The surprising reason a home should be in your portfolio

An Edmonton case study

Spring and summer are typically the hottest months for home buying and selling activity. So, as the days get longer, housing moves to the forefront of many people's minds.

With interest rates creeping higher, new national mortgage qualifying rules and a British Columbia 'speculation tax' all occurring within the last year, many Canadians are wondering about the state of our housing market.

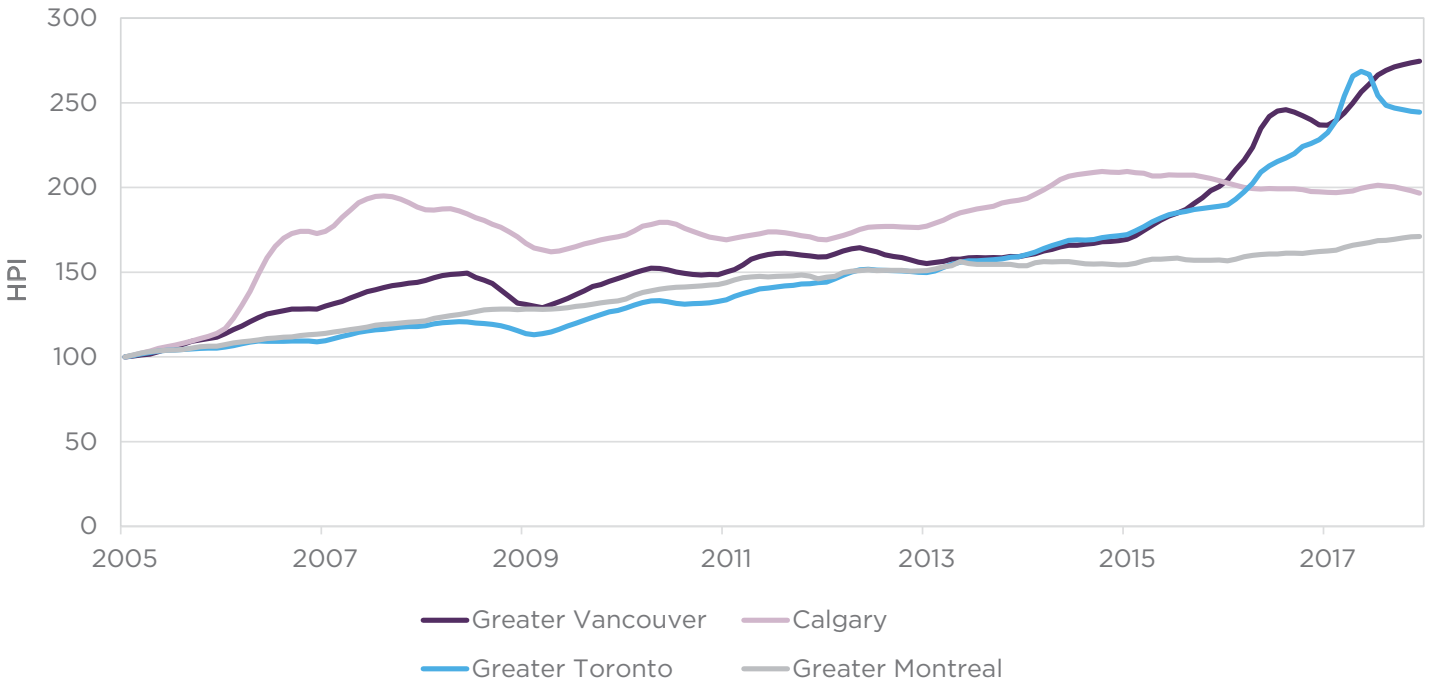
In this quarter's article, we attempt to shed some light on the current conditions of the Canadian housing market, the history of the Edmonton market, and where these fit in a diversified portfolio.

The Canadian housing market – problematic conditions

Concern with Canada's housing market is not new. Last year in particular saw a bevy of negative headlines. The Canada Mortgage and Housing Corporation (CHMC), which provides mortgage insurance in Canada, downgraded its overall evaluation from "strong" to "moderate" stating there was strong evidence of problematic conditions[1]. A month later, Goldman Sachs surmised that while a Canadian housing market crash was unlikely, with odds at about 30%, it was the second-most overvalued housing market within G10 countries[2]. More recently, changes to mortgage rules and a dramatic decrease in year-over-year sales in Toronto have caused negative headlines to loom once again.

Yet, what can be observed is that real estate is not national but local. What happens in Toronto's real estate market is not what happens in Calgary's or Montreal's. Even the report from Goldman Sachs noted that 'regional disparities' exist, and most of Canada's recent problems are due to housing markets in Toronto and Vancouver[2]. Regionalization is clearly evident when changes in home prices are compared for cities across Canada (Chart 1).

Chart 1: Canada's four biggest metros – changes in residential real estate prices (January 2005 - December 2017)[3]



SOURCE: The Canadian Real Estate Association – MLS® Home Price Index (HPI) Tool

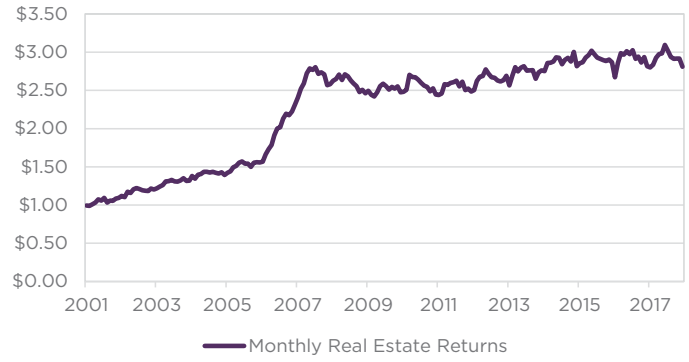
This dramatic difference across regions creates many questions for home owners: Should we be concerned about 'the Canadian housing market'? Is residential real estate a good investment? How does my home fit within my portfolio?

In an attempt to answer these questions, we have sourced monthly average total residential prices for Edmonton going back to January 1962. We then analyzed the data the way investors would typically look at a capital market index to understand the risk and return experienced over the next 55 years. By comparing this to other holdings in a typical Canadian portfolio, such as Canadian stocks and bonds, we can add some context to housing as an asset class.

Edmonton's housing market

Similar to Calgary and Montreal, owners of Edmonton residential real estate have not experienced the dramatic increases of Toronto and Vancouver, especially since the 2008/2009 recession (Chart 2).

Chart 2: Growth of wealth through Edmonton residential real estate (January 2001 – December 2017)[4]



However, serious, long-term investors focus on more than returns from one business cycle. Instead, our decisions focus on how asset classes perform over many decades, how much risk is taken to capture that performance, and how this risk-return profile compares to other assets. Most importantly, we want to know whether or not diversification can help improve this profile.

Stretching our analysis back over many decades provides interesting insight (Chart 3). It is clear that average monthly housing prices in Edmonton have grown significantly less than Canadian stocks and long-term bonds over the 55-year period for which data is available.

Perhaps most surprising in this analysis is that the risk involved with investing in Edmonton real estate over this period is higher than the other asset classes. Using standard deviation as a measure, volatility of monthly real estate returns is slightly higher than for the Canadian stock market (Table 1).

Table 1: Annualized returns and standard deviation (February 1962 – December 2017)[5]

	Annualized Return	Annualized Risk*
Monthly Real Estate Returns	6.17%	16.49%
S&P/TSX Composite Index	9.20%	15.15%
FTSE TMX Canada Long Term Bond Index	8.49%	8.37%

*Calculated as standard deviation of monthly returns, annualized. A smaller percentage implies reduced risk.

Chart 3: Growth of wealth (February 1962 – December 2017)[5]

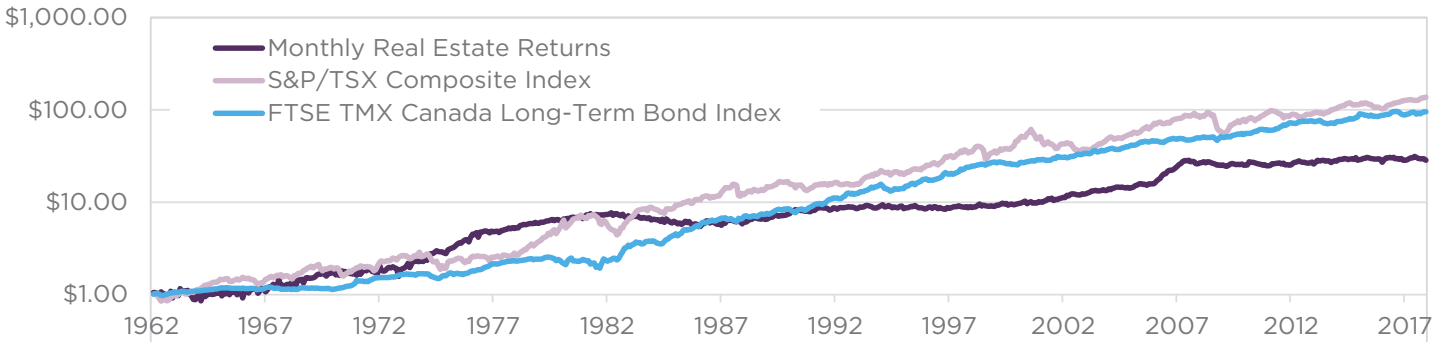


Table 2: Best/Worst Returns (February 1962 – December 2017)[5]

	Best 12-Month Return	Worst 12-Month Return	Best Five-Year Return	Worst Five-Year Return	Best 10-Year Return	Worst 10-Year Return
Monthly Real Estate Returns	53.60% (2/2006 – 1/2007)	-18.51% (12/1962 – 11/1963)	27.53% (12/1972 – 11/1977)	-5.69% (3/1981 – 2/1986)	16.88% (10/1966 – 9/1976)	0.63% (10/2007 – 9/2017)
S&P/TSX Composite Index	86.92% (7/1982 – 6/1983)	-39.15% (7/1981 – 6/1982)	27.76% (8/1982 – 7/1987)	-1.92% (4/1998 –3/2003)	19.51% (9/1977 – 8/1987)	2.83% (9/2000 – 8/2010)
FTSE TMX Canada Long-Term Index	55.59% (7/1982 – 6/1983)	-15.88% (10/1980 – 9/1981)	26.59% (10/1981 – 9/1986)	-0.63% (2/1965 – 1/1970)	18.33% (10/1981 – 9/1991)	2.73% (9/1964 – 8/1974)

This analysis would seem to indicate that, historically, Edmonton residential real estate has provided less growth and more risk than Canadian stocks and bonds over the last five decades. This begs the question: Why is housing viewed as a stable investment?

Recency bias

While historical data on the appreciation of Edmonton housing prices shows lower returns and higher volatility, a review of Best and Worst Returns adds some colour to the picture (Table 2). A few observations:

- Best and Worst 12-Month returns for real estate display volatility that is similar to bonds, and much less dramatic than stocks.
- Despite this, the Worst Five Year and Worst 10 Year returns for real estate are lower than both bonds and stocks. This would imply that when real estate does fall, prices can stay lower for longer.
- Perhaps most interesting, while the Best 12-Month and Worst 12-Month returns both occurred in the early 1980s for stocks and bonds, the real estate data varies significantly with the Worst 12-Month period occurring in 1963 and the Best 12-Month period occurring over 40 years later.

To better understand these temporal elements, we have analyzed recent housing price data for two timeframes: the pre-recessionary period from January 2001 to December 2008, and the post-recessionary period from January 2009 to December 2017.

When viewing the returns from this period, it is clear why Edmontonians may have a positive impression of residential real estate. Edmonton housing dramatically outperformed both stocks and bonds and had annual returns and volatility that performed far better than the historical data for this asset class (Chart 4 and Table 3).

Chart 4: Growth of wealth (January 2001 – December 2008)[6]

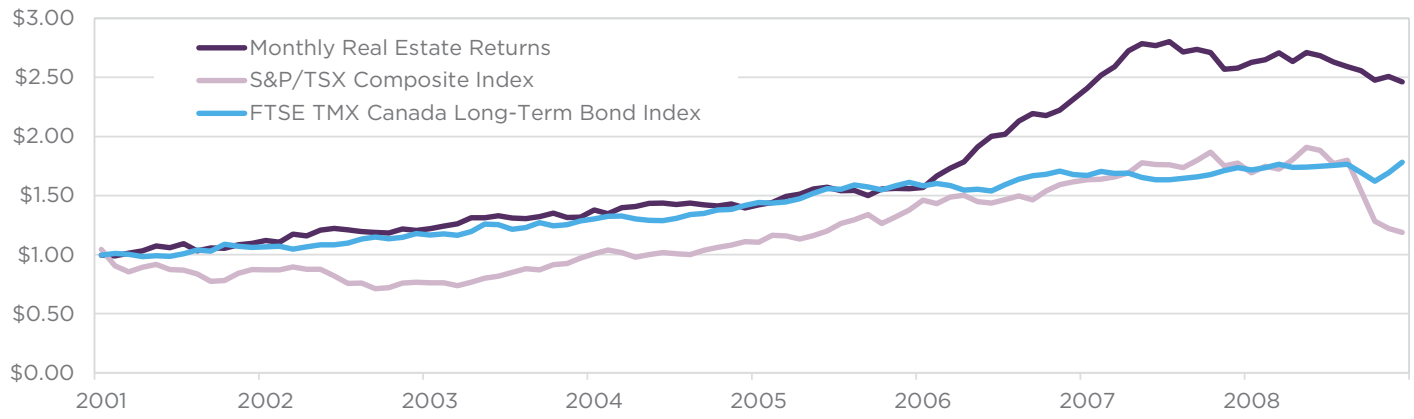


Table 3: Annualized returns and standard deviation (January 2001 – December 2008)[6]

	Annualized Return	Annualized Risk*
Monthly Real Estate Returns	11.93%	8.64%
S&P/TSX Composite Index	2.19%	15.29%
FTSE TMX Canada Long Term Bond Index	7.49%	6.67%

*Calculated as standard deviation of monthly returns, annualized. A smaller percentage implies reduced risk.

Table 4: Annualized returns and standard deviation (January 2009 – December 2017)[7]

	Annualized Return	Annualized Risk*
Monthly Real Estate Returns	1.48%	8.72%
S&P/TSX Composite Index	9.97%	10.72%
FTSE TMX Canada Long Term Bond Index	7.08%	6.97%

*Calculated as standard deviation of monthly returns, annualized. A smaller percentage implies reduced risk.

Recency bias

A common cognitive bias, the recency effect occurs because the human brain recalls short-term events most clearly. As a result, people often incorrectly weight recent events more heavily in decision making, or mistakenly believe that recent trends will continue into the future.

Yet, if we review the more recent period (Chart 5), the opposite has occurred. Average housing prices barely have grown since 2008 and are far surpassed by both stocks and bonds. Interestingly, despite this reduced return, monthly volatility in housing prices over both the 2001 - 2008 and 2009 - 2017 periods was remarkably consistent (Tables 3 and 4) and lower than the 1962 historical data shown previously. This could explain why Edmontonians may feel that real estate is a stable asset despite the significant difference in historical return versus stocks and long-term bonds.

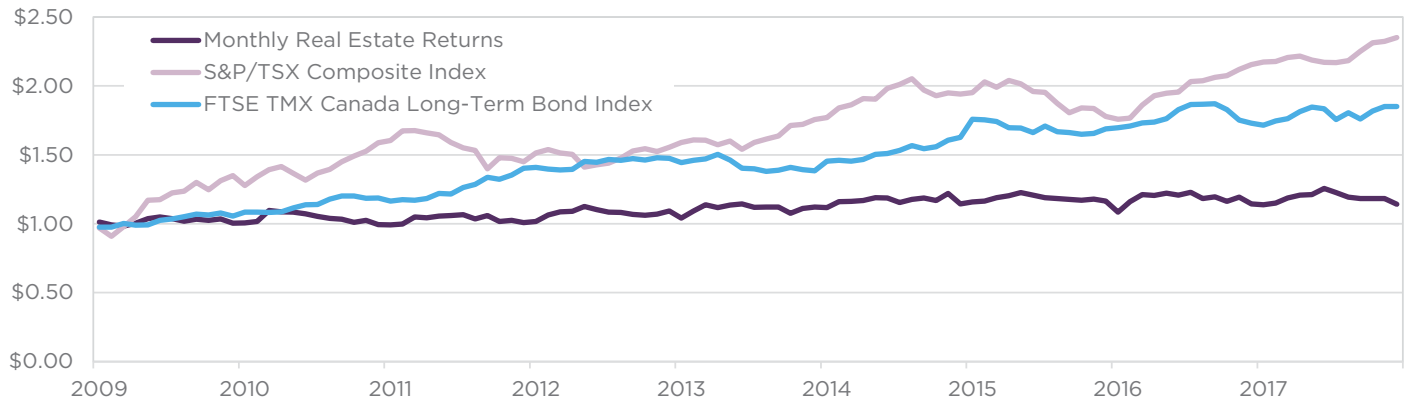
The real benefit of Edmonton real estate

If growth in value is not the reason for buying a home, one may wonder why home ownership is such an important rite of passage. While the emotional security that comes with a personal space cannot be overestimated, the data indicates another benefit to owning a home that may be a surprise.

Modern Portfolio Theory instructs us that when constructing a portfolio, the most important element is not an individual investment's risk or return, but how it affects the portfolio as a whole. In fact, even adding risky assets to a portfolio (i.e. diversification) may reduce the overall risk of a portfolio. The key is correlation.

In this regard, Edmonton real estate appears to be an excellent diversifier. In the longer period from 1962 to 2017, housing's correlation with both stocks and bonds was

Chart 5: Growth of wealth (January 2009 – December 2017)[7]



very close to zero. This is beneficial for diversification as it indicates that Edmonton housing prices have historically exhibited a return pattern that is in no way related to equity returns.

Correlation

Correlation describes the connection between the movements of two investments. In terms of financial portfolios, if two or more assets are positively correlated, their performance fluctuates in the same direction. If the correlation is negative, the assets move in opposite directions. Zero correlation indicates no relation between the assets. Investors should strive to diversify by holding assets that have a low, negative, or zero correlation. This can contribute to a better risk-return profile for the overall portfolio.

Modelling the benefits[8]

To provide a more concrete example, we built a very simple Model Diversified Portfolio that combines housing, stocks, and long-term bonds in equal proportions. The results are striking.

The effect of combining these diversified assets is a dramatic reduction in volatility. As we can see in Table 5, the model portfolio experienced a lower standard deviation than all of the individual asset classes. In other words, combining Edmonton housing with Canadian stocks and long-term bonds provided a better opportunity for growing net worth with lower risk.

Table 5: Comparison of model diversified portfolio versus individual asset classes (January 2001 – December 2017)[9]

	Annualized Return	Annualized Risk*
Model Diversified Portfolio*	6.93%	5.93%
Monthly Real Estate Returns	6.27%	8.78%
S&P/TSX Composite Index	6.23%	13.07%
FTSE TMX Canada Long Term Bond Index	7.27%	6.81%

* Model Diversified Portfolio consists of 1/3 real estate, 1/3 stocks, and 1/3 bonds.
**Calculated as standard deviation of monthly returns, annualized. A smaller percentage implies reduced risk.

International diversification

While we have used a simplified Canadian model to reflect the power of diversification, it must be noted that further diversification could be even more beneficial. As we have shown in past articles, international equities are a powerful diversifier. We believe that the model portfolio shown in this article would achieve an even better historical risk-return profile if an international index were added.

Conclusion

Worrying that Edmonton has the same real estate problems as the rest of Canada may not reflect reality, at least when using housing price increases as a gauge. It is possible this would be mirrored in other regional housing markets such as Winnipeg, Montreal or other municipalities that have not experienced the same price increases as Toronto and Vancouver, but more analysis would be necessary in order to know for sure. Historical data does provide a few key conclusions about the housing market, though. They are:

- The bulk of the recent run-up in prices in the Canadian housing market has occurred in Toronto and Vancouver.
- While the future is unpredictable, available data indicates that through most time periods Edmonton housing has not performed as well as traditional liquid investments such as stocks and long-term bonds.
- Despite lower returns, expanding the traditional portfolio to take into account housing assets shows that a home can still hold an important place in a diversified portfolio - and in a family's life.

References

1. "CMHC report reveals 'problematic conditions' of Canadian housing market". Leah Schnurr. Global News April 26, 2017. http://globalnews.ca/news/3406743/cmhc-report-canadian-housing-market/

2. "Canadian housing market has a 30 per cent chance of going bust". Michael Shulman. Yahoo Finance Canada May 17, 2017. https://ca.finance.yahoo.com/news/canadian-housing-market-30-per-cent-chance-going-bust-162156932.html

3. CHART 1: The Canadian Real Estate Association April 2017. "HPI Tool". http://www.crea.ca/housing-market-stats/mls-home-price-index/hpi-tool/

4. CHART 2:
   - REALTORS® Association of Edmonton, January 2001 – December 2011 Housing Statistics via "REALTORS Association of Edmonton – Average/Median Residential Selling Values".
   - REALTORS® Association of Edmonton, January 2012 – December 2017 Housing Statistics via "5 Year Residential Sales Activity (Edmonton CMA)".
   - Monthly real estate returns and growth of wealth calculated via Returns 2.0

5. CHART 3 AND TABLES 1, 2:
   - Monthly Real Estate Returns:
     - REALTORS® Association of Edmonton, January 1962 – December 2011 Housing Statistics via "REALTORS Association of Edmonton – Average/Median Residential Selling Values".
     - REALTORS® Association of Edmonton, January 2012 – December 2017 Housing Statistics via "5 Year Residential Sales Activity (Edmonton CMA)".
     - Growth of wealth, annualized returns, standard deviations and best/worst returns calculated via Returns 2.0
   - S&P/TSX Composite Index:
     - February 1962 – December 2017: S&P/TSX Composite Index. Total Returns in CAD. Source: S&P Dow Jones Indices LLC. Currency: CAD. S&P/TSX data provided by S&P/TSX. Via Returns 2.0
   - FTSE TMX Canada Long Term Bond Index:
     - February 1962 – December 2017: FTSE TMX Canada Long-Term Bond Index (Formerly DEX Long-Term Bond Index). All maturities greater than 10 years. Includes securities rated BBB or higher. Total Returns in CAD. Source: PC-Bond. Currency: CAD. Canadian fixed income data provided by PC-Bond, a business unit of FTSE TMX Global Debt Capital Markets Inc. Via Returns 2.0
   - CHART 3 created using a logarithmic scale with base 10.

6. CHART 4 AND TABLE 3:
   - Monthly Real Estate Returns:
     - REALTORS® Association of Edmonton, January 2001 – December 2008 Housing Statistics via "REALTORS Association of Edmonton – Average/Median Residential Selling Values".
     - Growth of wealth, annualized returns and standard deviations calculated via Returns 2.0
   - S&P/TSX Composite Index:
     - January 2001 – December 2008: S&P/TSX Composite Index. Total Returns in CAD. Source: S&P Dow Jones Indices LLC. Currency: CAD. S&P/TSX data provided by S&P/TSX. Via Returns 2.0
   - FTSE TMX Canada Long Term Bond Index:
     - January 2001 – December 2008: FTSE TMX Canada Long-Term Bond Index (Formerly DEX Long-Term Bond Index). All maturities greater than 10 years. Includes securities rated BBB or higher. Total Returns in CAD. Source: PC-Bond. Currency: CAD. Canadian fixed income data provided by PC-Bond, a business unit of FTSE TMX Global Debt Capital Markets Inc. Via Returns 2.0

7. CHART 5 AND TABLE 4:
   - Monthly Real Estate Returns:
     - REALTORS® Association of Edmonton, January 2009 – December 2011 Housing Statistics via "REALTORS Association of Edmonton – Average/Median Residential Selling Values".
     - REALTORS® Association of Edmonton, January 2012 – December 2017 Housing Statistics via "5 Year Residential Sales Activity (Edmonton CMA)".
     - Growth of wealth, annualized returns and standard deviations calculated via Returns 2.0
   - S&P/TSX Composite Index:
     - January 2009 – December 2017: S&P/TSX Composite Index. Total Returns in CAD. Source: S&P Dow Jones Indices LLC. Currency: CAD. S&P/TSX data provided by S&P/TSX. Via Returns 2.0
   - FTSE TMX Canada Long-Term Bond Index:
     - January 2009 – December 2017: FTSE TMX Canada Long-Term Bond Index (Formerly DEX Long-Term Bond Index). All maturities greater than 10 years. Includes securities rated BBB or higher. Total Returns in CAD. Source: PC-Bond. Currency: CAD. Canadian fixed income data provided by PC-Bond, a business unit of FTSE TMX Global Debt Capital Markets Inc. Via Returns 2.0

8. The model portfolio uses only hypothetical or back tested performance data and is an illustrative tool. Back tested performance is hypothetical (it does not reflect trading in actual client accounts) and is provided for informational purposes to illustrate potential performance had the strategy been available over the relevant period. Please review the full disclosure regarding the limitations of back tested performance at the end of this document as well as the methodology and assumptions used to calculate the back tested performance data. The Methodology and Disclosures information are integral to this publication.

9. TABLE 5:
   - Model Diversified Portfolio consists of 33.4% of Edmonton's Monthly Real Estate Returns, 33.3% of the S&P/TSX Composite Index in CAD, and 33.3% of the FTSE TMX Canada Long Term Bond Index in CAD. January 2001 – December 2017.
   - Monthly Real Estate Returns:
     - REALTORS® Association of Edmonton, January 2001 – December 2011 Housing Statistics via "REALTORS Association of Edmonton – Average/Median Residential Selling Values".
     - REALTORS® Association of Edmonton, January 2012 – December 2017 Housing Statistics via "5 Year Residential Sales Activity (Edmonton CMA)".
     - Growth of wealth, annualized returns and standard deviations calculated via Returns 2.0
   - S&P/TSX Composite Index:
     - January 2001 – December 2017: S&P/TSX Composite Index. Total Returns in CAD. Source: S&P Dow Jones Indices LLC. Currency: CAD. S&P/TSX data provided by S&P/TSX. Via Returns 2.0
   - FTSE TMX Canada Long-Term Bond Index:
     - January 2001 – December 2017: FTSE TMX Canada Long-Term Bond Index (Formerly DEX Long-Term Bond Index). All maturities greater than 10 years. Includes securities rated BBB or higher. Total Returns in CAD. Source: PC-Bond. Currency: CAD. Canadian fixed income data provided by PC-Bond, a business unit of FTSE TMX Global Debt Capital Markets Inc. Via Returns 2.0.

Appendix A - Data sources, decisions and assumptions

The primary objective of this paper was to compare long-term growth in Edmonton residential real estate to growth in Canadian stocks and bonds. To fulfill that objective, a number of decisions were made as to which types and sources of data were used:

- National Real Estate Data:
  - The Canadian Real Estate Association (CREA) provides the MLS® Home Price Index (HPI). This index tracks price changes over time by referencing a base year that is always set at 100. An HPI Tool on the CREA website automatically uses 2005 as the base year. To maintain consistency, we chose to display the Composite category for all cities as it most closely aligns with the Total Residential data provided by the REALTORS® Association of Edmonton (see below).

- Edmonton Real Estate Data:
  - Data Sourcing: Monthly average real estate prices were sourced from multiple reports maintained by the REALTORS® Association of Edmonton. We have assumed that these prices are relatively accurate. However, we recognize in 2012 the Association performed an audit on its statistics and recreated its formulas to enable greater accuracy. That process involved recalculations back to 2007, so data prior to that may not be as consistent. That being said, as housing data is difficult to find, using the available long-term data is the best possible way to inform a long-term investment perspective.
  - Total Residential: Part of the change incorporated in the 2012 audit was to separate out the different sectors of residential real estate, such as Single Family Detached, Condominium, Duplex/Rowhouses, and Total Residential. This was not done in the historical reporting prior to 2007, so to maintain consistency we used 'Total Residential' for our data analysis as it most closely resembled the long-term data.
  - Average Prices: The 1962 data provides only average sales prices until 2001 when median sale prices were also included. As a result, we used average sale prices throughout all of our analysis in order to maintain consistency.
- Canadian Bond Data – We recognize that since interest rates peaked in the early 1980s, fixed income performance has been strong, especially for long-term bonds. However, the only bond index that we could source with data back to 1962 was the FTSE TMX Long Term Bond Index. To maintain consistency with the Edmonton real estate data, this index was used for all bond analysis.
- Canadian Stock Data – The best known index for Canadian equities is the S&P / TSX Composite index and data is available back to 1962. In this case, the total return index (including dividends) was included.

Appendix B - Methodology and disclosures

- This presentation represents a Model Diversified Portfolio strategy using Edmonton's housing returns that is not currently managed in an actual client account by Pavilion Investment House. Therefore the data presented is back tested performance. Back tested performance is hypothetical (it does not reflect trading in actual accounts) and is provided for informational purposes to illustrate potential performance had the strategy been available over the relevant period. Hypothetical performance results are achieved by means of the retroactive application of each of the previously referenced models, certain aspects of which may have been designed with the benefit of hindsight. This hypothetical performance does not represent the results of actual trading using client assets nor decision-making during the period and does not and is not intended to indicate the past performance or future performance of any account or investment strategy managed by Pavilion Investment House. If actual accounts had been managed throughout the period, ongoing research might have resulted in changes to the strategy which might have altered returns. The actual performance of any account or investment strategy managed by Pavilion Investment House will differ from the hypothetical back tested performance results for each factor shown herein for a number of reasons, including without limitation the following:
- Although Pavilion Investment House may consider from time to time one or more of the factors noted herein in managing any account, it may not consider all or any of such factors. Pavilion Investment House may (and will) from time to time consider factors in addition to those noted herein in managing any account.
- Pavilion Investment House may rebalance an account more frequently or less frequently than daily and at times other than presented herein.
- The hypothetical back tested performance results for each factor do not reflect all transaction costs of buying and selling securities, custody costs and other costs or taxes – all of which would be incurred by an investor in any account managed by Pavilion Investment House. If all costs and fees were reflected, the hypothetical back tested performance results would be lower.
- Accounts managed by Pavilion Investment House are subject to additions and redemptions of assets under management, which may positively or negatively affect performance depending generally upon the timing of such events in relation to the market's direction.
- Simulated returns may be dependent on the market and economic conditions that existed during the period. Future market or economic conditions can adversely affect the returns.
- Data: All data is sourced from The Canadian Real Estate Association (CREA), the REALTORS® Association of Edmonton, and/or Returns 2.0.
- Returns: Results are back-tested using total monthly returns; in the cases where the reference portfolio is a mix of several indices, we assume monthly rebalancing.
- Portfolio Allocation: The simulated portfolio is a hypothetical portfolio meant to represent the Model Diversified Portfolio strategy with an asset allocation of 33.3% S&P/TSX Composite Total Return Index (Net), 33.3% FTSE TMX Canada Long Term Bond Index (Net), and 33.4% Edmonton Monthly Real Estate Returns.
- Currencies: Performance is presented in the local currencies of the respective tradable futures contracts. This implies a fully currency hedged reporting of performance. Results are presented in Canadian Dollar.
- Performance Statistics: The annualized return, standard deviation, and best/worst return statistics presented are annualized using monthly returns.

Marshall McAlister, CFA
Private Wealth Counsellor, Principal

mmcalister@pavilioncorp.com

T: 780 638 2491

Cary Williams, CFP
Associate Private Wealth Counsellor

cwilliams@pavilioncorp.com

T: 780 638 2493

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