

A DEEP DIVE INTO CANADIAN HOME BIAS:

The case for global equity diversification

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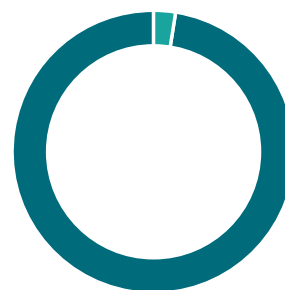
"Home Bias" refers to the tendency of an investor to select domestic securities rather than international securities. An ongoing challenge for Canadian investors is determining the right level of domestic equity exposure in their portfolios or the right level of home bias. The age old question of "how much should I allocate to local versus global stocks" is very nuanced. The principle of market proportional investment suggests that investors should align their asset class exposure with global market capitalizations because they represent the collective asset allocation of investors at any given point in time. Therefore, market-cap weighted indices serve as a valuable starting point for most investors. For example, as of April 30, 2024, a forward-looking efficient portfolio should only allocate about 2.6% of equities to Canadian stocks mirroring the same percentage of the global equity market on that date. However, as shown in Figure 1, according to the International Monetary Fund, Canadian investors allocated 50% of their total equity allocation to Canadian equities, over 18x overweight. Despite the benefits of diversifying a portfolio globally, Canadians may be putting too many eggs in one basket with too much home bias in their portfolios.

FIGURE 1

Canadian equities are a small part of the global market, but play an outsized role in Canadian portfolios

1A: PERCENTAGE OF GLOBAL MARKET

2.6% Canada
97.4% Rest of world



1B: PERCENTAGE OF PORTFOLIO

50% Canada
50% Rest of world



Sources: International Monetary Fund's Coordinated Portfolio Investment Survey (2023). Market cap data and holdings data as of April 30, 2024.

Notes: The IMF's Coordinated Portfolio Investment Survey was used in conjunction with market-cap information to determine domestic and foreign investment. The investment holdings data for Canada can be categorized as either "foreign investment by domestic investors" or "domestic investment by domestic investors." The sum of these equals "total investment by domestic investors." The percentage allocated to domestic securities divides "domestic allocation by domestic investors" by the "total investment by domestic investors."

What is home bias and why is it important?

Home bias is a globally observed phenomenon where investors intentionally overweight domestic holdings at the expense of foreign securities, as shown in Figure 2. Various theories have been proposed to explain this bias, including future risk and return impacts, domestic market concentration risk, the liquidity of domestic versus global markets, tax differentials, perceived global exposure through multinationals, preference for the familiar, amongst other considerations. However, this bias has significant implications as it prevents investors from achieving broad diversification across global markets.

FIGURE 2A
Select factors to evaluate the Canadian home bias decision

	VALIDATE HOME-BIAS DECISION	REDUCE HOME BIAS
Risk and return impact of adding foreign securities	Limited benefits	Significant benefits
Concentration of home market by sector or issuer	Unconcentrated	Highly concentrated
Domestic transaction costs	Low	High
Domestic liquidity	High	Low
Domestic asset taxes	Advantages	Disadvantages
Other domestic market-risk factors	No Impact	Significant risks
Additional considerations: Regulatory limits and liability-matching systems	Impact unique to each investor	

Sources: Vanguard.

FIGURE 2B
Home bias is a phenomenon observed worldwide
Equity market capitalization and home bias by country



Notes: Canada equities represented by FTSE Canada All Cap Index; global equities represented by FTSE Global All Cap Index. Data as of April 30, 2024.
Sources: Vanguard calculations, using data from Bloomberg.

Consequences of home bias

Security Concentration:

Figure 3 shows the leading 10 holdings in the global and Canadian equity markets. It is evident that Canada exhibits a greater level of concentration compared to the global equity market. Specifically, the top 10 holdings in Canada constitute more than 36% of the index. Conversely, the top 10 global securities make up approximately 15% of the global market. This could contribute to idiosyncratic risk, a form of risk which is particular to investing in a certain geography or market and can be avoided with diversification. Idiosyncratic risk is risk which the investor is not compensated for taking.

FIGURE 3

Canadian equities are more concentrated than global equities

A: Top 10 holdings in Canadian equity market		
Holdings	Market weight	Global weight
Royal Bank of Canada	6.25%	0.16%
Toronto-Dominion Bank	4.85%	0.12%
Shopify Inc.	3.73%	0.11%
Canadian Natural Resources	3.73%	0.10%
Canadian national Railway Co.	3.20%	0.09%
Enbridge Inc.	3.46%	0.09%
Canadian Pacific Kansas City Ltd.	3.36%	0.09%
Brookfield Corporation	2.77%	0.08%
Bank of Montreal	2.97%	0.08%
Bank of Nova Scotia	2.55%	0.07%
Total	36.87%	0.99%

B: Top 10 holdings in global equity market	
Holdings	Market weight
Microsoft Corporation	2.51%
Apple Inc.	2.28%
Nvidia Corporation	1.87%
Amazon.com Inc.	1.58%
Alphabet Inc. Class A	1.76%
Meta Platforms Inc. Class A	0.95%
Alphabet Inc. Class C	1.76%
Eli Lilly & Co.	0.64%
Berkshire Hathaway Inc. Class B	0.74%
Taiwan Semiconductor Manufacturing Company	0.55%
Total	14.64%

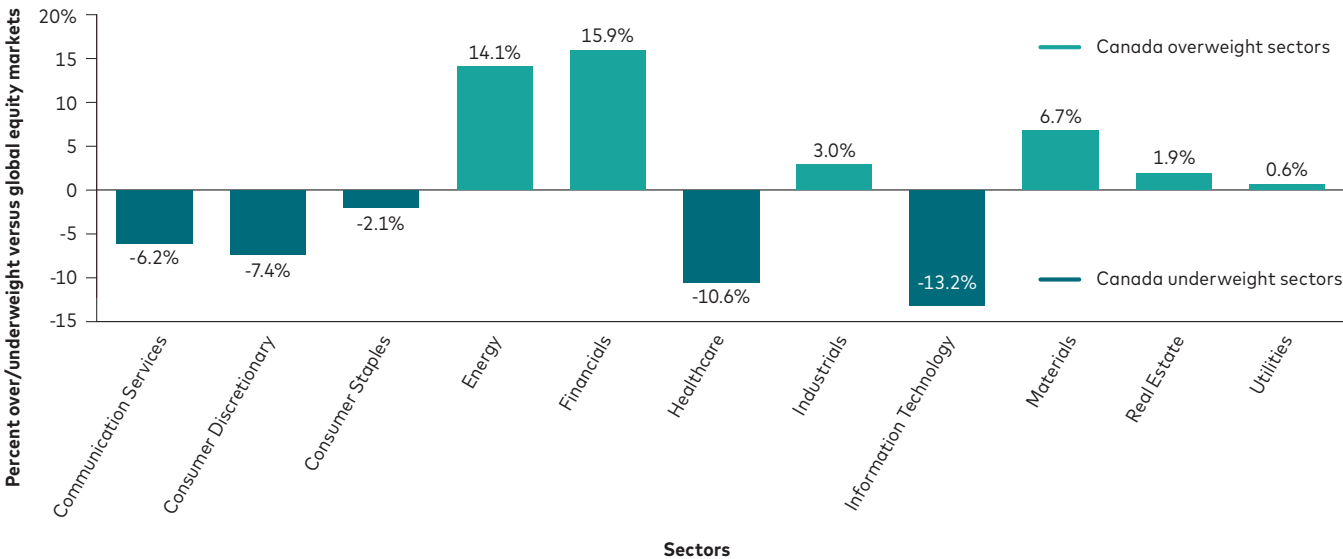
Notes: Canadian equities represented by FTSE Canada All Cap Index; Global equities represented by FTSE Global All Cap Index. Data through April 30, 2024.

Sources: Vanguard calculations, using Bloomberg data.

Sector concentration:

When we analyze security concentrations, it becomes evident that Canadian equity portfolios tend to be heavily invested in specific sectors or industries. In Figure 4, we compare the weight of the top 10 equity sectors in Canada to their weight in the global equities market. The Canadian equity market is significantly overweight in the energy and financials sectors, with a relatively smaller overweight in materials and industrials. However, this results in information technology, healthcare, consumer discretionary, and communication services being underweight relative to the global market.

FIGURE 4
Sector biases in Canadian equity market: A risk to diversified portfolios
Canadian equity market sector over and underweights versus global equity markets



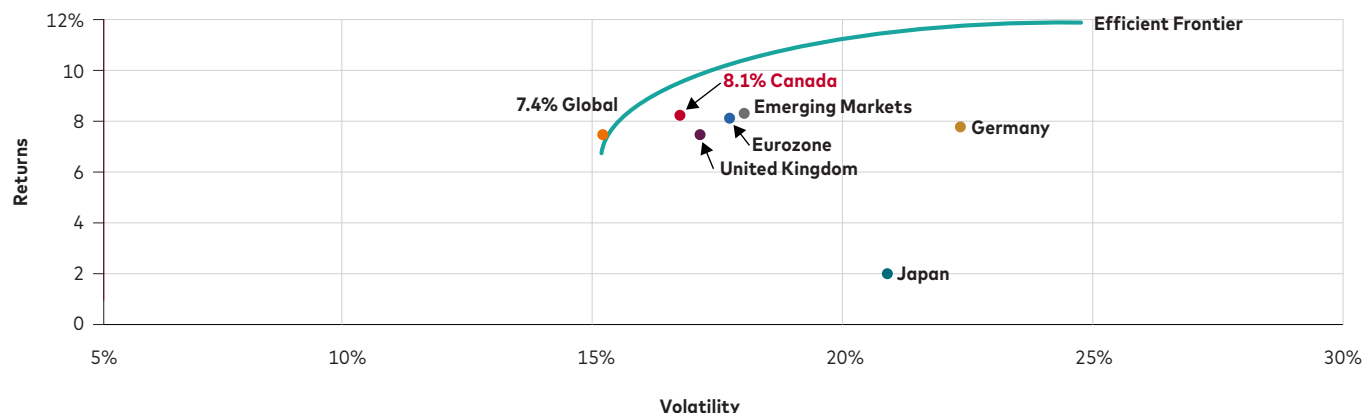
Notes: Canada equities represented by FTSE Canada All Cap Index; global equities represented by FTSE Global All Cap Index. Data as of April 30, 2024.
Sources: Vanguard calculations, using data from Bloomberg.

Inefficient portfolio allocation:

Although investors may have unique reasons or justifications for home bias, its direct implication for security and sector concentrations is that Canadian investors are exposed to a considerable amount of risk that could have been diversified away. Figure 5 illustrates the historical risk and return of the global equity market (orange dot), Canadian equity market (red dot), along with the returns and volatilities of many countries of the global index (various colors). Additionally, a theoretical forward-looking efficient frontier, represented by the teal line, is shown. An efficient frontier is expected to provide the highest level of return for a given level of risk thus deviating from it may be inefficient. Two key takeaways can be drawn from this graph: First, the Canadian stock market has historically been more volatile than the global market, but without a proportionate increase in return (in fact, all individual countries have had greater risk than the global index). Second, in a forward-looking context, any portfolio that deviates from the global market is, by definition, inefficient.

FIGURE 5

Over concentration in Canadian equities (or any single country) leads to inefficient portfolios Global and country specific risks vs returns



Notes: Index returns reflect the MSCI World Index and the respective MSCI indexes for each country in the World index. The efficient frontier does not reflect actual data or returns and is theoretical in nature. Returns data are from January 2, 1989 to April 30, 2024, more details on the data timeseries can be found in the footnote.¹ **Sources:** Vanguard calculations, using data from Bloomberg.

Canadian home bias and modern portfolio theory

Modern portfolio theory allows for the creation of portfolios that potentially have a lower risk per level of return compared to holding each individual asset separately. This is due to the diversification benefit, where combining securities, sectors, and countries with less-than-perfect correlations results in more efficient portfolios. The concept is similar to a great recipe, where individual ingredients combined together complement each other and the end result in a great dish. However, most investors prefer a set allocation to securities outside their home country, leading to the challenge of determining how much equity allocation should be focused on Canadian versus non-Canadian stocks. While a fully market proportional equity portfolio may be impractical or unpreferable for most Canadian investors, maintaining a set allocation represents a reasonable trade-off between diversification and investor preferences. The primary challenge with this approach is determining equity allocation to Canadian versus non-Canadian equities.

Finding optimal home bias allocation using minimum variance analysis

Vanguard's global research team has analyzed the optimal equity home bias for several global regions including the United States, Australia, Canada, U.K. and the Euro region. The optimal home bias has ranged from 25% to 60%. Therefore, the 30% recommendation is tailored for Canadian investors and not a generic recommendation for all regions.

A key factor to consider in determining how much to allocate outside of the Canadian equity market is diversification. One way to evaluate the expected diversification benefits of international equities is to analyze the impact on portfolio volatility as incremental allocations of international equities are added to a domestic equity portfolio.

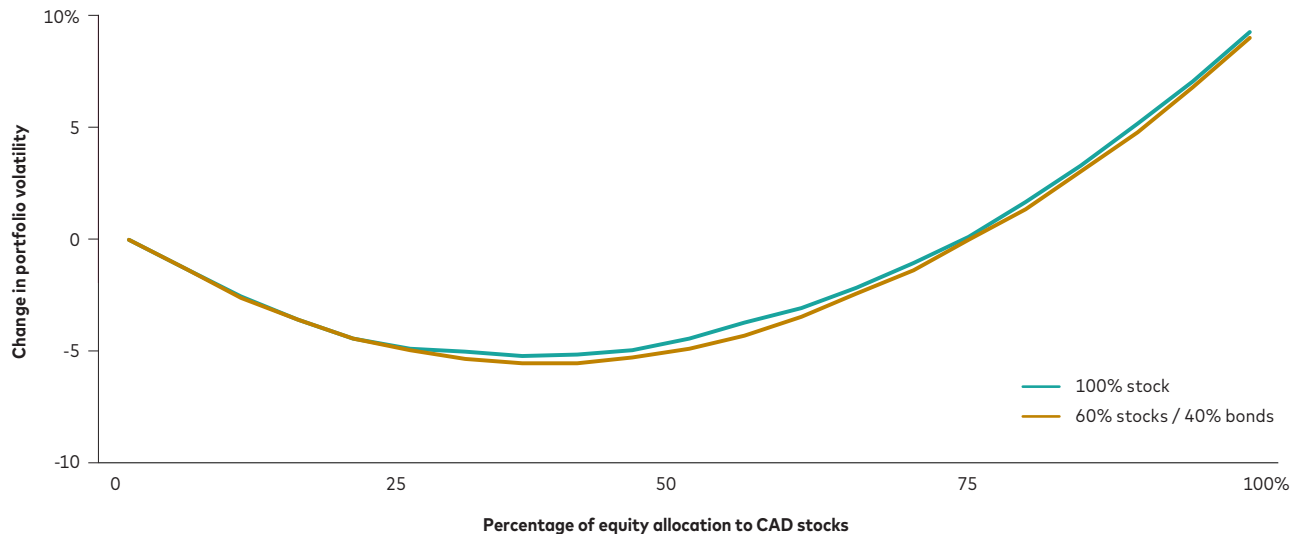
Figure 6 displays the results of a minimum-variance analysis, with a focus on assessing the volatility of investment portfolios. The analysis considers a 100% equity portfolio and a balanced portfolio of 60% stocks and 40% bonds, gradually decreasing exposure to Canadian vs global equities while starting with a portfolio fully allocated to Canadian equities. Notably, the curves representing both equity-only and balanced (60% equity / 40% bonds) portfolios demonstrate that incorporating global equity exposure would have reduced average volatility.

¹ The return points are historical, while the curve is purely theoretical and forward looking.

That said, the marginal benefit of international diversification declines as allocations to international equities increase. The semi-U-shaped curve in Figure 6 illustrates that portfolio volatility begins to rise with allocations greater than 70% to international equities. **Looking at the data, the optimal asset allocation for Canadian investors to minimize the long-term volatility of their portfolio is a 30% allocation to Canadian equities and a 70% allocation to international equities.**² Also, by combining the analyses in Figure 4 and 5, we see that maintaining a significant level of Canadian home bias results in assuming idiosyncratic risk, deviating from the efficient frontier.

FIGURE 6

Optimal Canadian vs global equities allocation in a minimum-variance framework



Notes: Ten-year annualized expected volatility is based on the median of 10,000 VCMM simulations in steady state, equilibrium conditions, in Canadian dollars.

Using multinationals to gain international diversification

A common question is whether domestic multinational companies have enough coverage of foreign markets embedded in their prices to provide similar diversification benefits to investing directly in international stocks. A common misconception is that since many large domestic firms generate a significant portion of their revenue from foreign operations, the diversification benefits of global investing are already reflected in their prices and performance.

Simply focusing on domestic companies means an investor has no stake in leading global companies that are domiciled outside their home market. While multinationals do provide some benefits, we believe it still makes sense for investors to hold international equities. Several studies have concluded that multinational firms do not provide the same diversification benefits as international equities. Researchers Jacquillat and Solnik³ regressed the returns of multinationals from nine countries and found that multinational returns tended to covary most with the firm's home market thus not resulting in strong diversification. Rowland and Tesar³ found that investors cannot exhaust the gains from diversification without turning to international markets. They also found virtually no evidence in Canadian markets that multinationals increase investment opportunities over those offered by local equities. In stark contrast, they found that the addition of international equity to local portfolios resulted in a more efficient portfolio frontier.⁴ Simply put, our view is that multinationals cannot provide the same level of diversification benefits as international stocks.

² Based on minimum variance analysis on historical data from January 1999 to April 2023. Details of the methodology under the note for Figure 5.

³ Jacquillat, B., Solnik, B., Multinationals are poor tools for international diversification. *Journal of Portfolio. Management* (Winter), 8–12.

How liquidity of domestic versus international markets impacts the home bias decision

The liquidity of the domestic market is an important criterion as illiquidity in one's home market would make the case for a lower home bias. To assess the liquidity of the Canadian equity markets in a simple way, we looked at the total value of stocks traded in 2022 in the Canadian market and compared it to the country's market capitalization. Obtaining the data from the World Bank, we then compared the Canadian data to that of the two largest economies and countries with a similar sized domestic market capitalization.

Based on the 2022 data, domestic share turnover represents 2.2% of global equity turnover. This is lower than Canada's share of the global market cap, which stood at 2.9%.⁵ This implies that Canada is less liquid than global markets. However, when comparing Canada with other major economies with a similar domestic market cap, we observe greater liquidity in Canada. As an example, Canadian equities are more liquid than the U.K. and Indian equity market, as measured by percent share of global equity turnover. Additionally, although Canada's market cap is only 60% of that of Hong Kong's, its equity turnover is 80% that of Hong Kong's.

FIGURE 7

Global equity turnover liquidity analysis

GLOBAL EQUITY TURNOVER				SORTED BY MARKET CAP	
COUNTRY / REGION	EQUITY TURNOVER (US\$T)	MARKET CAP* (US\$T)	EQUITY TURNOVER AS A % OF MARKET CAP	% OF GLOBAL EQUITY TURNOVER	% OF GLOBAL MARKET CAP
U.S.	47	40	116.1	44.9	43.0
China Mainland	32	11	283.0	31.1	12.2
Japan	6	5	108.9	5.6	5.7
Hong Kong, China	3	5	62.4	2.7	4.9
India	2	4	53.7	1.9	3.8
U.K.	1	3	25.3	0.8	3.3
Canada	2	3	81.9	2.2	2.9

* Includes only domestic equity shares for each country

Source: National Bank of Canada. World Bank, 2022; Market capitalization numbers were sourced using Bloomberg thus the data is marginally different from FTSE data.

⁴ Patrick F. Rowland a, Linda L. Tesar., Multinationals and the gains from international diversification. Review of Economic Dynamics.

⁵ Bloomberg. FTSE data shows Canada's share of global market capitalization at 2.7%.

To validate the liquidity analysis, we looked at implications to the underlying securities as demonstrated by an ETF's implied liquidity, execution quality as demonstrated by impact on bid-ask spreads and impact on percent premium/discount-to-NAV. We started by assessing the theoretical implied liquidity⁶ of a Canadian equity market capitalization weighted ETF that references the FTSE Canada All Cap Index. Based on data provided by National Bank Financial, the implied liquidity of this ETF is \$644 million which implies that it could have a single-day inflow/outflow of \$644 million without causing a material price impact on its underlying securities. To test the market impact further from an observed trade, we looked at another Canadian ETF that references the S&P/TSX Capped Composite Index. That ETF had an outflow of \$231 million on February 9, 2024. Despite the large size of this trade, the percent premium/discount-to-NAV around the date stayed stable. We also looked at a third ETF whose benchmark is the S&P/TSX 60. It traded \$390 million on November 15, 2023. The trade had a very small impact on its bid/ask spread.

Our conclusion on liquidity is that the Canadian markets are sufficiently liquid and thus clients should not reduce their Canadian home bias based on liquidity.

Tax considerations for the home bias decision

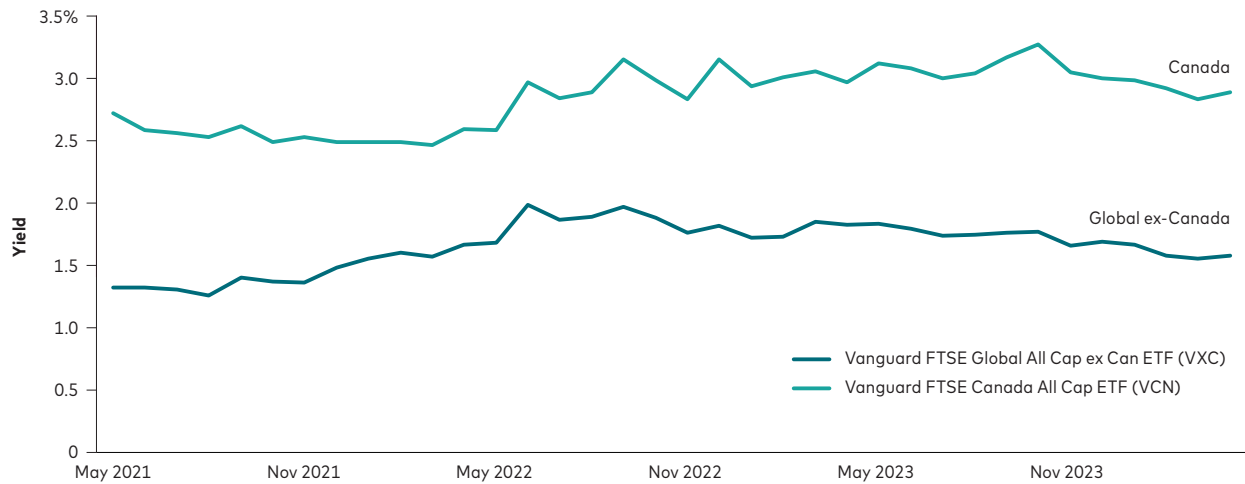
Taxation impacts investors' returns and all else equal, the greater the tax advantages of investing in Canadian stocks for a Canadian investor, the more advantageous it is to have a home bias. For Canadian investors, not all dividends are treated equally. Dividends received by a Canadian resident from a Canadian corporation are entitled to a dividend tax credit. Under Canada's tax rules, Canadian dividends are categorized as eligible or non-eligible for income tax purposes. Eligible dividends are taxed more favorably than non-eligible dividends, but both are more advantageous than dividends from a foreign corporation which is taxed at the investor's marginal tax rate.

For our tax analysis, we looked at the tax liability of a Canadian resident who received \$100,000 in distributions investing in Canadian stocks versus investing in Global ex-Canada stocks. We used Vanguard's VCN ETF to represent Canadian stocks and Vanguard's VXC to represent Global ex-Canada stocks. We broke down the actual distributions of the ETFs into income, withholding tax, Canadian dividends, capital gains and return of capital based on actual percentages from 2023. Assuming a Canadian investor was in the highest marginal tax bracket, we found that their tax liability for Canadian stocks would be \$37,813 whereas their tax liability for Global ex-Canadian stocks would be \$53,492. Based on this, we find it advantageous from a tax standpoint for a Canadian investor to invest in Canadian stocks, provided the investment is in a taxable account and the rate of distribution is the same for Canadian vs. ex-Canadian stocks.

⁶ Implied liquidity is a measure of the potential trading volume of an ETF based on the liquidity of its underlying securities.

However, the rate of distribution is not the same for Canadian and Global ex-Canadian stocks. Canadian stocks have generally had a higher rate of distribution as we can see from the chart below which looks at trailing 12-month yield for the last three years as of April 30, 2024.

FIGURE 8
12-month trailing distribution yield of Canadian vs Global ex-Canada equities



Source: Morningstar, Vanguard Research.

When distribution rates differ, the choice depends on the needs and preferences of investors. For those who prefer or need higher current income, a higher than 30% percent allocation to Canadian equities may be beneficial. Canadian stocks have higher distributions, and those distributions are generally taxed more favourably than global stocks. For investors who have a lower level of current income needs, and more focused on total returns, a lower than 30% allocation to Canadian equities may be preferable. This is due to the fact that a higher portion of the total return would be from capital gains, assuming equal future expected rate of returns, which is taxed more favourably than Canadian dividends. We should also note that clients can create their own homemade dividend by simply selling securities and incurring capital gains. This approach could add a layer of complexity and also increase transaction costs.

Regulatory issues

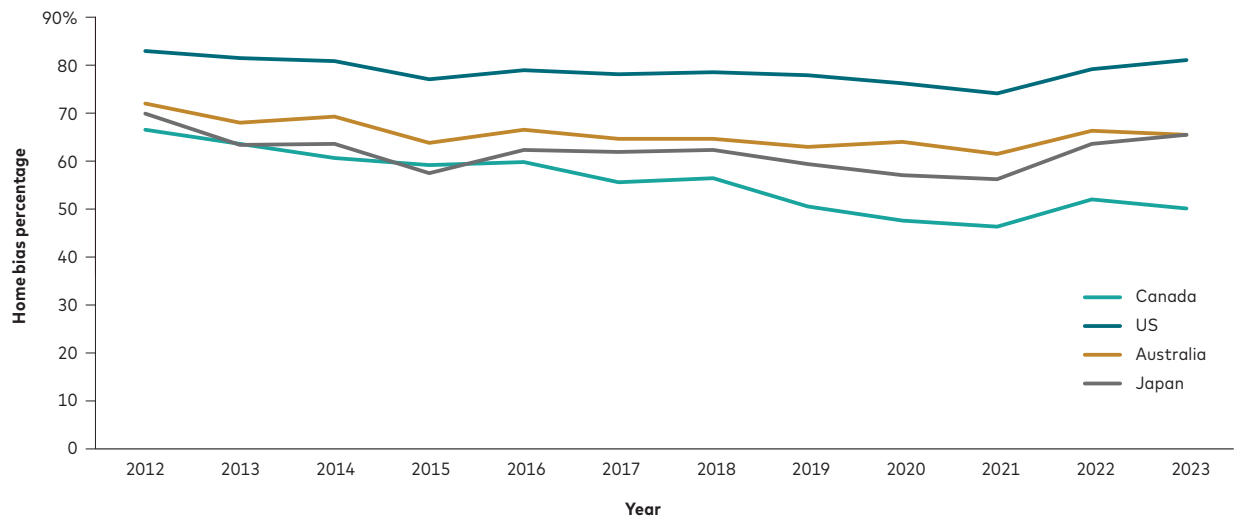
Prior to 2005, regulation had an impact on the home bias decision for Canadians due to the Income Tax Act imposing a limit on foreign investments in Canadian Registered Retirement Savings Plans (RRSPs). However, due to the elimination of the foreign content limit, regulation is not a relevant criterion in the home bias decision any longer.

The trend towards global diversification

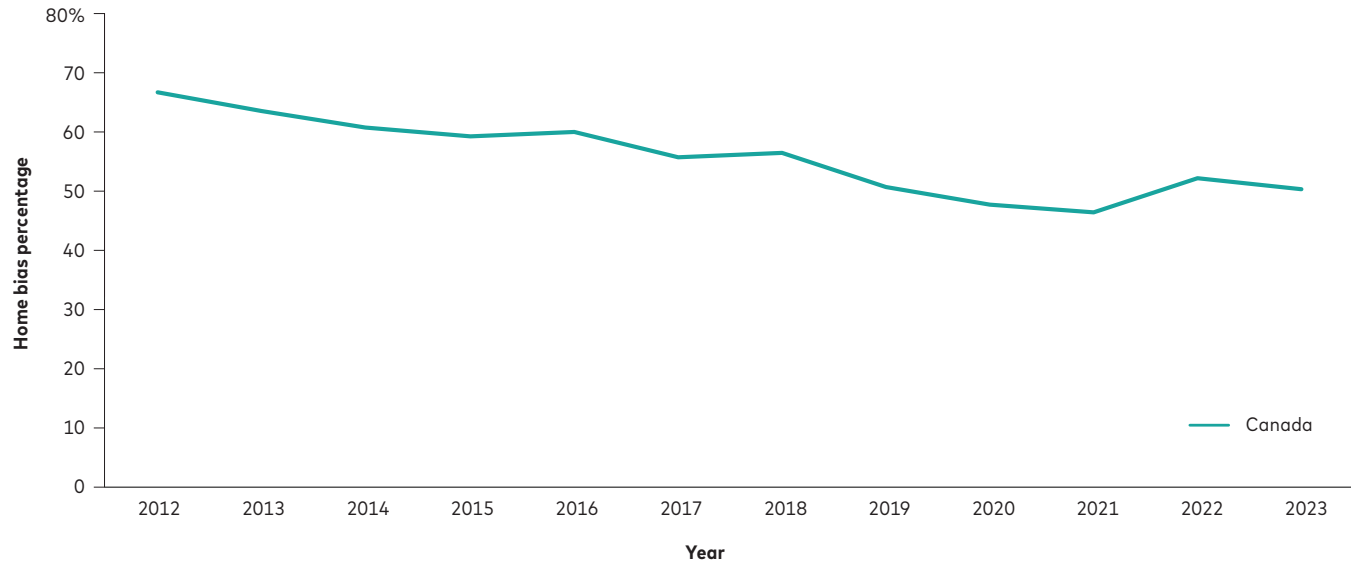
The good news is that Canadians and developed countries' investors are gradually reducing the levels of home bias in their portfolios and are increasingly going global with their equity allocations as shown by the declining preference for domestic equities from 2012 to 2023, in Figure 9.

Moreover, looking at the asset allocation for global pension assets over the last two decades, the data reveals a notable decrease in the degree of home bias in equities. Canada leads the way in decreasing home bias from 67% to 50% since 2012 whereas Australian and Japan have reduced their home bias by 4% and 6% respectively. US investors have only marginally reduced their home bias from 83% to 81% since 2012.

FIGURE 9
Declining home bias among investors in developed economies
Developed markets home bias trend, 2012-2023



Canada home bias trend, 2012-2023



Notes: Data as of April 30, 2023 (the latest available from the International Monetary Fund, or IMF) in U.S. dollars. Domestic investment is calculated by subtracting total foreign investment (as reported by the IMF) in a given country from its market capitalization in the MSCI All Country World Index. Given that the IMF data is voluntary, there may be some discrepancies between the market values in the survey and the MSCI ACWI. Sources: Vanguard calculations, based on data from the IMF's Coordinated Portfolio Investment Survey (2023).

Conclusion

Home bias is a common, global phenomenon where investors overweight domestic holdings at the expense of foreign securities. Canadian investors have a significantly high home bias, allocating 50% of their total equity allocation to Canadian equities, which is over 18x overweight. This bias results in security and sector concentration, leading to an inefficient portfolio allocation and exposure to considerable idiosyncratic risk that can be diversified away by allocating to both Canadian and global equities in a portfolio.

Vanguard maintains that 30% Canadian equities and 70% international equities is a reasonable asset allocation for Canadian investors based on historical evidence, declining trend of domestic equity preferences for both individual and pension investors and after considering other factors such as benefits of diversification, portfolio implementation costs, tax implications, liquidity of markets and regulatory restrictions.

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