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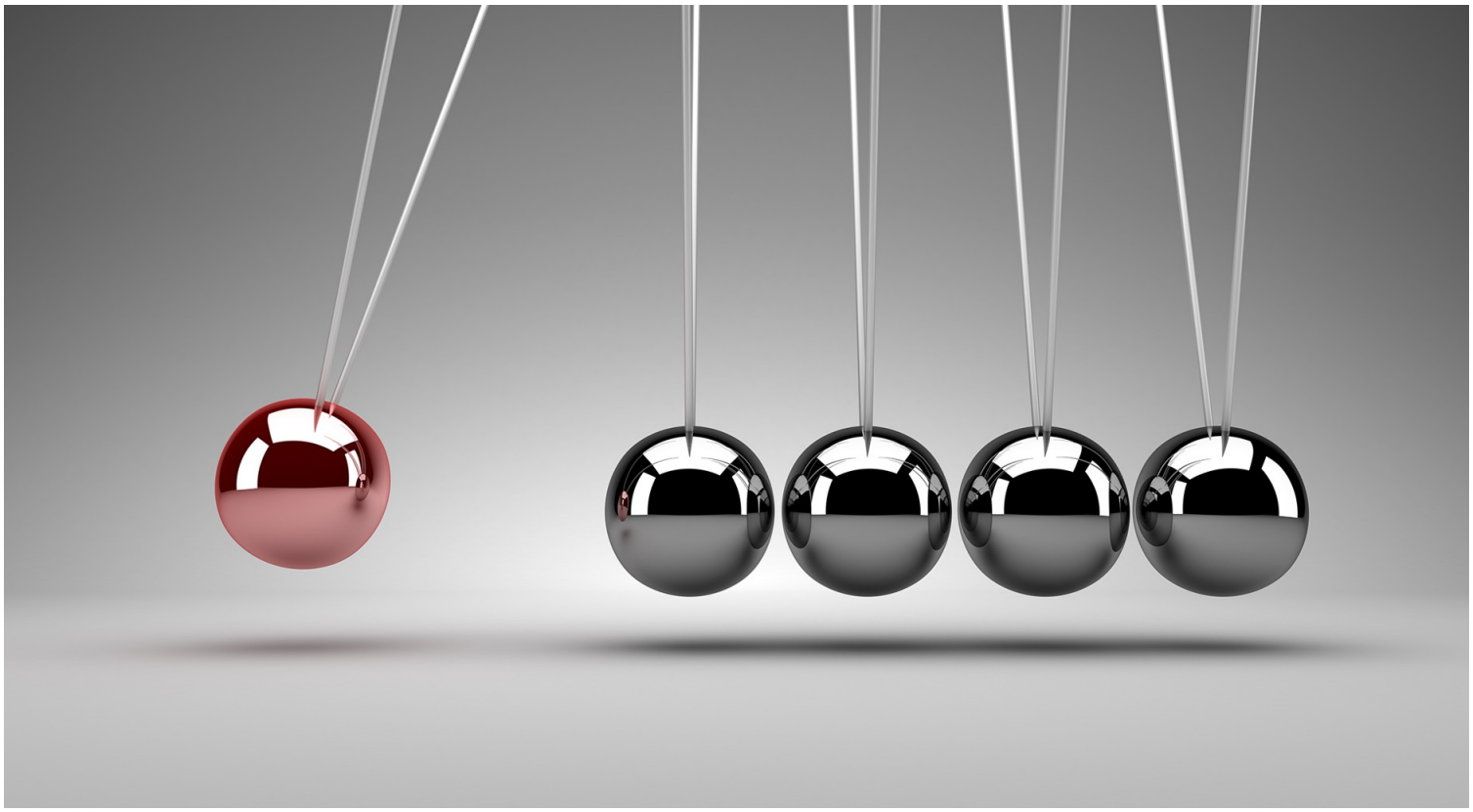
Asia/GEMs Equity Strategy

Introducing QUANTSY: Our Quantitative Style Rotation Model for the APxJ/EM Universe



Our new quant model aims to predict systematically which style group will outperform on a monthly basis. Complementing our existing top-down and bottom-up stock selection approach, the output of this model enables us to identify strong-conviction stock ideas that tick all the boxes.

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Asia/GEMs Equity Strategy

Introducing QUANTSY: Our Quantitative Style Rotation Model for the APxJ/EM Universe

Our new quant model aims to predict systematically which style group will outperform on a monthly basis. Complementing our existing top-down and bottom-up stock selection approach, the output of this model enables us to identify strong-conviction stock ideas that tick all the boxes.

In this report, we introduce the Morgan Stanley Style Rotation Model (QUANTSY), which aims to make style preference decisions between three pairs of style groups *independently*. We hope QUANTSY will allow us to make more judicious style rotation choices on a regular basis, improving our existing more ad hoc approach. At launch, QUANTSY suggests the following:

- **Own High Quality:** Quality underperformed late in 2016 globally, but QUANTSY suggests this retreat in performance will be temporary in APxJ/EM as the valuation gap between High Quality and Low Quality stocks has narrowed significantly. A similar pace of this narrowing valuation gap was last seen in 2013-14, which supported a two-year outperformance of High Quality stocks.
- **Prefer Low Dividend Yield vs. High Dividend Yield:** High Dividend Yield stocks' performance was flat in 2H16. In this case, QUANTSY suggests a preference for Low Dividend Yield stocks over High Dividend Yield stocks in APxJ/EM. The main warning signal for the High Dividend Yield group is its quality metrics, which have now fallen below those of its Low Dividend Yield peers.
- **Neutral Value vs. Growth:** Value has started outperforming Growth recently as global growth expectations firm up. However, QUANTSY is neutral Value vs. Growth, and hence we are cautious against chasing Value in APxJ/EM, as the dividend yield spread between Value and Growth stocks is no longer attractive compared to six months ago, before the recent Value rally started.

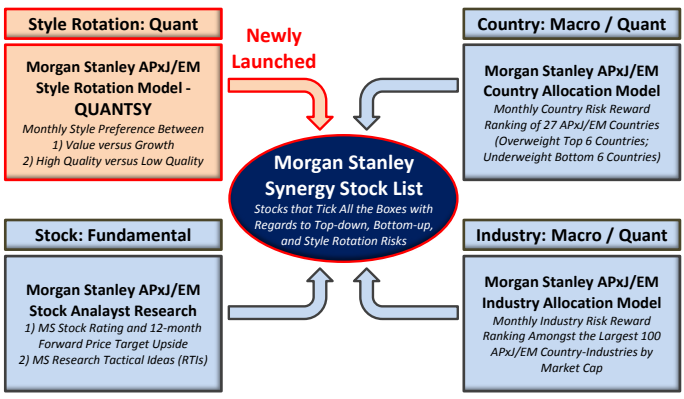
Stocks that tick all the boxes (Synergy Stock list): We identify 20 stocks that rank in favor by our: 1) bottom-up stock analysts' ratings; 2) existing top-down country allocation model; 3) industry allocation model, and 4) current style preferences.

Where our model is different – a systematic seven-factor approach:

- **QUANTSY does *not* have an inherent bias towards owning one style group over another** – unlike some Smart Beta products.
- **QUANTSY does *not* rely on judgment of the present stage of market cycles:** Nor does it rely on forecasting the direction of future market moves. Many other models use these qualitative judgments to select their preferred style groups.

Exhibit 1:

How QUANTSY Fits in the Big Picture – The Last Piece of the Puzzle for Stock Picking

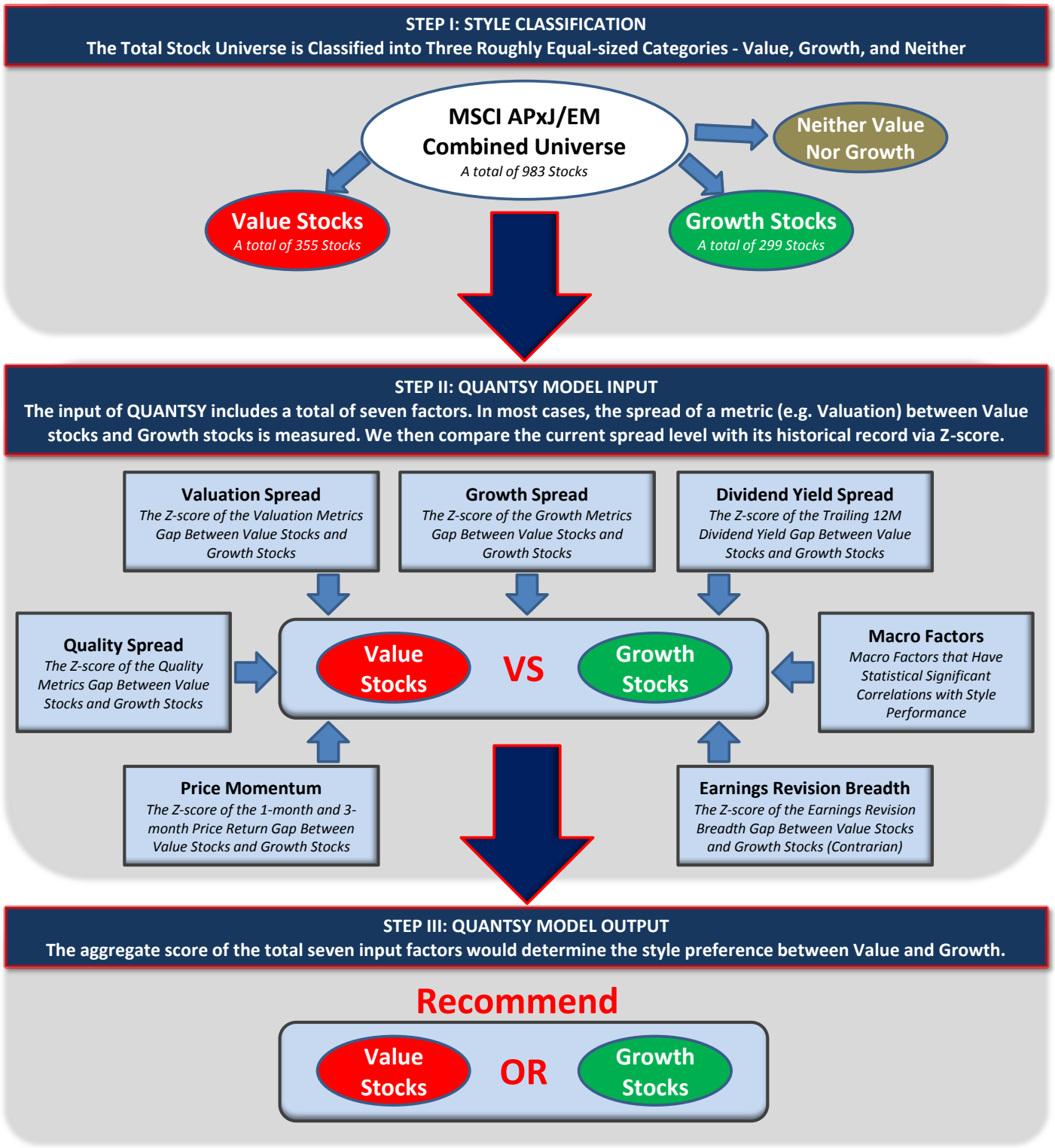


Source: Morgan Stanley Research

How QUANTSY Works – A Quick Summary

Exhibit 2:

How QUANTSY Works – Summary of Style Preference Decision Process



Source: Morgan Stanley Research

Executive Summary: Style Rotation Is the Last Piece of the Puzzle for Stock Picking

Style Preference Is Crucial for Stock Picking

Investment style has long been identified as a key component of success in active equity portfolio management, in part owing to the notable success of value investing developed by Benjamin Graham. However, only recently has the use of style equity management proliferated amongst active fund managers with the invention of Smart Beta and Style Index products. The concept has widened from Value versus Growth preference to a variety of style groups.

Two Interesting Facts about Style Rotation (Especially for Long-term / Non-quant Investors)

1. **Style rotation has occurred significantly less frequently than country or sector rotation:** In other words, the outperformance (or underperformance) of style groups tends to stay longer than it does for countries or sectors. Hence, long-term investors should probably pay more attention to style rotation.
2. **Style performance has had little correlation with any country or sector performance.** Hence, style rotation should be treated as an independent and orthogonal phenomenon versus country or sector rotations. For details, see **Part V** of the report.

Common Practice of Investors regarding Style Preference

1. **"Buy and Hold":** One common practice of investors is to "buy and hold" a portfolio of stocks with long-term risk exposure to one single style preference, on the premise that a certain style group can outperform the market in the long run. This is also the purpose of most Smart Beta and Style Index products. However, historical records show that any style group's performance tends to be sensitive to the present phase of market cycle. For instance, *in general*, Value stocks tend to outperform in the early cycles of bull markets whereas High Dividend Yield stocks tend to outperform when markets correct.
2. **"Chase the Winner":** Another common investor practice is to chase the style group that has outperformed in the prior time horizon. To execute this strategy, one would buy stocks within the style group that is currently in favor (and sell stocks within the style group that is currently out of favor). One rationale of this strategy is that the proliferation of style investing itself encourages investors to chase past style winners and thus reinforce the price momentum of the same style group of stocks. However, in this report (see **Part IV**), we demonstrate that simply going with the past style winner does not guarantee superior alpha generation.

How Our Model Is Different

In this report we introduce the Morgan Stanley Style Rotation Model (QUANTSY), which aims to make style preference decisions between three pairs of style groups *independently*:

1. Value versus Growth;
2. High Quality versus Low Quality;
3. High Dividend Yield versus Low Dividend Yield

See **Part II** of the report.

Back-tested performance of our model shows that by making style rotation decisions, one can outperform the market through different phases of market cycles, and thus generate superior alpha versus the common "Buy and Hold" and "Chase the Winner" strategies (see **Part III** of the report). The output of the model currently suggests owning High Quality stocks whilst avoiding High Dividend Yield stocks (see **Part I** of the report).

Ultimate Objective: Identify Stocks That Tick All the Boxes (Synergy Stock List)

Our Style Rotation Model complements our existing country allocation and industry allocation models as well as our stock analysts' research in offering stock-picking guidance with strong conviction. In **Exhibit 3** , we showcase our *Synergy Stock list*, which includes a total of 20 stocks that are diversified across six countries and 12 industry groups.

Exhibit 3:

Morgan Stanley Synergy Stock List – Identifying stocks that tick all the boxes – favored by 1) bottom-up stock analysts' ratings, 2) existing top-down country allocation model; 3) industry allocation model, and 4) current style preferences. Market cap is > US$2bn.

General Information					Bottom-up: Fundamental		Style Rotation: Quant				Top-down: Macro / Quant			
#	Ticker	Company	Market Cap bn US$	Share Price Last	Stock Rating	Price Target Upside	Quality Score (Decile: 1=High, 10=Low)	Quality Group Category	Dividend Yield Score (Decile: 1=High, 10=Low)	Dividend Yield Group Category	Country Ratings	Country	Country Industry Score (Decile: 1=High, 10=Low)	Industry Group
1	005930.KS	SAMSUNG ELECTRONICS CO	238.6	1805000	OW	11%	1	High	9	Low	EW	Korea	3	Technology Hardware
2	0700.HK	TENCENT HOLDINGS LI (CN)	227.6	189.7	OW	19%	1	High	10	Low	OW	China	2	Software & Services
3	ITC.NS	ITC	42.2	240.95	OW	29%	1	High	7	Medium	OW	India	1	Food Bev & Tobacco
4	TLKM.JK	TELEKOMUNIKASI INDONESIA	30.1	3980	OW	23%	1	High	7	Medium	EW	Indonesia	6	Telecommunication
5	000660.KS	SK HYNIX	28.0	45800	OW	9%	4	Medium	9	Low	EW	Korea	1	Semiconductors
6	UNVR.JK	UNILEVER INDONESIA	23.4	38800	OW	24%	1	High	7	Medium	EW	Indonesia	-	Household & Personal Prod.
7	035420.KS	NAVER	22.2	777000	OW	18%	2	High	10	Low	EW	Korea	1	Software & Services
8	FAL.SN	FALABELLA SACI	20.0	5299.5	OW	(2%)	3	High	9	Low	OW	Chile	-	Retailing
9	090430.KS	AMOREPACIFIC CORP (NEW)	17.8	305500	OW	64%	1	High	10	Low	EW	Korea	1	Household & Personal Prod.
10	ASPN.NS	ASIAN PAINTS	12.9	904.65	OW	41%	1	High	9	Low	OW	India	6	Materials
11	BAP.N	CREDICORP	12.6	157.86	OW	14%	3	Medium	8	Low	OW	Peru	6	Banks
12	BHRI.NS	BHARTI INFRATEL	10.0	344.2	OW	38%	2	High	9	Low	OW	India	2	Telecommunication
13	LUPN.NS	LUPIN	10.0	1505.75	OW	23%	2	High	10	Low	OW	India	4	Pharmaceuticals
14	002790.KS	AMOREG	9.2	122500	OW	80%	2	High	10	Low	EW	Korea	1	Household & Personal Prod.
15	EICH.NS	EICHER MOTORS	9.0	22523.95	OW	28%	1	High	10	Low	OW	India	4	Capital Goods
16	TEML.NS	TECH MAHINDRA	7.0	488	OW	12%	2	High	9	Low	OW	India	2	Software & Services
17	1193.HK	CHINA RESOURCES GAS GRP	6.6	21.8	OW	22%	1	High	8	Low	OW	China	1	Utilities
18	0696.HK	TRAVELSKY TECHNOLOGY H	6.2	16.3	OW	8%	1	High	9	Low	OW	China	2	Software & Services
19	036570.KS	NCSOFT CORP	4.7	248000	OW	49%	1	High	9	Low	EW	Korea	1	Software & Services
20	HVEL.NS	HAVELLS INDIA	3.1	341.85	OW	14%	2	High	9	Low	OW	India	4	Capital Goods

Source: Morgan Stanley Research

The particular criteria of the stock screen are:

- **Stock / bottom-up:** Rated Overweight by Morgan Stanley stock analysts;
- **Country / top-down:** Country rated Overweight or Equal-weight in our country model. All other conditions equal, the stock in the Overweight country is preferred. Our APxJ/EM country allocation model provides a monthly risk-reward ranking of 27 APxJ/EM countries, where we overweight the top six countries and underweight the bottom six countries. Our current Overweight countries within the APxJ/EM universe are: India, Taiwan, China, Peru, Chile, and Czech Republic.
- **Industry / top-down:** Strong ranking of country industry group within the APxJ/EM region. The score is based on the monthly ranking of its country industry group in our APxJ/EM industry allocation model.
- **Style rotation / quant:** Strong score in *owning* High Quality and *avoiding* High Dividend Yield combined. The score of the stock is based on its respective decile group by Quality and Dividend Yield within the overall stock universe.
- **Market cap larger than US$2bn**

Part I: QUANTSY's Style Preferences, How They Contextualize with Our Macro Calls, and the Stock Implications

Own High Quality

High Quality stocks have become out of favor in 2H2016, having underperformed their Low Quality peers by 6 percentage points since June. However, QUANTSY suggests that this retreat in performance is temporary, and thus we maintain our long-term preference for High Quality strategy (see our Best Business Model approach) and do not expect low quality stocks to perform well.

1) High Quality stocks have become more attractive in valuation since their retreat in performance in 2H2016. Exhibit 4 shows the YoY change of valuation metrics gap between High Quality stocks and Low Quality stocks, which has turned significantly more in favor of the High Quality stocks recently. In fact, the pace of valuation gap narrowing between High Quality and Low Quality stocks has reached a multi-year high post GFC. A similar pace of this valuation gap narrowing was last seen in 2013-14, and supported a structural outperformance of High Quality stocks.

2) High Quality stocks tend to outperform Low Quality stocks in a rising US$ environment. Exhibit 5 shows a strong positive correlation between the Fed's broad US$ index and APxJ/EM High Quality stocks' relative performance versus their Low Quality peers. The main reason is that those APxJ/EM companies with high US$ debt leverage also are more likely to be Low Quality in nature, and thus become more vulnerable when the US$ strengthens versus APxJ/EM currencies. Our FX team now forecasts a last leg of US$ rally. The team expects the broad US$ index to gain 6%, topping out in 2Q18. Thus, in particular, we would avoid companies with Low Quality high US$ debt level which are highlighted in **Exhibit 7**.

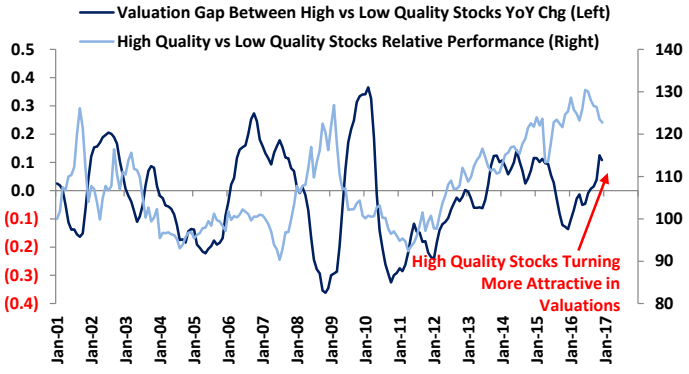
High Quality Stock Screen to Own: Piotroski Score & Joel Greenblatt Combo Screen

The Piotroski Score rates stocks on financial strength and profitability. Piotroski's system is simple; it consists of nine criteria, on which a stock is given one point if it passes and zero if it fails. The higher the final score, the better. Here we focus on stocks with a score of 0-2.

The Joel Greenblatt screen is based on the premise of buying quality companies 'on the cheap'. It ranks non-financial companies on two criteria: 1) ROCE (high is good) and 2) EV/EBITDA (low is good). Finally, the stocks are rated Overweight by Morgan Stanley.

Exhibit 4:

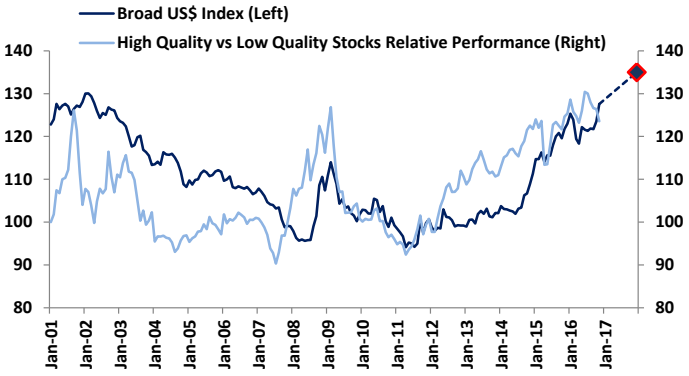
High Quality Stocks in APxJ/EM Performance Relative to Low Quality Stocks vs. YoY change of Valuation Metrics Gap between High Quality stocks and Low Quality stocks



Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016.

Exhibit 5:

High Quality Stocks in APxJ/EM Performance Relative to Low Quality Stocks vs. Broad US$ Index



Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016.

Exhibit 6:

APxJ/EM Quality stock screen – Piotroski Score & Joel Greenblatt combo screen

Rank	Company	Country	Sector	Price	Market Cap (US$ mn)		MS Rating	Upside To MS PT (%)	Piotroski Score	ROCE (%)	EBITDA / EV (%)
					Total	Free Float					
1	SAMSUNG ELECTRONICS CO	Korea	Information Technology	1805000	211,718	148,203	Overweight	10.8%	7	13.5	22.3
2	TAIWAN SEMICONDUCTOR MFG	Taiwan	Information Technology	181.5	146,029	138,727	Overweight	13.7%	6	23.7	13.0
3	SK HYNIX	Korea	Information Technology	45800	27,606	22,085	Overweight	9.2%	5	10.4	21.3
4	HYUNDAI MOBIS	Korea	Consumer Discretionary	271500	21,882	15,317	Overweight	21.5%	8	9.8	17.4
5	TELEKOMUNIKASI INDONESIA	Indonesia	Telecommunication Services	3980	29,778	14,889	Overweight	23.1%	7	27.1	13.9
6	CHUNGHWA TELECOM CO	Taiwan	Telecommunication Services	101.5	24,431	11,971	Overweight	17.1%	8	13.1	10.7
7	TATA MOTORS	India	Consumer Discretionary	487.05	20,628	11,346	Overweight	27.9%	5	8.9	17.1
8	TATNEFT COMMON (RUB)	Russia	Energy	427.2	15,247	9,911	Overweight	4.3%	7	19.1	17.2
9	KT&G CORP(KOREA TOBACCO)	Korea	Consumer Staples	102000	11,594	9,855	Overweight	33.3%	6	19.6	13.0
10	LG CHEM	Korea	Materials	253000	14,787	9,612	Overweight	26.5%	7	13.0	16.6
11	SK INNOVATION CO	Korea	Energy	147000	11,254	7,878	Overweight	36.1%	8	11.1	25.0
12	ULTRAPAR PART ON	Brazil	Energy	67.9	11,608	7,545	Overweight	35.5%	8	18.0	9.3
13	WH GROUP	Hong Kong	Consumer Staples	6.27	11,846	6,515	Overweight	19.6%	8	16.1	14.4
14	QUANTA COMPUTER	Taiwan	Information Technology	60.3	7,227	5,059	Overweight	30.0%	6	12.5	14.1
15	SINOPHARM GROUP CO H	China	Health Care	31.95	4,915	4,915	Overweight	47.1%	7	18.2	11.3
16	LOTTE CHEMICAL CORP	Korea	Materials	383500	10,883	4,897	Overweight	4.3%	6	18.5	18.6
17	BHARAT PETROLEUM CORP	India	Energy	640.5	13,648	4,777	Overweight	16.9%	7	20.4	13.3
18	SPARK NEW ZEALAND	New Zealand	Telecommunication Services	3.41	4,351	4,351	Overweight	4.1%	7	15.6	12.2
19	COCA-COLA AMATIL	Australia	Consumer Staples	10.12	5,596	4,197	Overweight	2.8%	8	19.6	12.9
20	VODACOM GROUP	South Africa	Telecommunication Services	152.4	16,582	4,146	Overweight	4.3%	6	38.8	12.0
21	SAPPI	South Africa	Materials	89.95	3,561	3,561	Overweight	3.4%	7	13.4	15.2
22	ALFA	Mexico	Industrials	25.85	6,425	3,534	Overweight	35.4%	6	10.3	16.7
23	KANGWON LAND	Korea	Consumer Discretionary	35700	6,324	3,478	Overweight	31.7%	7	18.7	11.6
24	ANHUI CONCH CEMENT H	China	Materials	21.1	3,537	3,360	Overweight	32.7%	6	9.9	14.0
25	ENN ENERGY HOLDINGS	China	Utilities	31.9	4,454	3,118	Overweight	50.5%	6	14.5	15.3
26	AMOREG	Korea	Consumer Staples	122500	8,093	2,832	Overweight	79.6%	8	19.3	16.0
27	ZHUZHOU CRRC TIMES H	China	Industrials	39.35	2,778	2,778	Overweight	28.3%	5	18.3	10.1
28	HINDUSTAN PETROLEUM CORP	India	Energy	450	6,736	2,694	Overweight	13.8%	7	13.2	15.0
29	UNITED TRACTORS	Indonesia	Energy	21250	5,883	2,648	Overweight	1.2%	6	14.7	16.3
30	INDOFOOD SUKSES MAKMUR	Indonesia	Consumer Staples	7925	5,165	2,582	Overweight	18.9%	8	11.3	11.8
31	HYUNDAI ENGR. & CONSTR.	Korea	Industrials	42800	3,946	2,565	Overweight	12.1%	7	9.2	31.9
32	HYUNDAI GLOVIS CO	Korea	Industrials	161500	5,014	2,507	Overweight	48.6%	8	14.7	13.8
33	CHINA RESOURCES GAS GRP	China	Utilities	21.8	6,253	2,501	Overweight	21.6%	7	14.5	11.2
34	OTE HELLENIC TELECOM	Greece	Telecommunication Services	9	4,653	2,326	Overweight	50.0%	6	10.3	26.6
35	HYUNDAI DEVELOPMENT CO	Korea	Industrials	46850	2,924	2,193	Overweight	32.3%	9	15.0	17.4

For important disclosures regarding companies that are the subject of this screen, please see the Morgan Stanley Research Disclosure Website at www.morganstanley.com/researchdisclosures. Source: MSCI, Factset, Morgan Stanley Research. Data as of Dec-end, 2016.

Exhibit 7:

APxJ/EM companies with high US$ debt / EBITDA ratios

Ticker	Company	Country	GICS Sector	MS Stock Rating	Latest Share Price	EBITDA FY2016 MSe Mn US$	Total Debt FY2016 MSe Mn US$	Total Debt / EBITDA	Net US$ Debt / EBITDA
SAIL.NS	Steel Authority Of India	India	Materials	UW	50.5	(630)	5,014	Neg- EBITDA	Neg- EBITDA
1919.HK	China COSCO	China	Industrials	UW	2.71	(99)	8,268	Neg- EBITDA	Neg- EBITDA
TBIG.JK	Tower Bersama Infrastructure	Indonesia	Telecommunication Services	UW	4980	242	1,403	573%	569%
1171.HK	Yanzhou Coal	China	Energy	UW	5.29	315	11,681	2115%	457%
1157.HK	Zoomlion Heavy Industry	China	Industrials	EW	3.41	117	5,036	1722%	440%
GOL.N	Gol Airlines	Brazil	Industrials	EW	13.62	318	2,063	551%	414%
0670.HK	China Eastern Airlines	China	Industrials	EW	3.55	3,775	17,577	452%	412%
LPKR.JK	Lippo Karawaci	Indonesia	Financials	EW	720	174	965	487%	379%
CX.N	Cemex	Mexico	Materials	EW	8.03	2,857	14,316	416%	376%
LFL.N	Latam Airlines Group SA	Chile	Industrials	EW	8.18	2,087	8,765	420%	353%
CAR.SN	Empresas CMPC SA	Chile	Materials	EW	1369.4	960	4,292	384%	336%
TUPRS.IS	Tupras	Turkey	Energy	EW	70.4	562	3,070	419%	326%
MFRISCOA1.MX	Minera Frisco, S.A.B. de C.V.	Mexico	Materials	UW	15.79	291	1,203	323%	299%
000977.SZ	Inspur Electronic Information	China	Information Technology	EW	21.2	69	425	554%	283%
GAGR.SI	Golden Agri-Resources	Indonesia	Consumer Staples	EW	0.43	637	3,145	346%	272%
2899.HK	Zijin Mining Group	China	Materials	EW	2.5	1,213	4,597	288%	268%
0390.HK	China Railway Group	China	Industrials	EW	6.38	3,978	25,181	601%	268%
CCB.CN	Cementos Argos S.A.	Colombia	Materials	UW	11900	600	2,491	270%	255%

Source: Morgan Stanley Research. Data as of December-end, 2016. Please note that all important disclosures including personal holding disclosures and Morgan Stanley disclosures for stocks under coverage appear on the Morgan Stanley public website at www.morganstanley.com/researchdisclosures.

Low Quality Stock Screen to Avoid: High US$ Debt Screen

We would avoid companies with high US$ debt levels because our FX team expects an accelerated US dollar rally in 2017. In **Exhibit 7**, we provide the APxJ / EM stock screen with high US$ debt / EBITDA ratios, according to the following criteria: 1) Net US$ Debt / EBITDA > 250% or negative EBITDA in FY2016; 2) Larger than 20% of total debt are US$ debt; 3) Morgan Stanley rating of Equal-weight or Underweight.

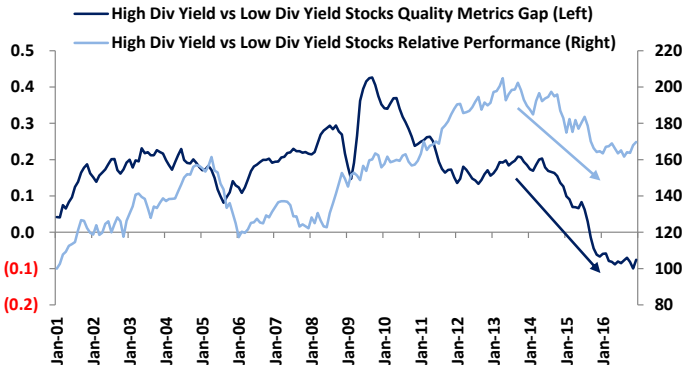
Avoid High Dividend Yield / Own Low Dividend Yield

QUANTSY suggests High Dividend Yield strategy will continue its structural underperformance. This is in-sync with the tightening global financial conditions consequent to the steepening US yield curve. Our Global Interest Rate team forecasts a peak in the US 10-year yield at 2.75% in Q3 2017.

The main warning signal is the quality metrics of the High Dividend Yield group, which have now fallen below those of their Low Dividend Yield peers (**Exhibit 8**). We would need to see a strong sign of reversal of Quality trend between High Dividend Yield stocks versus Low Dividend Yield peers, before beginning to feel comfortable owning High Dividend Yield stocks.

Exhibit 8:

High Dividend Yield Stocks in APxJ/EM Performance Relative to Low Dividend Yield Stocks vs. The Quality Metrics Gap Between High Dividend Yield and Low Dividend Yield



Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016.

High Dividend Yield Stock Screen to Avoid: Non-reliable Dividend Yield

The non-reliable dividend yield stock screen aims to identify stocks with high dividend yield but without a sustainable dividend payout track record. The stock screen is based on the following criteria:

Exhibit 9:

APxJ/EM High Dividend Yield stock screen to Avoid: Non-reliable Dividend Yield

Rank	Company	Country	Sector	Price	Market Cap (US$ mn)		MS Rating	Upside To MS PT (%)	Trailing Dividend Yield Last	Median QoQ Change In L12M DPS Last 10Yr	Std Dev Of QoQ Change In L12M DPS Last 10Yr	Probability Of Pos+ DPS Change (%) Last 10Yr
					Total	Free Float						
1	SINGAPORE AIRLINES	Singapore	Industrials	9.67	8,031	3,614	Underweight	(7.3%)	3.2	(1.3)	39.7	48
2	CEMIG PN	Brazil	Utilities	7.72	1,988	1,789	Underweight	10.1%	4.2	(1.7)	23.6	48
3	SAMSUNG SECURITIES CO	Korea	Financials	31450	1,990	1,493	Underweight	1.7%	3.2	(0.0)	18.5	48
4	SUNCORP GROUP	Australia	Financials	13.52	12,596	12,596	Underweight	(12.7%)	5.6	(0.1)	13.2	48
5	SINGAPORE PRESS HLDG	Singapore	Consumer Discretionary	3.53	3,911	3,911	Underweight	(0.8%)	5.0	0.0	9.0	33
6	NH INVESTMENT & SEC	Korea	Financials	9670	2,253	1,127	Underweight	(27.6%)	5.4	0.6	20.1	53
7	INDUSTRIAL BANK OF KOREA	Korea	Financials	12600	5,842	2,629	Underweight	(16.7%)	4.4	1.1	37.8	55
8	UNITED OVERSEAS BANK	Singapore	Financials	20.4	22,869	18,295	Underweight	(13.2%)	3.7	(0.1)	6.3	38
9	SIME DARBY	Malaysia	Industrials	8.1	11,995	4,198	Underweight	(22.2%)	3.2	1.0	14.6	53
10	SK TELECOM CO	Korea	Telecommunication Services	225500	15,075	3,769	Underweight	(15.7%)	4.4	0.0	2.2	20
11	STARHUB	Singapore	Telecommunication Services	2.81	3,368	1,179	Underweight	(7.5%)	7.1	0.0	2.4	35
12	HANG LUNG PROPERTIES	Hong Kong	Real Estate	16.44	9,536	4,768	Underweight	3.4%	4.6	0.0	2.5	33
13	SIAM CEMENT	Thailand	Materials	496	16,621	1,496	Underweight	(12.7%)	3.7	1.0	8.5	55
14	VANGUARD INTL SC	Taiwan	Information Technology	56.2	2,858	1,572	Underweight	(11.0%)	5.2	1.8	33.4	63
15	TELSTRA CORP	Australia	Telecommunication Services	5.1	45,148	15,802	Underweight	(3.1%)	6.2	0.0	1.4	35
16	CHINA MINSHENG BANK H	China	Financials	8.29	7,414	6,302	Underweight	13.4%	3.3	2.2	29.0	58
17	HARVEY NORMAN HOLDINGS	Australia	Consumer Discretionary	5.14	4,141	2,070	Underweight	(18.8%)	5.9	1.8	20.5	58
18	OIL & NATURAL GAS CORP	India	Energy	192.25	36,352	3,635	Underweight	(1.2%)	3.2	0.4	4.9	55
19	BANCO BRASIL ON	Brazil	Financials	27.54	24,246	7,274	Underweight	(34.6%)	3.7	1.3	9.5	60
20	PCCW	Hong Kong	Telecommunication Services	4.2	4,174	2,296	Underweight	14.3%	6.4	2.6	69.1	68
21	GLOBE TELECOM	Philippines	Telecommunication Services	1509	4,029	1,007	Underweight	(0.6%)	5.3	1.5	15.2	65
22	GAZPROM (RUB)	Russia	Energy	154.42	59,886	29,943	Underweight	(28.7%)	5.8	3.7	27.6	60
23	LENOVO GROUP	China	Information Technology	4.7	6,734	4,377	Underweight	(14.9%)	4.0	7.4	39.8	63
24	BENDIGO & ADELAIDE BANK	Australia	Financials	12.71	4,249	4,249	Underweight	(27.3%)	5.4	0.8	6.2	65
25	GPT GROUP	Australia	Real Estate	5.03	6,549	6,549	Underweight	(7.3%)	4.8	1.1	9.5	73
26	MIRVAC GROUP	Australia	Real Estate	2.13	5,715	5,715	Underweight	(9.7%)	5.0	0.7	9.0	78
27	ROSTELECOM COMMON (RUB)	Russia	Telecommunication Services	84	3,543	1,240	Underweight	(4.8%)	7.0	5.5	32.2	68
28	SEMEN GRESIK	Indonesia	Materials	9175	4,039	2,020	Underweight	(19.3%)	3.1	3.3	11.4	65
29	ITAU UNIBANCO PN	Brazil	Financials	33.53	33,281	33,281	Underweight	(22.2%)	3.7	1.5	6.0	63
30	AMCOR	Australia	Materials	14.95	12,537	12,537	Underweight	(19.8%)	4.1	1.4	6.3	68

For important disclosures regarding companies that are the subject of this screen, please see the Morgan Stanley Research Disclosure Website at www.morganstanley.com/researchdisclosures. Source: MSCI, Factset, Morgan Stanley Research. Data as of Dec 20, 2016.

1. High dividend yield >3%;
2. A lack of consistently rising DPS for the last 10 years, measured by median trailing 12-month DPS QoQ growth, standard deviation of trailing 12-month DPS QoQ growth, and hit ratio of trailing 12-month DPS QoQ growth;
3. Rated Underweight by Morgan Stanley.

Neutral Value versus Growth

Value has started outperforming Growth recently as global growth expectations firm up. However, QUANTSY suggests we should be cautious against chasing Value, at least in the APxJ/EM universe where we recently downgraded EM back to UW.

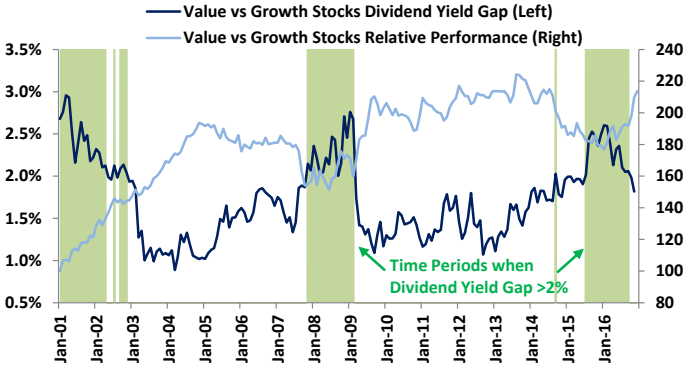
The dividend yield spread between Value and Growth stocks has also narrowed significantly from 2.5% at the start of year 2016 to 1.7% currently (**Exhibit 10**). Historically, when the dividend yield gap between Value and Growth stocks is above 2%, it has tended to be a buy signal for Value stocks. However, with the current dividend yield spread between Value and Growth stocks dropping below 2%, Value stocks look less attractive compared to six months ago before the recent Value rally started.

How Consistent is Our Style Views with Each Other

One may challenge our view that it is inconsistent to OW High Quality and EW Value at the same time, based on the belief that Value and Low Quality style groups should have a strong overlap in relation to their stock constituents. In **Exhibit 11**, we show the cross-correlation between various style groups' historical relative performance versus benchmark. Contrary to common belief, historical records demonstrate that there are no significant correlations between two different style groups, with the exceptions of those between Value vs. Growth, High Quality vs. Low Quality, and High Dividend Yield vs. Low Dividend Yield. For instance, we find that the correlation in historical performance between Value stocks and Low Quality stocks is almost zero.

Exhibit 10:

Value Stocks in APxJ/EM Performance Relative to Growth Stocks vs. the Dividend Yield Gap Between Value Stocks and Growth Stocks



Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016.

Exhibit 11:

Cross-correlation of Relative Performance Between Various Style Groups

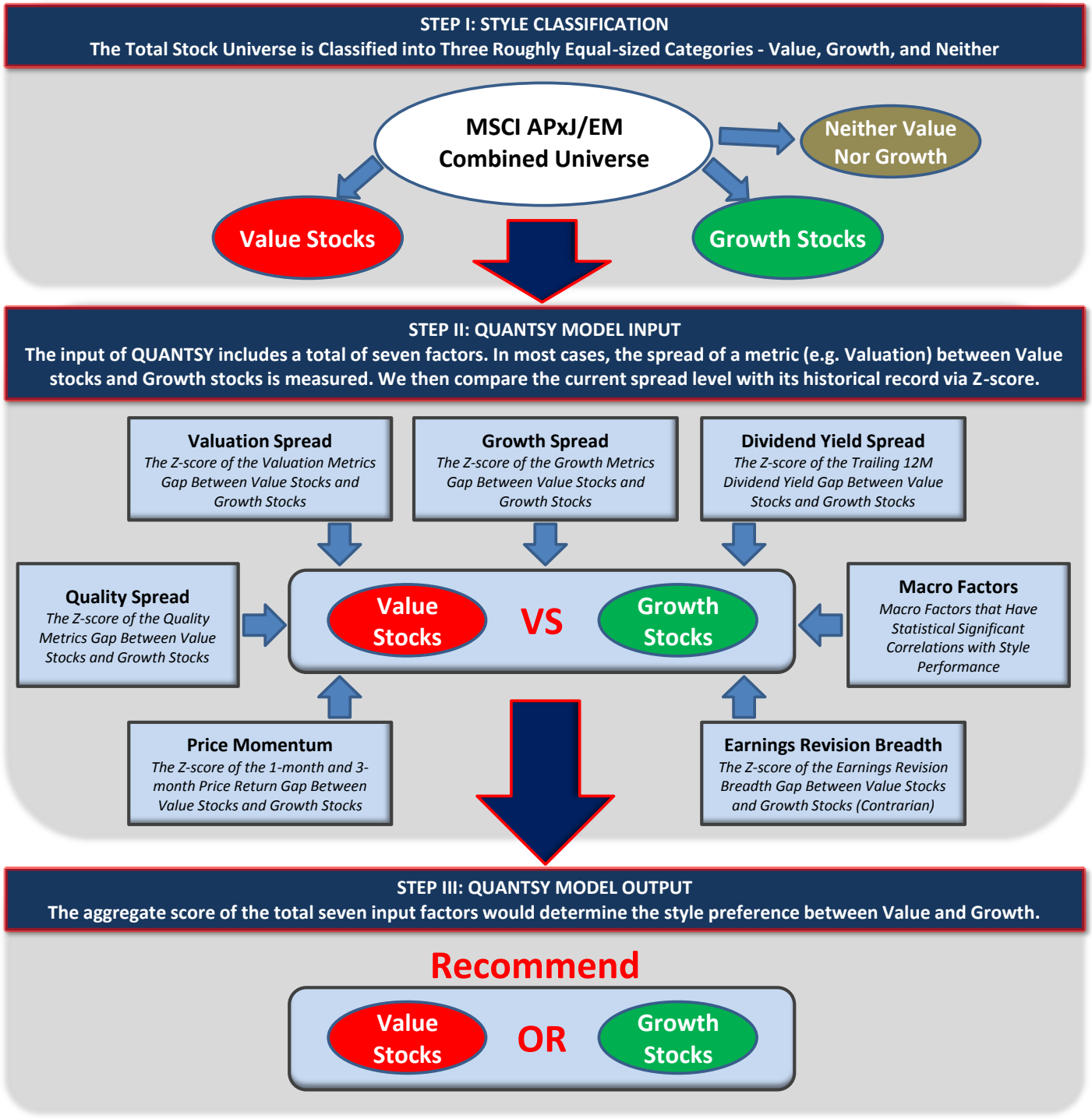
Style vs Style Correlation	High Div Yield	Low Div Yield	High Quality	Low Quality	Value	Growth
High Div Yield		-0.66	0.22	-0.28	0.25	-0.46
Low Div Yield	-0.66		-0.17	0.23	-0.20	0.42
High Quality	0.22	-0.17		-0.72	-0.33	0.20
Low Quality	-0.28	0.23	-0.72		0.05	0.00
Value	0.25	-0.20	-0.33	0.05		-0.60
Growth	-0.46	0.42	0.20	0.00	-0.60	

Source: Source: MSCI, Morgan Stanley Research. Data are based on back-testing from Jan 1996 to Dec 2016.

Part II: Where Our Approach Is Different – QUANTSY Model Construction

Exhibit 12:

Summary of Style Preference Decision Process of QUANTSY



Source: Morgan Stanley Research

Objective

In this report, we introduce QUANTSY (QUANTitative + StYle) – Morgan Stanley's proprietary Quantitative Style rotation model for the APxJ/EM universe. QUANTSY aims to systematically make style preference decisions between three pairs of style groups independently. These three pairs of style groups are listed below.

1. Value versus Growth
2. High Quality versus Low Quality
3. High Dividend Yield versus Low Dividend Yield

Step I: Stock Classification

1. **Stocks are weighted by free-float market cap within each style group:** They are rebalanced on a monthly basis.
2. **Stocks are selected within the MSCI EM & APxJ combined universe:** Currently there are a total of 983 stocks in this universe. By nature of the MSCI definition, this universe does not include stocks within the MSCI EM & APxJ small cap indices.
3. **The style definition of our stock classification is derived from that used by Morgan Stanley's Global Quantitative team:** By Growth versus Value, the total stock universe is classified into three roughly equal-sized categories: Growth, Value, and Neutral. The classification is based on a Growth score, which measures investor perceptions of growth, and a Value score, which includes measures of stock-relative and industry-relative valuations. By Quality, the total stock universe is classified based on four categories of metrics: profitability, fundamental stability, payout, and safety (beta, volatility, leverage, and Altman Z-score). By Dividend Yield, the total stock universe is classified based on only trailing 12-month dividend yield. For details, please refer to our report.

Step II: Model Input

QUANTSY assesses a total of eight factors from four categories: 1) price momentum, 2) earnings revision breadth, 3) factors on factors, and 4) macroeconomics. These factors will be measured for each style group and, for the first three categories, the spread between the two pair style groups (e.g., Value vs Growth) will be calculated. The aggregate score of the total eight input factors to the model would determine the ratings change of each pair of style groups.

a. Earnings & Price Momentum (16% weight total)

1. **Three-month price momentum (12% weight):** Delta of three-month price momentum. Positive signal if three-month price momentum spread historical Z-score > 0.5. Negative signal if three-month price momentum spread historical Z-score< -0.5.
2. **One-month price momentum (4% weight):** Delta of one-month price momentum. Positive signal if one-month price momentum spread historical Z-score > 0.5. Negative signal if one-month price momentum spread historical Z-score < -0.5.

b. Earnings Revision Breadth (12% weight)

1. **Earnings revision breadth (12% weight):** Delta of the consensus forward 12-month EPS estimate revision breadth. We take the contrarian side of this factor. Positive signal if earnings estimate revision breadth historical Z-score -0.5. Negative signal if earnings estimate revision breadth historical Z-score > 0.5.

c. Factors on Factors (48% weight total)

1. **Value spread (12% weight):** We first measure the Value score spread between a pair of style groups (e.g., Value versus Growth). Here a high Value score suggests the group of stocks is attractively valued. We then take the historical Z-score of the Value score spread YoY change. Positive signal if relative Value spread Z-score > 1.5. Negative signal if relative Value spread Z-Score < -1.5.
2. **Growth spread (12% weight):** We first measure the Growth score spread between a pair of style groups (e.g., Value versus Growth). We then take the historical Z-score of the Growth score spread YoY change. Positive signal if relative Growth spread Z-score > 1.5. Negative signal if relative Growth spread Z-Score < -1.5.
3. **Quality spread (12% weight):** We first measure the Quality score spread spread between a pair of style groups (e.g., Value versus Growth). We then take the historical Z-score of the Quality score spread YoY change. Positive signal if relative Quality spread Z-score > 1.5. Negative signal if relative Quality spread Z-Score < -1.5.
4. **Dividend yield spread (12% weight):** We first measure the Dividend Yield spread between a pair of style groups (e.g., Value versus Growth). We then take the historical Z-score of the Dividend Yield spread YoY change. Positive signal if relative Dividend Yield spread Z-score > 1.5. Negative signal if relative Dividend Yield spread Z-Score < -1.5.

d. Macroeconomics (24% weight total)

1. **Macro factors (24% weight):** Those include level of global PMI, yield spread between global equities earnings yield and US 10-yield bond yield, changes in Broad US dollar index, and changes in the slope of the US yield curve (measured using 2-year and 10-year treasury yields).

Step III: Model Output

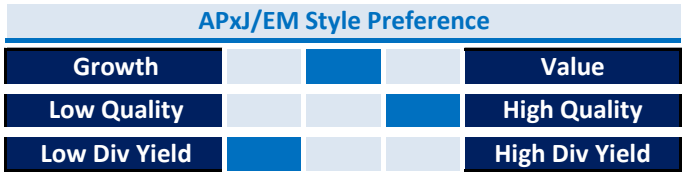
On a regular monthly basis, QUANTSY generates three-tier OW / EW / UW ratings for Value, High Quality, and High Dividend Yield stocks, respectively. By definition of the model, an Overweight rating for one side of the style pairs (i.e., Value, High Quality, and High Dividend Yield) would suggest an Underweight rating for the other side of the style pairs (i.e., Growth, Low Quality, and Low Dividend Yield), and vice versa. It is important to reiterate that the ratings on the three style pairs are generated *independently* by the same model framework.

Current QUANTSY ratings and how do they contextualize with our macro view

QUANTSY suggests the following ratings for January 2017:

Exhibit 13:

MS APxJ/EM current style recommendations: EW Value | OW High Quality | UW High Dividend Yield



Source: Morgan Stanley Research. Data as of date of publication.

i) UW High Dividend Yield: We believe High Dividend Yield strategy will continue its underperformance in a tightening global financial conditions consequent upon the steepening US yield curve. Our Global Interest Rate team forecasts a peak in the US 10-year yield at 2.75% in 3Q 2017.

ii) OW High Quality: High Quality stocks have become out of favour since 2H2016. However, our model suggests that this retreat in performance is temporary. We highlight our Best Business Model approach. Moreover, we would avoid low-quality companies with high US$ debt level as our FX team expects an accelerated US dollar rally in 2017.

iii) Neutral Value versus Growth: Value has started outperforming Growth recently as global growth expectations firm up. However, we are careful in chasing Value at least in the APxJ/EM universe as we recently downgraded EM back to UW within global equities.

Part III: What Gives Us Confidence – QUANTSY Back-tested Performance

Value vs. Growth

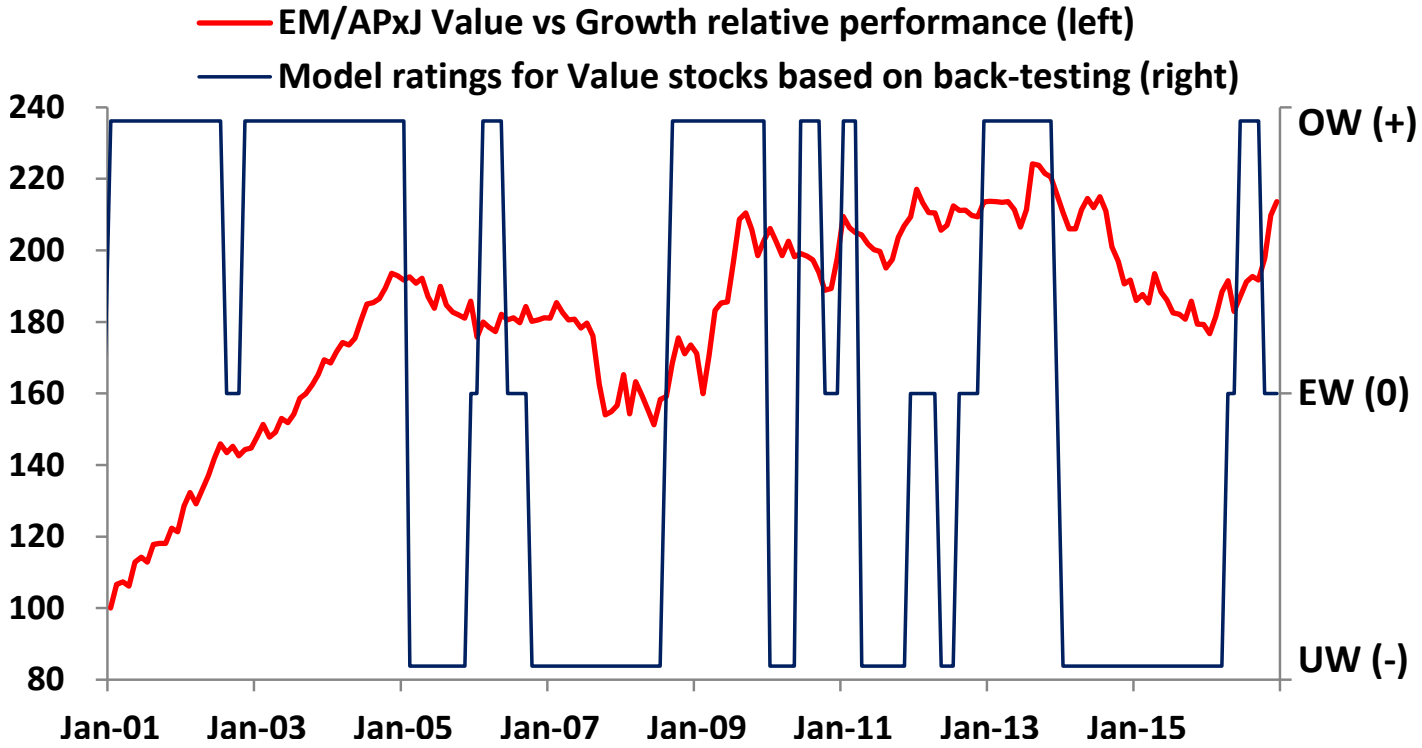
We plot the relative performance of APxJ/EM Value stocks versus Growth stocks together with our QUANTSY model's ratings history of Value stocks in **Exhibit 14** . By our model's definition, an OW (UW) rating for Value stocks would suggest an UW (OW) for Growth stocks. Since time horizons with an OW rating for Value stocks in **Exhibit 14** have largely captured the outperformance of Value stocks, and vice versa, that suggests the model has alpha generation power.

Information ratio (monthly): To quantify the efficacy of models on Value vs Growth style rotation, in **Exhibit 15** we examine the information ratio of APxJ/EM Value versus Growth relative performance in different time horizons with respect to the QUANTSY model's ratings of Value stocks.

- **OW periods**: The information ratio has nearly tripled to 0.39 when the model suggests an OW rating for Value stocks, compared to the information ratio of 0.16 for the overall period.
- **EW periods:** These demonstrate a similar magnitude of information ratio at about 0.19 compared that of the overall period.
- **UW periods**: The information ratio has reached a negative level at -0.11, suggesting it has captured much of the underperformance of Value versus Growth stocks. The smaller absolute magnitude of information ratio over UW periods vs. OW periods is largely owing to the larger volatility when Value underperformed Growth. This is in contrast with the backdrop of structural outperformance of Value vs Growth stocks.

Exhibit 14:

APxJ/EM Value versus Growth relative performance (left) vs. QUANTSY model's OW/EW/UW ratings of Value stocks based on back-testing



Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. Source: MSCI, IBES, Morgan Stanley Research. Data as of back-testing period from January 2001 to December 2016.

Annualized alpha (annualized): We also in Exhibit 16 show the average monthly performance of APxJ/EM Value versus Growth in different time horizons with respect to the QUANTSY model's ratings of Value stocks. The annualized relative performance has almost tripled to 12.0% when the model suggests an OW rating for Value stocks, compared to the annualized performance of 4.4% for the overall period. In comparison, the annualized relative performance is -3.7% when the model suggests an UW rating for Value stocks.

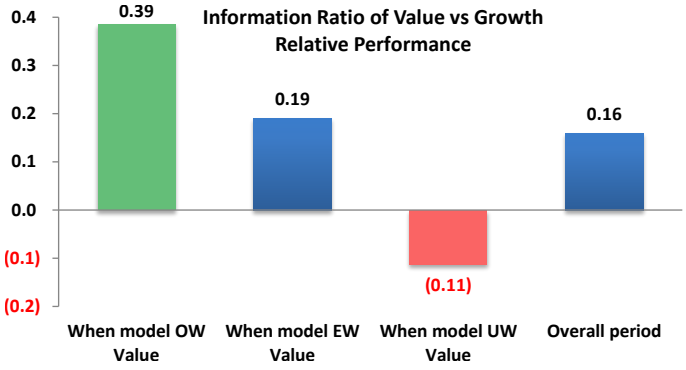
Ratings turnover: We show in Exhibit 17 that the average annual turnover of our model's ratings change is 145%. Equivalently, our ratings for Value vs. Growth, on average, last about 8.3 months.

Ratings bias: We also show in Exhibit 17 the frequency of months when the model produces an OW rating is approximately about the same of those with an UW rating. This implies that our QUANTSY does *not* have an inherent bias towards owning Value versus Growth (or vice versa), irrespective of the long-term outperformance of Value stocks versus Growth stocks. This is in contrast with the Smart Beta strategy, which requires investors to decide on one side of the style pair between Value versus Growth.

Country compositions: Exhibit 18 and Exhibit 19 show the time evolution of the country compositions by the number of stocks of APxJ/EM Value and Growth stocks, respectively. Overall, we find both Value and Growth stocks in APxJ/EM are well diversified among APxJ, EEMEA & LatAm regions. The differences between Value and Growth stocks mainly come from their weights in India, Korea, and Taiwan. There are a larger number of Growth stocks and few Value stocks in India; in contrast, the Korean and Taiwanese markets are heavily weighted in Value stocks.

Exhibit 15:

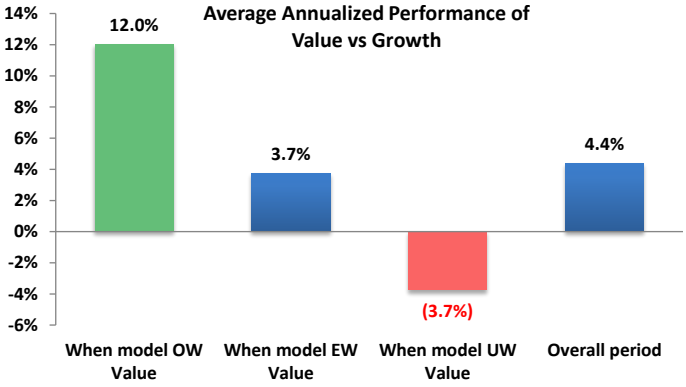
Information ratio (monthly) of APxJ/EM Value versus Growth relative performance in different time horizons with respect to QUANTSY model's ratings of Value stocks



Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. Source: MSCI, IBES, Morgan Stanley Research.

Exhibit 16:

Average annualized relative performance of APxJ/EM Value versus Growth in different time horizons with respect to QUANTSY model's ratings of Value stocks



Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. Source: MSCI, IBES, Morgan Stanley Research.

Exhibit 17:

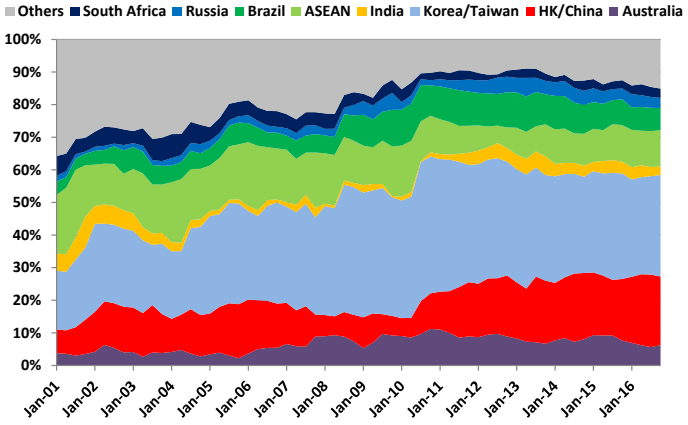
Key back-testing parameters of QUANTSY model for Value / Growth style rotation

Model Back-Testing Parameters	Value / Growth
Turnover (times/year)	145%
Avg Holding Period (months)	8.3
% of months, when OW	46%
% of months, when EW	15%
% of months, when UW	39%
% of months, overall	100%

Source: Morgan Stanley Research.

Exhibit 18:

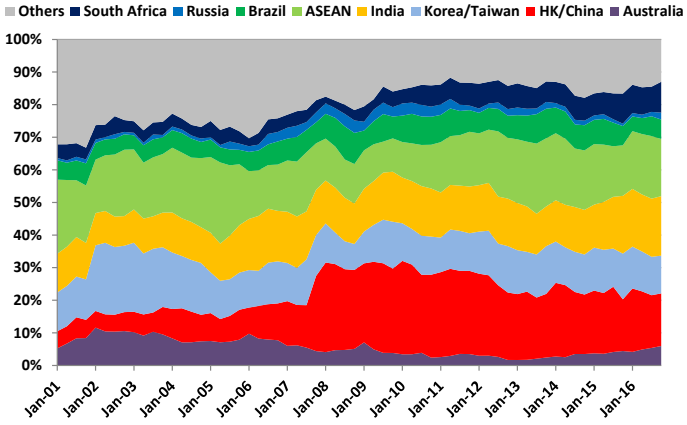
Country compositions of APxJ/EM Value stocks by number of stocks



Source: MSCI, Morgan Stanley Research.

Exhibit 19:

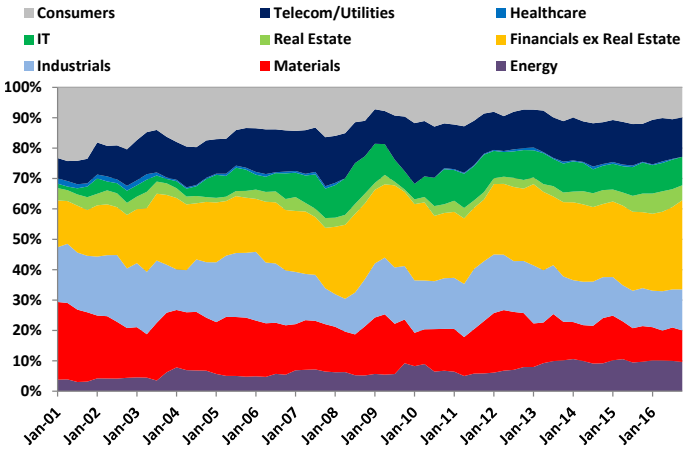
Country compositions of APxJ/EM Growth stocks by number of stocks



Source: MSCI, Morgan Stanley Research.

Exhibit 20:

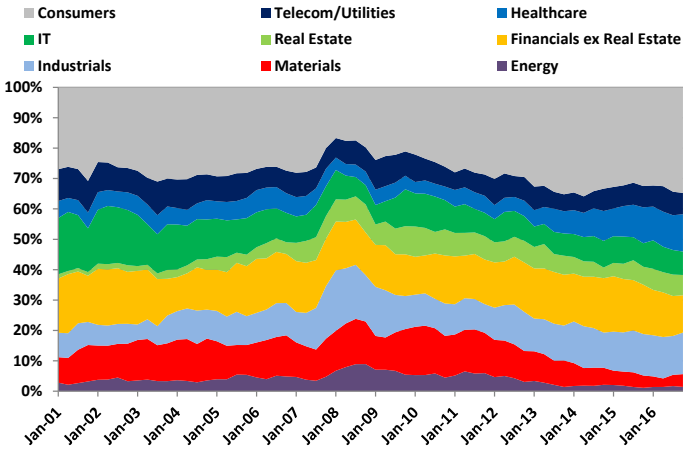
Sector compositions of APxJ/EM Value stocks by number of stocks



Source: MSCI, Morgan Stanley Research.

Exhibit 21:

Sector compositions of APxJ/EM Growth stocks by number of stocks



Source: MSCI, Morgan Stanley Research.

Sector compositions: Exhibit 20 and Exhibit 21 show the time evolution of the sector compositions of APxJ/EM Value and Growth stocks by number of stocks, respectively. The conspicuous conclusion: there are more Financials stocks that belong to the Value category, whilst there are more Healthcare and Consumers stocks that belong to the Growth Category. But again, probably to many investors' surprise, both Value and Growth stocks in APxJ/EM are largely diversified among all sectors over time. For instance, IT stocks are well represented in both Value and Growth stocks. Last, it is interesting to note that the weight of Energy & Materials Growth stocks has decreased significantly from the 2009-11 period.

High Quality vs. Low Quality

We plot the relative performance of APxJ/EM High Quality stocks versus Low Quality stocks together with our QUANTSY model's ratings history of High Quality stocks in **Exhibit 22** . By our model's definition, an OW (UW) rating for High Quality stocks would suggest an UW (OW) for Low Quality stocks.

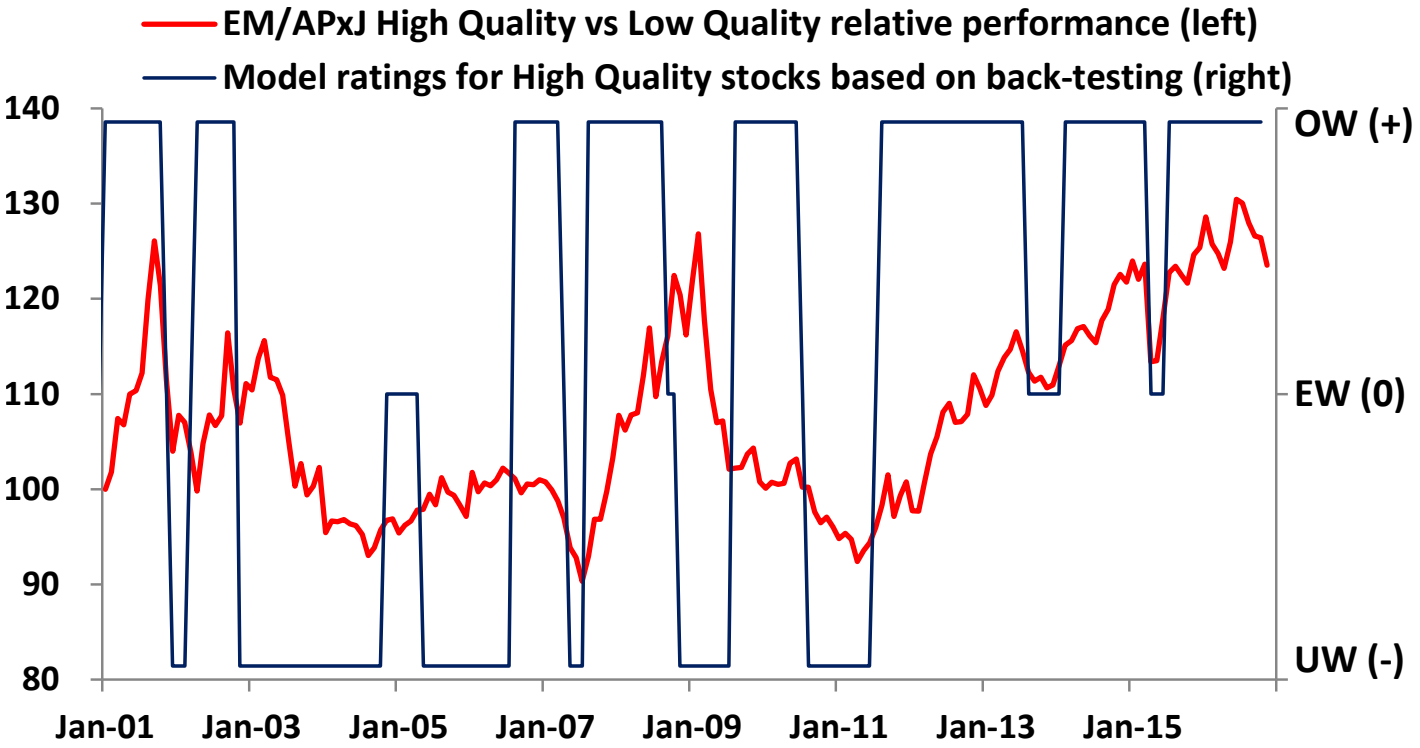
Information ratio (monthly): To quantify the efficacy of models on High Quality vs. Low Quality style rotation, in **Exhibit 23** we examine the information ratio of APxJ/EM High Quality versus Low Quality relative performance in different time horizons with respect to the QUANTSY model's ratings of High Quality stocks.

- **OW periods**: The information ratio has nearly tripled to 0.18 when the model suggests an OW rating on High Quality stocks, compared to the information ratio of 0.05 for the overall period.
- **EW periods:** These demonstrate the same level of information ratio at 0.07 compared to that of the overall period.
- **UW periods**: The information ratio has reached a negative level at -0.16, suggesting that it has captured much of the underperformance of High Quality versus Low Quality stocks.

Annualized alpha (annualized): In **Exhibit 24** we also show the average monthly performance of APxJ/EM High Quality versus Low Quality in different time horizons with respect to the QUANTSY model's ratings of High Quality stocks. The annualized performance has almost quadrupled to 5.8% when the model suggests an OW rating for High Quality stocks, compared to annualized performance of only 1.5% for the overall period. The annualized relative performance when the model suggests an UW rating for High Quality stocks also reached -5.2%.

Exhibit 22:

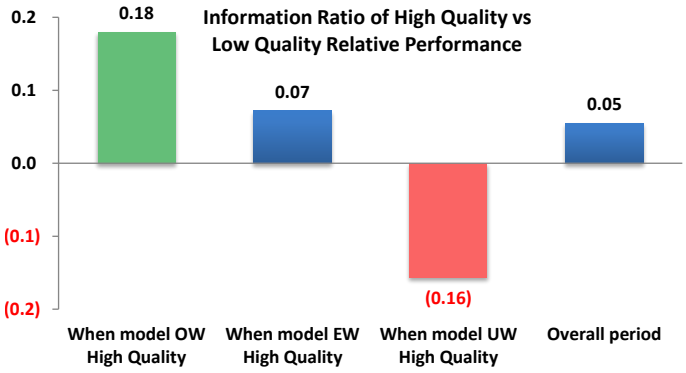
APxJ/EM High Quality versus Low Quality relative performance (left) vs. QUANTSY model's OW/EW/UW ratings of High Quality stocks based on back-testing



Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. Source: MSCI, IBES, Morgan Stanley Research. Data as of back-testing period from January 2001 to December 2016.

Exhibit 23:

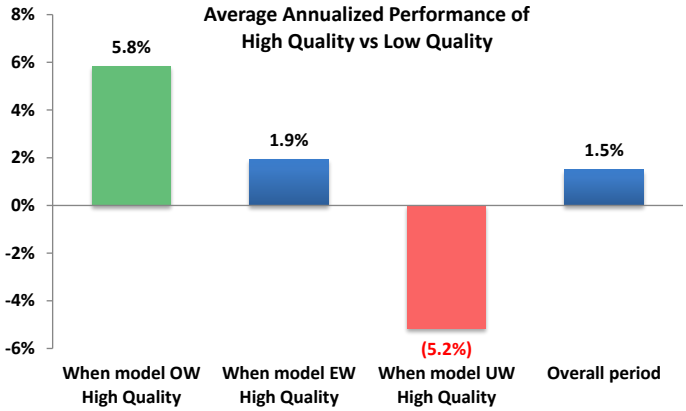
Information ratio (monthly) of APxJ/EM High Quality versus Low Quality relative performance in different time horizons with respect to QUANTSY model's ratings of High Quality stocks



Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. Source: MSCI, IBES, Morgan Stanley Research.

Exhibit 24:

Average annualized performance of APxJ/EM High Quality versus Low Quality in different time horizons with respect to QUANTSY model's ratings of High Quality stocks



Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. Source: MSCI, IBES, Morgan Stanley Research.

Exhibit 25:

Key back-testing parameters of QUANTSY model for High Quality / Low Quality style rotation

Model Back-Testing Parameters	High Quality / Low Quality
Turnover (times/year)	139%
Avg Holding Period (months)	8.6
% of months, when OW	54%
% of months, when EW	12%
% of months, when UW	34%
% of months, overall	100%

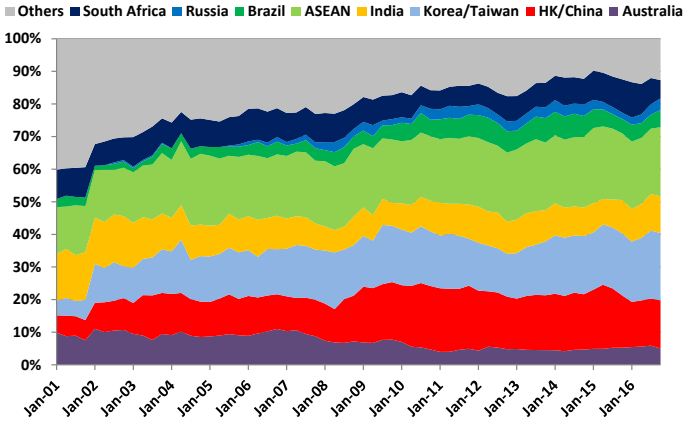
Source: Morgan Stanley Research.

Ratings turnover: We show in **Exhibit 25** that the average annual turnover of our model's ratings change is 139%. Equivalently, our ratings, on average, last about 8.6 months. We also show in **Exhibit 25** the number of months when the model produces an OW rating for High Quality stocks outnumbers those with an UW rating, even though QUANTSY does *not* have an inherent bias towards owning High Quality versus Low Quality.

Country compositions: **Exhibit 26** and **Exhibit 27** show the time evolution of the country compositions of APxJ/EM High Quality and Low Quality stocks by number of stocks, respectively. Overall, we find both High Quality stocks in APxJ/EM are diversified across APxJ, EEMEA and LatAm regions, with larger weights in India, ASEAN, and South Africa, whereas we find Low Quality stocks have larger weights in HK/China.

Exhibit 26:

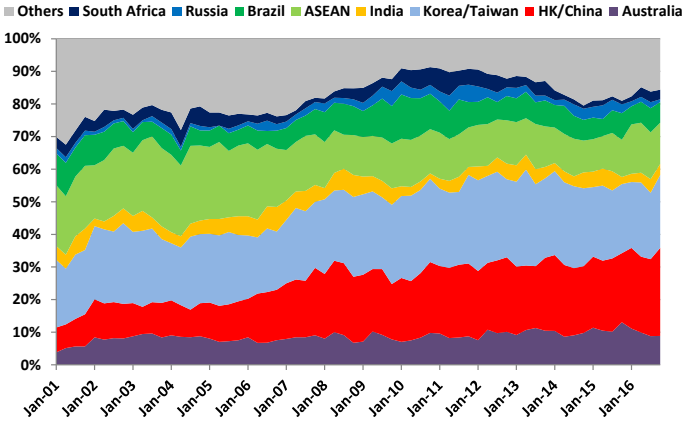
Country compositions of APxJ/EM High Quality stocks by number of stocks



Source: MSCI, Morgan Stanley Research.

Exhibit 27:

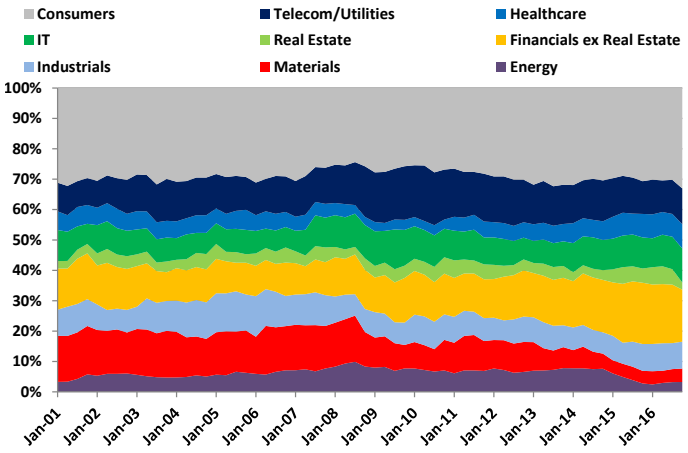
Country compositions of APxJ/EM Low Quality stocks by number of stocks



Source: MSCI, Morgan Stanley Research.

Exhibit 28:

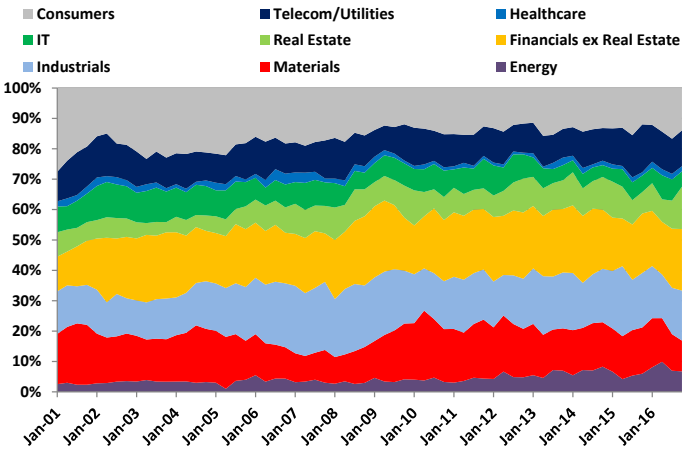
Sector compositions of APxJ/EM High Quality stocks by number of stocks



Source: MSCI, Morgan Stanley Research.

Exhibit 29:

Sector compositions of APxJ/EM Low Quality stocks by number of stocks



Source: MSCI, Morgan Stanley Research.

Sector compositions: Exhibit 28 and Exhibit 29 show the time evolution of the sector compositions of APxJ/EM High Quality and Low Quality stocks by number of stocks, respectively. The conspicuous conclusion: there are more IT, Health Care and Consumers stocks that belong to the High Quality category, whilst there are more Materials and Industrials stocks that belong to the Low Quality Category. But again, probably to many investors' surprise, both High Quality and Low Quality stocks in APxJ/EM are largely diversified among all sectors over time. For instance, Financials ex Real Estate stocks are well represented in both High Quality and Low Quality stocks.

High Dividend Yield vs. Low Dividend Yield

We plot APxJ/EM High Dividend Yield stocks' relative performance versus Low Dividend Yield stocks together with our QUANTSY model's ratings history of High Dividend Yield stocks in **Exhibit 30** . By our model's definition, an OW (UW) rating for High Dividend Yield stocks would suggest an UW (OW) for Low Dividend Yield stocks.

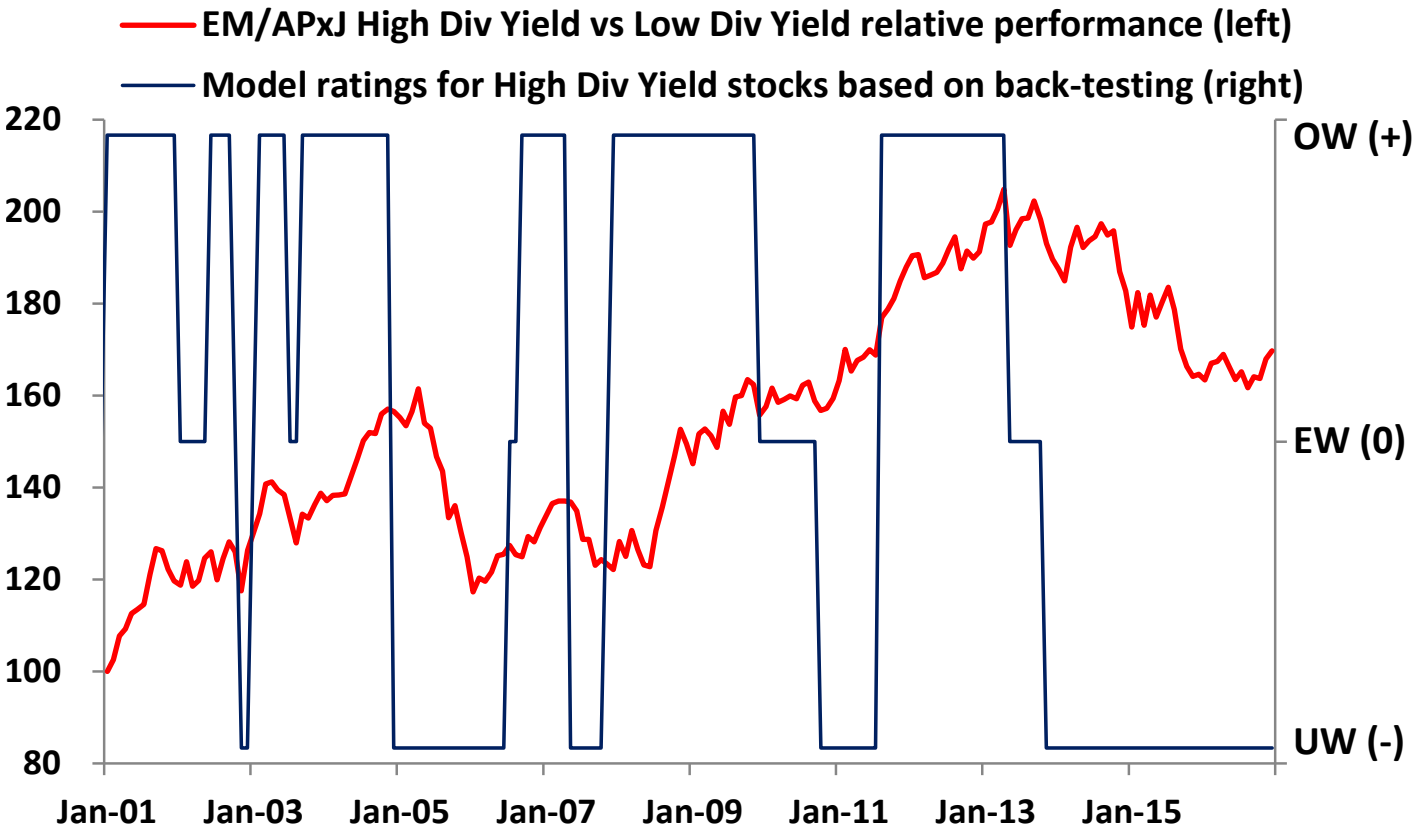
Information ratio (monthly): To quantify the efficacy of models on High Dividend Yield vs. Low Dividend Yield style rotation, in **Exhibit 31** we examine the information ratio of APxJ/EM High Dividend Yield versus Low Dividend Yield relative performance in different time horizons with respect to the QUANTSY model's ratings of High Dividend Yield stocks.

- **OW periods**: The information ratio has nearly tripled to 0.34 when the model suggests OW ratings for High Dividend Yield stocks, compared to the information ratio of 0.12 for the overall period.
- **EW periods:** These have an information ratio of about 0.02, close to zero.
- **UW periods**: The information ratio has reached a negative level at -0.08.

Annualized alpha (annualized): In **Exhibit 32** we also show the average monthly performance of APxJ/EM High Dividend Yield versus Low Dividend Yield in different time horizons with respect to the QUANTSY model's ratings of High Dividend Yield stocks. The annualized performance has more than tripled to 10.4% when the model suggests an OW ratings for High Dividend Yield stocks, compared to annualized performance of 3.2% for the overall period. In comparison, the annualized relative performance when the model suggests an UW rating for High Dividend Yield stocks reached -4.0%.

Exhibit 30:

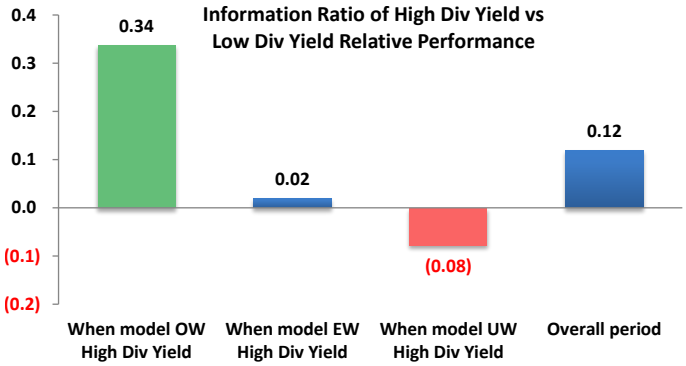
APxJ/EM High Dividend Yield versus Low Dividend Yield relative performance (left) vs. QUANTSY model's OW/EW/UW ratings of High Dividend Yield stocks based on back-testing



Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. Source: MSCI, IBES, Morgan Stanley Research. Data as of back-testing period from January 2001 to December 2016.

Exhibit 31:

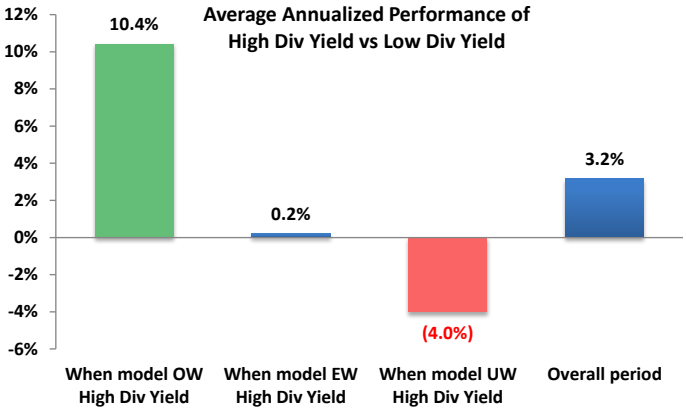
Information ratio (monthly) of APxJ/EM High Dividend Yield versus Low Dividend Yield relative performance in different time horizons with respect to QUANTSY model's ratings of High Dividend Yield stocks



Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. Source: MSCI, IBES, Morgan Stanley Research.

Exhibit 32:

Average annualized performance of APxJ/EM High Dividend Yield versus Low Dividend Yield in different time horizons with respect to QUANTSY model's ratings of High Dividend Yield stocks



Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. MSCI, IBES, Morgan Stanley Research.

Exhibit 33:

Key back-testing parameters of QUANTSY model for High Dividend Yield / Low Dividend Yield style rotation

Model Back-Testing Parameters	High Div Yield / Low Div Yield
Turnover (times/year)	120%
Avg Holding Period (months)	10.0
% of months, when OW	47%
% of months, when EW	15%
% of months, when UW	38%
% of months, overall	100%

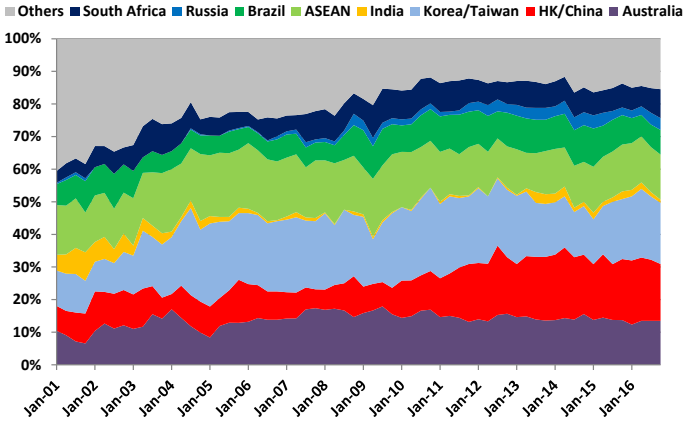
Source: Morgan Stanley Research.

Ratings turnover: We show in Exhibit 33 that the average annual turnover of our model's ratings change is 120%. Equivalently, our ratings, on average, last about 10 months. We also show in Exhibit 33 the number of months when the model produces an OW rating for High Dividend Yield stocks slightly outnumbers those with an UW rating, despite that QUANTSY does *not* have an inherent bias towards owning High Dividend Yield versus Low Dividend Yield.

Country compositions: Exhibit 34 and Exhibit 35 show the time evolution of the country compositions of APxJ/EM High Dividend Yield and Low Dividend Yield stocks by number of stocks, respectively. Overall we find both High Dividend Yield and Low Dividend Yield stocks in APxJ/EM are somewhat less diversified compared to other style groups. For instance, there are little representation of Indian stocks in the High Dividend Yield group, whilst there is a lack of presence of Australian stocks in the Low Dividend Yield stock group.

Exhibit 34:

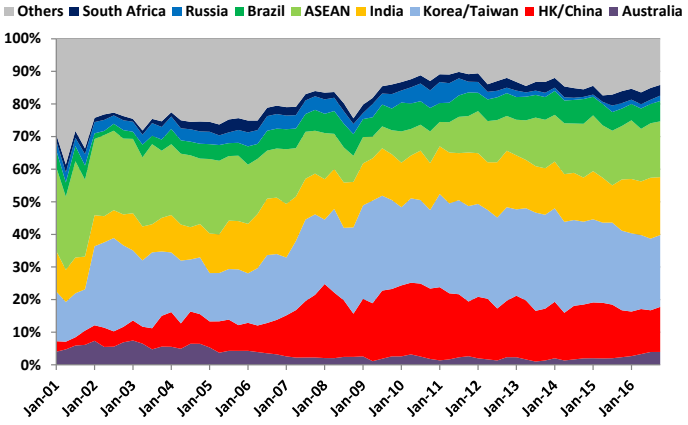
Country compositions of APxJ/EM High Dividend Yield stocks by number of stocks



Source: MSCI, Morgan Stanley Research.

Exhibit 35:

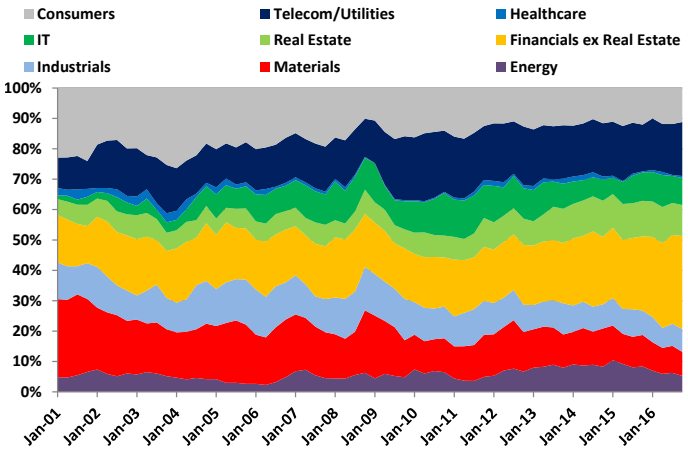
Country compositions of APxJ/EM Low Dividend Yield stocks by number of stocks



Source: MSCI, Morgan Stanley Research.

Exhibit 36:

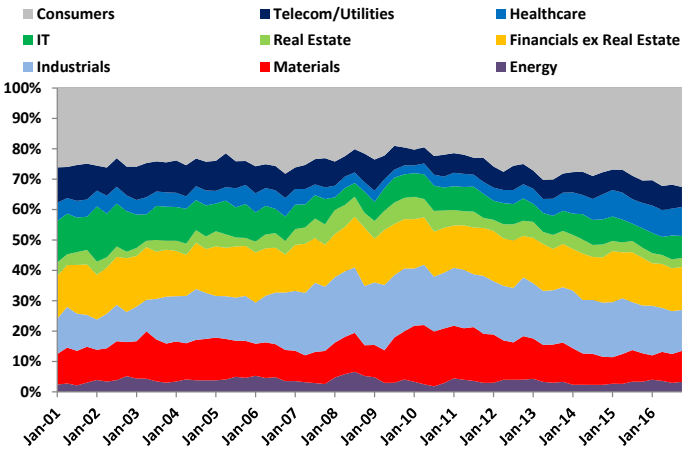
Sector compositions of APxJ/EM High Dividend Yield stocks by number of stocks



Source: MSCI, Morgan Stanley Research.

Exhibit 37:

Sector compositions of APxJ/EM Low Dividend Yield stocks by number of stocks



Source: MSCI, Morgan Stanley Research.

Sector compositions: Exhibit 36 and Exhibit 37 show the time evolution of the sector compositions of APxJ/EM High Dividend Yield and Low Dividend Yield stocks by number of stocks, respectively. The conspicuous conclusion: there are more Financials, Real Estate, Telecom and Utilities stocks that belong to the High Dividend Yield category, whilst there are more Consumers, Health Care and Industrials stocks that belong to the Low Dividend Yield Category. But again, probably to many investors' surprise, IT stocks are well represented in both High Dividend Yield and Low Dividend Yield stocks.

Part IV: Comparing Apples to Apples: QUANTSY versus Smart Beta and Style Momentum Strategies

Smart Beta: Long-term Risk Exposure to One Single Style Preference

Bottom Line: The Value, High Quality, and High Dividend Yield groups have outperformed the market over the long term in APxJ/EM. However, style groups' relative performance tends to be cyclical; hence, style rotation is crucial to reap alpha through different phases of market cycles.

"Long-and-hold": Smart Beta and Style Index products were first introduced and recently proliferated within the investor community on the basis of one single idea: that a certain style can outperform the market in the long run and thus that one should buy and hold a portfolio with long-term risk exposure to one single style preference. (There is a subtle difference between Smart Beta and Style Index products: stocks are equally weighted or weighted by market cap in style indices, whilst stocks are in general weighted by fundamental parameters in Smart Beta products.)

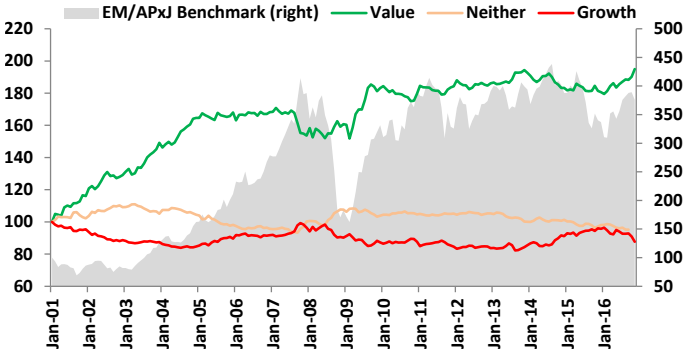
Value, High Quality, and High Dividend Yield groups have outperformed the market over the long-term in APxJ/EM: In Exhibit 38 to Exhibit 29 we examine the long-term relative performance by different style groups, namely 1) long Value / short Growth, 2) long High Quality / short Low Quality, and 3) long High Dividend Yield / short Low Dividend Yield.

In Exhibit 41, we then show the statistics of executing these strategies. These charts show that long Value / short Growth in APxJ/EM would yield an annualized alpha of 4.2% with and information ratio of 0.15, proving the so-called "value premium" does deliver in the APxJ/EM universe. In contrast, long High Quality / short Low Quality would only yield an annualized alpha of 1.5% with an information ratio of 0.06, and long High Dividend Yield / short Low Dividend Yield would yield an annualized alpha of 3.2% with an information ratio of 0.11.

However, style groups' relative performance tends to be cyclical; hence, style rotation is crucial to reap alpha through different phases of market cycles. For instance, Value stocks have proved to outperform in early-cycle periods. Value stocks in APxJ/EM almost consistently outperformed Growth stocks from 2001 to 2005 in the initial phase of the EM rally driven by Energy, Materials, Industrials, and Consumer Discretionary sectors. However, the Value rally paused in the late cycle of the EM rally in 2005-07 and gave back a portion of its gains in the 2007-08 financials crisis. Again post-GFC, the majority of the Value outperformance was garnered in the initial phase of the rally in 2009, and its outperformance versus Growth has halted until recently.

Exhibit 38:

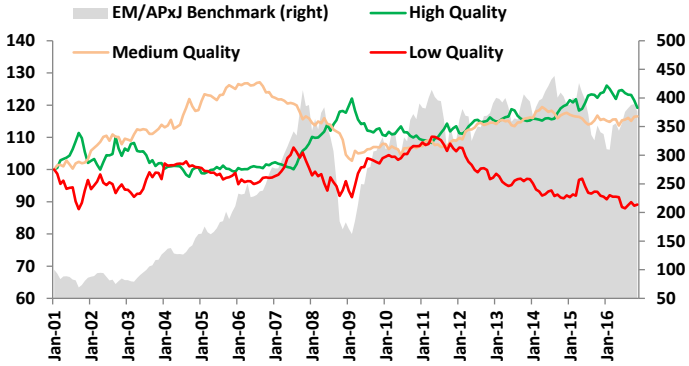
APxJ/EM Value/Growth style groups relative performance to MSCI APxJ/EM benchmark



Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016.

Exhibit 39:

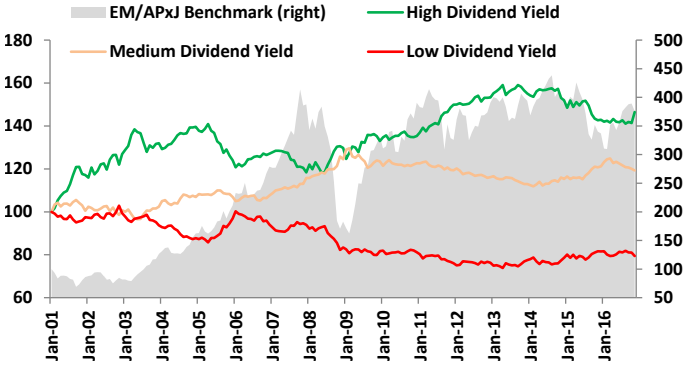
APxJ/EM Quality style groups relative performance to MSCI APxJ/EM benchmark



Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016.

Exhibit 40:

APxJ/EM Dividend Yield style groups relative performance to MSCI APxJ/EM benchmark



Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016.

Exhibit 41:

Statistics of Smart Beta strategy

Category	Value / Growth		
	Value / Growth	High Quality / Low Quality	High Div Yield / Low Div Yield
Annualized Alpha	4.9%	1.9%	3.6%
Information Ratio	0.16	0.05	0.12
Hit Ratio	52%	54%	58%
Largest Monthly Drawdown	(7.6%)	(8.3%)	(7.1%)

Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016. Here the information ratio is calculated on a monthly basis.

Style Momentum: Going with the Style Group that Outperformed in the Past

Bottom Line: Simply going with the past winners does not deliver superior alpha vs. Smart Beta. Optimized Style Momentum strategy based on a mix of momentum signals can generate better alpha than Smart Beta, but to discern the optimal mix ahead of time is challenging, if not impossible.

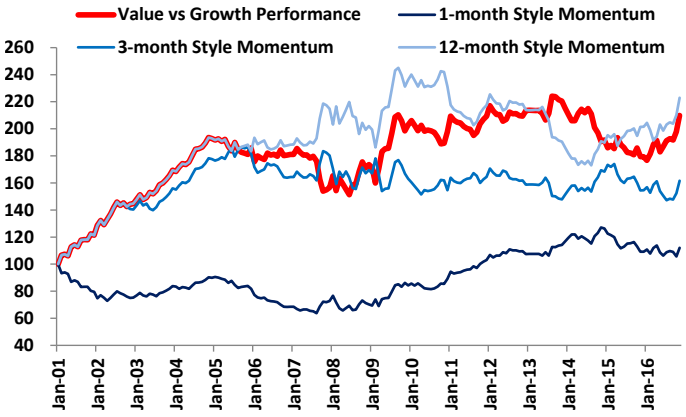
"Riding the momentum": In addition to the "Buy and Hold" strategy, another common investor practice is to chase the style group that has outperformed in the past time horizon. To execute this strategy, one would buy stocks within the style group that is currently in favor and sell stocks within the style group that is currently out of favor. One rationale of this strategy is that the proliferation of style investing itself encourages investors to chase past style winners and thus reinforce the price momentum the same style group of stocks.

However, simple Style Momentum strategy does not generate superior alpha vs. Smart Beta. We quantitatively assess the efficacy of Style Momentum strategy in Exhibit 42 - Exhibit 44 , and the advantage of Style Momentum over simple "Buy and Hold" strategy is unconvincing. For each style group (e.g. Value/Growth), we examine the back-tested performance of one-month, 3-month, and 12-month Style Momentum, respectively. Here, we define *N-month Style Momentum* as a strategy to long the style that outperforms in the past N months and short the style that underperforms in the past N month. Exhibit 42 - Exhibit 44 show that there is not a single Style Momentum strategy that could deliver a superior cumulative return over Smart Beta strategy across all three pairs of style group. In particular, the 3-month Style Momentum strategy underperformed the Smart Beta strategy over the long run for all the three pairs of style group.

Optimized Style Momentum strategy based on a mix of momentum signals with different time horizons may generate better alpha than Smart Beta, but to discern the optimal mix ahead of time is challenging, if not impossible. One can construct a more sophisticated Style Momentum based on a mix of different momentum signals. Here, for each pair of style groups, we form a total of 23 different Style Momentum strategies based on various mix of one-month, three-month, six-month, and 12-month Style Momentum signals. By back-testing all 23 strategies, we then identify the strategy that delivers the optimal information ratio and annualized alpha for each style group. We summarize the key statistics of Style Momentum based on the optimized strategy. This suggests one can at least obtain better information ratio using an optimized Style Momentum strategy over Smart Beta strategy. However, the optimal recipe differs from one pair of style group to another. Thus, it would be challenging, in our view, to discern the recipe for the optimized mix of momentum signals ahead of time.

Exhibit 42:

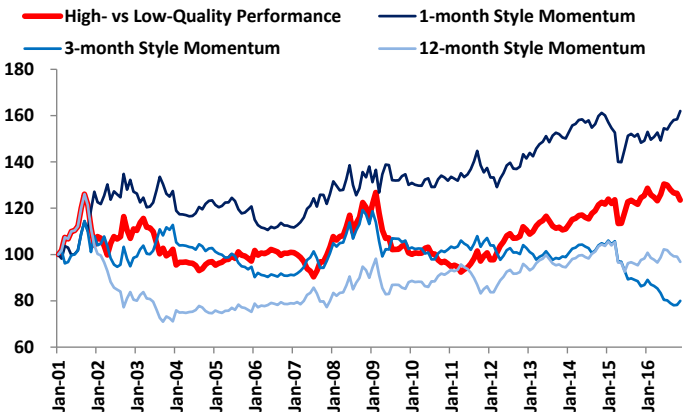
APxJ/EM Value performance relative to Growth in red versus Style Momentum strategy performance in blue (e.g., one-month Style Momentum strategy implies to long the style that outperforms between Value and Growth in the past one month and short the style that underperforms between Value and Growth in the past onemonth)



Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016.

Exhibit 43:

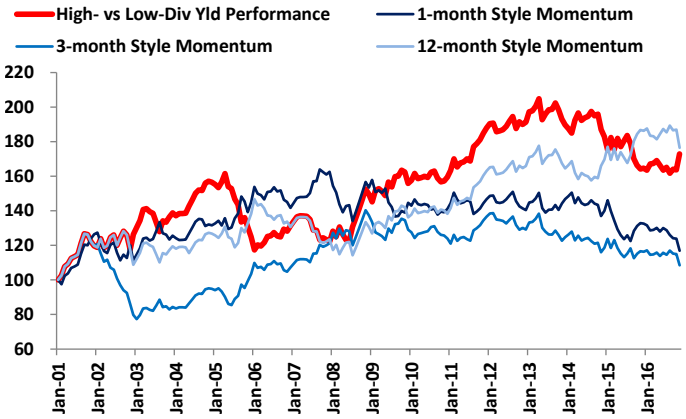
APxJ/EM High Quality performance relative to Low Quality in red versus Style Momentum strategy performance in blue (e.g. one-month Style Momentum strategy implies to long the style that outperforms between High and Low Quality in the past one month and short the style that underperforms between High and Low Quality in the past one month)



Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016.

Exhibit 44:

APxJ/EM High Dividend Yield performance rel. to Low Dividend Yield in red versus Style Momentum strategy performance in blue (e.g. 1-month Style Momentum strategy implies to long the style that outperforms between High and Low Dividend Yield in the past 1-month and short the style that underperforms between High and Low Dividend Yield in the past 1-month)



Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016.

Exhibit 45:

Statistics of optimized Style Momentum strategy: here we use the optimized strategy for each style groups based on historical back-testing

Category	Value / Growth	High Quality / Low Quality	High Div Yield / Low Div Yield
Annualized Alpha	4.6%	3.0%	4.1%
Information Ratio	0.16	0.10	0.14
Hit Ratio	58%	54%	58%
Largest Monthly Drawdown	(6.6%)	(8.3%)	(7.5%)

Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016. Here the information ratio is calculated on a monthly basis.

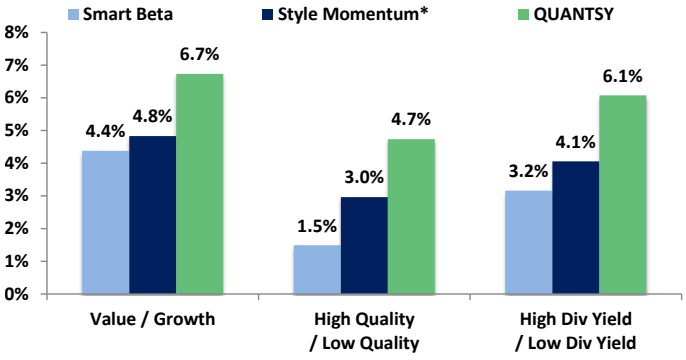
Final Verdict: QUANTSY versus Style Momentum and Smart Beta

Bottom Line: QUANTSY has historically offered a superior risk-adjusted return over Smart Beta and Style Momentum strategies.

Exhibit 48 summarizes key statistical parameters comparing QUANTSY versus Style Momentum and Smart Beta strategies. Historically, QUANTSY has offered a superior risk-adjusted return over Style Momentum and Smart Beta strategies, in relation to annualized alpha and information ratio. On the other hand, the largest monthly drawdowns have been similar (-7% ~ -8%) for all the three strategies across all three style groups.

Exhibit 46:

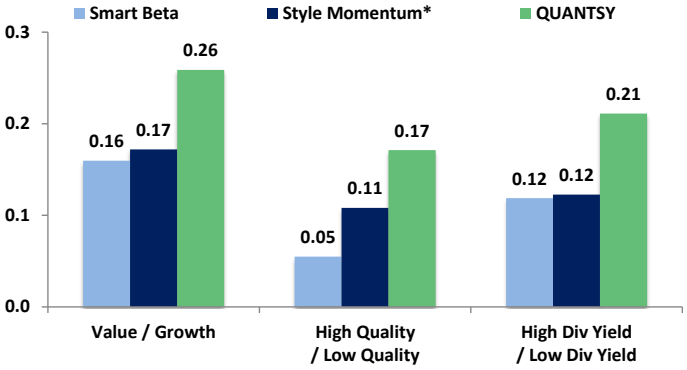
Annualized alpha via different strategies on style management: QUANTSY vs Style Momentum vs Smart Beta



Based on back-testing performance from Jan 2001 to Dec 2016. Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research.

Exhibit 47:

Information ratio (monthly) via different strategies on style management: QUANTSY vs Style Momentum vs Smart Beta



Based on back-testing performance from Jan 2001 to Dec 2016. Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research.

Exhibit 48:

Key statistical parameters comparison between QUANTSY, Style Momentum, and Smart Beta strategies: Historically, QUANTSY has offered a superior solution in relation to information ratio and annualized alpha, whilst keeping the largest monthly drawdown the same

Category	Value / Growth			High Quality / Low Quality			High Div Yield / Low Div Yield		
	Smart Beta	Style Momentum*	QUANTSY	Smart Beta	Style Momentum*	QUANTSY	Smart Beta	Style Momentum*	QUANTSY
Annualized Alpha	4.4%	4.8%	6.8%	1.5%	3.0%	4.7%	3.2%	4.1%	6.1%
Information Ratio	0.16	0.17	0.26	0.05	0.11	0.17	0.12	0.12	0.21
Largest Monthly Drawdown	(7.6%)	(6.6%)	(6.6%)	(8.3%)	(8.3%)	(8.3%)	(7.1%)	(7.5%)	(7.5%)
Turnover (times/year)	NA	126%	145%	NA	543%	139%	NA	575%	120%
Avg Holding Period (months)	NA	9.5	8.3	NA	2.2	8.6	NA	2.1	10.0

Based on back-testing performance from Jan 2001 to Dec 2016. Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research. Here the information ratio is calculated on a monthly basis.

Part V: Why Style Rotation Is Nontrivial – Debunking Two Myths about Style Rotation

Myth #1: "Style rotation occurs more frequently than country & sector rotations."

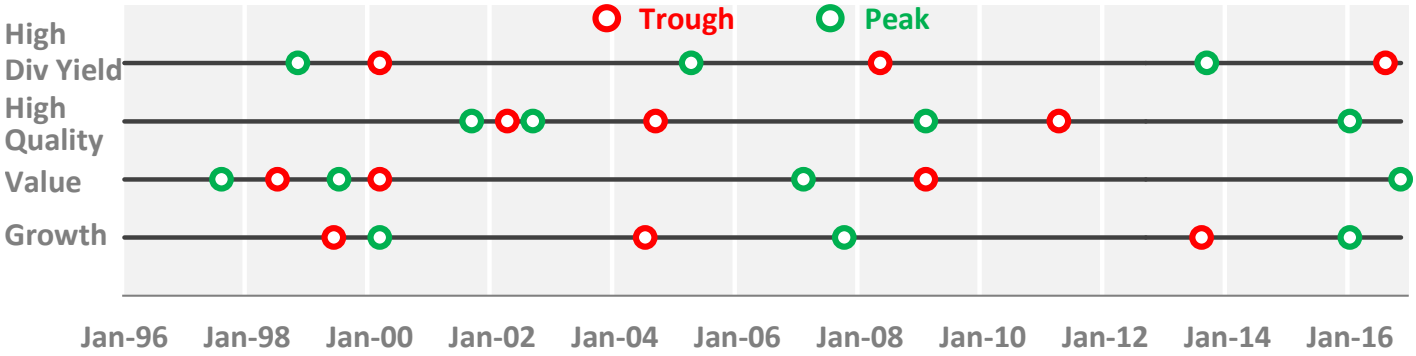
Truth: Style rotation has occurred significantly less frequently than either country or sector rotation. In other words, the outperformance (or underperformance) of style groups tends to stay longer than that of countries or sectors. Hence, alleged long-term investors should probably pay more attention to style rotation.

To compare the frequency of country, sector, and style rotations in APxJ/EM, we first plot the time trajectories of each country, sector, and style group's performance relative to the MSCI APxJ/EM benchmark. We then mark the peaks and troughts of each time series, respectively. The peaks and troughs are defined as the maximums and minimums of each relative price movement with a scale larger than 10%. At the end of this section in Appendix 2, we plot a number of country, sector, and style groups' relative performance to benchmark, with markers that show the peaks and troughs based on this definition. We also note that this 10% *price movement threshold* within our definition is chosen arbitrarily. At the end of this section in Appendix 1, we prove that the conclusion in this section does not depend on the choice of *price movement threshold*.

Next, we map every peak and trough of each APxJ/EM style group's relative performance in **Exhibit 49** , and using the same methodology, we map every peak and trough of each APxJ/EM sector and country's relative performance in **Exhibit 50** and **Exhibit 51** respectively. By comparing these three exhibits, it should be conspicuous to draw the conclusion that style rotation has occurred significantly less frequently than sector or country rotations.

Exhibit 49:

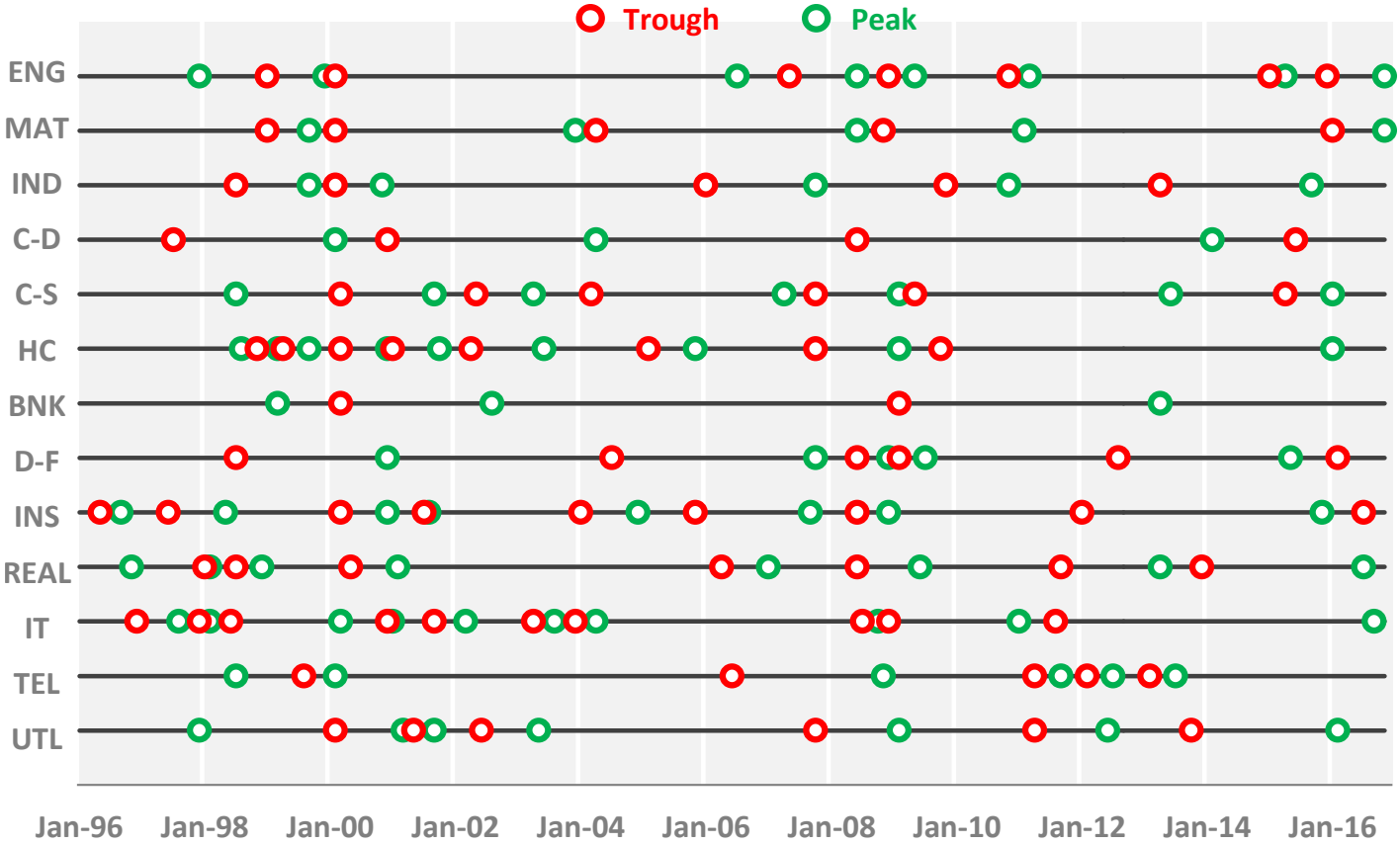
Peaks and troughs of APxJ/EM style groups' relative performance to benchmark (Peaks / toughs are defined as the maximums / minimums of price moves larger than 10%)



Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016.

Exhibit 50:

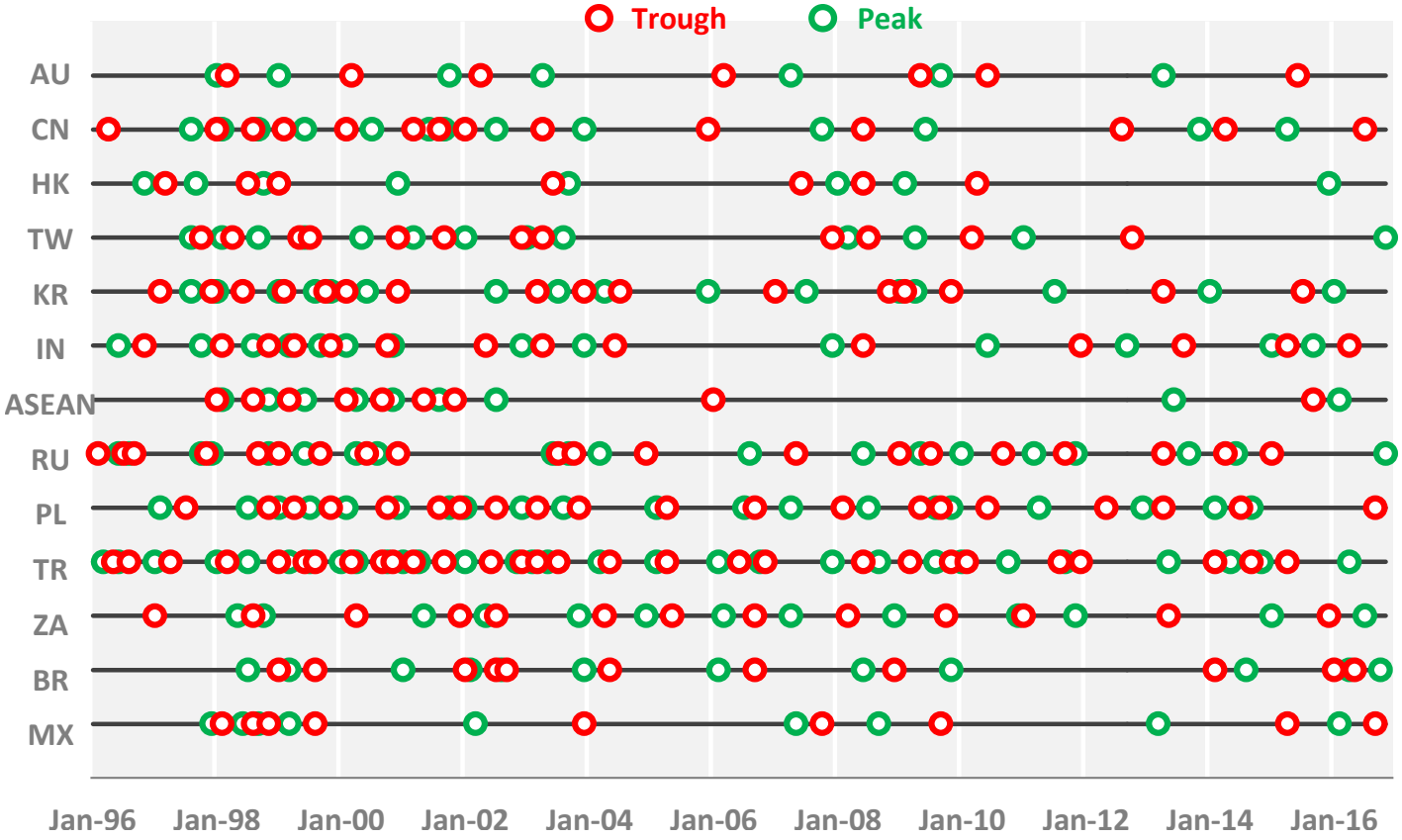
Peaks and troughs of APxJ/EM sectors' relative performance to benchmark (Peaks / toughs are defined as the maximums / minimums of price moves larger than 10%)



Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016. Abbreviations: ENG - Energy. MAT - Materials. IND - Industrials. C-D - Consumer Discretionary. C-S - Consumer Staples. HC - Health Care. BNK - Banks. D-F - Diversified Financials. INS - Insurance. REAL - Real Estate. IT - Information Technology. TEL - Telecommunication. UTL - Utilities.

Exhibit 51:

Peaks and troughs of APxJ/EM countries' relative performance to benchmark (Peaks / toughs are defined as the maximums / minimums of price moves larger than 10%)



Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016.

Fact: Sector rotation has occurred *twice* as frequently as style rotation. Country rotation has occurred *four times* as frequently as style rotation.

Style rotation least frequent: Below we quantify the spacing between each peak and trough as well as the extent of relative performance between each peak and trough from the previous charts. The results are summarized in **Exhibit 52** . It shows that, on average, sector rotation has occurred about *twice* as frequently as style rotation in APxJ/EM; country rotation has occurred about *four times* as frequently as style rotation in APxJ/EM.

Notable exceptions: There are some notable country and sector exceptions whose outperformance (underperformance) tends to last longer.

- Within sectors, Banks, Discretionary, and Materials have longer performance cycles (whilst IT & Health Care have the shortest).
- Within countries, Australia and Mexico have longer performance cycles (whilst Turkey, Poland, and Russia have the shortest).

Style performance least volatile: **Exhibit 52** also shows that the average scale of relative performance between peaks and troughs has been similar at circa 27-29% across country, sector and style groups in APxJ/EM universe. This, combined with the fact that the duration between peaks and troughs for style groups are longer than sectors and countries, suggests that style groups have been the least volatile in relation to their relative performance to benchmark compared with countries and sectors.

Exhibit 52:

The average durations of the bull / bear runs for APxJ/EM sectors, countries, and styles

Sector	Duration (months)	Average absolute scale of move
Energy	17.1	38%
Materials	26.7	35%
Industrials	23.0	21%
Discretionary	36.2	30%
Staples	19.3	25%
Health Care	10.3	32%
Banks	39.3	23%
Div. Financials	23.2	31%
Insurance	14.9	26%
Real Estate	15.4	29%
IT	9.8	31%
Telecom	20.5	28%
Utilities	17.8	24%
Average	21.0	29%

Country	Duration (months)	Average absolute scale of move
Australia	15.9	23%
China	8.9	31%
Hong Kong	12.2	23%
Taiwan	8.4	23%
Korea	7.5	30%
India	8.7	30%
ASEAN	13.9	25%
Russia	5.8	43%
Poland	5.7	24%
Turkey	4.0	32%
South Africa	9.6	21%
Brazil	11.1	40%
Mexico	14.2	28%
Average	9.7	29%

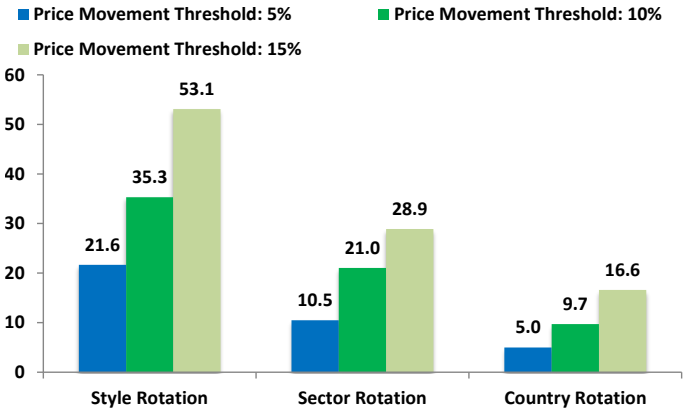
Style	Duration (months)	Average absolute scale of move
High Div Yield	42.4	38%
High Quality	30.5	16%
Value	26.2	35%
Growth	42.2	17%
Average	35.3	27%

Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research.

Appendix 1: The conclusion in this section does not depend on the choice of *price movement threshold*

Exhibit 53:

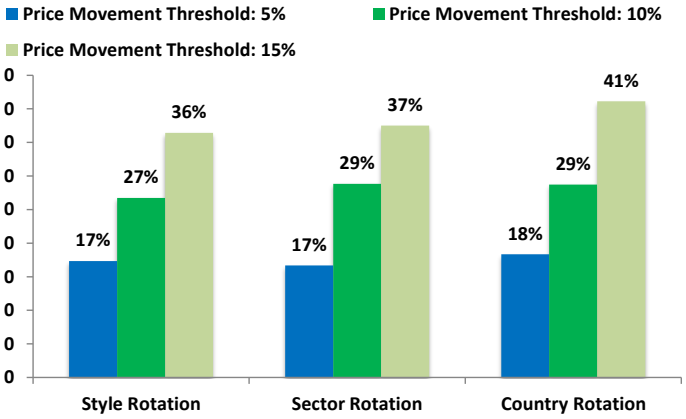
Average duration between peaks and troughs for style, sector and country rotations, as a function of different price movement threshold



Based on performance from Jan 1996 to Dec 2016. Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research. *Here the Optimized Style Momentum strategy is based on a mix of momentum signals with different time horizons. However, later in the report we state that it is challenging to discern the optimal mix ahead of time.

Exhibit 54:

Average scale of relative performance between peaks and troughs for style, sector and country rotations, as a function of different price movement threshold

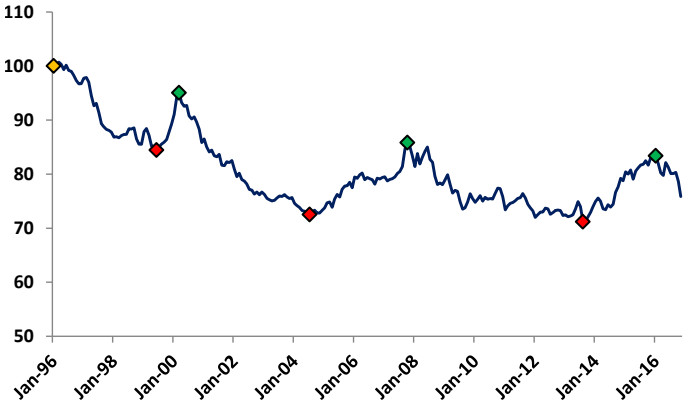


Based on performance from Jan 1996 to Dec 2016. Performance calculation does not consider transaction costs or other costs. These figures are not audited. Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research. *Here the Optimized Style Momentum strategy is based on a mix of momentum signals with different time horizons. However, later in the report we state that it is challenging to discern the optimal mix ahead of time.

Appendix 2: Examples of APxJ/EM style, sector, and country relative performance with their peaks & troughs marked

Exhibit 55:

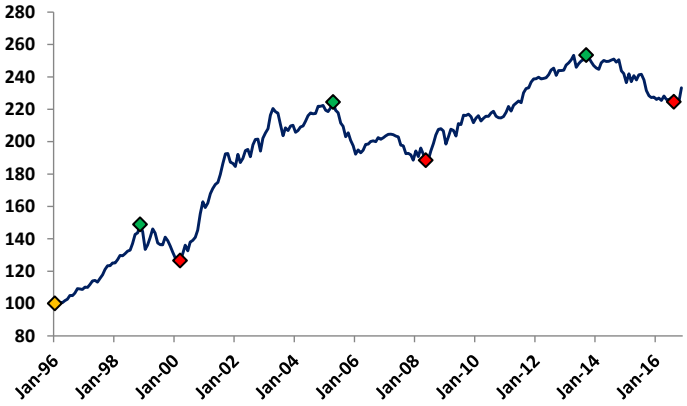
APxJ/EM Growth stocks relative performance versus MSCI APxJ/EM benchmark



Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016.

Exhibit 56:

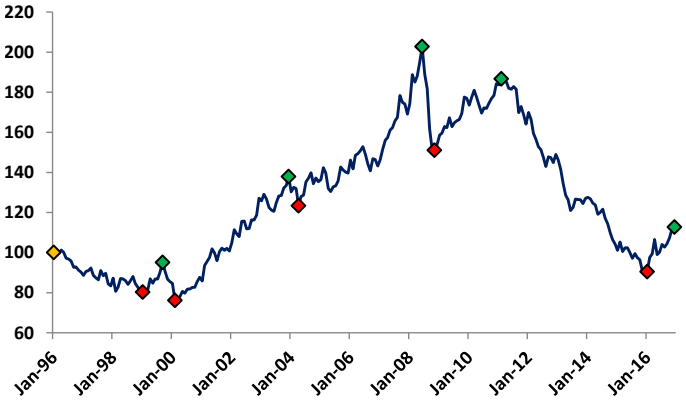
APxJ/EM High Dividend Yield stocks relative performance versus MSCI APxJ/EM benchmark



Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016.

Exhibit 57:

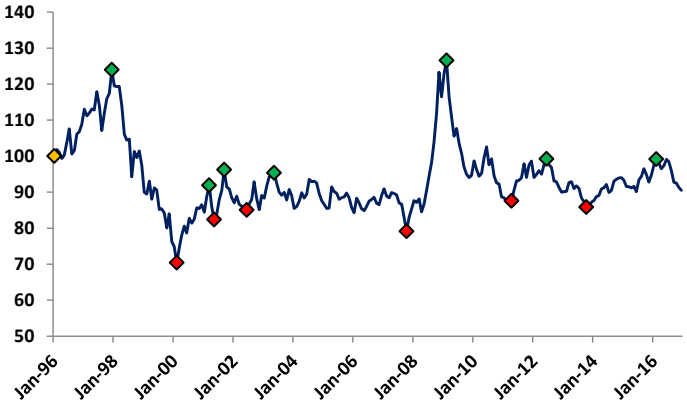
MSCI APxJ/EM Materials relative performance versus MSCI APxJ/EM benchmark



Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016.

Exhibit 58:

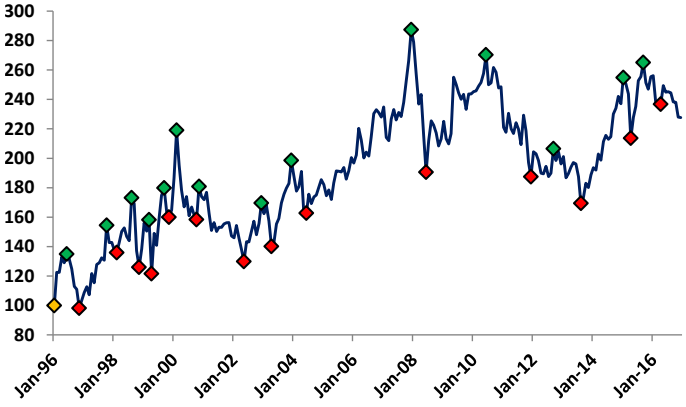
MSCI APxJ/EM Utilities relative performance versus MSCI APxJ/EM benchmark



Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016.

Exhibit 59:

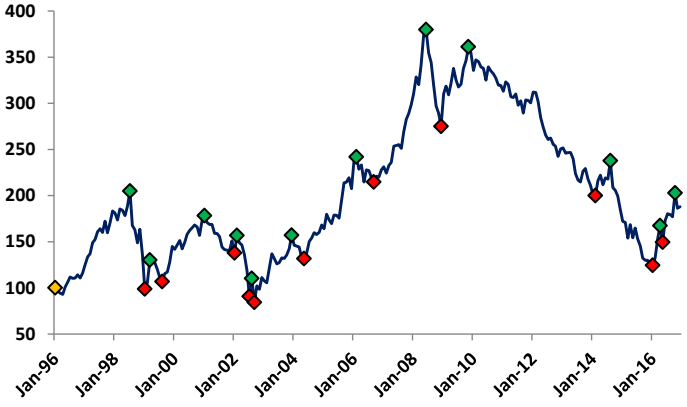
MSCI India relative performance versus MSCI APxJ/EM benchmark



Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016.

Exhibit 60:

MSCI Brazil relative performance versus MSCI APxJ/EM benchmark



Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016.

Myth #2: "Style performance is well correlated with certain country or sector's performance."

Truth: Style performance has had little correlation with any country or sector performance. Hence, style rotation should be treated as an independent and orthogonal phenomenon versus country or sector rotations.

This is a quite common (mis)perception amongst investors. Examples include: "High Quality stocks' performance is highly driven by India"; "Value stocks' performance is highly correlated with Banks (and especially China and Australia Banks)"; "Growth stocks are essentially those IT & Health Care names". The wrong implication of this myth is that one can ignore style rotation and merely focus on the more headline-grabbing country and sector rotations.

Here, we quantitatively assess the historical correlations between style groups and countries, and between style groups and sectors. The correlations are calculated on the basis of monthly relative performance to the MSCI APxJ/EM benchmark since 1996. The cross-correlations of relative performance between style groups and countries are mapped in **Exhibit 61**, and the cross-correlations of relative performance between style groups and sectors are mapped in **Exhibit 62**.

There has been little correlation between style groups and countries with the exception of a 36% correlation between High Dividend Yield and Australia. Similarly, there has been little correlation between style groups and sectors. The exceptions are some positive correlations between High Dividend Yield and Staples, Banks, and Utilities, and some negative correlations between High Dividend Yield and IT and Discretionary. All these exceptions, though, have an absolute correlation smaller than 50%.

On the other hand, the correlations between certain countries and sectors have been much more significant – more than 50%. The notable ones are the strong positive correlations between Russia and Energy, Hong Kong and Real Estate, and Taiwan and IT, as shown in **Exhibit 63**.

Exhibit 61:

Cross-correlations of relative performance between style groups and countries in APxJ/EM

Factor vs Country	Australia	China	Hong Kong	Taiwan	Korea	India	ASEAN	Russia	Poland	Turkey	S. Africa	Brazil	Mexico
High Yield	36%	3%	4%	-14%	-25%	-20%	7%	-7%	-2%	-13%	11%	16%	7%
High Quality	5%	-1%	-13%	2%	3%	14%	1%	-16%	-4%	-5%	3%	-10%	-3%
Value	0%	20%	4%	11%	13%	-19%	9%	4%	-6%	-8%	11%	6%	12%
Growth	-10%	-4%	4%	-11%	7%	6%	-6%	-4%	3%	4%	-7%	-2%	-13%

Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016.

Exhibit 62:

Cross-correlations of relative performance between style groups and countries in APxJ/EM

Factor vs Industry	Energy	Materials	Industrials	Discretionary	Staples	Health Care	Banks	Div. Financials	Insurance	Real Estate	IT	Telecom	Utilities
High Yield	3%	4%	-1%	-27%	37%	20%	46%	-13%	16%	7%	-39%	10%	32%
High Quality	-1%	1%	6%	6%	14%	13%	6%	-8%	16%	-14%	-3%	1%	1%
Value	4%	3%	10%	-6%	-13%	-16%	-3%	8%	-1%	8%	7%	-13%	11%
Growth	-9%	-1%	0%	10%	-7%	-4%	-9%	8%	3%	0%	-5%	11%	-15%

Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016.

Exhibit 63:

Cross-correlations of relative performance between countries and sectors in APxJ/EM

Country vs Industry	Australia	China	Hong Kong	Taiwan	Korea	India	ASEAN	Russia	Poland	Turkey	S. Africa	Brazil	Mexico
Energy	-19%	-6%	-23%	-21%	-18%	-14%	-15%	59%	-2%	13%	10%	50%	15%
Materials	17%	13%	-25%	-13%	8%	-4%	-15%	-2%	3%	-13%	33%	21%	-17%
Industrials	-5%	33%	12%	4%	16%	3%	30%	-26%	2%	-11%	-11%	-33%	-22%
Discretionary	4%	-13%	-5%	9%	24%	18%	-1%	-13%	12%	16%	-9%	-25%	0%
Staples	38%	-17%	-9%	-19%	-8%	18%	2%	-24%	2%	-7%	16%	-12%	19%
Health Care	31%	-19%	7%	-7%	-19%	22%	-8%	-27%	2%	-12%	1%	-23%	10%
Banks	27%	-11%	-17%	-18%	-14%	-11%	24%	8%	3%	15%	7%	0%	-2%
Div. Financials	-22%	8%	32%	-4%	14%	9%	4%	-7%	13%	4%	-3%	-11%	-13%
Insurance	23%	16%	-7%	0%	-2%	-3%	-7%	-15%	13%	0%	28%	-15%	-11%
Real Estate	-23%	23%	74%	-4%	-15%	-18%	42%	6%	-13%	-24%	-8%	-17%	-11%
IT	-26%	2%	-2%	62%	33%	6%	-5%	3%	-2%	-2%	-22%	-16%	-4%
Telecom	-2%	-14%	6%	-11%	-15%	0%	-8%	-10%	4%	17%	-1%	4%	35%
Utilities	-8%	12%	15%	-5%	-24%	-3%	20%	-2%	-21%	-11%	-3%	5%	13%

Past performance is not a guarantee of future results. Source: MSCI, Morgan Stanley Research. Data as of December-end, 2016.

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(as of December 31, 2016)

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STOCK RATING CATEGORY	COVERAGE UNIVERSE COUNT	% OF TOTAL	INVESTMENT BANKING CLIENTS (IBC) COUNT	% OF TOTAL IBC	% OF RATING CATEGORY	OTHER MATERIAL INVESTMENT SERVICES CLIENTS (MISC) COUNT	% OF TOTAL OTHER MISC
Overweight/Buy	**1142**	**34%**	**271**	**41%**	**24%**	**572**	**36%**
Equal-weight/Hold	**1442**	**43%**	**299**	**45%**	**21%**	**702**	**45%**
Not-Rated/Hold	**69**	**2%**	**8**	**1%**	**12%**	**9**	**1%**
Underweight/Sell	**668**	**20%**	**85**	**13%**	**13%**	**286**	**18%**
TOTAL	**3,321**		**663**			**1569**	

Data include common stock and ADRs currently assigned ratings. Investment Banking Clients are companies from whom Morgan Stanley received investment banking compensation in the last 12 months.

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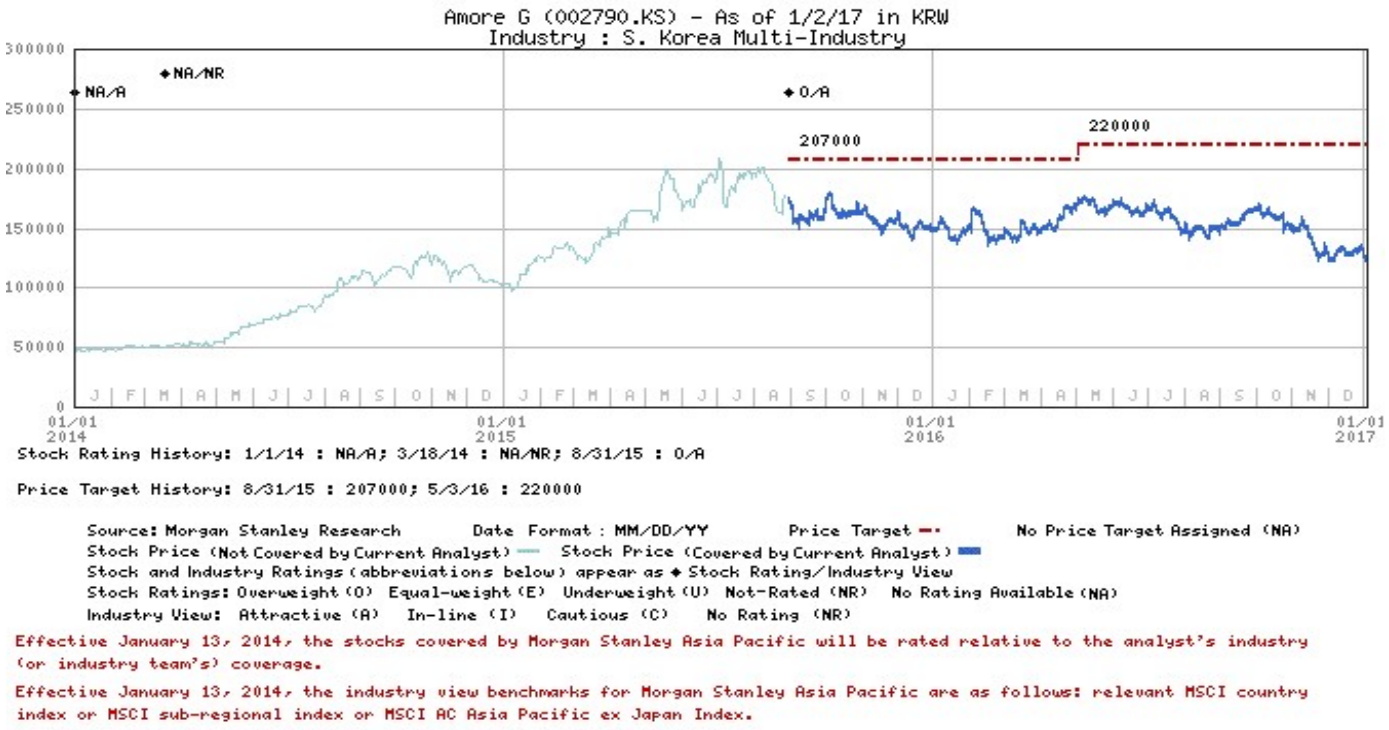
Stock Price, Price Target and Rating History (See Rating Definitions)



Amorepacific (090430.KS) - As of 1/2/17 in KRW
Industry : S. Korea Consumer

Stock Rating History: 1/1/14 : E/I; 3/18/14 : O/I

Price Target History: 11/12/13 : 95000; 3/18/14 : 142000; 5/9/14 : 155000; 8/12/14 : 230000; 11/10/14 : 270000; 2/4/15 : 300000; 4/9/15 : 380000; 5/15/15 : 450000; 8/13/15 : 470000; 10/7/16 : 500000

Source: Morgan Stanley Research Date Format : MM/DD/YY Price Target No Price Target Assigned (NA)
Stock Price (Not Covered by Current Analyst) Stock Price (Covered by Current Analyst)
Stock and Industry Ratings (abbreviations below) appear as ◆ Stock Rating/Industry View
Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) No Rating Available (NA)
Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

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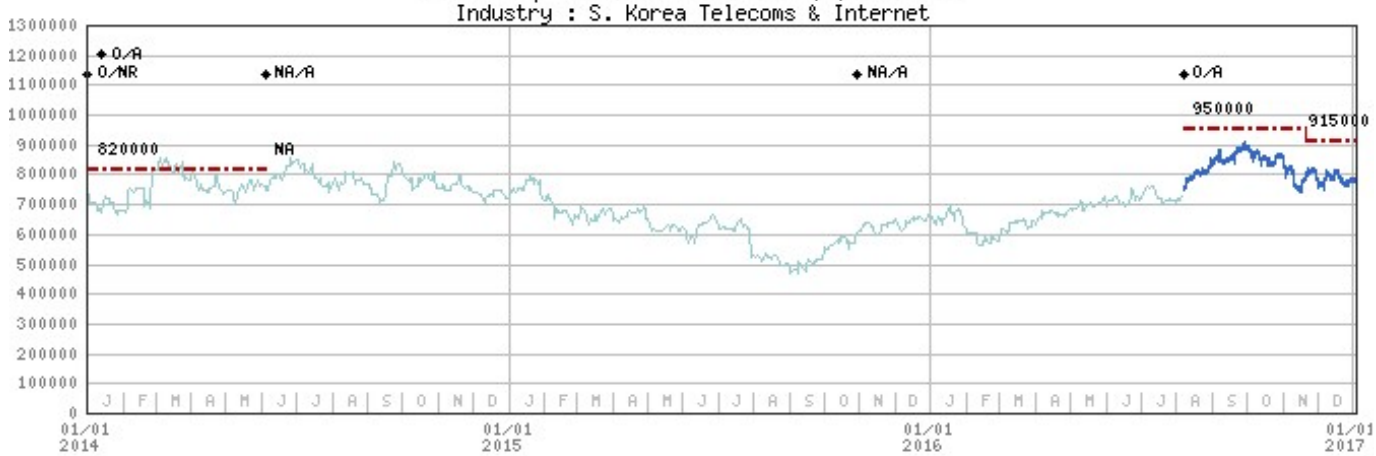
Naver Corp (035420.KS) - As of 1/2/17 in KRW
Industry : S. Korea Telecoms & Internet



Stock Rating History: 1/1/14 : O/NR; 1/13/14 : O/A; 6/4/14 : NA/A; 10/30/15 : NA/A; 8/7/16 : O/A

Price Target History: 12/12/13 : 820000; 6/4/14 : NA; 8/7/16 : 950000; 11/21/16 : 915000

Source: Morgan Stanley Research Date Format : MM/DD/YY Price Target No Price Target Assigned (NA)
Stock Price (Not Covered by Current Analyst) Stock Price (Covered by Current Analyst)
Stock and Industry Ratings (abbreviations below) appear as ◆ Stock Rating/Industry View
Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) No Rating Available (NA)
Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

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Stock Rating History: 1/1/14 : U/NR; 1/13/14 : U/A; 1/27/15 : O/A

Price Target History: 11/21/13 : 150000; 1/27/15 : 290000; 5/16/16 : 350000; 11/15/16 : 370000

Source: Morgan Stanley Research Date Format : MM/DD/YY Price Target -·- No Price Target Assigned (NA)
Stock Price (Not Covered by Current Analyst) — Stock Price (Covered by Current Analyst) ▬
Stock and Industry Ratings (abbreviations below) appear as ◆ Stock Rating/Industry View
Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) No Rating Available (NA)
Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

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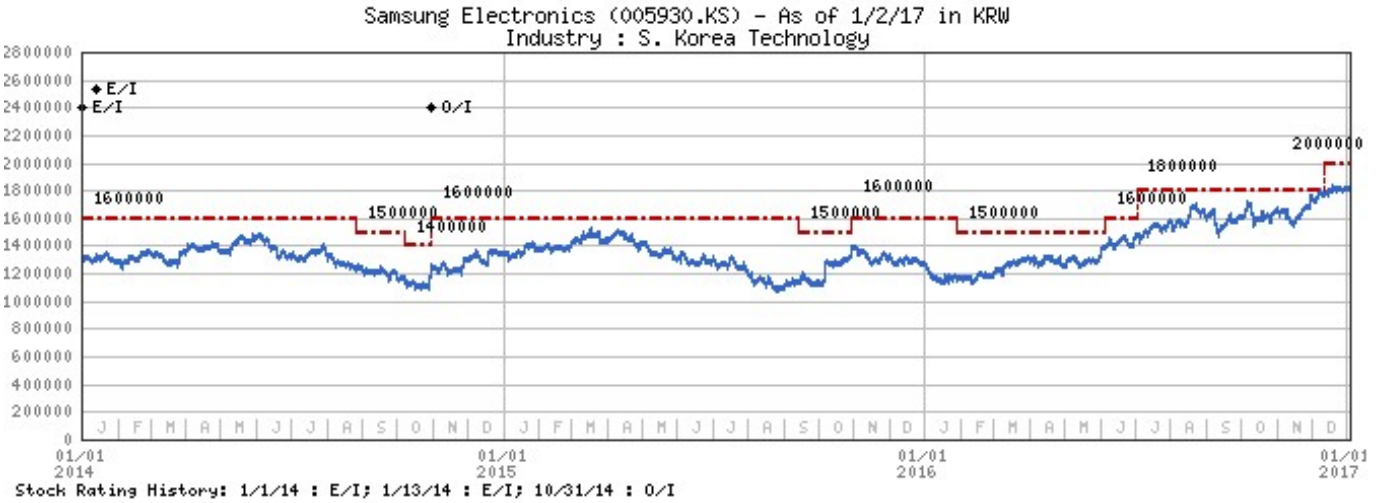

Stock Rating History: 1/1/14 : E/I; 1/13/14 : E/I; 10/31/14 : O/I

Price Target History: 10/28/13 : 1600000; 8/27/14 : 1500000; 10/8/14 : 1400000; 10/31/14 : 1600000; 9/14/15 : 1500000; 10/30/15 : 1600000; 1/29/16 : 1500000; 6/6/16 : 1600000; 7/3/16 : 1800000; 12/12/16 : 2000000

Source: Morgan Stanley Research Date Format : MM/DD/YY Price Target -·- No Price Target Assigned (NA)
Stock Price (Not Covered by Current Analyst) — Stock Price (Covered by Current Analyst) ▬
Stock and Industry Ratings (abbreviations below) appear as ◆ Stock Rating/Industry View
Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) No Rating Available (NA)
Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

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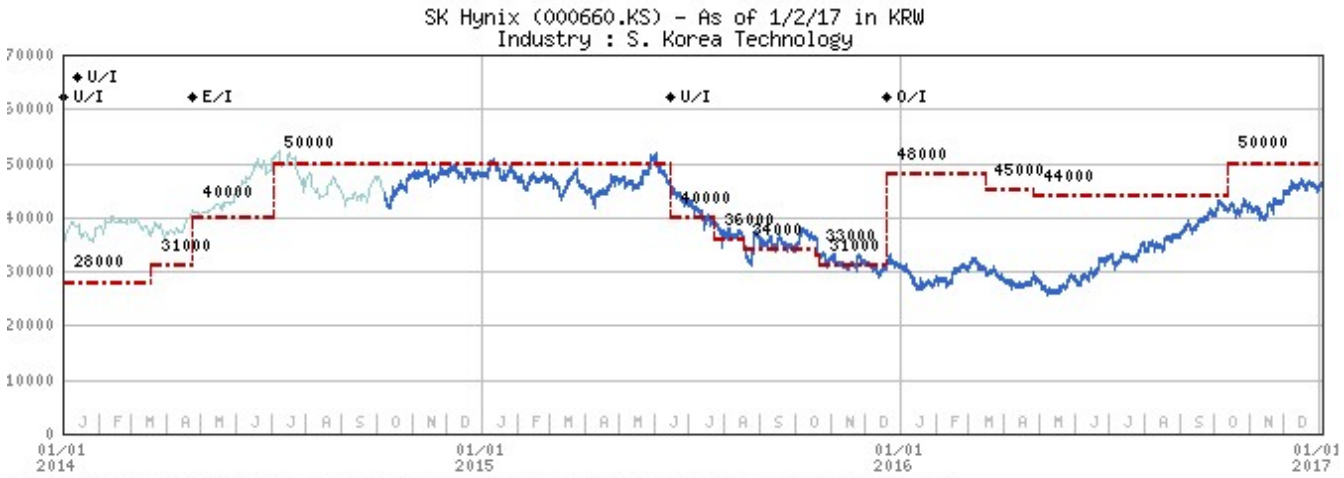

Stock Rating History: 1/1/14 : U/I; 1/13/14 : U/I; 4/24/14 : E/I; 6/15/15 : U/I; 12/21/15 : O/I

Price Target History: 9/25/13 : 28000; 3/18/14 : 31000; 4/24/14 : 40000; 7/3/14 : 50000; 6/15/15 : 40000; 7/23/15 : 36000; 8/17/15 : 34000; 10/19/15 : 33000; 10/22/15 : 31000; 12/21/15 : 48000; 3/15/16 : 45000; 4/26/16 : 44000; 10/13/16 : 50000

Source: Morgan Stanley Research Date Format : MM/DD/YY Price Target -·- No Price Target Assigned (NA)
Stock Price (Not Covered by Current Analyst) — Stock Price (Covered by Current Analyst) ▬
Stock and Industry Ratings (abbreviations below) appear as ◆ Stock Rating/Industry View
Stock Ratings: Overweight (O) Equal-weight (E) Underweight (U) Not-Rated (NR) No Rating Available (NA)
Industry View: Attractive (A) In-line (I) Cautious (C) No Rating (NR)

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