Innealta
CAPITAL

COMMENTARY: APRIL 5, 2012

BOTTOM-UP EQUITY COUNTRY ANALYSIS

- We reserve the right to get smarter. The focus of this monthly commentary is to lift the curtain and showcase the types of quantitative research that goes into model development and enhancement.
- Among the cornerstones of our portfolio management methodology are: 1) the quantitative framework, which provides insights into the levels and dynamics of key macroeconomic and fundamental variables related to security valuations and, 2) the investment team, which interprets the output of that framework and provides context to the signals. The quantitative framework (or, more familiarly, if not also a bit less aptly, 'model') is steeped in the extensive academic literature and enriched by the practical experience of the committee. By virtue of that combined experience, the model considers an extensive list of factors that are known to provide information in regard to future investment returns.
- As important as its current depth and breadth of knowledge and experience, the framework remains a platform for continued development. This evolution, in our view, is another critical feature of the value we add for our clients. Core to managing the framework is the critique and enhancement of its inputs and outputs. To that end, the committee remains vigilant to the identification of new factors and new techniques for modeling them, the sources of that learning a combination of in-house work and advancements discussed in the investment literature. In this regard, the quantitative approach to portfolio management is 'dynamic,' part of a constant effort to get smarter in the work that we do and more successful in the product that we present to our clients.
- This work continues the theoretical and conceptual framework now decades into its ongoing evolution. Knowing already that the new factors provide strong independent sources of return that can be expected to further enhance the risk/return profile of our Country Rotation portfolio, we currently are studying manners in which these methodologies and metrics can be combined with our existing Country Rotation model in a manner consistent with our current approach. Though the research exhibits promise, rigorous review will continue before its inclusion into our framework. Equal management of the risk and return characteristics will always be at the fore of our process.
- Whilst model enhancements shall come in due course, our bottom-up country rotation research provides just one example of our constant effort to identify new sources of excess return. Readers should know that this quest involves not just this, but many such threads, the methods of which we look to incorporate into our daily work as the benefits warrant.

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A BRIEF OVERVIEW OF WHERE WE ARE

The extant literature identifies myriad factors across many genres shown to provide some information in regard to forward equity returns with some measure of reliability. But what metrics are best suited for our brand of investing? Even more, with what math are we to make that assessment and, in turn, calculate those metrics on an ongoing basis? This takes us to the heart of our ongoing work: the search for consistent and dependable information across a reasonably manageable set of valuation metrics. And that search forces us to adapt our modeling techniques, as necessary, as we seek to better distinguish between signals that correctly suggest 'buy', versus those that fail to account for the more relevant criteria that ultimately render the signal less than informative in regard to future performance.

Metrics that suit our style

Covering one of the more familiar subsets, many studies link a number of valuation metrics to future equity returns. An illustrative example comes from a famous study by Professors Eugene Fama and Kenneth French (1989)[1] in which the authors find that the dividend-to-price ratio can be indicative of forward equity market returns. The general idea of most such valuation-oriented approaches is that when stocks are 'cheap' relative to historical valuations, they are more likely to experience high returns in the future as the market comes to value them fairly. But, how does one define and measure 'cheapness'?

[1] Fama, E. and K. French, 1989, Business Conditions and Expected Returns on Stocks and Bonds, *Journal of Financial Economics*.

In addition to valuation metrics, other studies find a link between volatility and returns. Historically, returns tend to be low during periods of high volatility. But how does one predict volatility and how does one know when volatility is 'high'?

Another branch of the literature connects monetary policy to the relative returns to stocks and bonds. The central idea here is that when monetary policy is 'accommodative', the return-to-risk properties of equities tend to be relatively attractive compared to those of bonds. Here again, though the answer might prove more straightforward than the search for a definition of 'undervalued' or 'too volatile', one can wonder more than a bit about what constitutes 'accommodative'.

GATHERING THE RAW DATA

To date, the majority of our model framework incorporates variables that have been aggregated at the index level by data providers. For example, to model a sector such as Consumer Staples, we review a number of metrics; the historical return series of a consumer staples index is most obvious. Similarly, to model a country such as Singapore, the model uses numerous metrics from indexes capturing the properties of the Singapore stock market. Since our portfolios offer granularity at the asset class level (Risk-Based portfolios), country-level (Country Rotation portfolio), or sector-level (Sector Rotation portfolios), reliance upon index level data is reasonable: the granularity of the data matches the granularity of the portfolio exposures.

The reason for bottom-up analysis

To date, these index level compilations have served well as proxies for our purposes. However, in an effort to more thoroughly exhaust particular concepts we have embarked on a more robust approach toward modeling the time series dynamics of global equity returns at the security level. This line of research is being done to ensure that we are extracting as much tactical information as empirically possible.

An extensive 'bottom-up' analysis such as the one we've commenced allows us to incorporate additional data points. The key here is that certain variables which may add value to the model framework—specific accounting-oriented cash flow variables, for example—may not be available at the index level. That is, they're not currently calculated by someone else, so if we want to utilize them, we must calculate them on our own. This bottom-up analysis serves this purpose as we extend the model framework in a new dimension: marshaling additional data points at the individual security-level and rolling them up to construct custom country-level metrics.

There are several advantages to the bottom-up modeling approach. Foremost, as already mentioned, the path allows us to extend the analysis to include additional variables which likely have incremental information in regard to identifying superior risk-adjusted return environments for equities relative to fixed income. Further, rolling up the data from individual securities gives us additional control over the data and enhances our understanding of them. For instance, researchers have identified return phenomena in the cross section of individual stocks. Having control over the data at the individual security level allows us to extend these results to the country-level, permitting us to include the incremental information content of these measures in the model framework. Additionally,

the process of 'working with the data' gives the researcher invaluable insights and knowledge of the phenomena they are studying in a way that delegating this task to a third-party data provider simply may not replicate.

This microeconomic (i.e. individual company) nature of our analysis nicely complements our existing model, which currently puts a higher emphasis on macroeconomic factors. At the same time, the analysis is in exactly the same spirit as our existing model. We use a rigorous, systematic process in order to help us reach investment decisions that are as objective as possible.

Our analysis is innovative in the sense that the academic literature largely ignores this type of asset-class level analysis. Many studies focus on cross-sectional return anomalies on an individual stock level. For example Fama and French (1992)[2] demonstrate that in addition to market returns there are at least two other risk factors that are reliable informants of subsequent stock returns, namely size and value. They show that, over long periods of time, smaller companies have outperformed their larger counterparts and companies with lower market value relative to their accounting value subsequently outperform. In other words, undervalued stocks outperform overvalued (kindly termed 'growth', in more common terms) stocks. According to Fama and French, these factors capture common risks across stocks: small companies are more risky than large companies and value stocks have higher distress risk than growth stocks. Investors willing to take these risks can expect to be rewarded, if not over the short term, then over time.

Practitioners and academics have also found trends in stock returns: In their now very famous study, Professors Narasimhan Jegadeesh and Sheridan Titman (1993)[3] find that stocks with high (low) past returns over the last six to twelve months tend to continue to have high (low) returns for at least another several months. This phenomenon is known as the 'momentum effect' and can be found in all asset classes.

There is, furthermore, an extensive asset pricing research literature which has documented many other sources of excess return. These include factors related to earnings quality, profitability, net stock issuance and seasonality, among many others. There is a general debate whether these systematic factors can be explained by risk or behavioral biases. Regardless of the ultimate reason however, many effects are well established and have been shown to exist in all segments of the market, in many different economic environments as well as on a global basis. Exposure to some of these factors, it can be found, has delivered significant excess returns on an individual stock level over the long term.

While these factors have been examined extensively on an individual stock level, very few studies aggregate individual security-level metrics, such as momentum and accounting ratios, to the broader asset-class level in a tactical strategy. Our innovation is to combine the richness of the individual security level data with our tactical strategies.

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[2] Fama, E. and K. French, 1992, The Cross-Section of Expected Stock Returns, *Journal of Finance*.
[3] Jegadeesh, N. and S. Titman, 1993, Returns to Buying Winners and Selling Losers: Implications for Stock Market Efficiency, *Journal of Finance*.

FINDING SOURCES OF EXCESS RETURN

Core to the bottom-up analysis, we examine a broad variety of fundamental and technical characteristics in historical simulations (back-tests). We group different types of characteristics into distinct composite return 'factors' that capture the operating performance and share price behavior of a company, the financial market environment and the opinions of market participants. Taken together, these composite factors, or composites[4], comprise a diverse set of return sources and provide information about companies' expected excess returns.

The component factors that we use to build the composites are well-defined, empirically tested variables that have been shown to exhibit reliable excess returns on an individual stock level. Our objective is to examine whether these factors can identify promising environments for forward country-level stock returns (relative to fixed income) as well. That is, we're looking to determine whether we would use these factors to decide which country equity markets to overweight and underweight in our country rotation strategy.

Proceeding with caution

In any empirical analysis one has to be vigilant about data-mining: finding spurious relationships that exist purely due to chance and that, therefore, cannot be extrapolated into the future. To avoid data-mining we only use characteristics that are sensible and intuitive drivers of stock returns and that are based on sound economic theory. Moreover, we require our return factors to be robust in the sense that they are effective across regions, in different economic environments and sub-periods. **While the strength of the return factors may differ along those dimensions, the basic economic principle should always hold.** Since the genesis of our framework, we have always been extraordinarily sensitive to the quantitative trap of data mining. It is prevalent throughout our industry and often cancers investment discipline. We are adamant about sound financial theory being the foundation of our framework. The temptation of "what would've worked last quarter?" will never pollute our conceptual foundations.

COLLATING THE FACTORS

The fundamental characteristics that we examine can broadly be classified into the following factor types:

- Valuation (Value): Valuation compares a stock's market price with its intrinsic value as measured by accounting information. Value stocks, or low-priced stocks, tend to outperform more expensive (growth or 'glamor') stocks. We measure the intrinsic value of a company using a variety of metrics that generally are available only at the company level.
- Operating Efficiency (Op Eff): Equity investors often put too much emphasis on a company's growth potential and ignore less glamorous companies that sport lower growth but higher profit margins and cash generating ability. A host of empirical research has shown that companies with superior bottom-line performance tend to outperform companies in a high-growth phase that offer lower return on investment.

[4] To be clear, we mean composites to be a combination of the return factors; this review makes no reference to composites associated with the performance of our actual investment strategies.

- Quality: In addition to the level of earnings relative to capital invested (Operating Efficiency), we can decompose earnings into a cash component, which tends to be fairly stable over time, and a more transitory accrual component, which is more difficult to measure and therefore more subject to manipulation. As a result, the higher the accrual component of earnings is relative to the cash component, the lower the quality of earnings and the poorer a company's future prospects will be.
- Management Behavior (Mgmt): This factor type captures company management's informational advantages relative to outsiders, as well as managerial biases. One example of how investors can get insights into the manner in which management assesses company value is by examining share issuances and repurchases. Companies have an incentive to issue shares when they regard their company as overvalued and to repurchase shares in the opposite case. Moreover, company management often has an incentive to engage in empire building, instead of pursuing the best interests of shareholders. Hence, companies sometimes overinvest and use excessive debt. Management-behavior-type factors capture these as well as other indications of executive motivations.
- Momentum (Mom): Factors of this type capture trends in stock returns that may be due to investors under-reacting to new information about companies. As news is gradually incorporated into a stock's price, we see trends over various horizons. It may also partly be due to herding among institutional investors. Trends in stock returns can be observed at various frequencies and there is a seasonal component to these trends as well. A comprehensive investigation of these effects nicely complements the momentum factor that we already are using in our models. Valuation and Momentum are naturally diversifying as they tend to be negatively correlated, while they both generate positive returns on average. As a result, their combination is more effective than each in isolation.
- Analyst Sentiment (Sent): This factor type captures the views of sell-side analysts about a company's operating performance and the level of its share price. Empirical research has shown that analysts, as a whole, tend to be conservative in the sense that they update their opinions about companies only with a delay once new information has become available. Typically several small updates in the same direction follow each other.
- Earnings Sentiment / Seasonality (Earn Sent): In addition to observing analysts' behavior, we also observe how market participants in general assess a company's earnings numbers from one fiscal period to the next. Just like analysts, the aggregate market tends to underreact to new information relevant to a company's earnings, as well as to various other types of seasonal effects.
- Volatility (Vol): Previous academic and practitioner research has shown that, for a variety of reasons, high current volatility/risk is associated with low future returns on an individual stock level (see, for example, Ang, Hodrick, Xing and Zhang (2006)[5]. Moreover, different effects have been known to exist for total risk and company-specific risk. Methods that aggregate company-specific risk to the country level in order to evaluate the investibility of that market complement our existing model.

We should point out that all factors examined carry some risk as they are systematic risk factors as well as return drivers. However, our objective is to find those factors that exhibit

[5] Ang, A., R. Hodrick, Y. Xing and X. Zhang, 2006, The Cross-Section of Volatility and Expected Returns, *Journal of Finance*.

a particularly attractive risk-return trade-off. Moreover, we would also like to find a set of factors that are very diversifying in the sense that each of them captures different and complementary attributes, thereby leaving the correlation between factors generally low. Combining them provides a broad and diverse set of information on which to evaluate prospects for relative equity returns.

While researchers have mostly examined and rationalized these factors on an individual stock level, the economic intuition outlined above applies similarly if these factors are aggregated to a country level and subsequently used to overweight and underweight country equity markets in a portfolio.

BACK-TEST DESIGN

We run our back-tests using monthly portfolio rebalancing[6]. Each month and for each factor we compare country factor ranks over the entire cross-section of countries included in our existing country rotation strategy. In other words, we scale countries from most to least attractive along each factor. We then equally weight all country equity markets in our portfolio that have relative factor ranks exceeding a certain threshold. The remainder of the portfolio is invested in U.S. domestic bonds (the Barclays Aggregate). Not surprisingly, this is very similar to how we manage our rotation portfolios. The equity allocation of the portfolio is kept approximately constant over time (roughly a 40/60 split between equities and bonds). However, the country composition within the equity portion of the portfolio changes over time depending on the stability of the factor that we use to evaluate potential risk-relative country stock returns. In other words, if the information contained in a factor is updated frequently, then the country factor ranks are likely to change frequently, thereby causing increased turnover within the equity portion of our portfolio. Initially we build one portfolio for each factor and then examine the performance of each factor portfolio over time.

In a second step, we examine correlations between factors in order to evaluate how much overlapping information they contain. If two factors have low (or even negative) correlation, then they tend to complement each other well, i.e. each of them adds information that is not already captured by the other factor. In fancy terms, orthogonality across factors is important. It ensures that we're minimizing overlap across actionable information in terms of investments.

BACK-TEST RESULTS

Exhibit 1 shows a list of the factors (and factor types from above) that show particularly promising results in terms of subsequent performance. We show total return information for our entire sample period (1990-2012) as well as three sub-periods. As we need to preserve the proprietary nature of our model, while still giving as much detail as necessary to fund the discussion, we only name the factor types and refer to the individual factors within each category simply as F1, F2, etc.

The first panel shows annualized active portfolio returns, which are returns in excess of that for the benchmark, a blend of global equity returns and U.S. domestic bonds. The second

[6] Note that we are extremely careful regarding data availability and in-sample phenomena. Great care has been taken to ensure that the analysis does not violate any econometric or theoretical assumptions.

panel shows the corresponding active risk of these portfolios (like active returns, active risk is the risk in excess of benchmark risk). Annualized active returns per unit of risk, commonly known as information ratios, are shown in the third panel. The last panel shows average annual portfolio turnover. As mentioned above, the information captured by different factors changes at various rates over time, thereby resulting in different portfolio turnover levels.

Exhibit 1: Performance of Factors (1990—2012)

Annualized Active Returns		Last 3 years	Last 5 years	Last 10 years	Since Inception
Value	Factor1	0.78%	0.94%	2.72%	3.28%
Value	Factor2	2.40%	1.14%	2.77%	2.30%
Op Eff	Factor1	3.30%	1.62%	4.14%	3.51%
Op Eff	Factor2	4.01%	3.18%	4.26%	4.06%
Op Eff	Factor3	0.58%	2.12%	2.70%	2.99%
Op Eff	Factor4	3.01%	2.06%	3.78%	3.98%
Op Eff	Factor5	3.04%	1.67%	4.21%	3.71%
Quality	Factor1	1.86%	1.03%	2.61%	3.00%
Mgmt	Factor1	0.54%	1.01%	3.11%	3.43%
Mom	Factor1	0.47%	0.85%	3.50%	4.32%
Mom	Factor2	1.99%	1.04%	3.35%	3.46%
Mom	Factor3	2.14%	1.23%	3.73%	3.76%
Sent	Factor1	2.66%	1.80%	3.78%	2.01%
Sent	Factor2	3.10%	2.21%	3.97%	2.29%
Vol	Factor1	2.82%	2.30%	2.62%	2.36%
Vol	Factor2	2.05%	1.62%	2.70%	2.60%
Annualized Active Risk		**Last 3 years**	**Last 5 years**	**Last 10 years**	**Since Inception**
Value	Factor1	2.78%	2.89%	2.90%	3.94%
Value	Factor2	2.26%	2.59%	2.44%	3.21%
Op Eff	Factor1	2.62%	2.91%	3.07%	3.69%
Op Eff	Factor2	2.54%	3.00%	3.02%	3.63%
Op Eff	Factor3	2.62%	2.86%	2.66%	3.28%
Op Eff	Factor4	2.54%	2.91%	3.10%	3.67%
Op Eff	Factor5	2.63%	2.90%	3.14%	3.68%
Quality	Factor1	2.01%	2.28%	2.23%	3.30%
Mgmt	Factor1	2.45%	2.72%	2.76%	3.58%
Mom	Factor1	3.10%	3.10%	3.22%	3.68%
Mom	Factor2	1.99%	2.48%	2.65%	3.44%
Mom	Factor3	2.05%	2.55%	2.69%	3.46%
Sent	Factor1	2.67%	2.98%	2.89%	3.78%
Sent	Factor2	2.54%	3.03%	2.95%	3.79%
Vol	Factor1	2.52%	2.75%	2.63%	3.12%
Vol	Factor2	2.61%	2.96%	2.70%	3.11%

Exhibit 1: Performance of Factors (1990—2012) *(cont.)*

Information Ratio		Last 3 years	Last 5 years	Last 10 years	Since Inception
Value	Factor1	0.3	0.3	0.9	0.8
Value	Factor2	1.1	0.4	1.1	0.7
Op Eff	Factor1	1.3	0.6	1.4	1.0
Op Eff	Factor2	1.6	1.1	1.4	1.1
Op Eff	Factor3	0.2	0.7	1.0	0.9
Op Eff	Factor4	1.2	0.7	1.2	1.1
Op Eff	Factor5	1.2	0.6	1.3	1.0
Quality	Factor1	0.9	0.5	1.2	0.9
Mgmt	Factor1	0.2	0.4	1.1	1.0
Mom	Factor1	0.2	0.3	1.1	1.2
Mom	Factor2	1.0	0.4	1.3	1.0
Mom	Factor3	1.1	0.5	1.4	1.1
Sent	Factor1	1.0	0.6	1.3	0.5
Sent	Factor2	1.2	0.7	1.4	0.6
Vol	Factor1	1.1	0.8	1.0	0.8
Vol	Factor2	0.8	0.6	1.0	0.8
Annual Portfolio Turnover		**Last 3 years**	**Last 5 years**	**Last 10 years**	**Since Inception**
Value	Factor1	68%	71%	68%	78%
Value	Factor2	60%	70%	72%	67%
Op Eff	Factor1	69%	72%	66%	68%
Op Eff	Factor2	63%	62%	59%	62%
Op Eff	Factor3	60%	62%	58%	54%
Op Eff	Factor4	60%	62%	55%	65%
Op Eff	Factor5	64%	65%	61%	71%
Quality	Factor1	74%	73%	58%	65%
Mgmt	Factor1	114%	115%	113%	135%
Mom	Factor1	152%	159%	148%	152%
Mom	Factor2	154%	154%	150%	161%
Mom	Factor3	144%	151%	138%	153%
Sent	Factor1	238%	254%	262%	276%
Sent	Factor2	410%	443%	447%	457%
Vol	Factor1	180%	175%	175%	190%
Vol	Factor2	190%	178%	171%	197%

SOURCE: Innealta using data from FactSet Research Systems

As can be seen in Exhibit 1, all factors show strong consistent performance in all periods at relatively low levels of risk. This leads to strong information ratios, or risk-adjusted returns. Depending on the factor type and the update frequency of the data used to compute the factor changes, the factor portfolio turnover ranges from about 50% per year to more than 400% per year. While higher turnover causes higher trading costs in real portfolios, we are able to trade the underlying ETFs very cheaply such that the turnover levels observed are of little concern.

Exhibit 2 shows the average factor exposure correlations over time for the same factors.

Exhibit 2: Average Factor Exposure Correlations over Time (1990—2012; by Factor Type)

		Value F1	Value F2	Op Eff F1	Op Eff F2	Op Eff F3	Op Eff F4	Op Eff F5	Quality F1	Mgmt F1	Mom F1	Mom F2	Mom F3	Sent F1	Sent F2	Vol F1	Vol F2
Value	F1	1.00	0.56	0.10	-0.10	0.04	-0.08	0.07	0.22	0.09	-0.19	-0.17	-0.17	-0.03	-0.03	-0.18	-0.18
Value	F2		1.00	-0.14	-0.11	0.22	0.07	-0.12	0.12	0.01	-0.17	-0.15	-0.15	0.01	0.00	-0.10	-0.09
Op Eff	F1			1.00	0.64	0.01	0.50	0.92	0.32	0.10	0.10	0.10	0.11	0.02	0.00	-0.18	-0.17
Op Eff	F2				1.00	0.45	0.80	0.65	0.21	0.10	0.20	0.15	0.15	0.07	0.03	-0.21	-0.19
Op Eff	F3					1.00	0.49	0.08	-0.10	0.10	0.10	0.10	0.10	0.06	0.08	-0.23	-0.22
Op Eff	F4						1.00	0.51	0.11	0.07	0.17	0.12	0.12	0.08	0.04	-0.16	-0.14
Op Eff	F5							1.00	0.27	0.10	0.12	0.11	0.12	0.02	0.01	-0.21	-0.20
Quality	F1								1.00	-0.09	0.01	-0.02	-0.02	0.03	0.02	-0.15	-0.15
Mgmt	F1									1.00	0.02	0.04	0.04	-0.04	-0.02	-0.06	-0.06
Mom	F1										1.00	0.70	0.67	0.17	0.14	-0.08	-0.08
Mom	F2											1.00	0.94	0.11	0.08	-0.04	-0.04
Mom	F3												1.00	0.11	0.10	-0.04	-0.05
Sent	F1													1.00	0.47	-0.01	0.00
Sent	F2														1.00	-0.02	0.00
Vol	F1															1.00	0.92
Vol	F2																1.00

SOURCE: Innealta using data from FactSet Research Systems

As can be seen in Exhibit 2, factors within a certain factor type tend to have relatively high positive correlations that often exceed 0.5. As expected, these factors contain quite a lot of overlapping information. Examining the correlations of factors across categories generally reveals substantially lower correlations, highlighting the fact that they tend to capture distinct sources of information. One notable example is the negative correlation that can be observed between the Valuation (Value) and Momentum (Mom) factor types. As noted earlier, these factors tend to be naturally diversifying, so that if they are combined in a portfolio they tend to produce relatively low-risk diversified returns. Similar patterns exist between Operating Efficiency (Op Eff) and Volatility (Vol) or Value and Vol.

In addition to factor performance, factor correlations are one of the main criteria we use to decide which factors to combine into composites. Based on the information shown in Exhibit 1 and Exhibit 2, we decided to form 11 composite factors that, in each case, combine two or more of our individual factors. The objective behind forming composites is to come up with 'super-factors' that have more attractive risk/return properties than individual factors and that are more diversified. As a result, we greatly reduce much of the noise normally associated with time series data.

Exhibit 3 shows performance information for our 11 composites for the entire sample period (1990-2012) as well as three sub-periods. The table follows the same format as Exhibit 1.

Exhibit 3: Performance of Composite Factors (1990—2012)

Annualized Active Returns	Last 3 years	Last 5 years	Last 10 years	Since Inception
Composite 1	0.73%	0.50%	2.72%	3.57%
Composite 2	3.10%	1.88%	3.80%	3.78%
Composite 3	0.56%	-0.02%	3.07%	4.22%
Composite 4	1.25%	2.00%	2.57%	2.38%
Composite 5	4.08%	3.67%	4.21%	3.55%
Composite 6	2.60%	2.05%	2.68%	2.36%
Composite 7	1.85%	0.62%	2.61%	2.61%
Composite 8	3.21%	2.73%	4.30%	4.05%
Composite 9	1.70%	1.05%	2.73%	2.87%
Composite 10	2.47%	1.79%	3.81%	2.04%
Composite 11	1.53%	0.73%	3.51%	2.08%
Annualized Active Risk	**Last 3 years**	**Last 5 years**	**Last 10 years**	**Since Inception**
Composite 1	2.70%	2.85%	3.00%	3.92%
Composite 2	2.62%	2.85%	3.01%	3.83%
Composite 3	2.39%	2.80%	3.19%	3.98%
Composite 4	2.34%	2.54%	2.60%	2.99%
Composite 5	2.64%	2.97%	2.92%	3.36%
Composite 6	2.62%	2.84%	2.73%	3.29%
Composite 7	2.52%	2.77%	2.69%	3.66%
Composite 8	2.70%	3.03%	2.98%	3.64%
Composite 9	2.33%	2.52%	2.41%	3.58%
Composite 10	2.79%	3.07%	2.96%	3.81%
Composite 11	2.60%	3.16%	3.22%	3.94%

Exhibit 3: Performance of Composite Factors (1990—2012) *(cont.)*

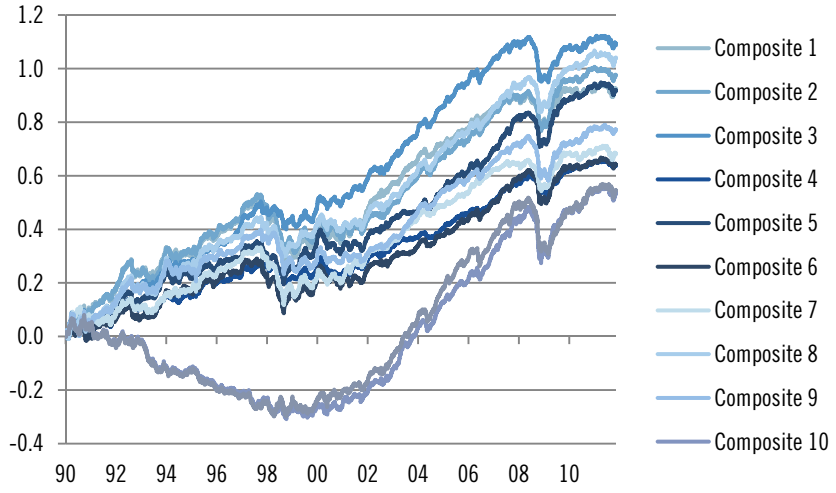
Information Ratio	Last 3 years	Last 5 years	Last 10 years	Since Inception
Composite 1	0.3	0.2	0.9	0.9
Composite 2	1.2	0.7	1.3	1.0
Composite 3	0.2	0.0	1.0	1.1
Composite 4	0.5	0.8	1.0	0.8
Composite 5	1.5	1.2	1.4	1.1
Composite 6	1.0	0.7	1.0	0.7
Composite 7	0.7	0.2	1.0	0.7
Composite 8	1.2	0.9	1.4	1.1
Composite 9	0.7	0.4	1.1	0.8
Composite 10	0.9	0.6	1.3	0.5
Composite 11	0.6	0.2	1.1	0.5
Annual Portfolio Turnover	**Last 3 years**	**Last 5 years**	**Last 10 years**	**Since Inception**
Composite 1	72%	78%	76%	84%
Composite 2	104%	104%	90%	87%
Composite 3	168%	144%	126%	143%
Composite 4	86%	85%	103%	111%
Composite 5	87%	96%	97%	117%
Composite 6	186%	174%	160%	175%
Composite 7	67%	67%	65%	73%
Composite 8	69%	73%	66%	76%
Composite 9	108%	102%	101%	117%
Composite 10	252%	268%	284%	304%
Composite 11	244%	251%	245%	250%

SOURCE: Innealta using data from FactSet Research Systems

As can be seen in Exhibit 3, all factor composites show stable active returns over time with limited risk. This is reflected in very attractive information ratios that exceed one in a number of cases, meaning that for each unit of risk, we are compensated with more than the same unit of return.

Exhibit 4 shows a chart of the cumulative factor composite performance over time. While periods of drawdowns exist, all factors added significant value over time. Drawdowns usually occur during periods of irrational investor behavior or market turmoil in general, such as the tech bubble around the end of the 1990s and the credit crunch during the fall of 2008. Each time our factor composites experienced a significant drawdown, there was a strong rebound shortly afterwards. One exception to that rule are factor composites 10 and 11, which experienced a sustained period of negative performance during the first half of our sample period. These two composites are at least partially based on analyst forecasts for which data availability, especially for emerging markets countries, was sparse before 2000. Once data coverage had improved, these factor composites generated strong returns from the start of the New Millennium.

Exhibit 4: Cumulative Active Returns of Factor Composites (1990—2012)



SOURCE: Innealta using data from FactSet Research Systems

SUMMARY AND CONCLUSION

This work continues the theoretical and conceptual framework now decades into its ongoing evolution. Knowing already that the new factors provide strong independent sources of return that can be expected to further enhance the risk/return profile of our Country Rotation portfolio, we currently are studying ways we can combine these methodologies and metrics with our existing Country Rotation model in a manner consistent with our current approach. Though the research exhibits promise, rigorous review will continue before its inclusion into our framework. Equal management of the risk and return characteristics will always be at the fore of our process.

Whilst model enhancements shall come in due course, our bottom-up country rotation research provides just one example of our constant effort to identify new sources of excess return. Readers should know that this quest involves not just this, but many such threads, the methods of which we look to incorporate into our daily work as the benefits warrant.

IMPORTANT INFORMATION

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Investment in emerging markets subjects a fund to a greater risk of loss than investments in a developed market. This is due to, among other things, greater market volatility, lower trading volume, political and economic instability, high levels of inflation, deflation or currency devaluation, greater risk of market shut down, and more governmental limitations on foreign investment policy than those typically found in a developed market. In addition, the financial stability of issuers (including governments) in emerging market countries may be more precarious than in other countries. As a result, there will tend to be an increased risk of price volatility in a fund's investments in emerging market countries, which may be magnified by currency fluctuations relative to the U.S. dollar.

Diversification does not protect against loss in declining markets.

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Innealta is an asset manager specializing in the active management of portfolios of Exchange Traded Funds. Innealta's competitive advantage is its quantitative investment strategy driven by a proprietary econometric model created by Dr. Gerald Buetow, Innealta's Chief Investment Officer. The firm's products include Tactical ETF Portfolios, a U.S. Sector Rotation Portfolio and a Country Rotation Portfolio. Innealta aims to beat appropriate benchmark performance by tactically managing portfolios utilizing a proprietary econometric model. By harnessing the benefits of ETFs, Innealta is able to provide investors with exposure to multiple asset classes and investment styles in highly liquid, low cost portfolios.

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