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Factor Performance 2010–2019: *A Lost Decade?*

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Factor Performance 2010–2019: *A Lost Decade?*

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KEY FINDINGS

- The factors in the widely used Fama–French model experienced a negative average return during the 2010–2019 period. This lost decade is remarkably similar to the 1990–1999 period.
- Many other factors did deliver a positive premium during the past decade—for example, low risk, price momentum, earnings momentum, analyst revisions, seasonals, and short-term reversal.
- In sum, there has been a clear dichotomy in recent factor performance: Although generally accepted factors struggled, other factors remained effective.

ABSTRACT: *The factors in the widely used Fama–French model experienced a negative average return during the 2010–2019 period. Perhaps surprisingly, such a lost decade is not unprecedented in history, as factor performance in the 2010s was, in fact, remarkably similar to factor performance in the 1990s. By contrast, many other factors did deliver a positive premium during the past decade. These factors include low risk, price momentum, earnings momentum, analyst revisions, seasonals, and short-term reversal. Thus, there appears to be a clear dichotomy in recent factor performance: Although generally accepted factors struggled, various factors that are considered to be inferior or redundant remained effective.*

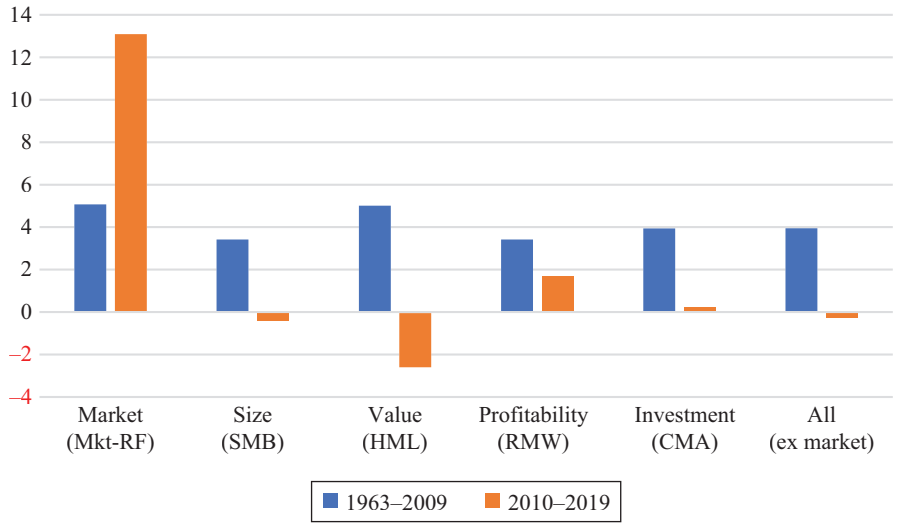
TOPICS: ***Factor-based models, style investing, volatility measures****

*All articles are now categorized by topics and subtopics. **View at PM-Research.com.**

This article reviews the performance of academic factor portfolios. A key result is that the factors in the widely used five-factor model of Fama and French (2015) failed to deliver during the most recent decade, 2010–2019, with an average return of below zero. This is not unprecedented in history, but in fact remarkably similar to the performance of these factors during the 1990–1999 decade. Extending the analysis, it is found that many factors not endorsed by Fama and French did deliver a positive premium during the 2010–2019 decade. These factors include low risk, price momentum, earnings momentum, analyst revisions, seasonals, and short-term reversal. In sum, there appears to be a clear dichotomy in recent factor performance: Although generally accepted factors experienced a lost decade, various factors that are considered to be inferior or redundant remained effective.

EXHIBIT 1

Performance of the Fama–French Factors (%)



PERFORMANCE OF FAMA–FRENCH FACTORS

The asset pricing literature is heavily influenced by the work of professors Eugene Fama and Kenneth French. Fama and French (1993) proposed a three-factor model, which extends the classic capital asset pricing model with size (SMB) and value (HML) factors. Fama and French (2015) augment their widely used three-factor model with profitability (RMW) and investment (CMA) factors, resulting in a five-factor model that has since become the new academic standard. Return series for these factors are publicly available in the Kenneth French data library.[1]

Exhibit 1 compares the performance of the Fama–French factors pre- versus post-2010. During the most recent decade, 2010–2019, the return on each of the Fama–French factors fell well short of its long-term average. The size and value factors even experienced a negative decade, with the return of the value factor being particularly poor. Arnott et al. (2020) and Fama and French (2020) address the mounting concern that the value premium might have disappeared permanently. They conclude that although the recent performance of the value factor is bad indeed, it is still well within the range of variation that can be expected statistically.

It is not just the size and value factors that have had a difficult time though. During the past decade, the premium on the investment factor also failed to materialize, with a return of close to zero. Only the profitability factor generated a positive return, but the magnitude of this premium is only about half its pre-2010 level. This weak performance of the two newly added factors is particularly striking, since they were introduced in the Fama and French (2015) study that uses data up to the end of 2013. In other words, the most recent decade is effectively still partially (40%) an in-sample period for these two new factors. Despite that head start, the two new factors did not have a strong decade. This complements evidence from Linnainmaa and Roberts (2018) and Wahal (2019), who find poor out-of-sample performance for the profitability and investment factors during the pre-1963 period that precedes the Fama and French (2015) sample.

Combined, the four Fama–French factors (all factors in the model excluding the market) generated an average premium of –0.28% during the 2010–2019 period, which compares with 3.95% during the 1963–2009 period. In unreported tests, it is found that this is not due to an increase in correlations between the factors, as the post-2010 correlations are in fact very similar to the pre-2010 correlations (close to zero on average). One might think that such a collective failure of these widely accepted factors must be unique in history, but

[1] http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html.

EXHIBIT 2

Performance of the Fama–French Factors (%)

	Market (Mkt-RF)	Size (SMB)	Value (HML)	Profitability (RMW)	Investment (CMA)	All (ex market)
1963–1969	4.49	9.49	2.39	1.28	–0.58	3.15
1970–1979	1.18	4.86	8.10	–0.51	6.25	4.67
1980–1989	8.51	–0.31	6.05	4.83	5.74	4.08
1990–1999	12.76	–2.11	–0.13	2.22	–0.04	–0.02
2000–2009	–1.77	7.27	7.74	8.54	6.76	7.58
2010–2019	13.10	–0.39	–2.60	1.67	0.22	–0.28

an inspection of the performance by decade shown in Exhibit 2 reveals that it is not. In fact, the 2010–2019 decade looks remarkably similar to the 1990–1999 decade, because also during that decade (1) the size premium was negative, (2), the value premium was negative, (3) the investment premium was close to zero, and (4) the profitability premium was positive but well below its long-term average. As a result, the four factors combined also failed to deliver a positive return during that decade.

This is not where the similarities between the 2010–2019 and 1990–1999 decades end, because these also just happen to be the only two decades with double-digit excess returns for the market factor. Conversely, the two decades during which the market premium failed to materialize, the 2000–2009 and 1970–1979 decades, were also the two decades during which factor premiums were highest. Thus, there appears to be an inverse relationship between long-term market returns and factor premiums. Of course, one cannot rule out being fooled by randomness here, as these inferences are based on just six independent decade observations, but the results are intriguing nonetheless.

The availability of just six independent decades also means it is hard to reliably assess the probability of a negative average performance of the Fama–French factors during a period of one decade. The calendar decades suggest a 1 in 5 probability based on pre-2010 data, which increases to 2 out of 6 when the most recent decade is included. Based on rolling 10-year average returns of the Fama–French factors, however, this probability is just 1.6%. Thus, although calendar decades (xyz0 to xyz9) are a natural choice for independent 10-year observations, they appear to exaggerate the likelihood of an entirely lost decade for the Fama–French factors.

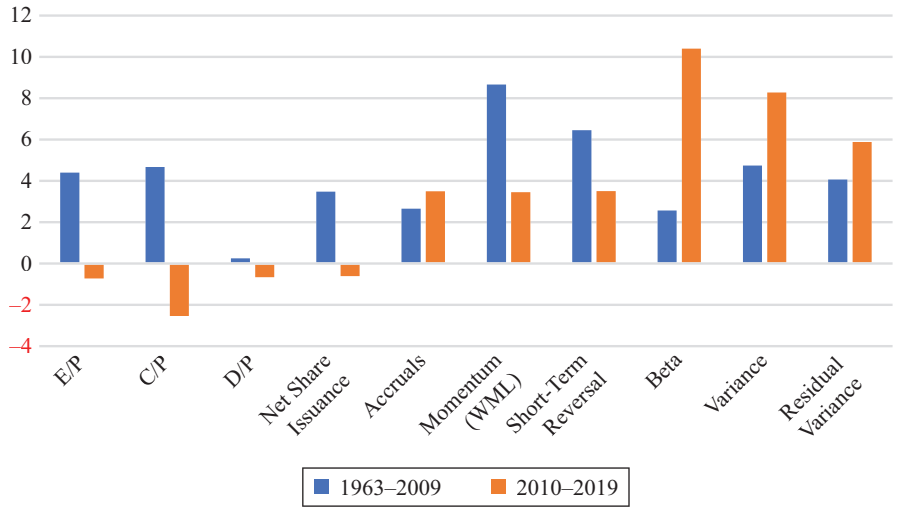
PERFORMANCE OF OTHER FACTORS IN KENNETH FRENCH DATA LIBRARY

The Kenneth French data library also tracks the performance of a number of factors that are not included in the Fama–French five-factor model. Some of these are constructed using the same kind of 2 × 3 sorts that are used for the value, profitability, and investment factors. This means that value-weighted top 30% minus bottom 30% portfolios are created within the large-cap and small-cap segments of the universe separately, and next a fifty-fifty average of these two long–short portfolios is taken. For other factors only value-weighted quantile portfolios based on the full universe are available. For these factors top 30% minus bottom 30% portfolios are created by taking the average of the top three deciles minus the average of the bottom three deciles. Since factor premiums tend to be stronger in the small-cap space than in the large-cap space, not giving a weight of 50% to the small-cap part of the universe should generally lead to more conservative estimates for factor premiums.

The factors for which 2 × 3 sorts are available are three alternative value metrics (earnings-to-price, cash-flow-to-price, and dividend yield), momentum (12-1 month), and short-term reversal (one month). The other factors are an alternative investment factor (net share issuance), accruals (change in operating working capital to book), and three low-risk factors (60-month market beta, 60-day variance, and 60-day residual variance). The risk factors are made beta neutral by levering up the long low-risk leg and levering down the short high-risk leg to market betas of exactly 1. For simplicity, this is done using the full-sample data, following Blitz, van Vliet, and Baltussen (2020), rather than dynamically as in Frazzini and Pedersen (2014).

EXHIBIT 3

Performance of Other Factors Available in Kenneth French Data Library (%)



The performance of these factors is reported in Exhibits 3 and 4. The three alternative value metrics all have a negative return during the last decade, similar to the HML value factor. The alternative investment factor, net share issuance, also ends up in negative territory. The accruals factor fared better, with a return of 3.5% during the 2010–2019 period, which is even slightly higher than its return during the pre-2010 period. Fama and French (2016) find that their five-factor model has difficulty explaining the performance of accruals portfolios, and the 2010–2019 period illustrates that the accruals factor can indeed do well when the Fama–French factors struggle.

Next, we look at the momentum factor, which is often used to augment the Fama–French factor models, turning, for example, the five-factor model into a six-factor model. Momentum had a huge negative return of −82% in 2009, causing the 2000–2009 period to be a lost decade for the momentum factor. This even led to the factor being existentially questioned, with, for example, Bhattacharya, Li, and Sonaer (2017) observing that "momentum profits have become insignificant since the late 1990s," according to data up to 2012. During the 2010–2019 period an average premium of about 3.5% was observed for the momentum factor, which although below its long-term average, is well within positive territory. Thus, it seems premature to discard the momentum factor. Interestingly, the momentum factor also did well during the other decade that was difficult for the Fama–French factors, 1990 to 1999. This was, in fact, the best decade for momentum.

The short-term reversal factor had a realized return of about 3.5% during the last decade, which, similar to the momentum factor, is below its long-term average but well above zero. Most notable in Exhibits 3 and 4, however, are the three low-risk factors, which exhibit premiums of about 6% to 10% during the 2010–2019 period. This result makes it the second-best decade ever for low risk, with only the 1980–1989 decade being stronger. Fama and French (2016) argue that the low-risk anomaly is subsumed by their five-factor model, but the most recent decade shows that the low-risk factor can shine when the Fama–French factors fail to deliver.

In sum, the factors in the Kenneth French data library that are closely related to the factors in the five-factor model struggled just as much as the factors in that model, while all the other, fundamentally different factors in the Kenneth French data library had decent positive returns, and, in the case of the low-risk factor, even a great return. As before, the similarities with previous decades are striking. The lost decade of 2010 to 2019 is like a mirror image of the 2000–2009 period, during which the Fama–French factors had exceptionally strong performance and left most other factors in their wake, and like a repeat of the 1990–1999 period, during which the Fama–French factors also failed to deliver while other factors held their ground.

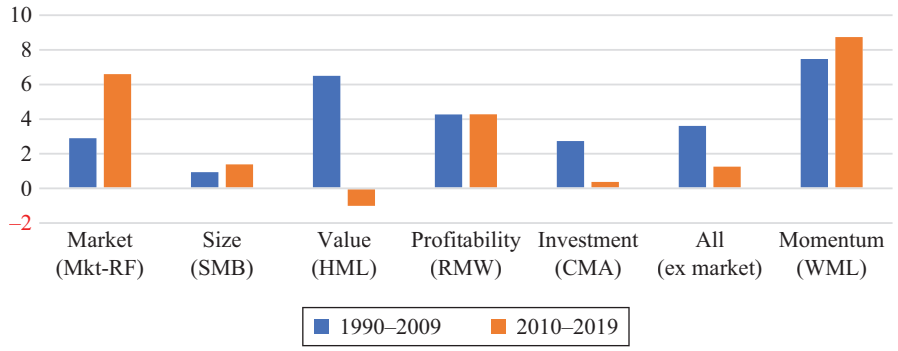
EXHIBIT 4

Performance of Other Factors Available in the Kenneth French Data Library (%)

	E/P	C/P	D/P	Net Share Issuance	Accruals	Momentum (WML)	Short-Term Reversal	Beta	Variance	Residual Variance
1963–1969	1.10	1.32	–5.84	0.24	5.81	10.62	7.59	–4.19	–1.80	–3.19
1970–1979	6.50	8.95	2.90	3.75	3.29	9.97	13.28	0.27	0.87	0.60
1980–1989	6.02	6.21	2.68	4.22	3.39	8.94	6.29	13.19	14.28	12.83
1990–1999	–0.53	–1.74	–2.53	0.44	2.93	13.49	1.40	–1.44	3.20	5.38
2000–2009	7.78	7.46	1.91	7.61	–1.02	1.00	4.13	2.66	4.86	2.19
2010–2019	–0.72	–2.54	–0.66	–0.61	3.50	3.45	3.50	10.40	8.28	5.88

EXHIBIT 5

Performance of Fama–French–Carhart Factors in Global ex-US (%)



INTERNATIONAL PERFORMANCE OF FAMA–FRENCH–CARHART FACTORS

The Kenneth French data library also offers data for the international versions of the five-factor model, plus the momentum factor. These data are available with a shorter history, from July 1990 onward. Exhibit 5 depicts the performance for the Global ex-US factors during the 2010–2019 versus the 1990–2009 period, and Exhibit 6 reports the performance by decade of these factors. The Global ex-US results are in many ways similar to the US results. For the size factor a much weaker long-term performance is observed, but performance during the 2010–2019 decade was still marginally positive. The value factor had a negative return during the last decade, just as in the United States. The investment factor was close to zero, also just as in the United States.

For the United States the profitability factor was the only factor in the five-factor model (apart from the market) that remained effective post-2010, albeit with a drop in performance of about 50% compared with pre-2010. For Global ex-US profitability is also the only Fama–French factor that remained effective post-2010. There is even no performance decay at all in Global ex-US, as pre-2010 and post-2010 performance of the profitability factor are virtually identical. Combined, the international versions of the Fama–French factors experienced a drop in performance of about two-thirds during the last decade, but did manage to stay in positive territory.

The final similarity between the Global ex-US and US results is the momentum factor. In the United States this factor remained effective post-2010, and the same is observed for Global ex-US. In fact, just as for the profitability factor, no decay at all is observed in performance for the Global ex-US momentum factor, compared with its pre-2010 performance.

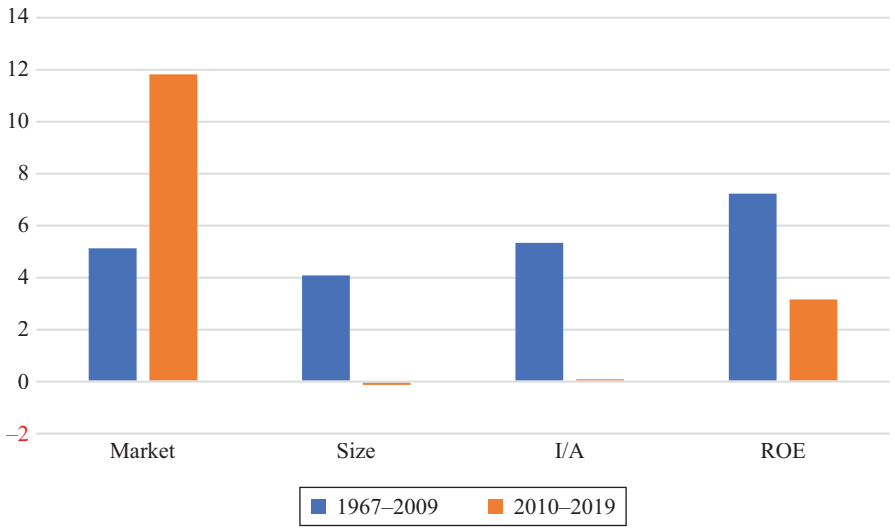
PERFORMANCE OF HOU–XUE–ZHANG FACTORS

One of the main contenders to the Fama–French five-factor model is the four-factor model of Hou, Xue,

EXHIBIT 6
Performance of Fama–French–Carhart Factors in Global ex-US (%)

	Market (Mkt-RF)	Size (SMB)	Value (HML)	Profitability (RMW)	Investment (CMA)	All (ex market)	Momentum (WML)
1990–1999	4.35	–1.84	0.04	6.42	–1.69	0.73	10.67
2000–2009	1.52	3.57	12.64	2.22	6.93	6.34	4.55
2010–2019	6.60	1.38	–1.01	4.28	0.37	1.26	8.74

EXHIBIT 7
Performance of Hou–Xue–Zhang Factors (%)



and Zhang (2015), also known as the q-factor model. This model consists of market and size factors similar (but not identical) to those in the Fama–French model, an investment factor (I/A), and a return on equity factor (ROE). Data for the Hou, Xue, and Zhang (HXZ) factors are also publicly available.[2] The performance of those factors is reported in Exhibits 7 and 8.

The HXZ size factor shows a negative return during the past decade, similar to that of the Fama–French size factor, SMB. This finding is not surprising, since the two series are very similar, with a correlation of 0.97. The HXZ investment factor had a return of close to zero during the past decade, similar to that of the Fama–French investment factor, CMA. This again is not surprising because these two series are also very highly correlated, with a correlation of 0.91. Only the HXZ return-on-equity factor showed a positive return,

EXHIBIT 8
Performance of Hou–Xue–Zhang Factors (%)

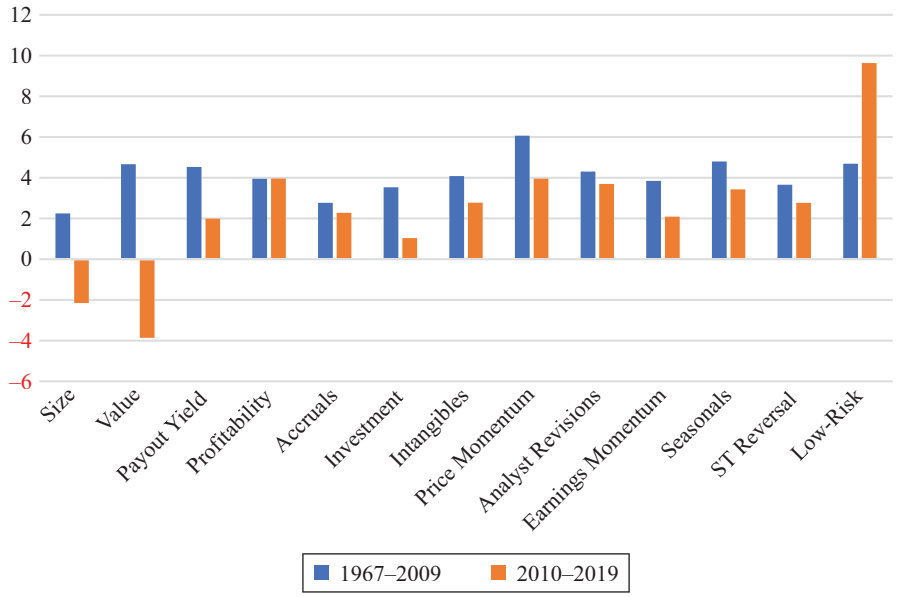
	Market	Size	I/A	ROE
1967–1979	2.04	7.65	6.09	5.81
1980–1989	8.09	0.16	7.62	9.67
1990–1999	12.34	–1.02	2.16	9.22
2000–2009	–1.04	8.47	5.25	4.66
2010–2019	11.82	–0.12	0.09	3.16

although at about 3% the magnitude of this return is less than half its pre-2010 level. This finding is also consistent with the previous findings since the HXZ return-on-equity factor is correlated with the Fama–French profitability (RMW) and momentum (WML) factors, with correlations of 0.67 and 0.49, respectively. For those factors it is also observed that returns post-2010 are positive,

[2] http://global-q.org/index.html.

EXHIBIT 9

Performance of Other Factors Available in Hou–Xue–Zhang Data Library (%)



but below the pre-2010 levels. The correlation between the HXZ return-on-equity factor and momentum has been documented by Novy-Marx (2015), who finds that the factor captures momentum in firm fundamentals by relying entirely on the most current recently announced quarterly earnings, which tend to be high after positive earnings surprises.

Next to the q-factors, the HXZ data library contains value-weighted decile portfolios for about 50 individual factors from the Hou, Xue, and Zhang (2020) article. Since most of these factors were first documented well before 2010, the past decade also constitutes an out-of-sample period for them. Following the same approach as before, these were turned into factor return series by taking the average of the top three deciles minus the average of the bottom three deciles. Closely related factors were combined into composite factors by averaging their returns, which brings down the number of factors to 13. For instance, the HXZ data library contains five separate seasonal factors, which were combined into one composite seasonal factor. The performance of these factors is reported in Exhibits 9 and 10.

Consistent with findings in the previous sections, the size and value composite factors experienced a negative premium during the most recent decade. Remarkably, however, the other 11 composite factors all generated positive returns during the 2010–2019 decade: payout yield, profitability, accruals, investment, intangibles, price momentum, analyst revisions, earnings momentum, seasonals, short-term reversal, and low risk. For profitability, price momentum, short-term reversal, and low risk, this is consistent with the earlier results for the Kenneth French versions of these factors. For the other factors, it is an additional insight. The main takeaway is that whereas the Fama–French factors experienced a lost decade, many factors that are not endorsed by Fama–French actually had a decent or, in some cases, even a very good recent decade.

SUMMARY AND IMPLICATIONS

The factors in the widely used five-factor model of Fama and French (2015) experienced a lost decade, with a negative return on average and each individual factor falling well short of its long-term average return. It turns out that this is not unprecedented in history, but in fact remarkably similar to the performance of these factors during the 1990–1999 decade. Expanding the analysis, it is found that many factors that are not endorsed by Fama–French did deliver a positive premium during the 2010–2019 decade. These factors include low risk, price

EXHIBIT 10

Performance of Other Factors Available in Hou–Xue–Zhang Data Library (%)

	Size	Value	Payout Yield	Profitability	Accruals	Investment	Intangibles
1967–1979	7.05	7.50	8.99	0.68	3.65	4.58	3.42
1980–1989	–3.11	4.37	6.65	4.68	3.56	4.85	5.06
1990–1999	–2.54	–2.47	–1.59	6.14	1.05	–0.41	3.81
2000–2009	6.16	8.96	5.19	5.26	2.52	4.80	4.58
2010–2019	–2.15	–3.86	1.99	3.96	2.28	1.03	2.77

	Price Momentum	Analyst Revisions	Earnings Momentum	Seasonals	Short-Term Reversal	Low Risk
1967–1979	9.37	8.02	4.34	5.64	6.60	–0.30
1980–1989	5.74	7.21	4.93	2.22	4.46	13.61
1990–1999	10.05	7.27	5.09	9.19	–2.65	2.44
2000–2009	–1.92	–2.87	1.16	1.90	5.34	4.48
2010–2019	3.96	3.69	2.09	3.43	2.77	9.63

Note: Size: ME; Value: BM, Rev_12, EP, CP, EM, SP, OCP; Payout yield: OP, NOP; Profitability: OPE, OPA, COP; Accruals: OA, TA, DA, POA; Investment: IA, dPIA, NOA, dNOA, IG, NSI, CEI; Intangibles: OCA, ADM, RDM, RER; Price momentum: R6_6, R11_1; Analyst revisions: RE_1, RE_6; Earnings momentum: Abr_1, Abr_6, ROE_1, ROE_6, dROE_1, dROE_6, SUE_1, SUE_6; Seasonals: r1a, r5a, r10a, r15a, r20a; Short-term reversal: SRev; Low risk: IVFF_1, TV_1, beta_1.

momentum, earnings momentum, analyst revisions, seasonals, and short-term reversal. In sum, there appears to be a clear dichotomy: Although generally accepted factors experienced a lost decade, many factors that are considered to be inferior or redundant were actually the ones that delivered. Altogether, the 2010–2019 decade is like a mirror image of the 2000–2009 decade, during which the Fama–French factors had an exceptionally strong performance and left most other factors in their wake.

Only time will tell if the Fama–French factors are again able to make a comeback in the decade(s) to come. In the meantime, their weak recent performance will have implications for asset pricing research. For one, the five-factor model will generally have a hard time explaining strong CAPM alphas during the 2010–2019 period, because positive loadings on the Fama–French factors will not help to explain returns if the Fama–French factors themselves have no premium initially. The findings in this article also question the classic ambition of the asset pricing literature to reduce the entire "factor zoo," that is, the hundreds of alleged factors, to just a handful of factors that should explain the entire cross section of stock returns. Although the Fama–French factors still have a strong long-term performance, they have by now experienced two lost decades during which various other factors were able to deliver. Thus, it seems that more factors are needed for an accurate and comprehensive description of the cross section of stock returns.

ACKNOWLEDGMENTS

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ADDITIONAL READING

The Volatility Effect Revisited

David Blitz, Pim van Vliet, and Guido Baltussen

The Journal of Portfolio Management
https://jpm.pm-research.com/content/46/2/45

ABSTRACT: *High-risk stocks do not have higher returns than low-risk stocks in all major stock markets. This article provides a comprehensive overview of this low-risk effect, from the earliest asset pricing studies in the 1970s to the most recent empirical findings and interpretations. Volatility appears to be the main driver of the anomaly, which is highly persistent over time and across markets and which cannot be explained by other factors such as value, profitability, or exposure to interest rate changes. From a practical perspective, low-risk investing requires little turnover, volatilities are more important than correlations, low-risk indexes are suboptimal and vulnerable to overcrowding, and other factors can be efficiently integrated into a low-risk strategy. Finally, there is little evidence that the low-risk effect is being arbitraged away because many investors are either neutrally positioned or even on the other side of the low-risk trade.*

The Devil Is in the Details: *The Risks Often Ignored in Low-Volatility Investing*

Nicholas Alonso and Oleg Nusinzon

The Journal of Portfolio Management
https://jpm.pm-research.com/content/early/2020/05/20/jpm.2020.1.163

ABSTRACT: *With increasing investor interest in low-volatility equity strategies comes a need for greater scrutiny of different methodologies used to achieve low-volatility exposure. In an earlier article, the authors investigated the analytical differences between a variety of approaches to constructing low-volatility portfolios. In this article, the authors turn their attention to the empirical differences between common approaches to low volatility. They find that a traditional optimizer-based approach to building low-volatility portfolios has large sensitivities to the risk inputs used in the process. In fact, using the same portfolio construction methodology but changing the risk inputs even slightly can lead to large differences. The magnitude of this sensitivity should give investors pause; even across risk inputs in which differences are valid, variations persist and can be harmful to portfolio performance. The authors show that there are other, more robust, ways of achieving low-volatility portfolios without this input sensitivity (e.g., risk balancing) and suggest that investors should consider this lack of input sensitivity as a valuable characteristic in low-volatility investing.*