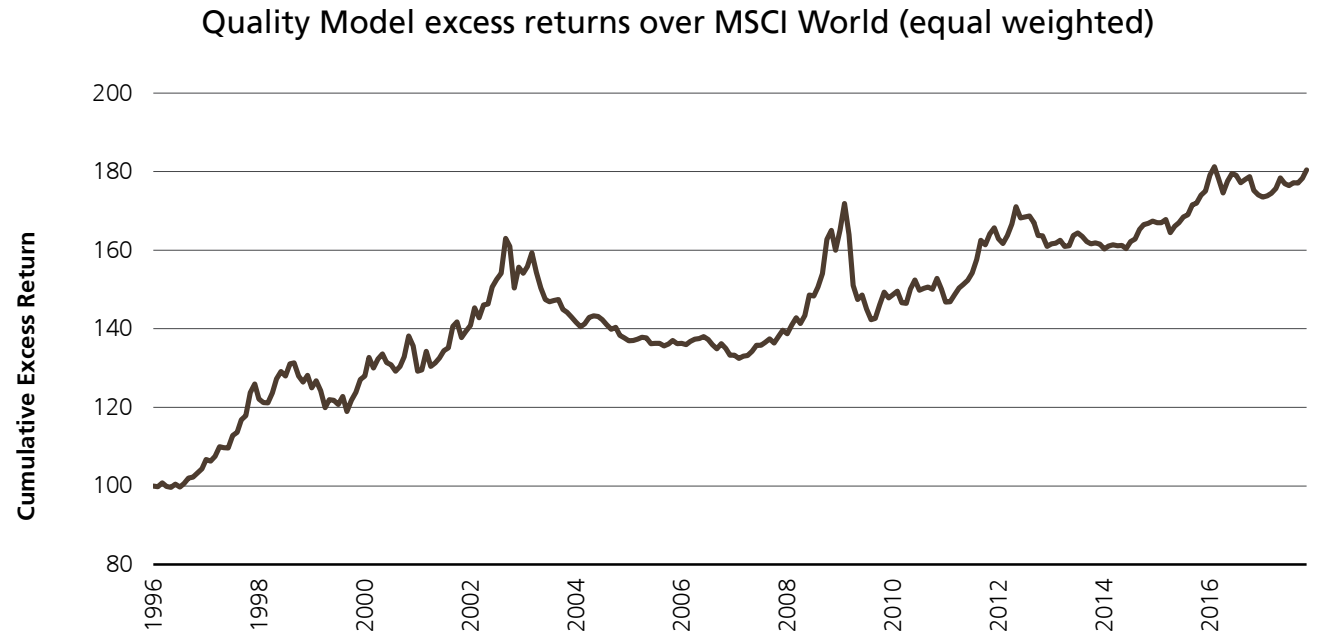
Delta Quality scores and changes in the weighted average cost of capital



# Building a Quality factor model

- High quality decile >7
- Delta quality score > 15

	MSCI World
	(Equal Weighted)
Annualised Excess Arithmetic	2.9%
Annualised Excess Geometric	2.7%
Volatility	6.0%
Avg No Of Stocks	157
No Of Periods	262
Sharpe RF 0	0.46
T Stat	2.13



Section 4

Where is the opportunity?

# High quality companies with improving fundamentals and solid cashflow yields

High Quality and cashflow yield

	1 Low quality	2	3	4	5 high quality
1 expensive	-4.3%	-0.5%	0.8%	-0.4%	1.9%
2	-5.5%	-3.4%	-1.3%	0.5%	0.0%
3	-1.6%	1.2%	-0.5%	2.4%	1.1%
4	-0.8%	1.1%	0.6%	1.4%	3.0%
5 cheap	2.0%	2.5%	3.0%	4.6%	4.8%

Delta Quality and cashflow yield

	Declining	Stable	Improving
1 expensive	-3.1%	-1.6%	1.1%
2	-7.1%	-1.5%	-0.7%
3	-3.2%	1.0%	1.1%
4	-1.3%	1.2%	1.9%
5 cheap	5.4%	2.6%	3.9%



# Screen: United States

Ticker	Company	Country	Sector	HQ score	DQ score	FCF Yield*
<b>S&amp;P 500</b>						
CMCSA-US	Comcast Corporation Class A	US	Consumer Discretionary	8	17	6.3%
LOW-US	Lowe's Companies, Inc.	US	Consumer Discretionary	10	16	7.2%
AZO-US	AutoZone, Inc.	US	Consumer Discretionary	10	14	7.0%
CCL-US	Carnival Corporation	US	Consumer Discretionary	8	16	2.3%
COST-US	Costco Wholesale Corporation	US	Consumer Staples	9	17	2.3%
PFE-US	Pfizer Inc.	US	Health Care	8	15	7.4%
BMJ-US	Bristol-Myers Squibb Company	US	Health Care	9	17	3.6%
CSCO-US	Cisco Systems, Inc.	US	Information Technology	8	13	6.3%
NTAP-US	NetApp, Inc.	US	Information Technology	9	17	7.2%
EBAY-US	eBay Inc.	US	Information Technology	7	14	5.8%
INTC-US	Intel Corporation	US	Information Technology	9	14	4.8%
MSFT-US	Microsoft Corporation	US	Information Technology	7	14	6.1%
PPG-US	PPG Industries, Inc.	US	Materials	9	14	6.1%
APD-US	Air Products and Chemicals, Inc.	US	Materials	8	14	3.9%
AVB-US	AvalonBay Communities, Inc.	US	Real Estate	7	16	3.4%

\* FCF Yield is UBS analyst forecast (if not available: trailing, or DY)

# Screen: Europe

Ticker	Company	Country	Sector	HQ score	DQ score	FCF Yield*
<b>MSCI Europe</b>						
BKG-GB	Berkeley Group Holdings plc	GB	Consumer Discretionary	10	17	10.1%
WPP-GB	WPP Plc	GB	Consumer Discretionary	8	13	10.3%
NXT-GB	Next plc	GB	Consumer Discretionary	10	15	8.1%
PSN-GB	Persimmon Plc	GB	Consumer Discretionary	8	17	8.7%
CCL-GB	Carnival plc	GB	Consumer Discretionary	9	15	2.3%
CPG-GB	Compass Group PLC	GB	Consumer Discretionary	9	12	4.4%
HEIA-NL	Heineken NV	NL	Consumer Staples	7	15	4.6%
VPK-NL	Royal Vopak NV	NL	Energy	7	14	0.6%
BAYN-DE	Bayer AG	DE	Health Care	7	15	8.2%
NOVO.B-DK	Novo Nordisk A/S Class B	DK	Health Care	10	14	3.8%
IAG-ES	International Consolidated Airlines Group SA	ES	Industrials	7	16	6.7%
AENA-ES	Aena SME SA	ES	Industrials	9	17	6.8%
ALFA-SE	Alfa Laval AB	SE	Industrials	8	16	5.2%
CAP-FR	Capgemini SE	FR	Information Technology	8	15	6.6%
BLT-GB	BHP Billiton Plc	GB	Materials	7	17	10.5%
RIO-GB	Rio Tinto plc	GB	Materials	9	15	7.9%
1COV-DE	Covestro AG	DE	Materials	10	16	8.9%
MNDI-GB	Mondi plc	GB	Materials	9	13	4.4%
BLND-GB	British Land Company PLC	GB	Real Estate	8	13	4.4%
TEL-NO	Telenor ASA	NO	Telecommunication Services	9	16	8.3%
ENEL-IT	Enel SpA	IT	Utilities	7	16	12.0%

\* FCF Yield is UBS analyst forecast (if not available: trailing, or DY)

# Screen: Japan

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Ticker	Company	Country	Sector	HQ score	DQ score	FCF Yield*
<b>Topix 1000</b>						
7269-JP	Suzuki Motor Corp.	JP	Consumer Discretionary	7	15	6.9%
7606-JP	UNITED ARROWS LTD.	JP	Consumer Discretionary	10	17	5.0%
7259-JP	Aisin Seiki Co Ltd	JP	Consumer Discretionary	7	12	7.8%
6326-JP	Kubota Corporation	JP	Industrials	7	14	2.7%
3632-JP	GREE, Inc.	JP	Information Technology	7	12	20.2%
4208-JP	UBE Industries, Ltd.	JP	Materials	8	16	6.5%

\* FCF Yield is UBS analyst forecast (if not available: trailing, or DY)

# Screen: Asia ex-Japan (part 1)

Ticker	Company	Country	Sector	HQ score	DQ score	FCF Yield*
<b>MSCI AC Asia ex Japan</b>						
2020-HK	ANTA Sports Products Ltd.	HK	Consumer Discretionary	10	18	3.9%
1093-HK	CSPC Pharmaceutical Group Ltd.	HK	Health Care	10	16	2.9%
27-HK	Galaxy Entertainment Group Limited	HK	Consumer Discretionary	10	15	4.5%
1169-HK	Haier Electronics Group Co., Ltd.	HK	Consumer Discretionary	9	17	7.4%
168-HK	Tsingtao Brewery Co., Ltd. Class H	HK	Consumer Staples	9	16	5.3%
1193-HK	China Resources Gas Group Limited	HK	Utilities	8	18	6.1%
2688-HK	ENN Energy Holdings Limited	HK	Utilities	8	15	10.0%
1113-HK	CK Asset Holdings Limited	HK	Real Estate	8	15	7.7%
2388-HK	BOC Hong Kong (Holdings) Limited	HK	Financials	8	15	3.8%
2333-HK	Great Wall Motor Co., Ltd. Class H	HK	Consumer Discretionary	8	14	10.1%
857-HK	PetroChina Company Limited Class H	HK	Energy	7	17	6.8%
386-HK	China Petroleum & Chemical Corporation Class H	HK	Energy	7	16	8.4%
2628-HK	China Life Insurance Co. Ltd. Class H	HK	Financials	7	16	2.4%
576-HK	Zhejiang Expressway Co. Ltd. Class H	HK	Industrials	7	13	13.4%
867-HK	China Medical System Holdings Ltd.	HK	Health Care	7	13	2.7%
966-HK	China Taiping Insurance Holdings Co., Ltd.	HK	Financials	7	13	0.8%

\* FCF Yield is UBS analyst forecast (if not available: trailing, or DY)

# Screen: Asia ex-Japan (part 2)

Ticker	Company	Country	Sector	HQ score	DQ score	FCF Yield*
<b>MSCI AC Asia ex Japan</b>						
LPPF-ID	PT Matahari Department Store Tbk Class A	ID	Consumer Discretionary	10	14	7.2%
ADRO-ID	PT Adaro Energy Tbk	ID	Energy	8	20	14.5%
BSDE-ID	PT Bumi Serpong Damai Tbk	ID	Real Estate	8	16	11.9%
BBTN-ID	PT Bank Tabungan Negara (Persero) Tbk	ID	Financials	7	15	0.6%
532540-IN	Tata Consultancy Services Limited	IN	Information Technology	10	16	4.3%
500182-IN	Hero Motocorp Limited	IN	Consumer Discretionary	10	13	3.2%
036570-KR	NCsoft Corporation	KR	Information Technology	9	18	7.2%
011170-KR	Lotte Chemical Corp.	KR	Materials	8	15	13.5%
000030-KR	Woori Bank	KR	Financials	7	15	4.4%
Z74-SG	Singapore Telecommunications Limited	SG	Telecommunication Services	9	14	5.4%
S63-SG	Singapore Technologies Engineering Ltd	SG	Industrials	7	18	3.5%
A17U-SG	Ascendas Real Estate Investment Trust	SG	Real Estate	7	16	6.0%
C09-SG	City Developments Limited	SG	Real Estate	7	16	0.2%
GLOW-TH	Glow Energy Public Co., Ltd.	TH	Utilities	8	13	12.2%
PTT-TH	PTT Public Co., Ltd.	TH	Energy	7	18	11.6%
PTTEP-TH	PTT Exploration & Production Plc	TH	Energy	7	15	8.9%
SCC-TH	Siam Cement Public Co. Ltd.	TH	Materials	7	13	7.9%
SCC.F-TH	Siam Cement Public Co. Ltd.(Alien Mkt)	TH	Materials	7	13	3.6%
3008-TW	LARGAN Precision Co., Ltd.	TW	Information Technology	10	18	5.4%
2474-TW	Catcher Technology Co., Ltd.	TW	Information Technology	9	19	9.3%
6505-TW	Formosa Petrochemical Corp	TW	Energy	9	17	5.5%
1301-TW	Formosa Plastics Corporation	TW	Materials	7	18	2.0%

\* FCF Yield is UBS analyst forecast (if not available: trailing, or DY)

# Screen: Australia

Ticker	Company	Country	Sector	HQ score	DQ score	FCF Yield*
<b>ASX 200</b>						
SRX-AU	Sirtex Medical Limited	AU	Health Care	10	14	5.3%
HVN-AU	Harvey Norman Holdings Ltd	AU	Consumer Discretionary	9	16	8.8%
RIO-AU	Rio Tinto Limited	AU	Materials	9	16	7.1%
SUL-AU	Super Retail Group Limited	AU	Consumer Discretionary	8	19	7.9%
FMG-AU	Fortescue Metals Group Ltd	AU	Materials	8	17	4.0%
BHP-AU	BHP Billiton Limited	AU	Materials	8	17	9.1%
ALL-AU	Aristocrat Leisure Limited	AU	Consumer Discretionary	8	17	5.0%
WPL-AU	Woodside Petroleum Ltd	AU	Energy	8	14	4.7%
WHC-AU	Whitehaven Coal Limited	AU	Energy	7	19	18.9%

\* FCF Yield is UBS analyst forecast (if not available: trailing, or DY)

# Valuation Method and Statement of Risk

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Our quantitative models rely on reported financial statement information, consensus earnings forecasts and stock prices. Errors in these numbers are sometimes impossible to prevent (as when an item is misstated by a company). Also, the models employ historical data to estimate the efficacy of stock selection strategies and the relationships among strategies, which may change in the future. Additionally, unusual company-specific events could overwhelm the systematic influence of the strategies used to rank and score stocks.

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## UBS Investment Research: Global Equity Rating Definitions

12-Month Rating	Definition	Coverage <sup>1</sup>	IB Services <sup>2</sup>
<b>Buy</b>	FSR is > 6% above the MRA.	45%	26%
<b>Neutral</b>	FSR is between -6% and 6% of the MRA.	39%	23%
<b>Sell</b>	FSR is > 6% below the MRA.	16%	11%
Short-Term Rating	Definition	Coverage <sup>3</sup>	IB Services <sup>4</sup>
<b>Buy</b>	Stock price expected to rise within three months from the time the rating was assigned because of a specific catalyst or event.	<1%	<1%
<b>Sell</b>	Stock price expected to fall within three months from the time the rating was assigned because of a specific catalyst or event.	<1%	<1%

Source: UBS. Rating allocations are as of 30 September 2017.

1:Percentage of companies under coverage globally within the 12-month rating category.

2:Percentage of companies within the 12-month rating category for which investment banking (IB) services were provided within the past 12 months.

3:Percentage of companies under coverage globally within the Short-Term rating category.

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**KEY DEFINITIONS:****Forecast Stock Return (FSR)** is defined as expected percentage price appreciation plus gross dividend yield over the next 12 months. **Market Return Assumption (MRA)** is defined as the one-year local market interest rate plus 5% (a proxy for, and not a forecast of, the equity risk premium). **Under Review (UR)** Stocks may be flagged as UR by the analyst, indicating that the stock's price target and/or rating are subject to possible change in the near term, usually in response to an event that may affect the investment case or valuation. **Short-Term Ratings** reflect the expected near-term (up to three months) performance of the stock and do not reflect any change in the fundamental view or investment case. **Equity Price Targets** have an investment horizon of 12 months.

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NetApp Inc, US\$57.81 (04 Jan 2018); Bristol-Myers Squibb, US\$61.75 (04 Jan 2018); Costco Wholesale Corp, US\$189.10 (04 Jan 2018); Lowe's Companies, Inc., US\$92.74 (04 Jan 2018); Berkeley Group Holdings, 4,195p (04 Jan 2018); Aena SME SA, €175.40 (04 Jan 2018); Covestro AG, €88.42 (04 Jan 2018); Telenor, Nkr178.00 (04 Jan 2018); United Arrows, ¥4,650 (04 Jan 2018); Anta Sports Products, HK\$35.75 (04 Jan 2018); Haier Electronics Group, HK\$22.50 (04 Jan 2018); Tsingtao Brewery, HK\$42.05 (04 Jan 2018); CSPC Pharmaceutical Group, HK\$17.60 (04 Jan 2018); Harvey Norman Holdings Limited, A\$4.28 (04 Jan 2018); Rio Tinto Limited, A\$77.85 (04 Jan 2018); Comcast Corporation, US\$40.67 (04 Jan 2018); AutoZone Inc., US\$761.26 (04 Jan 2018); Carnival Corp., US\$66.85 (04 Jan 2018); Pfizer Inc., US\$36.79 (04 Jan 2018); Cisco Systems Inc., US\$38.99 (04 Jan 2018); eBay, US\$38.57 (04 Jan 2018); Intel Corp., US\$44.43 (04 Jan 2018); Microsoft Corp., US\$87.11 (04 Jan 2018); PPG Industries Inc., US\$117.47 (04 Jan 2018); Air Products and Chemicals, US\$167.05 (04 Jan 2018); AvalonBay Communities, Inc., US\$174.61 (04 Jan 2018); WPP, 1,319p (04 Jan 2018); Next, 4,748p (04 Jan 2018); Persimmon, 2,754p (04 Jan 2018); Compass Group, 1,565p (04 Jan 2018); Heineken, €87.22 (04 Jan 2018); Vopak, €36.76 (04 Jan 2018); Bayer, €104.26 (04 Jan 2018); Novo Nordisk, Dkr335.55 (04 Jan 2018); International Airlines Group, 665p (04 Jan 2018); Alfa Laval, SKr198.60 (04 Jan 2018); Capgemini, €101.35 (04 Jan 2018); BHP Billiton Limited, A\$30.33 (04 Jan 2018); Mondi, 1,939p (04 Jan 2018); British Land, 665p (04 Jan 2018); Enel, €5.24 (04 Jan 2018); Suzuki Motor, ¥6,742 (04 Jan 2018); Aisin Seiki, ¥6,380 (04 Jan 2018); Kubota, ¥2,256.5 (04 Jan 2018); Gree Inc, ¥714 (04 Jan 2018); Ube Industries, ¥3,425 (04 Jan 2018); Largan Precision, NT\$4,135.00 (04 Jan 2018); Tata Consultancy Services Ltd., Rs2,649.80 (04 Jan 2018); Galaxy Entertainment Group, HK\$60.25 (04 Jan 2018); Matahari Department Store, Rp11,075 (04 Jan 2018); Hero MotoCorp, Rs3,738.50 (04 Jan 2018); New Oriental Education & Technology, US\$99.39 (04 Jan 2018); Catcher Technology, NT\$335.00 (04 Jan 2018); NCsoft, Won422,500 (04 Jan 2018); Formosa Petrochemical Corporation, NT\$119.00 (04 Jan 2018); Singtel, S\$3.61 (04 Jan 2018); PT Adaro Energy Tbk, Rp1,915 (04 Jan 2018); China Resources Gas Group, HK\$27.85 (04 Jan 2018); Bumi Serpong Damai, Rp1,710 (04 Jan 2018); Lotte Chemical, Won349,000 (04 Jan 2018); ENN Energy Holdings, HK\$55.55 (04 Jan 2018); CK Asset Holdings, HK\$69.15 (04 Jan 2018); Bank of China (Hong Kong), HK\$39.55 (04 Jan 2018); Great Wall Motor, HK\$9.81 (04 Jan 2018); Glow Energy PCL, Bt80.75 (04 Jan 2018); PTT, Bt472.00 (04 Jan 2018); Singapore Technologies Engineering, S\$3.30 (04 Jan 2018); Formosa Plastics, NT\$98.50 (04 Jan 2018); PetroChina, HK\$5.78 (04 Jan 2018); Sinopec - H, HK\$6.14 (04 Jan 2018); Ascendas REIT, S\$2.79 (04 Jan 2018); China Life Insurance, HK\$24.85 (04 Jan 2018); City Developments, S\$12.86 (04 Jan 2018); PTT Exploration & Production, Bt106.00 (04 Jan 2018); Woori Bank, Won15,650 (04 Jan 2018); PT Bank Tabungan Pensiunan Nasional Tbk, Rp2,470 (04 Jan 2018); Bank Tabungan Negara, Rp3,460 (04 Jan 2018); Zhejiang Expressway Co Ltd., HK\$8.93 (04 Jan 2018); Siam Cement, Bt496.00 (04 Jan 2018); Baidu, Inc., US\$245.73 (04 Jan 2018); China Medical System Holdings, HK\$18.98 (04 Jan 2018); China Taiping Insurance, HK\$31.35 (04 Jan 2018); Sirtex Medical Limited, A\$16.70 (04 Jan 2018); Super Retail Group Ltd, A\$8.37 (04 Jan 2018); Fortescue Metals Group Ltd, A\$5.17 (04 Jan 2018); Aristocrat Leisure Ltd, A\$22.96 (04 Jan 2018); Woodside Petroleum Limited, A\$34.46 (04 Jan 2018); Whitehaven Coal Limited, A\$4.50 (04 Jan 2018); BHP Billiton Plc, 1,562p (04 Jan 2018); Rio Tinto Plc, 3,987p (04 Jan 2018); Source: UBS. All prices as of local market close.

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