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Applied philosophy

Vaccination rates and equity returns

Vaccination programmes hold the promise of our lives returning to normal. Countries that have reached a high enough threshold in vaccinating their populations have been able to gradually open up. We were expecting equity markets to have had higher returns in these markets since vaccinations started in December 2020 but have found little relationship between vaccination rates and performance. In our view, short term returns are difficult to predict and we therefore prefer to focus on the long term using valuations as our anchor.

The economic recovery seems to be gathering pace as we shift from talk of whether governments and central banks provide enough stimulus to inflation, tapering and rate rises. This is happening with the backdrop of rising new cases and deaths globally, albeit with increasing regional differences. While some developed countries are gradually opening up, emerging markets (EM), especially India, are fighting another wave of the pandemic. We suspect this trend may continue due to the unequal distribution of vaccines, which has favoured economies that could afford to buy early and stock up enough doses to vaccinate a large proportion of their population.

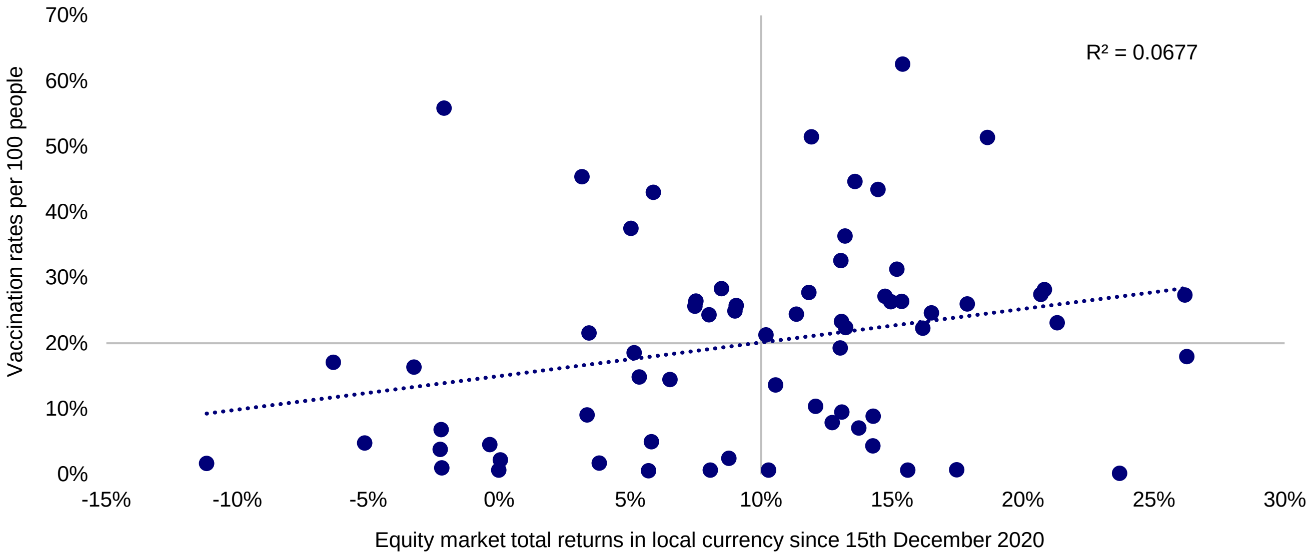
We believe there is a connection between the speed of the economic recovery and the pace of reopening. How quickly a country emerges from lockdowns and how willing its citizens are to go out to shops and restaurants is partly determined by their vaccination rates, in our view. Vaccination programmes started around the middle of December in countries which were early adopters. Most of them were countries that had domestic R&D and manufacturing capacity for vaccines that were quickly authorised.

We expected that to translate into strong returns in risk assets, mostly equity markets. Therefore, we analysed equity market total returns since 15th December 2020 in 66 countries using Datastream Total Market indices versus vaccination rates as a percentage of total populations based on data collected by Our World in Data. However, **Figure 1** suggests little connection between the two sets of data. There is only a very small positive relationship between the speed of vaccination programmes and market performance.

First, most countries are bunched together near the averages for both vaccination rates and returns. Second, many countries have yet to really start their vaccination programmes, and therefore it is impossible to tell how far they are from reopening their economies. Also, some of these countries, such as Australia, China, Vietnam and Taiwan, have controlled the pandemic relatively well and have not had to resort to draconian lockdowns for extended periods leaving less room for recovery. Finally, it may be too early to draw conclusions and perhaps idiosyncratic variables may have driven country returns in the last four months. The relationship is no stronger if we use earnings growth or starting valuations (price-to-earnings, or P/E ratios) instead of vaccination rates in the same period.

One way of reducing the noisiness of the data is to use higher level aggregates. Indeed, if we compare

Figure 1 – Equity market total returns versus vaccination rates



Notes: Data as at 7th May 2021 close. We use Datastream Total Market indices for equity market total returns. The axes cross at their respective averages. Past performance is no guarantee of future results. Source: Refinitiv Datastream, Our World in Data, Invesco developed markets (DM) to EM, it is possible that the higher vaccination rate in DM translated into a 4.4% outperformance from 15th December 2020 to 7th May 2021 in local currency terms using MSCI indices.

Nevertheless, we believe that equities are long term investments (meaning 5-10 years) and may be driven by sentiment in the short term making it difficult to separate the signal from the noise. Although, as we argued in Cigarettes sunshine & happiness, we have a tendency to seek out short term returns and look for advantages using alternative data sources in our investments, this does not necessarily lead to better decisions. We found that the dispersion of short-term returns is much higher than long-term ones, while they may also seem more randomly distributed. We have long advocated a more long-term approach using valuations as our anchor.

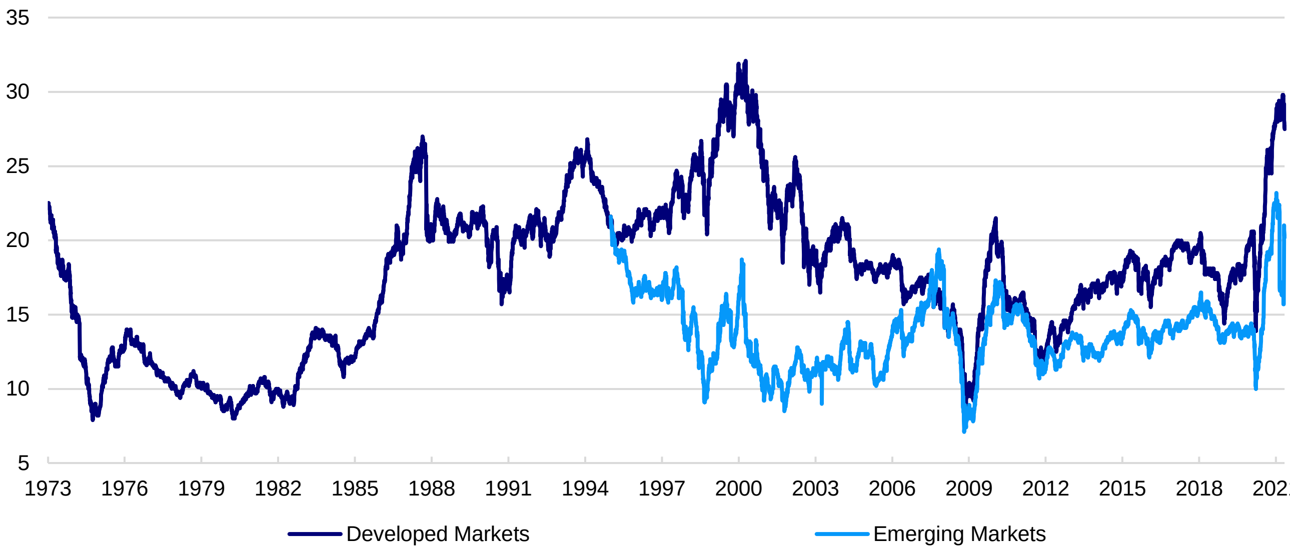
Even using a simple price-to-earnings ratio tended to provide a good guide to future returns in the past. The R^2 number for the regression between P/E ratios and subsequent 10-year global equity returns is 64% (using the Datastream Total Market World index in USD terms between 1st January 1973 to 7th May 2021), which means that starting valuations explain that proportion of the variance in future returns. We reach similar predictive power when we use only DM P/E ratios and returns, while the relationship seems somewhat weaker for EM. Perhaps structural changes in EM with the rise of China's weight in the index, or its close connection to the commodity super-cycle weakens the predictive power of valuations in the region.

There were not many periods in the past when valuations were at such lofty levels as at present (see **Figure 2**). Developed market equities trade at 27.5x earnings, while emerging markets are valued at 20.2x (using Datastream Total Market indices, as of 7th May 2021). Historically, these valuations were associated with low returns in the following decade. Nevertheless, we think it is worth considering where we are in the economic and market cycles before we reach our conclusions.

If we are at the end of the economic cycle or we are in a market bubble, we would consider high valuations to be unsustainable. However, we think we are more likely to be near the early part of an economic expansion and therefore markets may be signalling their expectations about the levels of growth ahead of us. In our view, positive sentiment has run ahead of earnings growth in equity markets resulting in high valuation levels. We expect this to reverse in the coming year with earnings growth outpacing positive equity returns leading to a de-rating (P/E ratios falling).

Of course, we would be more comfortable if current P/E ratios were lower, say in the low teens, which in the past tended to signal high forward returns, especially if that were coupled with a trough in the economic cycle. Nevertheless, we believe that equity market valuations are less extreme than those in fixed income markets even after the recent rise in yields. Therefore, we retain our preference for stocks over bonds. In the short term, we would favour the momentum to continue in DM, but expect the growth and recovery prospects to be better in EM in the long run.

Figure 2 – Price-to-Earnings ratios since 1973



Note: Daily data from 2nd January 1973 for Developed Markets and 2nd January 1995 for Emerging Markets. Data as at 7th May 2021. We use Datastream Total Market indices for both. Past performance is no guarantee of future returns.
Source: Refinitiv Datastream and Invesco.

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Figure 3 – Asset class total returns (%, annualised)

Data as at 07/05/2021	Index	Current Level/RY	Total Return (USD, %) 1w	1m	QTD	YTD	12m	Total Return (Local Currency, %) 1w	1m	QTD	YTD	12m
Equities												
World	MSCI	710	1.3	3.3	5.8	10.7	50.4	1.0	2.5	4.8	11.0	45.5
Emerging Markets	MSCI	1349	0.1	0.9	2.6	5.0	54.0	-0.3	-0.2	1.3	5.3	46.2
China	MSCI	106	-2.2	-2.2	-0.9	-1.3	36.8	-2.3	-2.5	-1.2	-1.3	35.3
US	MSCI	4094	0.8	3.5	6.3	12.2	50.9	0.8	3.5	6.3	12.2	50.9
Europe	MSCI	2036	2.9	5.2	7.7	12.2	51.0	1.9	3.1	4.5	12.5	34.2
Europe ex-UK	MSCI	2550	2.7	5.1	7.6	11.5	54.5	1.7	2.8	3.9	12.6	37.7
UK	MSCI	1165	3.5	5.5	8.0	14.7	39.9	2.5	4.0	6.6	12.2	23.0
Japan	MSCI	3917	2.4	-0.6	0.8	2.6	37.3	1.7	-1.6	-0.9	7.8	39.9
Government Bonds												
World	BofA-ML	0.50	0.7	0.9	1.8	-4.1	1.8	0.2	0.0	0.3	-2.9	-2.2
Emerging Markets	BBloom	4.34	1.0	2.8	4.0	-3.6	17.1	1.0	2.8	4.0	-3.6	17.1
China	BofA-ML	3.02	0.4	2.2	2.4	3.0	9.3	0.2	0.9	0.8	1.7	-0.4
US (10y)	Datastream	1.58	0.5	0.8	2.2	-4.7	-6.2	0.5	0.8	2.2	-4.7	-6.2
Europe	Bofa-ML	0.08	0.8	0.9	2.1	-4.2	14.2	-0.1	-1.2	-1.2	-3.5	1.4
Europe ex-UK (EMU, 10y)	Datastream	-0.26	1.0	1.1	2.6	-3.8	9.5	0.2	-0.9	-0.7	-3.1	-2.8
UK (10y)	Datastream	0.81	1.6	1.5	2.1	-2.9	8.5	0.6	0.1	0.8	-5.1	-4.6
Japan (10y)	Datastream	0.08	0.7	1.1	1.9	-5.3	-2.2	0.1	0.1	0.2	-0.4	-0.4
IG Corporate Bonds												
Global	BofA-ML	1.71	0.7	1.2	2.2	-2.2	10.0	0.4	0.4	1.1	-2.2	5.7
Emerging Markets	BBloom	3.74	0.5	1.3	1.9	0.0	20.6	0.5	1.3	1.9	0.0	20.6
China	BofA-ML	3.93	0.3	2.0	2.2	2.9	10.8	0.2	0.6	0.7	1.7	1.0
US	BofA-ML	2.20	0.5	0.8	1.7	-2.9	6.0	0.5	0.8	1.7	-2.9	6.0
Europe	BofA-ML	0.44	1.0	1.8	3.4	-1.4	18.7	0.1	-0.2	0.1	-0.6	5.3
UK	BofA-ML	1.84	1.4	2.0	2.6	-1.1	18.9	0.4	0.6	1.3	-3.3	4.5
Japan	BofA-ML	0.39	0.7	1.1	2.0	-4.7	-0.9	0.0	0.1	0.2	0.2	1.0
HY Corporate Bonds												
Global	BofA-ML	4.62	0.5	1.1	2.0	1.9	22.6	0.3	0.7	1.3	2.0	19.6
US	BofA-ML	4.74	0.3	0.7	1.4	2.3	19.8	0.3	0.7	1.4	2.3	19.8
Europe	BofA-ML	2.93	0.9	2.3	4.0	1.5	31.6	0.0	0.2	0.7	2.2	16.8
Cash (Overnight LIBOR)												
US		0.06	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1
Euro Area		-0.58	-0.5	1.5	2.8	-1.4	11.1	0.0	0.0	-0.1	-0.2	-0.6
UK		0.04	-0.4	0.5	0.8	1.6	12.6	0.0	0.0	0.0	0.0	0.0
Japan		-0.08	-0.1	0.6	1.5	-5.4	-2.8	0.0	0.0	0.0	0.0	-0.1
Real Estate (REITs)												
Global	FTSE	1976	0.5	3.5	6.1	12.4	38.3	-0.4	1.5	2.7	13.3	22.8
Emerging Markets	FTSE	2027	1.2	-1.6	-1.3	3.4	18.8	0.3	-3.6	-4.5	4.2	5.4
US	FTSE	3286	-0.5	4.7	7.7	18.0	45.2	-0.5	4.7	7.7	18.0	45.2
Europe ex-UK	FTSE	3758	1.3	4.4	9.5	1.6	38.4	0.4	2.4	6.0	2.4	22.9
UK	FTSE	1518	2.5	6.2	9.2	13.7	44.3	1.6	4.7	7.8	11.2	26.8
Japan	FTSE	2864	1.6	0.9	2.3	10.4	30.8	0.9	0.0	0.5	16.1	33.2
Commodities												
All	GSCI	2512	3.4	11.3	11.9	27.0	77.1	-	-	-	-	-
Energy	GSCI	356	2.4	9.3	9.7	33.3	108.2	-	-	-	-	-
Industrial Metals	GSCI	1763	5.3	13.5	15.5	25.9	72.4	-	-	-	-	-
Precious Metals	GSCI	2135	3.9	5.5	7.3	-2.9	8.0	-	-	-	-	-
Agricultural Goods	GSCI	518	5.5	22.9	22.1	29.5	73.9	-	-	-	-	-
Currencies (vs USD)*												
EUR		1.22	1.2	2.5	3.7	-0.4	12.3	-	-	-	-	-
JPY		108.62	0.6	1.1	1.9	-4.9	-2.1	-	-	-	-	-
GBP		1.40	1.0	1.4	1.3	2.3	13.8	-	-	-	-	-
CHF		1.11	1.4	3.2	4.7	-1.8	8.0	-	-	-	-	-
CNY		6.43	0.6	1.7	1.9	1.5	10.1	-	-	-	-	-

Notes: *The currency section is organised so that in all cases the numbers show the movement in the mentioned currency versus USD (+ve indicates appreciation, -ve indicates depreciation). Past performance is no guarantee of future results. Please see appendix for definitions, methodology and disclaimers.
Source: Refinitiv Datastream and Invesco

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Figure 4 – Global equity sector total returns relative to market (%)

Data as at 07/05/2021	Global				
	1w	1m	QTD	YTD	12m
Energy	**2.2**	**0.9**	**-1.7**	**2.8**	**-10.4**
Basic Materials	**4.4**	**6.2**	**6.6**	**9.3**	**18.7**
Basic Resources	6.5	9.1	10.6	13.8	28.3
Chemicals	1.7	2.3	1.4	3.5	7.5
Industrials	**1.1**	**1.5**	**1.4**	**3.0**	**5.8**
Construction & Materials	2.4	2.5	2.2	5.4	9.3
Industrial Goods & Services	1.0	1.3	1.3	2.7	5.3
Consumer Discretionary	**-1.5**	**-1.8**	**-1.5**	**-3.1**	**4.1**
Automobiles & Parts	-1.2	-4.1	-5.3	-3.7	37.7
Media	-1.4	-4.7	-4.0	-6.2	1.9
Retailers	-2.0	-0.6	0.0	-4.2	-7.1
Travel & Leisure	-2.9	-5.2	-4.6	-1.4	1.5
Consumer Products & Services	-0.3	0.8	1.4	-0.9	9.0
Consumer Staples	**1.0**	**0.0**	**-0.7**	**-5.0**	**-13.9**
Food, Beverage & Tobacco	1.0	0.9	0.7	-3.4	-12.1
Personal Care, Drug & Grocery Stores	0.9	-1.7	-3.2	-7.7	-17.3
Healthcare	**-0.7**	**1.3**	**-0.6**	**-5.1**	**-15.9**
Financials	**1.6**	**2.2**	**1.6**	**7.2**	**8.5**
Banks	1.7	1.8	0.6	8.7	9.6
Financial Services	1.6	3.1	3.1	6.2	8.9
Insurance	1.6	1.9	1.8	5.0	5.6
Real Estate	**-0.9**	**-0.2**	**-0.3**	**0.3**	**-8.7**
Technology	**-2.5**	**-3.3**	**-0.9**	**-1.9**	**8.1**
Telecommunications	**1.0**	**0.1**	**-0.5**	**-1.1**	**-10.1**
Utilities	**-0.3**	**-1.1**	**-1.7**	**-5.5**	**-13.0**

Notes: Returns shown are for Datastream sector indices versus the total market index. Past performance is no guarantee of future results.
Source: Refinitiv Datastream and Invesco

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Figure 5 – Model asset allocation

	Neutral	Policy Range		Allocation	Position vs Neutral
Cash Equivalents	**5%**	**0-10%**		**10%**	
Cash	2.5%			10%	
Gold	2.5%			0%	
Bonds	**40%**	**10-70%**	↑	**22%**	
Government	25%	10-40%	↑	17%	
US	8%		↑	5%	
Europe ex-UK (Eurozone)	7%			4%	
UK	1%		↓	1%	
Japan	7%		↑	4%	
Emerging Markets	2%		↓	3%	
China**	0.2%		↓	0%	
Corporate IG	10%	0-20%		0%	
US Dollar	5%			0%	
Euro	2%			0%	
Sterling	1%			0%	
Japanese Yen	1%			0%	
Emerging Markets	1%			0%	
China**	0.1%			0%	
Corporate HY	5%	0-10%		5%	
US Dollar	4%		↑	5%	
Euro	1%		↓	0%	
Equities	**45%**	**25-65%**		**50%**	
US	25%			18%	
Europe ex-UK	7%			12%	
UK	4%		↑	7%	
Japan	4%		↓	5%	
Emerging Markets	5%			8%	
China**	2%		↓	2%	
Real Estate	**8%**	**0-16%**		**16%**	
US	2%		↑	4%	
Europe ex-UK	2%			4%	
UK	1%		↓	1%	
Japan	2%		↑	4%	
Emerging Markets	1%			3%	
Commodities	**2%**	**0-4%**	↓	**2%**	
Energy	1%		↓	1%	
Industrial Metals	0.3%		↓	0%	
Precious Metals	0.3%			0%	
Agriculture	0.3%			1%	
Total	**100%**			**100%**	
Currency Exposure (including effect of hedging)					
USD	48%		↑	40%	
EUR	20%		↓	22%	
GBP	7%		↓	10%	
JPY	15%		↑	14%	
EM	9%		↓	14%	
Total	**100%**			**100%**	

Notes: **China is included in Emerging Markets allocations. This is a theoretical portfolio and is for illustrative purposes only. See the latest The Big Picture document for more details. It does not represent an actual portfolio and is not a recommendation of any investment or trading strategy. Arrows indicate the direction of the most recent changes.
Source: Invesco

Figure 6 – Model allocations for Global sectors

	Neutral	Invesco	Preferred Region
Energy	**6.1%**	**Underweight**	**US**
Basic Materials	**4.5%**	**Neutral**	**Europe**
Basic Resources	2.5%	Neutral	Europe
Chemicals	2.0%	Neutral	US
Industrials	**12.9%**	**Neutral**	**US**
Construction & Materials	1.6%	Neutral	Europe
Industrial Goods & Services	11.3%	Neutral	US
Consumer Discretionary	**16.2%**	**Overweight**	**US**
Automobiles & Parts	2.8%	Underweight	Japan
Media	1.3%	Overweight	US
Retailers	5.8%	Neutral	US
Travel & Leisure	2.2%	Overweight	US
Consumer Products & Services	4.0%	Overweight	EM
Consumer Staples	**6.3%**	**Overweight**	**Japan**
Food, Beverage & Tobacco	4.1%	Overweight	Japan
Personal Care, Drug & Grocery Stores	2.2%	Underweight	Europe
Healthcare	**9.8%**	**Underweight**	**Europe**
Financials	**14.7%**	**Neutral**	**Japan**
Banks	7.4%	Underweight	Japan
Financial Services	3.8%	Overweight	US
Insurance	3.4%	Neutral	Europe
Real Estate	**3.4%**	**Overweight**	**EM**
Technology	**18.9%**	**Overweight**	**US**
Telecommunications	**4.0%**	**Neutral**	**Europe**
Utilities	**3.2%**	**Neutral**	**Europe**

Notes: These are theoretical allocations which are for illustrative purposes only. They do not represent an actual portfolio and are not a recommendation of any investment or trading strategy. See the latest Strategic Sector Selector for more details.
Source: Refinitiv Datastream and Invesco

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Appendix

Definitions of data and benchmarks for Figure 3

Sources: we source data from Datastream unless otherwise indicated.

Cash: returns are based on a proprietary index calculated using the Intercontinental Exchange Benchmark Administration overnight LIBOR (London Interbank Offer Rate). The global rate is the average of the euro, British pound, US dollar and Japanese yen rates. The series started on 1st January 2001 with a value of 100.

Gold: London bullion market spot price in USD/troy ounce.

Government bonds: Current levels, yields and total returns use Datastream benchmark 10-year yields for the US, Eurozone, Japan and the UK, and the Bank of America Merrill Lynch government bond total return index for the World and Europe. The emerging markets yields and returns are based on the Bloomberg Barclays emerging markets aggregate government bond index.

Corporate investment grade (IG) bonds: Bank of America Merrill Lynch investment grade corporate bond total return indices. The emerging markets yields and returns are based on the Bloomberg Barclays emerging markets aggregate corporate bond index.

Corporate high yield (HY) bonds: Bank of America Merrill Lynch high yield total return indices

Equities: We use MSCI benchmark gross total return indices for all regions.

Commodities: Goldman Sachs Commodity total return indices

Real estate: FTSE EPRA/NAREIT total return indices

Currencies: Global Trade Information Services spot rates

Factor index definitions

We focus on relatively large-cap stocks, as we suspect that most investors will be conscious of liquidity constraints when implementing such strategies. We have chosen six factors, that we think cover the classic definitions used by most investors. We aim to capture roughly a fifth of the market in each of our factor indices using the historical constituents of the STOXX 600 since August 1999 and the S&P 500 since September 1989, with monthly rebalancing. All our rankings are based on data in euros for Europe and in US dollars for the US. All factor indices are equal-weighted. We use the following definitions:

Growth: stocks in both the top third based on their 5-year sales per share trend and the top-third based on their internal growth rate (the product of the 5-year average return on equity and the retention ratio).

Low volatility: stocks in the bottom quintile based on the standard deviation of their daily returns in the previous three months.

Price momentum: stocks in the top quintile based on their performance in the previous 12 months.

Quality: stocks in both the top third based on their return on invested capital and the top third based on their EBIT to EV ratio (earnings before interest and taxes to enterprise value). This follows Joel Greenblatt's "magic formula" from his 2005 book: The little book that beats the market.

Size: stocks in the bottom quintile based on their market value.

Value: stocks in the bottom quintile based on their price to book value ratios.

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