EAM INVESTORS

Dude, Where's My Small Cap Premium?

The small cap factor premium, first documented by Banz in 1981, showed that smaller firms had higher risk-adjusted returns compared to larger firms, heavily influencing asset allocation decisions ever since. However, the premium's significance seems to have diminished over time and the underlying cause remains uncertain. On the other hand, momentum strategies have shown remarkable consistency and have outperformed the small cap premium. Our study suggests that incorporating momentum within the small cap stock universe could offer a more reliable approach for generating alpha in today's markets and resurrect the fruits of small cap investing.

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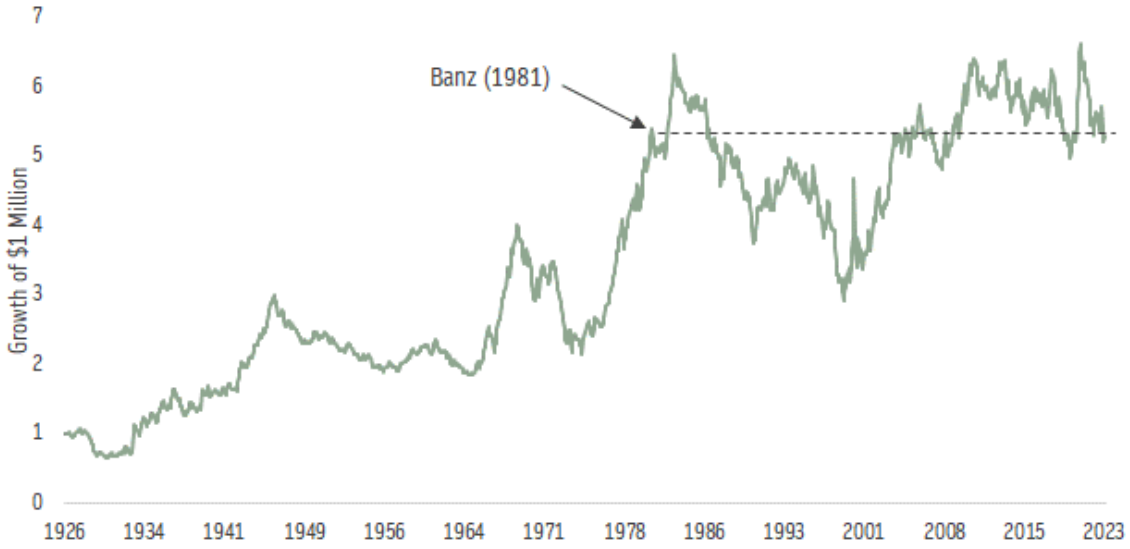
The Small Cap Premium

The small cap premium, well-documented by Banz in 1981, revealed that smaller firms yielded higher risk-adjusted returns compared to larger ones. Although not among the strongest stock pricing anomalies, the size effect played a significant role in shaping the traditional style box for asset allocation, gaining fame due to its straightforward measurement. Figure 1 illustrates the growth of the long-short Small Minus Big (SMB) factor defined by Fama and French (1993) over nearly a century in the US, showing an annualized return of 1.74% with a significant t-stat of 2.07. However, starting from April 1981, the premium becomes statistically insignificant (t-stat of 0.40), indicating a substantial decline in the small cap effect post-Banz (1981).

Figure 1: Growth of the SMB Factor (US Equity Market)
January 1927 – May 2023



Source: Ken French's data library: https://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.
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These findings present a concerning outlook for investors relying solely on the size premium for their investment strategies. Alquist et al. (2018) speculated that data errors, particularly those related to delisted stocks in the original Banz (1981) dataset, might have influenced the study's results, raising doubts about the size premium's significance. Despite this uncertainty, there has been extensive research attempting to resurrect the size premium. Vassalou and Yuhang (2004) explore default risk as a measure and reveal that the size effect primarily exists in the microcap subset of the market. In a separate study, Asness et al. (2018) find a significant small cap effect when controlling for 'junk', which represents the inverse of quality measures. Nevertheless, the performance of the SMB factor post-Banz (1981) has not been strong without accounting for other pricing dynamics.

Size Deciles

As a robustness check, we examined decile portfolios based solely on sorting by market capitalization. Figure 2 displays the performance across market cap deciles over the full-sample period in US equity markets, with the smallest decile portfolio outperforming the market portfolio by 2%. While decreasing excess returns are observed as one moves from smallest to largest market cap, the rate of change is relatively small. The smallest minus the largest decile spread portfolio (D1 - D10) does indicate a small cap effect during the full sample, with an excess return of 2.92%. Similarly, the average return of the smallest five deciles minus the average return of the largest five deciles (Small – Big), indicates a small cap premium, with an excess return of 1.68%. However, Figure 3 presents a different scenario when starting the analysis from April 1981, the post-Banz (1981) period. In this sub-sample period, the signs change, and the small cap premium vanishes with the smallest market cap decile underperforming the market by -1.68%. The smallest minus largest decile spread portfolio (D1 - D10) is negative at -1.81%, while the average return of the smallest five deciles minus the average return of the largest five deciles (Small – Big) is also negative at -0.65%. This suggests that if a size effect exists during this period, it is more likely a large cap effect rather than a small cap effect.

Figure 2: Size Decile Performance, Full Sample Period
January 1927 – May 2023

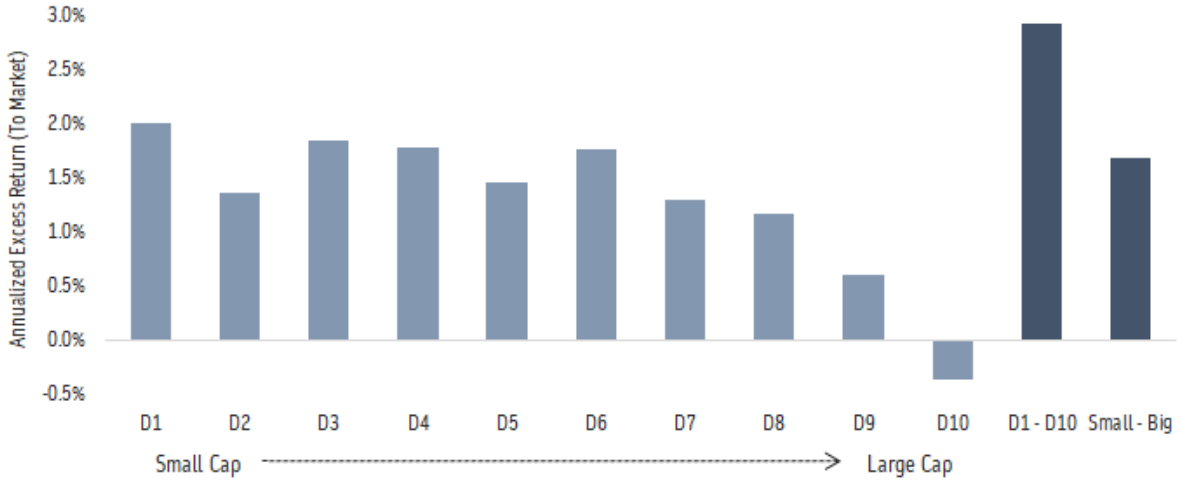
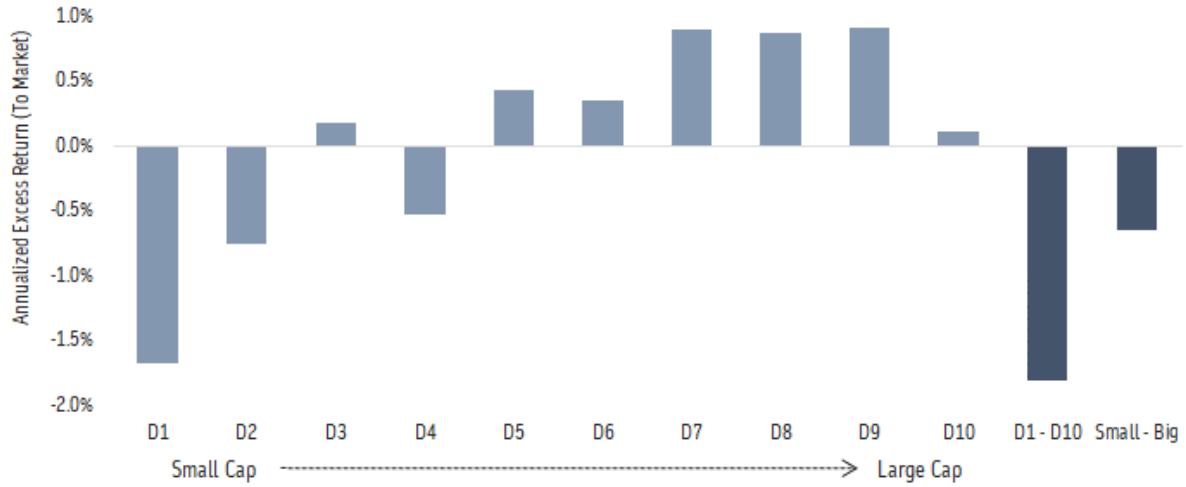


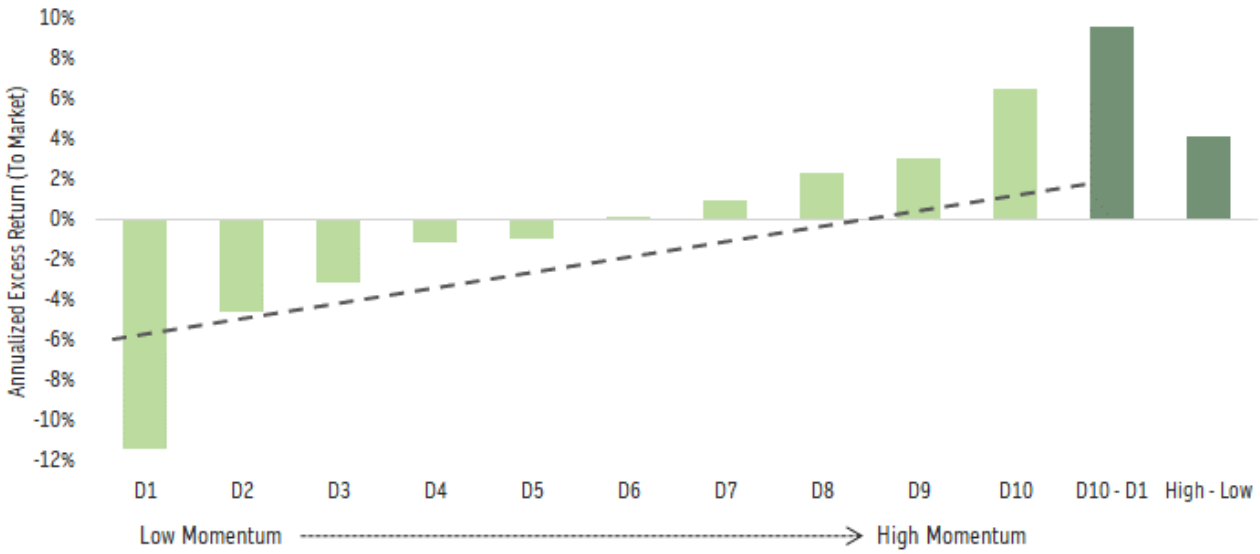
Figure 3: Size Decile Performance, Post-Banz Period
April 1981– May 2023



Momentum Deciles to the Rescue

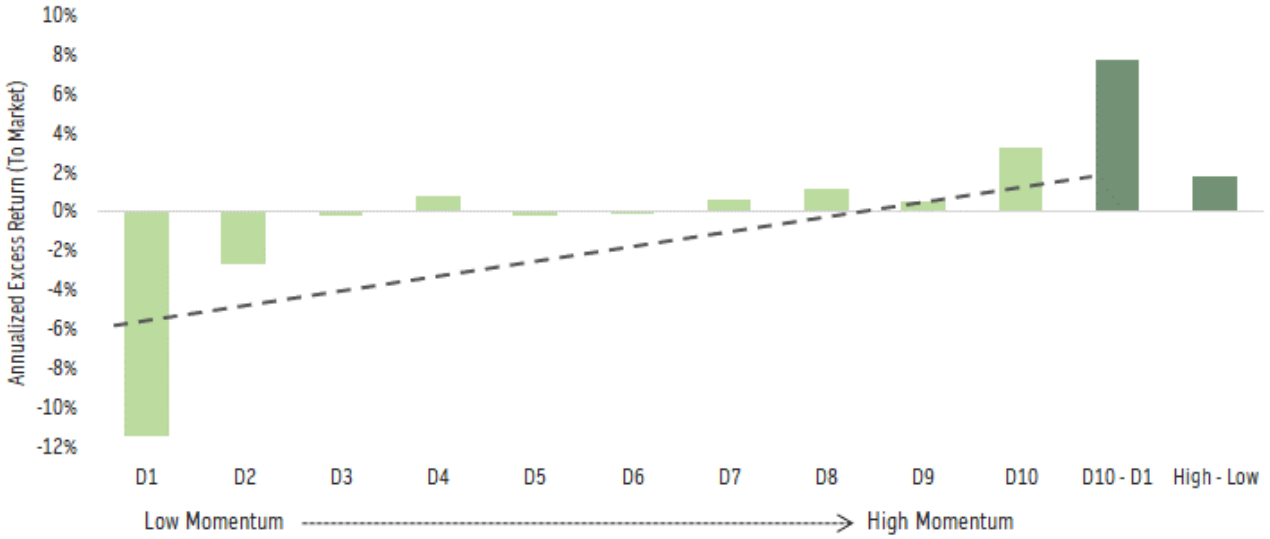
Empirical evidence confirms that the size effect has weakened since Banz's study in 1981. To outperform as one moves down the market capitalization ranges, it becomes necessary to incorporate another factor, as relying solely on size is not sufficient. Figure 4 illustrates the performance of decile portfolios in the US equity universe based on univariate momentum sorts from January 1927 to May 2023. Momentum proves to be a desirable anomaly over the full sample period, with the lowest momentum decile portfolio significantly underperforming the market at -11.37%, while the top momentum decile outperforms with an annualized excess return of 6.45%. Notably, there is a positive linear relationship (depicted by a dashed line in Figure 4) between excess returns and momentum deciles, with a considerable decile spread portfolio (D10 - D1) return of 9.56% between the highest and lowest momentum deciles. Additionally, the average of the top five momentum decile returns minus the average of the bottom five momentum decile returns (High – Low) also shows a momentum premium with an excess return of 4.10% annualized.

Figure 4: Momentum Decile Performance, Full Sample Period
January 1927 – May 2023



The critical question arises regarding the momentum effect post-Banz (1981). Figure 5 addresses this using April 1981 as the starting point. It reveals that the lowest momentum decile underperforms the market at -11.41%, whereas the top momentum decile outperforms by 3.26% annualized. The decile spread portfolio of the highest and lowest momentum deciles (D10 - D1) outperforms the market with an annualized excess return of 7.73%. Further, the average of the top five momentum decile returns minus the average of the bottom five momentum decile returns (High – Low) is also positive with an excess return of 1.82% annualized. The linear relationship of performance increasing as we move up the momentum deciles is largely preserved, and the most crucial extreme deciles align with the full sample narrative. This suggests that momentum continues to be a relevant and persistent factor even after the decline of the size effect post-Banz (1981).

Figure 5: Momentum Decile Performance, Post-Banz Period
April 1981 – May 2023



Implementation

The standalone alpha source of the small cap effect appears to have weakened post-Banz (1981), whereas the momentum effect has remained robust. To enhance the small cap premium, an overlay of a momentum strategy within the small cap stock universe proves beneficial, providing a persistent alpha source. Table 1 displays the excess returns of twenty-five portfolios sorted by size and momentum for the full sample period. The highest momentum quintile intersected with the lowest size quintile stands out as the best performer among the twenty-five portfolios, with an equity risk premium of 1.54% per month (highlighted green) and a highly significant t-stat of 5.99. Notably, the highest momentum quintile outperforms the other momentum quintiles across each size segment.

Throughout the full sample period, the quintile spread for small cap stocks and large cap stocks is approximately 60 basis points per month, statistically significant, and present across all momentum quintiles. This shows again that the size effect is evident over this period. Meanwhile, the momentum quintile spread averages about 90 basis points per month, showing that momentum works effectively in each cap range. Both premiums (size and momentum) exist in this context, with the momentum premium being about 50% higher than the small cap premium. However, in the recent post-Banz (1981) period, changes in market dynamics have affected these premiums.

Table 1: Size and Momentum Premiums, Full Sample Period
Excess Returns on 25 Stock Portfolios. Jan. 1927 - May 2023 (1,157 months)

	Small	2	3	4	Large	Small-Large	Small	2	3	4	Large	Small-Large
	Arithmetic Mean (%)						T-Stat					
Size-Momentum Sorts												
Low Momentum	0.61	0.42	0.37	0.38	0.01	0.61	1.93	1.44	1.33	1.37	0.04	2.29
2	1.12	0.88	0.78	0.66	0.53	0.60	4.00	3.70	3.55	3.12	2.79	3.17
3	1.28	0.97	0.85	0.80	0.62	0.66	5.01	4.58	4.27	4.35	3.67	3.88
4	1.35	1.16	0.92	0.91	0.76	0.59	5.24	5.47	5.05	5.14	4.91	3.21
High Momentum	1.54	1.40	1.27	1.23	0.95	0.59	5.99	6.11	6.31	6.52	5.60	3.31
High Momentum - Low Momentum	0.93	0.98	0.90	0.85	0.94		5.10	5.98	4.85	4.18	3.51	

Returns are in excess of the T-Bill rate.

In Table 2, the quintile analysis is repeated for the post-Banz (1981) period. Once again, the best performing portfolios (highlighted green), are the top momentum quintiles in each market cap range. Notably, the top momentum quintile intersected with the bottom size quintile proves to be the best performer with a return of 1.21% per month, indicating the potential benefits of incorporating momentum within a smaller market cap universe. Interestingly, over this period, the quintile spread for small cap stocks (Small – Large) becomes negative in the bottom two momentum quintiles, providing further evidence of the diminishing small cap effect, and particularly within the lowest momentum names. If any size effect exists in the post-Banz (1981) era, it seems to be concentrated within the top two momentum quintiles. Overall, these findings suggest that exposure to high momentum stocks, particularly within a smaller market cap universe, may prove beneficial for investors in the post-Banz era.

Table 2: Size and Momentum Premiums, Post-Banz Period

April 1981 – May 2023

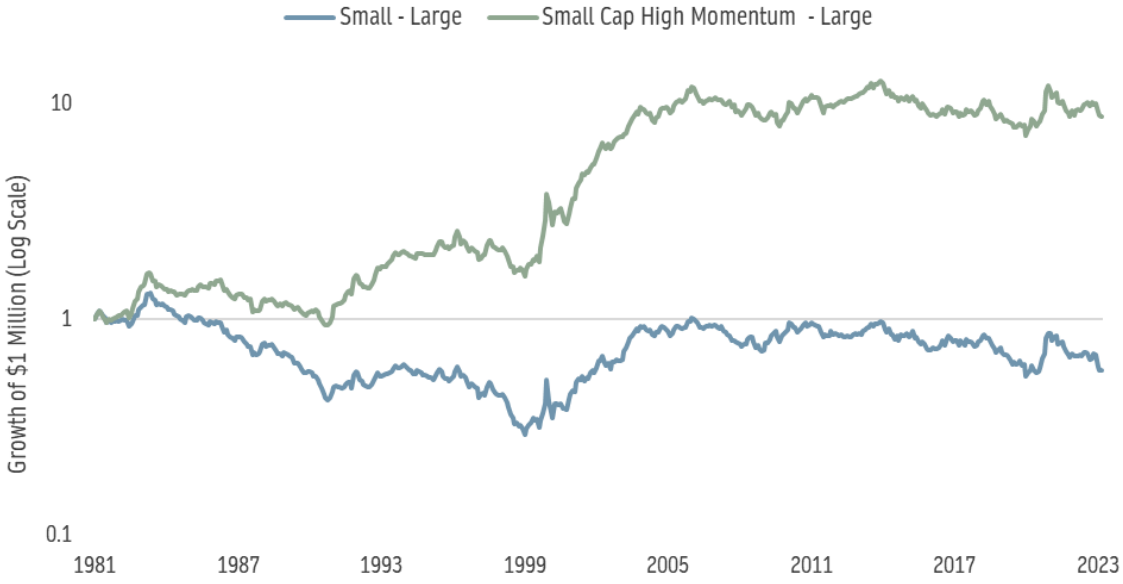
	Small	2	3	4	Large	Small-Large	Small	2	3	4	Large	Small-Large
	Arithmetic Mean (%)						T-Stat					
Size-Momentum Sorts												
Low Momentum	0.00	0.28	0.42	0.33	0.51	-0.52	-0.01	0.76	1.20	0.93	1.55	-2.11
2	0.60	0.74	0.69	0.76	0.74	-0.13	2.41	2.81	2.70	3.00	3.25	-0.75
3	0.82	0.87	0.81	0.83	0.61	0.21	3.64	3.77	3.62	3.86	3.11	1.35
4	1.00	0.99	0.80	0.82	0.70	0.29	4.35	4.28	3.63	4.03	3.72	1.73
High Momentum	1.21	1.18	1.03	0.93	0.81	0.40	4.23	3.95	3.75	3.68	3.63	2.06
High Momentum - Low Momentum	1.22	0.90	0.61	0.60	0.30		5.38	3.71	2.37	2.06	1.04	

Returns are in excess of the T-Bill rate.

Figure 6 shows that while the small cap effect overall has been negative over this last ~40 year period, a small cap portfolio with exposure to high momentum stocks has significantly outperformed. The size quintile spread portfolio (Small – Large) yielded an annualized return of -1.29% in the period. Meanwhile, the highest momentum quintile within the smallest size quintile (Small Cap High Momentum) relative to Large has an annualized return spread of 5.27%.

Figure 6: Growth of the Small Cap Momentum Effect, Post-Banz Period

April 1981 – May 2023



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Conclusion

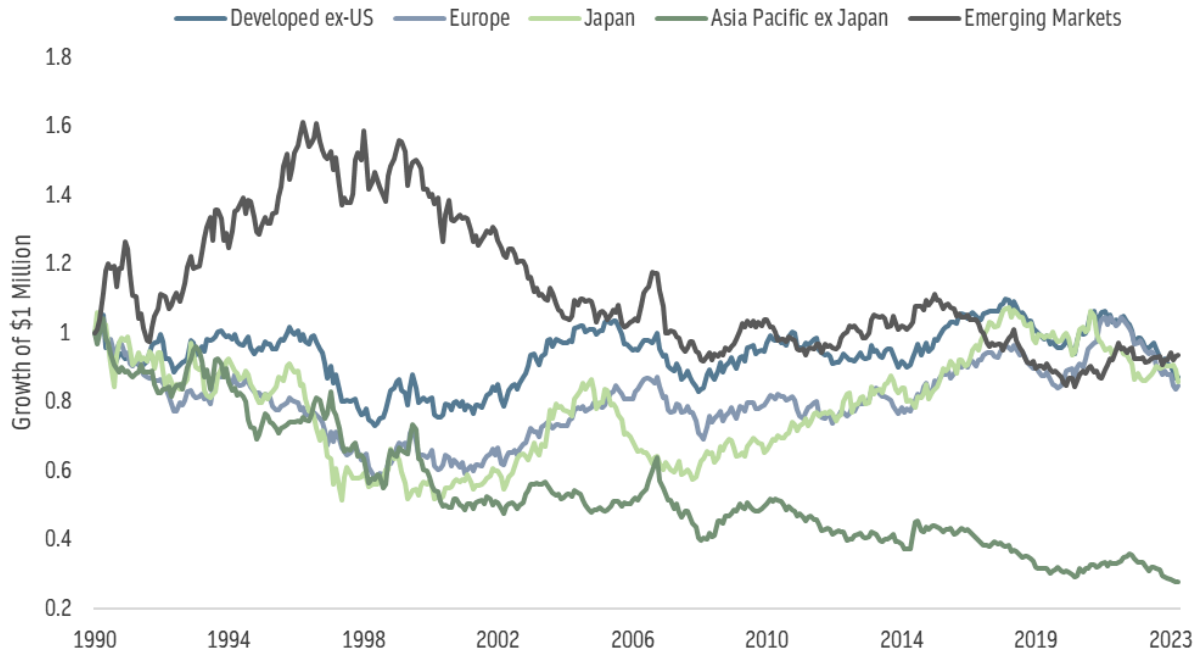
In all, our study sheds light on the evolving dynamics of the small cap premium and the persisting strength of momentum strategies in today's markets. The once-prominent small cap effect as documented by Banz in 1981, has significantly subsided over time, leaving investors to seek alternative approaches to enhance returns. The momentum effect, on the other hand, has demonstrated remarkable consistency and has outperformed the small cap premium throughout both the full sample period and post-Banz (1981) period. By incorporating momentum within a small cap universe, investors can potentially unlock a more reliable and persistent source of alpha. These findings underscore the importance of continuously adapting investment strategies to evolving market conditions as well as highlight the continued relevance of momentum as a robust factor. As the investment landscape continues to evolve, leveraging momentum strategies may prove instrumental in navigating the shifting tides of financial markets and achieving sustained outperformance.

Appendix: Non-US Portfolios

The Small Cap Premium in Non-US Markets

The non-US data used in our study begins in 1990, making it entirely post-Banz (1981). Figure 7 illustrates the performance of the SMB factors in various regions, including developed ex-US, Europe, Japan, Asia Pacific ex-Japan, and emerging markets. The results show that the corresponding SMB factors are relatively flat and, in some cases, slightly negative. Notably, the Asia Pacific ex-Japan SMB returns an annualized -3.80%, indicating that if a market cap effect exists in this region, it is more likely a large cap effect rather than a small cap effect. Except for emerging markets, the decay of the small cap effect becomes apparent in non-US equities during the 1990s.

Figure 7: Growth of the SMB Factor (Non-US Markets)
June 1990 – May 2023



In Table 3, we present the analogous analysis to Table 1, utilizing the developed ex-US data set as a robustness check. Similar to our findings in US equities, momentum proves to be most effective in smaller market cap segments. Notably, the momentum quintile spread within the lowest size quintile averages 146 basis points per month, with a highly significant t-stat of 7.83. These results reaffirm the potential benefits of maintaining momentum exposure to preserve the small cap premium within developed ex-US markets.

Table 3: Size and Momentum Premiums, Developed ex-US

November 1990 – May 2023

	Small	2	3	4	Large	Small-Large	Small	2	3	4	Large	Small-Large
	Arithmetic Mean (%)						T-Stat					
Size-Momentum Sorts												
Low Momentum	-0.21	-0.09	0.01	0.06	0.11	-0.32	-0.67	-0.28	0.04	0.20	0.34	-1.68
2	0.42	0.27	0.32	0.35	0.26	0.16	1.88	1.15	1.28	1.35	0.99	1.16
3	0.62	0.47	0.38	0.41	0.46	0.17	3.09	2.19	1.70	1.79	1.95	1.28
4	0.90	0.61	0.55	0.46	0.49	0.41	4.32	2.81	2.47	2.05	2.15	3.00
High Momentum	1.25	0.94	0.74	0.70	0.44	0.81	4.67	3.61	2.84	2.78	1.74	4.93
High Momentum - Low Momentum	1.46	1.03	0.73	0.64	0.33		7.83	4.97	3.41	2.94	1.25	

Returns are in excess of the T-Bill rate.

In emerging markets, we divide the universe into Small (bottom 10% of market cap) and Large (top 90% of market cap) categories. Additionally, we partition the market into three momentum bins: the bottom 30%, the middle 40%, and the top 30%. Once again, the highest momentum stocks within the smallest market cap category proved to be the best performers (highlighted green). The return of the spread portfolio of the highest and lowest momentum stocks (High Momentum – Low Momentum) averages 94 basis points per month in the Small category and 72 basis points per month in the Large category, with both showing highly significant premiums. As for the Small – Large return, it is only significant when excluding the lowest 30% of momentum stocks. These findings suggest that in the emerging markets, high momentum stocks in the smaller market cap segment hold the most potential for generating significant alpha, reinforcing the importance of considering momentum in portfolio decisions.

Table 4: Size and Momentum Premiums, Emerging Markets

July 1990 – May 2023

	Small	Large	Small-Large	Small	Large	Small-Large
	Arithmetic Mean (%)			T-Stat		
Size-Momentum Sorts						
Low Momentum	0.25	0.20	0.05	0.74	0.58	0.35
2	0.96	0.62	0.34	3.28	2.02	2.51
High Momentum	1.19	0.92	0.27	3.91	3.03	1.78
High Momentum - Low Momentum	0.94	0.72		5.31	4.14	

Returns are in excess of the T-Bill rate.

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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Important Disclosures

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The U.S. Dollar is the currency used to express performance.

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

The U.S. Market portfolio return represents the Fama-French return of the U.S. universe of stocks. The SMB Factor referenced in Figure 1 is for the Fama-French 3-factor model.

For Developed Markets, the Fama-French portfolios, which are constructed monthly, are the intersections of 5 portfolios formed on size (market equity, ME) and 5 portfolios formed on prior (2-12) return. For Emerging Markets, the Fama-French portfolios, which are constructed monthly, are the intersections of 2 portfolios formed on size (market equity, ME) and 3 portfolios formed on prior (2-12) return.

(Small – Big) is defined as the equal weighted average of the bottom five size decile returns minus the equal weighted average of the top five size decile returns, rebalanced monthly.

(High – Low) is defined as the equal weighted average of the top five momentum decile returns minus the equal weighted average of the bottom five momentum decile returns, rebalanced monthly.

In Figure 6, (Small – Large) is defined as the return of the smallest size quintile minus the return of the largest quintile, rebalanced monthly. (Small Cap High Momentum) is defined as the return of the highest momentum quintile within the smallest size quintile.