

Quantitative Monographs

How to pick stocks in the MSCI China A-Share inclusion universe

Equities

China
Quantitative

Universe overview

MSCI announced this morning its 2017 Market Classification Review and plans to include China A Large Cap stocks in the MSCI Emerging Markets Index. We compare the new entries universe with the CSI 300 Index. Overall, they are very similar to each other. Our model forecasts the forward 12-month tracking error to be 1.3% between the two universes. According to the model, the difference in sector composition is the main contributor of the tracking error. Utilities, IT and Consumer Staples contribute the largest proportions of tracking error among all sectors

Alpha model in china's domestic market

In our previous research, [How to pick stocks in China's domestic market — from a quant perspective](#) (17 January 2017), we introduced a static six-factor model to mimic a typical selection process for an investor seeking stocks with attractive valuation, quality and earnings profiles. The six factors are Earnings Yield, Book to Price, ROE, Three-month Return Volatility, Three-month Earnings Momentum and Earnings Certainty.

Top screening among MSCI China A-share inclusion

We provide stock screening for the new inclusion universe based on the alpha model. Back-testing suggests strong performance over the past decade. In the past 12 months, the model would have generated 11.7% return (top-10 basket) in excess of the CSI 300 index, based on our back-testing.

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Figure 1: Top-10 screen in MSCI China A-share new inclusion

Ticker	Company	Industry	Forward PE (x)	Forward P/BV (x)	Forward ROE (%)	Rank
601288	Agricultural Bank of China Limited	Financials	5.9	0.8	13.6	1
601939	China Construction Bank Corporation	Financials	6.5	0.9	14.2	2
600016	China Minsheng Banking Corp., Ltd.	Financials	5.7	0.7	13.4	3
600015	Hua Xia Bank Co., Limited	Financials	5.2	0.7	14.4	4
601398	Industrial and Commercial Bank of China Limited	Financials	6.4	0.8	13.6	5
600036	China Merchants Bank Co., Ltd.	Financials	8.0	1.2	15.8	6
601988	Bank of China Limited	Financials	6.4	0.7	13.2	7
601328	Bank of Communications Co., Ltd.	Financials	6.6	0.7	10.7	8
600690	Qingdao Haier Co., Ltd.	Consumer Discretionary	12.9	2.6	20.2	9
600741	HUAYU Automotive Systems Company Limited	Consumer Discretionary	9.5	1.5	15.7	10

Note: The screen is based on data as of end-May 2017.

Source: MSCI, Wind, UBS Quantitative Research

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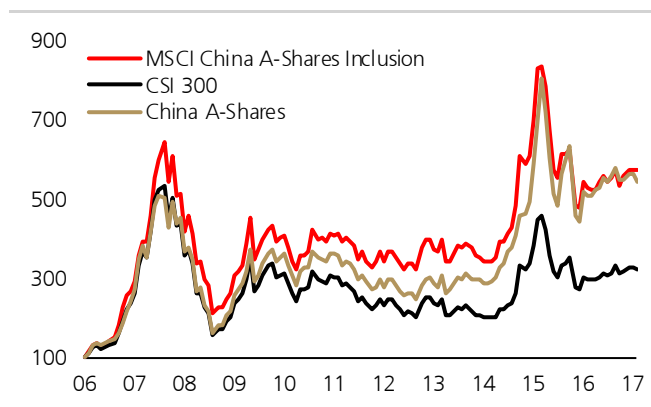
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Universe overview

MSCI plans to include China A Large Cap stocks in the MSCI Emerging Markets Index. The 222 new entries will make up 0.73% of the MSCI EM Index, at a 5% partial Inclusion Factor.

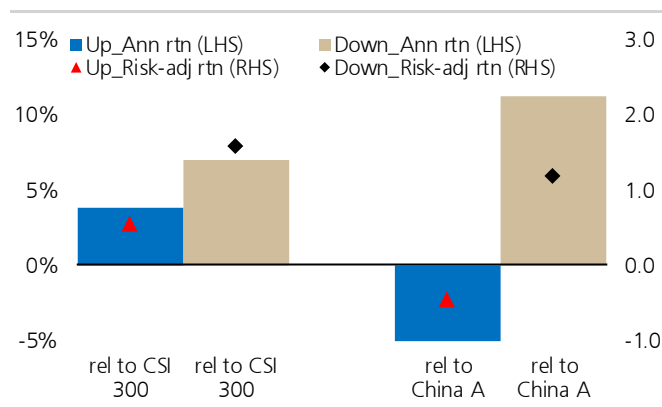
We simulate the historical performance of the new inclusion universe and compare that with the performances of CSI 300 and all China A shares. Since 2006, the MSCI China A-share new inclusions have outperformed the CSI 300 by 5% per annum and all China A shares by 0.5% per annum.

Figure 2: Performances of CSI 300, all China A shares and MSCI A-share new inclusions¹



Source: MSCI, Wind, UBS Quantitative Research

Figure 3: Relative performances under different market conditions, since 2006



Source: MSCI, Wind, UBS Quantitative Research

We further sort market conditions by the monthly returns of CSI 300 and all China A shares. We find that the MSCI new inclusions delivered stronger performance during down markets. Relative to the CSI 300, the new inclusions outperformed by 7% per annum during down markets, while only outperformed by 3.8% during up markets. Compared to all China A shares, the new entries underperformed by 6.8% in up markets, and outperformed by 11.2% in down markets.

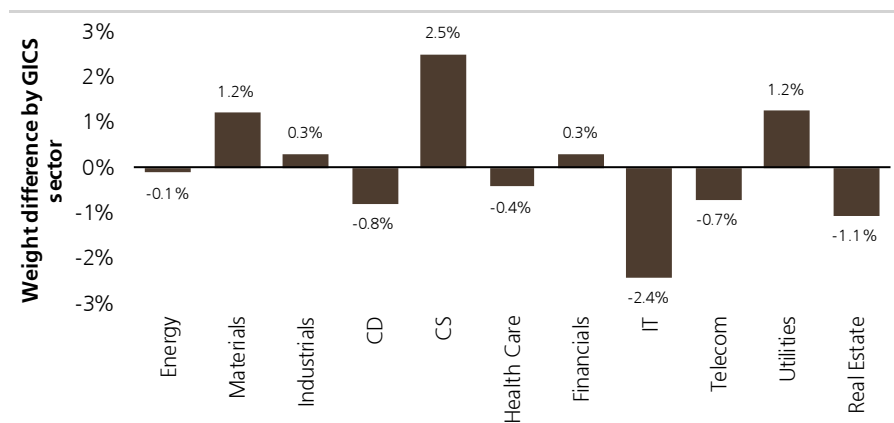
Our proprietary risk model forecasts the forward 12-month tracking error between the two universes at 1.3%. We believe the tracking error can be attributed to differences in sector composition, style component and size distribution.

Sector composition

Compared to the CSI 300 Index, the MSCI China A-share inclusion universe is underweight IT, and overweight Consumer Staples, Utilities and Materials.

¹ Performance of MSCI A-share new inclusions is simulated by the cap-weighted monthly returns of the 169 new entries. Weight is based on floating market caps, multiplied by the MSCI Foreign Inclusion Factor.

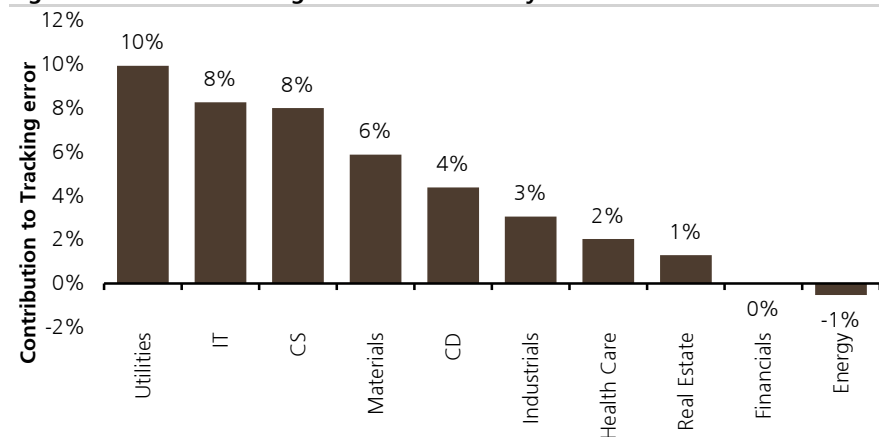
Figure 4: MSCI A-share new inclusions' sector weights relative to CSI 300



Note: Data as at the close of 19 June 2017. CD = Consumer discretionary; CS = Consumer staples.
Source: MSCI, Wind, UBS Quantitative Research

Naturally, these differences in sector composition are an important source of tracking error. Utilities, IT and Consumer Staples contribute the largest proportions of tracking error among all sectors.

Figure 5: Forecast tracking error breakdown by sector



Note: Data as at the close of 19 June 2017. CD = Consumer discretionary; CS = Consumer staples.
Source: MSCI, Wind, UBS Quantitative Research

Style component

Relative to the CSI 300 universe, the new inclusion universe tilts towards more expensive, higher-beta and more volatile stocks with strong past performance. More precisely, the new inclusion universe is overweight investment styles such as High Price momentum, High Earnings Certainty, High Beta and High Volatility. Top underweight styles are ROE, Forecast EPS Growth and Earnings Yield.

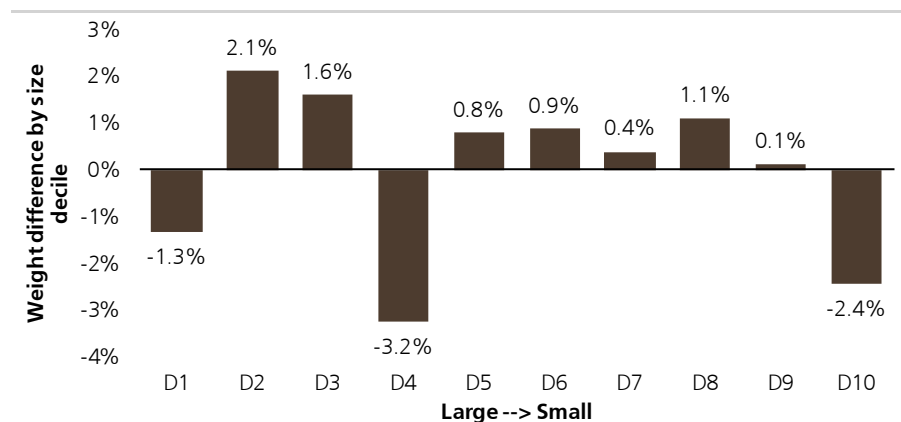
Figure 6: Style components in MSCI China A-share inclusion, relative to benchmark of CSI 300 Index

	Value			Quality		Earnings		Price Momentum		Growth		Risk				
	Earnings Yield	Dividend Yield	Book / Price	ROE	ROIC	Debt / EV	EPS Revision 3M	Previous 6M Return	Previous 12M Return	Historical EPS Growth	Forecast EPS Growth	Beta 3M	Beta 1Y	Earnings Certainty	Volatility 6M	Volatility 12M
High	-1.1%	-0.8%	-0.7%	-3.0%	-0.1%	4.2%	0.7%	2.9%	4.5%	-0.3%	-4.4%	1.0%	2.5%	2.1%	0.7%	-0.7%
Mid	1.6%	2.3%	0.1%	2.7%	0.7%	-1.6%	-1.6%	-1.6%	-2.3%	1.4%	3.6%	0.2%	-0.6%	-2.6%	-2.5%	-2.1%
Low	-0.5%	-1.5%	0.6%	0.3%	-0.6%	-2.6%	0.9%	-1.3%	-2.2%	-1.1%	0.8%	-1.3%	-1.9%	0.5%	1.8%	2.8%

Note: Style flags are formed by assigning stocks into three baskets (high, medium and low), according to representative factors in different styles, including value, quality, growth, earnings, momentum, and risk. Data as at the close of 16 June 2017. Source: MSCI, Wind, UBS Quantitative Research

In terms of size distribution, compared to the CSI 300 index universe, the MSCI inclusion universe is underweight the largest and smallest market cap deciles of CSI 300 Index universe (see Figure 15 in Appendix).

Figure 7: Overweight/underweight by size deciles



Note: Size deciles are based on the market caps of CSI 300 Index constituents. Data as at close of 19 June 2017.
Source: MSCI, Wind, UBS Quantitative Research

Largest tracking error contributors

In terms of individual stocks, top contributors of tracking error are BOE Technology Group, Inner Mongolia Baotou Steel Union, and China Shipbuilding Industrial.

Figure 8: Top 10 tracking error contributors

Company	Sector	Marginal contribution to tracking error
China Vanke Co.,Ltd.	Real Estate	0.18
Gree Electric Appliances,Inc. of Zhuhai	Consumer Discretionary	0.16
Kweichow Moutai Co.,Ltd.	Consumer Staples	0.08
Ping An Bank Co., Ltd.	Financials	0.06
East Money Information Co., Ltd.	IT	0.04
Leshi Internet Information & Technology	IT	0.04
BBMG Corporation	Materials	0.04
Shenzhen O-Film Tech Co.,Ltd.	Consumer Discretionary	0.04
China United Network Communications Limited	Telecom	0.03
WANDA FILM HOLDING CO., LTD	Consumer Discretionary	0.03

Source: MSCI, Wind, UBS Quantitative Research

Stock-picking in the new universe

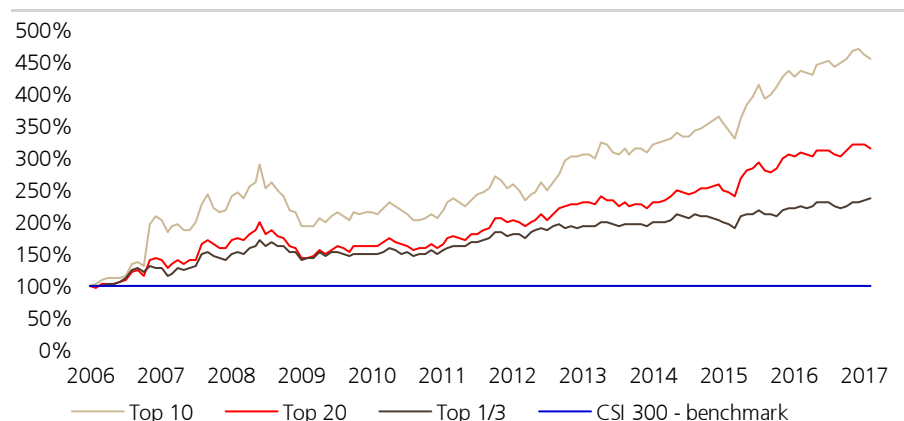
Six-factor alpha model

With our [How to pick stocks in China's domestic market — from a quant perspective](#) (17 January 2017) note, we launched our first alpha model for the China A-share market. Back-testing shows the model would have delivered 23% return in the past 12 months, and 10% annualised return since January this year, relative to the equal-weighted MSCI China A benchmark.

It is a static six-factor model, attempting to mimic a typical selection process for an investor seeking stocks with attractive valuation, quality and earning profiles. The six factors we use are Earnings Yield, Book to Price, ROE, Three-month Return Volatility, Three-month Earnings Momentum and Earnings certainty.

Here we apply this model to the new inclusion universe. Back-testing also suggests strong performance.

Figure 9: Back-testing relative performance vs the benchmark of CSI 300



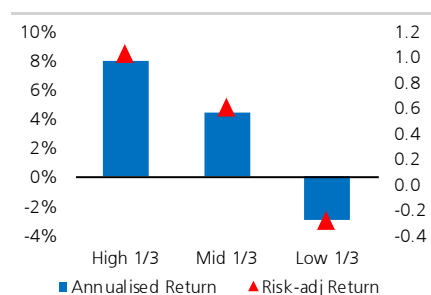
Source: MSCI, Wind, UBS Quantitative Research

Figure 10: Back-testing performance since 2006



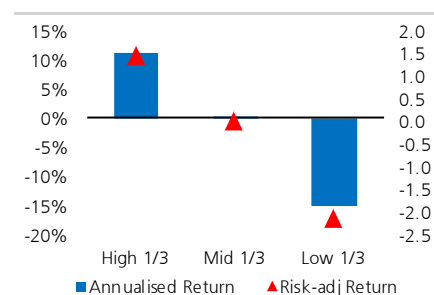
Source: MSCI, Wind, UBS Quantitative Research

Figure 11: Back-testing performance since 2011



Source: MSCI, Wind, UBS Quantitative Research

Figure 12: Back-testing performance in past 12M



Source: MSCI, Wind, UBS Quantitative Research

Figure 13: Top-20 screen of MSCI China A-share inclusion

Ticker	Company	Industry	Fwd PE	Fwd P/BV	Fwd ROE (%)	Rank
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000001	Ping An Bank Co., Ltd.	Financials	6.4	0.7	11.5	11
600048	Poly Real Estate Group Co., Ltd.	Real Estate	7.0	1.1	16.3	12
600066	Zhengzhou Yutong Bus Co., Ltd.	Industrials	10.1	2.6	27.5	13
601166	Industrial Bank Co., Ltd.	Financials	5.7	0.8	15.0	14
600688	Sinopec Shanghai Petrochemical Company Limited	Materials	10.8	2.2	21.2	15
600104	SAIC Motor Corporation Limited	Consumer Discretionary	9.3	1.6	17.8	16
600919	Bank of Jiangsu Co., Ltd.	Financials	8.1	1.1	14.0	17
601818	China Everbright Bank Company Limited	Financials	5.8	0.7	12.4	18
600674	Sichuan Chuantou Energy Co., Ltd.	Utilities	11.8	1.8	14.9	19
600900	China Yangtze Power Co., Ltd.	Utilities	15.9	2.2	14.2	20

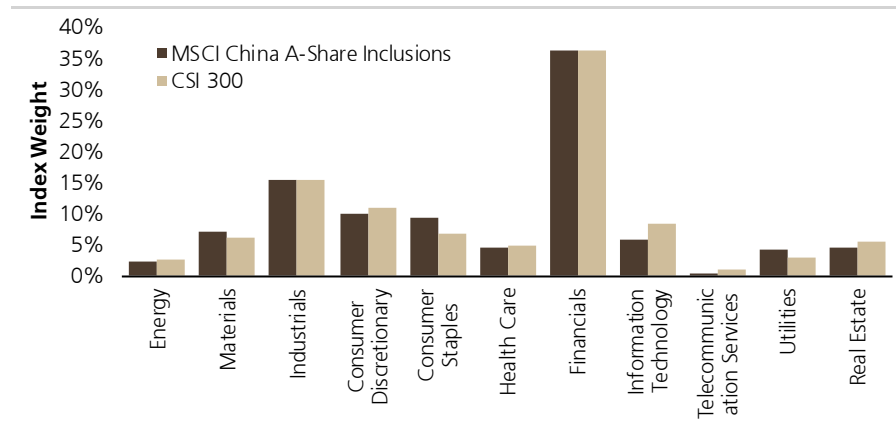
Note: The screen is based on data as of end-May 2017.

Source: MSCI, Wind, UBS Quantitative Research

Appendix

Sector weight comparison

Figure 14: Sector weights of CSI 300 and the new A-share inclusions



Note: Data as at the close of 19 June 2017.
Source: MSCI, Wind, UBS Quantitative Research

Size profile comparison

Figure 15: Size profiles of CSI 300 and MSCI new inclusions, sorted by company market cap

Size decile	Benchmark: CSI 300				MSCI China A inclusions		Difference in weight (%)
	Max mkt cap (Rmb m)	Min mkt cap (Rmb m)	Count of constituents	Total weight (%)	Count of constituents	Total weight (%)	
D1	1,810,916	751,314	7	10.1	7	8.8	-1.3%
D2	741,720	351,323	7	10.5	6	12.6	2.1%
D3	343,814	244,566	8	9.9	8	11.5	1.6%
D4	233,541	162,751	9	10.3	7	7.0	-3.2%
D5	161,807	127,112	15	9.5	15	10.2	0.8%
D6	122,606	92,352	22	9.8	19	10.7	0.9%
D7	86,404	61,198	31	10.2	27	10.6	0.4%
D8	60,889	43,963	40	10.0	37	11.1	1.1%
D9	43,863	30,354	52	9.9	47	10.1	0.1%
D10	30,183	8,828	79	9.8	49	7.4	-2.4%

Note: Data as at the close of 19 June 2017.
Source: MSCI, Wind, UBS Quantitative Research

Calculation of composite score

Our model is based on a combination of three style categories: value, quality, and earnings momentum and certainty. In each category, we choose two major factors. Factor definitions are shown in Figure 16.

Figure 16: Factor definitions

Type	Name	Definition
Value	Book / Price	The inverse of the 12m forward P/BV multiple
	Earnings Yield	The inverse of the 12m forward PE multiple
Quality	ROE	The 12m forward Earnings Yield / Book to Price
	Volatility 3M	Volatility of daily total returns on trading days over the past 3 months
Earnings	3M Earnings Momentum	The percentage change in forecast EPS over the previous 3 months
	EPS Coefficient of Variation	$-\log(\text{the standard deviation of 12m EPS forecasts} / \text{the absolute value of average 12m EPS forecasts})$

Source: UBS Quantitative Research

We calculate the composite score for each stock at the end of each month. We adopt a five-step methodology for score calculation:

- **Step 1:** Based on the MSCI China A index, we rank the universe by each individual factor.
- **Step 2:** Calculate the average ranking in each category.

$$RANK_{i,t}^{Value} = (RANK_{i,t}^{Book/Price} + RANK_{i,t}^{Earnings Yield})/2$$

$$RANK_{i,t}^{Quality} = (RANK_{i,t}^{ROE} + RANK_{i,t}^{Volatility 3M})/2$$

$$RANK_{i,t}^{Earnings} = (RANK_{i,t}^{3M Earnings Momentum} + RANK_{i,t}^{EPS_{CV}})/2$$

We have two factors in each style, and if any factor data is missing, for instance, if there was no consensus forecast for the forward 12-month P/BV multiple for stock i at time t , ie, $RANK_{i,t}^{Book/Price} = N/A$, we will then calculate the ranking with available data, ie, $RANK_{i,t}^{Value} = RANK_{i,t}^{Earnings Yield}$. If both factors are missing in the same category, the ranking will be marked as N/A and stock i will be excluded from the portfolio at month-end t . This way, we manage to guarantee that there is at least one factor available in each of the three categories, and we cast an equal weight for each category, as below.

- **Step 3:** Composite score is the average ranking over three categories.

$$Comp Score_{i,t}^{Absolute} = (RANK_{i,t}^{Value} + RANK_{i,t}^{Quality} + RANK_{i,t}^{Earnings})/3$$

- **Step 4:** We further develop a delta score—the month-on-month changes of the composite score.

$$Comp Score_{i,t}^{Change} = Comp Score_{i,t}^{Absolute} - Comp Score_{i,t-1}^{Absolute}$$

- **Step 5:** Our final model combines the composite score (Step 3) and the delta score (Step 4), by ranking according to the two scores, separately, and calculate the average ranking, equal-weighted.

$$Comp Score_{i,t}^{Final} = (RANK_{i,t}^{Absolute} + RANK_{i,t}^{Change})/2$$

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Buy	FSR is > 6% above the MRA.	46%	30%
Neutral	FSR is between -6% and 6% of the MRA.	38%	28%
Sell	FSR is > 6% below the MRA.	16%	18%
Short-Term Rating	Definition	Coverage ³	IB Services ⁴
Buy	Stock price expected to rise within three months from the time the rating was assigned because of a specific catalyst or event.	<1%	<1%
Sell	Stock price expected to fall within three months from the time the rating was assigned because of a specific catalyst or event.	<1%	<1%

Source: UBS. Rating allocations are as of 31 March 2017.

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

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