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Fundstrat Doctor Quant Model US Large Cap Equal Weighted Long™ Index

Index Methodology

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1 INTRODUCTION

Multi-Factor based investing is a logical improvement over the traditional Market Cap, Active and Single-Factor investing. The single factor (e.g. value), captures the premia associated with only that particular factor. One of the drawbacks associated with single factor investing is the prolonged periods of underperformance relative to market cap weighted investing. While the factor may outperform over longer time frame, there can be intermediate periods of underperformance. Multifactor investing tries to mitigate this risk by combining multiple factors to achieve consistent outperformance. A combination of less correlated factors can potentially deliver consistently better returns compared to any single factor.

2 WHAT IS DOCTOR QUANT MODEL?

The Doctor Quant Model™ ("DQM") is a proprietary quantitative stock selection model (named after its creator, Mr. Sam Doctor) that combines 8 key factor groups to rank large cap US-listed stocks and identify investment opportunities therefrom. Each factor group examines several underlying factors that exhibit positive correlations amongst themselves. DQM uses fundamental and valuation factors, and generates an aggregate score based on sector-specific weights.

DQM combines over 40 factors, grouped into 8 factor groups spanning both fundamental and valuation / sentiment metrics. The analysis combines them in a manner intended to deliver sustainable alpha. The rationale behind testing the initial weights of the different factors, which were adjusted through training the model, used years of experience with fundamental single-stock research. However, each factor was normalized using relative z-scores to make the metrics comparable across stocks, industries and sectors. The 8 factor groups and their individual fundamental and valuation/market metric factors are set forth below:

Fundamental Groups	Valuation / Market Metrics Groups
1. Cash flow	1. Valuation
1. CapEx	*1. Market cap / Price change*
2. Free Cash Flow	*2. Price to Book*
3. Dividend Growth	*3. Price to Sales*
4. Dividend Yield	*4. Price to Earnings*
5. Incremental FCF margin	*5. Price / Free Cash Flow*
6. Capex / Sales	*6. EV / EBITDA*
7. Capex / Depreciation	*7. EV / Sales*
2. Credit Metrics	2. Sentiment
1. Debt to EBITDA	*1. Analyst Ratings*
2. Credit rating	*2. Short Interest Days*
3. Debt to Capital	*3. Short Interest % of float*

4. CDS Spread + spread delta
5. Cost of Debt
6. EBITDA Int. Coverage
7. Changes in above metrics

3. Balance Sheet

   1. Asset Turnover
   2. Incremental Asset Turnover
   3. Working Capital Turns
   4. Net Current Assets
   5. Liquid Assets / Market Cap
   6. Current Assets / Sales
   7. Return on Assets
   8. Return on Equity
   9. Return on Invested Capital

4. Income Statement

   1. Sales Growth
   2. Sales History
   3. Sales Volatility
   4. Earnings Growth
   5. Earnings History
   6. Earnings Volatility
   7. Margin Growth
   8. Margin History
   9. Margin Volatility
   10. Revenue / Employee
   11. Net income / Employee
   12. Market cap per employee

3. Momentum

   1. 12M price performance
   2. Spread between a composite metric of incremental Income statement and balance sheet metrics and price performance – essentially a "price momentum in excess of or trailing fundamentals"

4. Laggards

   1. Multi-year trading range
   2. Highs / lows
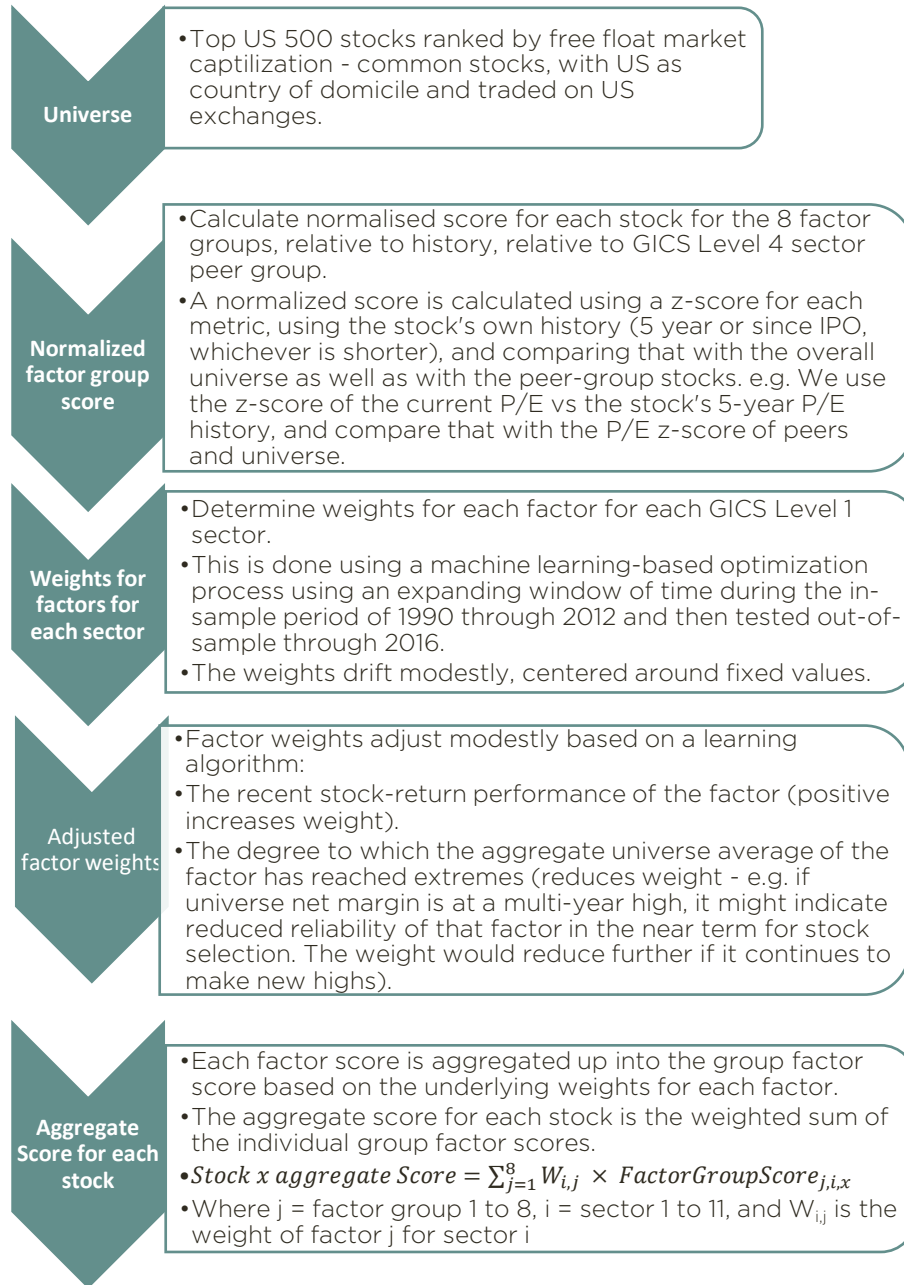   3. Changes in position in trading range

RULES BASED METHODODLOGY

This is a rules-based methodology in that:

1. The Index selection universe of 500 US large cap stocks is based on the rule: largest stocks by market capitalization.
2. Every stock is scored on each factor, based on a set of objectively-determined weights that may vary across sectors / industries but that apply equally to all stocks in the same industry.
3. The 500 US large cap stocks are ranked from 1 (best) to 500 (weakest) based on the aggregate score of all factors.
4. The Index consists of the 100 highest ranked stocks, equally weighted, and is rebalanced and reconstituted quarterly as further described below.
5. The following items are held as cash until the subsequent rebalance date:
    a. Dividends received during the quarter;
    b. Cash received as part of an M&A transaction where a portfolio stock was acquired for cash, regardless of whether the acquiror is a portfolio company or not;
    c. If a portfolio company was acquired by a non-portfolio company in a stock-based acquisition, the Index would sell stock in the acquiror and hold as cash.
6. If a portfolio company is acquired by another portfolio company in a stock transaction, the Index would hold the stock until the subsequent rebalance, leading to an excess position in the acquiror stock.

DQM SCORING PROCESS

The below flowchart explains the DQM scoring process.

Universe
- Top US 500 stocks ranked by free float market captilization - common stocks, with US as country of domicile and traded on US exchanges.

Normalized factor group score
- Calculate normalised score for each stock for the 8 factor groups, relative to history, relative to GICS Level 4 sector peer group.
- A normalized score is calculated using a z-score for each metric, using the stock's own history (5 year or since IPO, whichever is shorter), and comparing that with the overall universe as well as with the peer-group stocks. e.g. We use the z-score of the current P/E vs the stock's 5-year P/E history, and compare that with the P/E z-score of peers and universe.

Weights for factors for each sector
- Determine weights for each factor for each GICS Level 1 sector.
- This is done using a machine learning-based optimization process using an expanding window of time during the in-sample period of 1990 through 2012 and then tested out-of-sample through 2016.
- The weights drift modestly, centered around fixed values.

Adjusted factor weights
- Factor weights adjust modestly based on a learning algorithm:
- The recent stock-return performance of the factor (positive increases weight).
- The degree to which the aggregate universe average of the factor has reached extremes (reduces weight - e.g. if universe net margin is at a multi-year high, it might indicate reduced reliability of that factor in the near term for stock selection. The weight would reduce further if it continues to make new highs).

Aggregate Score for each stock
- Each factor score is aggregated up into the group factor score based on the underlying weights for each factor.
- The aggregate score for each stock is the weighted sum of the individual group factor scores.
- $Stock\ x\ aggregate\ Score = \sum_{j=1}^{8} W_{i,j} \times FactorGroupScore_{j,i,x}$
- Where j = factor group 1 to 8, i = sector 1 to 11, and $W_{i,j}$ is the weight of factor j for sector i

3 FUNDSTRAT DOCTOR QUANT MODEL US LARGE CAP LONG EQUAL WEIGHT INDEX METHODOLOGY

BRIEF DESCRIPTION OF INDEX

The Fundstrat Doctor Quant Model US Large Cap Equal Weighted Long^{TM} Index (also known as the "DQM Long Index" or "Index") is a composite index that tracks the performance of the Top 100 stocks based on DQM aggregate score.

ELIGIBILITY CRITERIA AND INDEX CONSTRUCTION

The Index consists of DQM Leaders Stocks. To be defined as a DQM Leaders Stock, a company must satisfy the following criteria:

- One of the 500 largest U.S. companies by market capitalization, common stock, with US as country of domicile and traded on US exchanges.
- Ranked in the top 100 stocks based on the DQM aggregate score.

BASE DATE AND BASE VALUE

The Index was calculated with a base value of 100 as of December 29, 1995.

RECONSTITUTION AND REBALANCING

The reconstitution and rebalancing of the Index is performed on a quarterly basis. Important dates in reconstitution/rebalancing are as follows:

Selection Date: The date on which the universe and DQM Leaders Stocks are selected by applying the Index eligibility criteria. The Selection Date for the Index is the Wednesday after the second Monday of the quarter each of February/May/August/November.

Reference Date: The date on which the weights are applied, and positions are determined for the constituents screened during the Selection Date. The Reference Date for the Index is four trading days after the Selection Date.

Effective Date: The date on which changes are affected in the Index. The rebalanced/reconstituted portfolio becomes effective on the close of the Effective Date which is three trading days after the Reference Date.

NUMBER OF CONSTITUENTS

The number of constituents for the Index is fixed at 100.

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WEIGHTING

The Index follows an equal weight methodology. The starting weight for each of the DQM Leaders on reconstitution/rebalancing date is fixed at 1%. The number of positions to buy for a stock is determined as follows:

$$Position\ to\ buy\ for\ stock\ i = \frac{\frac{Portfolio\ Value_{end\ of\ quarter}}{100}}{Stock\ Price_{i,\ end\ of\ quarter}} - Current\ stock\ i\ position$$

DIVIDEND REINVESTMENT

The dividends of the Index are assumed to be accumulated until the end of the quarter. At the end of the quarter, the dividends collected since last reconstitution are fully reinvested across the Index based on the weighting at the close of next trading day.

INDEX CALCULATION

The Index level at any point is calculated as the sum of the price component and the dividend/cash component:

$$I_t = K_t + Q_t$$

I_t = Index level

K_t = Index price component

Q_t = Index dividend/cash component

$$Index\ Price\ Component\ Value = \frac{Combined\ Market\ Value\ of\ Assigned\ Shares\ of\ All\ Components}{Divisor}$$

$$K_t = \sum_{i=1}^{n}\left(P_{i,t} * S_{i,t}\right)/D_t$$

Where,

K_t = Index price component at time t

D_t = Divisor at time t

Fundstrat Doctor Quant Model US Large Cap Equal Weighted Long Index

t = The time the Index is calculated

$P_{i,t}$ = Price of DQM Leaders Stock i at time t

$S_{i,t}$ = # of shares of Leaders Stock i at time t

The initial Index divisor is determined as follows:

$$I_0 = \sum_{i=1}^{n}\left(P_{i,0} * S_{i,0}\right)/D_t$$

Where,

K_t = Index price component at time t

D_t = Divisor at time t

t = The time the Index is calculated

$P_{i,t}$ = Price of DQM Leaders Stock i at time t

$S_{i,t}$ = # of shares of Leaders Stock i at time t

At the time of rebalance, the Index divisor is adjusted as follows:

$$Divisor\ after\ rebalance = \frac{Index\ Market\ Value\ after\ rebalance}{Index\ Level\ before\ rebalance}$$

$$D_{t+1} = D_t * \{\sum_{i=1}^{n}\left(P_{i,t} * S_{i,t+1}\right)/\sum_{i=1}^{n}\left(P_{i,t} * S_{i,t}\right)\}$$

Where,

D_{t+1} = Divisor after rebalancing are made to the Index

D_t = Divisor at time t

t = The time the Index is calculated

$P_{i,t}$ = Price of DQM Leaders Stock i before rebalancing

$S_{i,t}$ = # of shares of DQM Leaders Stock i before rebalancing

$P_{i,t+1}$= Price of DQM Leaders Stock i after rebalancing

$S_{i,t+1}$= # of shares of DQM Leaders Stock i after rebalancing

The Index dividend component is calculated as follows:

$$Q_t = \{\textstyle\sum_{i=1}^{n}(d_{i,t} * S_{i,t})+C_t)\}/D_t$$

Where,

Q_t= Index dividend component

$d_{i,t}$=dividend per shares corresponding DQM Leaders stock i on ex-dividend date, zero otherwise.

$S_{i,t}$= # of shares of Leaders Stock i at time t

$C_{i,t}$= Accumulated cash level at time t

D_t= Divisor at time t

The dividend component is set zero at the time reconstitution/rebalancing to reflect the reinvestment of dividends.

INDEX MAINTENANCE

Changes in constituents:

The general treatment of additions and deletions aims at minimizing turnover in the Index.

Deletions – In the event a company is delisted or acquired or goes bankrupt, the company is removed from the Index and the proceeds are held in cash until the next reconstitution date.

Other corporate actions:

Spin-offs, Rights Offerings, Stock Splits – Stock prices and number of shares are adjusted. In the event a company is spun-off, the Index goes long the spun-off company(ies) until the next reconstitution date.

Merger /Acquisition

Merger between two components (stock consideration): The target company is deleted. Stock received in a stock M&A would be held as stock if the acquirer is already in the Index portfolio.

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Merger between two components (cash and stock consideration): The target company is deleted. Hold the cash until next reconstitution date. Stock received in a stock M&A would be held as stock if the acquirer is already in the portfolio.

Merger between two components (cash consideration): The target company is deleted. Hold the cash until next reconstitution date.

Merger between non-component and component: The target company is deleted. Hold the cash until next reconstitution date.

INDEX GOVERNANCE

The Index is maintained by the Fundstrat Global Advisors Index Committee ("Index Committee"). The Index Committee, which is comprised currently of Fundstrat Global Advisors employees, meets quarterly and as necessary on an ad hoc basis to review the performance of the Index and to consider whether any factors should be added to or removed from the model. At each meeting, the Index Committee reviews whether the Index is functioning as designed, including with respect to corporate actions and in response to significant market events. Any changes will be subsequently published.