

What's Up with Japan?

While momentum is widely acknowledged as a robust and persistent driver of excess returns in global equity markets, Japan presents an intriguing case that may diverge from this trend. To explore this phenomenon, our analysis encompasses 20 distinct datasets examining long-only momentum and value returns in both large and small cap Japanese equities. Our findings reveal that while value outperforms market returns across market caps, momentum performs strongly under certain scenarios. In fact, a top decile momentum strategy demonstrates excess returns and outperforms a top decile value strategy specifically in Japanese large cap. Moreover, our analysis suggests that enhancing Japanese small cap momentum returns may be achievable through a value-sensitive overlay. Lastly, our study underscores the significance of portfolio construction as a critical factor to consider when implementing momentum strategies in the Japanese market.



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Momentum in Japan

Momentum is a well-established source of excess returns in global equity markets (Asness (1994), Jegadeesh and Titman (1993)). However, there has been a significant amount of research questioning the momentum premium in Japanese equities. Asness, Moskowitz, and Pedersen (2013), found that “momentum premia are also positive in every market, especially in Europe, but are statistically insignificant in Japan.” Further, several other studies find no significant momentum premium in Japan (Fama and French (2012), Griffin et al. (2003), Hanauer (2014)). It is worth pointing out that these studies use the factor return for momentum (WML or Winners Minus Losers), whereas our analysis computes long-only momentum returns. Still, no matter how it is measured, momentum returns in Japan appear lower (or insignificant) than in any other market.

There are many reasons given for momentum’s perceived failure in Japan. Chui et al. (2010) put the blame on the country’s low individualism, while others argue it is merely a chance result (Fama and French (2012)). Further, Asness (2011) suggests that momentum should be researched not only on its own, but as part of a system with value given their negative correlations. Thus, momentum has a purpose as a suitable diversifier to a value approach in Japan, increasing risk-adjusted returns. We support this claim looking at correlations of popular factors in Appendix Table 6, which finds momentum and value are negatively correlated across all region/country groupings tested.

However, in a departure from previous research, Hanauer (2014) argues that market dynamics explain momentum’s underperformance in Japan. Namely, he finds that “momentum returns are significantly higher when the market stays in the same condition than when it transitions to the other state.” And that “a potential explanation for this contrast might be the result of the option-like payoff of the loser portfolio after market declines.” Thus, Hanauer argues that the market dynamics in Japan (continued cycling of shorter-term rallies to sell-offs) can explain momentum’s failures in Japan. He further suggests that “momentum strategies might be more profitable in the future if the overall market performance is more stable than in the past.”

Therefore, our study can contribute to the momentum debate in Japan in at least three ways: 1) a computation utilizing long-only momentum and value returns in Japan in both small and large cap equities, 2) a computation utilizing a more current data set, under either an equal-weighted or market cap-weighted portfolio construction, and 3) the ability to construct more granular momentum and value portfolios than is typically analyzed using Fama-French or index constituent data.

Data and Methods

In our analysis, we employ FactSet exchange data to identify constituents of our universe covering the period from February 1996 through February 2024¹. We calculate 20 sets of long-only returns, with 10 being market cap-weighted and the other 10 equal-weighted. Within this framework, Large Cap refers to the top 90% of total market capitalization, while Small Cap denotes the subsequent 10%, subject to rebalancing at the end of each June. Momentum is defined as the prior 12-month return without the most recent month, with rebalancing occurring monthly, while value is formed at the end of each June and is determined by the book-to-market ratio. Specifically, we compute returns for portfolios focusing on the top decile of both value and momentum, as well as a top 30% (the top 3 deciles) momentum portfolio. Additionally, we calculate *Momentum + Value* portfolio returns, which involve selecting the top 30% momentum portfolio, sorting it based on value (with preference given to high book-to-market ratios), and then retaining only the top 30% of value scores within the momentum portfolio to formulate the strategy.

Momentum in Japanese Large Cap

Our analysis reveals significant disparities in the performance of momentum within Japanese large cap equities, contingent upon the method of portfolio construction. In portfolios constructed based on market capitalization-weighting (Table 1), the top decile momentum strategy emerged as a standout performer, boasting substantial outperformance relative to the market (by 416 bps. annualized). It delivered the highest returns, Sharpe ratio, and *t-statistic* among all portfolios tested. Similarly, the top decile value strategy demonstrated superiority over the market, albeit with a lesser degree of outperformance compared to momentum. Further, the introduction of a value overlay (Large Cap Momentum + Value) failed to enhance performance beyond that of the top decile momentum strategy (but it did improve the top 30% momentum portfolio).

Table 1: Japanese Large Cap, Market Cap-Weighted
February 1996 – February 2024

	Large Cap Momentum Top 10%	Large Cap Value Top 10%	Large Cap Momentum Top 30%	Large Cap Momentum + Value	Large Cap Japan Market
Return (Annualized)	6.40%	5.18%	3.23%	4.45%	2.24%
Trailing 1-Year Return (Annualized)	30.16%	27.26%	30.08%	24.58%	24.54%
Trailing 3-Year Return (Annualized)	1.04%	14.61%	2.70%	11.90%	1.60%
Trailing 5-Year Return (Annualized)	9.11%	7.62%	7.19%	10.19%	6.05%
Volatility (Annualized)	24.25%	20.20%	18.33%	19.36%	16.89%
Tracking Error (to Market)	16.25%	11.18%	8.58%	11.06%	--
Beta (to Market)	1.07	1.00	0.96	0.94	--
Sharpe Ratio	0.18	0.15	0.06	0.12	0.01
Information Ratio (to Market)	0.26	0.26	0.11	0.20	--
T-Stat (Excess Returns)	1.74	1.62	0.74	1.22	--
Batting Average (Excess Returns)	52%	49%	51%	55%	--

¹Using Factset's universe of stocks to define the full Japanese equity market allows for more granularity in analyzing portfolios than if we used Fama-French data and is more inclusive than simply using index constituents. The time period covered is representative of our access to the full universe of Japanese equities. Over the full sample period the large cap universe has a median number of names of 700, with the small cap universe median number of names at 2266.

However, a different picture emerged when portfolios were constructed with equal weighting (Table 2). Here, the top decile momentum strategy's outperformance lost statistical significance, contrasting with the resilience of the top decile value strategy, which retained its effectiveness. Notably, incorporating a value overlay (Large Cap Momentum + Value (EW)) substantially improved the outcomes of a top 30% momentum strategy (adding 262 bps. annualized while increasing the Information Ratio by 0.30), while outperforming the top decile value strategy. These findings underscore the nuanced dynamics of momentum and highlight the importance of considering portfolio construction methods in investment decision-making within the Japanese large cap equity space.

Table 2: Japanese Large Cap, Equal-Weighted
February 1996 – February 2024

	Large Cap Momentum Top 10% (EW)	Large Cap Value Top 10% (EW)	Large Cap Momentum Top 30% (EW)	Large Cap Momentum + Value (EW)	Large Cap Japan Market (EW)
Return (Annualized)	3.63%	5.23%	2.75%	5.37%	2.38%
Trailing 1-Year Return (Annualized)	18.89%	31.20%	19.97%	24.23%	13.07%
Trailing 3-Year Return (Annualized)	-0.16%	11.74%	0.60%	10.38%	-1.34%
Trailing 5-Year Return (Annualized)	4.91%	5.86%	3.37%	7.78%	2.86%
Volatility (Annualized)	21.18%	19.41%	17.37%	17.58%	17.03%
Tracking Error (to Market)	13.49%	8.46%	8.33%	8.64%	--
Beta (to Market)	0.96	1.03	0.90	0.90	1.00
Sharpe Ratio	0.07	0.16	0.04	0.18	0.02
Information Ratio (to Market)	0.09	0.34	0.04	0.35	--
T-Stat (Excess Returns)	0.78	1.98	0.27	1.82	--
Batting Average (Excess Returns)	53%	52%	52%	53%	--

Momentum in Japanese Small Cap

In Japanese small caps, the landscape differs significantly. In market cap-weighted portfolios (Table 3), the top decile value strategy stands out as the strongest performer, boasting an annualized return of 6.15% (495 basis points of excess return), along with the highest Sharpe and Information ratios and a notable *t-stat*. Conversely, the top decile market cap-weighted momentum portfolio slightly outperforms the market return by 107 basis points but exhibits a low *t-stat* (1.0) and the weakest Sharpe and Information ratios among the portfolios tested. However, a more inclusive view of momentum may be advantageous, as evidenced by the top 30% momentum portfolio outperforming the top decile portfolio. Additionally, the value overlay (Small Cap Momentum + Value) enhances the outcomes of the top 30% momentum portfolio.

Table 3: Japanese Small Cap, Market Cap-Weighted
February 1996 – February 2024

	Small Cap Momentum Top 10%	Small Cap Value Top 10%	Small Cap Momentum Top 30%	Small Cap Momentum + Value	Small Cap Japan Market
Return (Annualized)	2.27%	6.15%	3.91%	4.63%	1.20%
Trailing 1-Year Return (Annualized)	22.97%	29.47%	20.71%	31.60%	12.27%
Trailing 3-Year Return (Annualized)	-1.67%	11.10%	1.28%	11.27%	-1.05%
Trailing 5-Year Return (Annualized)	1.49%	6.00%	2.94%	7.03%	2.74%
Volatility (Annualized)	24.19%	20.71%	19.37%	19.15%	18.66%
Tracking Error (to Market)	11.62%	9.13%	6.02%	7.99%	--
Beta (to Market)	1.15	1.00	0.99	0.94	1.00
Sharpe Ratio	0.01	0.19	0.09	0.13	-0.05
Information Ratio (to Market)	0.09	0.54	0.45	0.43	--
T-Stat (Excess Returns)	1.00	3.00	2.43	2.27	--
Batting Average (Excess Returns)	52%	54%	56%	52%	--

Notably, equal-weighted portfolio construction improves all portfolio returns in Japanese small caps (Table 4), with the top decile value portfolio leading the pack with an annualized return of 9.12%—nearly 50% better than market cap-weighted methodologies. Similar to market cap-weighted portfolios, momentum benefits from the more inclusive top 30% momentum portfolio and a value overlay. Remarkably, the Small Cap Momentum + Value equally-weighted portfolio stands out, boasting a 7.21% annualized return (439 basis points above the market, and 224 basis points above the top 30% momentum portfolio), the strongest performance over the last five-years relative to all of our other small cap portfolios, a *t-stat* of 2.44, an information ratio of 0.48, and a Sharpe ratio of 0.26—marked improvements over the top decile or top 30% equally-weighted momentum portfolios individually.

Table 4: Japanese Small Cap, Equal-Weighted
February 1996 – February 2024

	Small Cap Momentum Top 10% (EW)	Small Cap Value Top 10% (EW)	Small Cap Momentum Top 30% (EW)	Small Cap Momentum + Value (EW)	Small Cap Japan Market (EW)
Return (Annualized)	3.11%	9.12%	4.97%	7.21%	2.82%
Trailing 1-Year Return (Annualized)	16.89%	27.21%	18.39%	34.58%	10.13%
Trailing 3-Year Return (Annualized)	0.73%	8.14%	2.41%	12.89%	-1.51%
Trailing 5-Year Return (Annualized)	2.44%	7.06%	3.98%	9.65%	3.13%
Volatility (Annualized)	25.66%	21.06%	19.90%	19.79%	19.47%
Tracking Error (to Market)	13.56%	8.96%	7.32%	9.19%	--
Beta (to Market)	1.13	0.98	0.95	0.91	1.00
Sharpe Ratio	0.04	0.33	0.14	0.26	0.04
Information Ratio (to Market)	0.02	0.70	0.29	0.48	--
T-Stat (Excess Returns)	0.64	3.69	1.56	2.44	--
Batting Average (Excess Returns)	52%	58%	57%	55%	--

Conclusion

Our research touched upon some of the nuances of momentum and value strategies in Japanese equity markets. In totality, our findings underscore Japan's unique position in global equity markets, where value's efficacy appears notably strong compared to momentum, irrespective of market cap or portfolio construction methodologies. However, through a comprehensive analysis spanning large and small cap equities, a top decile momentum strategy showcases promising excess returns, particularly in Japanese large caps. To wit, long-only momentum may be more efficacious than previous research using WML (winners minus losers) has suggested.

Notwithstanding, our study suggests avenues for enhancing momentum returns in Japanese small caps through value-sensitive overlays. Notably, the significance of portfolio construction methods emerges as a crucial consideration, with equal-weighted portfolios demonstrating marked improvements over market cap-weighted approaches in Japanese small caps. Our research contributes to the ongoing debate surrounding momentum strategies in Japan, shedding light on the intricacies of market dynamics and portfolio construction methodologies. Still, we are leery of the efficacy of projecting the lessons of the past analysis in Japanese equities to the future, especially if the market stabilizes or begins to positively trend over the long-term. In that scenario, we may begin to see momentum reassert its dominance - proving the exception is indeed still the rule.

Appendix: Momentum Relative to the Fama-French Factors

Another test for momentum portfolios in Japan is to compare how much of their performance can be explained by the Fama-French three and five factor models. Using a factor model to test a factor's performance has become an industry standard in empirical finance (Asness, 2011). Typically, this is done through a regression of the factor returns onto a factor model to examine the statistical and economic significance of the regression intercept (i.e. the alpha from the factor unexplained by the factor model being used).

We report in Table 5 the regression intercepts across differing geographic regions along with their associated t-statistics and adjusted R² statistics. A higher annualized value for the intercepts indicates that the momentum factor is farther from the span of a Fama-French (FF) factor model investor. In each regression we regress the WML (winners minus losers) factor onto the listed FF model for the associated all-cap country grouping factors (see Fama and French (2015) and (2017) for model details). The data coincides with the FactSet data sample period of February 1996 – February 2024 and is taken from the Fama-French data library². The country groupings used are Japan, North America, Europe, Asia Pacific ex-Japan, and the Emerging Markets.

This analysis shows that the Fama-French models do not capture all of momentum's profits as evidenced by the statistically significant annualized intercept returns in every country grouping. While the Japan intercepts do exhibit less significance than the other country groupings (indicating Japan is a structurally different market), we do find the Japan FF3 intercept is significant, indicating that momentum does exhibit alpha in Japan net of size and value.

Table 5: Geographic Regression Intercepts
February 1996 – February 2024

Country/Region	Model Used	Intercept (Annualized)	T-stat	Adjusted R ²
Japan	FF3	4.59%	1.72	10.82%
	FF5	3.44%	1.28	11.81%
North America	FF3	8.93%	2.95	13.94%
	FF5	6.79%	2.17	15.65%
Europe	FF3	13.26%	5.48	21.42%
	FF5	9.50%	3.82	25.78%
Asia Pacific ex-Japan	FF3	14.06%	5.26	17.15%
	FF5	12.46%	4.56	23.23%
Emerging Markets	FF3	11.73%	6.23	9.38%
	FF5	9.52%	4.80	12.19%

²https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

Research by Asness (2011) suggests momentum has a purpose as a suitable diversifier to a value approach given their negative correlations. To support this claim, we show the correlation coefficients for momentum, size, value, and quality grouped by region/country in Table 6. The correlation between momentum (WML) and value (HML) is indeed negative across all country groupings tested. Interestingly, Japan is the only country grouping with a negative correlation to size (SMB). Also interesting, momentum and quality (RMW) exhibit a large positive correlation in all country groups except for North America, which displays a slight negative correlation.

Table 6: Geographic Correlation Coefficients
February 1996 – February 2024

Country Grouping		Momentum	Size	Value	Quality
Japan	Momentum	1.00	-0.08	-0.27	0.30
	Size	-0.08	1.00	0.02	-0.10
	Value	-0.27	0.02	1.00	-0.60
	Quality	0.30	-0.10	-0.60	1.00
North America	Momentum	1.00	0.07	-0.26	-0.06
	Size	0.07	1.00	-0.03	-0.45
	Value	-0.26	-0.03	1.00	0.37
	Quality	-0.06	-0.45	0.37	1.00
Europe	Momentum	1.00	0.08	-0.33	0.42
	Size	0.08	1.00	-0.03	0.03
	Value	-0.33	-0.03	1.00	-0.60
	Quality	0.42	0.03	-0.60	1.00
Asia Pacific ex-Japan	Momentum	1.00	0.07	-0.35	0.26
	Size	0.07	1.00	0.07	-0.25
	Value	-0.35	0.07	1.00	-0.59
	Quality	0.26	-0.25	-0.59	1.00
Emerging Markets	Momentum	1.00	0.10	-0.14	0.22
	Size	0.10	1.00	0.02	-0.13
	Value	-0.14	0.02	1.00	-0.47
	Quality	0.22	-0.13	-0.47	1.00

When comparing the Japan returns in our study with those of Fama-French, we find that the Fama-French (FF) Japan market (all-cap benchmark) returns an annualized 2.70% over our sample period. If we approximate that with our 90% - large benchmark and 10% small benchmark, then we get 2.19% annualized: roughly 50 bps lower than Fama-French.

For the Japan large cap top 30% momentum and small cap top 30% momentum, FF returns 4.10% and 4.67% annualized, respectively. This compares to our Japan large cap top 30% momentum and small cap top 30% momentum returning 3.23% and 3.91% annualized, respectively over the same period. In all, our study is showing a lower top 30% momentum return of about 80 bps, however, the two data sets reach a similar outcome.

We employ the following construction differences in our methodology vs. Fama-French (FF) which may explain the differences in returns:

- Selection universe - We select the universe annually by taking the top 3,000 stocks by market cap to form large and small cap universes. FF uses the entire universe of stocks irrespective of market cap and formed on a monthly basis. Our methodology yields more stability in # of stocks in the universe and is more in-line with popular index providers.
- Top 30% momentum portfolios – FF select the top 30% of momentum for the entire universe and then separately sort the entire universe by market cap. Their large cap top 30% momentum portfolio, for example, is then given by the intersection of these two separate sorts. Our study first looks at each market cap range and then sorts on momentum.
- Low-priced stocks - We use a \$2 price screen which reduces the potential for data errors sometimes found in these very low-priced stocks.

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About EAM

EAM Investors is solely focused on delivering alpha for clients in global equity markets. A momentum-driven approach to investing leverages their collective insight within a systematic process designed to deliver consistent and predictable outcomes. EAM's Informed Momentum® investment process has been applied consistently across all strategies since inception of the firm in 2007.

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Fama-French returns referenced in this document are calculated using monthly and daily data from Ken French's website: https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html

FactSet data and MSCI pricing source data.
The U.S. Dollar is the currency used to express performance.