FACTOR FOCUS

October 26, 2023

Sam Burns, CFA Chief Strategist

Low-volatility and cheap stocks are in favor globally

- Our global purified factor performance results highlight the ongoing interest in stocks with higher Earnings Yield and lower Volatility as risk appetite has weakened and bond yields have risen globally.

- In North America, large Size remains the strongest factor on our metrics, though low Volatility has been strongest most recently. Low Leverage (debt/assets) is the next strongest factor overall now, reflecting worries about rising rates.

- In Europe, high Earnings Yield remains strongest, while low Volatility has taken over from low Profit Margin as the other leading factor. Large Size and low Leverage tilts are still visible in Europe.

- Our purified global sector returns show Energy still in the top spot amid unrest in the Middle East. Technology and Communication Services are next strongest, while Real Estate, Utilities, and Consumer Staples lag.

- We update our North American and European stock screens that combine MAER with factor and sector tilts, along with the summary of our historical testing of those screens.

Low Volatility and high Earnings Yield are leading factors globally

Our Global pure factor returns (below) show low Volatility as the strongest factor now as risk appetite in equities has weakened further. High Earnings Yield remains solidly in favor, continuing its recent trend.

Equity prices have been under pressure recently, thanks in large part to surging bond yields, led by US Treasuries. Long-term bond yields have reached the highest levels since 2007, even as increased turmoil in the Middle East has raised fears about wider conflicts and oil supplies.

With the declines in stock prices has come reduced investor risk appetite within equities, and we see this clearly in the Volatility factor returns. The negative returns shown in the table below for Volatility indicate that lower Volatility stocks have been outperforming, after accounting for sector exposure and overlapping factor influences (like size or profitability, which often correlate with volatility).

Investors are also showing a continued preference for stocks with higher expected earnings yields, indicating that they are seeking out cheaper stocks within each sector as they worry about slowing economic growth. This impact is stronger in Europe than in North America (as shown on the following pages), but is part of a general pattern lately of seeking lower-risk companies.

We can also see this in the tilt toward stocks with lower balance sheet leverage (lower debt/assets ratios) and higher trailing return on equity (ROE). Larger-cap stocks are still preferred in North America and to a somewhat lesser degree in Europe, but this is less visible in the global results.

So there remain divergences in factor trends across regions, but there is a general tilt toward lower-risk and cheaper stocks now. Much will depend on the path of bond yields and oil prices in the near-term, as central banks like the Fed and ECB have indicated they are at or near the end of their tightening cycles now, and China is trying to stimulate its economy amid heavy debt and real-estate related headwinds.

Exhibit 1: Low Volatility now leads globally, while high Earnings Yield remains in favor along with low Leverage

Global Sector-Neutral Pure Factor Returns
24 Oct 2023

Factor	3mth Ann. Ret	6mth Ann. Ret	12mth Ret	Avg. Ann. Ret
Earnings Yield	25.2	14.2	15.3	**18.2**
ROE	8.4	9.9	3.9	**7.4**
Sales Growth	6.1	3.8	0.1	**3.3**
Size	1.4	2.5	5.0	**3.0**
Profit Margin	-3.1	-8.6	-4.8	**-5.5**
Leverage	-24.7	-8.6	-4.9	**-12.8**
Volatility	-48.9	-16.2	-5.8	**-23.7**

The "Avg. Ann. Ret." column reflects the average annualized daily return across the three lookback windows shown (3, 6, 12 month).

This allows us to include all three time periods in our factor ranking, reducing the reliance on a single time period. We also use this composite average return in our factor backtest studies.

Data above based on global MAER stock universe with minimum USD$500 million market cap, averaged over the available data period 2003 to present. Returns reflect hypothetical long-short returns for top vs. bottom deciles of stocks ranked by the indicated factor. The results are constructed on a sector-neutral basis with all other factors also neutralized. "Vol" = highest trailing two-year return volatility. "Sales Growth" = highest trailing five-year trendline sales growth rate. "Size" = largest equity market capitalization. "Leverage" = highest debt/assets ratio. "Profit Margin" = highest consensus NTM profit margin. "ROE" = highest trailing annual return on equity. "Earnings Yield" = highest consensus NTM earnings yield (est. EPS/ price). Results incorporate a two trading day reporting lag and do not incorporate any trading costs.

Source: Mill Street Research, Factset

North America: Lower-risk large-caps with solid balance sheets are in favor

North American pure factor returns show the very strong large-cap bias intact, alongside a preference for low Leverage and low Volatility.

The Size factor (favoring large-caps) has now remained the strongest North American factor for a third consecutive month (top chart, right). While this may reflect investor risk preferences (even after accounting for stock price volatility), it also reflects relative fundamentals. Our earnings estimate data continue to show smaller-caps having weaker earnings trends than large-caps in North America.

After Size, we see a clear tilt toward low Leverage stocks (low debt/assets ratios) and low Volatility stocks. As always, these results adjust for the inherent differences in leverage and volatility across sectors, so they do not reflect sector tilts in disguise.

The trend toward low Leverage stocks has accelerated lately after a period of mostly choppy behavior (second chart, right). This likely reflects the impact of surging bond yields, which have raised concerns about debt costs for highly levered companies.

The Volatility factor has been negative (favoring low Volatility) recently, but on a longer-term basis remains broadly range-bound (third chart, right).

The Earnings Yield factor has been volatile in recent years, but in the last few months has been showing more steadily positive returns, favoring cheaper (high earnings yield or low P/E) stocks over more expensive stocks on a sector-neutral basis.

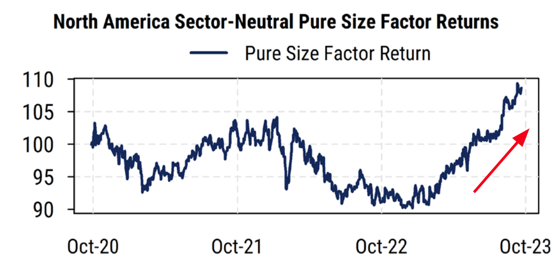
Overall, investors seem worried about rates and the risk to companies and stock prices, so they have favored larger, less volatile companies with low debt and cheaper valuation multiples.

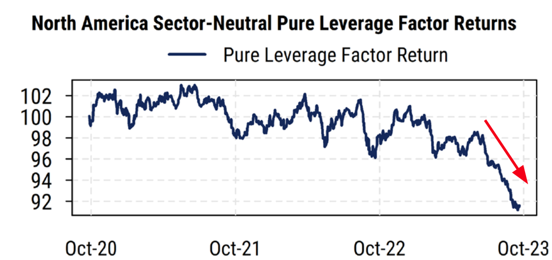
Our process for favoring the two best performing factors leads us to tilt our North American stock screen (p. 6) toward **large Size and low Leverage** stocks, along with the sector trends (p. 5) and MAER rankings.

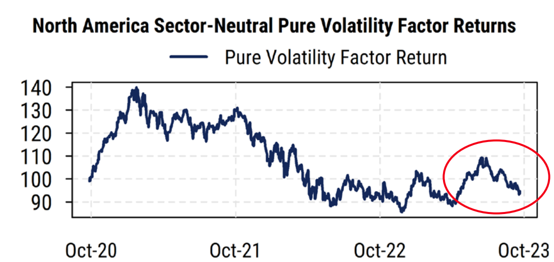
Exhibit 2: Large Size remains the clear leader in North America, along with low Leverage and low Volatility

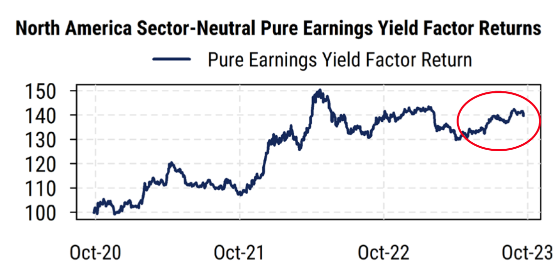
North America Sector-Neutral Pure Factor Returns
24 Oct 2023

Factor	3mth Ann. Ret	6mth Ann. Ret	12mth Ret	Avg. Ann. Ret
Size	29.7	25.9	16.6	**24.0**
Earnings Yield	17.1	10.9	2.3	**10.1**
ROE	6.0	9.0	5.6	**6.9**
Sales Growth	6.6	7.5	3.6	**5.9**
Profit Margin	-7.5	-3.5	1.3	**-3.3**
Volatility	-47.5	5.7	2.2	**-13.2**
Leverage	-26.5	-13.1	-5.2	**-14.9**









Source: Mill Street Research, Bloomberg, Factset

Europe: High Earnings Yields and low Volatility in favor now

High Earnings Yield is again the strongest factor trend in Europe, but low Volatility has shown the biggest move most recently.

Last month we noted that while a large-cap (Size) tilt remains clearly in place in Europe as it has for many months now, high Earnings Yield (value) has the strongest intermediate-term performance trend on our metrics again this month.

The bigger move just recently, though, has been in the low Volatility factor. This is a trend visible globally as investors have become more risk averse amid surging long-term bond yields and growing unrest in the Middle East. The last couple of months have brought the returns to low Volatility stocks almost equal to those of high Earnings Yield on our 3/6/12-month composite return screen (right).

And as we have seen in the North American data, there is also a renewed tilt toward low Leverage companies, i.e., those with lower debt/assets ratios within each sector. This is consistent with worries about rising bond yields and slowing global growth on highly levered companies, particularly given the weaker economic backdrop in Europe.

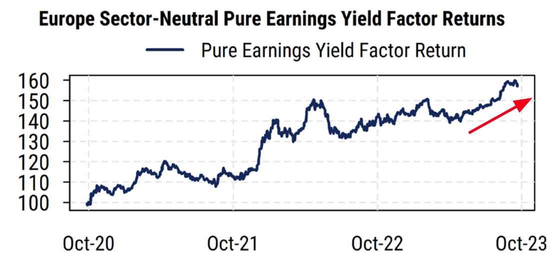
So while the recent pullback in equity prices and risk appetite may be reaching "oversold" conditions in the short-term, the intermediate-term factor trends show an interest in stocks that have less risk in terms of price (volatility), company size, balance sheet leverage, and valuation.

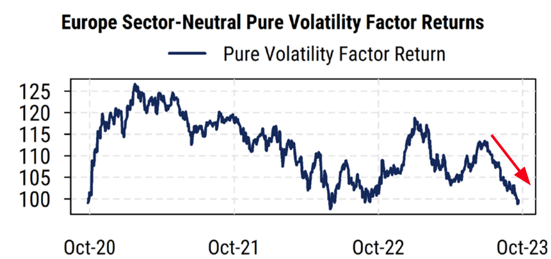
Our European stock screen (page 7) now favors high Earnings Yield and low Volatility as the preferred factors along with the MAER ranks and sector tilts.

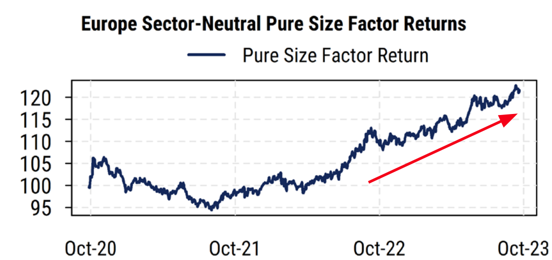
Exhibit 3: Risk aversion is clearly visible in Europe, led by a tilt toward cheaper, lower volatility, low leverage large-caps

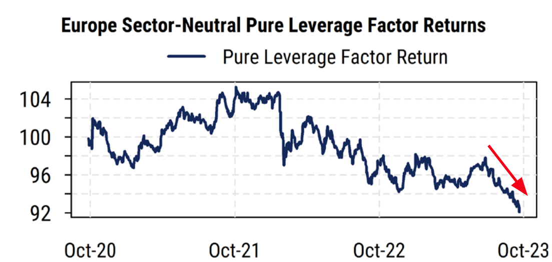
Europe Sector-Neutral Pure Factor Returns
24 Oct 2023

Factor	3mth Ann. Ret	6mth Ann. Ret	12mth Ret	Avg. Ann. Ret
Earnings Yield	30.8	20.9	13.8	**21.8**
Size	11.0	10.9	8.5	**10.2**
ROE	11.5	2.5	4.5	**6.2**
Sales Growth	-8.3	-2.4	-4.0	**-4.9**
Profit Margin	-7.5	-7.4	-4.2	**-6.4**
Leverage	-16.8	-6.2	-3.5	**-8.8**
Volatility	-45.4	-13.7	-2.0	**-20.4**









Source: Mill Street Research, Factset, Bloomberg

Energy keeps top spot, followed by Tech and Communications Services amid widespread recent declines

As discussed in our Factor Studies we can use **purified global sector returns as an additional "factor" within a factor-based stock selection model.**

Sector returns, like factor returns, can be "purified" by neutralizing the effects of factor tilts within sectors[1] (i.e., the fact that Financials or Utilities are almost always cheaper than other sectors, Tech is typically higher growth, Energy more volatile, etc.). Purified sector returns tend to be less volatile and more persistent (i.e., more predictable), than unadjusted ("basic") sector returns.

Here we update the **current global pure sector performance table** (top) and highlight the trends in global sector performance.

Energy (blue line in chart at right) has continued outperforming amid higher (but volatile) oil prices driven by Middle East turmoil.

Technology (red line) has resumed outperforming despite the general pullback in equities recently, keeping its position near the top of the table. Despite what some commentators say, Tech relative returns have not historically been sensitive to interest rates.

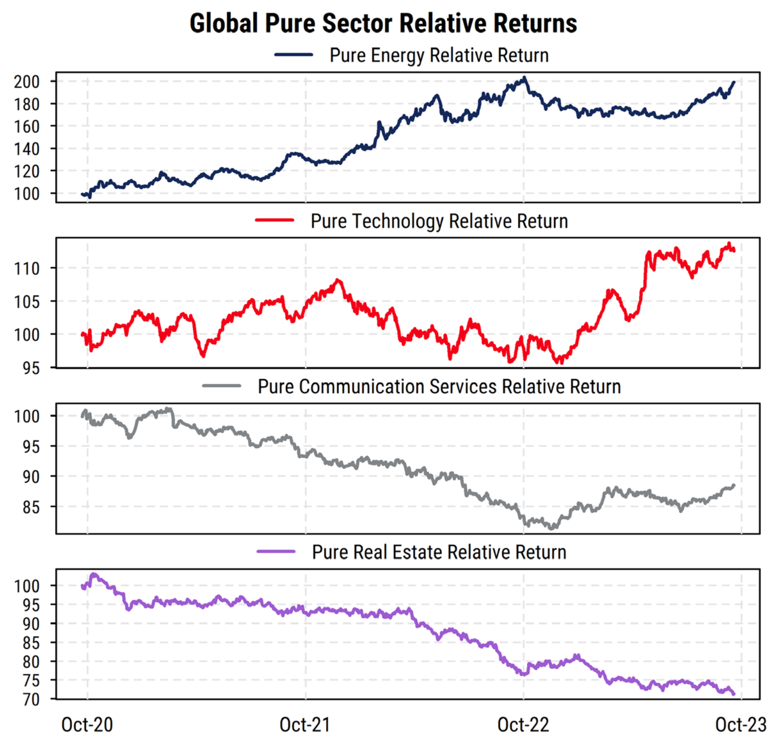
Communication Services (grey line) has been showing improved relative performance recently after lagging its Technology cousin in recent months. It has now moved ahead of Consumer Discretionary in our table.

Real Estate (purple line) has returned to the bottom of the table as surging bond yields have created further headwinds for the rate-sensitive sector. It has been under pressure from post-COVID demand issues for years now, and now has high rates to deal with.

Exhibit 4: Energy has continued to outperform on higher oil prices amid Mideast unrest, still followed by Tech. Communication Services has improved. Defensives still lag, with Real Estate back at the bottom as rates surge.

Global Pure Sector Returns
24 Oct 2023

Sector	3mth Ann. Ret	6mth Ann. Ret	12mth Ret	Avg. Ann. Ret
Energy	26.3	19.1	8.7	**18.0**
Tech	-29.9	11.2	24.8	**2.0**
CommSvcs	-17.3	-2.1	13.4	**-2.0**
ConsDisc	-33.0	-4.0	13.4	**-7.9**
Financials	-36.9	-3.0	4.8	**-11.7**
Industrials	-39.5	-7.1	10.1	**-12.2**
Materials	-33.2	-16.5	3.2	**-15.5**
Healthcare	-36.3	-17.8	1.2	**-17.6**
ConsStpls	-38.6	-20.5	0.9	**-19.4**
Utilities	-42.6	-19.0	1.6	**-20.0**
RealEstate	-47.3	-15.5	-0.7	**-21.2**



[1] Note that we calculate sector returns like the factor returns, using our broad global MAER universe to estimate daily returns to GICS sectors after accounting for each stock's factor exposures, using square-root of market cap weights.

Source: Mill Street Research, Factset, Bloomberg

Stock screens: MAER + risk factor + sector overlay for North America

Here we show examples of how we can use the results of our factor analysis to **combine our factor work with our long-standing MAER ranking model**[1]. As the factor trends change over time, we adjust the screens to incorporate our preferred risk factors.

Below is a screen using our North American universe of just over 2000 stocks (excluding ADRs and stocks below $500 million market cap). To construct it, we first rank all stocks using our cornerstone six-factor MAER model on a sector-neutral basis (i.e., ranking stocks using MAER within their own GICS sector).

Our process ***includes sector tilts*** as described in our Factor Study, and so we then rank stocks separately based on a **combination of four elements**: the two preferred factors for this month (30% weight each), a sector ranking (that assigns a percentile score to all stocks in a GICS sector based on that sector's composite performance ranking, with 20% weight), and a "neutral" factor that tilts toward stocks that are closest to neutral (average) on all the other (non-preferred) factors (with 20% weight). The final step is to combine the MAER ranking and factor ranking, with 80% weight on MAER and 20% on the factor ranking, to produce a final ranking.

The two preferred factors are **Size (larger preferred) and Leverage (lower preferred)**. The sector ranking is shown on page 5. ***The list below shows the top 20 ranked stocks based on the combined MAER + Factor/Sector ranking.*** Note that this is not meant as a complete portfolio, but an idea list to show how our tools can be used together.

Exhibit 5: Screen of North American stocks that score best on a combination of MAER and our preferred factors and sectors this month.

MAER Top Ranked North American Stocks in Leading Factors and Sectors
Large Size and Low Leverage
25 Oct 2023

Ticker	Name	Sector	Mkt Cap (USD mil)
GOOGL	Alphabet	CommSvcs	1,541,254
NVDA	NVIDIA	Tech	1,074,425
META	Meta Platforms	CommSvcs	667,241
JPM	JPMorgan Chase	Financials	421,440
CMCSA	Comcast	CommSvcs	182,490
GE	General Electric Company	Industrials	120,320
ETN	Eaton Plc	Industrials	85,099
GWO-CA	Great-West Lifeco	Financials	26,780
HUBB	Hubbell Incorporated	Industrials	16,808
OC	Owens Corning	Industrials	12,254
TOL	Toll Brothers	ConsDisc	7,949
CIVI	Civitas Resources	Energy	7,582
PBF	PBF Energy	Energy	6,616
BMI	Badger Meter	Tech	4,218
KBH	KB Home	ConsDisc	3,731
WHD	Cactus	Energy	3,244
LBRT	Liberty Energy	Energy	3,156
CORT	Corcept Therapeutics Incorporated.	Healthcare	2,794
ROCK	Gibraltar Industries	Industrials	2,054
SPNS	Sapiens Intl NV	Tech	1,568

[1] *Additional information about the MAER stock selection model and additional stock screens are available on request*

Source: Mill Street Research, Factset, Bloomberg

Stock screens: MAER + risk factor + sector overlay for Europe

Replicating the process described on the previous page, below is a screen using our broad European universe of about 1000 stocks.

The two preferred factors for Europe this month are **Volatility (lower preferred) and Earnings Yield (higher preferred)**. The sector ranking is shown on page 5.

The list below shows the top 20 ranked stocks based on the combined MAER + Factor/Sector ranking.

Note that this is not meant as a complete portfolio, but an idea list to show how our tools can be used together.

Additional screens are always available on request.

Exhibit 6: Screen of European stocks that score best on a combination of MAER and our preferred factors and sectors this month.

MAER Top Ranked European Stocks in Leading Factors and Sectors
Low Volatility and High Earnings Yield
25 Oct 2023

Ticker	Name	Sector	Mkt Cap (USD mil)
STLAM-IT	Stellantis N.V.	ConsDisc	60,622
VOLV.B-SE	Volvo AB	Industrials	42,299
CRH-GB	CRH public limited company	Materials	39,333
SGO-FR	Compagnie de Saint-Gobain SA	Industrials	30,954
TSCO-GB	Tesco	ConsStpls	22,940
ML-FR	Cie Generale des Etablissements Mic	ConsDisc	21,979
REP-ES	Repsol SA	Energy	21,058
FRE-DE	Fresenius SE KGaA	Healthcare	17,568
HEI-DE	Heidelberg Materials AG	Materials	14,493
MB-IT	Mediobanca - Banca di Credito Finan	Financials	11,266
NICE-IL	NICE	Tech	10,731
WTB-GB	Whitbread	ConsDisc	8,180
HIK-GB	Hikma Pharmaceuticals	Healthcare	5,633
BZU-IT	Buzzi Spa	Materials	5,286
BPE-IT	BPER Banca S.p.A.	Financials	4,343
SXS-GB	Spectris	Tech	4,261
UNI-IT	Unipol Gruppo S.p.A.	Financials	3,891
SUN-CH	Sulzer AG	Industrials	3,283
IDR-ES	Indra Sistemas S.A.	Tech	2,562
BWLPG-NO	BW LPG	Energy	1,772

Source: Mill Street Research, Factset, Bloomberg

Factor Strategy analysis

At right we summarize the results of our hypothetical backtested strategy results that generally reflect the process used in the screens on the previous pages.

Note that each month we select two factors for each region to use in the screens, which are typically the ones with the strongest returns (as is done in the tests shown at right) but there may be occasional differences.

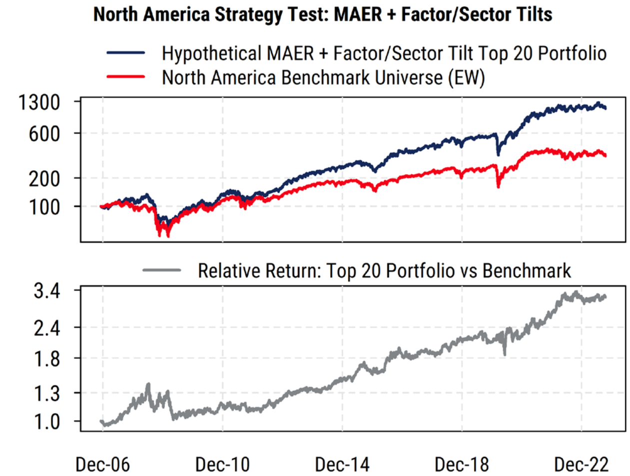
For each region, **we simulate a strategy of selecting the 20 highest ranked stocks** based on the combination of MAER ranking, factor ranking (based on the two best performing factors over the last 3-12 months), and global sector ranking (stocks assigned scores based on the relative performance rank of the sector they belong to).

As is done in the monthly screens in this report, the **MAER ranking gets 80% of the weight in the overall result, while the Factor+Sector ranking gets 20%**. The factor ranking includes a process for neutralizing (or at least reducing) the influence of the other factors that were not selected that month, as described in our Factor Study reports.

The results at right show that **the Top 20 MAER + Factor/Sector portfolios have outperformed the benchmark universe in North America and Europe over the period since 2006 by a wide margin and with reasonable consistency**. This includes the most recent few years when other factor models have struggled (including MAER itself at times).

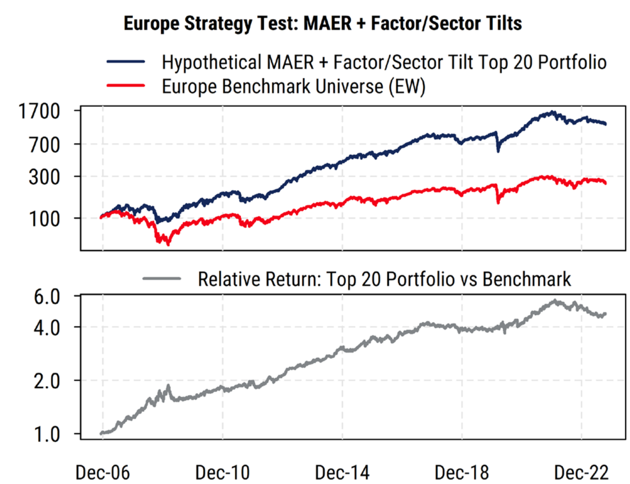
As always, these are meant only as representative and hypothetical tests and *do not reflect any actual investments or portfolios*. They do not include transactions costs, taxes, or other important considerations such as liquidity. More information is available on request, as is the estimated performance of the stock screens as published in these reports.

Exhibit 6: North America and Europe hypothetical strategy results



North America MAER + FactorSector Strategy Summary
Dec 2006 - Oct 2023

Model	Ann. Ret.(%)	Ann. Vol. (%)	Ann. Ret/Vol.
Top 20 Strategy	15.1	24.1	0.63
Benchmark	7.5	22.8	0.33



Europe MAER + FactorSector Strategy Summary
Dec 2006 - Oct 2023

Model	Ann. Ret.(%)	Ann. Vol. (%)	Ann. Ret/Vol.
Top 20 Strategy	15.7	20.4	0.77
Benchmark	5.5	19.4	0.28

Source: Mill Street Research, Factset, Bloomberg

Important Disclosures and Certifications

The research provided in this report is based on strategic analysis provided by Mill Street Research LLC ("Mill Street"), an investment adviser registered with the Massachusetts Securities Division. Strategic analysis is based on fundamental, macroeconomic and quantitative data to provide investment analysis with respect to the securities markets. The report is not intended to provide personal investment advice. This report does not constitute an offer or solicitation to buy or sell any securities discussed herein in any jurisdiction where such offer or solicitation would be prohibited. The securities mentioned in this report may not be suitable for all types of investors. This report does not take into account the investment objectives, financial situation or specific needs of any particular client of Mill Street. Recipients should consider this report as only a single factor in making an investment decision and should not rely solely on investment recommendations contained herein, if any, as a substitution for the exercise of independent judgment of the merits and risks of investments. Mill Street has no actual, implied or apparent authority to act on behalf of any issuer mentioned in the report. Employees of Mill Street may have positions in securities mentioned in this report, disclosures are available on request. Before making an investment decision with respect to any security recommended in this report, the recipient should consider whether such recommendation is appropriate given the recipient's particular investment needs, objectives and financial circumstances. We recommend that investors independently evaluate particular investments and strategies, and encourage investors to seek the advice of a financial advisor. Mill Street will not treat non-client recipients as its clients solely by virtue of their receiving this report. Past performance is not a guarantee of future results, and no representation or warranty, express or implied, is made regarding future performance of any security mentioned in this report. The price of the securities mentioned in this report and the income they produce may fluctuate and/or be adversely affected by exchange rates, and investors may realize losses on investments in such securities, including the loss of investment principal. Mill Street accepts no liability for any loss arising from the use of information contained in this report.

All information, opinions and statistical data contained in this report were obtained or derived from public sources believed to be reliable, but Mill Street does not represent that any such information, opinion or statistical data is accurate or complete (with the exception of information contained in the Important Disclosures and Certifications section of this report), and they should not be relied upon as such. All estimates, opinions and recommendations expressed herein constitute judgments as of the date of this report and are subject to change without notice. Nothing in this report constitutes legal, accounting or tax advice. Since the levels and bases of taxation can change, any reference in this report to the impact of taxation should not be construed as offering tax advice on the tax consequences of investments. As with any investment having potential tax implications, clients should consult with their own independent tax adviser. This report may provide addresses of, or contain hyperlinks to, Internet web sites. Mill Street has not reviewed the linked Internet web site of any third party and takes no responsibility for the contents thereof. Each such address or hyperlink is provided solely for the recipient's convenience and information, and the content of linked third party web sites is not in any way incorporated into this document. Recipients who choose to access such third-party web sites or follow such hyperlinks do so at their own risk. The market indices mentioned in this report are unmanaged, hypothetical portfolios of securities that are often used as a benchmark in evaluating the relative performance of a particular investment, as constructed by the index providers. Index return figures do not reflect any fees, expenses or taxes. An index should only be compared with a mandate that has a similar investment objective. An index is not available for direct investment, and does not reflect any of the costs associated with buying and selling individual securities or management fees. This report or any portion hereof may not be reprinted, sold, or redistributed without the prior written consent of Mill Street.