Equity Factor Indexes for the Canadian Market

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In the 1960s, several academics independently formulated what came to be known as the Capital Asset Pricing Model, or the CAPM for short. According to the CAPM, the expected excess return of every security is proportional to its systematic risk (beta) with respect to the market portfolio. Furthermore, every investor should hold nothing other than a combination of the market portfolio and cash (long or short), the blend between the two reflecting individual risk tolerance. This later prediction of the CAPM is the intellectual origin of broad market index investing.

However, research in the late 1970s and early 1980s showed that over the long run beta is not the only factor relevant to predict performance. Over long periods of time, small-cap stocks and those with relatively favorable valuation ratios tend to outperform market beta portfolios. (These two phenomena are often called the size effect and value effect, respectively.) As academics began to accept these empirical rejections of the CAPM, two schools of thought emerged to explain them.

1. The efficient market school, which views the size and value effects as systematic risk factors (or proxies thereof) in addition to the market portfolio which the markets rationally awards risk premiums for taking.
2. The inefficient market school which believes that market prices differ from fair values but that as the differences tend toward zero over time, value and size premiums will occur without any connection to risk factors.

**Factor Indexes**

In the U.S., the existence of the size and value effects led to the practice of dividing the market into groups of stocks on the basis of market capitalization and valuation ratios. Morningstar began to popularize the concept in the 1990s with its Equity Style Box in the 1990s. The Equity Style Box is a 3×3 grid that on the vertical axis shows whether Morningstar classifies a stock or equity fund as being Large-cap, Mid-cap, or Small-cap with respect to size as measured by market capitalization, and whether it falls in the Value, Core (or Blend), or Growth area as measured by Morningstar’s proprietary multi-factor style model. (See Figure 1.)

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**Figure 1:** The Morningstar Equity Style Box

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In the early 2000s, Morningstar expanded on the Style Box for equity funds with the Equity Ownership Zone. In Ownership Zone analysis, the Style Box is treated as a piece of graph paper and each stock in a portfolio is plotted on it. The asset-weighted average position is called the Centroid and is plotted as well. The Ownership Zone itself is an ellipse that contains the stocks that make up 75% of the portfolio closest to the Centroid as measured by asset value. Plotting the Ownership Zones of different portfolios on the same chart provides a visual representation of how similar or different the investment styles of the portfolios are. See Figure 2 for an example using Morningstar’s US Equity Style Indexes discussed below.

Figure 2: Morningstar US Style Indexes Ownership Zones—April 30, 2012

Also in the early 2000s, Morningstar introduced its first family of indexes, the Morningstar US Style Indexes. Nine of these indexes are a set of mutually exclusive and exhaustive portfolios that contain all of the stocks in the U.S. Market index according to the nine squares of the Style Box. Embodied as Exchange-Traded Funds (ETFs), these indexes provide a powerful tool for U.S. investors to obtain style-pure exposure to the U.S. equity market.
Factor indexes are only useful as they represent distinct market behaviors, which are manifested as distinct patterns of return over time. To see if the size and value factors as represented by the Morningstar US Styles indexes meet this criterion, we plot the following two index ratios in Figure 3 over the period July 1997 through April 2012:

1. **Small/Large.** This is the ratio of the Morningstar US Small-Cap index to the Large-Cap index. Each of these indexes is comprised of all of the stocks that are its size band. Any period for which this line is upward sloping is when small-cap stocks were outperforming large-cap stocks and any period for which it is downward sloping is when large-cap stocks outperformed small-cap stocks. Since the ratio of 1.54 at the end of the overall period is well over 1.00, we conclude that the size premium was clearly realized over this period.

2. **Value/Growth.** This is the ratio of the Morningstar US Value index to Growth index. Each of these indexes is comprised of all of the stocks that are its column of the Style Box. Any period for which this line is upward sloping is when value stocks were outperforming growth stocks and any period for which it is downward sloping is when growth stocks outperformed value stocks. Since the ratio of 1.49 at the end of the overall period is well over 1.00, we conclude that the value premium was clearly realized over this period.

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**Figure 3: Size and Value Effects** Morningstar US Style Index Ratios

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Data from July 1997–April 2012.
Source: Morningstar Direct, Morningstar Indexes
Figure 4 shows the historical compound annual returns and standard deviations of all of the Morningstar US Style indexes over the period July 1997 through April 2012. What stands out from this chart is not only the realized size and value premiums over the period, but also the additional risk of the Growth indexes in comparison to their Value and Core counterparts.\(^6\)

**Figure 4: Risk and Return of Morningstar US Style Indexes**

![Graph showing returns and standard deviations of Morningstar US Style Indexes](image)

Data from July 1997–April 2012.
Source: Morningstar Direct, Morningstar Indexes

**Factor Tilt Indexes for Canada**

After developing the Ownership Zone for U.S. equity portfolios, Morningstar developed Ownership Zone analysis for other equity markets, including Canada. When applied to portfolios that are composed exclusively of Canadian stocks, the Ownership Zone chart shows where each stock and each portfolio falls in terms of market capitalization and value/growth orientation relative to the Canadian equity market. In other words, stocks that fall in the large-cap band are large relative to other Canadian stocks but not necessarily relative to stocks in other markets such as the U.S. Figure 5 shows the Ownership Zones for the Canadian equity indexes discussed below.
Morningstar took a different approach to introducing equity factor indexes for the Canadian market than it did in the U.S. First, rather than starting with the Style Box, we took a broader view of equity factors based on academic findings that suggest that there are equity factors beyond size and value/growth orientation. As Figure 6 shows, more recent research has identified Momentum\(^7\) and Liquidity\(^8\) as distinct factors in addition to Value and Size. Furthermore, dividend yield is often treated as a factor, which we regard as a special type of value orientation. The practical manifestation of this has been the creation of several dividend indexes and ETFs in the U.S.\(^9\)

Secondly, we leveraged the expertise of Toronto-based Computerized Portfolio Management Services (CPMS), a leading expert on factor-based equity investing in the Canadian and U.S. markets, which Morningstar acquired in 2009. CPMS provides a broad range of portfolio analysis and equity return enhancement products to the Canadian investment community, and has a reputation of delivering high-quality data on over 4,000 companies in North America. Clients include institutional money managers, pension plans, institutional brokerage departments, financial planners, and investment advisors.
Morningstar created three equity indexes for the Canadian market based on the following CPMS factor-based strategies.

1. **The Canadian Value Strategy.** This strategy is suited for investors seeking value for money through stocks with low price/reported earnings, price/book, and cash flow ratios. The strategy emphasizes stocks with low P/E multiples based on reported and expected earnings, low price/cash flow multiples based on reported cash flow, and low price/book ratios. Importance is also placed on stocks with high earnings estimate revisions. The Morningstar Canada Value Index is based on this strategy and utilizes the methodology inherent in the CPMS model portfolios. Figure 7 provides details on this index.

2. **The Canadian Earnings Momentum Strategy.** This strategy is suited for aggressive, short-term, active investors. The strategy emphasizes stocks with high earnings estimate revisions and quarterly earnings momentum. Importance is also placed on stocks with positive earnings surprise and positive price change. The Morningstar Canada Momentum Index is based on this strategy and utilizes the methodology inherent in the CPMS model portfolios. Figure 8 provides details on this index.

3. **The Canadian Dividend Growth Strategy.** This strategy is suited for income-oriented investors seeking to buy profitable companies that are growing their dividends. The strategy emphasizes stocks with high expected dividend yields and dividend growth. Importance is also placed on stocks with high cash flow momentum and return on equity. The Morningstar Canada Dividend Target 30 Index is based on this strategy and also utilizes the methodology inherent in the CPMS model portfolios. Figure 9 provides details on this index.

In each strategy, stocks are screened to ensure they have minimum liquidity and analyst coverage as well as earnings in the upcoming year. Stocks are also screened to be included in the top 250 stocks within the extensive CPMS Equity Universe. Each of the three Morningstar indexes is an equally weighted portfolio of the top 30 stocks based on the weighted average of the selection factors as shown in Figures 7, 8, and 9, respectively.
Equity Factor Indexes for the Canadian Market | June 2012

Figure 7: Morningstar Canada Value Index

Index Characteristics
- Designed to provide diversified exposure to stock with relatively low prices given anticipated per-share earnings, book value, cash flow, sales, and earnings estimates.
- Rebalances and Reconstitutions take place on a quarterly basis.
- Securities are equally weighted at each reconstitution.

Eligible Universe
- Trades on the TSX.
- Classified as a Canadian issuer based on country of incorporation, primary stock market activities and headquarters, and primary business activities.
- Meets screens for:
  - Low Price/Earnings Ratios
  - Low Price/Cash Flow Ratios
  - Low Price/Book Value Ratios
  - Low Price/Sales Ratios

Eligible Universe
- Price to Earnings Ratio (trailing): 20.00%
- Price to Latest Cash Flow: 20.00%
- Current Price/Book Ratio: 20.00%
- Price to Latest Four-Quarter Sales: 20.00%
- Estimate Revision (Current Year) 3 Months: 20.00%

Figure 8: Morningstar Canada Momentum Index

Index Characteristics
- Designed to provide diversified exposure to Canadian issuers which have demonstrated, among other things, positive momentum in earnings and price.
- Rebalances and Reconstitutions take place on a quarterly basis.
- Equally weighted based on specific selection factors.

Eligible Universe
- Trades on the TSX.
- Classified as a Canadian issuer based on country of incorporation, primary stock market activities and headquarters, and primary business activities.
- Meets screens for:
  - Above-average ROE and ROA.
  - Emphasis on upward earnings estimate revisions and technical price momentum indicators.

Eligible Universe
- Trailing Return on Equity: 20.00%
- 3-Month EPS Estimate Revision (Current Year): 30.00%
- Latest Quarterly Earnings Surprise: 10.00%
- Price Change from Month-End Three Months Ago: 10.00%
- Price Change from Month-End Nine Months Ago: 10.00%
- Percent Change in Price from 12-Month High: 20.00%

Figure 9: Morningstar Canada Dividend Target 30 Index

Index Characteristics
- Reflects the performance of 30 high-quality dividend-paying Canada-based equities.
- Rebalances and Reconstitutions take place on a quarterly basis.
- Securities are equally weighted at each reconstitution.

Eligible Universe
- Listed on TSX.
- One of the 100 stocks with the highest 12-month average trading volume.
- Dividend Yield greater than 1%.
- Securities of Canadian-domiciled firms who have Common Shares or Units of Income Trusts.

Eligible Universe
- Dividend Yield: 33.33%
- Cash Flow to Debt: 20.00%
- Five-Year Normal EPS Growth: 13.33%
- Return on Equity: 20.00%
- EPS Estimate Revision: 13.33%
As the Morningstar indexes are fairly specialized strategies, where might they fit into an overall portfolio of Canadian stocks? To help answer that question, Figure 5 shows the Ownership Zones for the three Morningstar indexes along with that of the S&P/TSX 60 index, which is the most popular Canadian equity index in terms of the assets of Canadian investors linked to it in the form of index funds and ETFs. (This is not surprising as the S&P/TSX 60 consists of the largest 60 stocks of the comprehensive S&P/TSX Composite Index, represents 73% of the assets of the Composite index, has monthly returns that are 99.4% correlated with it, and as Figure 13 shows, has almost identical performance and risk.)

Figure 5 shows that the Morningstar indexes offer some style diversification with respect to the TSX 60. The Dividend index, while still large-cap, has stocks with less market-cap than the TSX 60. Not surprisingly, it has more of a value orientation. The Value and Momentum indexes each have a mid-cap focus, which can provide diversification across the size spectrum within a portfolio. Also, as we would expect, the Value index has a clear value bias and the Momentum strategy has a clear growth bias.

This is not to say that these various indexes hold completely distinct portfolios. Given the limited number of stocks that trade on the TSX, it is not surprising that some of the same names appear in portfolios that are constructed using different principles. As Figure 10 shows, there is a certain amount of stock overlap among the three Morningstar indexes and the TSX 60. However, note how different the exposure to the commonly held stocks is among the portfolios.

Figure 10: Canadian Equity Indexes Stock Overlap—April 30, 2012
In addition to opportunities for style diversification as shown in Figure 5, the Morningstar indexes also provide opportunities for diversification across economic sectors. As Figure 11 shows, the Canadian equity market is heavily weighted in Financial Services, Energy, and Basic Materials. But what Figure 11 also shows is how much lighter the Morningstar Value and Momentum indexes are exposed to these sectors, and how much more exposure all of the Morningstar indexes have to the remaining sectors. Hence, Canadian investors can use the Morningstar indexes to tilt away from Financial Services, Energy, and Basic Materials and form more diversified portfolios within the Canadian stock market.

Of course investors are ultimately concerned with performance and risk. As Figures 12 and 13 show, all of the Morningstar factor indexes have significantly outperformed the TSX 60 over the period January 2002–April 2012. This is consistent with the idea that each factor index will ultimately deliver the premium that each is designed to capture. Furthermore, as Figure 13 shows, by combining these indexes among themselves and with the TSX 60 (or TSX Composite), these premiums could have been realized while reducing the risk of an overall portfolio. The curve in this figure is the historically efficient frontier of compound rate of return versus standard deviation of the period. Due to the high, realized factor premiums over this period, most of the portfolios along the curve consist only of the factor indexes. Only those points on the extreme left end of the efficient frontier contain the TSX 60, the largest exposure being 8.76% for the minimum variance portfolio.
Figure 12: Canadian Equity Index Performance

Figure 13: Risk and Return of Canadian Equity Indexes and Index Portfolios

Data from January 2002–April 2012.
Source: Morningstar Direct, Morningstar Indexes
The point labeled “Morningstar All” in Figure 13 represents the equally weighted portfolio of the three Morningstar factor indexes (i.e., one third in each). This portfolio falls almost exactly on the efficient frontier. However, since no investor is likely to hold such a portfolio, we also show that combining it with the TSX 60 would have both reduced risk and enhanced performance. We show two such portfolios: the 70/10/10/10 portfolio, which is 70% in the TSX 60 and 10% in each of the three factor indexes and the 61/13/13/13 portfolio which is 61% in the TSX 60 and 13% in each of the three factor indexes. As the figure shows, the greater the use of the factor indexes, the closer is the overall portfolio to the efficient frontier. Assuming that this relationship continues to hold in the future, this demonstrates the possible risk-reducing and performance-enhancing potential of these factor indexes for a Canadian equity investor.

Conclusion
Extensive academic research has shown that there clearly exist distinct factors which explain returns on U.S. stocks. Because exposure to these factors, especially size and value, has been shown to generate premiums for investors that tilt their portfolios toward them over the long run, equity factor indexes and ETFs that embody them have become quite popular among U.S. investors.

Research conducted by Morningstar CPMS shows that similar factors operate in the Canadian market with similar potential benefits for Canadian equity investors. Based on this research, Morningstar has created a dividend, value, and momentum index to capture each of these three factors, respectively. We have shown that these indexes can indeed provide several benefits to investors. In particular, investors can use them to gain diversification across the Style Box (i.e., across both the dimensions of size and value/growth orientation) and across economic sectors. Furthermore, when combined with the popular TSX 60, these indexes can simultaneously reduce the overall risk of a Canadian equity portfolio and enhance performance, thus bringing investors to an overall better place in the risk/return space.
5. BlackRock iShares offers ETFs based on these nine Morningstar US Style indexes.
10. These results are based on portfolio holdings data on the two indexes dated April 30, 2012 and monthly total return data over the period January 2002–April 2012 obtained from Morningstar Direct.