Applying Quant to Security Selection:

An Introduction to Quantitative Investing

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CRESSCAP
INVESTMENT RESEARCH

Host: Steven Cress, CEO of CressCap

The next wave of investment research

CressCap
INVESTMENT RESEARCH

Long Standing Global Expertise:

❑ Equities Tenure Runs 32 years
❑ Founder of CressCap Investment Research - A SaaS platform for autonomous research
❑ Founder of Cress Capital Management - US Equity hedge fund; Intl equity accounts.
❑ Sunrise Brokers: Head of Equities & proprietary trading desk
❑ Northern Trust Global Investments: Head of International Business Development
❑ Morgan Stanley: 13 Years - Prop desk head for $650 million global risk book NY & UK
❑ Prudential Securities: Senior Analyst - Covering Closed-End Funds

WHAT IS QUANT?

THE THREE PILLARS OF QUANT

Mathematical Analysis
Mathematical analysis is the systematic study of real and complex-valued continuous functions.

Statistical Computing
Statistical computing is the science of collecting, exploring and presenting large amounts of data to discover underlying patterns and trends.

Scoring Factor Groups
- Value
- EPS Revisions
- Profitability
- Growth
- Momentum
- Leverage

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DIFFERING RESEARCH DISCIPLINES

Quantitative

- Power of computer processing & structured data collection

- Mathematical analysis

- Statistical Computing - screen and score

- Financial statements and ratio calculations

- Insight into valuation and historical performance of security or market

Technical

- Evaluating securities through historical statistics

- Historical prices and trading volume to chart patterns in securities

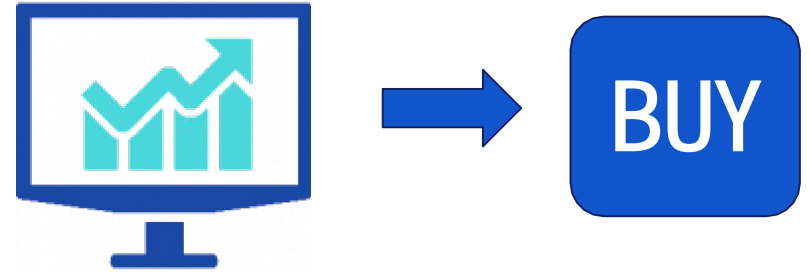- Determine future performance based on historical patterns

Fundamental

- Evaluate all aspects of company or market

- Assess management

- Evaluate tangible and intangible assets

- Review strength of economy and industry specific conditions

WHY USE QUANT?

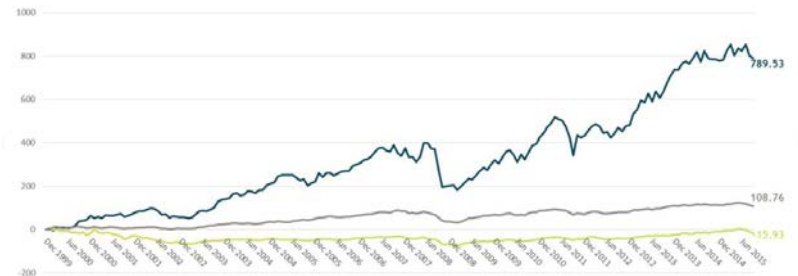## Ability to Analyze / Monitor Large Number of Securities

Avoid Bias / Emotions

Research is Faster, Processing Metrics Daily

Ability to Backtest System

FINANCIAL METRICS AND FACTOR BUCKETS

IT'S ALL RELATIVE
Screening Techniques to Identify Attractive Securities

Value	Growth	EPS Revisions	Profitability	Momentum
Sector relative grade based on common value metrics: Price/Book, Price/Sales, FY2 EV/EBITDA	Sector relative grade for common metrics: Revenue Growth, EPS Growth, ROE Growth, Operating CF Growth	Sector relative grade for analyst forward EPS Revisions	Sector relative Profitability outputs for cash flow returns, Gross Margin, Net Margin, ROE, ROI, ROC.	Sector relative grade for short-term, medium-term, and long term momentum

Quant Factor Groups & Metrics

Capital Spending Discipline

Capex to Depreciation
Capex to Sales
R&D to Sales
FCF to EPS
Depreciation 1yr change
Shares Outstanding 1yr change
Shares Issued 1yr change
Capital Expenditure 1yr change
Capital Employed 1yr change

Cash Flow

FCF to Market Cap
FCF to Sales

Efficiency

R&D 1yr change
Cash Turnover
Fixed Assets Turnover
Inventory Turnover
Total Assets Turnover
Working Cap Turnover
LT Debt to Working Cap

Financial Leverage

Capitalization Ratio
Debt to Assets
Debt to Equity
Interest Coverage Ratio
Net Debt to Equity
Current Liability Ratio

Growth

FCF 1yr change
1yr hist EPS growth
2yr hist EPS growth
5yr hist EPS growth
1yr fw EPS growth
2yr fw EPS growth
1yr hist BVPS growth
1yr hist DPS growth
1yr hist EBIT growth
1yr hist Sales growth

Cash Ratio
Quick Ratio
Current Ratio

Performance

Analysts Revisions
Analysts Revisions 1mo change
Analysts Revisions 6mo change
Price Momentum 12mo
Price Momentum 1mo
Price Momentum 3mo
Price Momentum 6mo
Market Cap 1yr change

Quality

ROA
ROCE
ROE
EBIT margin
Net income margin
Payout ratio
Profit Margin
Return on Investment
Shares Purchased 1yr change
Working Cap 1yr change

Valuation

Dividend yield
Enterprise Value to EBITDA
Enterprise Value to Sales
Price to Book
Price to Earnings FY1
Price to Cash Earnings
Price to Earnings
Price to Sales

How Academic Grades Play A Part In Quant

Factors based on value, growth, profitability, EPS revisions and momentum

Z-Scores

A-F Grade

Buy or Sell

Idea Generation on thousands of securities using inputs of financial metrics in five different categories

METHODOLOGY

- Z-scores to determine the fractile for each security are based on the sector

- Z-score ranges from -3 to 3

- Stocks given highest grading are in the top percentile of the sector, which is based off the input factors

Fractile	Grade	Underlying Z-Score Range		Percentile
13	A+	2.5385	3	7.70%
12	A	2.077	2.5385	7.70%
11	A-	1.6155	2.077	7.70%
10	B+	1.154	1.6155	7.70%
9	B	0.6925	1.154	7.70%
8	B-	0.231	0.6925	7.70%
7	C+	-0.2305	0.231	7.70%
6	C	-0.692	-0.2305	7.70%
5	C-	-1.1535	-0.692	7.70%
4	D+	-1.615	-1.1535	7.70%
3	D	-2.0765	-1.615	7.70%
2	D-	-2.538	-2.0765	7.70%
1	F	-2.9995	-2.538	7.70%

Cress Universe Rank	Company	Closing Price	Cress Sector Grade	Value Grade	Growth Grade	EPS Revisions Grade	Profitability Grade	Momentum Grade	4 Week Price Chg. (%)	13 Week Price Chg. (%)	52 Week Price Chg. (%)	Sector	Cress Sector Rank	Factset Consensus Rating
210	Reliance Steel & Aluminum Co. (RS-US)	94.49	A+	B+	C+	A+	B+	C+	0.10	6.30	30.31	MATERIALS	1.00	1.41
214	Nucor Corporation (NUE-US)	66.75	A+	B-	C+	A	B-	B-	2.41	2.17	19.62	MATERIALS	2.00	1.38
265	Schnitzer Steel Industries, Inc. Class A (SCHN-US)	36.15	A	A-	D-	A+	C-	A+	15.68	6.32	84.44	MATERIALS	4.00	2.00
268	Steel Dynamics, Inc. (STLD-US)	47.48	A	C+	B-	A-	B	C	-5.91	3.92	44.49	MATERIALS	5.00	1.31
487	United States Steel Corporation (X-US)	36.12	B+	B+	C-	B	C-	B-	3.02	-7.53	73.65	MATERIALS	10.00	1.44

QUANTITATIVE PHILOSOPHY & PROCESS

A quantitative strategy allows for the identification of stocks that are collectively attractive on a variety of investment characteristics

- ❖ Employing a diversified, non-directional approach to investing
- ❖ No bias towards a single investment style.
- ❖ Exploiting Proprietary screening techniques to identify opportunities
- ❖ Investing in stocks that collectively offer Value, Growth, Profitability, EPS Revisions & Momentum
- ❖ Future outlook derived from estimates in the sell side community
- ❖ Mitigating exposure to sector and stock risk through diversification
- ❖ Partnering with experienced data vendors for best in class information
- ❖ Applying risk management techniques to protect against downside risks

QUANTAMENTAL - BLENDED RESEARCH

Our Proprietary Process is Convergence Analytics

The Fusion of Core Research Disciplines

❑ Statistical Screening Focused on Relative Valuation

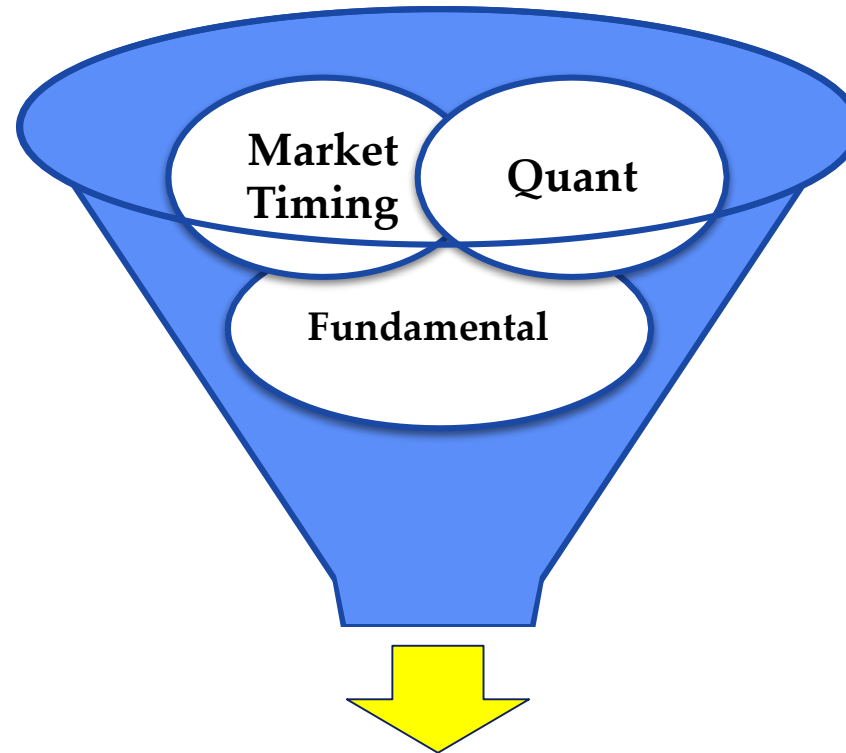❑ Market Timing

❑ Collaborative Real-Time Fundamental Analysis

THE GOAL IS TO VALIDATE EACH INDIVIDUAL RECOMMENDATION WITH OUR PROCESSES

BLENDED RESEARCH ANALYTICS

Fundamental Analysis is core to our process…
…But optimal valuations are identified with the use of quant screens and validated with behavioural pattern recognition

Statistical Inputs

➢ Sector
➢ Sentiment
➢ Cycles
➢ Liquidity
➢ Visibility
➢ Risk Factors
➢ Style Rotation

Market Timing **Quant**

Fundamental

Market Timing Inputs

➢ Market Psychology
➢ Capital Flows
➢ Historical Patterns
➢ Herd Behavior
➢ Volatility
➢ Fear and Uncertainty
➢ Breadth

IDENTIFY THE BEST RELATIVE VALUATION AND
EXECUTE ACCORDINGLY

OVERVIEW

- We present a quantitative framework for measuring over 100 factors (financial metrics) of stock selection within sectors

- Nine factor groups are studied: Capital Spending Discipline, Cash Flow, Efficiency, Financial Leverage, Growth, Liquidity, Performance, Quality, and Valuation

- Performance and significance of long-short backtests is given for each factor and sector

- Methodology:
    - Rank stocks in each of the 9 sectors by each factor, put into 13 fractiles
    - For each sector, calculate z-score to determine grading system
    - Aggregate results to market level

- Global database created allowing flexibility for performing similar factor research for various stock universes

Q & A