

## The US Real Effective Exchange Rate: Contradictions of Trumponomics

- Our newly-estimated model of the broad US effective exchange rate finds that uncertainty, as measured by the VIX, has a significant positive effect on the USD.
- The rise in uncertainty since the last US presidential election and the associated global flight to the safety of US assets put upward pressure on the effective exchange rate of about 14% relative to its pre-election level, leaving the exchange rate 11% above current fundamentals.
- The strength in the USD is contributing to the observed and expected widening of the US trade deficit, which has been moving in the opposite direction to President Trump's desire. We expect trade uncertainty to remain high, and in so doing maintain upward pressure on the broad measure of the USD.

### US EXCHANGE RATE AND INTERNATIONAL TRADE

The USD is a key variable in the global trading system by virtue of being the world's reserve currency, but it naturally is also an important determinant of US trade outcomes. The latter role is a specific focus of the Trump Administration, which has labelled China a currency manipulator and accused Germany of benefiting from an undervalued Euro. Underlying this charge is a concern that an overvalued USD is constraining demand for US exports and makes imports more attractive, increasing the trade deficit. In part, this is also motivating President Trump to weigh in on matters of monetary policy, urging lower rates at home in order to depreciate the US dollar.

If the US dollar is indeed overvalued, what is the reason for it? A hint is in its central role as the world reserve currency: the premium associated with the US dollar due to this role fluctuates with economic conditions and, in particular, at times of rising global economic risks.

In this note we explore the determinants of the US real effective exchange rate, a broad measure of the US currency constructed by the US Federal Reserve Board (chart 1). This constructed index weighs currency pairs by the share the associated countries have in US trade, adjusted for the effects of relative changes in consumer prices among countries. Given the pattern of international trade in the US this exchange rate measure places almost two thirds of the weight on the European Union, China, Canada and Mexico. We did not focus on another widely used benchmark, DXY, because the latter covers mostly developed country counterparts and thus underestimates the impact of emerging economies like China, Mexico and others.

The discussion of the results of our analysis are presented in the next section.

### FUNDAMENTALS OF THE US REAL EFFECTIVE EXCHANGE RATE MODEL

To relate the broad real effective exchange rate published by the Fed to economic fundamentals, we estimate a pair of equations that govern i) the long-

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Chart 1

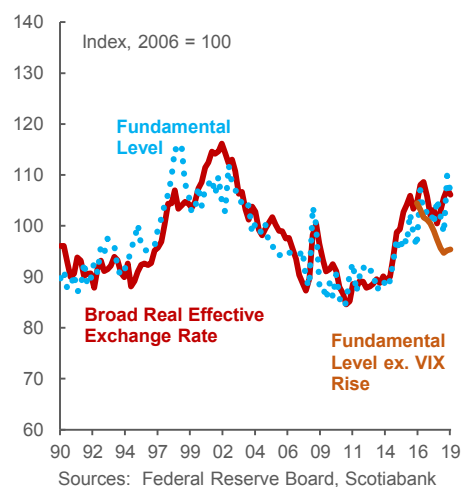


Table 1

Long-run Equation for the US Real Effective Exchange Rate

	Estimated coefficient	T-statistic
US Federal Budget Deficit, % GDP	1.264	5.16
WTI Oil Price, log	-0.092	-3.96
Ratio of US GDP to Foreign Demand for US Exports, log	0.466	5.28
Real Yield on 10-year Bond	-3.609	-6.89
VIX	0.002	2.57
VIX*DUMMY	0.010	7.07
Constant	0.571	0.76

Source: Scotiabank Economics.

run behaviour of the exchange rate (table 1), and ii) the dynamic adjustment of the exchange rate to the long-run (fundamental) level.

Table 1 shows the results of the estimation of the long-run equation. We find the following fundamental factors driving the level of the exchange rate:

- i) The Federal Government budget balance relative to GDP. A positive coefficient in Table 1 means that an improvement of the Federal Government budget balance as a percent of GDP appreciates the US real exchange rate. This is because the deficit reduction is associated with an improvement in the US current account balance, which reduces the supply of US dollars and leads to an appreciation.
- ii) The real price of oil, with a negative coefficient. This means that an increase in the price of oil depreciates the US exchange rate because it implies a weaker US trade balance and current account. For most of the post-war history the US economy has been a net importer of oil, which explains the direction of the impact. More recently, with the US turning into a net exporter, the direction of the impact has likely changed but it is too recent to be picked up econometrically.
- iii) The 10-year US Treasury bond rate. This variable captures long-run shifts in appetite for US assets with the US dollar enjoying a world reserve currency status. An increase in the long-run appetite for US assets is associated with an appreciation of the US exchange rate and raises the demand for US government bonds which increases the price and reduces the equilibrium long-run interest rate.
- iv) The ratio of the US real GDP to the trading partners' export-weighted GDP. This variable captures two channels that lead to an appreciation in the US exchange rate. First, the so-called "Balassa-Samuelson effect" says that an improvement in productivity in the tradable sector of a given country (the US) relative to the productivity of its trading partners will, under certain conditions, appreciate the currency of this country. The variable also captures the strength of the US economy relative to the economies of its trading partners making it attractive to international investors.
- v) The VIX. An increase in the uncertainty in the financial markets induces a flight to quality, increasing the premium commanded by the US dollar and leading to an appreciation.
- vi) A structural break in the effect of the VIX since the election of Donald Trump to the US Presidency. Since President Trump's election, the US effective exchange rate is more sensitive to fluctuations in the level of uncertainty in financial markets.<sup>1</sup>

The resulting long-run equation is shown on chart 1. The fundamental drivers explain the actual behaviour of the real exchange rate quite well, in particular after 2014.

The dynamic equation, which governs the adjustment of the exchange rate to its long-run equilibrium, is a function of the following variables in addition to the first lag of the exchange rate (see Table 2):

- i) The disequilibrium of the exchange rate relative to its fundamental level. Any disequilibrium of the US effective exchange rate relative to its fundamental value closes with time at a pace of roughly 16% per quarter;
- ii) The first difference of the VIX;
- iii) The growth rate of the price of oil; and
- iv) The differential between the US and foreign 10-year government bond rates. An increase of the US long-run interest rate relative to the long-run interest rates of its trading partners will generate a temporary appreciation of the US exchange rate.

		Estimated coefficient	T-statistic
Lag of real effective exchange rate, difference	log-	0.131	1.74
Exchange Rate Disequilibrium, lag		-0.162	-4.25
VIX, first difference		0.001	2.84
WTI Price of Oil, log-difference		-0.070	-5.39
10-year Bond Yield, spread vs global average, lag		0.005	2.38

Source: Scotiabank Economics.

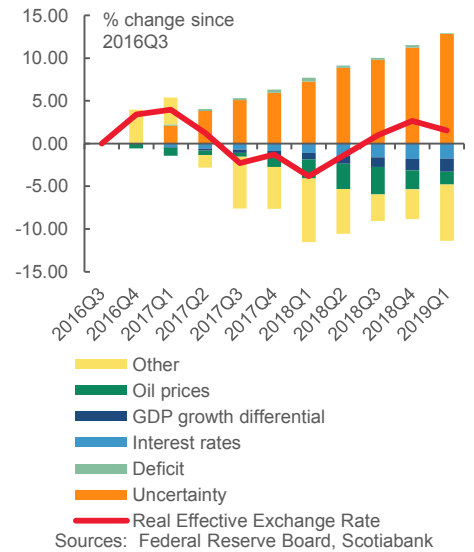
<sup>1</sup> We tested for structural breaks in other variables as well, with only the VIX structural break being statistically significant.

**DRIVERS OF THE US REAL EFFECTIVE EXCHANGE RATE SINCE THE 2016 PRESIDENTIAL ELECTION**

Having estimated the equations described in the previous section we can now turn to the question of what, if anything, drove the US real effective exchange rate higher since the election of president Trump. Chart 2 shows that from 2016Q3 to 2019Q1 several fundamentals factors pushed the US effective exchange rate down (see chart 2), including US GDP growth that was less impressive compared to that of its trade partners, a stronger oil price and a higher 10-year bond yield.

However, the depreciation pressure coming from these factors was offset by the increased uncertainty since the election of president Trump, which would have led to an appreciation on the order of 14% between 2016Q3 and 2019Q1 due to a flight to the safety of US assets. Given that the elevated trade uncertainty is expected to persist well into 2020, it should continue to support the US real exchange rate and thus prevent the shrinking of the US trade balance.

Chart 2



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