

PB 16-22 Estimates of Fundamental Equilibrium Exchange Rates, November 2016

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As of mid-November, the US dollar has become overvalued by about 11 percent. The prospect of fiscal stimulus and associated interest rate increases under the new US administration risks still further increases in the dollar. An even stronger dollar would widen the path of growing trade deficits already in the pipeline. As President-elect Donald Trump has attributed trade deficits largely to past trade agreement “disasters,” there is a corresponding risk of escalating trade policy conflict, in a perverse dynamic reminiscent of the initial years of Reaganomics.¹

In October 2016, the base month of this new set of fundamental equilibrium exchange rate (FEER) estimates, the US dollar was overvalued by 8 percent, about the same amount as identified in the three previous issues in this series

(Cline 2015a, b; 2016).² The real effective exchange rate (REER) of the dollar in October was 17 percent above its level in mid-2014. Given the two-year lag from the exchange rate signal to the trade outcome, the US current account deficit is on track to widen from 2.7 percent of GDP this year to nearly 4 percent by 2021. Yet market expectations of fiscal stimulus under the new Trump administration have pushed the dollar even higher, by about an additional 3 percent by mid-November.

The new estimates (all based on October exchange rates) again find a modest undervaluation of the yen (by 3 percent) but no misalignment of the euro and Chinese renminbi.³ The Korean won is found to be undervalued by 6 percent.

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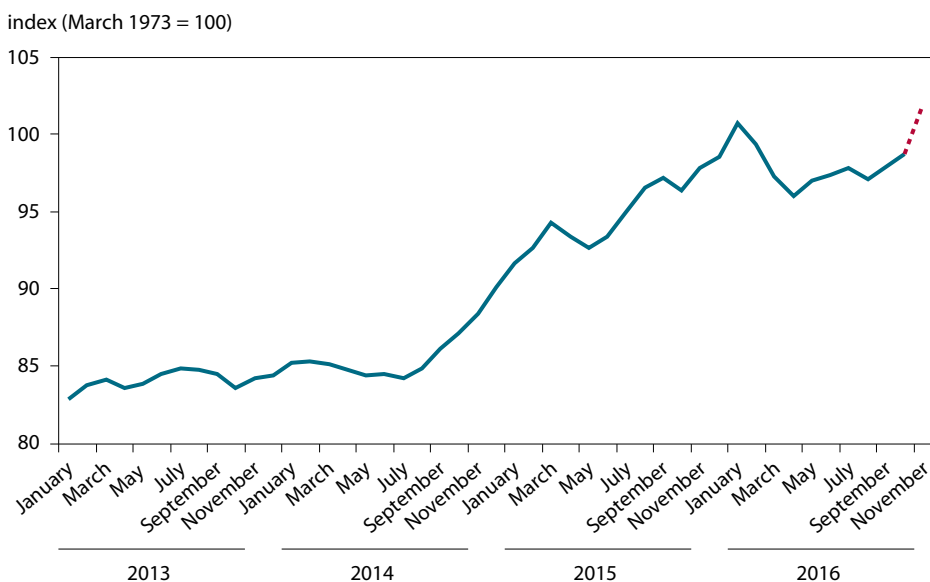
Cases of significant overvaluation besides that of the United States include Argentina (by about 7 percent), Turkey (by about 9 percent), Australia (by about 6 percent), and New Zealand (by about 4 percent). A familiar list of smaller economies with significantly undervalued currencies once again shows undervaluation in Singapore and Taiwan (by 26 to 27 percent), and Sweden and Switzerland (by 5 to 7 percent).

2. First introduced in Cline and Williamson (2008), the semi-annual calculations of FEERs examine the extent to which exchange rates need to change in order to curb any prospectively excessive current account imbalances back to a limit of ± 3 percent of GDP. This target range is intended to be consistent with sustainability for deficit countries and global adding-up for surplus countries. The estimates apply the Symmetric Matrix Inversion Method (SMIM) model (Cline 2008). For a summary of the methodology, see Cline and Williamson (2012, appendix A), available at <http://www.piie.com/publications/pb/pb12-14.pdf>.

3. Because the REER for the yen fell by about 3 percent from October to November 15, however, the undervaluation of the yen may have widened to about 6 percent.

1. “Read Donald Trump’s Speech on Trade,” *Time*, June 28, 2016.

Figure 1 US broad real effective exchange rate, 2013–16



Note: November 2016 is the author’s estimate for November 15, 2016.
 Sources: US Federal Reserve (2016) and author’s calculations.

KEY CURRENCY TRENDS

Persistence of the Strong Dollar The Federal Reserve’s broad REER index rose from about 85 in 2013 and early 2014 to a peak of 101 in January 2016 before easing to about 99 in October (figure 1). **After the election of Trump, financial markets bid up the dollar as expectations of fiscal stimulus dominated uncertainty about trade and immigration shocks.**

By November 15, the index stood at an estimated 102, slightly higher than its January peak.⁴ The decline of currencies of economies dependent on oil and other commodities, and the unsynchronized phases of monetary policies in the United States versus the euro area and Japan, were the main forces behind the appreciation over the past two years. As discussed below, the strength of the dollar suggests a substantially widening current account deficit going forward, given the lag from the exchange rate signal to the current account outcome.

POLITICAL SHOCKS AND CURRENCY REACTIONS

The *Brexit* shock—the unexpected success of the June 23 UK referendum to leave the European Union—has exerted substantial downward pressure on the pound sterling. Against the dollar, the pound fell 10.5 percent from June 23 to June 30, and the cumulative decline reached 16.3

percent by November 15. The corresponding cumulative decline against the euro in this period was 10.5 percent. The REER for the pound fell by 13.6 percent from May to October, but as the pound was the only key currency to rise against the dollar following the US elections, this cumulative decline had eased to 10.5 percent by November 15. In principle the more competitive exchange rate could offset some of the adverse shock to growth caused by the vote to exit the European Union. However, reduced access to the EU market would tend to negate such competitiveness gains, especially if there is a “hard” exit. In its World Economic Outlook (WEO) estimates for the United Kingdom, the International Monetary Fund (IMF) has reduced its prospective growth estimate for 2016–21 from an annual average of 2.1 percent in April to 1.7 percent in October (IMF 2016a, b). Nonetheless, the WEO forecast for the current account deficit in 2021 has widened rather than narrowed (from 3.5 percent of GDP in April to 3.8 percent in October), suggesting that the Fund considers losses from reduced market access to dominate any gains from a lower exchange rate as well as weakened demand growth for imports from slower growth.

In *Brazil* the impeachment process begun in early December 2015 culminated in the removal of President Dilma Rousseff from office on August 31, 2016. Whereas Brazil’s REER had shown a sharp decline from June 2014 to October 2015 associated with the broad decline in commodity prices (Cline 2015b), the real exchange rate had recovered about 60 percent of this loss by mid-November

4. Based on the REER in the SMIM model. The Federal Reserve index is only available on a monthly basis.

2016 (despite the dip after the US election).⁵ The recovery of the currency reflects financial market expectations that the political shift back from the left to the center will lead to more coherent economic policies.⁶ However, Brazil faces daunting fiscal challenges following the worst recession in three decades, as well as ongoing uncertainty from pervasive political corruption.⁷

The strength of the dollar suggests a substantially widening current account deficit going forward, given the lag from the exchange rate signal to the current account outcome.

In *Argentina* the December 2015 election of Mauricio Macri of the independent party Commitment to Change ended 15 years of rule by the Peronist party, a period dominated by the presidential terms of Néstor Kirchner and subsequently his wife, Cristina Fernandez de Kirchner. In 2011 the government had introduced exchange controls, and in the face of high inflation of about 20 to 25 percent per year (in contrast to official estimates of about 10 percent per year; see appendix B), the real value of the official exchange rate appreciated substantially. A large gap developed between the official rate and informal market “blue” peso, which reached a spread of 70 percent in October 2015.⁸

5. With 2007 = 100, the REER fell from 101.7 in June 2014 to 71.5 in October 2015, but recovered to 89.6 by November 15, 2016.

6. The administration of Rousseff, of the Brazilian Labor Party (PTB), was marked by heavy-handed intervention in what was called the “new economic matrix,” involving subsidized public credit, tax incentives, increased protection against foreign competition, and price controls. Over-indexation of minimum wages and social security benefits contributed to inflationary and fiscal pressures. Her successor Michel Temer, of the Brazilian Democratic Movement Party (PMDB), has proposed social security reform and a cap on expenditure growth (Fraga 2016). Note that Temer temporarily succeeded Rousseff in May 2016, before her final removal on August 31.

7. The cumulative decline in output from 1980 to 1983 reached 7.1 percent; the cumulative decline from 2014 to 2017 is expected to reach 6.5 percent (7.0 percent through 2016) (IMF 2016b). On post-Rousseff challenges, see Monica de Bolle, “Brazil’s Post-Impeachment Economics,” *Realtime Economic Issues Watch*, Peterson Institute for International Economics, September 6, 2016.

8. The corresponding spread for the “blue chip swap” rate applied in most financial transactions at the time was 48 percent. *EconViews*, October 20, 2015.

The new president ended the exchange controls in mid-December 2015, and in one day the official exchange rate of the peso fell from 9.8 per dollar to 13.3 per dollar.⁹ Although the overall effect has been a significant real depreciation, the large cumulative overvaluation through 2015 has been only partially reversed. Thus, from October 2015 to October 2016, the REER for Argentina fell by 21.1 percent, but it still remained 69 percent higher than the average in 2007. Appendix B discusses the price indexes used for the period 2007–early 2016 in view of the unreliability of the official data in that period.

For *Mexico*, the political shock in 2016 has come from north of the border. The campaign of Republican candidate Donald Trump, who called for a wall to be built along the border at Mexico’s expense, seems to have exerted strong downward market pressure on the peso. From October 2015, before Trump took a clear lead among primary candidates, until August 2016, Mexico’s REER fell by 10 percent, in a period when the average REER for emerging-market comparators—Chile, Colombia, Korea, Malaysia, and the Philippines—rose by 4.5 percent.¹⁰ In the week after Trump was elected, Mexico’s REER fell another 5.4 percent.

Figure 2 shows the sizable exchange rate impacts over the past year in these four cases of political shocks, indicating a strong recovery of the REER for Brazil but a substantial real effective depreciation for the other three economies.

EURO, CHINESE RENMINBI, AND JAPANESE YEN

Over the past year the *euro* initially declined about 5 percent against the dollar in November 2015, in the expectation that US interest rates would rise in contrast to monetary easing in the euro area (figure 3). However, by the second quarter of 2016 the currency had fully recovered against the dollar, reflecting the US Federal Reserve’s shift to a substantial delay in further tightening. Nonetheless, by November 15, 2016, the prospect of a resumption of gradual monetary tightening in the United States, and especially the shift of expectations of fiscal stimulus after the US election, brought the REER for the euro back down to its low of a year ago.

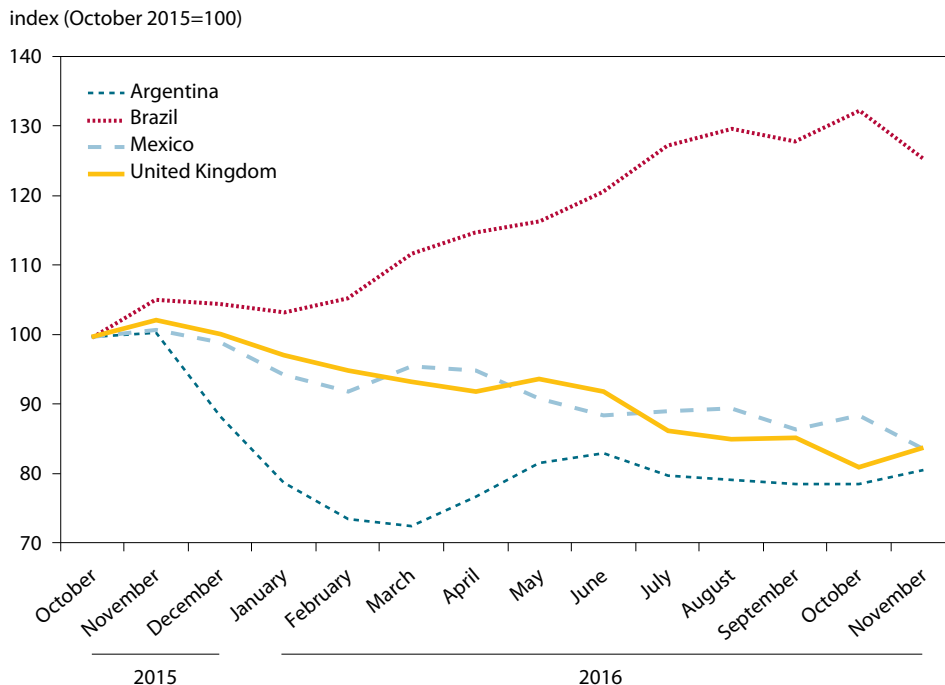
The *Chinese renminbi* declined about 5 percent in nominal terms from October 2015 to October 2016 and eased an additional percentage point against the dollar after the US elections.¹¹ With inflation at 2 percent in China

9. December 16 and 17, 2015. Bloomberg.

10. The REER deflates by consumer prices and uses the SMIM model trade weights.

11. The rate was 6.35 yuan per dollar in October 2015, 6.78 in October 2016, and 6.86 on November 15, 2016. Bloomberg.

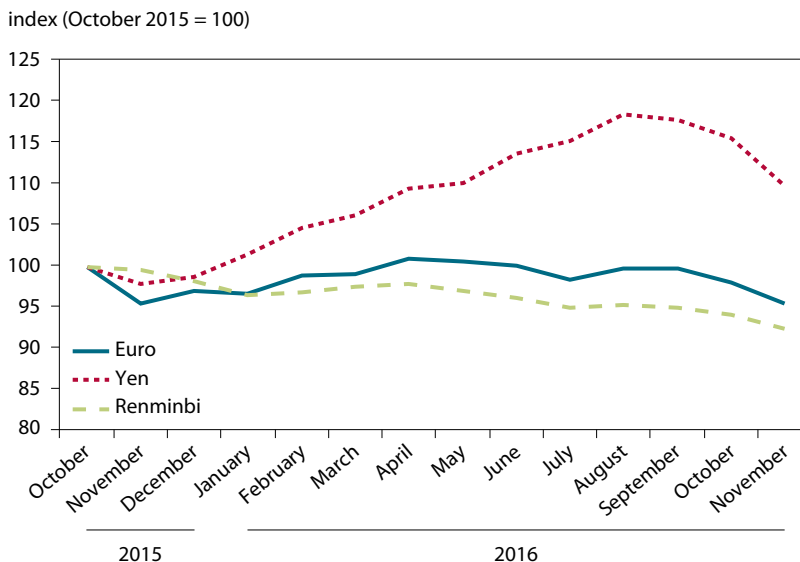
Figure 2 REER trends for economies with political shocks in 2016 (Argentina, Brazil, Mexico, and the United Kingdom)



Note: November 2016 refers to November 15, 2016.

Source: Author's calculations.

Figure 3 Strength of the euro, yen, and renminbi against the US dollar



Note: November 2016 refers to November 15, 2016.

Source: Author's calculations.

and 1.2 percent in the United States (IMF 2016b), most of this decline was real. The decline partly reflected the rise of the dollar against most currencies (figure 1). However, the currency weakness also reflected continuing capital flow pressures on the currency, and China intervened considerably to prevent the renminbi from falling even further (as discussed in Cline 2016, appendix B). Thus, from October 2015 to September 2016, China's external reserves fell from

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\$3.53 trillion to \$3.17 trillion (PBOC 2016). Although the decision to include the renminbi in the IMF's special drawing right marks an important milestone in the political economy of international finance, this event seems to have had little influence on the strength of the currency.¹²

For *Japan*, the dominant influence in July–October was a safe-haven boost to the currency in the aftermath of the Brexit vote. Thus, the yen strengthened from 107.2 per dollar in the first half of June to 102.6 in the final five days of the month following the referendum. However, the rate more than fully reversed this trend following the US election, as the rate fell to 109.2 by November 15 (Bloomberg). Even before the most recent reversal, the yen was not particularly strong from a longer-term perspective. In 2008–12, on average the REER for the yen stood 18 percent above the level in 2007. But beginning in September 2012, the new policies under Abenomics led to a sharp depreciation, to an average in 2013–15 that was 9 percent *below* the 2007 level. By October 2016, the REER had recovered only to its 2007 level, and remained well below its high plateau in 2008–12. This persistent weakness has extended after the US elections, as the REER for the yen fell by 3.3 percent from October to November 15.

CURRENT ACCOUNT OUTLOOK

Table 1 reports the IMF's most recent medium-term forecasts for current account balances of the 34 economies included in this study. For most, there has been little change in the projected 2021 balance from the April WEO to the October WEO (IMF 2016a, b). The United States is

a major exception, as the Fund scaled down its medium-term deficit from 3.9 percent of GDP to 2.7 percent. As discussed below, I consider this change excessive. Appendix A develops a revised model of the US current account, and this model is used as the basis for the US projection.

The first column of table 1 indicates the Fund's projection of current account balances for 2016. There is the usual pattern of outsized surpluses in a handful of economies (especially Singapore and Taiwan, but also Korea, Switzerland, and Sweden). Thailand's surplus has surged to nearly 10 percent of GDP, a phenomenon not anticipated a year ago and not expected to continue in the medium term.¹³ The largest deficit outcome in 2016 is expected to be in Saudi Arabia, at nearly 7 percent of GDP in contrast to an average surplus of 16 percent of GDP in 2000–2014 (IMF 2016b). The Fund's projection for the large deficit to ease to about 1 percent of GDP by 2021 is not premised on a major rebound in oil prices but on other adjustments. Thus, the Fund projects that the average price of UK Brent, West Texas International, and Dubai oil will rise from \$43 per barrel in 2016 to \$51 in 2017 and \$58 per barrel by 2021, compared to an average of \$102 in 2011–14 (IMF 2016b).

The second column of table 1 reports estimated GDP in 2021. At that time, the 34 economies are projected to have a combined GDP of \$90 trillion, or 91 percent of world output at market exchange rates (IMF 2016b). The 10 rich economies¹⁴ in the table account for \$51 billion, or 57 percent of the total for the 34 economies and 52 percent of world output. With the rich economies still accounting for over half of world output at market exchange rates, which is what matters for assessing trade and external accounts, growth in these economies remains important to growth in world trade. Similarly, at market exchange rates, by 2021 US GDP remains 27 percent larger than that of China and accounts for 23 percent of world product.

The third column of table 1 reports the IMF's projection of the current account balance in 2021 as a percent of GDP. The fourth column shows the adjusted projection used in the estimates here. The adjustment reflects the

13. The October 2015 WEO placed the 2016 outcome at a surplus of only 2.9 percent of GDP (IMF 2015). The country's current account has been volatile in recent years and showed a deficit of about 1 percent of GDP as recently as 2013. The present large surplus reflects weak imports associated with political uncertainty and restrained domestic demand, as well as low oil prices, combined with strong tourism earnings (IMF 2016d, 52; Hudson Lockett, “Falling imports, more tourists buoy Thailand's current account,” *Financial Times*, May 31, 2016).

14. The 10 rich economies included are: Australia, Canada, the euro area, Japan, New Zealand, Norway, Sweden, Switzerland, the United Kingdom, and the United States. The high-income island economies of Hong Kong and Singapore are excluded as not representative of this group.

12. “IMF Adds Chinese Renminbi to Special Drawing Rights Basket,” *IMF News*, September 30, 2016.

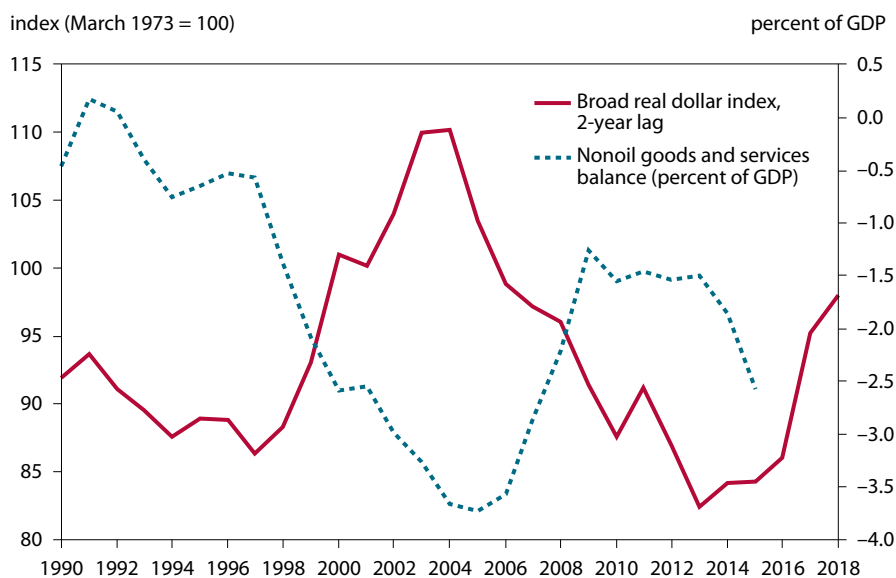
Table 1 Target current accounts for 2021

Country	IMF projection of 2016 current account (percent of GDP)	IMF 2021 GDP forecast (billions of US dollars)	IMF 2021 current account forecast (percent of GDP)	Adjusted 2021 current account (percent of GDP)	Target current account (percent of GDP)
Pacific					
Australia	-3.5	1,640	-4.0	-4.0	-3.0
New Zealand	-3.0	236	-4.1	-3.9	-3.0
Asia					
China	2.4	18,033	0.8	1.0	1.0
Hong Kong	2.8	397	3.4	3.9	3.0
India	-1.4	3,651	-2.2	-2.1	-2.1
Indonesia	-2.3	1,408	-2.3	-2.3	-2.3
Japan	3.7	5,604	3.3	3.6	3.0
Korea	7.2	1,819	5.2	5.6	3.0
Malaysia	1.2	527	1.5	2.6	2.6
Philippines	1.8	543	0.2	0.7	0.7
Singapore	19.3	357	15.7	17.1	3.0
Taiwan	15.0	612	13.9	14.4	3.0
Thailand	9.7	482	2.2	2.7	2.7
Middle East/Africa					
Israel	3.1	389	2.0	2.6	2.6
Saudi Arabia	-6.6	855	-1.2	-0.8	-0.8
South Africa	-3.3	338	-3.6	-3.3	-3.0
Europe					
Czech Republic	1.5	207	-0.8	-0.4	-0.4
Euro area	3.4	14,163	2.8	3.0	3.0
Hungary	4.9	139	1.4	1.6	1.6
Norway	7.0	441	7.2	6.5	6.5
Poland	-0.1	614	-2.6	-2.4	-2.4
Russia	3.0	1,786	4.5	3.8	3.8
Sweden	5.0	595	4.3	4.9	3.0
Switzerland	9.2	762	8.5	6.2	3.0
Turkey	-4.4	965	-5.6	-5.2	-3.0
United Kingdom	-5.9	3,022	-3.8	-2.9	-2.9
Western Hemisphere					
Argentina	-2.3	841	-4.2	-4.0	-3.0
Brazil	-0.8	2,315	-1.1	-1.0	-1.0
Canada	-3.7	1,924	-2.5	-0.1	-0.1
Chile	-1.9	296	-2.7	-2.0	-2.0
Colombia	-5.2	410	-3.3	-2.9	-2.9
Mexico	-2.7	1,403	-2.7	-0.1	-0.1
United States	-2.5	22,767	-2.7	-3.9	-3.0
Venezuela	-3.4	194	0.7	-0.4	-0.4

IMF = International Monetary Fund

Sources: IMF 2016a and author's calculations.

Figure 4 Lagged real US dollar and nonoil goods and services balance



Sources: US Federal Reserve (2016) and BEA (2016a, b).

change in the REER from the base period used in the WEO (July 22–August 19) to that used in this study (October).¹⁵ In addition, an adjusted estimate is applied to the United States, based on the model in appendix A. Because this adjustment is relatively large, there are induced changes for other countries from the allocation of the counterpart of the change for the United States (as discussed below), affecting particularly Canada and Mexico.¹⁶

The final column of the table states the target current account in the FEERs system. If the (adjusted) projection is outside of the ± 3 percent of GDP limit, the target is set at this limit.¹⁷

15. This change is applied to the current account impact parameter of the SMIM model, γ , to obtain the implied change in the current account as a percent of GDP, and half of this implied change is added to the WEO projection (based on the past pattern of more inertia in the WEO current account projections than would be expected using the full exchange rate impact). Note that one of the largest adjustments from the change in the base is that for the United Kingdom, in view of a decline of its REER by 5 percent between the two periods. Note also that increases for Russia and Norway reflect appreciation between the two periods rather than oil developments (and, for Norway, the effect of the sizable decline in the pound given a large UK trade weight).

16. Note that there is an additional adjustment for Switzerland deducting 3 percent of GDP from the projected surplus to take account of foreign ownership of Swiss corporations (see Cline 2016a, 7). The IMF current account estimates shown in the table do not make an adjustment for this consideration.

17. Except for oil exporting economies, for which no limit is set because natural resource wealth is being converted into replacement financial wealth.

ALTERNATIVE PROJECTIONS FOR THE US CURRENT ACCOUNT

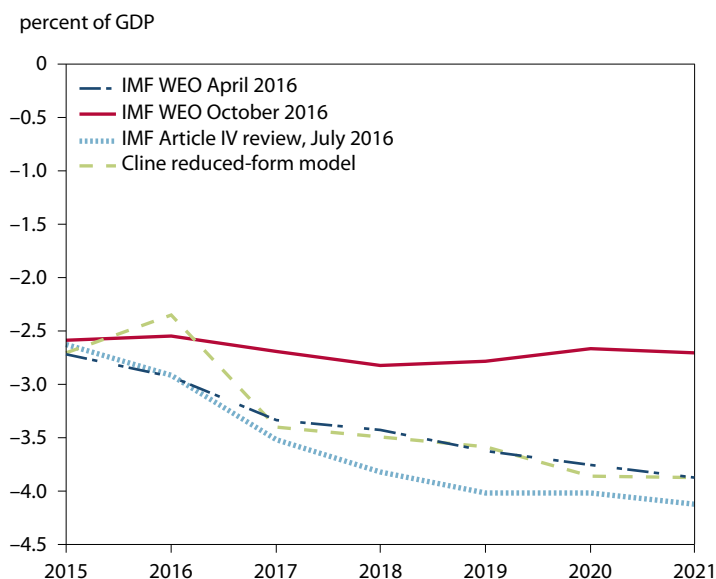
The stronger dollar presages a deterioration in the current account balance after a lag of some two years. Figure 4 shows that over the period 1990–2016, there has been a strong negative relationship between the level of the REER for the dollar and the trade balance on nonoil goods and services two years later. Thus, after the REER rose from 86.5 in 1995 to 110 in 2002, the result was a collapse in the nonoil trade balance from a deficit of 0.5 percent of GDP in 1997 to a deficit of 3.6 percent of GDP in 2004.¹⁸ Subsequently the REER fell substantially and the deficit narrowed considerably. But because of the time lag from the exchange rate signal to the trade outcome, we should not yet have begun to see the trade erosion to be expected from the sharp appreciation shown in figure 1, which only arrived in late 2014.¹⁹

In Cline (2015a, 2016) I estimated a simple reduced-form model of the relationship of the nonoil trade balance to the REER (lagged two years), the difference between US and world growth, and a time trend. In appendix A below, I update this model to incorporate a variable for the trend level of US GDP relative to foreign GDP. After incorporating the outlook for trade in oil and using the model of capital services and net international investment position

18. The exchange rate entry in the figure shows the level two years prior to the year indicated, because of the lag.

19. Note, however, that there has already been more decline in the nonoil deficit than would have been predicted by the model developed in appendix A.

Figure 5 Alternative projections of the US current account balance



IMF = International Monetary Fund; WEO = World Economic Outlook
Sources: IMF (2016a, b, c) and author's calculations.

developed in Cline (2005), I arrive at the projected path shown in figure 5 as “Cline reduced-form model” for the US current account balance through 2021. The projection assumes that the REER for the dollar stays at its October 2016 level, and that growth in the US and the world economy follows the path projected by the IMF in its October WEO. The Cline reduced-form model observation for 2015 in the figure is the actual outcome, whereas the model projections begin in 2016.²⁰

Figure 5 also reports three alternative projections by the IMF for the US current account. Both the April WEO and the July Article IV IMF projections are close to mine, showing a substantial deterioration of the current account from a deficit of about 2.5 percent of GDP in 2015 to a range of -3.9 percent (April WEO and my current projection) to -4 percent (Article IV).²¹ But the October 2016 WEO shows a sharply different picture: The US current account would stay almost unchanged at a deficit of about

2.7 percent of GDP through 2021, despite the pipeline effects of the large appreciation of the dollar.

One reason for a change in the IMF's medium-term forecast would be that the base period for the Fund's April projection was when the dollar was higher than the base period for its October projection.²² The REER depreciated by 2.3 percent between the two base periods. Applying the impact parameter in the revised US current account model (appendix A), $\gamma = -0.122$ percent of GDP change in the current account for 1 percent REER appreciation, one might have expected the Fund to reduce its medium-term deficit estimate by 0.28 percent of GDP (2.3×0.122). Instead the reduction amounts to 1.17 percent of GDP.

Otherwise, the large reduction in the Fund's projected medium-term deficit for the United States seems to be attributable to three influences.²³ First, the October WEO has a substantially lower growth path for the US economy than the April WEO, reducing import demand. For 2016–21, average annual growth declines by 0.37 percentage point for the United States, but by only 0.15 percentage point for the world economy (IMF 2016a, b). Second, the Fund apparently considers US net exports not to have responded

20. As indicated in appendix A, the model for the balance of trade on nonoil goods and services tracks actual outcomes since 1990 relatively closely but understates the deficit in 2015.

21. The slight improvement of the 2021 baseline from the May projection in Cline (2016), from -4.1 percent to -3.85 percent of GDP, reflects the revision of the model to take account of the relative levels of US and foreign GDP as well as annual growth differentials (see appendix A), and the decline in baseline US growth from the April to the October WEO. These changes more than offset the effect of an appreciation of the REER by about 2 percent between the two base periods for the REER in my projections (April and October, respectively).

22. The first base period was February 2016; the second, July 22–August 19, 2016. The Fed's broad REER was at 99.78 in February and at 97.47 in the July (one-fourth weight) to August (three-fourths weight) period.

23. Based on communication with an IMF expert on the team that analyzes the US economy.

as much to the stronger dollar as might have been expected, and sees little additional impact in the pipeline. Third, lower growth means less investment, even as consumption is rising less than might have been expected in response to low oil prices, and the resulting narrowing of expected investment minus saving would tend to reduce the external deficit.

On the first of these three influences, the new estimates of appendix A fully take account of the lower US growth path and also refine the measurement of rest-of-world growth. On the second influence, my preferred lag of two years from the exchange rate signal to the trade effect means that trade observed so far is still responding to the lower dollar that prevailed before mid-2014. With an index of 2007 = 100, the US REER stood at 95 in the first half of 2014 and 112.5 in the first half of 2016, so to date the observed trade performance is still responding to the more competitively priced dollar.

With respect to the proposition that US saving is somehow higher than would have been expected, there is little supporting evidence. Thus, in 2015 after the oil price decline, gross household saving stood at 6.96 percent of GDP, lower (not higher) than the average of 7.26 percent in 2011–13 before the price decline. Similarly, investment has risen rather than fallen, reaching 16.9 percent of GDP for gross fixed investment in 2015 compared to an average of 15.4 percent in 2011–13 (BEA 2016c).

The calculations in this set of FEERs estimates apply the projected US current account deficit from the reduced form model (Cline reduced-form model in figure 5). Because the resulting difference is large (with the 2021 deficit reaching \$877 billion rather than \$615 billion), it is necessary to allocate the resulting change in current accounts across trading partners, to insure adding-up consistency.²⁴ In relative terms the largest impacts of this adjustment are for Canada and Mexico, causing their baseline current account balances to swing from deficits of about 2.5 percent of GDP to approximately zero balances (table 1).

FEERS ESTIMATES

Table 2 reports the results of the SMIM model estimates of FEERs, given the current account targets in the final column of table 1. The first column of table 2 shows the desired change in the current account in 2021 as a percent of GDP needed to reach the target. The third column shows the change in the REER that would be needed to accomplish this objective, and is equal to the targeted change divided by the impact parameter γ . Because the system is overidentified,

it is impossible to have all economies reach their targeted changes in REERs precisely. The model generates the best approximations possible. These are shown in the second column, for the achievable change in the current account, and the fourth column, for the change in the REER.

The estimates in table 2 apply average exchange rates in the month of October as the base. Although there were significant exchange rate movements from October to mid-November following the US elections (including a 3.2 percent rise in the REER for the dollar), I have kept the October base for the calculations, in part because of the precarious nature of relying on a much shorter period for the base.²⁵

Important cases where no change [in the REER] is called for include China and the United Kingdom.

In table 2, the most important change in the REER needed to reach current account targets is the depreciation by 7.9 percent for the United States, in view of its need to reduce the medium-term current account deficit by about 1 percent of GDP. Considering that the US REER rose by about 3 percent from the October average to its level on November 15, by implication the depreciation needed from the post-election level would be about 11 percent. Referring once again to the REER levels in the base month of October, sizable real depreciations are also called for in the cases of Turkey (change of -9.2 percent), Argentina (-7.3 percent), Australia (-6.1 percent), and New Zealand (-4.3 percent). The outcome for Argentina is not surprising, given the fact that the sharp rise in the REER from high inflation in recent years has not been fully reversed under the new government (see appendix B).

Economies needing REER appreciations to reach FEERs include Singapore (27.4 percent), Taiwan (25.6 percent), Switzerland (6.8 percent), and Sweden (4.7 percent). Japan also needs a modest REER appreciation (by 3.3 percent) in the October-based estimates, implying a somewhat more significant appreciation (about 6 percent) needed from the November 15 level. Similarly, the 6 percent appreciation identified as needed for Korea against the October base would translate to an appreciation of about 7 percent against a mid-November base.

24. These adjustments apply the set of coefficients for the importance of each partner in US trade (US row entry in the ϕ matrix in the SMIM model; Cline 2008) to the increment of about \$260 billion in the US imbalance.

25. The post-election estimates discussed above refer to exchange rates on a single day, November 15.

Table 2 Results of the simulation: FEERs estimates

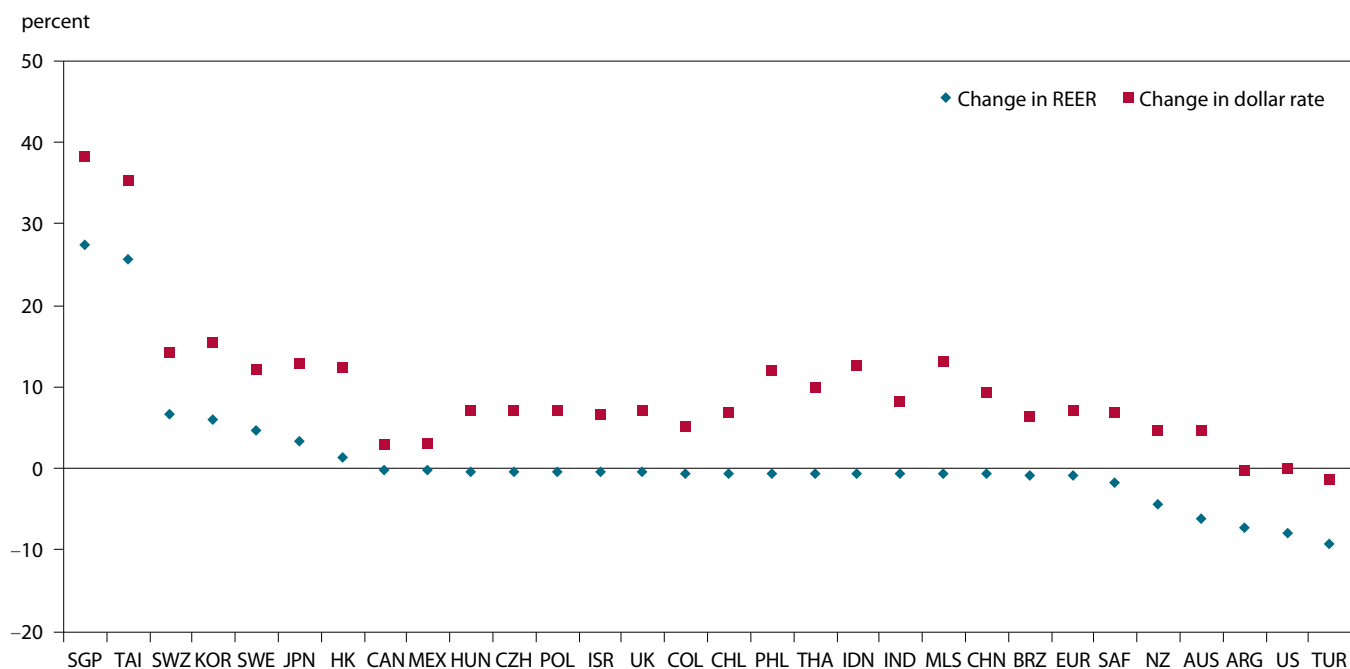
Country	Changes in current account as percentage of GDP		Change in REER (percent)		Dollar exchange rate		FEER-consistent dollar rate
	Target change	Change in simulation	Target change	Change in simulation	October 2016	Percentage change	
Pacific							
Australia*	1.0	1.2	-5.4	-6.1	0.76	4.6	0.80
New Zealand*	0.9	1.1	-3.7	-4.3	0.72	4.7	0.75
Asia							
China	0.0	0.2	0.0	-0.7	6.73	9.2	6.16
Hong Kong	-0.9	-0.7	1.7	1.3	7.76	12.5	6.89
India	0.0	0.1	0.0	-0.7	66.7	8.1	61.7
Indonesia	0.0	0.1	0.0	-0.7	13018	12.5	11569
Japan	-0.6	-0.5	4.0	3.3	104	12.9	92
Korea	-2.6	-2.4	6.6	6.0	1126	15.6	974
Malaysia	0.0	0.3	0.0	-0.7	4.18	13.0	3.69
Philippines	0.0	0.1	0.0	-0.6	48.3	12.0	43.2
Singapore	-14.1	-13.7	28.2	27.4	1.38	38.3	1.00
Taiwan	-11.4	-11.1	26.2	25.6	31.6	35.4	23.3
Thailand	0.0	0.3	0.0	-0.7	35.1	10.0	31.9
Middle East/Africa							
Israel	0.0	0.1	0.0	-0.5	3.82	6.8	3.58
Saudi Arabia	0.0	0.2	0.0	-0.5	3.75	9.4	3.43
South Africa	0.3	0.5	-1.2	-1.6	13.93	6.9	13.03
Europe							
Czech Republic	0.0	0.2	0.0	-0.4	24.5	7.1	22.9
Euro area*	0.0	0.2	0.0	-0.8	1.10	7.1	1.18
Hungary	0.0	0.2	0.0	-0.3	278	7.1	260
Norway	0.0	0.1	0.0	-0.4	8.17	7.4	7.60
Poland	0.0	0.2	0.0	-0.4	3.91	7.0	3.65
Russia	0.0	0.1	0.0	-0.4	62.6	7.6	58.2
Sweden	-1.9	-1.7	5.3	4.7	8.81	12.1	7.86
Switzerland	-3.2	-3.0	7.1	6.8	0.99	14.1	0.87
Turkey	2.2	2.3	-8.7	-9.2	3.08	-1.3	3.11
United Kingdom*	0.0	0.1	0.0	-0.5	1.23	7.1	1.32
Western Hemisphere							
Argentina	1.0	1.1	-6.6	-7.3	15.17	-0.2	15.20
Brazil	0.0	0.1	0.0	-0.8	3.19	6.5	2.99
Canada	0.0	0.1	0.0	-0.3	1.32	2.8	1.29
Chile	0.0	0.2	0.0	-0.6	663	6.9	620
Colombia	0.0	0.1	0.0	-0.6	2935	5.2	2790
Mexico	0.0	0.1	0.0	-0.3	18.9	3.1	18.3
United States	0.9	1.0	-7.0	-7.9	1.00	0.0	1.00
Venezuela	0.0	0.1	0.0	-0.6	9.99	6.3	9.40

* The currencies of these countries are expressed as dollars per currency. All other currencies are expressed as currency per dollar.

FEER = fundamental equilibrium exchange rate; REER = real effective exchange rate

Source: Author's calculations.

Figure 6 Changes needed to reach FEERs



ARG = Argentina, AUS = Australia, BRZ = Brazil, CAN = Canada, CHL = Chile, CHN = China, COL = Colombia, CZH = Czech Republic, EUR = Euro area, HK = Hong Kong, HUN = Hungary, IND = India, IDN = Indonesia, ISR = Israel, JPN = Japan, KOR = Korea, MLS = Malaysia, MEX = Mexico, NZ = New Zealand, PHL = Philippines, POL = Poland, SGP = Singapore, SAF = South Africa, SWE = Sweden, SWZ = Switzerland, TAI = Taiwan, THA = Thailand, TUR = Turkey, UK = United Kingdom, US = United States

FEER = fundamental equilibrium exchange rates; REER = real effective exchange rate

Source: Author's calculations.

Important cases where no change is called for include China and the United Kingdom.²⁶ The sizable decline in the pound sterling since Brexit, despite a modest reversal since the base period of the October WEO, means that the prospective medium-term deficit is less than 3 percent of GDP, even though the deficit for 2016 is on track to reach 5.9 percent of GDP (table 1).²⁷

The final column of table 2 translates the model-solution changes in the REERs into corresponding changes in bilateral exchange rates against the US dollar. Because of the significant decline in the dollar, for most economies there is a rise in the bilateral rate against the dollar. The bilateral changes (against October levels) tend to be the highest in Asia, at about 13 percent bilateral appreciation for Japan, about 16 percent for Korea, and about 35 to 38 percent for Singapore and Taiwan. Even for economies with no need to appreciate REERs, the bilateral increases are sizable, at about 9 percent for China and about 10 to 12 percent for

most other economies in the region. Figure 6 also shows these simulation results for changes needed in REERs and bilateral rates against the dollar in order to reach FEERs.

IMPLICATIONS OF THE US ELECTIONS

On November 8, 2016, Republican candidate Donald Trump surprised pollsters and defeated Democratic candidate Hillary Clinton to win the US presidential election. His election could have major implications for economic growth, stability, and exchange rates. Although the widespread expectation had been that financial markets would experience a severe setback in the event of a Trump victory, following a brief plunge in overnight markets, the US equity market staged a rally, apparently reflecting a swing to dominant market expectations of fiscal stimulus.²⁸ For exchange rates, the largest impact was on the Mexican peso, which fell about 8 percent the day after the election and by mid-November stood 9 percent below its October average (Bloomberg). In the week following the election, the dollar rose against most major currencies (by about 3 percent against the euro and

26. Note, however, that for economies not needing any target change in the REER, the overall solution nonetheless tends to impose a real depreciation of about 0.4 to 0.6 percent.

27. From July 22–August 19 to October, 2016, the REER for the United Kingdom fell by 5.2 percent.

28. By November 15 the S&P 500 stood at 2180, close to its mid-August peak of 2190 (see finance.yahoo.com).

Korean won, about 4 percent against the yen, and about 1 percent against the Canadian dollar and Chinese renminbi—although the dollar fell 0.6 percent against the pound sterling [Bloomberg]). The overall effect was that by November 15, the REER for the dollar stood 3.2 percent above its October average, whereas the REERs had fallen by 0.8 percent for the euro, 3.3 percent for the yen, and 1.7 percent for the Korean won. The REER had risen 0.4 percent for China, however, and 3.6 percent for the pound sterling.

Trump's proposed economic policies include a long list of major changes: potentially high protection against Mexico and China, large cuts in upper tax brackets, repeal of the Affordable Care Act, repeal of the Dodd-Frank financial sector regulatory legislation, large spending on infrastructure, deportation of illegal immigrants, construction of a wall along the Mexican border, a reversal of regulatory measures limiting carbon dioxide emissions, and a sizable increase in the minimum wage. Republicans maintained control of both houses of Congress, paving the way for implementation of his proposals. Moreover, his executive power permits considerable action on trade protection even without congressional support (Hufbauer 2016). In principle, the prospect that such sweeping changes could occur could pose considerable uncertainty.

By mid-November, some analysts who had predicted a recession if Trump were elected had shifted to predicting an initial boost to growth followed by a decline that would leave overall growth over the next four years little changed, reflecting the expectation that measures actually implemented would be far milder than those proposed during the election campaign.²⁹ Others calculated that if the full Trump program were implemented, growth would be well below baseline, but if only the “benign” fiscal part were adopted, growth would be modestly higher than baseline.³⁰ However, the scope for positive effects even in the “benign”

29. Thus, in June 2016, Moody's Analytics had projected that the full set of Trump proposals would bring recession by 2019, fiscal deficits reaching 10 percent of GDP, and a boost of the 2021 debt-to-GDP ratio from a baseline of 80 percent to 103 percent (Zandi et al. 2016, and by communication). In contrast, by mid-November Zandi (2016) projected 2020 GDP as virtually unchanged from the baseline, with modestly higher growth in 2017–18 offset by lower growth in 2019–20. The key to the change in outlook was a sharp downsizing in the scale of expected tax cuts implementable in contrast to the campaign proposals (from \$6.4 trillion over a decade to \$1 trillion) and in extra spending for infrastructure and the military (from \$1 trillion over a decade to \$500 billion), as well as likely softening of trade and immigration measures. Note further, however, that in mid-November the Tax Policy Center (2016) calculated that even the revised Trump proposals would reduce revenue by \$6.15 trillion and boost the debt-to-GDP ratio by 26.2 percent of GDP over 10 years, albeit without forecasting that the revised proposals would be fully approved by Congress.

30. Julie Verhage, “Goldman Sees the Possibility of Stagflation under Trump Presidency,” *Bloomberg*, November 14, 2016.

case depends importantly on whether one views the US economy as being already at full employment or instead sees considerable potential for re-entry into the labor market by workers discouraged by the Great Recession. In October the IMF (2016b) estimated that the US economy in 2017 would have a slightly positive (i.e. above-potential) output gap (0.02 percent), casting doubt on the scope for labor market influence. On balance, it is too early to revise the US growth path identified by the Fund and used in the projections here in appendix A.

Over the medium term the currency market pressures under the new Trump administration would seem likely to be toward a stronger dollar as a consequence of higher fiscal deficits and higher interest rates. Such an environment would resemble the strong dollar phase in the initial years of the Reagan administration, a time marked by rising currency conflict and protectionist pressures. If the dollar were to strengthen further, the most important currency misalignment identified in the FEERs analysis would only widen further.

CONCLUSION

The principal findings of these new estimates remain similar to those in the previous three issues in this semiannual series. As of October, the dollar remained overvalued by approximately 8 percent, the euro and Chinese renminbi were neither under- nor overvalued, and the yen was modestly undervalued (by about 3 percent in October).³¹ The Korean won is undervalued by 6 percent as of October, slightly more than previously. Chronic undervaluations persist in a familiar list of economies (Singapore, Taiwan, Sweden, Switzerland), as does chronic overvaluation in Turkey (now at about 9 percent). Australia and New Zealand have returned to their frequent position of modest overvaluation (by 4 to 6 percent). However, the subsequent strengthening of the dollar after the US election (based on November 15, 2016 rates) implies that US overvaluation may have reached 11 percent, Japanese undervaluation may have reached 6 percent, and Korean undervaluation may have reached 7 percent.

An important feature of these estimates, however, is that they are based on a projection of the US current account deficit that departs from the IMF's medium-term baseline, in which the deficit would not widen beyond the 3 percent limit used in the FEERs estimates. I disagree, mainly because I see the exchange rate lag as being longer (two years) and thus the adverse effect of the strong dollar after mid-2014 is only now beginning to show up.

31. Considering that the REER for the yen fell 3.3 percent from the October average to the level on November 15, the degree of undervaluation may be about 6 percent.

However, neither the Fund nor I have incorporated into the main calculations the additional influences reflecting the Trump victory.

Because Trump's pledges of sharply increased infrastructure spending and steep reductions in business and personal taxes would place upward pressure on fiscal imbalances and interest rates, his policies could substantially boost the strength of the dollar, resembling the experience of Reaganomics. The consequence could then be considerably wider trade deficits than incorporated in my baseline.

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In a context in which the president-elect has denounced past trade agreements as disastrous for the United States, a more rapidly widening trade deficit could add fuel to the fire of trade conflict. In this connection, it is important to underscore that in the FEERs series of estimates, the Chinese renminbi has not been seriously undervalued since 2012.³²

32. See the chart in Cline (2016, 11).

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APPENDIX A

UPDATING THE US CURRENT ACCOUNT PROJECTION MODEL

Cline (2015a) estimates a reduced form model relating the nonoil US trade balance (NOTB) for goods and services to the lagged real effective exchange rate (REER), the difference between US growth and world growth, and a time trend. After incorporating projected oil trade, transfers, and capital income (taking account of cumulative current account balances and projected interest rates), the model provides a projection of the US current account deficit over the horizon for which projections of the underlying variables are available. Cline (2016) updates the NOTB equation in this system.

This approach focuses on the two main proximate determinants of the external balance: relative price (real exchange rate) and income effects. A stronger exchange rate makes US goods less competitive and reduces the trade balance. Growth in US income boosts US imports; growth in foreign income boosts US exports. The time trend captures structural shifts and is most readily summarized as the symmetrical pattern for a rich country reflecting the mirror image of the secular trend for poor countries from the Balassa-Samuelson effect. In that effect, greater relative catch-up in productivity in traded goods than in nontraded goods and services means that developing countries tend to have a rising external balance over time for a given real exchange rate, or a rising real exchange rate consistent with a constant external balance (relative to GDP).

The substantial downward change in the projected path of US GDP in 2016–21 in the Fund’s latest World Economic Outlook (WEO; IMF 2016a, b) has illuminated a potential limitation of the NOTB equation in this setup. By applying only the current-year difference between US and world growth as the income influence, the model does not capture the cumulative effect of a widening difference in the *levels* of US and rest-of-world income over a period in which there is a sustained difference in growth rates that is larger than previously anticipated. Including the relative level of US and foreign income as an income variable can help address this effect.

Re-estimating the NOTB model by simply adding a variable for the level of US GDP relative to foreign GDP reduces the estimated coefficient on the lagged REER to a size that is well below the standardized export-based trade impact parameter in the SMIM model for all other countries.³³ In contrast, a simple equation relating the NOTB to the lagged real exchange rate and a time trend yields a coefficient on the REER that is quite close to the SMIM export-based norm, which can be interpreted as a “prior” warranting special weight.

The solution in this update is to adopt a two-stage estimation process. In the first stage, the coefficient of NOTB on the lagged REER is obtained from a simple regression on that variable along with time. For the period 1990–2015, using annual data, this equation yields:

$$A1) \text{ NOTB}_t = 10.126 - 0.113 \text{ REER}_{t-2} - 0.093 T; R^2 = 0.83$$

$$(7.9) \quad (-8.5) \quad (-7.0)$$

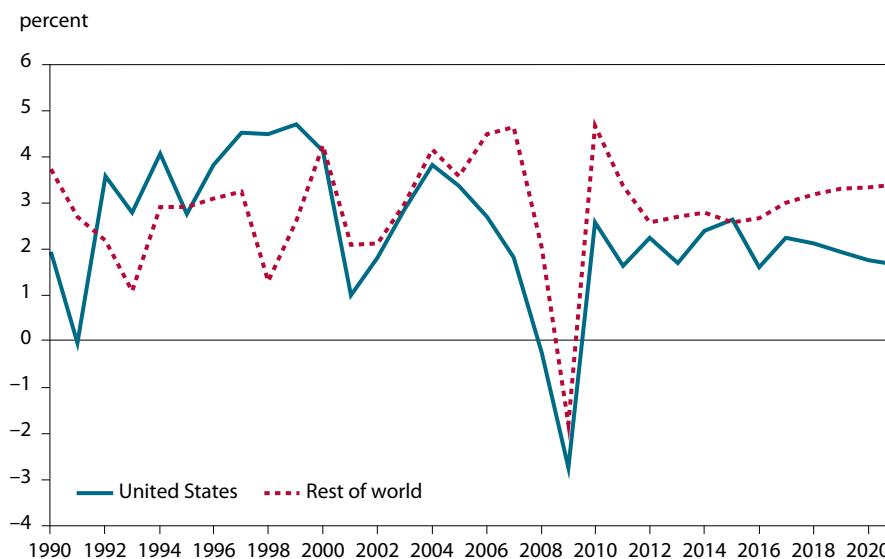
where *NOTB* is the nonoil trade balance on goods and services as a percent of GDP, *REER* is the Federal Reserve’s broad real effective exchange rate index (March 1973 = 100), and *T* is time (set at 1 in 1990 and advancing to 26 by 2015). As shown by the t-statistic in parentheses, the coefficient on the *REER* with a two-year lag is highly significant. The average of this variable over this period is 93.55. An increase of 1 percent in the REER thus generates a decline of $0.113 \times 0.9355 = 0.106$ percent of GDP for trade effects alone. This impact is close to what would be obtained from applying the general formulation of the “gamma” impact parameter used for other countries in the SMIM model.³⁴

In a second step, the influence of US versus foreign growth is incorporated, both in terms of the difference in growth rate in the year in question and regarding the cumulative growth path for the level of US and foreign income over the period. For this purpose, it is necessary to identify values for both variables for the “foreign” (non-US) world economy. For examination of trade effects, the relevant income is that which is measured at market exchange rates, not by purchasing power (the more usual basis for reporting world growth in the WEO). Given US real growth in a particular year (g_{US}), the Fund’s estimate of

33. This equation reduces the coefficient on the lagged exchange rate to only -0.064 , about half the magnitude from the standard calibrated trade impact (see note 34).

34. In this formulation, $\gamma = -1.056 x + 0.056 x^2$, where x is the ratio of exports of goods and services to GDP (Cline 2008, 17). Gamma is constrained not to have a larger negative value than 0.5 (relevant for small highly open economies). In 2015, US exports of goods and services amounted to 11.85 percent of GDP (BEA 2016a, b). The standard SMIM formulation would thus yield $\gamma = -0.1243$ for the change in trade balance as a percent of GDP resulting from a 1 percent appreciation in the REER. The US model also adds induced capital services effects, however.

Figure A1 Annual real growth at market exchange rates, United States and rest of world (percent)



Sources: IMF (2016b) and author's calculations.

global growth at market exchange rates (g_w), and the share of US GDP in world GDP at market exchange rates in the year in question (ϕ_{US}), the real growth rate in rest-of-world (RW) GDP in that year can be estimated as:

$$A2) g_{RW} = \frac{g_w - \phi_{US} g_{US}}{1 - \phi_{US}}$$

Figure A1 shows the resulting annual growth rates in 1990–2015 for the rest of world and the United States. The surprise in the figure is that US growth was actually higher than that of the rest of the world in most of the 1990s, when using economy weights based on market exchange rates rather than purchasing power exchange rates. This result reflects the much larger weight of Europe, Japan, and other industrial countries in world GDP at market exchange rates than at purchasing power exchange rates. Another pattern evident in the figure is slower growth in the United States than in the rest of the world after 2005, and a widening of this gap in 2016–21.

To obtain the corresponding variables for the path of real GDP, 1990 is set as a base of 100 for both the United States and rest of world, and for each, the index of real output thereafter is increased by the respective annual growth rates. The ratio of the resulting US index to the rest-of-world index then provides a measure of the relative *level* of GDP in each year. Figure A2 shows this ratio, QU/QR. The GDP ratio for the United States first rises above unity in the 1990s and then declines again, to only about 0.85 by 2021. From 1990 to 2015, output rose from an index of 100 to 183 for the United States and 196 for the rest of the world; by 2021, the US index reaches 205 and the rest of world reaches 236. Despite the more rapid growth in the rest of the world than in the United States after 2000, the share of the United States in world output at market exchange rates remains surprisingly steady, down only slightly from about 25 percent in the early 1990s to 23 percent by 2021.

With the relative GDP output level variable (QU/QR) and annual growth data in hand, the second stage of the NOTB model estimation is to examine the role of these variables in trade behavior that is not explained by the exchange rate. For this purpose, on the basis of equation A1, an intermediate residuals series is first specified, as:

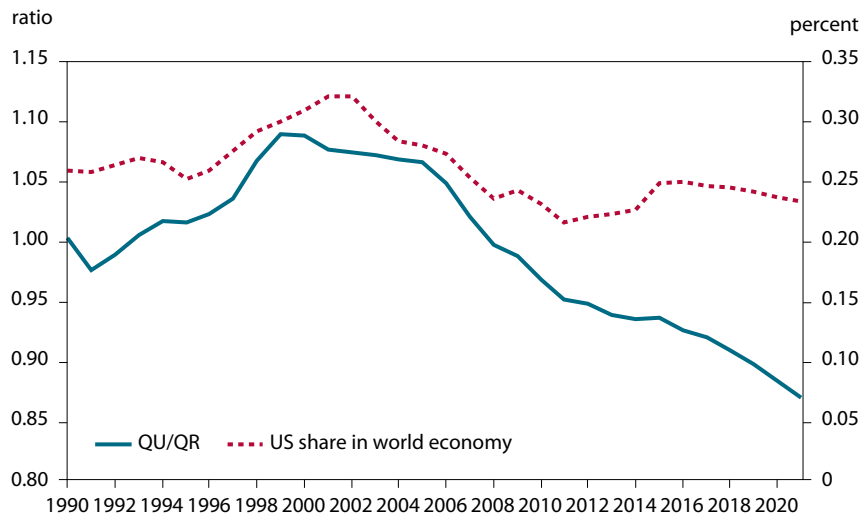
$$A3) RES_t \equiv NOTB_t + 0.113 REER_{t-2}$$

This residuals series indicates that portion of the nonoil trade balance that is not explained by the exchange rate. Regressing this series on the income, growth, and time variables yields:

$$A4) RES_t = 14.64 - 4.233 QU/QR - 0.104 gdiff_t - 0.112 T; \quad R^2 = 0.882$$

(7.2) (-2.2) (-1.67) (-8.7)

Figure A2 Ratio of real GDP index (1990 = 100) for US divided by index for rest of world and share of US in world economy at market exchange rates



QU/QR = ratio of US index to rest-of-world index
 Sources: IMF (2016b) and author's calculations.

where $gdif = g_{US} - g_{RW}$, with t-statistics in parentheses. The trend relative GDP level variable QU/QR is statistically significant, and the current year growth differential is close to significance at the 10 percent level. The time trend remains highly significant and has a slightly larger coefficient than in the simple equation including only the REER.

The combined model based on equations A1 and A4 then becomes:

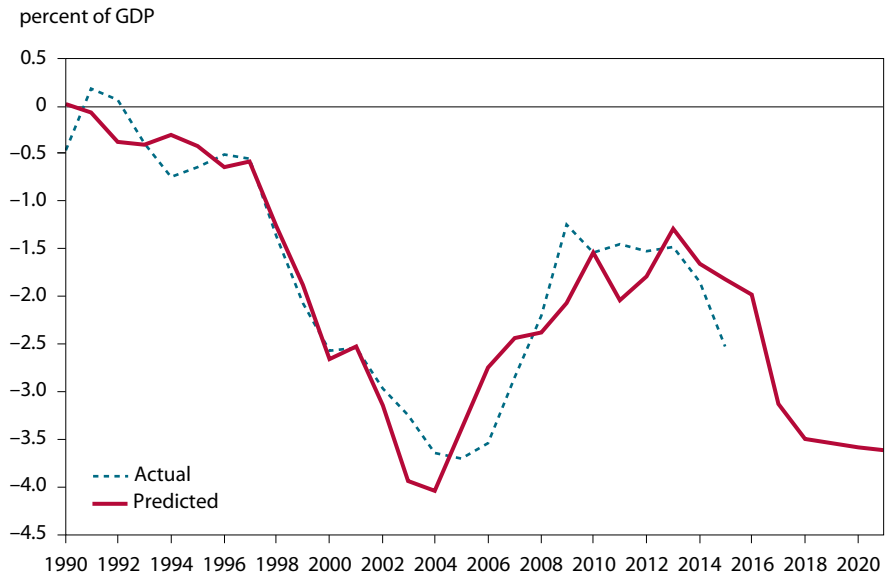
$$A5) NOTB_t = 14.364 - 0.113 REER_{t-2} - 4.233 QU/QR - 0.104 gdif_t - 0.112 T; R^2 = 0.865$$

Figure A3 compares the actual path of the NOTB since 1990 to that predicted by this equation, as well as the projected path for 2016–21 based on the REER as of October 2016 and the US and world growth and output projections in the October WEO (IMF 2016b).

As shown in figure A3, the actual path of the nonoil trade balance has deteriorated even more rapidly than projected. The two-year time lag means that in the model, most of the reduction in the trade balance remains in the pipeline. The projection for 2021 places the NOTB at -3.59 percent of GDP. After incorporating the path for the projected NOTB into the broader current account model, the result is an estimated balance of -3.85 percent of GDP in 2021, substantially wider than the IMF's projected -2.7 percent of GDP (IMF 2016b).³⁵ The model-projected path for the current account for 2016–21 is shown in figure A3. Finally, the revisions in the model mean that the summary impact parameter γ is also changed. A simulation in which the 2016 REER is shocked to be 10 percent stronger than in the baseline yields a 2021 current account deficit that is larger by 1.22 percent of GDP, placing the parameter at $\gamma = -0.122$. (The previous value for this parameter, in Cline 2016, was $\gamma = -0.178$.)

35. Note that the paths of the other components of the current account (net oil trade, capital income, and transfers) as well as that of the Net International Investment Position remain very similar to those shown in Cline (2016, 13).

Figure A3 US Nonoil trade balance (goods and services) as percent of GDP: actual and predicted



Sources: BEA (2016a, 2016b), IMF (2016b), and author's calculations.

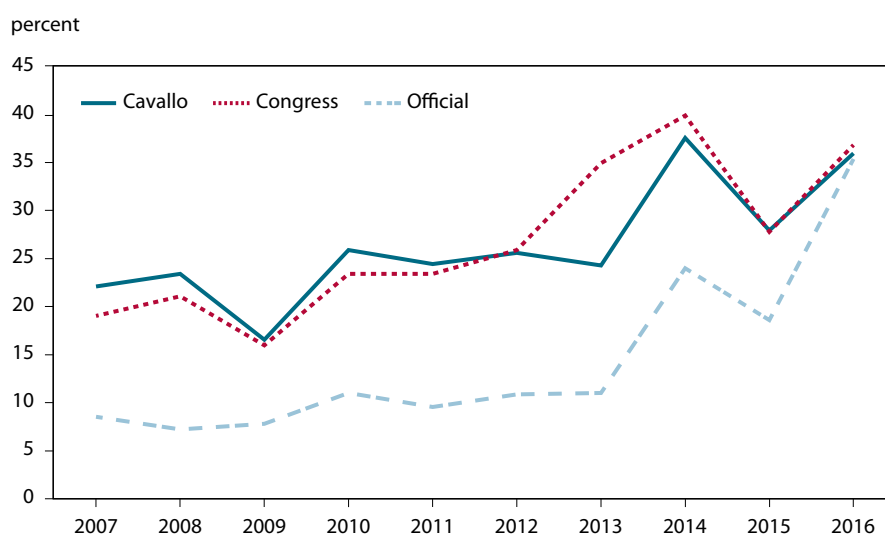
APPENDIX B

ARGENTINA: INFLATION DATA AND THE REAL EXCHANGE RATE³⁶

Officially reported data in Argentina are widely judged to seriously understate the rate of inflation in 2007–15. Thus, in a study examining Argentine growth, Coremberg (2014, 2) states that “At the beginning of 2007, the administration decided to hide inflation by intervening in the construction of the official consumer price inflation (CPI) index estimated by the National Statistics Institute (INDEC).” The *Economist* stated in early 2014 that “Between 2007 and 2013 the country’s statistics agency, INDEC, cherry-picked prices to make inflation seem half as high as the 25% [annually] measured by independent economists ...”³⁷ When in 2011 the government threatened to impose fines and criminal charges on private consultants providing unofficial estimates of inflation, a “Congress Index” emerged as opposition congressmen released a compilation of private estimates with the shield of congressional immunity.³⁸ In 2013 the International Monetary Fund censured Argentina for reporting unreliable data, but in August 2016 the Fund stated that it expected to remove the censure following reforms in INDEC introduced by the new government of Mauricio Macri.³⁹

The most reliable available series for consumer prices in the period 2007–15 appears to be that from the MIT Billion Prices Project. First undertaken to address the Argentine statistical problem, this initiative compiles price data from over 300 online retailers in 50 countries (Cavallo 2012, Cavallo and Rigobon 2016). Figure B1 shows the alternative estimates of 12-month consumer price inflation using this set of estimates (“Cavallo”), the “Congress” estimates, and the official INDEC series.⁴⁰

Figure B1 Estimates for 12-month consumer price inflation in Argentina



Note: Inflation calculated from December to December, except for 2016 (September to September for Cavallo and Congress estimates; July to July for official estimates).

Sources: Cavallo 2012, Cavallo and Rigobon 2016 (Cavallo estimates); Econviews.com (Congress estimates); and BIS 2016 (official estimates). See note 40 for details.

36. I thank Eduardo Borensztein for advice on Argentine inflation data.

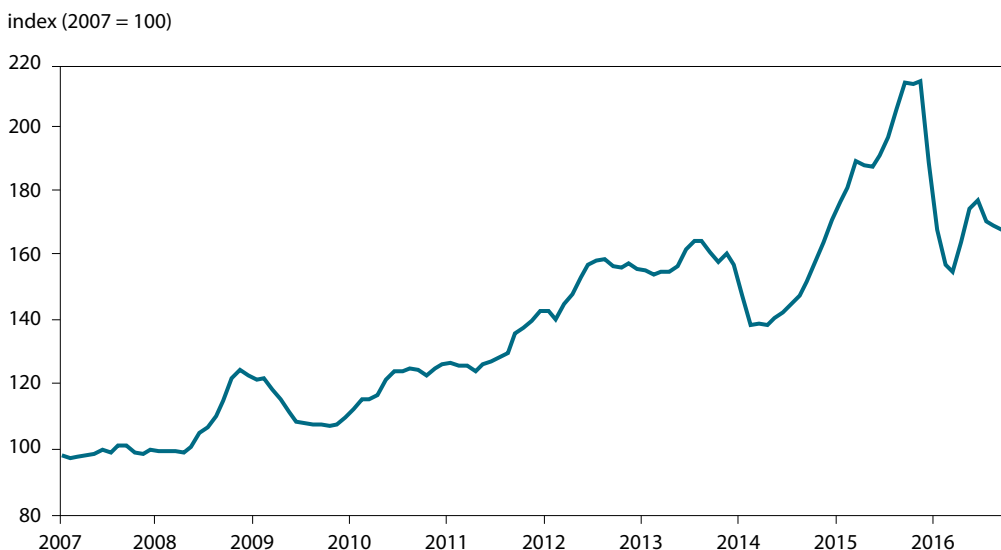
37. “Pricing Power,” *Economist*, February 22, 2014.

38. “Argentina’s April Inflation 6.7%, According to the Congress Index,” *MercoPress*, May 25, 2016; and Shane Romig, “Argentina Introduces New Inflation Index,” *Wall Street Journal*, February 13, 2014.

39. “IMF sees censure on Argentina being lifted after data ‘progress,’” *Reuters*, August 31, 2016.

40. The official INDEC data are from BIS (2016). The “Congress” estimates are from EconViews “Week at a Glance,” December 2, 2014, and October 12, 2016 (available at www.Econviews.com). The “Cavallo” series is most readily available at www.inflacionverdadera.com/Argentina_inflation.xls (accessed November 29, 2016).

Figure B2 Real effective exchange rate index for Argentina



Source: Author's calculations.

For the period 2007 through 2015, the private alternative estimates stood on average 13.5 percentage points above the corresponding official estimates of annual inflation. Using the average of the “Cavallo” and “Congress” estimates, and applying the trade weights of the SMIM model, the resulting path of the REER for Argentina beginning in 2007 is shown in figure B2. With a base of 100 for the average during 2007, this index rose to a peak of 216 in November 2015, before declining to 169 in October of 2016. The sharp rise in Argentina’s REER in the past several years helps explain why the current account fell from a surplus of 1.8 percent of GDP in 2008 to a deficit of 2.5 percent in 2015 (IMF 2016b).

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