
LETTERS TO THE EDITOR

“A Survey of Alternative Equity Index Strategies”: A Comment

In their recent article (September/October 2011), Tzee-man Chow, Jason Hsu, Vitali Kalesnik, and Bryce Little (CHKL) proposed an empirical analysis of several methodologies used for designing non-cap-weighted benchmarks. Given the growing interest in such initiatives expressed by asset owners around the world, an attempt to provide a thorough analysis of competing non-cap-weighted benchmarks is extremely welcome. We find, however, that the article suffers from a number of methodological and conceptual flaws, and as a result, it provides a misleading assessment of the benefits and shortcomings of non-cap-weighted indices and benchmarks.

Our first concern is that the analysis is biased against optimization-based strategies and in favor of heuristic strategies because CHKL chose to focus their analysis on a broad universe of 1,000 stocks. It is well known that the “curse of dimensionality” implies that portfolio optimization techniques are expected to perform poorly in exceedingly large universes. Typically conducted on universes that are considerably smaller, practical implementations of optimization-based strategies use a two-step approach, if necessary, that often draws on regional building blocks.

In addition, CHKL’s fundamental-weighting strategy is based on a security selection that is different from that of all other approaches, which introduces an obvious bias into the comparison. Thus, although the authors claimed to conduct an “apples-to-apples comparison” by “using identical datasets [and] stock universes,” they were actually comparing results for portfolios with different constituent assets without disclosing the part of the performance that was due to stock selection. Comparing strategies that involve stock selection with strategies that simply improve the weighting within a given universe does not lead to a clear comparative analysis of different indexation methods.

Concerning factor exposures, CHKL concluded that all strategies “outperform because of the positive value and size loadings” and that “none of these strategies are different from naive equal weighting.” This conclusion is inconsistent with their results, which show some differences in factor exposures and include significantly negative value exposure.

The authors’ results also show that the momentum exposure is insignificant for equal weighting whereas it is significantly positive or negative for other strategies. Clearly, the conclusion that none of the strategies are different from equal weighting is not immediately obvious from the results.

Claiming that small-cap and value exposures are positive and similar for all strategies is also inconsistent with economic reasoning. For example, when CHKL applied indexation methods to a universe of the largest 1,000 stocks globally, no small caps were present in any of the portfolios. Of the strategies they tested, only the fundamental-weighting approach would be able to select any smaller-cap stocks. If investors use indices made up exclusively of large-cap stocks, none of the alternative weighting schemes should show any economically meaningful bias toward small caps.

The results of a mostly positive value bias are also questionable. By any reasonable definition of style neutrality, equal weighting should be free of a value bias because no valuation information whatsoever enters into the determination of weights. That the equal-weighted index shows a value bias with respect to the cap-weighted index indicates only the relativity of the reference point, and one could equally argue that the cap-weighted index has a growth bias relative to the equal-weighted reference.

CHKL’s conclusion regarding similar value exposures for all alternative beta strategies also abstracts from important differences between strategies. Kaplan (2008) showed that a fundamental-weighted index mechanically overweights value stocks as compared with growth stocks. Other weighting schemes included in CHKL’s article do not use fundamental information and thus do not lead to such a mechanical value bias.

CHKL’s claim that all non-cap-weighted indices are basically equivalent not only is inconsistent with their results and with economic reasoning but also hinders a careful understanding of the relative merits of different strategies. In particular, while some strategies are mainly concerned with the *relationship* between different stocks and especially correlations (diversification strategies), other strategies look directly at company characteristics on a *stand-alone* basis (stock selection

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strategies). For the latter, portfolio construction cannot be distinguished from security selection, which is not the case with diversification strategies. For example, better-diversified portfolios can be constructed by applying maximum diversification, minimum volatility, or efficient approaches to the top 50 capitalized stocks globally or to a set of growth stocks. In such a case, one would have to look hard to find a value or small-cap bias.

CHKL also failed to replicate the actual index rules used in the various strategies. Although they cited the providers of index offerings, they went on to test implementations that were different from the actual indices. Comparing results that do not apply the actual index rules can lead to erroneous conclusions regarding the offerings of the various alternative index strategy providers. For example, CHKL deviated significantly from actual implemented optimization strategies in the weight constraints they used, which allowed for considerable concentration, whereas both practical implementation and academic research regarding such optimization-based strategies typically pay closer attention to choosing appropriate weight constraints. Furthermore, CHKL did not use the turnover control methods typically used in implementing optimization-based strategies. For example, the turnover control in the EDHEC-Risk Efficient Indices leads to turnover on the order of 25 percent, whereas CHKL reported turnover of up to 76 percent for a version of the risk-efficient strategy that they implemented. Such a comparison of pseudomethodologies does not provide any useful information with respect to the actual offerings.

CHKL's assessment of implementation hurdles and constraints is particularly misleading. An important conclusion in the article is that "diversity weighting and fundamental weighting generally have lower annual turnover and trading costs than the other strategies." This conclusion, however, is deceptive because CHKL did not use the rules of the actual indices to manage turnover and liquidity, which is especially surprising given that fundamental weighting—in addition to being the only strategy that benefits from a different stock selection—is the only strategy that benefits from turnover constraints. Indeed, fundamental weighting uses trailing five-year average measures instead of current data for most of the weighting criteria, which Arnott, Hsu, and Moore (2005) precisely justified in their study of fundamental indexation by the fact that it reduces turnover. Therefore, that CHKL did not use the turnover control methods of other strategies is quite surprising.

Although a careful empirical assessment of equity index strategies is certainly welcome, presenting tests of stylized portfolio construction strategies that do not correspond to concrete product offerings, that are not implemented on equal terms, and whose performance drivers are not clearly identified is unlikely to lead to a better understanding of alternative weighting schemes.

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"A Survey of Alternative Equity Index Strategies": Author Response

Noël Amenc, Felix Goltz, and Lionel Martellini outline their concerns with our recent *FAJ* article, and we welcome their challenges to our research and hope that increased focus and attention on these issues will lead to greater understanding of the underlying drivers of risk, return, and performance. We believe that our article adequately addresses most of the issues raised in their letter, so

we will focus our response on several issues that merit additional comment and clarification.

The purpose of our article was to provide a rigorous replication of the methodologies associated with several popular alternative beta strategies, not to compare actual products or indices that are built around those methodologies. Accordingly, we had to decide how to standardize the core methodologies in order to provide an apples-to-apples comparison of them. Our robustness tests

show that our main conclusions hold when the parameters are varied. We believe that our article details the rationale for our assumptions as well as the results of our robustness tests (including a test of the number of securities in the portfolio), and thus we will not repeat those points here.

Amenc, Goltz, and Martellini object to the fact that fundamental weighting is based on a security selection process different from that of all the other strategies, which they believe introduces an obvious bias into the comparison. We agree that the selection element is different from that of the other methodologies and that it is an important characteristic. That said, dropping the selection rule, as some fundamental-weighting strategies do, does not alter the main conclusions of our research. As **Table 1** and **Table 2** show, using fundamental measures of size to reweight a cap-weighted index generates performance that is consistent with that of other noncap strategies: They both earn a higher return than a traditional cap-weighted benchmark, and they do so by having an exposure to market beta of close to 1 and by having additional exposures to size and value premiums. In a broader sample, Hsu, Kalesnik, and Xie (2011) observed that a quarter to a third of the excess return of

fundamental indexing over the benchmark is lost in the reweighting approach.

Amenc, Goltz, and Martellini claim that our article provides a misleading assessment of the benefits and shortcomings of non-cap-weighted indices and benchmarks. From their letter, they appear to object to our interpretations of the results of the Fama–French three-factor model and/or the Fama–French–Carhart four-factor model. We acknowledge that the various alternative beta strategies differ in their loadings on value and size factors, but we stand by our conclusion that the strategies are essentially isomorphic to each other. Two influential papers by Berk (1994, 1995) can be interpreted as saying that value and size factors capture essentially the same source of excess return. Related research by Arnott, Hsu, Liu, and Markowitz (2011) also shows that value and size premiums are artifacts of the same noise-in-price phenomenon. Moreover, we carefully marked our claim with a caveat: We indicated that because the various strategies all take on loadings on the three Fama–French factors, any two alternative betas can be combined with the cap-weighted market portfolio to mimic any other alternative beta. This ability to mimic alternative betas suggests that they are not unique.

Table 1. Universe Selection Effect: Fundamental-Weighting Strategies

	Total Return	Volatility	Sharpe Ratio	Excess Return over Benchmark	Tracking Error	Information Ratio	One-Way Turnover
<i>Global strategies, 1987–2009</i>							
MSCI World Index	7.58%	15.65%	0.22	—	—	—	8.36%
Fundamental weighting	11.13	15.30	0.45	3.54%	4.77%	0.74	14.93
Reweighting companies with largest capitalization by fundamental weights	10.08	15.09	0.39	2.50	3.86	0.65	15.16
<i>U.S. strategies, 1964–2009</i>							
S&P 500 Index	9.46%	15.13%	0.26	—	—	—	6.69%
Fundamental weighting	11.60	15.38	0.39	2.14%	4.50%	0.47	13.60
Reweighting companies with largest capitalization by fundamental weights	11.28	15.09	0.38	1.81	3.98	0.46	13.52

Table 2. Universe Selection Effect: Fundamental-Weighting Strategies and Risk Decomposition

	Annual Alpha	Alpha <i>p</i> -Value	Market (<i>Mkt</i> - <i>R_f</i>)	Size (<i>SMB</i>)	Value (<i>HML</i>)	Momentum (<i>MOM</i>)	<i>R</i> ²
<i>Global strategies, 1987–2009</i>							
MSCI World Index	0.00%	—	1.000	0.000	0.000	0.000	1.00
Fundamental weighting	2.18	(0.000)	0.970	0.040	0.332	-0.090	0.97
Reweighting companies with largest capitalization by fundamental weights	1.26	(0.020)	0.967	0.005	0.252	-0.049	0.97
<i>U.S. strategies, 1964–2009</i>							
S&P 500 Index	0.00%	—	1.000	0.000	0.000	0.000	1.00
Fundamental weighting	0.50	(0.193)	1.010	0.128	0.338	-0.076	0.97
Reweighting companies with largest capitalization by fundamental weights	0.34	(0.344)	1.002	0.094	0.301	-0.056	0.98

Finally, Amenc, Goltz, and Martellini make several references to our departures from the design features of commercially available products. We believe that we departed from the commercially available products for valid reasons. We encourage both researchers and investors to study the details of the commercially offered strategies and draw their own conclusions about what drives performance. More importantly, we hope that our research stimulates an open exploration of the alternatives.

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