

Barra China Equity Model (CNE5)

Descriptor Details

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The ten style factors of CNE5 comprise a total of 21 descriptors. This document defines these descriptors and their weights in the style factors. The descriptors are listed under the style factors to which they belong.

Style: **Beta**

Definition: 1.00 BETA

Components: BETA Beta (β)

Computed as the slope coefficient in a time-series regression of excess stock return, $r_t - r_{ft}$, against the cap-weighted excess return of the estimation universe R_t , 用一篮子股票的超额收益 R_t 所计算的单一股票超额收益 $r_t - r_{ft}$ 时间序列回归的斜率。

$$r_t - r_{ft} = \alpha + \beta R_t + e_t \quad (1)$$

The regression coefficients are estimated over the trailing 252 trading days of returns with a half-life of 63 trading days. 该回归系数根据252个连续交易日收益所计算的，这些交易日收益有着63天的half life。

Style: **Momentum**

Definition: 1.00 RSTR

Components: RSTR Relative strength

Computed as the sum of excess log returns over the trailing $T = 504$ trading days with a lag of $L = 21$ trading days, 504个连续交易日 $T = 504$ 的对数收益率的加总，有着21天的延迟期 $L = 21$

$$RSTR = \sum_{t=L}^{T+L} w_t [\ln(1 + r_t) - \ln(1 + r_{ft})]$$

where, r_t is the stock return on day t , r_{ft} is the risk-free return, and w_t is an exponential weight with a half-life of 126 trading days. r_t 是 t 天的收益, r_{ft} 是无风险收益, w_t 是一个有着126个交易日的半衰期的指数加权。

Style: **Size**

Definition: 1.00 LNCAP

Components: LNCAP Natural log of market cap
某公司总市值的自然对数。Style: **Earnings Yield**Definition: $0.68 \cdot \text{EPIBS} + 0.11 \cdot \text{ETOP} + 0.21 \cdot \text{CETOP}$ Components: EPIBS Analyst Predicted Earnings-to-Price
Earnings-to-price ratio forecasted by analysts. 分析师估计的市盈率。ETOP Trailing earnings-to-price ratio
Computed by dividing the trailing 12-month earnings by the current market capitalization. Trailing earnings are defined as the last reported fiscal-year earnings plus the difference between current interim figure and the comparative interim figure from the previous year. 用连续12月的收益除以现在的市值。连续12月的收益是指上一财年的财报收益，加上本年与上年中期数值之差。CETOP Cash earnings-to-price ratio
Computed by dividing the trailing 12-month cash earnings divided by current price. 连续12月的现金收入除以现股价。Style: **Residual Volatility**Definition: $0.74 \cdot \text{DASTD} + 0.16 \cdot \text{CMRA} + 0.10 \cdot \text{HSIGMA}$ Components: DASTD Daily standard deviation
Computed as the volatility of daily excess returns over the past 252 trading days with a half-life of 42 trading days. 过去252天的股票超额收益的波动率，这些交易日有着42天的半衰期。CMRA Cumulative range
This descriptor differentiates stocks that have experienced wide swings over the last 12 months from those that have traded within a narrow range. Let $Z(T)$ be the cumulative excess log return over the past T months, with each month defined as the previous 21 trading days, 这个descriptor将大震荡的股票从小波动的股票中剔除出来。 $Z(T)$ 是 T 个月的累积超额对数收益，每月以21个交易日计。

$$Z(T) = \sum_{\tau=1}^T [\ln(1 + r_{\tau}) - \ln(1 + r_{f\tau})],$$

where, r_{τ} is the stock return for month τ (compounded over 21 days) and $r_{f\tau}$ is the risk-free return. The cumulative range is given by, where, r_{τ} 是从 τ 月的股票收益（以21个交易日为1月） $r_{f\tau}$ 是无风险收益，累积范围如示，

$$CMRA = Z_{max} - Z_{min}$$

where,

$$\begin{aligned} Z_{max} &= \max \{Z(T)\} \\ Z_{min} &= \min \{Z(T)\} \\ T &= 1, \dots, 12 \end{aligned}$$

HSIGMA Historical sigma (σ)

Computed as the volatility of residual returns in Equation 1, 由Equation 1中的残差计算的波动率。

$$\sigma = \text{std}(e_t)$$

The volatility is estimated over the trailing 252 trading days of returns with a half-life of 63 trading days. 波动率的计算是根据过去252个交易日的收益率，有着63天的half-life。

Note: The Residual Volatility factor is orthogonalized to Beta to reduce collinearity. 使得残差波动率与 beta 正交，使得减少共线性。

Style: **Growth**

Definition: $0.47 \cdot \text{SGRO} + 0.24 \cdot \text{EGRO} + 0.18 \cdot \text{EGIBS} + 0.11 \cdot \text{EGIBS}_s$

Components: SGRO Sales growth (trailing five years)
Annual reported sales per share are regressed against time over the past five fiscal years. The slope coefficient is then divided by the average annual sales per share to obtain the sales growth. 年度报告每股销售额以过去5个财年回归。该斜率除以每年该股销售额的平均，得到销售额增长率。

EGRO Earnings growth (trailing five years)
Annual reported earnings per share are regressed against time over the past five fiscal years. The slope coefficient is then divided by the average annual earnings per share to obtain the earnings growth. 年度报告每股利润以过去5个财年回归。该斜率除以每年该股利润的平均，得到利润增长率。

EGIBS Long-term Predicted Earnings Growth
Long-term earnings growth forecasted by analysts. 由分析师预估的长期收益增长率。

EGIBS_s Short-term Predicted Earnings Growth
Short-term earnings growth forecasted by analysts. 由分析师预估的短期收益增长率。

Style: **Book-to-Price**

Definition: $1.00 \cdot \text{BTOP}$

Components: BTOP Book-to-Price
Last reported book value of common equity divided by current market capitalization. 上一报告的普通股本的账面价值除以现在的市值。

Style: **Leverage**

Definition: $0.38 \cdot \text{MLEV} + 0.35 \cdot \text{DTOA} +$

$0.27 \cdot \text{BLEV}$ Components: MLEV Market leverage

$$\text{MLEV} = (\text{ME} + \text{PE} + \text{LD}) / \text{ME}$$

Where, ME is the market value of common equity on the last trading day, PE is the most recent book value of preferred equity, and LD is the most recent book value of long-term debt. 公式中, ME是上一交易日普通股本的市值, PE是最近披露的优先股的账面价值, LD是最近披露的长期债务的账面价值。

DTOA Debt-to-assets
Computed as,

$$\text{DTOA} = \text{TD} / \text{TA}$$

where, TD is the book value of total debt (long-term debt and current liabilities) and TA is most recent book value of total assets. 公式中, TD是总债务(长期负债和流动负债)的账面价值, TA是最新披露的总资产的账面价值。

BLEV Book leverage
Computed as

$$\text{BLEV} = (\text{BE} + \text{PE} + \text{LD}) / \text{BE}$$

where, BE is the most recent book value of common equity, PE is the most recent book value of preferred equity, and LD is the most recent book value of long-term debt. 公式中, BE是最新披露的普通股本的账面价值, PE是最近披露的优先股的账面价值, LD是最近披露的长期债务的账面价值。

Style: **Liquidity**

Definition: $0.35 \cdot \text{STOM} + 0.35 \cdot \text{STOQ} +$

$0.30 \cdot \text{STOA}$ Components: STOM Share turnover, one month

Computed as the log of the sum of daily turnover during the previous 21 trading days, 过去21个交易日内每天换手率加总的对数。

$$\text{STOM} = \ln \left(\sum_{t=1}^{21} \frac{V_t}{S_t} \right), (9)$$

where, V_t is the trading volume on day t and S_t is the number of shares outstanding. 公式中, V_t 是在 t 天的成交量, S_t 是已发行股票的股数。

STOQ Average share turnover, trailing 3 months

Let STOM_τ be the share turnover for month τ , with each month consisting of 21 trading days. The quarterly share turnover is defined by, STOM_τ is τ months' stock turnover rate, each month includes 21 trading days. 季度的股票换手率如下:

$$\text{STOQ} = \ln \left(\sum_{\tau=1}^4 \exp(\text{STOM}_\tau) \right), (10)$$

STOA Average share turnover, trailing 12 months
 Let $STOM_{\tau}$ be the share turnover for month τ , with each month consisting of 21 trading days. The annual share turnover is defined by, $STOM_{\tau}$ 是 τ 月的股票换手率, 每个月包括21个交易日。年度的股票换手率如示:

$$STOA = \ln \sum_{\tau=1}^T \exp(STOM_{\tau}) \quad (11)$$

 where, $T = 12$ months. 其中, $T = 12$ 月。

Style: **Non-linear Size**
Definition: $1.00 \cdot NLSIZE$
Components: $NLSIZE$ Cube of Size
 First, the standardized Size exposure (i.e., log of market cap) is cubed. The resulting factor is then orthogonalized to the Size factor on a regression-weighted basis. Finally, the factor is winsorized and standardized. Size (某公司总市值的自然对数) 进行标准化后进行立方。对结果在加权回归的基础上进行对Size的正交化。最后对该指标进行缩微处理和标准化处理。

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