Style Analysis

Learning Goals

- Understand what Style Analysis is and what can be learned from it

- Understand the difference between Returns Based and Holdings Based Analysis

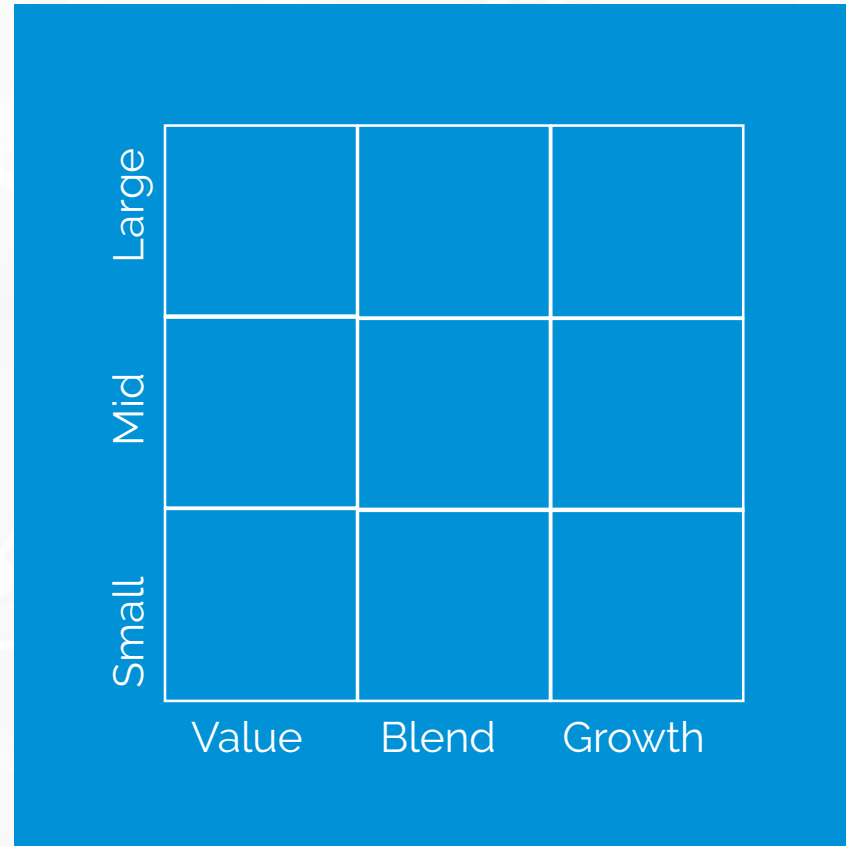- Understand some of the style analysis techniques/concepts used in Aapryl

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Returns Based Style Analysis

- The procedure of separating an investment portfolio into a subset by running a regressing the determining what type of investment behavior an investor or money manager employs based on some quantifiable criteria

- Most commonly used in US Equity Markets:

    Size = Small Cap to Large Cap

    Valuation = Value to Growth

- Allows investors to gain insight into a portfolio's Risk/Reward profile

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Typical Style Box

Methods of Style Analysis

- **Holdings Based:** Classifies portfolio based on the securities inside of a portfolio

- **Returns Based:** Uses regression analysis to compare portfolios to market indices representing the various styles

Holdings vs Returns

Holdings Based	Returns Based (used in Aapryl)
Looks at a single point in time (need multiple analysis to look across time)	Across time
Holdings required	Portfolio returns required
Answers the questions "what is in a portfolio"	Answers the question, "how does a portfolio behave."
Harder to implement and perform on many managers	More scalable

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Returns Based Style Analysis Overview

- Introduced by Nobel Prize winner William Sharpe

- Classifies investments using *only* portfolio returns

- Employs Multifactor Regression model using common market indices (partitioning the market)
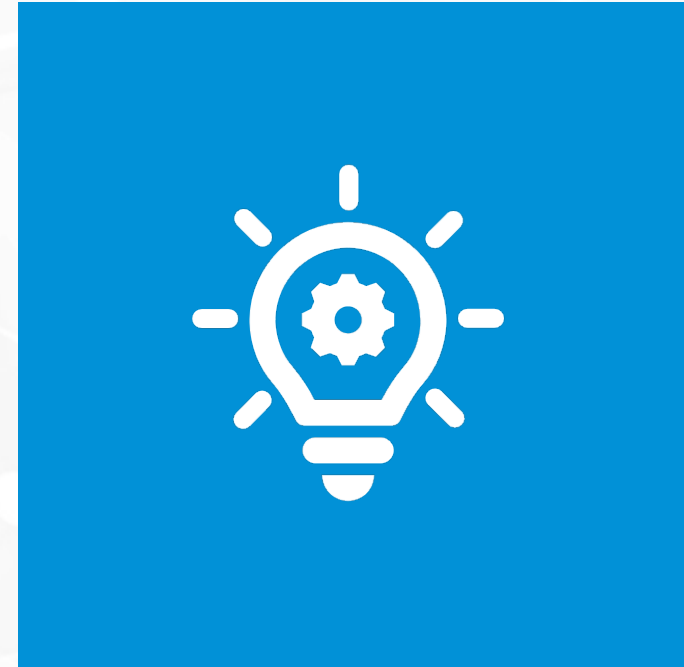
RBSA- Basics

- **CAPM:**

    Portfolio Return = Alpha + (Beta x Market) + Error

- **Beta:** A measure of market risk of an investment; relationship to market

- Often associated with Equity indices such as:

    S&P 500   Wilshire 5000

    Russell 2000   Dow Jones Industrial

- Style Analysis identifies the market betas

- **Alpha:** A measure of value-added taking into account market risk

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Aapryl's Approach

- **Style Analysis** is the underpinning of most of the analysis in Aapryl including Aapryl Expected Alpha, Skill Analysis and Economic Cycle Chart

- **Clone Portfolios** are hypothetical portfolios comprised of the mix of style factors that explain the portion of a manager's return that is driven by the market

- Aapryl uses Style Analysis to calculate 2 types of Clone Portfolios:

  - Static Clone- Uses full history of the manager in regression

  - Dynamic Clone- Uses last 36 months in the regression

- Aapryl uses a set of factors as the independent variables in the regression rather than market indices:

  - International- uses MSCI/Barra

  - Domestic- uses Russell/Axioma

Factors

- **Value:** The value factor measures the return of stocks that have value characteristics such as low price to earning or price to book ratios

- **Core:** The core factor measures the return of stocks that can not be categorized as either value or growth based on characteristics such as low price to earning or price to book ratios

- **Growth:** The growth factor measures the return of stocks that have growth characteristics such as high growth rates, price to earning or price to book ratios

- **Defensive:** The defensive factor is a stability factor that measures the return of stocks that are less subject to economic cycles based on earnings variability, return on assets and leverage

Factors continued

- **Economic Sensitivity:** The economic sensitivity factor is a stability factor that measures the return of stocks that are more subject to economic cycles based on earnings variability, return on assets and leverage

- **Momentum:** The momentum factor measures the returns of stock that exhibit high price momentum relative to the market

- **Quality:** The quality factor measures the returns of stock that exhibit high quality relative to the market based on ROA, leverage and earnings stability

- **Yield:** The yield factor measures the return of stocks that have a higher dividend yields relative to the market

- **Low Volatility:** The low volatility factor measures the performance of a group of stocks that have the lowest volatility in a larger basket. Volatility is generally measured by either the standard deviation of the price movements or by the beta of those stocks to the broader market

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Advanced Topics - Aapryl Methodology

1. Aapryl's regression methodology is a proprietary technique that optimizes explanatory power as defined by R Squared
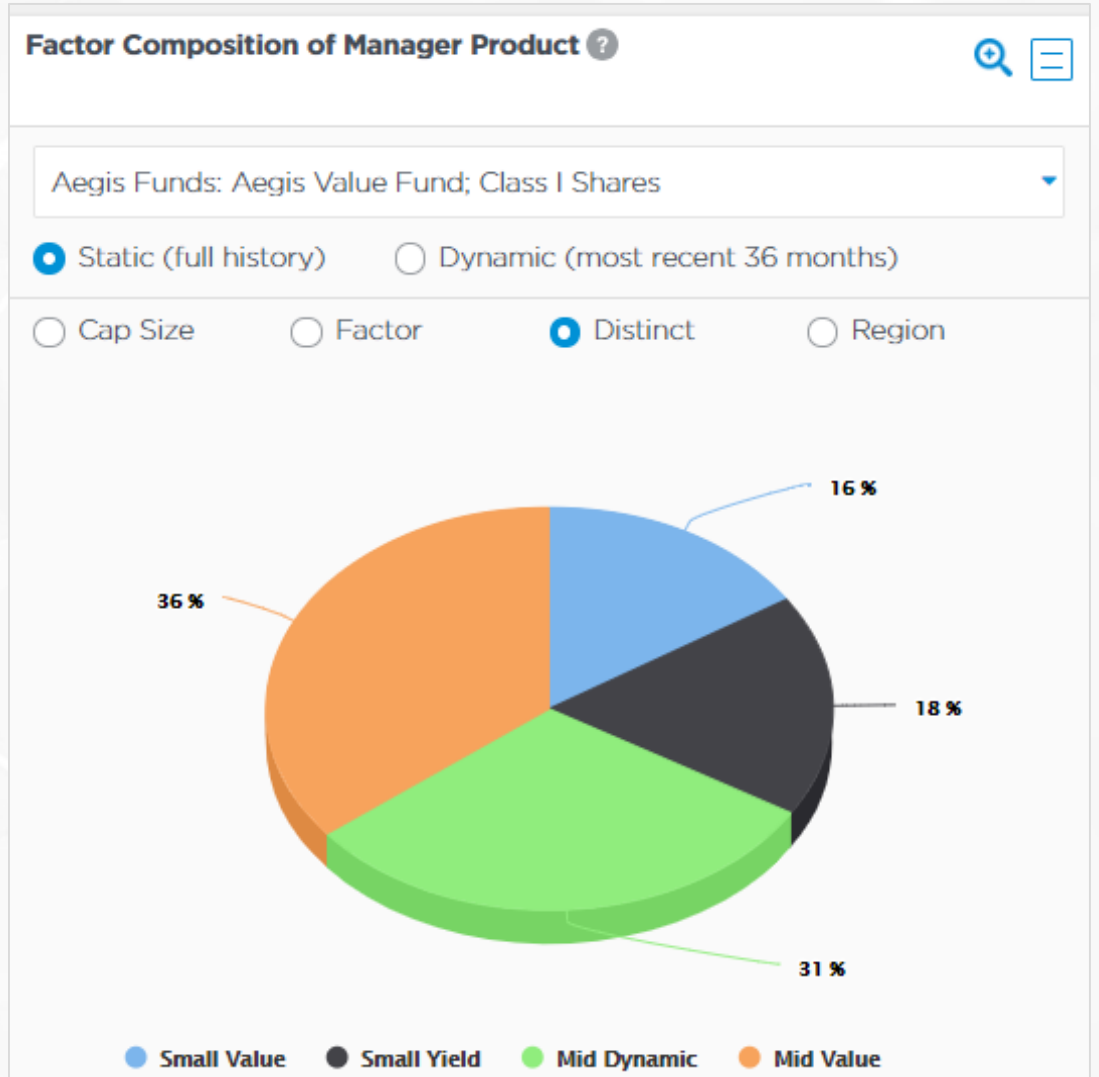
2. Aapryl chooses the group of factors that, as a group, have the most explanatory power. So not all factors used in the regression will be in the resulting clone portfolio

3. Aapryl considers the unexplained portion of regression (alpha & error) to be skill (i.e. alpha)- A high R2 means little error*

* See skill analysis course for more details

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Factor Exposure (Style Beta)

- This chart shows the historic make up of the clone portfolio

- Each line represents a factor exposure over time

- The chart displays the changes in exposure

- Toggle set to static, indicates that all calculations start at the inception date of the fund

Factor Composition of Manager Product ❓

Aegis Funds: Aegis Value Fund; Class I Shares ▾

◉ Static (full history)   ○ Dynamic (most recent 36 months)

○ Cap Size   ○ Factor   ◉ Distinct   ○ Region

16 %

18 %

36 %

31 %

● Small Value   ● Small Yield   ● Mid Dynamic   ● Mid Value

Exposures Across Time- Dynamic

- The chart shows the historic composition of the clone portfolio

- Each line represents a factor exposure over time so users can see the changes in exposure

- It can be shown distinctly or summarized by Cap Size, Factor or Region

- This chart can be shown as Static or Dynamic
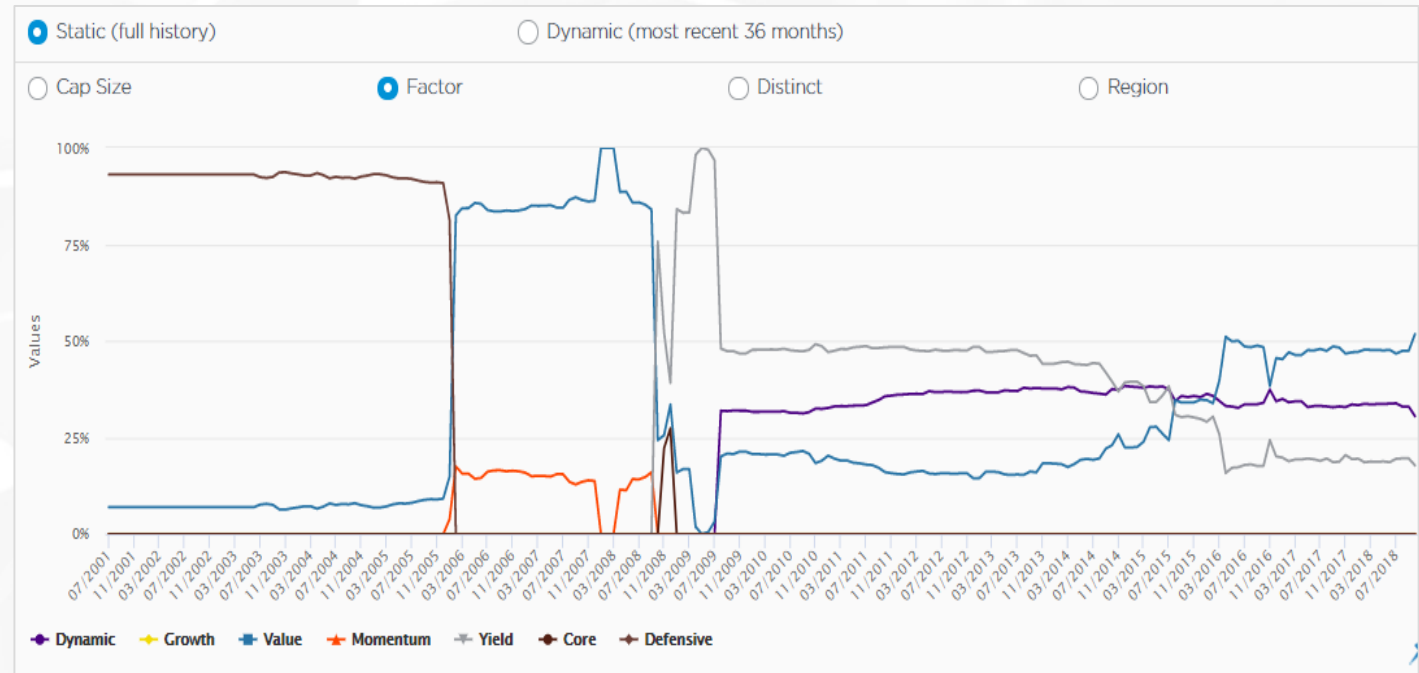
Aapryl's Style Box
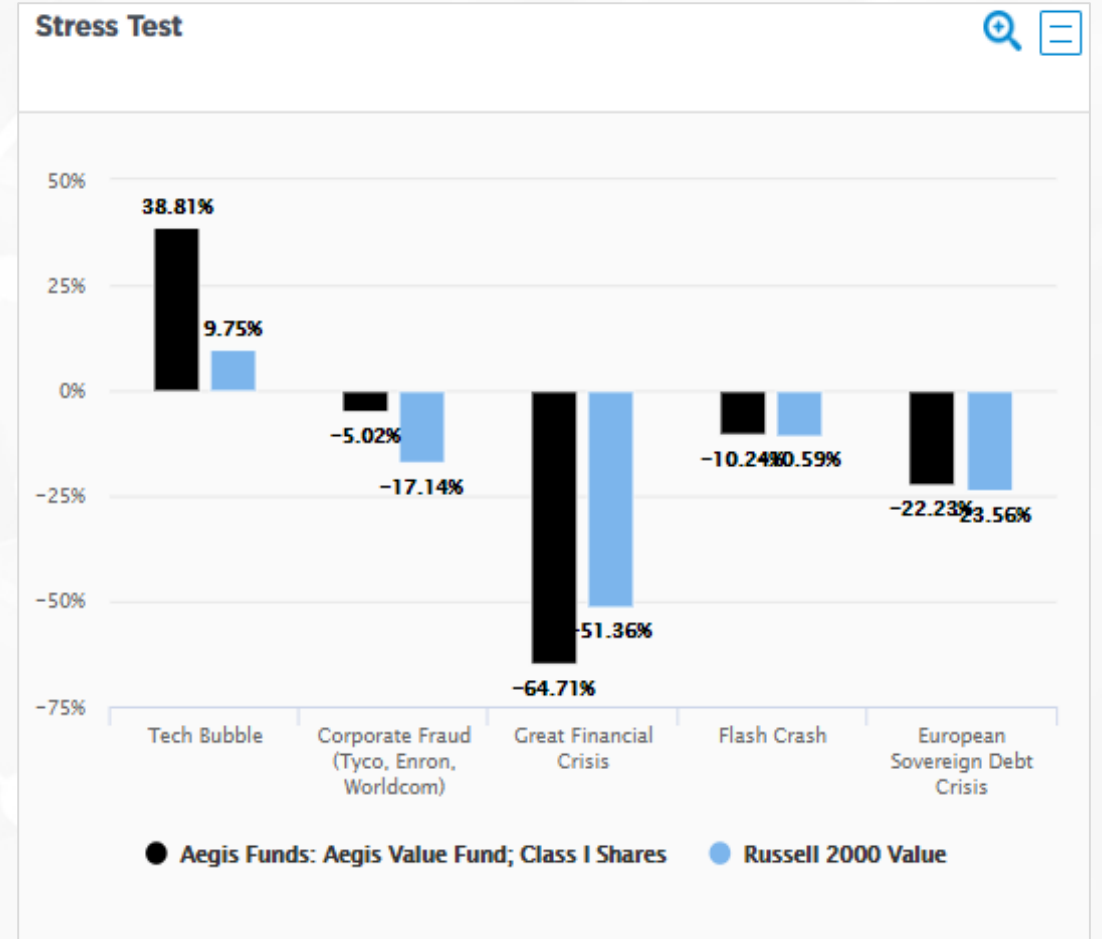
- Aapryl has a unique style box. The X axis shows a manager's classification from Value to Growth while the Y axis shows the manager's classification from Cyclical to Defensive

- The box is segregated into boxes to classify managers based on placement

- The circles get larger as the time period covered get more recent. This allows users to see how managers may have changed over time
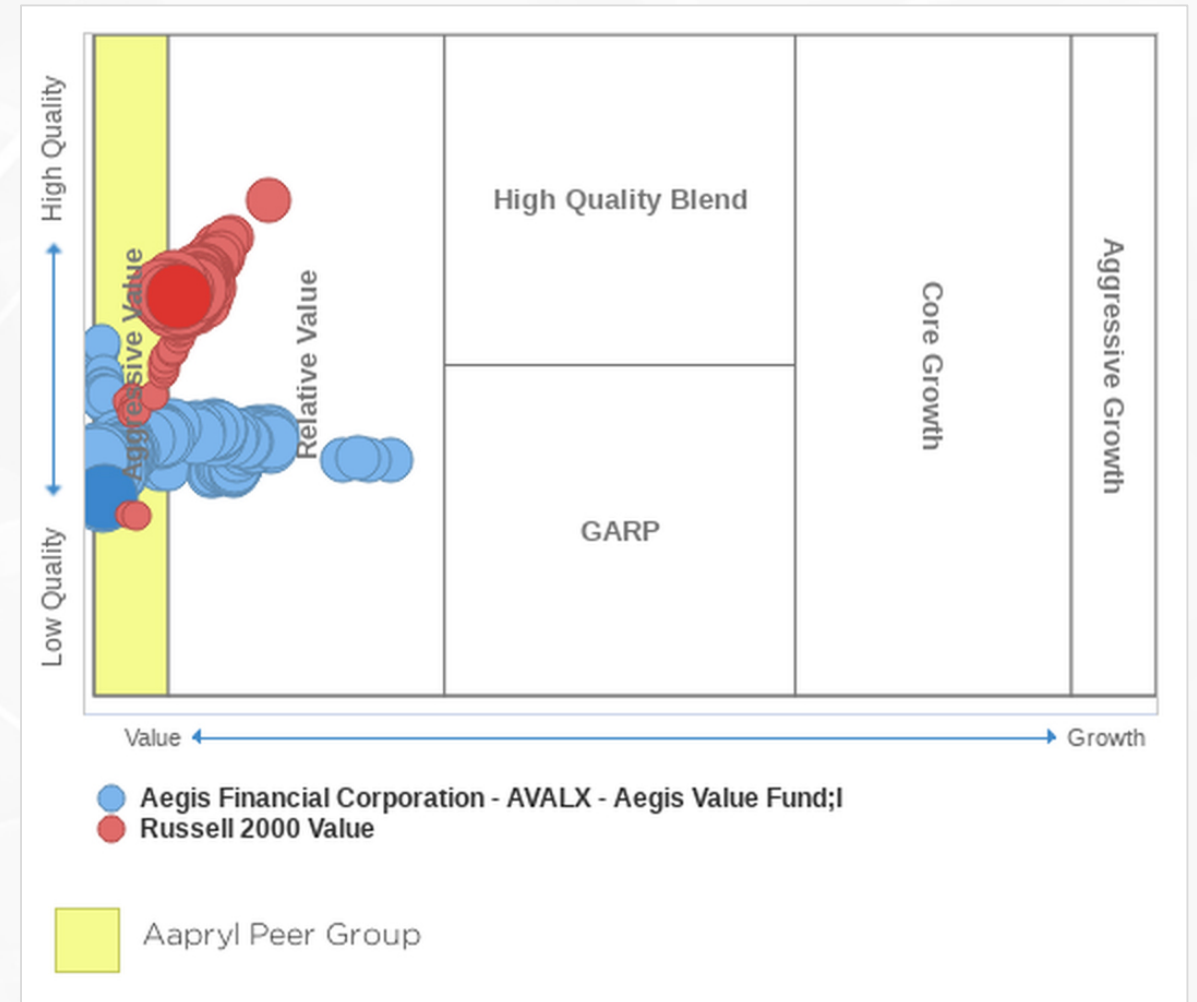
Aapryl's Stress Test

- Aaprly performs stress tests on the clone portfolios created in the style analysis module by looking at the hypothetical performance of the portfolio in periods of market stress

- The chart provides insight into how a portfolio and its benchmark would have performed in the stress periods

- Known stress periods are preloaded into the system, but users may select their own

Stress Test

Stress Test bar chart showing:

Period	Aegis Funds: Aegis Value Fund; Class I Shares	Russell 2000 Value
Tech Bubble	38.81%	9.75%
Corporate Fraud (Tyco, Enron, Worldcom)	-5.02%	-17.14%
Great Financial Crisis	-64.71%	-51.36%
Flash Crash	-10.24%	-10.59%
European Sovereign Debt Crisis	-22.23%	-23.56%

● Aegis Funds: Aegis Value Fund; Class I Shares ● Russell 2000 Value

Aapryl's Economic Analysis

- The chart breaks the economic cycle into 4 segments: Recovery, Mid, Late, and Recession

- Research has shown that different styles will perform best at different points in the cycle

- The chart uses style analysis to determine the manager's style and applies the research to show at what point the manager should perform best

RECOVERY	MID	LATE	RECESSION

MACRO ECONOMIC ENVIRONMENT

RECOVERY	MID	LATE	RECESSION
▪ Activity rebounds (GDP, IP, employment, incomes) ▪ Credit begins to grow ▪ Profits start to increase ▪ Monetary policy still easy	▪ Growth is accelerating ▪ Credit growth strong ▪ Profit growth accelerating; sales still moribund ▪ Monetary policy neutral	▪ Above trend GDP growth ▪ Profits peaking ▪ Inflation increasing ▪ Monetary policy contracting	▪ Growth declining ▪ Credit dries up ▪ Profits decline ▪ Policy eases

MOMENTUM

CYCLICAL / LOW QUALITY VALUE	GARP / BLEND	HIGH QUALITY / STABLE GROWTH	DEFENSIVE
RELATIVE / HIGH QUALITY VALUE		CYCLICAL / HIGH GROWTH	

KEY SECURITY METRICS

▪ Low Price to Book ▪ High Operating Leverage	▪ Low Price to Earnings and Free Cash Flow ▪ Increasing ROE	▪ Improving Earnings Growth ▪ Fair valuation / Low PEG Ratio	▪ High Sales Growth ▪ Improving ROE	▪ Earnings Stability ▪ Low Debt/Equity	▪ High/Stable Dividend ▪ Low Volatility

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