

Uncertain Exchange: The Canada-US Exchange Rate
through Covid-19 and Beyond

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Abstract

In this paper we argue that the CAD/USD exchange rate appreciated more quickly than expected during the Covid-19 pandemic due to rapid recovery of confidence in market prices followed by an increasing Canadian commodity price index. We employ data on historical and current price trends as well as informed opinion by authoritative public- and private-sector actors in conducting our analysis and formulating our conclusion.

The Canada-US Exchange Rate through Covid-19 and Beyond

The World Health Organization's (WHO) inaugural Disease Outbreak News report on novel coronavirus (WHO, 2021) corresponded with a sharp depreciation of the Canadian dollar, which was subsequently followed by abrupt appreciation just three months later (Chart 1). From \$0.74 to a low of \$0.70 between February and March 2020, the exchange rate underwent a subsequent rapid recovery to its pre-pandemic level by July of that year and has since risen higher (*Ibid*). This contrasts markedly with what some credible sources predicted at the time.

By April 2020, the top investment strategist at Vanguard Investments expected a persistent weak exchange rate into the foreseeable future (Hasanjee, 2020), while the Bank of Canada's (BoC) then-governor echoed this sentiment by noting that any appreciation would be gradual owing to the sudden oil supply glut caused by reduced global demand (Bank, 2020, Apr. 15). The divergence of actual events from expectations by such notable authorities prompted us to ask: why did the Canadian dollar appreciate so soon into the pandemic?

The Canadian dollar has long been characterized as a commodity currency that fluctuates predictably with the price of oil (Antweiler, 2018), therefore an obvious theory is that rising oil prices drove exchange rate appreciation from early April onward. However recent studies have called the resilience of this relationship into question. For example, a 2019 study by Desjardins financial group identified a "significant gap" between the price of oil and the CAD/USD exchange rate during the years 2017 - 2019, suggesting that the Canadian dollar and oil may not be as strongly correlated as they have been historically (Vachon, 2019). Therefore we set out to elicit whether this historic relationship persists and, if not, what else might explain the observed appreciation.

Since the present study is motivated by our interest in eliciting the probable cause(s) of early appreciation, we conducted a case study comparison of the ongoing Covid-19 pandemic with the 2008 financial crisis. We felt that any substantive differences between these recent episodes could potentially shed light on why recent events unfolded differently than expected. As such, the present study employs a back-of-the-envelope approach that should provide tentative insights worthy of further exploration via formal empirical analyses.

Our findings led us to conclude that the CAD/USD exchange rate appreciated more quickly than expected during the Covid-19 pandemic due to a rapid reduction in market volatility followed by increasing Canadian commodity index prices.

Methodological Conventions

We examine the USD/CAD exchange rate - as opposed to CAD/USD - so that trend-line valley's correspond with depreciation of the CAD against USD, and peaks correspond with appreciation. We've maintained the same vertical axis scale wherever possible, particularly when exploring trends over given time horizons, in order to present more consistent pictures both within and between comparison periods. In some instances we used two vertical axes to provide more comparable pictures where we felt this would enhance interpretation of the exchange rate alongside potentially significant economic fundamentals. Data are presented in monthly and quarterly units; exchange rate, oil, commodity, and Vix index trends are monthly; GDP and inflation differentials as well as forward rates are quarterly. Consistent trend-line colouration is also used; the exchange rate is represented in blue, oil prices in orange, commodity prices in grey, forward rates in yellow, the Vix index in purple, and GDP and inflation differential in green and black respectively.

Data Analysis

Long-run trends for both oil and commodity prices against the USD/CAD exchange rate are given in Graph's 3 and 4 respectively. From 1990 until the 2008 financial crisis it is clear that both oil and commodities are strongly correlated with exchange rate fluctuations. However from 2008 onward oil prices appear to be much more volatile than both commodities and the exchange rate, while the latter two trends appear to be more strongly correlated with one another. From Graph's 3 and 4 we are satisfied that the commodity price index is a stronger predictor of exchange rate fluctuations from 2008 until the present, however before drawing further inferences we explored additional fundamental factors of potential significance.

Graph 5 shows long-run trends for Canada-US inflation and GDP growth differentials; Canadian inflation less US inflation, and Canadian GDP growth less US GDP growth. From economic theory (Kasa, 2021) we expect both higher Canadian inflation and lower Canadian GDP growth to be correlated with a depreciated Canadian dollar. This was clearly the case in the early 1990s, however in the early 2000s an appreciating exchange rate coincides with lower Canadian inflation and GDP growth. During the 2008-2009 financial crisis exchange rate depreciation was correlated with higher Canadian inflation and GDP growth, while early into the Covid-19 pandemic depreciation was correlated with lower Canadian inflation and GDP growth. Since the record is mixed with regard to how the exchange rate moves alongside relative inflation and GDP growth, we decided to conduct a case study between the 2008 Great Recession and the Covid-19 pandemic to better identify any prevailing trends.

Case Study: The Great Recession vs. Covid-19

Graph's 1 and 2 present exchange rate trends for Covid-19 and the Great Recession respectively. Though the exchange rate depreciated markedly during both events, it remained lower for longer during the latter. Global financial panic triggered by the failure of Lehman Brothers and other "too-big-to fail" financial institutions in September 2008 (Kingsley, 2012) was accompanied by immediate depreciation of the Canadian dollar from \$0.93 USD to \$0.83 USD, and on to an eventual low of \$0.78 USD by February 2009 (Graph 2). All said, depreciation persisted for 5 straight months, while the exchange rate did not return to its pre-Recession level of \$0.97 until April 2010 (Graph 4). Conversely, the initial depreciation that accompanied the WHO's inaugural Disease Outbreak News report in January 2020 (WHO, 2021) intensified decisively in February until March when it abruptly reversed (Graph 1). During Covid-19, depreciation lasted only 3 months, while the exchange rate returned to its pre-pandemic level of \$0.76 USD by August 2020 (*Ibid*). In our search for potential explanatory variables we found that changes in GDP growth and inflation differentials were uncorrelated with exchange rate depreciation in any consistent way.

At the exchange rate's 2008 trough, Canadian GDP and inflation growth were both approximately 1% higher than in the US, while at its 2020 trough Canadian GDP growth and inflation were both lower than in the US; inflation by half a per cent and GDP growth by 4% (Graphs 6-7). As per economic theory, the exchange rate might have been unaffected in 2008 given that both variables moved in the same direction at roughly the same magnitude. Though inflation and GDP growth again moved in the same direction through early 2020, the dramatic fall in relative Canadian GDP growth should have overpowered the moderate negative inflation

differential and driven the Canadian dollar lower than it actually fell in March of that year. Such a dramatic drop should have kept the exchange rate lower for longer, or at least resulted in more gradual appreciation. Our subsequent exploration of the relationship between commodity prices and the exchange rate proved more fruitful.

Graph 9 shows an appreciating exchange rate from March 2020 correlated with rising commodity prices from April 2020. Graph 8 shows a depreciating exchange rate correlated with falling commodity prices, though here it appears that exchange rate depreciation followed the drop in commodity prices. Both graphs demonstrate that the commodity price trend follows the USD/CAD exchange rate closely, however during Covid-19 the Canadian dollar appreciated before commodity prices picked up. We found that price volatility and uncertainty - represented through the Vix index - provides a compelling explanation for why exchange rate changes led commodity prices during Covid-19 and visa-versa during the Great Recession.

Graphs 11 and 12 show the Vix Index during the Great Recession and Covid-19 respectively. Price volatility persisted for twice as long during the Recession - from September 2008 through April 2009 - compared with Covid-19, where it persisted from February to May 2020. To our surprise, the Vix's trough appears to exactly coincide with the exchange rate's trough during Covid-19. The Vix's subsequent increase likewise coincides with Canadian dollar appreciation. This finding helps account for why the exchange rate picked up when it did before commodity prices, while both trends together help account for why the Canadian dollar appreciated faster than expected during Covid-19. Since volatility appears to be decreasing on average since March 2020, we wondered if the forward rate might offer a glimpse of the future.

Graph 10 shows a flat forward rate until at least April 2026. For the time being, the market is clearly on standby for a sense of future direction. As we concluded our analysis we wondered whether other major exchange rates followed the USD/CAD exchange rate during Covid-19 or followed independent paths of their own. Since the USD is virtually *the* global safe haven asset, it would make sense for US dollar demand to increase during times of uncertainty and cause the USD to appreciate against all other currencies.

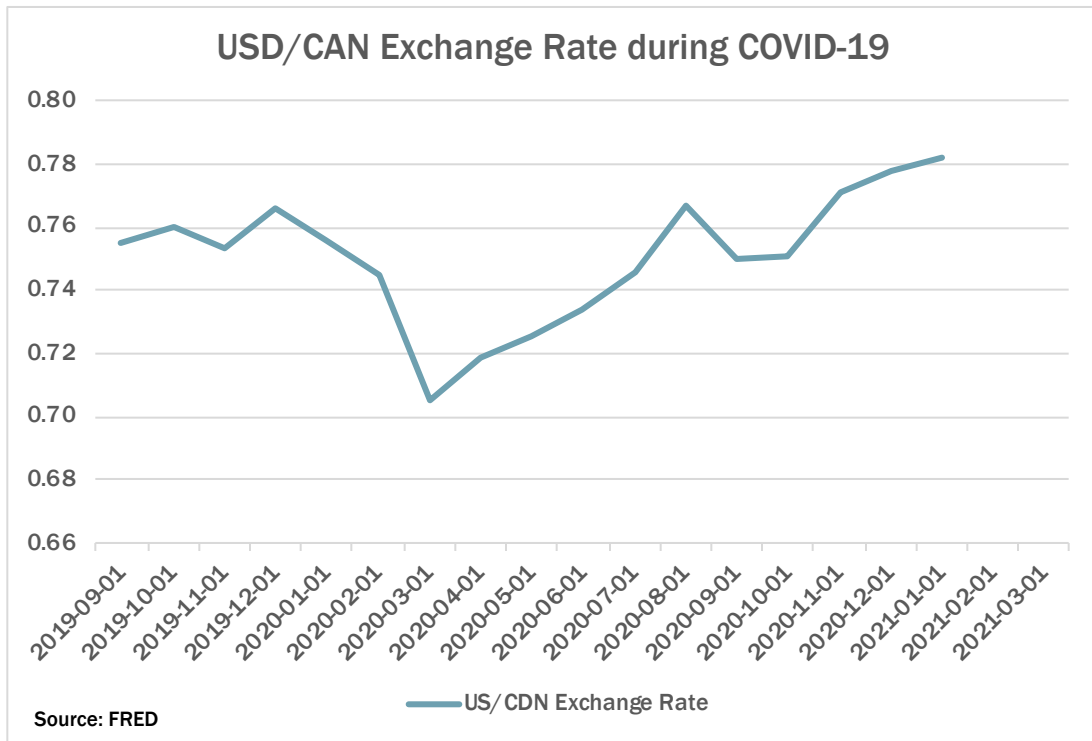
Graph 13 shows the USD/CAD exchange rate alongside the USD exchange rate with key global currencies - USD/EUR, USD/GBP, USD/JPY, and USD/CHF. It looks as though all trends are similar; those that initially traded at a discount (i.e. CAD, GBP) depreciated from January to March 2020 before appreciating from March onward, while those that initially traded at an initial premium (i.e. EUR, JPY, and CHF) appreciated from January to March before depreciating afterward. Clearly there are similarities between the Canadian dollar's behaviour during Covid-19 and that of other key currencies. However further empirical study is required to infer decisive causal factors in each of these cases.

Conclusion

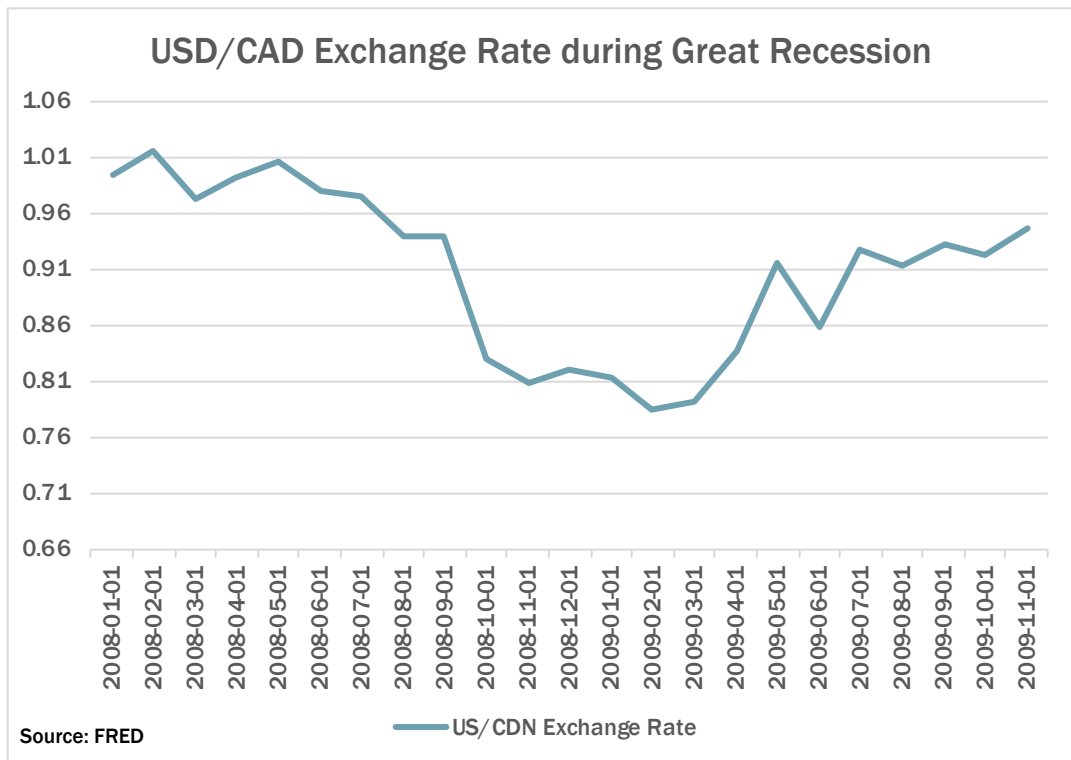
We have concluded that the Canadian dollar appreciated sooner than expected into the Covid-19 pandemic due to the rapid decline of market volatility followed by rising Canadian commodity index prices. We also found a uniform pattern between depreciation of the Canadian dollar with the USD and other key currencies generally. As per the forward rate, it's anyone's guess where exchange rates go from here.

Data

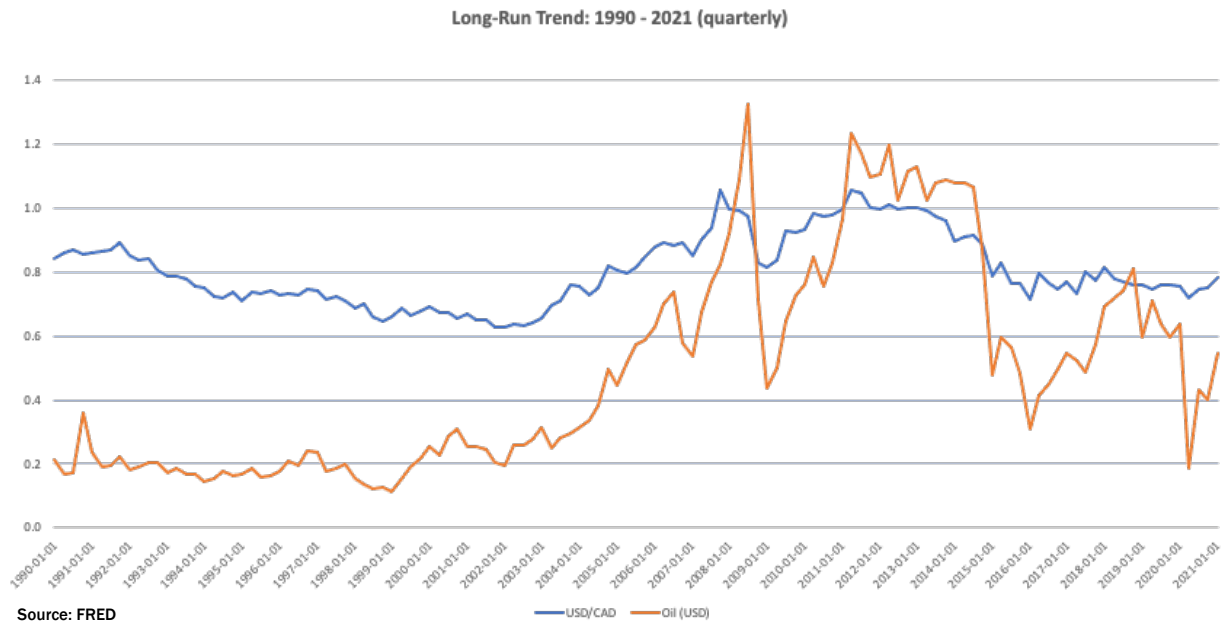
Graph 1: USD/CAD Exchange Rate (Covid-19)



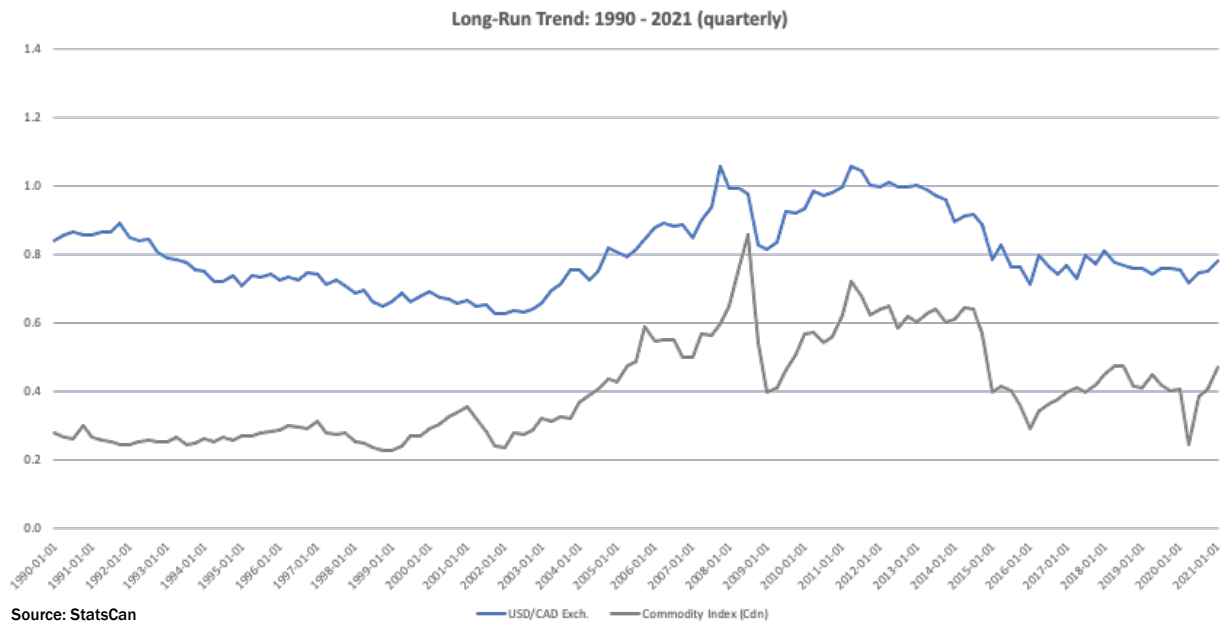
Graph 2: USD/CAD Exchange Rate (Great Recession)



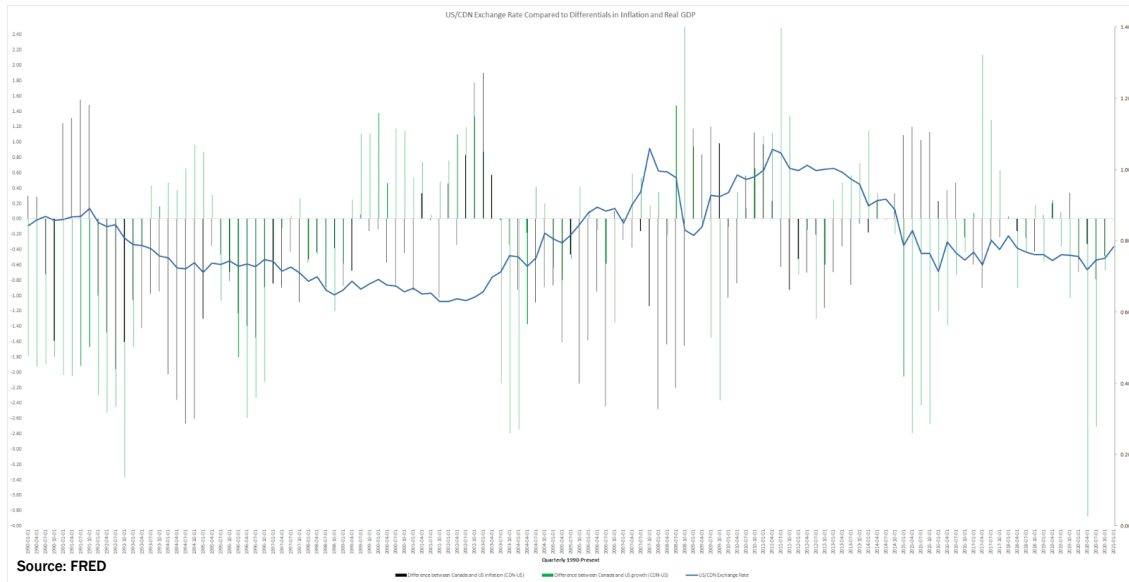
Graph 3: Oil Price and USD/CAD Exchange Rate (Long-Term)



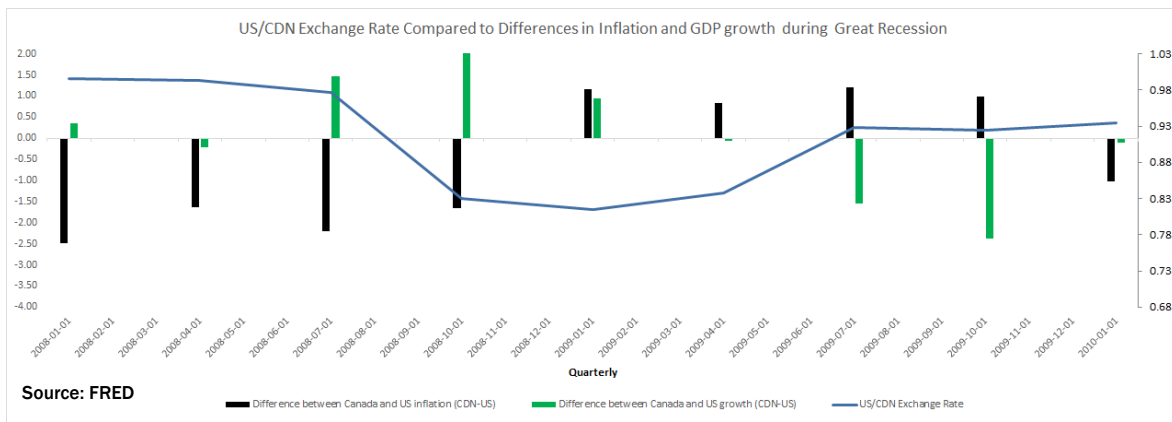
Graph 4: Commodity Price Index and USD/CAD Exchange Rate (Long-Term)



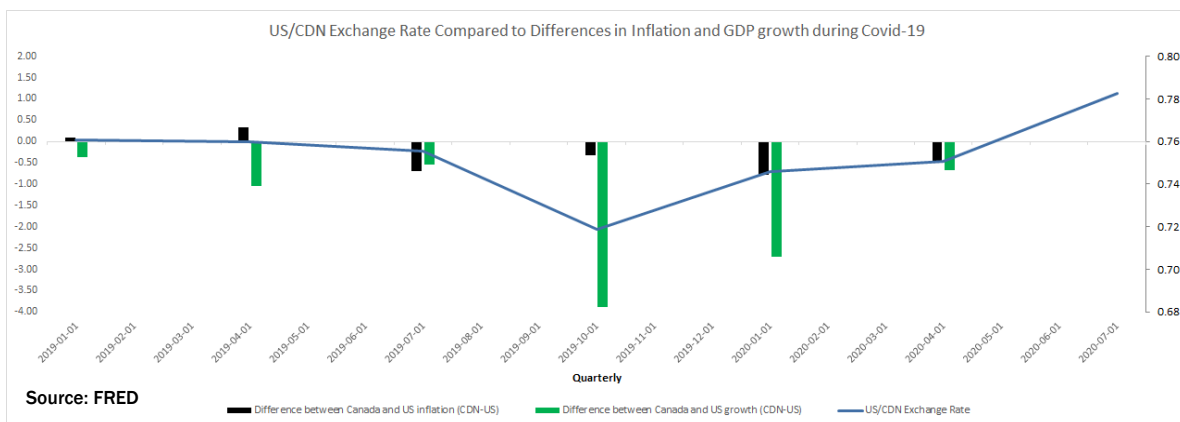
Graph 5: GDP & Inflation Differentials (Long-Term)



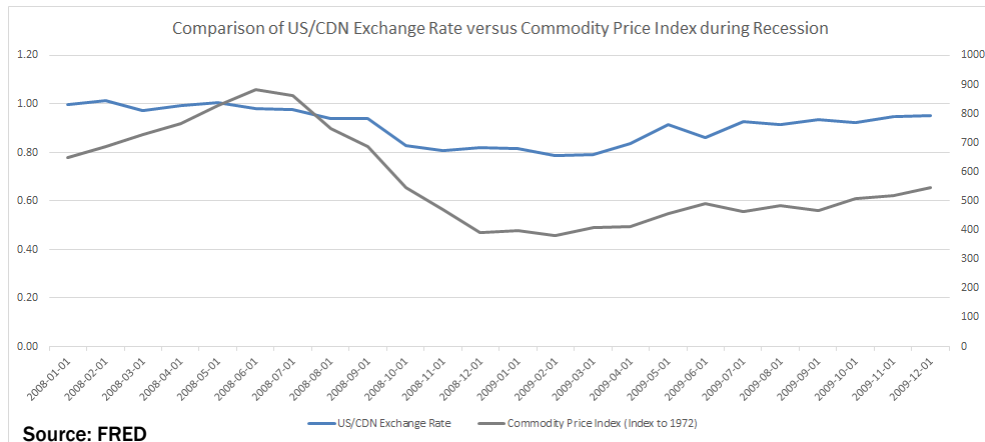
Graph 6: GDP & Inflation Differentials (Great Recession)



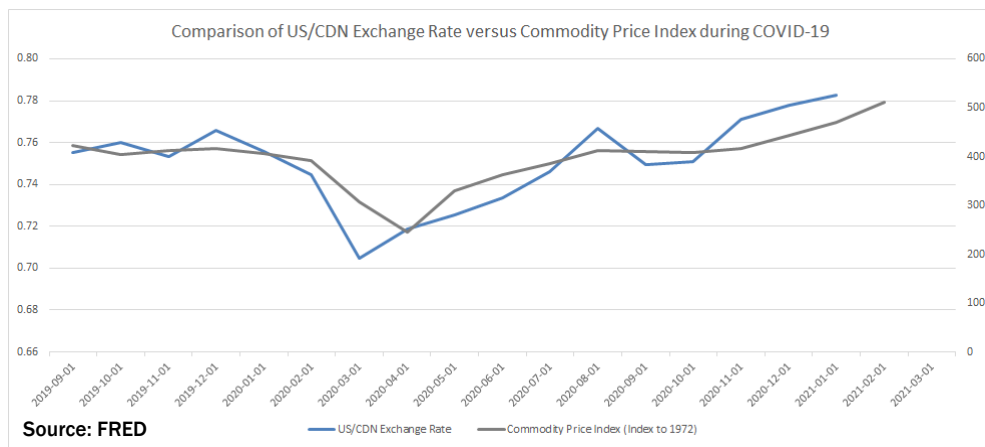
Graph 7: GDP and Inflation Differentials (Covid-19)



Graph 8: Commodity Price Index (Great Recession)



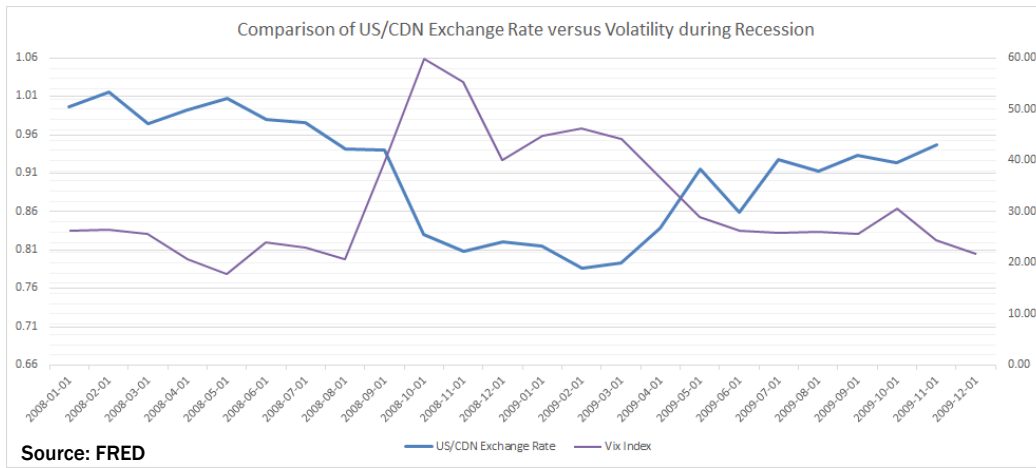
Graph 9: Commodity Price Index (Covid-19)



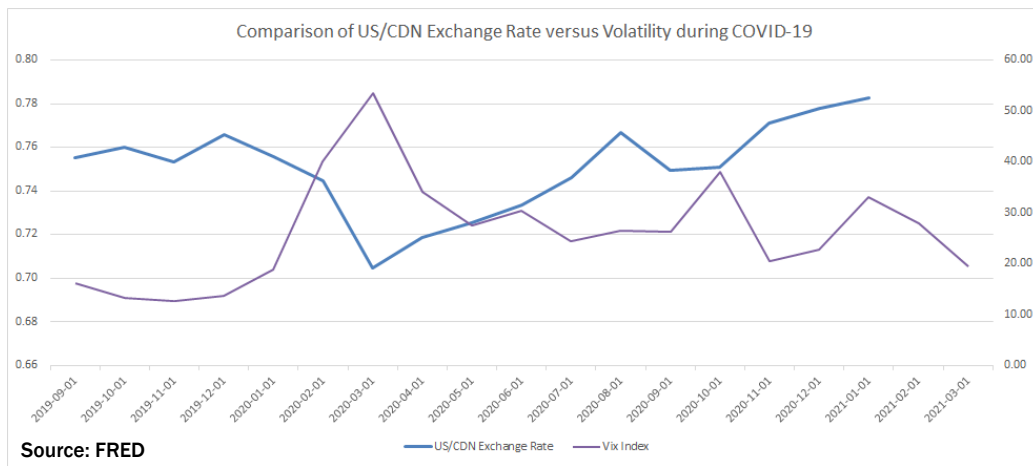
Graph 10: Forward Rate



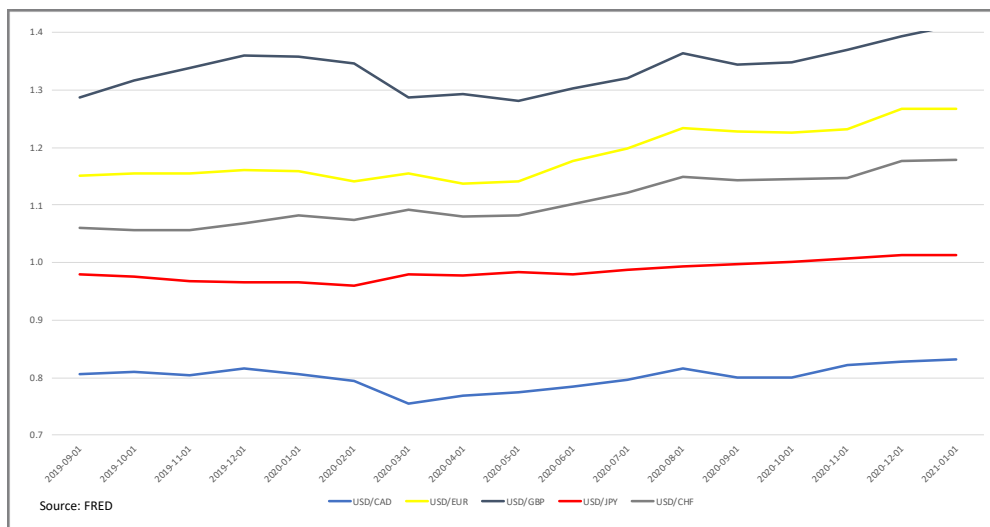
Graph 11: Vix Index (Great Recession)



Graph 12: Vix Index (Covid-19)



Graph 13: Exchange Rates - USD/CAD, USD/EUR, USD/GBP (Covid-19)



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