Sismo Factor Handbook
Factor Library

Standard Factors and the Downloadable Factor Library Methodology Handbook

Version 1.5 - 27 September 2026

Definitions, construction, interpretation and practical guidance for the 8 Standard Factors and 48 downloadable Custom Factors in Sismo.

Explore the Sismo Factor Library
https://factors.sismo.ai/?lang=en

The online library helps you choose factors for your investment process.
This handbook explains how those factors are constructed and how to use them in Sismo.

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Standard Factors

Sismo automatically calculates eight Standard Factors whenever you run a factor calculation. They provide broad measures of growth, momentum, quality, risk, sell-side sentiment, valuation, dividend yield and the balance of expected return and risk.

The Standard Factors have fixed definitions. The 48 downloadable templates described later in this handbook complement these broad measures with more granular views and can be adapted in the Custom Factors panel.

How to Read the Definitions

Each table lists the underlying indicators, observation period, constituent weight and whether the indicator is inverted. Inversion reverses the sign of a component; it does not take its reciprocal.

A high composite score does not imply that every underlying indicator is high.

Fiscal years follow each company's reporting calendar: n is the current fiscal year, n−1 the latest reported fiscal year, n−2 the preceding fiscal year, and n+1 and n+2 the next two fiscal years. Growth windows written n−2 to n and n to n+2 reproduce the periods in the Standard Factor definitions.

With Universe-Z, exposures describe a company's position relative to the selected universe.

With History-Z, they describe its position relative to its own history. The methodology chapter explains these two calculation approaches.

Reading High Scores

Higher Growth, Momentum, Quality, Sentiment, Value and Yield scores indicate more of the named characteristic. Higher Risk means greater measured risk.

Higher Best Fit combines a higher cost-of-equity indicator with lower volatility and a lower R-squared against MSCI World.

Growth

Combines sales growth and normalized net income growth over two fiscal-year windows. A higher score indicates stronger growth across these measures.

Indicator	Period	Weight	Inversion
Sales Growth	n−2 to n	25%	No
Normalized Net Income Growth	n−2 to n	25%	No
Sales Growth	n to n+2	25%	No
Normalized Net Income Growth	n to n+2	25%	No

Momentum

Combines total returns over six, three and one month. A higher score indicates stronger recent share-price performance, including dividends.

Indicator	Period	Weight	Inversion
Total Return	6 months	33.4%	No
Total Return	3 months	33.3%	No
Total Return	1 month	33.3%	No

Quality

Combines return on invested capital, return on equity and inverted net debt relative to EBITDA. A higher score reflects stronger profitability and/or lower indebtedness across these measures.

Indicator	Period	Weight	Inversion
Return on Invested Capital	n−1	33.4%	No
Return on Equity	n−1	33.3%	No
Net Debt / EBITDA	n−1	33.3%	Yes

Risk

Combines daily vol atility, market beta and inverted weekly skewness. A higher score indicates greater variability, higher market sensitivity and/or a more negative skew in returns.

Indicator	Period	Weight	Inversion
Daily Volatility	6 months	40%	No
Daily Beta vs MSCI World	24 months	40%	No
Weekly Skewness	24 months	20%	Yes

Sentiment

Combines the current percentage of Buy recommendations with changes in Buy recommendations and target prices. A higher score indicates more positive sell-side sentiment and/or improving analyst views.

Indicator	Period	Weight	Inversion
% Buy Recommendations	Current	33.3%	No
Change in % Buy Recos	Over last 6 months	33.3%	No
Change in Target Price	Over last 3 months	33.4%	No

Value

Combines historical and forward P/E ratios with historical P/B. All three components are inverted, so a higher score indicates lower valuation multiples.

Indicator	Period	Weight	Inversion
Price to Earnings P/E	n−1	34%	Yes
Price to Earnings P/E	n+1	33%	Yes
Price to Book P/B	n−1	33%	Yes

Yield

Uses ordinary dividend per share for the latest reported fiscal year (n−1), divided by the current share price. With Universe-Z, a higher score indicates a higher dividend yield relative to the selected investment universe. With History-Z, it indicates a higher dividend yield relative to the company's own historical observations.

Indicator	Period	Weight	Inversion
Dividend Yield	n-1	100%	No

Best Fit

Combines Sismo's proprietary cost-of-equity indicator with inverted volatility and inverted R-squared against MSCI World. A higher score reflects the combined expected-return, risk and diversification characteristics of the stock. Details of the cost-of-equity methodology are available on request.

Indicator	Period	Weight	Inversion
Expected Return (Cost of Equity)	n−1	50%	No
Daily Volatility	6 months	25%	Yes
R-Squared vs MSCI World	24 months	25%	Yes

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Getting Started with the Downloadable Factor Library

The Sismo Factor Library lets you browse the available factor templates and select those relevant to your investment approach. After you submit your selection, the Sismo team emails you a single JSON file containing all your chosen factors, ready to import into Sismo. Once imported, the factors appear in your Custom Factors list and can be customized to suit your needs.

Step 1 – Import the desired factors

Factors can be imported from:

Factors → Factor Library

Click **Import** in the upper-right corner of the page and select the JSON file(s) you wish to add to your session.

Imported factors are added to the **Custom Factors** panel located in the lower-left corner of the Factor Library page.

Only import the factors that are relevant to your investment process. Additional factors can be imported later at any time.

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Step 2 – Calculate the factors

Imported factors become available only after a new factor calculation has been performed.

Depending on the status of the selected investment universe, there are three possible situations.

1. **Existing universe factors already calculated at the latest date**

   Under **Factors → Run Calculations**, the universe appears with its latest calculation date displayed in **green**.

   Click **Recalculate** to recompute the existing factor session. All newly imported Custom Factors will automatically be included.

2. **Existing universe requiring an update**

   If the latest calculation date appears in **orange** under **Factors → Run Calculations**, the factor session is no longer up to date.

   Click **Update** to calculate a new factor session at the most recent available date. All imported Custom Factors will automatically be included.

3. **New universe**

   If no factor session has yet been created for the universe:

   1. Open **Factors → Run Calculations**
   2. Click **+ Add Factor Calculation**

3. Select the desired universe
4. Launch the calculation

Automatic Overnight Calculations

If automatic factor calculations have been configured from the **Landing** page (blue tab in the upper-right corner of every Sismo screen), newly imported Custom Factors require no additional action. During the next scheduled overnight calculation, Sismo will automatically calculate all newly imported factors alongside the 8 Standard Sismo Factors and any other Custom Factors already present in the user's session. The updated factor exposures will therefore be available the following morning.

-

Step 3 – Understanding what is calculated

Whenever a factor calculation is launched, Sismo automatically calculates:

- all **8 Standard Sismo Factors**; and
- **every Custom Factor** currently stored in your session.

There is no need to select individual factors during calculation. Every active Custom Factor is calculated automatically.

-

Step 4 – Managing your Custom Factors

Moving the mouse over a factor name in the **Custom Factors** panel displays three management icons.

✏ **Rename** – Rename the factor

⚙ **Edit** – Modify the factor by changing its indicators, parameters, weights or other construction settings

🗑 **Delete** – Remove the factor from your session

Custom Factors can also be exported individually and imported again later using the **Export** and **Import** functions.

-

Step 5 – Explore and Audit the Factors

Once factor calculations have been completed, the downloaded factors become available throughout Sismo in exactly the same way as the Standard Sismo Factors.

➔ **Visualizing factor exposures**

Open: **Factors → Explore Analytics**

This page provides access to Sismo's Polar Charts, which display the factor exposures of stocks, sectors, baskets, portfolios and other investment universes.

Under **Choose Factor Set**, select either:

- **Custom** - displays only the imported Custom Factors;

- **All** - displays both the 8 Standard Sismo Factors and the imported Custom Factors.

Only factors whose **bulb icon** is activated (orange) in the **Factor Library** are displayed on the Polar Chart. Turning the bulb off simply hides the factor from graphical displays; the factor continues to be calculated and remains available for future use.

Once one or more items (stock, sector, basket, portfolio or other investment object) are loaded into the left-hand comparison slots, the Polar Chart immediately displays their factor exposures, with the factor names shown around the outside of the chart.

➔ Auditing factor calculations

Every factor displayed on the Polar Chart can be explored in greater detail.

Hover the mouse over a factor name around the outside of the Polar Chart and right-click to open the contextual menu.

Two analysis options are available:

- **Factor Distribution** opens a Screening page showing the complete distribution of the selected factor across the current investment universe. This allows users to understand where the selected stock, sector or portfolio stands relative to all other securities.
- **Factor Audit** opens a detailed audit table showing the calculated factor together with all of its underlying constituents. This makes it possible to verify every component of the factor calculation and understand precisely how the overall factor exposure has been constructed.

This complete drill-down capability - from Polar Chart to factor distribution to constituent-level audit - is one of the core transparency features of Sismo and allows every factor to be fully understood, verified and customized.

-

Best Practices

The time required to calculate a factor session depends on:

- the number of securities in the selected universe; and
- the total number of Custom Factors stored in your session.



Because every Custom Factor is recalculated each time a factor session is launched, we recommend keeping **no more than approximately 20 Custom Factors** in your session at any given time.

When factors are no longer required, export them to your own computer and delete them from Sismo.

This allows you to maintain your own complete personal factor library while keeping factor calculations fast and responsive for both your organization and the wider Sismo user community.

1. Introduction

The Sismo Factor Framework

Sismo is built around a unified factor framework that transforms financial and non-financial information into transparent, measurable investment dimensions.

A factor in Sismo is a weighted linear combination of one or more indicators designed to represent an underlying investment characteristic in a transparent, measurable and customizable way. Financial metrics, market data, ESG indicators and user-defined qualitative scores can all be integrated into the same analytical framework.

Every factor remains fully transparent and explainable through its underlying indicators and constituent weights.

Sismo provides two complementary normalization approaches.

Cross-sectional factors (Universe-Z). They compare all companies within a selected investment universe at a given date. Underlying indicators are converted to a common scale using Z-scores (standardization), allowing different metrics to be combined and compared fairly. Extreme observations are winsorized to limit the influence of outliers. Factor scores therefore measure the relative positioning of each company versus its peers.

Sector-neutralization. Each indicator may optionally be sector-neutralized, allowing managers to distinguish genuine stock selection from simple sector allocation effects. Sector neutralization is performed at the indicator level before factor construction and is available exclusively for cross-sectional factors.

Historical factors (History-Z). They compare a company's current value with its own historical observations over the past five years. Rather than comparing companies against each other, they measure whether today's value is above or below the company's five-year average, making them particularly useful for identifying business cycles, valuation extremes and long-term corporate evolution.

Together, these two normalization approaches provide a consistent analytical framework that can be applied across screening, portfolio monitoring, portfolio construction, optimization and risk analysis while preserving complete transparency of every calculation.

Transparency and Auditability

Transparency is a core design principle of the Sismo platform.

Every factor can be fully decomposed into its underlying indicators and constituent weights, allowing users to understand, verify and audit every calculation. Users can drill down from

any factor score to its individual constituents and ultimately to the original underlying data, making factor analysis both transparent and easy to validate.

Factors as a Common Investment Language

Investment decisions rarely rely on a single financial indicator. Instead, they naturally combine complementary dimensions to answer practical investment questions.

- Is this company creating value?
- Is its competitive position improving?
- Is earnings growth accelerating?
- Is management allocating capital efficiently?
- Are sell-side analysts becoming more optimistic?
- Is the company becoming more or less sensitive to the macroeconomic environment?

Sismo formalizes these questions into concise, measurable investment characteristics.

Using only a limited number of carefully designed complementary factors, managers can build a rich multidimensional fingerprint of any company, sector, basket or portfolio relative to a selected investment universe. This common analytical language can then be applied consistently across screening, portfolio monitoring, portfolio construction, optimization, performance attribution and risk analysis.

Why Factors?

Individual financial indicators rarely capture an investment theme in its entirety. Quality cannot be fully described by ROE alone, nor Value by a single valuation multiple, nor Growth by a single growth measure.

Each individual indicator captures only one aspect of an investment characteristic. Combining complementary indicators generally provides a more robust and economically meaningful representation than relying on any single financial indicator or ratio.

Like leading quantitative investment frameworks such as MSCI Barra® and Axioma®, Sismo represents investment themes through weighted combinations of complementary indicators rather than isolated financial indicators. Each constituent contributes complementary information while remaining individually observable, fully auditable and easily customizable.

Unlike many traditional commercial factor models, every Sismo Custom Factor remains fully transparent, auditable and user-customizable. Users can inspect every constituent, modify the methodology and build proprietary factors while preserving a common analytical framework.

Standardizing the underlying indicators allows financial measures expressed in different units to be combined into factor scores. Higher scores indicate a stronger expression of the characteristic defined by the factor, taking account of any inverted components.

Sismo provides two calculation approaches:

- Universe-Z compares each company's underlying indicators with those of the selected investment universe at the calculation date.
- History-Z compares each company's underlying indicators with its own observations over the preceding five years.

Factor scores should be interpreted alongside their construction and observed distribution. The same numerical score on two different factors does not necessarily represent the same percentile or investment significance. Users can examine the factor distribution and underlying components to assess how distinctive a company's exposure is.

Rather than interpreting dozens of unrelated financial indicators or ratios, portfolio managers can describe companies and portfolios through a limited number of complementary, standardized investment characteristics. This common language makes investment analysis more transparent, comparable and actionable across the entire investment process.

Downloadable Factor Library

The Standard Factors included in Sismo provide a consistent analytical framework shared by all users. Their construction is fixed to ensure comparability across portfolios and over time.

The Downloadable Factor Library complements these Standard Factors by providing ready-to-use templates that users can download, customize and save as their own factors. Throughout Sismo, the terms User Factors and Custom Factors are used interchangeably and refer to the same user-defined factors.

Users may customize these templates by selecting different indicators, modifying historical or forward-looking periods, adjusting constituent weights, or enabling sector-neutral calculations.

The downloadable templates are intended as practical starting points rather than definitive answers, allowing each manager to adapt the proposed methodology to their own investment philosophy and process.

After downloading and importing a factor template, it appears in the **Custom Factors** panel on the left-hand side of Sismo. Hovering over the factor name reveals several management icons. Clicking the **Modify Factor** icon (⚙) opens the factor editor, where users can modify indicators, constituent weights, historical periods and other factor parameters before saving their customized version.

Once imported, users may adapt every aspect of the factor construction to match their own investment process.

How to Read This Handbook

Rather than proposing a single "best" definition for each investment style, the handbook presents complementary factor templates, each designed to answer a specific investment question.

- Investment Question - defines the investment characteristic the factor is intended to measure.
- Sismo Proposal - describes the proposed implementation within Sismo.
- Interpretation - explains how to interpret positive and negative factor exposures.
- Customization - summarizes the parameters that users may modify, including indicators, periods, constituent weights and whether the factor is calculated on a standard or sector-neutral basis.
- Data Source - identifies the origin of the underlying data.

Sell-Side Consensus Measures. As a general design principle, Sismo uses the Median Consensus for analyst-derived indicators whenever available. Median consensus is less sensitive to outlier estimates than the arithmetic mean and therefore provides a more robust representation of market expectations.

Fiscal-Year Notation. Throughout this handbook, **n−1** denotes the latest reported fiscal year, **n** the current fiscal year, **n+1** the next fiscal year, and **n+2** the following fiscal year. Historical periods refer to reported financial statements, while future periods refer to analyst consensus estimates.

2. Macro Sensitivity Factors

Introduction

Equity returns are influenced not only by company fundamentals but also by changes in the macroeconomic environment. Interest rates, inflation, credit conditions, financial stress, market volatility, commodity prices and currencies all contribute to shaping the relative performance of sectors, industries and individual companies.

Macro Sensitivity Factors quantify these historical relationships through a transparent and consistent analytical framework. Rather than forecasting macroeconomic developments, they measure how stocks, sectors, investment universes and portfolios have historically reacted to changes in selected macroeconomic variables.

Methodology

Each Macro Sensitivity Factor is estimated using a transparent two-factor regression combining:

- a broad equity benchmark;
- one selected macroeconomic variable.

The reported macro beta measures the historical sensitivity to the selected macroeconomic variable after controlling for broad equity market movements. The estimated macro beta is then transformed into a Macro Sensitivity Factor, allowing meaningful comparison across stocks, sectors, universes and portfolios.

The standard methodology is:

Macro beta = 50% × $\beta_{2Y\text{-}D}$ + 50% × $\beta_{5Y\text{-}D}$

where $\beta_{2Y\text{-}D}$ and $\beta_{5Y\text{-}D}$ are estimated over the last two years and five years, respectively, using daily observations. The shorter window captures recent changes in sensitivity, while the longer window provides a more stable estimate. When daily macroeconomic data are unavailable, weekly observations are used for both horizons (currently ME - US Financial Stress).

The underlying macro beta and the standardized factor exposure answer different questions.

The macro beta describes the historical relationship between stock returns and changes in the selected macroeconomic variable, after controlling for equity-market movements. A positive beta indicates a positive conditional relationship; a negative beta indicates the opposite. These relationships are historical estimates and do not guarantee a particular response in a future market episode.

The standardized factor exposure describes the relative position of that sensitivity. With Universe-Z, a positive score indicates a relatively higher sensitivity within the selected universe; it does not necessarily mean that the underlying beta is positive. With History-Z, the comparison is with the company's own historical observations. For credit spreads, financial stress and VIX, a relatively higher factor score can therefore reflect either a more positive or a less negative underlying sensitivity. The underlying betas should be inspected before interpreting the stock as benefiting from, or providing protection against, rising stress.

Custom Macro Factors

The library can be extended using proprietary macroeconomic series.

Custom macroeconomic time series can be uploaded directly from the **User Indicators → Macroeconomic Indicators** menu using a simple two-column CSV file (*Date*, *Value*).

For continuously updated datasets, proprietary indicators may also be synchronized automatically through **SFTP/API** integrations, allowing organizations to maintain proprietary Macro Sensitivity Factors using the same analytical framework as the standard library.

Macro Factor Construction

Macro Sensitivity Factor	Economic Dimension	Reference Series	Construction	Transform.
ME - US 10Y Yield	Interest-Rate Level	US 10Y Treasury Yield	50% $\beta_{2Y\text{-}D}$ + 50% $\beta_{5Y\text{-}D}$	Change
ME - US 10Y-2Y	Yield-Curve Shape	US 10Y – 2Y Treasury Yield Spread	50% $\beta_{2Y\text{-}D}$ + 50% $\beta_{5Y\text{-}D}$	Change
ME - US Inflation 10YBE	Inflation Expectations	US 10Y Breakeven Inflation	50% $\beta_{2Y\text{-}D}$ + 50% $\beta_{5Y\text{-}D}$	Change
ME - US Baa Spread	Credit Conditions	Moody's Baa – US 10Y Yield Spread	50% $\beta_{2Y\text{-}D}$ + 50% $\beta_{5Y\text{-}D}$	Change
ME - US Financial Stress	Financial Stress	St. Louis Fed Financial Stress Index	50% $\beta_{2Y\text{-}W}$ + 50% $\beta_{5Y\text{-}W}$	Change
ME - VIX	Market Uncertainty	Cboe VIX Index	50% $\beta_{2Y\text{-}D}$ + 50% $\beta_{5Y\text{-}D}$	% Change
ME - Brent Oil	Oil Price	Brent Crude Oil Price	50% $\beta_{2Y\text{-}D}$ + 50% $\beta_{5Y\text{-}D}$	% Change
ME - EUR USD FX	Currency Regime	EUR USD Spot Rate - USD per EUR	50% $\beta_{2Y\text{-}D}$ + 50% $\beta_{5Y\text{-}D}$	% Change

Macro Factor Profiles

Note: *The sector examples below illustrate the signs of historical sector median macro betas observed in Sismo for the MSCI World universe. These betas measure the relationship with the selected macroeconomic variable after controlling for equity-market movements. The positive and negative labels refer to the underlying regression betas. Standardized factor scores express the relative position of those sensitivities and may have different signs. The examples may vary with the observation date, investment universe, benchmark and estimation period.*

ME - US 10Y Yield
Interest-Rate Level

Measures historical sensitivity to changes in long-term U.S. government bond yields, one of the principal drivers of discount rates, financing costs and equity valuations. This factor helps identify duration-sensitive companies and monitor portfolio exposure to changes in long-term interest rates.

TYPICAL HISTORICAL EXPOSURE

Negative historical macro beta	Positive historical macro beta
• Utilities	• Banks
• Real Estate	• Oil & Gas
• Household & Personal Products	• Semiconductors
• Food & Beverage	• Technology Hardware
• Healthcare Equipment & Services	

ME - US 10Y-2Y
Yield-Curve Shape

Measures historical sensitivity to changes in the slope of the U.S. yield curve, proxied by the spread between the 10-year and 2-year Treasury yields. A steepening curve generally reflects improving growth expectations, while a flattening or inverted curve is often associated with slowing economic activity and tighter monetary conditions.

TYPICAL HISTORICAL EXPOSURE

Negative historical macro beta	Positive historical macro beta
• Technology Hardware	• Media & Entertainment
• Semiconductors	• Healthcare Equipment & Services
• Real Estate	
• Utilities	
• Biotechnology	

Note: Historical sector relationships are less stable than for interest-rate level factors, and may vary meaningfully across estimation windows.

ME - US Inflation 10YBE
Inflation Expectations

Measures historical sensitivity to changes in U.S. 10-year breakeven inflation, used as a market-implied measure of long-term inflation expectations.

TYPICAL HISTORICAL EXPOSURE

Negative historical macro beta	Positive historical macro beta
• Utilities	• Oil & Gas
• Food & Beverage	• Aerospace & Defense
• Household & Personal Products	• Technology Hardware
• Pharmaceuticals	• Selected Financial Services

ME - US Baa Spread
Credit Conditions

ME – US Baa Spread measures historical sensitivity to changes in the spread between Moody's Baa corporate bond yields and the U.S. 10Y Treasury yield. A widening spread generally reflects deteriorating credit conditions, higher risk aversion and tighter financing conditions.

Positive exposure has frequently been observed in defensive sectors such as utilities, healthcare, telecommunications and food-related sectors, while negative exposure has often been observed in banks, automobiles, energy, industrials and other cyclical sectors.

TYPICAL HISTORICAL EXPOSURE

Negative historical macro beta	Positive historical macro beta
• Banks	• Utilities
• Automobiles & Components	• Healthcare Equipment & Services
• Oil & Gas	• Biotechnology
• Machinery & Electrical Equipment	• Telecommunication Services
• Industrial Conglomerates	• Real Estate
• Technology Hardware	• Food & Beverage
• Cyclical Consumer Goods	• Food & Drug Retail

ME - US Financial Stress
St. Louis Fed Financial Stress Index

ME - US Financial Stress measures historical sensitivity to changes in the St. Louis Fed Financial Stress Index, a broad indicator of stress across financial markets.

Historically, positive exposure has often been observed in defensive sectors such as household products, food, healthcare, utilities and telecommunications. Negative exposure has often been observed in banks, energy, autos, industrials and other cyclical or capital-intensive sectors.

TYPICAL HISTORICAL EXPOSURE

Negative historical macro beta	Positive historical macro beta
• Oil & Gas	• Household & Personal Products
• Banks	• Food & Beverage
• Industrial Conglomerates	• Food & Drug Retail
• Automobiles & Components	• Healthcare Equipment & Services
• Machinery & Electrical Equipment	• Biotechnology
	• Utilities
	• Telecommunication Services

ME - VIX
Market Uncertainty

ME - VIX measures historical sensitivity to changes in the Cboe VIX Index, used as a market measure of equity volatility and risk aversion. Historical sector relationships may be more episode-dependent than for credit-spread or broad financial-stress factors.

TYPICAL HISTORICAL EXPOSURE

Negative historical macro beta	Positive historical macro beta
• Oil & Gas	• Household & Personal Products
• Financial Services	• Real Estate
• Technology Hardware	• General Retailers
• Hotels, Restaurants & Leisure	• Food & Drug Retail
• Biotechnology	

ME - Brent Oil
Oil Price

ME - Brent Oil measures historical sensitivity to changes in Brent crude oil prices.

Historically, strong positive exposure has most clearly been observed in Oil & Gas. Outside Oil & Gas, positive historical exposures are generally less dominant and may be more sensitive to the estimation window. Negative exposure has often been observed across a broad range of consumer, healthcare and industrial sectors, reflecting the effect of higher energy costs and changing macroeconomic conditions associated with oil-price increases.

TYPICAL HISTORICAL EXPOSURE

Negative historical macro beta	Positive historical macro beta
• Household & Personal Products • Cyclical Consumer Goods • Materials • General Retailers • Food & Beverage • Healthcare Equipment & Services	• Oil & Gas • Software • Selected Financial Services

ME - EUR USD FX
Currency Regime

ME – EUR USD FX measures historical sensitivity to changes in the EUR USD exchange rate, expressed as U.S. dollars per euro. An increase in the reference series corresponds to euro appreciation versus the U.S. dollar.

Historically, positive exposure has often been observed in Metals & Mining, Materials, Real Estate, Telecommunications and selected consumer defensive sectors. Negative exposure has often been observed in Oil & Gas, Technology Hardware, Software, Semiconductors and selected financial or business-services sectors.

TYPICAL HISTORICAL EXPOSURE

Negative historical macro beta	Positive historical macro beta
• Oil & Gas • Software • Semiconductors • Technology Hardware • Commercial & Professional Services	• Metals & Mining • Materials • Household & Personal Products • Real Estate • Telecommunication Services

3. Growth Factors

Introduction

There is no single definition of corporate growth. Corporate growth can be assessed through several complementary dimensions. Sales growth, earnings growth, cash-flow growth and analyst expectations each capture different information and often diverge.

The Growth Library therefore separates these dimensions while also providing a composite Broad Growth Factor for users seeking an overall measure of business expansion.

Historical financial statements measure realized execution, while analyst estimates reflect current market expectations. Because equity valuations are inherently forward-looking, Sismo combines both sources by assigning a 40% weight to historical observations and a 60% weight to forward estimates (except GR - Growth Expectations which relies entirely on forecasts). The weighting of individual growth periods varies by template, as shown below. GR - Growth Expectations assigns 40% to growth from n to n+1 and 60% to growth from n+1 to n+2.

Growth Factor Definition

Sismo Factor Name Factor	Purpose	Indicator	Construction
GR - Sales Growth **Sales Growth**	Commercial Momentum	Sales	25% (n−2→n−1) + 15% (n−3→n−1) + 35% (n→n+1) + 25% (n+1→n+2)
GR - Operating Growth **Operating Growth**	Operating Growth	EBIT	25% (n−2→n−1) + 15% (n−3→n−1) + 35% (n→n+1) + 25% (n+1→n+2)
GR - Cash Growth **Cash Growth**	Cash Generation	CFO (50%) + FCF (50%)	For **each indicator**: 40% (n−2→n−1) + 60% (n→n+2)
GR - Broad Growth **Broad Growth**	Broad Business Growth	Sales (⅓) + EBIT (⅓) + CFO (⅓)	For **each indicator**: 40% (n−2→n−1) + 60% (n→n+2)
GR – Growth Expectations **Growth Expectations**	Expected Growth	Sales (50%) + EBIT (50%)	For **each indicator**: 40% (n→n+1) + 60% (n+1→n+2)

Design Principles

Revenue, operating profit and cash flow are intentionally kept as separate factors because they measure different stages of value creation. Revenue measures commercial expansion. EBIT measures the conversion of sales into operating profit. Cash flow confirms whether operating growth translates into cash generation. These dimensions often diverge. Separating them preserves information that would otherwise be hidden in a single composite score.

The Broad Growth Factor complements rather than replaces the specialized Growth Factors. It provides a concise summary of overall business expansion for screening, portfolio monitoring and portfolio-level analysis, while detailed company analysis can continue to examine each underlying growth dimension separately.

4. Growth Consistency Factors

Growth Consistency Factors assess not only how much a company has grown, but also how consistently that growth has been delivered over time.

Consistent growth and rapid growth are distinct characteristics. Companies exhibiting the fastest growth are not necessarily those delivering the most stable long-term expansion.

Unlike the Growth Factors presented in the previous chapter, Growth Consistency Factors rely exclusively on reported historical financial statements, typically covering the last three, five or ten years.

The same transparent methodology can be applied separately to Sales, Gross Profit, EBITDA, EBIT, Normalized Net Income, EPS, CFO, FCF, or Dividends, subject to data availability and economic relevance.

Investment Question:
Which companies have delivered the most consistent long-term growth?

Growth Consistency Template

Indicator	Historical Window	Weight	Inversion	Sector Neutral
Average Annual Growth	3Y, 5Y or 10Y	30%	N	N/Y
Minimum Annual Growth	3Y, 5Y or 10Y	30%	N	N/Y
Standard Deviation of Annual Growth	3Y, 5Y or 10Y	40%	Y	N/Y

The three constituents measure complementary characteristics:

- **Average growth** measures the typical annual growth rate
- **Minimum growth** captures the weakest annual growth observed over the selected period, thereby reflecting periods of severe contraction
- **Standard deviation** measures the stability of annual growth, penalizing irregular or volatile growth patterns

The methodology can therefore be applied to each financial metric, generating the following downloadable factor templates.

By default, Growth Consistency Factors are calculated using all available historical observations. Companies with incomplete histories therefore remain eligible, allowing recently listed companies or businesses with limited financial histories to be included whenever sufficient data are available.

Setting **Full Period Data Only = Yes** restricts the calculation to companies with complete historical observations over the selected period (e.g. the full five or ten years). This produces a more homogeneous comparison universe but excludes companies with incomplete financial histories.

Indicator	Purpose	Sismo Factor Name
Sales	Sales Growth Consistency	**GC - Sales Growth**
EBITDA	EBITDA Growth Consistency	**GC - EBITDA Growth**
EBIT	EBIT Growth Consistency	**GC - EBIT Growth**
EPS	EPS Growth Consistency	**GC - EPS Growth**
CFO	CFO Growth Consistency	**GC - CFO Growth**
FCF	FCF Growth Consistency	**GC - FCF Growth**
Dividend	Dividend Growth Consistency	**GC - Dividend Growth**

Note: Downloadable Growth Consistency Factors are initialized with Prior Period = 5 Years, Full Period Data Only = No, Sector Neutral=No. Users may modify these parameters at any time.

5. Quality Factors

Introduction

No single financial ratio adequately captures corporate quality. Profitability, capital efficiency, financial strength, earnings quality and operational efficiency each measure different dimensions of a business. The Quality library is therefore organized around distinct investment questions.

Each downloadable factor captures a specific dimension of business quality while remaining fully transparent and easy to customize.

Whenever reliable consensus estimates are available, Sismo combines the latest reported fiscal year (**n-1**) with the next fiscal year's consensus estimate (**n+1**), allowing both current fundamentals and expected business evolution to be considered.

The proposed factors are intended to measure complementary dimensions of business quality rather than produce a single overall quality score. Depending on their investment philosophy, users may analyse these dimensions separately or combine them into custom Quality factors.

Calculation Methodology

Unless otherwise specified:

- Indicators are standardized using the standard Sismo cross-sectional normalization methodology.
- **Sector Neutral = Y** indicates that the sector median is removed before standardization.
- **Inversion = Y** indicates that the indicator receives a negative weight during aggregation so that higher factor scores always represent more attractive characteristics.
- Factors are calculated using the available constituents. Certain indicators are naturally unavailable for financial institutions.

Each downloadable factor can be modified by changing indicators, weights, forecast horizons and sector-neutral settings to match different investment philosophies.

The following tables summarize the proposed construction of each downloadable factor.

Capital Efficiency -
Which companies generate the highest returns on invested and shareholders' capital?

ROIC and ROE provide complementary perspectives on capital efficiency. ROIC measures the returns generated on the capital invested in the business, while ROE measures the return earned by shareholders on their equity. Combining both provides complementary perspectives on capital efficiency while reducing reliance on a single capital-efficiency measure across different business models and reporting situations.

Q - Capital Efficiency

Indicator	Period	Weight	Inversion	Sector Neutral
ROIC*	n-1	35%	N	N
Forecast ROIC*	n+1	35%	N	N
ROE	n-1	30%	N	N

* For banks and most financial institutions, ROE replaces ROIC.

Profitability -
Which companies convert sales into profits more efficiently than their sector peers?

Gross margin provides information on pricing, product mix and cost structure. EBITDA and EBIT margins capture operating efficiency, while net margin incorporates financing and taxation effects. Combining the four provides a comprehensive view of operating profitability.

Q - Profitability SN

Indicator	Period	Weight	Inversion	Sector Neutral
Gross Margin	n-1	10.0%	N	Y
Gross Margin	n+1	10.0%	N	Y
EBITDA Margin	n-1	12.5%	N	Y
EBITDA Margin	n+1	12.5%	N	Y
EBIT Margin	n-1	17.5%	N	Y
EBIT Margin	n+1	17.5%	N	Y
Net Margin	n-1	10.0%	N	Y
Net Margin	n+1	10.0%	N	Y

Earnings Quality -
To what extent are reported earnings supported by cash generation?

The CFO-to-Net-Income ratio measures the extent to which reported earnings are supported by operating cash generation rather than by non-cash accruals.

Q - Earnings Quality

Indicator	Period	Weight	Inversion	Sector Neutral
CFO Margin	n-1	20%	N	N
CFO Margin	n+1	20%	N	N
FCF Margin	n-1	20%	N	N
FCF Margin	n+1	20%	N	N
CFO / Net Income	n-1	20%	N	N

Financial Strength -
Which companies exhibit the strongest and most resilient balance sheets?

Financial strength combines leverage and bankruptcy-risk measures to assess balance-sheet resilience across sectors and countries while maintaining broad data availability.

Q - Financial Strength

Indicator	Period	Weight	Inversion	Sector Neutral
Net Debt / EBITDA	n-1	40%	Y	N
Net Debt / Equity	n-1	30%	Y	N
Altman Z-Score	n-1	30%	N	N

Operational Efficiency -
Which companies combine high workforce productivity with strong operating profitability?

Operational efficiency combines workforce productivity and operating profitability. Sales per Employee provides an indicator of workforce productivity, while EBIT Margin measures operating profitability. Together, they provide complementary perspectives on workforce productivity and operating profitability.

Q - Operational Efficiency SN

Indicator	Period	Weight	Inversion	Sector Neutral
Sales per Employee	n-1	50%	N	Y
EBIT Margin	n-1	25%	N	Y
EBIT Margin	n+1	25%	N	Y

Quality Momentum -
Which companies are experiencing improving profitability expectations according to sell-side analysts?

Upward revisions to profitability expectations often precede improvements in reported financial statements and may therefore provide an early indication of improving business quality.

Q - Quality Momentum SN

Indicator	Estimate Year	Revision Period	Weight	Inversion	Sector Neutral
Gross Margin Revision	n+1	3 Months	20%	N	Y
EBITDA Margin Revision	n+1	3 Months	30%	N	Y
EBIT Margin Revision	n+1	3 Months	30%	N	Y
Net Margin Revision	n+1	3 Months	20%	N	Y

Note: The default 3-month revision period is intended to balance responsiveness and stability. Users may modify the revision period in the Factor Builder to suit their investment horizon.

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Taken together, these six factors provide complementary perspectives on business quality. They may be analyzed individually or combined into custom Quality factors depending on the investment process.

6. Value Factors

Introduction

Value investing seeks companies trading at attractive valuations relative to their underlying fundamentals.

Since no single valuation multiple captures every aspect of valuation, the Value Library combines complementary measures into transparent downloadable factors designed to answer different investment questions.

The **Relative Value factors** emphasize forward-looking fundamentals whenever analyst consensus is available, while retaining reported financial metrics to ensure broad coverage across the investment universe. When consensus estimates are unavailable, the historical metrics naturally become the primary inputs.

In addition to traditional valuation multiples, Sismo provides a proprietary **Expected Return factor** derived from normalized valuation multiples and long-term growth assumptions.

This methodology estimates the long-term return implicitly offered to shareholders by the current market valuation.

Expected Return complements rather than replaces conventional valuation factors. It provides an alternative perspective based on the return implied by current valuation and long-term growth assumptions.

The Relative Value factors compare current valuation multiples directly. The Expected Return factor instead translates current valuation into an implied long-term shareholder return using a transparent analytical framework.

Calculation Methodology

Unless otherwise specified:

- Indicators are standardized using the standard Sismo cross-sectional normalization methodology.
- **Sector Neutral = N** for the standard Relative Value factor.
- A second downloadable template applies **Sector Neutral = Y** for investors wishing to compare companies only with their sector peers.
- **Inversion = Y** indicates that lower valuation multiples receive higher factor scores.

Unlike accounting metrics, valuation multiples naturally combine market prices with company fundamentals. The proposed templates therefore emphasize complementary valuation perspectives rather than relying on any single multiple.

Relative Value -
Which companies trade at the most attractive valuation relative to their current and expected fundamentals?

Relative Value combines earnings, enterprise-value and balance-sheet valuation multiples to provide a broad assessment of valuation attractiveness.

Forward-looking multiples receive greater weight because equity markets primarily reflect expected future fundamentals, while reported multiples provide continuity and broader coverage.

V - Relative Value

Indicator	Period	Weight	Inversion	Sector Neutral
Normalized P/E	n	15%	Y	N
Normalized P/E	n+1	25%	Y	N
EV / EBIT	n-1	10%	Y	N
EV / EBIT	n+1	15%	Y	N
EV / EBITDA	n-1	5%	Y	N
EV / EBITDA	n+1	10%	Y	N
Price / Book	n-1	20%	Y	N

Normalized P/E uses consensus earnings estimates for the current fiscal year (n) and the following fiscal year (n+1). Together, these two forward-looking valuation multiples provide broad coverage of expected earnings while avoiding reliance on reported P/E ratios, which may be unavailable or difficult to interpret when earnings are negative.

The proposed construction assigns approximately two-thirds of the total weight to forward-looking valuation metrics and one-third to reported financials, while remaining fully operational when analyst estimates are unavailable.

Relative Value (Sector Neutral) -
Which companies trade at the most attractive valuation relative to their direct sector peers?

This factor uses the **same construction** as Relative Value, with sector-neutralization applied to every constituent before aggregation. Sector-neutral valuation is particularly useful for stock-picking strategies because it removes structural valuation differences between industries.

V - Relative Value SN

Indicator	Period	Weight	Inversion	Sector Neutral
Normalized P/E	n	15%	Y	Y
Normalized P/E	n+1	25%	Y	Y
EV / EBIT	n-1	10%	Y	Y
EV / EBIT	n+1	15%	Y	Y
EV / EBITDA	n-1	5%	Y	Y
EV / EBITDA	n+1	10%	Y	Y
Price / Book	n-1	20%	Y	Y

The standard Relative Value factor assigns higher scores to companies trading at lower valuations across the investment universe, whereas the Sector Neutral variant compares companies only with their direct sector peers.

Historical Earnings Value -
Which companies trade at the most attractive valuation relative to their own historical earnings valuation?

Historical Earnings Value assesses current earnings multiples relative to each company's own valuation history. Each P/E multiple is expressed as a ratio to its five-year median, with inversion applied so that lower relative multiples contribute positively to the factor.

This provides a complementary perspective to Relative Value. A company may trade at a higher P/E than its peers while remaining inexpensive relative to its own historical valuation, or trade at a lower P/E than its peers while remaining expensive relative to its own history.

V - Historical Earnings Value

Indicator	Parameter	Period	Weight	Inversion	Sector Neutral
Normalized P/E	Multiple / 5Y Median	n-1	40%	Y	N
Normalized P/E	Multiple / 5Y Median	n+1	60%	Y	N

The default construction combines reported and forward-looking earnings multiples. The historical (n−1) component maintains broad applicability, including companies with limited or no analyst coverage, while the forward-looking (n+1) component gives greater weight to expected future earnings. The valuation multiple is expressed relative to its own five-year median, allowing companies to be compared according to their historical valuation pattern rather than solely on absolute multiples.

Under the default Universe-Z calculation, these historical valuation ratios are standardized across the selected investment universe before being combined. The factor therefore compares companies according to how their current valuations relate to their respective histories. This is distinct from History-Z, which standardizes indicators against each company's own historical observations.

Typical Applications

- Identifying companies trading below their own historical valuation.
- Identifying potential valuation re-ratings following periods of excessive optimism or pessimism.
- Complementing traditional Relative Value factors by distinguishing stocks that appear inexpensive relative to their own history from those that are inexpensive relative to the broader market.
- Supporting investment processes that combine absolute and historical valuation perspectives.

Expected Return -
Which companies offer the highest long-term expected shareholder return based on their current valuation and sustainable growth prospects?

Unlike conventional valuation factors based directly on market multiples, this proprietary Sismo methodology estimates the long-term shareholder return implied by today's valuation and long-term growth assumptions.

V - Expected Return

Indicator	Horizon	Weight	Inversion	Sector Neutral
Multiple-Derived Cost of Equity	*Current Dynamics*	100%	N	N

The Multiple-Derived Cost of Equity methodology combines three complementary components:

- **Earnings Yield (1/P/E)**, representing the current return generated by the business;
- **Long-term Growth (g)**, representing future value creation;
- **Price-to-Book (P/B)**, reflecting how much of this future growth is already embedded in the market valuation.

This relationship can be summarized by the following simplified equation:

$$r = \frac{1}{P/E} + g \times \left(1 - \frac{1}{P/B}\right)$$

where:

- **r** = implied shareholder expected return (Multiple-Derived Cost of Equity);
- **1/P/E** = current earnings yield;
- **g** = sustainable long-term growth;
- **P/B** = Price-to-Book ratio.

The implied return combines earnings yield with a growth adjustment whose contribution depends on the price-to-book ratio. Holding the other inputs constant, higher growth increases the estimate when P/B is above one, has no effect when P/B equals one, and decreases it when P/B is below one. The result is a model-implied return under the methodology's assumptions, rather than a prediction of realized investment performance.

7. GARP (Growth at a Reasonable Price) Factors

Introduction

Growth at a Reasonable Price (GARP) seeks companies offering attractive growth prospects without requiring investors to pay excessive valuations.

GARP occupies the middle ground between pure Growth and pure Value investing. Rather than pursuing the fastest-growing companies regardless of price or the cheapest companies regardless of growth, GARP seeks businesses offering an attractive balance between valuation and expected business expansion.

Traditional GARP strategies often rely on the PEG ratio (Price/Earnings-to-Growth). Rather than replacing PEG with another ratio, Sismo replaces it with a transparent factor methodology. While intuitive, PEG suffers from several practical limitations, particularly when growth is low, negative or highly uncertain. Sismo therefore evaluates valuation and growth independently before combining standardized scores into a transparent composite factor.

This approach avoids the instability of conventional PEG ratios when growth is low or negative, preserves the contribution of each component, and allows the methodology to be adapted to different financial metrics.

The standard GARP factor combines reported and forecast information while deliberately avoiding growth periods that cross the boundary between historical financial statements and analyst estimates.

Standard GARP -
Which companies combine attractive valuations with demonstrated and expected earnings growth?

GP - Standard GARP

Indicator	Period	Weight	Inversion	Sector Neutral
Normalized P/E	n−1	15%	Yes	No
Normalized P/E	n+1	35%	Yes	No
EPS Growth	n−2 → n-1	10%	No	No
EPS Growth	n → n+1	25%	No	No
EPS Growth	n+1 → n+2	15%	No	No

Methodology

Unlike a traditional PEG ratio, Sismo does not divide valuation by growth. Instead, each valuation and growth indicator is independently winsorized, standardized and combined into a weighted composite score.

Standardizing valuation and growth separately preserves the full information contained in each component. Users can immediately identify whether a high GARP score results from attractive valuation, strong growth, or a combination of both. This transparency would be lost in a single mathematical ratio such as PEG.

Compared with a traditional PEG ratio, this construction offers several advantages:

- avoids unstable ratios when growth approaches zero or becomes negative;
- preserves transparency on each component;
- allows valuation and growth to contribute independently;
- enables the methodology to be adapted to different financial metrics.

The factor assigns equal importance to **valuation (50%)** and **growth (50%)**. Forecast information represents **75%** of the total weight, while historical information accounts for the remaining **25%**, providing both forward-looking insight and continuity.

The factor gives equal total weight to valuation and growth. Because the components are combined linearly, a strong contribution from one dimension can offset a weaker contribution from the other. A high overall score therefore does not guarantee that both dimensions are favorable. Users seeking companies that meet both criteria should inspect the underlying components or apply separate valuation and growth screening conditions.

Growth **n−1** measures the historical change from **n−2 to n−1** using reported financial statements.

Growth **n+1** and **Growth n+2** measure the forecast changes from **n to n+1** and **n+1 to n+2**, respectively, using analyst estimates.

The methodology deliberately excludes growth from **n−1 to n**, as this interval combines reported financial statements with forecast estimates and may therefore introduce inconsistencies in data treatment.

When forecast estimates are unavailable, the factor is calculated using the available historical components. Although the resulting score remains informative, it should be interpreted as reflecting historical rather than expected growth.

As with all Sismo factors, every underlying indicator remains individually accessible, allowing users to understand, audit and, if desired, customize the construction of the factor.

Beyond PEG

The traditional PEG ratio combines valuation and growth into a single mathematical expression:

$$PEG = \frac{P/E}{Growth}$$

Although widely used, the PEG ratio presents several well-known practical limitations:

- it becomes unstable when growth approaches zero;
- it is difficult to interpret for companies with negative growth;
- it relies on a single valuation measure;
- it provides little visibility into the individual contributions of valuation and growth.

By treating valuation and growth as separate standardized signals, Sismo preserves transparency and flexibility while remaining faithful to the original objective of identifying companies offering attractive growth at reasonable valuations.

Alternative GARP Factors

The Standard GARP factor combines normalized P/E with EPS growth because earnings remain the most widely used measure of shareholder value creation.

Because Sismo standardizes valuation and growth independently, the methodology naturally extends beyond earnings to any financial metric for which both valuation and growth measures exist.

Factor	Valuation	Growth	Typical Use
GP - Standard GARP	Normalized P/E	EPS Growth	Standard approach
GP - Sales GARP	EV/Sales	Sales Growth	Early-stage or low-margin companies
GP - EBITDA GARP	EV/EBITDA	EBITDA Growth	Operating performance
GP - EBIT GARP	EV/EBIT	EBIT Growth	Capital-intensive businesses
GP – Cash Flow GARP	Price/CFO	CFO Growth	Cash generation

These alternative factors answer different investment questions rather than representing better or worse versions of GARP.

- **Sales GARP** is particularly relevant for rapidly growing companies whose earnings are not yet representative.

- **EBITDA GARP** emphasizes operating performance before depreciation and financing effects.
- **EBIT GARP** is often more appropriate for capital-intensive industries where depreciation represents a meaningful economic cost.
- **Cash Flow GARP** evaluates whether valuation is supported by growth in operating cash generation and may be particularly useful where accounting earnings are less informative.

For most investment universes, Standard GARP provides a general-purpose implementation combining valuation and earnings growth.

GARP (Sector Neutral)

A sector-neutral version of the GARP factor is also available.

Sector neutralization removes structural valuation and growth differences between industries, allowing companies to be compared against their direct sector peers rather than against the entire investment universe.

This version is particularly suited to stock-picking strategies within diversified portfolios seeking to isolate company-specific characteristics, whereas the standard GARP factor retains the information contained in sector allocation and sector rotation.

Key Takeaway

By combining independent valuation and growth signals rather than relying on a single ratio, Sismo's GARP methodology offers a transparent, robust and flexible framework that can be adapted to different financial metrics while remaining faithful to the original **Growth at a Reasonable Price** philosophy.

8. Sell-Side Intelligence Factors

Introduction

Sell-side research extends far beyond recommendations and target prices. Analysts continuously update their expectations for sales, margins, earnings and cash generation, while the breadth and consistency of the consensus provide useful context for interpreting those expectations.

The Sismo Sell-Side Intelligence factors are organized around four questions commonly asked by portfolio managers:

1. **Are analysts positive, and is their opinion improving?**
2. **Are fundamental forecasts being revised upwards or downwards?**
3. **Are expectations for profitability improving?**
4. **How much confidence can be placed in the consensus?**

This structure distinguishes between the current level of analyst opinion, changes in expectations and the depth and agreement of sell-side coverage.

Unless otherwise specified, the proposed factors use the **median consensus**, which reduces the influence of unusually high or low individual estimates. Mean, minimum and maximum consensus values remain available for analysis and custom factor construction.

Target Price Premium is also available in Sismo but is not used in the proposed factors. Because share prices adjust continuously while target prices are revised periodically, Target Price Premium contains substantial recent price information and may increase simply because a share price has fallen. It is therefore better interpreted as a complementary valuation measure than as a pure forward-looking sell-side signal.

The four proposed factors capture distinct dimensions of sell-side information:

Factor	Investment Question
SS - Analyst Sentiment	Are analysts positive and becoming more positive?
SS - Fundamental Revisions	Are forecasts for sales, earnings and cash generation improving?
SS - Profitability Revisions	Are expected margins improving?
SS – Consensus Confidence	How broad and consistent is the consensus?

Design Principles

Sell-side indicators are intentionally grouped according to the type of information they convey rather than combined into a single composite score.

Current analyst opinion, revisions to financial forecasts, revisions to profitability expectations and consensus quality measure different dimensions of the sell-side process and often evolve independently.

Although these four dimensions all originate from sell-side research, they answer different investment questions and should be interpreted independently rather than combined into a single composite score.

Analyst Sentiment -
Which companies currently receive positive analyst support, with recommendations and target prices continuing to improve?

SS - Analyst Sentiment

Indicator	Parameters	Weight	Inversion	Sector Neutral
Reco (%)	R-score - Value	20%	No	No
Reco (%)	R-score - Value Change - 3M	25%	No	No
Reco (%)	R-score - Value Change - 6M	15%	No	No
Target Price	Median - Value % Change - 1M	15%	No	No
Target Price	Median - Value % Change - 3M	25%	No	No

The factor combines current analyst opinion with recent changes in that opinion. The current R-score contributes 20% of the factor, while recommendation and target-price dynamics account for the remaining 80%.

The **R-score** is preferred to Buy percentage because it incorporates the complete distribution of Buy, Hold and Sell recommendations. It also captures an improvement from Sell to Hold even when the proportion of Buy recommendations remains unchanged.

Changes in R-score are measured in value rather than percentage terms. Because the R-score is bounded, a percentage change can depend excessively on its starting level and may be harder to interpret.

The 3-month and 6-month recommendation changes provide complementary information. The 3-month measure emphasizes recent developments, while the 6-month measure provides evidence of persistence beyond a single reporting event.

Target-price revisions are measured over both 1 month and 3 months. The 1-month measure captures the freshest revisions but may have fewer observations. The 3-month measure provides broader coverage and continuity, although some revisions may be less recent. Combining both horizons balances freshness and coverage.

Unlike Target Price Premium, a change in target price reflects a direct analyst action and is therefore more closely related to the evolution of sell-side opinion.

Fundamental Revisions -
Which companies are experiencing the broadest improvement in sell-side forecasts of their underlying earnings power?

SS - Fundamental Revisions

Indicator	Parameters	Weight	Inversion	Sector Neutral
Sales	Median - Value % Change - 3M - n+1	20%	No	No
EBIT	Median - Value % Change - 3M - n+1	30%	No	No
Earnings per Share	Median - Value % Change - 3M - n+1	30%	No	No
Free Cash Flow	Median - Value % Change - 3M - n+1	20%	No	No

The factor measures whether improving expectations are supported across several stages of the financial statements:

- Sales;
- Operating profit;
- Earnings attributable to shareholders;
- Cash generation.

This breadth helps distinguish a general improvement in expected fundamentals from a change limited to a single accounting line.

The factor uses the **n+1 fiscal year**. Current-year estimates can become progressively less forward-looking as the fiscal year advances and may be strongly influenced by the reporting calendar. Using n+1 provides a more consistent forecast horizon throughout the year.

A 3-month revision period provides a balance between responsiveness and stability. It is generally long enough to capture revisions following results, guidance or material company developments, while remaining more current than a 6-month measure.

Free Cash Flow revisions provide useful confirmation that improving earnings expectations are supported by expected cash generation. Coverage is broad across the MSCI World universe, but FCF estimates are generally unavailable for banks and many other financial companies. In these cases, the factor is calculated from the remaining available components.

This preserves coverage but should remain transparent: for financial companies, the effective construction will rely primarily on Sales, EBIT and EPS where those measures are available and economically meaningful.

Profitability Revisions -
Which companies are experiencing the strongest improvement in expected profitability?

SS - Profitability Revisions

Indicator	Parameters	Weight	Inversion	Sector Neutral
Gross Profit	Median - Margin Change - 3M - n+1	25%	No	Yes
EBITDA	Median - Margin Change - 3M - n+1	25%	No	Yes
EBIT	Median - Margin Change - 3M - n+1	35%	No	Yes
Normalized Net Income	Median - Margin Change - 3M - n+1	15%	No	Yes

Fundamental Revisions measure changes in expected financial values. Profitability Revisions instead focus on changes in expected margins.

This distinction is important. A company may benefit from rising sales and earnings forecasts without any improvement in operating efficiency. Conversely, a company with moderate sales growth may experience meaningful margin expansion and improving economics.

The factor combines revisions to gross, EBITDA, EBIT and net margins. EBIT receives the highest weight because it captures operating profitability after depreciation while remaining less affected than net income by financing, tax and exceptional items.

Net margin receives a lower weight because it may be influenced by factors outside core operations. Gross and EBITDA margins provide complementary evidence on pricing, input costs and operating leverage.

Sector neutralization is applied because structural margin levels and normal patterns of margin change vary substantially across industries. The factor therefore identifies companies whose expected profitability is improving relative to their sector peers.

Consensus Confidence -
Which companies are supported by broad sell-side coverage and relatively consistent analyst estimates?

SS - Consensus Confidence

Indicator	Parameters	Weight	Inversion	Sector Neutral
Active Brokers	Value	50%	No	No
Earnings per Share	Dispersion (σ/μ) - n+1	25%	Yes	No
EBIT	Dispersion (σ/μ) - n+1	25%	Yes	No

Consensus Confidence measures the depth and consistency of sell-side information. It does not indicate whether the consensus is positive or negative.

The factor rewards broad analyst coverage and relatively low dispersion in expected EPS and EBIT. A strong contribution from coverage can offset a weaker contribution from dispersion, or vice versa. Users should therefore examine both components when assessing the depth and consistency of the consensus.

Coverage and dispersion must be considered together. A low dispersion based on only two analysts does not carry the same informational weight as a similarly low dispersion based on twenty analysts. Active Brokers therefore complements, rather than replaces, the dispersion measures.

EPS and EBIT are used because they capture complementary views of expected shareholder earnings and underlying operating performance.

Target-price dispersion is not included in the factor. Analysts may use different valuation methods, forecast horizons and update schedules, so target-price dispersion can reflect methodological differences as well as uncertainty about fundamentals.

The factor is intended as a transparent practical measure rather than a formal statistical confidence measure. Its purpose is to support the assessment of consensus breadth and consistency while keeping both dimensions individually observable.

Coverage Momentum

Changes in the number of active brokers can also be monitored in Sismo over any selected period, either in absolute or percentage terms, out of *Sell-Side Coverage* indicators.

This information answers a separate question: **Is sell-side attention towards the company increasing or decreasing?**

Rising coverage may accompany growing institutional interest, improved liquidity or increased information flow. Declining coverage may indicate reduced market attention.

However, changes in coverage can also result from broker mergers, analyst departures, sector reorganizations or data-maintenance events. Coverage Momentum is therefore not included among the proposed downloadable factors but remains available as a useful screening and custom-factor indicator.

Absolute and percentage changes should also be interpreted differently. An increase from two to four brokers represents a 100% increase, while an increase from twenty to twenty-two brokers is only 10%, although both involve two additional brokers.

Interpreting Sell-Side Signals

The four factors should not be interpreted as interchangeable.

- Analyst Sentiment represents the sell-side's overall judgement.
- Fundamental Revisions identify the financial assumptions underlying that judgement.
- Profitability Revisions isolate changes in expected operating efficiency.
- Consensus Confidence indicates how much informational depth and agreement supports the estimates.

As with all Sismo factors, every underlying indicator remains individually accessible, allowing users to understand, audit and customize the construction.

Key Takeaway

Sell-side information is most useful when current opinion, changes in forecasts and the quality of the consensus are analyzed separately.

By distinguishing analyst sentiment, fundamental revisions, profitability revisions and consensus confidence, the Factor Library transforms a broad set of sell-side data into a small number of transparent downloadable factors, each answering a specific portfolio-management question.

9. Momentum Factors

Introduction

Momentum investing assumes that market trends often persist for a period before eventually reversing. Rather than attempting to forecast turning points, momentum investors seek to identify securities already exhibiting favorable price dynamics.

Price momentum is not a single phenomenon. Relative performance, trend persistence, temporary pullbacks and position within a long-term trading range each capture different aspects of market behavior.

The following templates translate these concepts into practical investment tools. Rather than proposing alternative definitions of momentum, they capture complementary dimensions of trend behavior, each addressing a distinct investment question. Combined with fundamental and valuation factors, they can support stock selection, portfolio monitoring and portfolio implementation.

The library covers four momentum concepts through five downloadable templates. **Momentum (Sector Neutral)** measures recent returns after adjusting for sector performance. **Trend Pullback** combines stronger one-year returns with weaker one-month returns to identify candidates for further investigation; it is available with and without sector neutralization. **Trend Strength** measures the gap between the 50-day and 200-day moving averages. **52-Week Relative Position** assesses the stock's position relative to its annual high and low.

Factor	Investment Question
M - Momentum SN	Which stocks have recently outperformed their sector peers?
M - Trend Pullback	Which stocks are candidates for further investigation following recent weakness?
M - Trend Strength	How strong is the prevailing trend?
M – 52W Relative Position	Where does the stock trade within its annual price range?

Design Principles

Momentum is intentionally decomposed into several complementary factors rather than summarized by a single score.

Relative performance, trend persistence, temporary pullbacks and long-term price position measure different aspects of market behavior.

Separating these dimensions preserves information that would otherwise be hidden within a single momentum indicator.

Customization

Users may freely modify look-back windows, constituent weights and sector-neutral settings to adapt the templates to different investment horizons and styles.

Momentum (Sector Neutral) -
Which stocks have recently outperformed their sector peers?

M - Momentum SN

Methodology

Indicator	Weight	Sector Neutral
Total Return 1 Month	33.4%	Yes
Total Return 3 Months	33.3%	Yes
Total Return 6 Months	33.3%	Yes

Interpretation

This factor measures recent price momentum after removing sector effects. It highlights companies outperforming their direct peers rather than sectors benefiting from favorable market conditions, making it well suited for stock selection within diversified portfolios.

Recent performance over multiple horizons balances responsiveness with persistence while avoiding excessive dependence on any single observation window. Using several horizons also reduces the influence of short-lived price movements that may dominate a single observation period.

Typical Applications

- Relative stock selection within sectors
- Portfolio monitoring
- Momentum-based screening
- Complement to fundamental analysis

Trend Pullback -
Which companies remain strong long-term performers despite a recent correction?

M - Trend Pullback

Methodology

Indicator	Weight	Inversion	Sector Neutral
Total Return 1 Year	60%	No	No
Total Return 1 Month	40%	Yes	No

M - Trend Pullback SN

Indicator	Weight	Inversion	Sector Neutral
Total Return 1 Year	60%	No	Yes
Total Return 1 Month	40%	Yes	Yes

Interpretation

This factor combines one-year total return with inverted one-month total return. Higher scores favor stronger long-term performance and weaker recent performance, providing a starting point for investigating potential pullbacks.

Because the components are combined linearly, a high score does not necessarily mean that the stock has both a positive one-year return and a negative one-month return. Users should inspect these returns separately to confirm the pattern. The factor also does not establish whether recent weakness is temporary or whether the price will recover.

The standard version retains sector effects. The sector-neutral version subtracts the relevant sector median from each return indicator before standardization, allowing users to assess long-term strength and recent weakness after adjusting for sector performance.

Typical Applications

- Buy-the-dip strategies
- Portfolio rebalancing
- Identifying temporary weakness in market leaders
- Timing additions to existing positions

Trend Strength -
How strong is the prevailing price trend?

M - Trend Strength

Methodology

Indicator	Weight
(50-Day Moving Average – 200-Day Moving Average) / 200-Day Moving Average	100%

Interpretation

The underlying indicator measures the percentage gap between the 50-day and 200-day moving averages. A positive raw value means that the 50-day average is above the 200-day average; a negative raw value means that it is below.

The standardized factor score describes the relative position of this gap. With Universe-Z, a high score indicates a relatively larger gap within the selected universe. With History-Z, it indicates a relatively larger gap compared with the company's own history. A negative factor score therefore does not necessarily mean that the 50-day average is below the 200-day average.

The indicator provides context on the relationship between medium-term and long-term price levels. It does not, by itself, establish the direction of the latest price movement or predict whether a trend will continue.

Typical Applications

- Trend confirmation
- Portfolio monitoring
- Identifying structurally strong price trends
- Complementing momentum signals

52-Week Relative Position -
Where does the stock trade within its annual price range?

M - 52W Relative Position

Methodology

Indicator	Weight
Distance to 52-Week High	50%
Distance to 52-Week Low	50%

Interpretation

This factor measures a stock's position within its 52-week trading range. Stocks receive the highest scores when they are simultaneously close to their annual highs and well above their annual lows, highlighting sustained price leadership rather than stocks simply trading within a narrow or directionless range.

Academic and practitioner research has reported that stocks trading close to their 52-week highs have often exhibited continued relative strength over subsequent periods.

Typical Applications

- Identifying market leaders
- Relative strength screening
- Portfolio monitoring
- Trend confirmation

Key Takeaway

Momentum cannot be reduced to a single indicator.

Relative performance, pullbacks, trend persistence and price leadership each capture different aspects of market behavior.

Used together, these factors provide a comprehensive perspective on price dynamics.

10. Risk Factors

Risk cannot be fully described by a single indicator. Some risks arise from broad market movements, while others originate from sector dynamics, investment styles, macroeconomic themes, commodities or company-specific events. Other risks only become apparent during periods of market stress.

The standard Sismo Risk factor provides a broad assessment by combining 6-month daily Volatility (40%), 2-year daily Beta (40%) and 2-year weekly inverted Skewness (20%) into a single score.

The following four templates examine complementary characteristics of historical returns: market sensitivity, volatility and market correlation, distribution shape, and drawdown.

They can be analyzed individually or alongside the Standard Risk factor. Together, they support the investigation of different risk characteristics without constituting a formal decomposition of portfolio risk.

Factor	Investment Question
R - Market Sensitivity	How sensitive is the stock to broad market movements?
R - Non-Market Risk	Which stocks score highly on a combination of historical volatility and low market correlation?
R - Tail Risk	Which stocks exhibit the greatest downside tail risk?
R - Drawdown	Which stocks have experienced the most severe historical peak-to-trough declines?

Market Sensitivity -
How sensitive is the stock to broad market movements?

R - Market Sensitivity

Methodology

Indicator	Period	Weight
Beta vs. Selected Index	2Y D	60%
Beta vs. Selected Index	5Y D	40%

Interpretation

Beta measures the sensitivity of a stock's returns to movements in the selected market index. Stocks with high beta typically outperform during strong market advances but generally experience larger losses during market downturns.

Beta combines two complementary dimensions of market behavior:

- **Correlation**, measuring how closely the stock moves with the market
- **Relative volatility**, measuring how much the stock fluctuates compared with the market

$$Beta = \frac{Cov(r_{stock}, r_{indice})}{{\sigma_{indice}}^2} = \frac{Cov(r_{stock}, r_{indice})}{\sigma_{indice} x \sigma_{stock}} x \frac{\sigma_{stock}}{\sigma_{indice}} = \rho_{stock,indice} x \frac{\sigma_{stock}}{\sigma_{indice}}$$

$$= Correlation\ x\ Relative\ Volatility$$

A stock therefore exhibits high beta because it is more volatile than the market, because it moves closely with the market, or both. Conversely, a highly volatile stock with weak market correlation may exhibit only moderate beta, while a less volatile stock that closely tracks the market may still have a relatively high beta. Examining Volatility, Correlation and Beta together provides complementary perspectives on market risk.

In addition, $\mathbf{R^2}$ indicates how much of a stock's return variability is explained by market movements. Two stocks with similar beta may therefore exhibit very different R^2 values, indicating that one is much more strongly driven by the market than the other. Beta remains the reference measure of overall market sensitivity because it naturally aggregates across portfolios, baskets and sectors.

Typical Applications

- Measuring market exposure
- Portfolio construction
- Risk budgeting
- Defensive and aggressive stock selection

Non-Market Risk -
Which stocks score highly on a combination of historical volatility and low market correlation?

R - Non-Market Risk

Methodology

Indicator	Period	Weight	Inversion
Volatility	2Y D	50%	No
Correlation with Selected Index	2Y D	50%	Yes

Interpretation

This factor combines historical volatility with inverted correlation to the selected market index. Higher volatility and lower signed correlation each contribute positively to the score.

The factor provides a screening measure for investigating volatile stocks whose returns move less positively, or negatively, with the selected index. A high score can be driven primarily by either component, so volatility and correlation should also be examined separately.

Low signed correlation is not the same as weak market dependence. A stock with strongly negative correlation can remain closely linked to market movements, but in the opposite direction. This factor therefore does not measure residual volatility or the proportion of return variability attributable to non-market drivers.

It can support the investigation of differentiated return profiles alongside Beta, R^2 and the underlying return history.

Typical Applications

- Identifying differentiated return profiles
- Diversification analysis
- Active stock selection
- Detecting portfolios driven by non-market themes

Tail Risk -
Which stocks exhibit the greatest downside tail risk?

R - Tail Risk

Methodology

Indicator	Period	Weight	Inversion
Excess Kurtosis	3Y W	50%	No
Skewness	3Y W	50%	Yes

Interpretation

This factor combines excess kurtosis with inverted skewness, calculated from weekly returns over three years.

Excess kurtosis measures the influence of extreme observations in either tail of the return distribution. Negative skewness indicates downside asymmetry; it does not necessarily mean that large negative returns occur more frequently than large positive returns.

Higher excess kurtosis and more negative skewness each contribute positively to the factor. Because these components are combined linearly, a high score can be driven mainly by one of them.

The factor provides a historical indicator for investigating extreme-return behavior and downside asymmetry. It does not estimate the probability or magnitude of future losses. Both statistics can be sensitive to individual extreme observations and should be interpreted alongside the return history, volatility and drawdown measures.

Typical Applications

- Identifying tail-risk exposure
- Monitoring asymmetric downside risk
- Portfolio stress analysis
- Complementing volatility measures

Historical Drawdown -
How severe have historical losses been?

R - Drawdown

Methodology

Indicator	Period	Weight	Inversion
Maximum Drawdown	5 Years	70%	Y
Maximum Drawdown	All Available History (max. 18Y)	30%	Y

Interpretation

Maximum Drawdown measures the largest peak-to-trough decline experienced by a stock over the selected historical period. Unlike volatility, which measures the dispersion of returns, Maximum Drawdown reflects the investor's realized historical experience rather than the statistical dispersion of returns. It should not be interpreted as a prediction of future losses.

Because it is path-dependent, Maximum Drawdown captures a different dimension of risk from volatility, beta or return distribution statistics. It provides a direct measure of the most severe historical loss that an investor would have experienced over the selected period.

The 5-year maximum drawdown reflects more recent downside experience, while the full-history maximum drawdown captures exposure to major historical market crises. Combining both horizons provides a balanced assessment of downside risk by incorporating both recent market conditions and longer-term historical behavior.

Typical Applications

- Assessing historical downside exposure
- Comparing recovery characteristics
- Portfolio monitoring
- Evaluating long-term capital preservation

Appendix A – Downloadable Factor Library

The Sismo Downloadable Factor Library currently contains **48** ready-to-use factor templates organized into **9** complementary investment families.

Each template can be downloaded, customized and adapted to the user's own investment process.

The Downloadable Factor Library is intended to evolve over time as new investment methodologies, data sources and analytical techniques become available.

Future editions of this handbook will introduce additional factor templates while preserving the principles of transparency, customization and methodological consistency that underpin the Sismo factor framework.

Factor Family	Factor	Primary Investment Question
Macro Sensitivity	ME - US 10Y Yield	Which companies have historically been most sensitive to **US long-term interest rates**?
	ME - US 10Y-2Y	Which companies have historically been most sensitive to **US yield curve changes**?
	ME - US Inflation 10YBE	Which companies have historically been most sensitive to **US inflation expectations**?
	ME - US Baa Spread	Which companies have historically been most sensitive to **US credit conditions**?
	ME - US Financial Stress	Which companies have historically been most sensitive to **US financial stress**?
	ME - VIX	Which companies have historically been most sensitive to **US equity market volatility**?
	ME - Brent Oil	Which companies have historically been most sensitive to **changes in Brent oil prices**?
	ME - EUR USD FX	Which companies have historically been most sensitive to **EUR/USD exchange-rate movements**?
Growth	GR - Sales Growth	Which companies are expected to deliver the **strongest sales growth**?
	GR - Operating Growth	Which companies are expected to deliver the **strongest operating profit growth**?
	GR - Cash Growth	Which companies are expected to deliver the **strongest operating cash-flow growth**?
	GR - Broad Growth	Which companies are expected to deliver the **strongest broad-based fundamental growth**?
	GR - Growth Expectations	Which companies have the strongest **forecast sales and operating profit growth**?
Growth Consistency	GC - Sales Growth	Which companies have delivered the **most consistent long-term sales growth**?
	GC - EBITDA Growth	Which companies have delivered the **most consistent long-term EBITDA growth**?
	GC - EBIT Growth	Which companies have delivered the **most consistent long-term operating profit growth**?
	GC - EPS Growth	Which companies have delivered the **most consistent long-term earnings per share growth**?
	GC - CFO Growth	Which companies have delivered the **most consistent long-term operating cash-flow growth**?
	GC - FCF Growth	Which companies have delivered the **most consistent long-term free cash-flow growth**?
	GC - Dividend Growth	Which companies have delivered the **most consistent long-term dividend growth**?
Quality	Q - Capital Efficiency	Which companies generate the **highest returns on invested and shareholders' capital**?
	Q - Profitability SN	Which companies **convert sales into profits more efficiently than their sector peers**?
	Q - Earnings Quality	To what extent **are reported earnings supported by cash generation**?
	Q - Financial Strength	Which companies exhibit the **strongest and most resilient balance sheets**?
	Q - Operational Efficiency SN	Which companies combine **high workforce productivity with strong operating profitability**?
	Q - Quality Momentum SN	Which companies are experiencing **improving profitability expectations according to sell-side analysts**?
Value	V - Relative Value	Which companies trade at the **most attractive valuation relative to current and expected fundamentals**?
	V - Relative Value SN	Which companies trade at the **most attractive valuation relative to their direct sector peers**?
	V - Historical Earnings Value	Which companies trade at the **most attractive valuation relative to their own historical earnings valuation**?
	V - Expected Return	Which companies offer the **highest long-term expected shareholder return based on their current valuation**?
GARP	GP - Standard GARP	Which companies **combine attractive EPS valuations with demonstrated and expected earnings growth**?
	GP - Sales GARP	Which companies **combine attractive sales valuations with demonstrated and expected sales growth**?
	GP - EBITDA GARP	Which companies **combine attractive EBITDA valuations with demonstrated and expected EBITDA growth**?
	GP - EBIT GARP	Which companies **combine attractive EBIT valuations with demonstrated and expected EBIT growth**?
	GP - Cash Flow GARP	Which companies **combine attractive cash-flow valuations with demonstrated and expected CF growth**?
Sell-Side Intelligence	SS - Analyst Sentiment	Which companies **receive positive analyst support, with recommendations and target prices improving**?
	SS - Fundamental Revisions	Which companies are experiencing the **broadest improvement in sell-side earnings forecasts**?
	SS - Profitability Revisions	Which companies are experiencing the **strongest improvement in expected profitability**?
	SS - Consensus Confidence	Which companies are supported by **broad sell-side coverage and relatively consistent analyst estimates**?
Momentum	M - Momentum SN	Which companies have recently **outperformed their sector peers**?
	M - Trend Pullback	Which companies remain **strong long-term performers despite a recent correction**?
	M - Trend Pullback SN	Which companies remain strong long-term performers relative to sector peers despite a recent correction?
	M - Trend Strength	**How strong is the prevailing price trend**?
	M - 52W Relative Position	**Where does the stock trade within its annual price range**?
Risk	R - Market Sensitivity	**How sensitive is the stock to broad market movements?**
	R - Non-Market Risk	Which stocks score highly on a **combination of historical volatility and low market correlation?**
	R - Tail Risk	Which stocks exhibit the **greatest downside tail risk**?
	R - Drawdown	**How severe have historical losses been**?
Total	**48 Downloadable Factors**	