The Nasdaq-100

To Hedge or Not to Hedge Currency Exposure

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The Nasdaq-100 Index has remarkably outperformed other US equity benchmarks such as the S&P 500 in 2020, due its overweight towards new economy companies that have benefited from recent economic, technological, and social change. The rally of the Nasdaq-100 is supported by the long-term trend of technology innovation, the digital transformation acceleration during the pandemic period, and the Fed's ultra-low interest rate expectations.

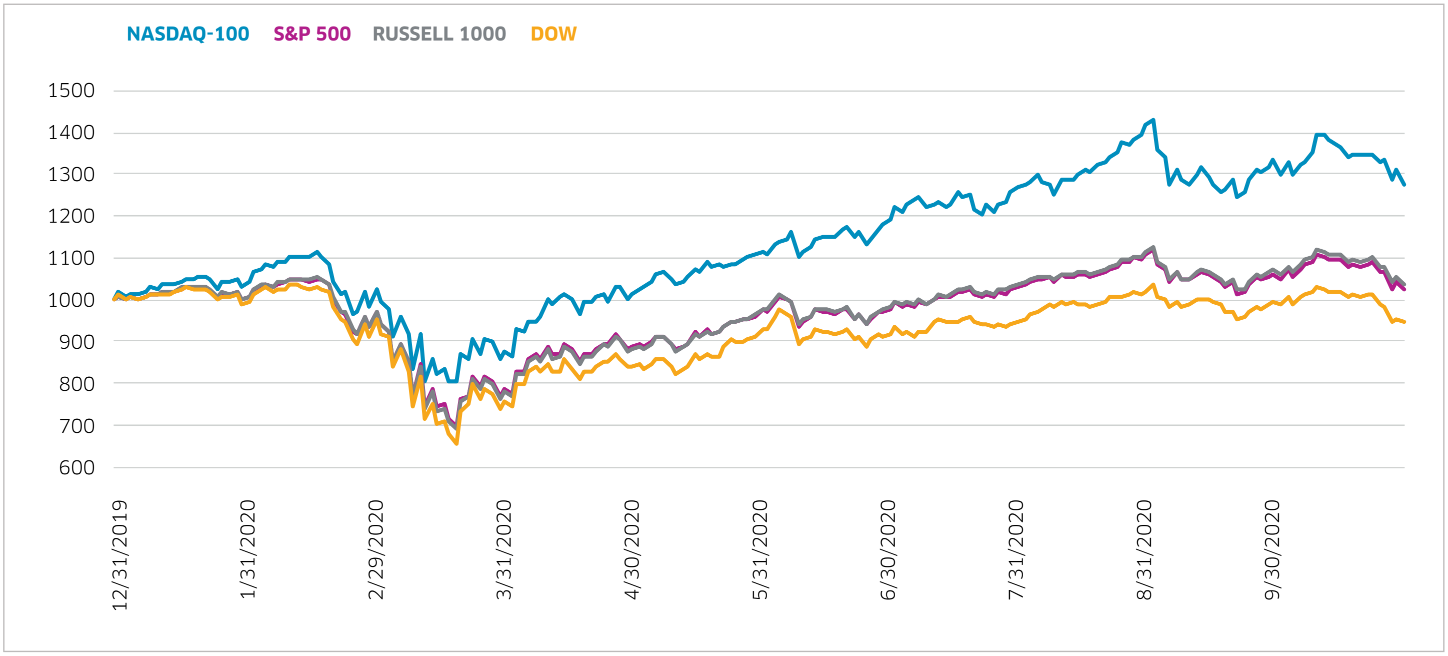
For global investors willing to invest in products tracking the Nasdaq-100, they have to face one extra hurdle –foreign exchange risk. Local currency returns in the Nasdaq-100 can significantly deviate from the US Dollar (USD) return of Nasdaq-100. Hence, Nasdaq offers the solution to use forward exchange contracts managing the currency risk in Nasdaq indexes.

Canadian Investors can track both unhedged and hedged Nasdaq-100 indexes: the Nasdaq-100 Canadian Dollar (CAD) Total Return Index (XNDXCAD) and the Nasdaq-100 Currency Hedged CAD Total Return Index (XNDXCADH). As the currency market is consistently evolving, investors should closely watch, research and use their best judgments when making the decision whether to hedge or not to hedge.

A Versatile Index for the Changing Times

The world was stunned by the outbreak of the Covid-19 pandemic early this year. Despite the heavy death tolls, huge job losses and a still very gloomy economic outlook, the stock market has accomplished a dramatic V-shaped recovery and continues reaching new highs. The Nasdaq-100 Index has returned 27.5% YTD, as of October 31, 2020, and significantly outperformed other major US equity benchmarks such as the S&P 500.

Performance of Nasdaq-100 and Other Major U.S. Stock Benchmarks (Year-to-Date)



Source: Bloomberg Data as of October 31, 2020

There are several fundamental reasons analysts saw that may contribute to the rally of the Nasdaq-100 during the pandemic period this year.

Technology innovation is transforming nearly every business and redefining how we live, work, and play. Mega tech companies such as Apple, Amazon, Microsoft, Google and Facebook (the #1 to #5 ranked companies in Nasdaq-100) have not only been changing our everyday lives, but they've been driving the growth of the entire technology sector. New disrupters, such as Tesla (#6), Netflix (#10) or NVidia (#7) may also emerge over time, so that the names of those in the forefront of the sector may change eventually. Nevertheless, one thing that is highly unlikely to change, at least in the near future, is the growing dependency on technology by businesses and consumers alike. The Nasdaq-100 succeeds in capturing the mega theme of technology growth and offers the ability for one to track 100 of the most innovative public companies.

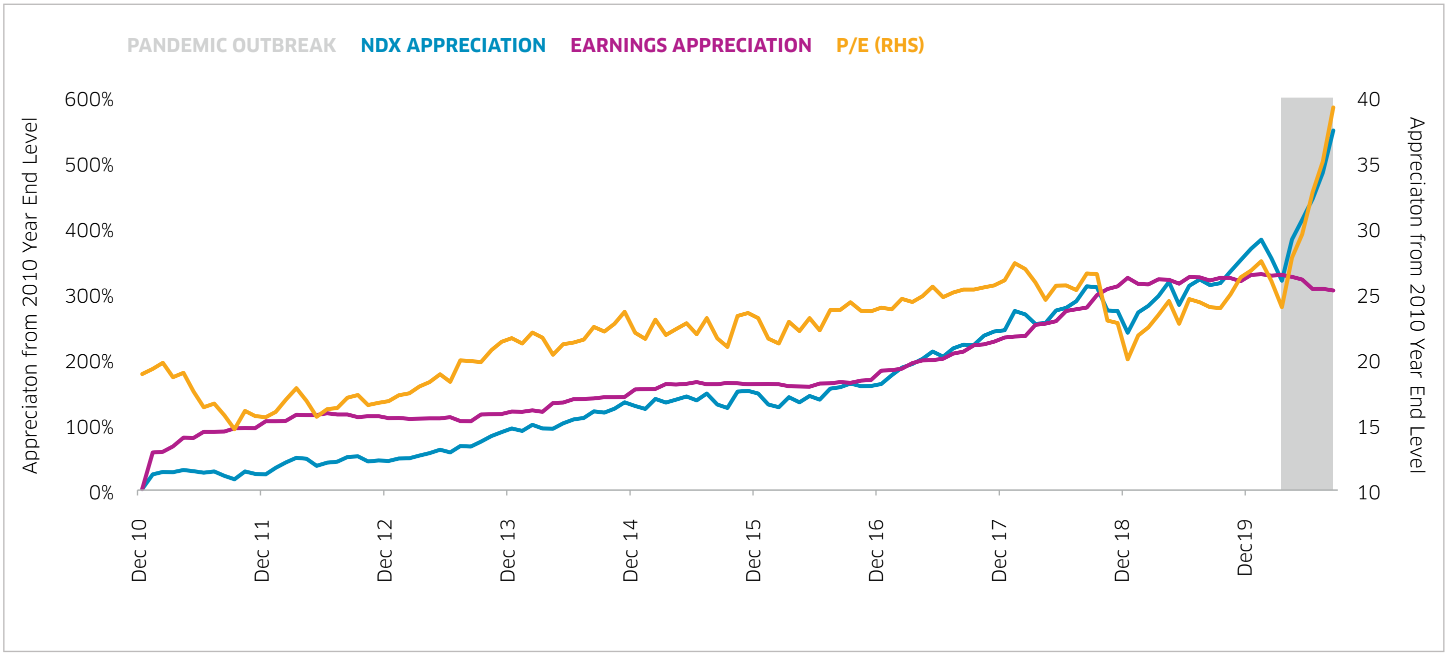
When the pandemic started hitting the U.S. in full force in early March, many states were forced to order restrictions, even lockdowns. People's lives and business activities were inevitably and heavily impacted. Digital technologies, led by cloud computing, remote communications, and E-commerce, became the keys to keep the economy running and avoid another devastating collapse like the Great Depression of the 1930s. For example, analysts saw Zoom (#38)'s daily meeting participants increased from 10 million back in last December to over 300 million in April.[1] Netflix added 15.7 million global subscribers in the first quarter and another 10 million in the second quarter.[2] Dan Springer, the CEO of DocuSign (#49), the cloud-based electronic signature and agreement management company, has seen the company add more customers during the first half of the year than the entire 2019.[3] He is also confident that the ongoing trend won't easily fade away even after the pandemic ends. Nasdaq-100 companies may very well be the primary beneficiaries of this accelerated trend of digital transformation.

Unlike the dot com bubble nearly two decades ago, Nasdaq-100's superior performance in the latest cycle is sufficiently supported by the robust long-term earnings growth. Since the outbreak of the pandemic, the Fed's exceptional quantitative easing policies have created an ultra-low interest rate environment. The Nasdaq-100's pandemic rally from March was mainly due to the stock market's repricing of the discount rate. Theoretically, a P/E of 25 with 2% discount rate is equivalent to a P/E of 50 with 1% discount rate, with all else equal. The Fed's recent

1 https://www.theverge.com/2020/4/23/21232401/zoom-300-million-users-growth-coronavirus-pandemic-security-privacy-concerns-response
2 https://www.netflixinvestor.com/financials/quarterly-earnings/default.aspx
3 https://www.cnn.com/2020/09/14/investing/docusign-stock-pandemic-dan-springer/index.html

statement, expecting to keep the target rate at current level between zero and 0.25% through at least 2023,[4] means that the current Nasdaq-100 level can still be well supported until human societies win over the battle against the virus.

Nasdaq-100's Long-Term Valuation



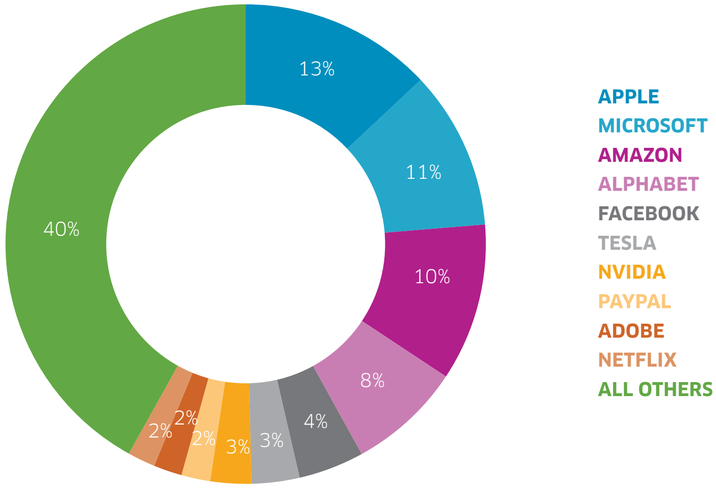
Nasdaq-100 at a Glance

The Era of Tech Mega-Caps

- The Top 10 components of NDX comprise ~60% of the index weight
- 6 are classified as Technology per ICB
- 2 are Consumer Services (Amazon, Netflix)
- PayPal classified as Industrials
- Tesla classified as Consumer Goods
- All 10 centered around multiple areas of technological innovation, regardless of whether their customer base is Consumer, Enterprise, or Mixed
- Average Market Cap: $835 Billion
- Total Revenue as a group in 2019: $1 Trillion
- Total Annual R&D Expense: $120 Billion

4 https://www.nasdaq.com/articles/fed-forecasts-interest-rates-at-near-zero-levels-through-2023-2020-09-16

Top 10 Constituent Weights (%)



Source: Nasdaq as of August 31, 2020

Nasdaq-100 Performance in the Lens of Global Investors

Nasdaq-100 tracking products are highly demanded among global investors. There are already many local currency denominated Nasdaq-100 indexes to support investors around the world.[5] For example, NDXCAD is the Canadian Dollar version of Nasdaq-100, NDXEUR is the Euro version, and NDXJPY is the Japanese Yen version, etc.

There is, however, only one problem. The investment returns global investors received, when exchanged back to their local currencies, can be very different from the benchmark return of Nasdaq-100 index in USD terms. In the following table, we listed the annualized local returns for NDXCAD, NDXEUR, and NDXJPY vs. the dollar returns for NDX in the last ten years. We can see that the local currency Nasdaq-100 can perform significantly above or below the Nasdaq-100 measured in USD terms.

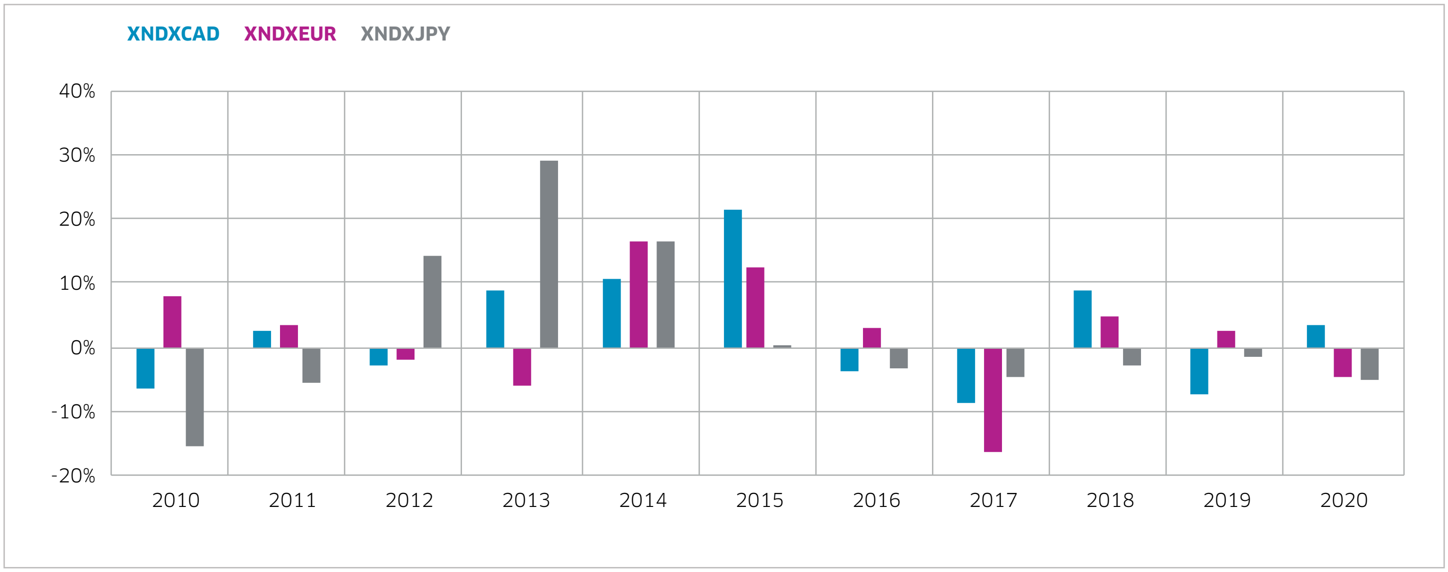
Annual Total Return of the Nasdaq-100 in Local Currencies

YEAR	XNDX	XNDXCAD	XNDXEUR	XNDXJPY
2010	20.1%	13.9%	28.5%	4.7%
2011	3.7%	6.2%	7.1%	-1.7%
2012	18.4%	15.7%	16.5%	33.0%
2013	36.9%	46.1%	31.0%	66.4%
2014	19.4%	30.2%	36.0%	36.2%
2015	9.8%	31.6%	22.3%	10.1%
2016	7.3%	3.6%	10.5%	4.0%
2017	33.0%	24.3%	16.8%	28.4%
2018	0.0%	9.0%	5.1%	-2.6%
2019	39.5%	32.4%	42.0%	38.1%
2020*	27.5%	31.1%	22.9%	22.6%

Source: Nasdaq; 2020 data as of October 31, 2020

5 https://indexes.nasdaqomx.com/docs/Index_Versions_NDX.pdf

Annualized Local Excess Return of Nasdaq-100 against the USD Total Return



Source: Nasdaq as of October 31, 2020

Foreign Exchange Risk Management

Foreign Exchange (FX) risk, a.k.a. exchange rate risk, currency risk, refers to the deviation of realized returns in target (local) currency from the nominal calculation in base (foreign) currency, marks the most significant risk for non-US investors when investing in the US stock market.

FX risk is driven by many long-term and short-term factors. Rising inflation, sudden announcement of rate cuts, deteriorated current account and FX reserve, instability in politics, the sluggish economic growth, among other factors can all trigger a country's currency to depreciate.

International trade practitioners rely on FX derivatives, and most commonly the forward exchange contract, to mitigate foreign exchange risk. A forward exchange contract is the agreement between two parties to exchange two designated currencies at a specific time in the future. Forward exchange contracts are easy to set up and can reflect the market expectations for the designated exchange rate up to one year in the future. However, it can't hedge against the unexpected change of views regarding the designated currencies. Also, once you have entered the contract, you must execute the term with the agreed exchange rate at the expiration date. That reflects the major downside of currency hedging: it limits the gain.

Suppose that a Toronto-based exporter is expecting the Canadian dollar to depreciate against the U.S. dollar. This would result in a more expensive U.S. dollar for Canadians. In this case, she may get more money when she receives proceeds in U.S. dollar and converts it back to Canadian dollar at a higher exchange rate. So the Canadian exporter's best strategy is to keep her export contract unhedged. On the other hand, if she predicts the Canadian dollar will strengthen against the U.S. dollar, then the U.S. dollar that the Canadian exporter would receive after selling her cargos would be worth less in Canadian dollar because the U.S. dollar would depreciate against the Canadian dollar. In this case, the Canadian exporter should enter a forward exchange contract to sell the U.S. dollar at the expected payment date with a predetermined exchange rate.

In the above cases, all worked as intended. But let's consider this case: The Canadian exporter has entered a forward exchange contract because she expects the U.S. dollar to depreciate against the Canadian dollar. But since, the Fed has unexpectedly announced the target rate hike of 25 points and the market responded with a sharp bounce of 10% in U.S. dollar appreciation. In this case, the Canadian exporter's currency hedge decision will make her profit shrink by 10% because of the hedge contract that has to be executed with a lower than current exchange rate. Thus, by protecting against currency risk, a currency-hedged strategy may also limit gains (and losses).

Introducing the Nasdaq-100 Currency Hedged CAD Total Return Index

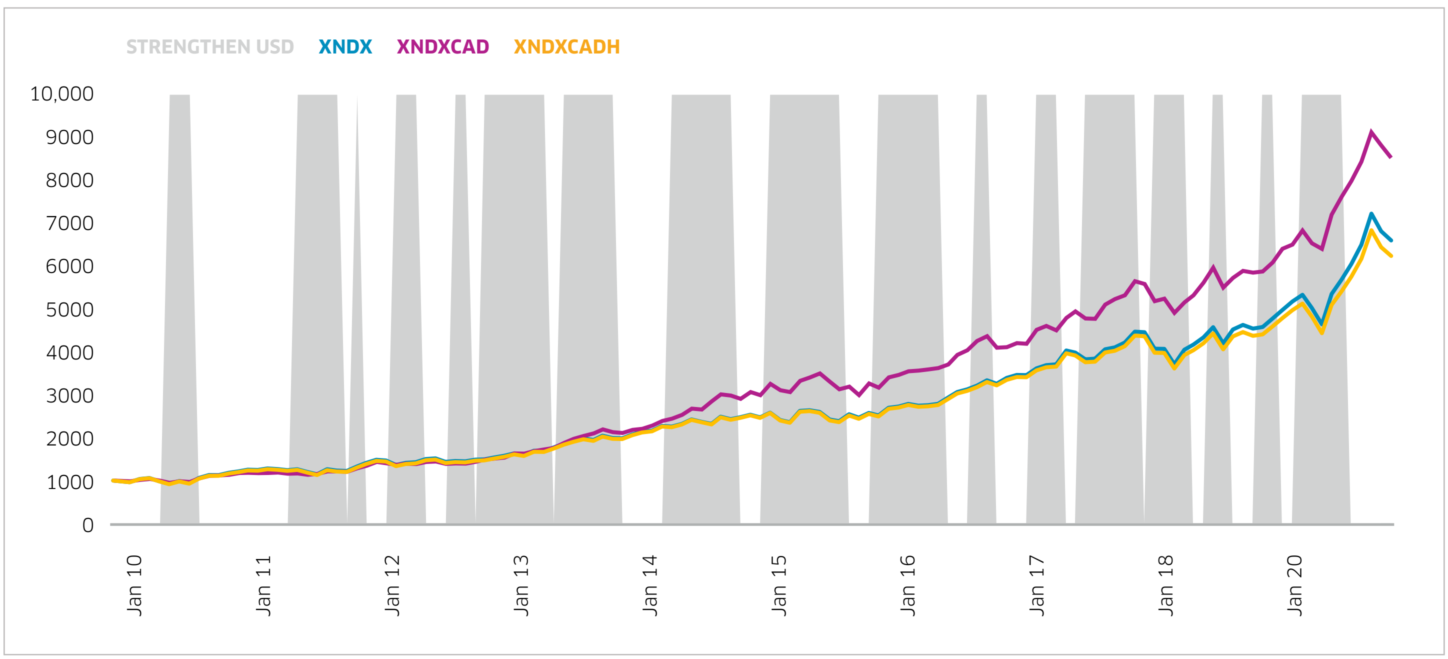
For a Canadian investor who is interested in tracking the Nasdaq-100, luckily she has more choices than just exchanging her savings in U.S. dollars and deposit to a US brokerage account. Nasdaq offers Canadian Dollar Nasdaq-100 indexes in two capacities: the Nasdaq-100 Canadian Dollar Total Return Index (XNDXCAD) and the Nasdaq-100 Currency Hedged CAD Total Return Index (XNDXCADH).

The Nasdaq-100 Canadian Dollar Total Return Index (XNDXCAD) is designed to represent returns for the Nasdaq-100 Total Return Index (the "Underlying Index") calculated in Canadian dollar. It is a currency-unhedged strategy.

The Nasdaq-100 Currency Hedged CAD Total Return Index (XNDXCADH) is designed to represent returns for the Nasdaq-100 Total Return Index, also calculated in Canadian dollar, and involves systematically hedging the currency risk of the USD. It is a currency-hedged strategy implemented by selling forward exchange contracts at 100% of index values. By doing so, Canadian investors tracking the index are able to lock in the concurrent exchange forward rates of the USD, and mitigate the exchange rate risk of their foreign investment (the Nasdaq-100). Profits (losses) from the currency forward contracts are offset by losses (profits) in the value of the foreign currency (the USD), thereby negating the currency exposure in the investment portfolio.

During our historical lookback window between January 8, 2010 and October 31, 2020, the XNDXCAD index, our unhedged strategy, returned a cumulative of 750%, or an equivalent of 22% per annual. The XNDXCADH index, our currency-hedged strategy, returned 523%, or 18.4% per annual. Throughout the lookback window, the hedged index XNDXCADH is tracked very closely to the XNDX index, our underlying denominated in USD, and proved its effectiveness in managing the currency risk.

Cumulative Performance of XNDXCAD and XNDXCADH [6]



	XNDX	XNDXCAD	XNDXCADH	USDCAD
Cumulative Return	560%	750%	523%	29%
Annualized Total Return	19.1%	21.9%	18.4%	2.4%
Annualized Volatility	19.9%	19.7%	20.0%	8.2%

Source: Nasdaq; Total Return Time Horizon from January 8, 2010 to October 31, 2020

6 Nasdaq-100 CAD Total Return Index (XNDXCAD) launched at 3/6/2017; Nasdaq-100 Currency Hedged CAD Total Return Index (NDXCADH) launched at 1/8/2010, all index histories prior to the launch are backtested data.

When reviewing the performance by calendar years, we noticed that, for every year where the CAD strengthened and the USD weakened, the hedged index (XNDXCADH) outperformed the unhedged index (XNDXCAD). This proved that the currency hedging worked as intended and can effectively protect investors from the risk of a weakening dollar. But on the other hand, in years with a strong USD and weak CAD, the unhedged index (XNDXCAD) outperformed the hedged index (XNDXCADH). It further justified our earlier discussion that currency hedging may limit the investment gains if the directions reverse.

Calendar Year Total Return Performance

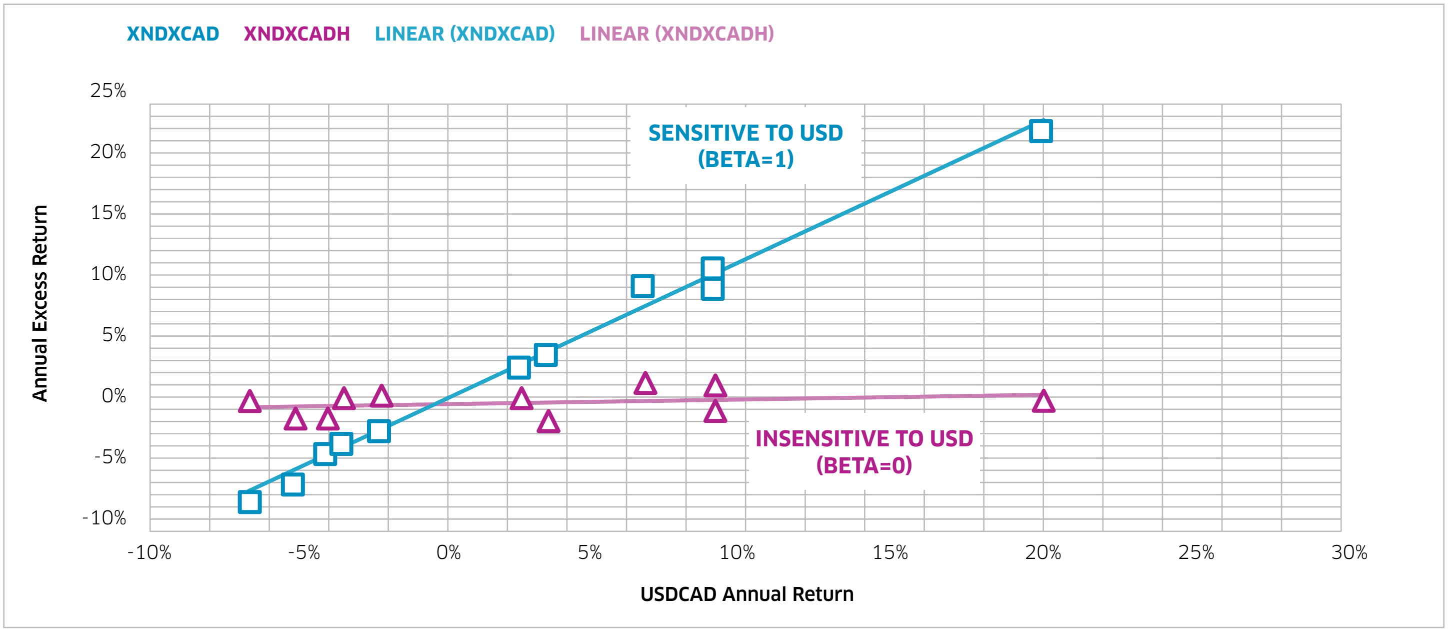
USDCAD column represents the U. S. dollar currency returns measured in terms of Canadian dollars. Gray rows marked the years with a strengthening Canadian dollar and a preference for currency hedging.

YEAR	XNDX	XNDXCAD	XNDXCADH	USDCAD
2010	18.1%	13.4%	16.3%	-3.9%
2011	3.7%	6.2%	3.4%	2.5%
2012	18.4%	15.7%	18.4%	-2.2%
2013	36.9%	46.1%	37.9%	6.7%
2014	19.4%	30.2%	20.2%	9.0%
2015	9.8%	31.6%	9.3%	19.9%
2016	7.3%	3.6%	7.1%	-3.5%
2017	33.0%	24.3%	32.4%	-6.6%
2018	0.0%	9.0%	-1.2%	9.0%
2019	39.5%	32.4%	37.7%	-5.1%
2020*	27.5%	31.1%	25.4%	2.8%

Source: Nasdaq; Total Return Time Horizon from January 8, 2010 to October 31, 2020

Currency-Hedging (XNDXCADH) Largely Removed the Sensitivity to Currency (USDCAD)

Plotting the annual excess return of hedge and unhedged indexes (Y-axis) against the currency returns (X-axis). A regression line and its beta coefficient reveal the relationship between excess returns and currencies. A low beta such as 0 means that the index is insensitive to currency movement; and a high beta such as 1 suggests that the index is invulnerable to the currency risk.



Source: Nasdaq; Total Return Time Horizon from January 8, 2010 to October 31, 2020

To Hedge or Not to Hedge

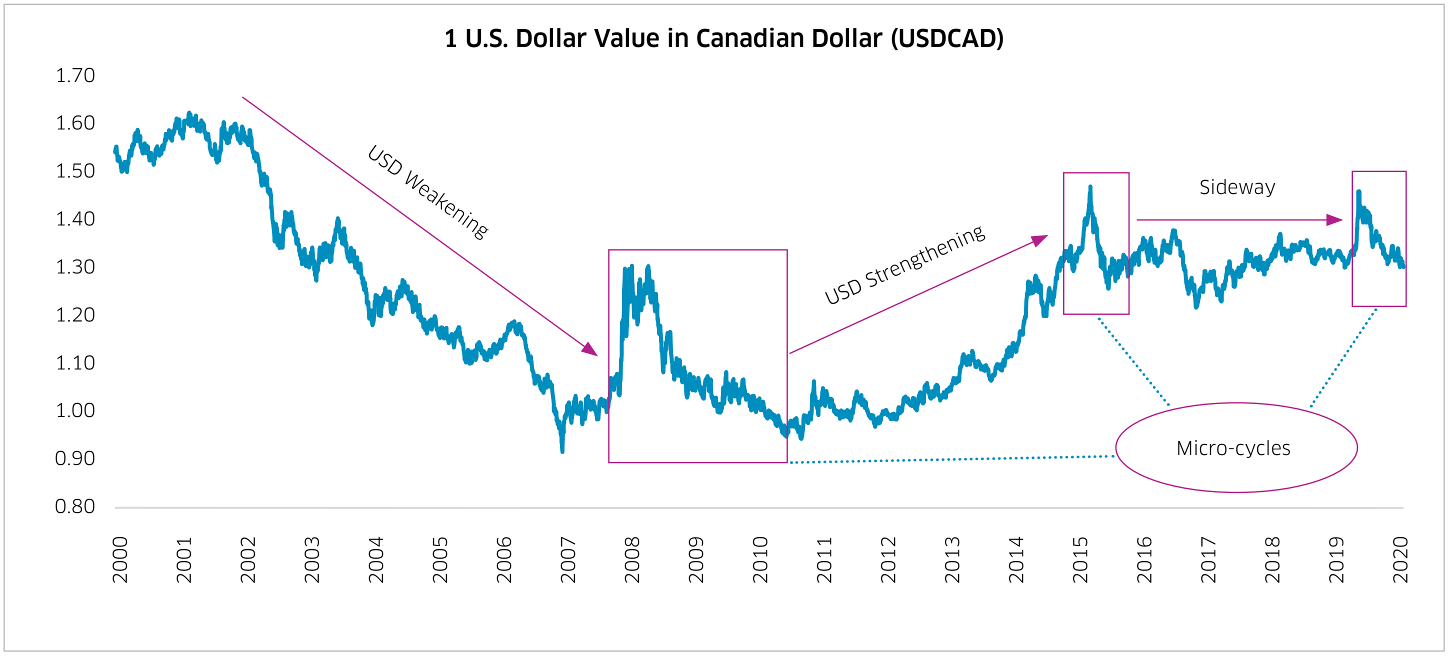
For Canadian investors wishing to invest in the US stock market, to hedge or not to hedge the U. S. dollar exposure can be a vital decision to impact their investment performance.

If just from the past 10 years' experience, it seems that the unhedged Nasdaq-100 (XNDXCAD) has outperformed the hedged opponent (XNDXCADH).[7] Keeping an investment portfolio unhedged to enjoy the extra gains from U. S. dollar appreciation (against the Canadian dollar) can be a better choice.

The last ten years was marked with a better economic recovery and GDP growth in the United States vs. Canada post the great financial crisis between 2008 and 2009. If we extend the lookback horizon, there is a different story in the 2000's. The Canadian dollar in 2000's was in a major strengthening trend against the U. S. dollar, helped by the stronger economic growth and higher oil prices.

In addition to the mega trends that drove the currencies' rise and fall, there are also many crisis triggered micro-cycles in between that ultimately altered the mega trends. For example, the 2008-2009 great financial crisis (GFC) has triggered a flight-to-safety event that drove the greenback first skyrocketing and then gradually falling in the following years. The GFC also collapsed oil prices and terminated the Lonnie's near decade long rally. The Fed's actions to exiting QE and raising target rates in 2015, brewed the market's worry of a global scale slowdown and we have since observed another risk-on / risk-off dollar micro cycle. Canada and USA are both developed market economies with close trade relationships. Canada's central bank, the Bank of Canada, also maintained the same pace of rate hike with the Fed. As a result, the USDCAD exchange rate only moved within a narrow range in recent years until the pandemic hit.

The Currency Market is filled with Mega Trends and Micro Cycles



Source: FactSet, Nasdaq, from Oct. 2000 to Sep. 2020

The post pandemic world should reset for a new regime of USDCAD prices. Whether it will be a new round of strengthening or weakening dollar is still up to debate. Investors should closely watch the movements in interest rates, inflation, and economic growth. They should consult FX market experts, other securities professionals and put their own strategic and technical considerations to make the call. Either way, Nasdaq is here to help Canadian investors with both hedge and unhedged Nasdaq-100 index solutions.

Disclaimer

7 See the cumulative performance chart on page 6.