Global Macro Risks – Sovereigns

Stronger US Dollar and Potential Change in US Imports Create Vulnerabilities for Some Sovereigns

Executive Summary

Strengthening US macroeconomic outlook, along with tightening monetary policy and expected fiscal stimulus, point to a stronger US dollar in 2017, as the US becomes relatively more attractive for foreign capital. In addition, the proposed US border adjustment tax component of the broader US corporate tax reform proposal could also result in a permanent real appreciation of the US dollar. While the magnitude and the period over which exchange rate adjustment takes place are uncertain and will depend on the transmission mechanisms through the economy, in theory a 20% border adjustment tax could result in a permanent appreciation of the dollar of up to 25%. Even a partial dollar appreciation could be very large compared to historical movements in the dollar, and could pose significant but varied risks for other countries.

A large permanent dollar appreciation would be transmitted to other sovereigns through several channels:

- Sovereigns with high levels of US dollar-denominated debt relative to domestic output would be highly vulnerable to a large dollar appreciation. Servicing interest costs on dollar debt will become more onerous for some sovereigns and other debt issuers in those countries. The most vulnerable sovereigns include Jamaica, Croatia, Belize, Mozambique, Serbia, Lebanon, Kyrgyz Republic, Ukraine, and Venezuela. Large dollar reserves will provide a buffer, and indeed, external vulnerability as measured by the ratio of dollar-denominated debt to dollar reserves would not be affected. Further, sovereigns with large dollar revenues will be in a better position compared to sovereigns with primarily domestic sources of revenue.

- Countries with pegs to the dollar or currency boards will face the need for internal adjustment, while dollarized economies would experience a loss of competitiveness. The IMF currently identifies eight dollarized countries globally, including Ecuador, El Salvador, and Panama; eight countries with currency boards linked to the US dollar, including Hong Kong and the ECCU economies; and 15 countries with conventional peg with the US dollar, including the Bahamas, Bahrain, Barbados, Bermuda, Jordan, Oman, Qatar, Saudi Arabia and the UAE among others. All of these countries would face pressure for internal adjustment, tighter monetary conditions and potential loss of competitiveness if they were to maintain the peg with the US dollar.
As US assets become relatively more attractive to foreign capital, emerging markets could experience capital outflows. Economies which are already vulnerable, such as Turkey, could experience significant exchange rate pressure. Further, should US companies repatriate cash to the US or move investment back to the US, some economies may experience a decline in FDI or investment. In addition, re-pricing of dollar trades in financial markets would occur.

More broadly, in the event of a large permanent dollar appreciation, all issuers in a country would need to adjust to the corresponding depreciation of their currencies against the dollar. Countries’ net US dollar foreign liabilities as a share of national GDP could give one indication of the vulnerability. Over 20 countries globally have a net US dollar liability position in excess of 20% of GDP, including Papua New Guinea, Nicaragua, Jamaica, Kyrgyz Republic, Georgia, Belarus, Finland, Armenia, Lithuania and Turkey among others. On the other hand, among the most resilient countries would be Singapore, Hong Kong, Ireland and Switzerland, all with net US dollar assets position of over 100% of GDP.

Changes in US trade flows, would be transmitted to sovereigns globally through two additional channels:

- Under a scenario of delayed or partial US dollar adjustment, demand for US imports would fall and US exports would rise. Currently, exports to the US represent over 20% of national GDP for Mexico, Canada, and Nicaragua, and between 10% and 20% of GDP for Vietnam, Trinidad and Tobago, Cambodia, and Hong Kong, but are also material in many other countries.

- Finally, in the event that a US border adjustment tax is challenged as a trade restriction and leads to potential retaliation by US trade partners, it could result in a large decline in both US and global trade flows. Even though difficult to evaluate, in the current world of regionally and globally integrated supply chains, retaliatory actions, if sustained, could have global spillovers and a much broader impact on trade than what would be indicated by a measure such as trade exposures to the US.

Analyzing the Macroeconomic Impact of a US Border Adjustment Tax

Strengthening US macroeconomic outlook, along with tightening monetary policy and fiscal stimulus, will all be consistent with stronger US dollar in 2017, as the US becomes relatively more attractive for foreign capital. In addition, the US House Republican corporate tax reform proposal includes a destination-based border adjustment tax of 20% as a way to neutralize the fiscal revenue impact of lowering the statutory corporate tax rate from 35% to 20%, which in theory could result in a large one-time permanent appreciation of the US dollar.

The border tax would treat domestically purchased inputs and imported inputs differently. Corporations would no longer be able to deduct the costs of imported inputs from their taxable income, while export-sales revenue would not be taxed. In practice, this would be equivalent to imports facing a tariff equivalent to the new corporate tax rate of 20%, while exports would be in effect subsidized.

Estimating the impact of the border adjustment tax on the US and other economies is not as straightforward as economic theory suggests. In theory, since the US dollar is a freely floating currency, a 20% border tax would result in an immediate and permanent nominal (and hence real) appreciation of the dollar of 25%. In reality, however, the magnitude of the appreciation, and the time over which adjustment takes place, will depend on the responsiveness of foreign currency markets to changes in US trade policies and transmission mechanisms through the economy. We describe below three possible macroeconomic scenarios that could play out, starting with the theoretical textbook scenario, and relaxing some of the assumptions in the other scenarios.

The authors would like to thank the organizers and participants of the Conference on Border Tax and Corporate Tax Reform organized by Peterson Institute, Washington, DC on February 1, 2017. We benefited greatly from the wide-ranging discussions at the conference.
The Macroeconomic Impact of a Border Adjustment Tax is Difficult to Predict in Reality

**Scenario 1: Full Nominal Exchange Rate Adjustment ("Textbook Adjustment")**

Under a scenario of immediate and complete exchange rate adjustment (real and nominal):

1. A 20% Border Tax would lead to a 25% one-time permanent appreciation of the US dollar.
2. The dollar appreciation will neutralize the impact of the tax and leave US growth, the US price level, and the US trade deficit unchanged.
3. In terms of the national accounting identity, the trade balance – which equals the excess of total domestic savings over investment – remains unchanged.

In the textbook case of complete and immediate nominal exchange rate adjustment, holding everything else constant, a border adjustment tax will make US exports more competitive in foreign markets and US imports more costly at the pre-tax exchange rate. Higher foreign demand for US export products will increase the demand for US dollars. At the same time, the reduced US demand for foreign products will reduce the supply of US dollars in the foreign exchange market. Higher demand for dollars relative to supply would lead to an appreciation of the US dollar, which would in turn offset the impact on trade.

**Scenario 2: Long-Term Partial Nominal (and Real) Exchange Rate Adjustment ("price and exchange rate impact")**

Under a scenario of partial nominal exchange rate adjustment in the long term:

1. The nominal appreciation of the dollar would be smaller, but would be accompanied by an increase in the US price level resulting in full real exchange rate adjustment.
2. The dollar appreciation and the increase in the US price level will neutralize the impact of the tax and leave US growth and the US trade deficit unchanged.
3. In terms of the national accounting identity, the trade balance – which equals the excess of total domestic savings over investment – remains unchanged.

For importers, an appreciation by 25% would mitigate the impact of a 20% tax on after-tax profits. For exporters, although the 20% effective tax subsidy would allow exporters to price more competitively in foreign markets, an appreciation of the US dollar against its trading partners would mitigate the ultimate impact on their after tax cash flow.

Therefore, in this scenario, a 20% border tax would be neutral for international trade, as it would lead to a 25% nominal appreciation of the trade-weighted US dollar that would fully offset the impact of the border tax on individual businesses. Domestic and foreign...
price levels will remain unchanged. In terms of the national accounting identity, the trade balance - which equals the excess of total domestic savings over investment - remains unchanged. Thus, this scenario implicitly assumes that the US saving-investment balance remains unchanged.

Internationally traded commodities, such as oil, that are typically priced in the US dollar would also see their dollar price decline correspondingly. Under a complete exchange rate adjustment scenario, the decline in the dollar price of oil outside the US could be as much as 20%, offsetting the appreciation of the dollar, while US oil price (WTI) remains unaffected. With imported oil taxed at 20% in the US, this would mean a substantial wedge between the domestic US price of crude oil (WTI) and the international price of crude oil (Brent).

**Scenario 2: Long Term Partial Nominal Exchange Rate Adjustment**

In reality, an immediate nominal exchange rate adjustment may not occur. The BIS estimates that around 87% of the USD 5 trillion daily turnover in global foreign exchange markets comprises US dollar transactions. By contrast, total US trade (exports and imports) amounted to USD 4.9 trillion for the whole year in 2016. Thus, being a widely traded international reserve currency and with many assets globally denominated in US dollars, the value of the US dollar is determined by many factors other than US trade flows.

Unlike Scenario 1 where the appreciation of the real exchange rate occurs entirely through the adjustment of the nominal exchange rate, in Scenario 2 the appreciation of the real exchange rate would take place over time through a combination of nominal exchange rate and price level adjustments.

Here, the appreciation of the dollar would be smaller, but it would also be accompanied by an increase in the US price level. Similar to Scenario 1, if the real dollar appreciation completely offsets the impact of the tax on net exports, the US trade balance would remain unchanged. Unlike Scenario 1, in this case the price of imports in the US would have risen.
Scenario 3: Short Term Partial Exchange Rate Adjustment and Asymmetric Impact across Industries

**Macro 101 (US)**

\[ Y = C + I + G + NX \]
\[ Y = C - G - I = NX \]
\[ \uparrow NCO = \uparrow (S - I) = \uparrow NX(\uparrow \epsilon, -\uparrow \epsilon) \]
\[ \epsilon = \frac{(Pd / Pf)}{*\uparrow e} \]
\[ \uparrow P = \uparrow (\epsilon \uparrow \epsilon) * (Pf / \uparrow e) \]
\[ \text{but } ? S, ? I, ? Y \]

**Impact on the US**

USD: +0-25%

- **Impact on US real output:** indeterminate, could be positive, negative or none
- **Impact on US prices:** increase
- **Impact on US trade deficit:** decline
- **Asymmetric impact across sectors**

**Impact on other countries**

- Adjustment to partial USD appreciation of between 0-25%
- Adjustment to lower exports to the US and higher exports from the US

Note: In "Macro 101 (US)" section, Y is gross domestic product, C is consumption, I is investment, G is government expenditure, NX is net exports (which are a function of the real exchange rate and taxes on net exports), S is national savings; \( \epsilon \) is the real exchange rate, \( Pd \) and Pf are the domestic and foreign price levels respectively, \( Pim \) is the import price for US, \( t \) is the tax on net export. \( \uparrow \) denotes an increase, \( \uparrow \uparrow \) denotes a larger increase, and ? denotes unknown.

In addition to the fact that an immediate nominal exchange rate adjustment may not occur as in Scenario 2, macroeconomic adjustment through domestic prices may take time. Thus, we may see only a partial adjustment of the real effective US dollar rate in the short term. Therefore, nominal exchange rates may not adjust enough to fully offset the impact of the tax on export and import prices.

Thus, under a scenario that the exchange rate adjusts only partially or the adjustment takes time, a border tax would likely lead to higher US consumer prices, lower US trade deficit, and higher price of oil in the US but lower international price of oil.

Further, there are a number of reasons why the impact of a border tax across companies and industries in the US may not be symmetric. The ability of companies to pass on price increases to consumers will depend on the price elasticity across different goods, market structure (the amount of competition or monopoly power within the different industries), export/import intensities, scope for import substitutions, nationality of competitors, labor intensities, and margins. Firms may also adjust their production allocation between the US and other countries. All these developments will affect investment in different sectors. At the same time, as firms adjust, the fiscal impact of the corporate tax reform may not be neutral, which will impact government savings. And depending on inflation and real wage adjustment in the economy, private consumption and savings may change as well. Thus, the savings-investment balance of the economy may change and the direction of change is difficult to predict ex ante. All these factors mean that the impact on US real output is uncertain ex ante and could be positive, negative or neutral.

**Lack of Historical Precedent**

What one can learn from history on the macroeconomic impact of a border adjustment tax is somewhat limited by the fact that no other country seems to have a border adjustment tax on corporates as is being proposed in the US. The border adjustment tax has many similarities with a Value Added Tax (VAT) which is common in many countries, in that it is a destination-based tax and taxes based on domestic activity. However, unlike a VAT which is a sales tax that has a symmetric impact on companies and industries within a country, the border adjustment tax is asymmetric in that it favors exporters and penalizes importers.

Nevertheless, the historical evidence from recent implementation of VAT in advanced economies suggests that VAT has been indeed associated with real exchange rate appreciation, which in several cases has come from increase in domestic consumer prices along with a nominal appreciation. The evidence suggests that the complete real exchange rate adjustment has taken between one and three years. Thus, the experience with the introduction of VATs has been closest to our “Scenario 2: Long-Term Partial Exchange Rate Adjustment” in the long run.
Analyzing Sovereign Exposures to Stronger US Dollar and Potential Change in US Trade Flows

Potential US Dollar Appreciation Is Large in a Historical Context

The potential appreciation of the US dollar can be very large compared to the historical movements of the dollar. A full 25% appreciation of the US dollar in real terms and over a short period will be unprecedented and will be the second-largest jump in the value of the dollar in nominal terms, only behind the 1986 dollar appreciation. Even if we only observe a partial US dollar appreciation in the 10-15% range, that would still be a very high value of the dollar, especially considering that the US dollar has already appreciated by close to 25% in nominal terms over the last two years.

Channels of Impact for Sovereigns

A large permanent US dollar appreciation can affect other sovereigns through several channels:

- Directly increasing the value of US dollar-denominated debt relative to domestic output;
- Affecting the competitiveness of dollarized economies, countries with pegs to the dollar, or countries with currency boards linked to the dollar;
- Potentially affecting capital flows to emerging markets, and leading to re-pricing of dollar trades in financial markets;
- All other issuers in the economy would need to adjust to their domestic currency depreciation relative to the dollar.

If capital flows do not respond to the policy change and the exchange rate does not appreciate enough to offset the border tax, then an additional channel of transmission to the rest of the world would be through trade:

- Impact on countries which export to the US directly, or which participate in integrated supply chains with final goods exported to the US;
- Global trade could be severely impacted in the event of retaliation and escalating trade wars.
Sovereigns with Large Dollar Denominated Debts Are Highly Vulnerable

Sovereigns with high levels of US dollar-denominated debt relative to domestic output would be highly vulnerable to a large permanent dollar appreciation. Regardless of whether the US dollar appreciates immediately by the full extent or only partially, sovereigns (and other issuers) will see the burden of servicing their dollar denominated debt increase relative to domestic revenue or domestic GDP. Given the prevalence of the dollar in global financial markets, the vast majority of the almost $1.8 trillion foreign currency sovereign debt globally, as of 2015, is denominated in US dollars.

Vulnerability varies by country. Large dollar reserves or sovereign wealth funds will provide a buffer, and indeed, external vulnerability as measured by the ratio of dollar-denominated debt to dollar reserves would not be affected. Further, sovereigns with large dollar revenues will be in a better position compared to sovereigns with primarily domestic sources of revenue.

As Exhibit 4 shows some of the largest emerging market dollar debt issuers in nominal terms - for example, Argentina, Mexico, Brazil and India - are not among the countries that would be most affected by a dollar appreciation, as their foreign currency debt represents a relatively smaller share of GDP.

The sovereigns with the highest ratio of foreign currency debt to GDP include Jamaica, Croatia, Belize, Mozambique, Serbia, Lebanon, Kyrgyz Republic, Ukraine, and Venezuela among others. A number of these countries are already facing significant debt-repayment challenges (see Exhibit 5).

Source: Moody’s Investors Service
Challenges for Dollarized Economies, and Economies with Currency Boards or Pegs to the Dollar

In the events of a large permanent dollar appreciation, dollarized economies would experience a loss of competitiveness. As shown in Exhibit 6, the IMF currently identifies eight dollarized countries globally, including Ecuador, El Salvador, and Panama.

Further, countries with hard pegs to the dollar or currency boards will face the need for internal adjustment. The IMF currently identifies eight countries with currency boards linked to the US dollar, including Hong Kong and the ECCU economies; and 15 countries with conventional peg with the US dollar, including the Bahamas, Bahrain, Barbados, Bermuda, Jordan, Oman, Qatar, Saudi Arabia and the UAE among others. All of these countries would face tighter monetary conditions and loss of competitiveness, and the need for internal adjustment if they were to maintain their pegs.
Emerging Market Capital Outflows Would Increase
As US assets become relatively more attractive to foreign capital, emerging markets could experience capital outflows. Economies which are already vulnerable, such as Turkey, could experience significant exchange rate pressure.

All Issuers Would Need to Adjust to the One-Time Currency Depreciation Relative to the Dollar
More broadly, in the event of a large permanent dollar appreciation, all issuers in a country would need to adjust to the corresponding depreciation of their currencies against the dollar. Currency movements will have an impact on the valuation of US dollar denominated assets and liabilities.

Countries’ net US dollar denominated foreign assets/liabilities as a share of national GDP could give one indication of the vulnerability. Over 20 countries globally have a net US dollar liability position in excess of 20% of GDP, including Papua New Guinea, Nicaragua, Jamaica, Kyrgyz Republic, Georgia, Belarus, Finland, Armenia, Lithuania and Turkey among others. On the other hand, countries with
positive net US dollar denominated asset positions, including Singapore, Hong Kong, Ireland and Switzerland, all with net US dollar assets position of over 100% of GDP, would see valuation gains from an appreciation of the US dollar.

Exhibit 8
Currency Denomination of Net Foreign Asset/Liability Positions Makes Some Countries More Vulnerable than Others to Large US Dollar Moves

Most Vulnerable Countries in 2012

Least vulnerable countries in 2012

Note: The international foreign assets and liabilities database is updated once every several years; the latest available data, plotted above, is for 2012. Abbreviations: PNG - Papua New Guinea, TTO - Trinidad and Tobago.

Trade Exposure Matters in Case of a Delayed or Partial Appreciation of the US Dollar
Under a scenario of delayed or partial US dollar adjustment, demand for US imports would fall and US exports would rise. This is because the after-tax relative price of imports would increase while US exporters would benefit from increased price competitiveness due to the implicit tax subsidy. Currently, exports to the US represent over 10% of national GDP for Mexico, Canada, Nicaragua, Vietnam, Trinidad and Tobago, Cambodia, and Hong Kong, but are material in many other countries as well (see Exhibit 9). Also, in dollar terms, currently China, Germany, Japan and Mexico have the largest trade surpluses with the US. Further, competitors of US exporters, including from countries such as Japan and Germany, would face increased competition from US firms.

Exhibit 9
Exposure to Declines in US Exports
Retaliation by Other Countries Would Be Detrimental to Global Trade

Even if exchange rate adjustment mitigated the impact of the US border adjustment tax, it could be perceived by US trade partners as protectionist. Pressure could build up in other countries to retaliate and pursue their own protectionist policies. Also, countries could pursue arbitration by the WTO. Legal and trade experts have differing opinions on whether the WTO would consider the border adjustment tax as non-discriminatory, similar to a VAT. Escalating retaliatory actions, especially in the event that the WTO concludes that the border tax does not comply with WTO rules, could potentially spiral into trade wars.

Even though difficult to evaluate, in the current world of regionally and globally integrated supply chains, retaliatory actions could have global spillovers and a much broader impact on trade than what would be indicated by a measure such as trade exposures to the US. Thus a meaningful decline in global trade flows cannot be ruled out.

References


Moody's Related Research

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Endnotes

1 Also referred to as “Destination-Based Cash-Flow Tax” (DBCFT).
2 The Destination based cash flow tax (DBCFT) or Border adjustment tax proposal in its entirety has the following features: 20% tax rate on taxable income generated in the US, businesses would be able to fully expense capital investment (instead of taking depreciations), no tax on profits earned overseas, no interest deductibility, and border adjustment, where imports are no longer deductible.
3 A 20% border tax translates into an appreciation of the US dollar of 25% in the following way. A t% border tax on imports would require an US dollar appreciation of t/(1-t)% for the impact of the tax on the cost of imports to be nullified. For example, assume that the exchange rate between the USD and the currency “Z” of Country Z was initially 1 to 1. At this exchange rate, for USD 100 or Z 100 worth of pretax exports to the US, the supplier from Country Z who exports to the US would receive Z 80 (or USD 80) after a 20% tax. For this supplier to receive Z 100, the exchange rate would have to be Z 1.25 to USD 1, which is a 25% appreciation of the US dollar. At this new exchange rate, the foreign supplier would receive USD 80*1.25=Z 100. (If the appreciation were only 20%, then the foreign supplier would still lose because she would receive only Z 96 (=80*1.20) after tax instead, of Z 100.)
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