POLICY BRIEF

17-31 Estimates of Fundamental Equilibrium Exchange Rates, November 2017

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The early boost to the dollar following President Donald Trump's election—a Trump "bump"—has been replaced by a Trump "dump." Whereas the real effective exchange rate (REER) of the dollar rose by 3.9 percent from October 2016 before the election to December, by May 2017 it had returned to its October 2016 level, and by October 2017 the REER for the dollar had fallen 2.6 percent below its level a year earlier. Through mid-May the dollar's path could be explained by changes in interest differentials against other major currencies, but thereafter a growing gap emerged in an apparent reflection of increased US political risk, from both domestic political dysfunction (with the failure to repeal the Affordable Care Act) and escalating tension with North Korea. A weaker dollar should help curb the widening of the US trade deficit and potential associated escalation of

trade conflict, and Trump himself had complained about the strong dollar as an impediment to US competitiveness.[1]

Since the last estimate in May 2017, the projected 2022 current account deficit for the United States has narrowed from 4.0 percent of GDP to 3.4 percent, considerably closer than before to the 3 percent limit of GDP threshold that serves as the guideline for the calculation of fundamental equilibrium exchange rates (FEERs) in this series.[2] With projected current account imbalances that do not exceed the FEERs limits (± 3 percent of GDP) for the key economies of the euro area and China, and only a modestly excessive surplus in Japan, projections based on October 2017 real exchange rates indicate lesser need for real exchange rate realignments than in most of the semiannual assessments in recent years.[3] Nonetheless, asynchronous normalization of monetary policies and passage of a sizable US tax cut could boost the dollar and external imbalances again.

Appendix A considers whether a deficit ceiling of 3 percent of GDP has become too lenient a target for the United States in view of lower prospective growth than in past decades, reflecting demographic and productivity trends. The appendix concludes that the offsetting influence of lower prospective interest rates provides a reasonable basis for leaving the target unchanged, and thus still within the same target range as applied to all other countries.

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1. "Trump's Weak-Dollar Temptation," *Wall Street Journal*, April 14, 2017.

2. First introduced in Cline and Williamson (2008), the semi-annual calculations of fundamental equilibrium exchange rates (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. However, the prospective surplus of Korea is a significant exception, and the chronic excess surpluses of Singapore, Taiwan, and (to a much lesser extent) Switzerland persist.

DECLINE OF THE DOLLAR

The surge in the dollar that followed the election of Donald Trump late last year has been followed by its decline during the first three quarters of 2017. Whereas the monthly average of the Federal Reserve's broad real exchange rate index for the dollar rose from 99.2 for October 2016 to 103.1 for December, it then fell to a low of 95.0 for September 2017 before a modest rebound to 96.7 in October.[4] The 9-month decline from December to September was exceptional.[5] Over the year ending in October, variability of the real effective exchange rate has been high, standing at the 83rd percentile for 12-month periods beginning in 1973.[6]

Three factors likely contributed to the decline.[7] The first is the reduction of the long-term US interest rate, both absolutely and relative to the corresponding rate of other key-currency economies. The second is an increase in perceived political-inefficacy risk, associated in particular with the collapse of the effort to repeal the Affordable Care Act, despite Republican control of the presidency and both houses of Congress. The third is geopolitical risk. The intensification of US–North Korean verbal assaults was accompa-

nied by a modest decline in the dollar.[8] Whereas increased geopolitical risk has traditionally boosted the dollar, resulting from a safe-haven effect, some financial market observers have emphasized that the reverse seems to be the case with respect to the recent North Korean confrontation.[9]

The interest rate on the US 10-year Treasury note rose from an average of 1.81 percent in the five days before the US presidential election in early November 2016, to a peak of 2.60 percent on December 15, before falling to a range of 2.30 to 2.40 percent in the second quarter of 2017 and a low point of 2.03 percent on September 7. The rate returned to its second-quarter range after the administration announced its tax reform plans and the Federal Reserve announced that it would scale back its balance sheet by not fully renewing maturing Treasury bonds acquired under quantitative easing. The decline in the long-term rate from its December high reflected growing doubt about the ability of the administration to carry out planned tax cuts and infrastructure spending, as well as unexpectedly weak core US inflation.[10]

Nonetheless, only part of the decline in the dollar can be explained by the decline in the US long-term interest rate from its December peak. Figure 1 shows the strength of the dollar against five major currencies (euro, yen, Canadian dollar, UK pound sterling, and Swiss franc), indexed to 100 for November 1, 2016. The figure also shows the differential between the US 10-year Treasury rate and the GDP-weighted average 10-year rates of these five economies (right axis).[11] A close relationship between the two held through May 15, but thereafter the path of the curve for the dollar fell increasingly below that of the interest differential. The figure suggests that if the relationship between the dollar and the interest differential observed from November 1 to May 15 had persisted, by mid-October the dollar would have been nearly 5 percent higher than its actual level.

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4. Federal Reserve (2017a); this trend is discussed further in appendix B and illustrated in figure B.1. The index has a base of 100 for March 1973.

5. Only one prolonged period was marked by continued declines of the REER by 8 percent or more from the level nine months earlier: late 1985 to the third quarter of 1986, following the Plaza Accord. Otherwise, the only declines by 8 percent or more from nine months earlier were in September 1973 and March–April 1988. Calculated from Federal Reserve (2017a). Note, however, that in the fall of 1978, a sharp decline against the leading currencies (by 14 percent against the yen and 12 percent against the deutsche mark from June to October) forced the United States to issue debt denominated in deutsche marks and Swiss francs ("Carter bonds") and to seek support from the International Monetary Fund (IMF), even though the REER fell only 5.2 percent in the same period. See Treasury (2017b).

6. The trailing 12-month coefficient of variation (ratio of standard deviation to average) was 0.097 for October 2017, compared to a median of 0.064 for monthly data over the period 1973–2017. Even so, this variability remained lower than that of two recent peaks (at 0.14 in April–May 2015 and 0.18 in February–April 2009, the largest for the 43-year series). The recent variability by this measure has also been considerably less than in the post–Plaza Accord peak months of February–August 1986 (averaging 0.16). Calculated from Federal Reserve (2017a).

7. A minor further contribution to the decline was the trade conflict with Mexico, which had depressed the peso in December. The shift toward negotiations on the North American Free Trade Agreement (NAFTA) contributed to a sharp recovery of the peso by the second quarter of 2017. In contrast, from the December peak the dollar fell about the same amount against the Canadian dollar as did the overall trade-weighted average for the US dollar, even though Canada too had been in jeopardy of NAFTA disruption.

8. For the five weeks following the August 8 "fire and fury" statement directed at North Korea by President Trump, the dollar was an average of 2 percent lower than during the five weeks preceding the statement against the euro, yen, and Canadian dollar, although it was approximately unchanged against the pound sterling and Swiss franc. Calculated from Bloomberg.

9. John Manning, "Why Has the US Dollar Been Consistently Falling Throughout 2017?" *International Banker*, September 20, 2017; Rebecca Ungarino, "The incredible shrinking dollar: Greenback hits new 2017 low," CNBC, September 8, 2017; "Why is the US dollar falling?" BBC, August 11, 2017.

10. See for example Brian Chappatta, "The Bond Market's Biggest Rally of 2017 Amazes Traders," Bloomberg, August 31, 2017.

11. For the euro, the GDP weight is for the full euro area; the interest rate is for the German bund.

Figure 1   Dollar strength and 10-year interest differential against five advanced economies

exchange rate index (November 1, 2016 = 100)   US interest differential (percent)
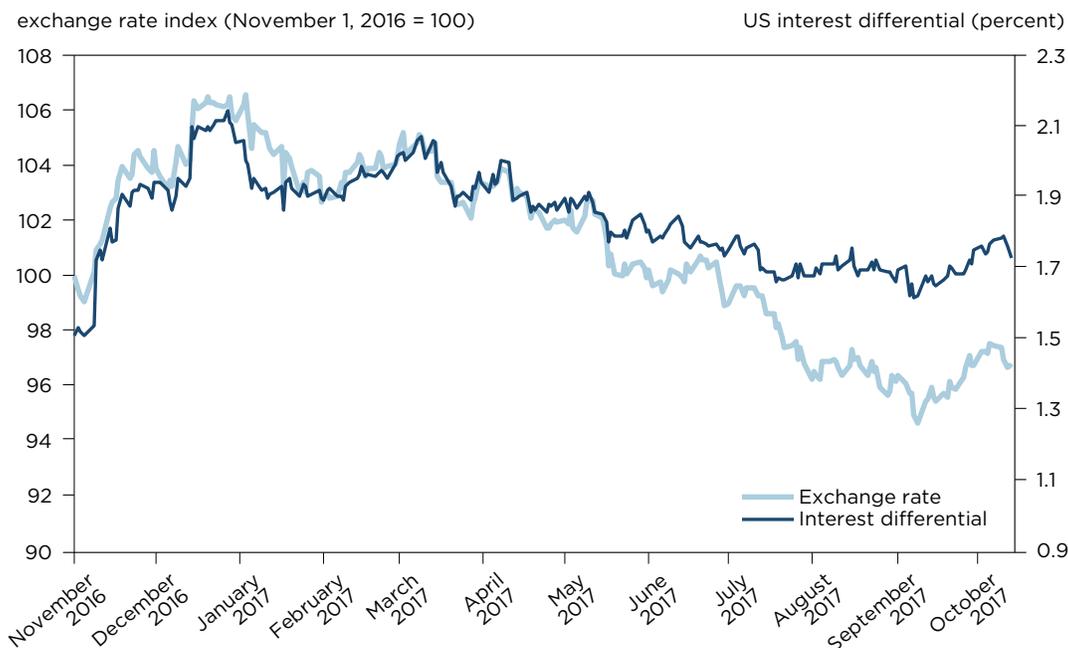
Notes: Left axis: GDP-weighted index of dollar against the euro, yen, pound sterling, Canadian dollar, and Swiss franc. Right axis: GDP-weighted 10-year US interest differential against corresponding government obligations (German bund for the euro).
Sources: Bloomberg, IMF (2017b), and author's calculations.

Similarly, statistical relationships for the euro and yen individually indicate that only two-thirds of the dollar's decline against the yen and only about half of the dollar's decline against the euro can be explained by a decline in the long-term interest differential.[12] As discussed later, the euro has risen substantially this year, but relatively little of the dollar's decline can be explained by a greater rise of the euro against the dollar than corresponding increases of other currencies against the dollar.[13]

Overall, the narrowing of the interest differential from its initial post-election peak appears to be responsible for less than half of the decline of the dollar, with the other half or more attributable to a new political risk premium reflecting both domestic and external factors. This political risk serves as a caveat to what otherwise might be grounds for expecting a stronger dollar over the next year or so as the normalization of US monetary policy proceeds faster than that in the euro area and Japan. Thus, market forecasts anticipate that by September 2018 the 10-year government bond yield differential for the United States will widen from 2.28 percent to 2.90 percent against the Japanese yen, and from 1.89 percent to 2.20 percent against the German bund.[14]

PROSPECTIVE IMPACT OF US TAX REFORM

In late September, the Trump administration released a broad description of its proposed tax reform (Treasury 2017a). It proposed cutting the corporate tax from 35 to

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12. The models in Cline (2017a, 4) indicate that a rise of 100 basis points in this differential has tended to boost the dollar by 15 US cents against the euro and by 17 yen against the dollar. From the dollar's peak in mid-December to its low point in mid-September, the long-term interest differential fell by 47 basis points against the German bund and 35 basis points against the 10-year Japanese bond, which would have warranted a dollar decline of about 7 cents against the euro and by 6 yen per dollar. In this period the actual decline of the dollar was by 14 cents against the euro and 9 yen per dollar.

13. From December to October, the REER for the dollar fell 6.2 percent. The dollar fell 10.4 percent against the euro. The euro has a weight of 15 percent in the dollar's REER, so the extra decline against the euro would have contributed only (10.4 – 6.2) x 0.15 = 0.63 percentage point to the REER decline, about one-tenth of the total.

14. For the first half of October 2017, the 10-year rates were 2.34 percent for the United States, 0.06 percent for Japan, and 0.45 percent for the German bund (Bloomberg.) For September 2018, market forecasts are 3.0 percent for the United States, 0.1 percent for Japan, and 0.8 percent for the German bund (Consensus Economics 2017b).

20 percent; setting a maximum 25 percent tax on pass-through taxation of sole proprietorships, partnerships, and S (small-business) corporations; expensing capital investments for five years; and shifting to a territorial tax system exempting dividends from foreign subsidiaries. For personal taxes, the proposal called for a shift to just three tax brackets (12 percent, 25 percent, and 35 percent), with the possibility of an additional top tax rate. The standard deduction

After a post-election surge of 3.9 percent from October 2016 to December, by October 2017 the REER for the dollar had fallen to 2.6 below its level a year earlier. Falling relative US interest rates drove the decline in the first two quarters of 2017; rising political risks at home (dysfunction) and abroad (North Korea) may have done so thereafter.

would be doubled to $24,000 (for married filers). Most tax deductions would be eliminated, including those for state and local taxes, but deductions would be retained for mortgage interest and charitable contributions. Importantly with respect to possible exchange rate and trade effects, the proposal omitted the idea of shifting the corporate tax to a destination basis and imposing a border tax adjustment of 20 percent on all imports and granting exemption to all exports (see Cline 2017b).

On November 2 the House Ways and Means Committee introduced the "Tax Cuts and Jobs Act." The proposal clarified the levels of the tax brackets, added a top bracket of 39.6 percent, and made other significant modifications.[15] The Joint Committee on Taxation estimated the proposal's net revenue effects at a cumulative loss of $1.5 trillion during 2018–27, or 0.63 percent of cumulative GDP over that period (Joint Committee 2017). After adding cumulative interest on the resulting increase in debt, the Congressional Budget Office (CBO) estimated that the total fiscal cost would be $1.7 trillion, or 0.7 percent of cumulative GDP over the 10-year period (CBO 2017a), before taking account of any induced growth effects. The

average fiscal deficit for the period would rise from its baseline of 4.3 percent of GDP to 5.0 percent.

Even with some erosion of planned revenue as opposition confronts the planned removal of popular deductions, the magnitude of the revenue loss from the tax plan appears likely to be in the range of 1 percent of GDP annually or less.[16] Applying the general equilibrium model developed in Cline (2017b) I find that tax cuts reducing revenue by 1 percent of GDP would boost the interest rate by 26 basis points, strengthen the dollar by 2 percent, and erode the nominal trade balance by about 0.25 percent of GDP.[17] Such an increase in the dollar would reverse less than half of the unexplained portion of its decline since December 2016. These illustrative estimates suggest that the scope for an upsurge in the dollar from tax reform may be modest rather than massive. As discussed in appendix C, however, the Tax Foundation (2017) projects large output and investment effects that would imply much larger capital inflows and trade deficits.

RISE IN THE EURO

In contrast to the REER of the dollar, the REER for the euro has risen significantly this year. From December 2016 to October 2017, the euro's REER rose 4.0 percent. Of this amount, only 1.2 percentage point was attributable to the 11.5 percent rise of the euro against the dollar over this period. In mid-June the election of Emmanuel Macron as the new president of France eased euro area political risk from the populist right. Growth exceeded earlier expectations, and in July European Central Bank (ECB) president Mario Draghi indicated that by "autumn" the ECB would begin discussions of tapering quantitative easing (QE).[18]

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15. These included a ceiling of $10,000 on property tax deduction, a limit of $500,000 on mortgages eligible for interest deduction, and a 20 percent tax on foreign companies operating in the United States on payments they make abroad from US operations. Richard Rubin, "House GOP Tax Plan Sticks With Big Corporate Cuts," *Wall Street Journal*, November 2, 2017.

16. Business opposition to the proposed excise tax on payments by multinationals to foreign affiliates, which was to provide $155 billion in new revenue over the decade, caused House Republicans to drop the provision from the plan within one week of its announcement. "GOP Change to Foreign Tax Provision Leaves Gap in Tax Plan," *Wall Street Journal*, November 7, 2017.

17. In the fiscal, exchange rate, and trade general equilibrium model (FERTGEM) model (Cline 2017b), simulation B changes the economy-wide tax rate from 24.4 percent to 22.4 percent. The estimate here applies a rate of 23.4 percent to simulation B. The model is available at https://piie.com/publications/working-papers/trade-and-fiscal-deficits-tax-reform-and-dollar-general-equilibrium (accessed on November 28, 2017).

18. Whereas private forecasts had placed 2017 growth at 1.7 percent in January, by September the estimate had risen to 2.1 percent (Consensus Economics 2017a, b). On the signal of tapering QE, see Karen Gilchrist, "Euro surges against dollar as Draghi says QE tightening talks will start in September," CNBC, July 20, 2017.

Figure 2   REERs for six major emerging-market economies

index (June 2014 = 100)
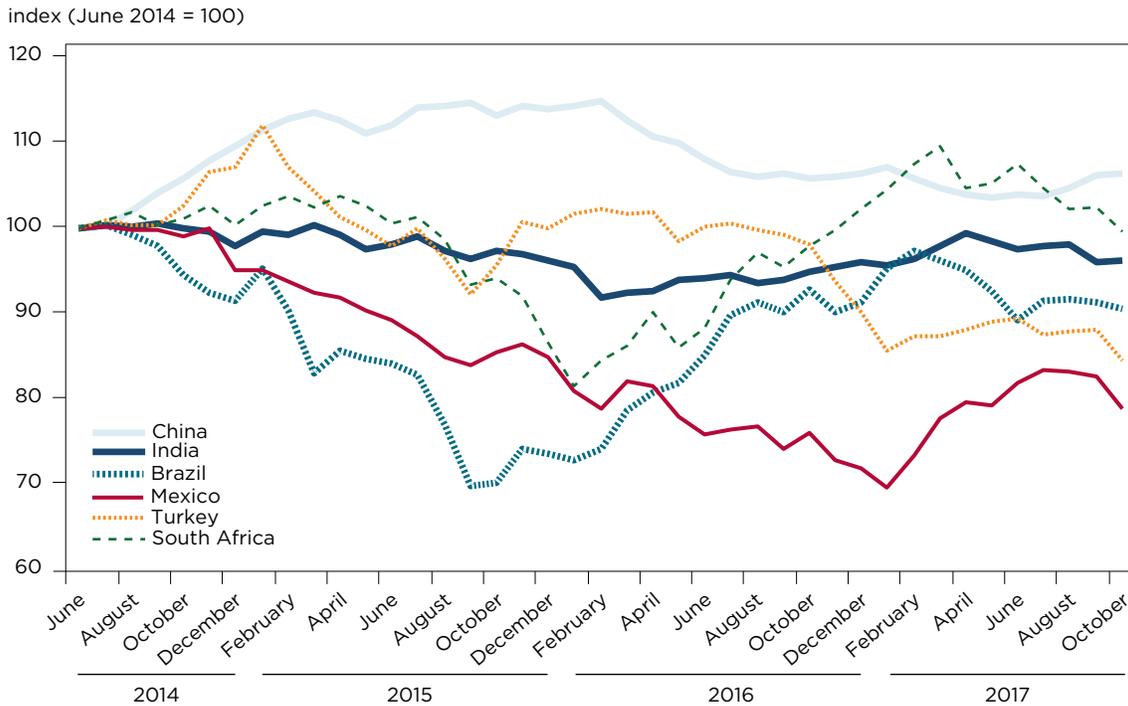
REER = real effective exchange rate
Sources: Bloomberg and author's calculations.

TRENDS IN MAJOR EMERGING-MARKET CURRENCIES

Three years ago the collapse in the price of oil marked the end of the commodity boom and the beginning of a phase of real depreciation by several emerging-market economies (see Cline 2015, 3). In late September 2017 the Federal Reserve announced that it would begin the process of reducing its balance sheet in October.[19] In view of the "taper tantrum" experienced in emerging-market currencies in mid-2013 after the Federal Reserve announced it would begin tapering down its amount of monthly securities purchases under quantitative easing, it is timely to review recent trends in major emerging-market exchange rates.

Figure 2 shows the path of the real effective exchange rate (REER) for six of these currencies, starting at June 2014

as an index base of 100.[20] The real exchange rates for **Brazil** and **Mexico** showed the greatest signs of downward pressure associated with falling commodity prices from June 2014 to June 2015. Thereafter, however, for both economies it was political developments that imposed further downward pressure: in Brazil, uncertainty associated with the process of impeachment of President Dilma Rousseff, and in Mexico, the threat of trade conflict with the United States with the Trump campaign and then election. Conversely, when the political dynamics reversed, the two currencies rebounded, as centrist Michel Temer replaced Rousseff as acting president in May 2016 and president in September 2016, and the NAFTA conflict transitioned to orderly renegotiation in early 2017.[21]

Despite financial market enthusiasm for the regime change in Brazil, debt sustainability risks remain large (IMF

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19. Heather Long, "In sign of U.S. economy's strength, Fed to start reducing $4.5 trillion balance sheet," *Washington Post*, September 20, 2017. In June the Federal Reserve had announced that the program would begin at a monthly reduction of $10 billion and phase up to monthly reductions of $50 billion after 12 months, with 60 percent of the reductions to be in holdings of Treasury obligations and 40 percent in holdings of agency debt and mortgage-backed securities (Federal Reserve 2017b).

20. The REERs deflate by consumer prices and apply the SMIM model trade weights.

21. The Mexican peso weakened again by October as the NAFTA negotiations entered a tense phase following US insistence that the agreement contain a "sunset clause" requiring renewal every five years, as well as high US local content requirements for automobiles imported from Canada and Mexico into the United States. David Lawder and Dave Graham, "US hikes tensions in NAFTA talks with call for 'sunset clause'," Reuters, October 12, 2017.

2017c). After severe recession in 2015 and 2016, growth is projected to be sluggish in 2017–18 and reach a plateau of only 2 percent in the medium term. Success in curbing inflation has exceeded expectations, but crucial challenges remain for fiscal reform (especially trimming excessive social security expenditures), and the political climate remains stressed despite President Temer's congressional victory in August blocking an attempt to try him for corruption.[22]

Estimates suggest that the scope for an upsurge in the dollar from tax reform may be modest rather than massive.

In the case of the largest emerging-market economy, **China**, the REER rose significantly in the same period that REERs for commodity exporters were falling. However, after rising 15 percent from June 2014 to February 2015, the REER for the renminbi began a slow decline and by September 2017 had given back about two-thirds of the increase. The decline occurred despite the use of substantial foreign exchange reserves to support the currency.[23] For **India**, the REER has remained within a narrower range. After easing about 8 percent through February 2016, the REER returned to its June 2014 level by April 2017, reflecting capital inflows associated with favorable economic performance.[24]

For **Turkey**, for most of the period after June 2014 the real exchange rate remained unchanged. However, after the failed coup attempt in July 2016, and the extensive wave of arrests and dismissals that followed it, the REER for the Turkish lira fell by about 15 percent by January 2017.[25] Even though **South Africa** relies on commodities for about 60 percent of its exports (Cline 2015, 3), its REER held

relatively steady from mid-2014 through mid-2015. From late 2015 to early 2016 the currency fell sharply, however, as rating agencies downgraded sovereign debt close to junk status (Fitch) or issued a warning (Standard & Poor's).[26] After the return of a respected finance minister, Pravin Gordhan, at the end of the year, the REER gradually rebounded from its January 2016 low, helped by recovering prices for metals and the absence of further downgrades. The REER then returned to a declining path after the ouster of Gordhan in March 2017 and a downgrade to below-investment grade by Fitch in April.[27]

Another important emerging-market economy, **Argentina**, is not shown in figure 2 because its REER swings are so large they would not fit on the same scale. High inflation caused the REER to rise by 50 percent from June 2014 to November 2015, despite Argentina's reliance on commodity exports. A large spread developed between the black market and the official exchange rate.[28] Then after elections in late 2015, the new government of Mauricio Macri eliminated exchange controls and the peso fell sharply, bringing the REER back to the June 2014 level before ongoing inflation brought it back up to a plateau about 25 percent higher in the period after May 2016.

MORE MODERATE GLOBAL IMBALANCES DRIVEN BY CHINA AND THE UNITED STATES

It is important to recognize that global imbalances are considerably smaller at present and as projected through 2022 by the International Monetary Fund (IMF) than in the early 2000s, especially during 2004–07 when the US current account deficit peaked at 5.8 percent of GDP in 2006 ($806 billion) and China's surplus peaked at 9.9 percent of GDP in 2007 ($353 billion). In contrast, based on the FEERs criterion of ±3 percent of GDP, *the United States has not been in excessive current account deficit since 2008, and China has not been in excessive surplus since 2011.*

Figure 3 shows trends in current account imbalances for the 30 nonoil economies covered in this series over the period 2001–16, as well as the corresponding projections by the IMF (2017b) for 2017–22.[29] Panel A shows the number

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22. Joe Leahy and Andres Schipani, "Brazil's pension and tax reforms back on track, says Meirelles," *Financial Times,* August 10, 2017.

23. External reserves fell from $4.01 trillion in June 2014 to $3.11 trillion in August 2017. Based on international patterns of reserve composition (about 64 percent in US dollars, 20 percent in euros, 4 percent each in yen and pounds sterling, and 2 percent each in Australian and Canadian dollars (IMF 2017d), and given the US dollar's appreciation against these other reserve currencies, only about one-fourth of the reserves decline was likely to have been from valuation effects. Much of the use of reserves appears to have been to finance a reduction in debt owed abroad rather than domestic capital flight. See Cline (2016a, 15–16).

24. "Rupee should not become too strong, says CEA Arvind Subramanian," *Economic Times*, April 28, 2017.

25. "Turkey"s failed coup attempt: All you need to know," *Al Jazeera*, July 15, 2017.

26. "South Africa gets a rating downgrade," *Economist*, December 7, 2015.

27. "Fitch downgrades South Africa's credit rating to 'junk' status," CNBC, April 7, 2017.

28. As discussed in Cline (2016b, appendix B), for several years the Argentine government had understated inflation in the official statistics. The REER estimates here apply alternative private sector estimates of inflation for the period 2007–15.

29. The economies listed in table 1, excluding Norway, Russia, Saudi Arabia, and Venezuela.

Figure 3 Excess surpluses and deficits for 30 major nonoil economies

a. Number of economies

b. Aggregate excess surpluses and excess deficits as percent of aggregate GDP
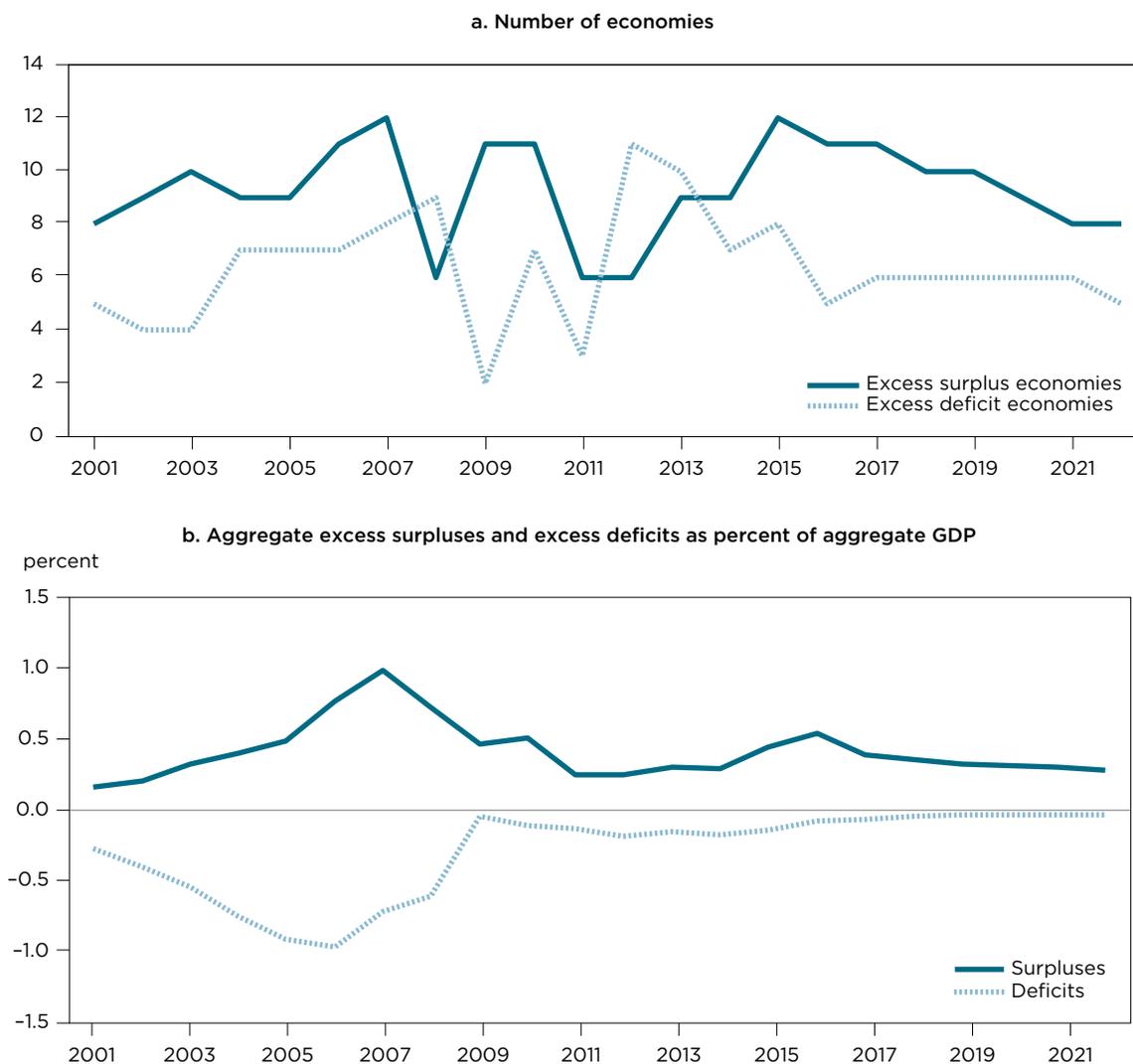
Notes: Imbalances exceeding ±3 percent of GDP. See table 1 for list of included economies (excluding Norway, Russia, Saudi Arabia, and Venezuela).
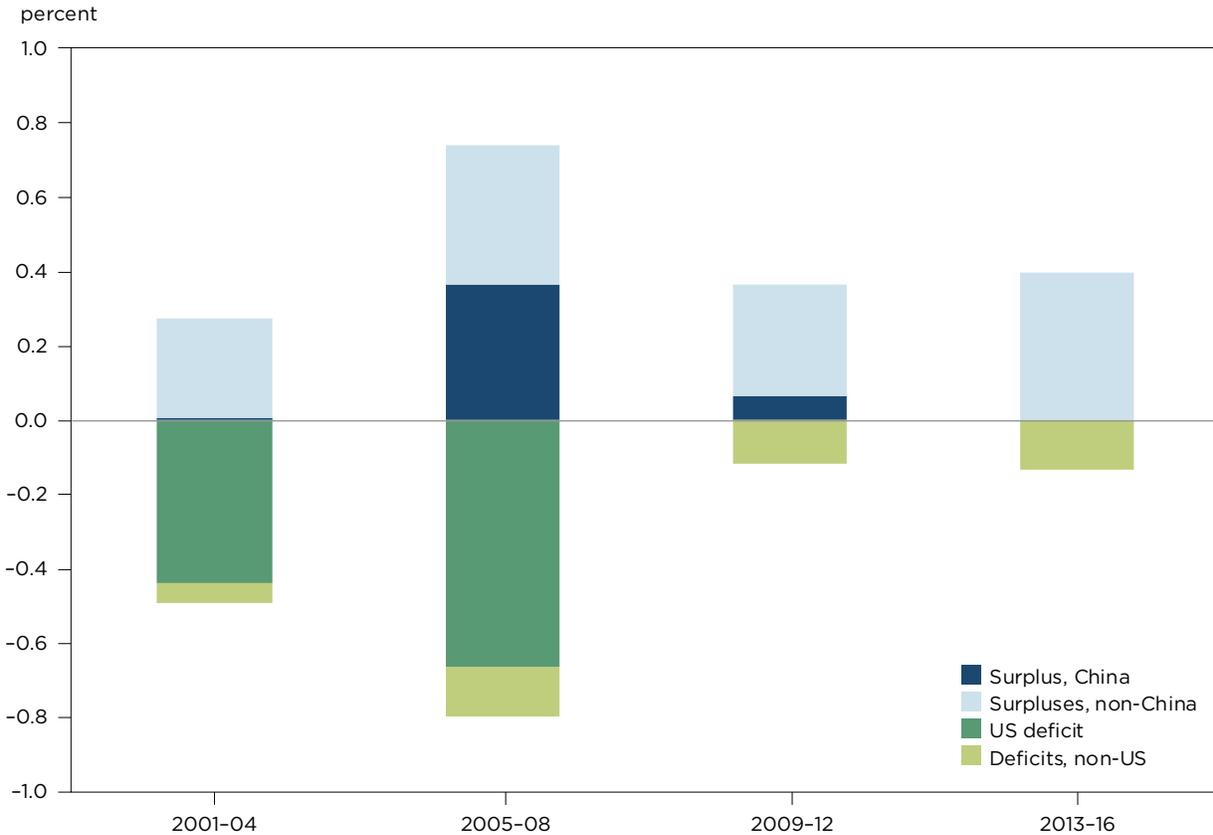*Source:* Calculated from IMF (2017b).

of excess-surplus and excess-deficit economies for each year, with the classification based on the ±3 percent of GDP criterion. Panel B shows the aggregate excess surpluses and aggregate excess deficits of these economies as a percent of total GDP of the 30 economies (at market exchange rates) over the same period.

In terms of the number of economies, there has been a surprising persistence of about one-half of the 30 nonoil economies being in excessive imbalance, with the average number of excess surplus economies at 9 and the average number in excess deficit at 6 for the full period 2001–16. As shown in panel B, however, in terms of the magnitudes, excess deficits declined sharply after 2008. Excess surpluses have also declined significantly, albeit with a partial rebound in 2015–16.

Figure 4 shows that virtually the entire narrowing of magnitudes of the excessive imbalances after 2008 can be attributed to the elimination of the excessive surplus of China and excessive deficit of the United States. For the excess-surplus economies excluding China, the aggregate excess surplus has remained relatively unchanged at about 0.3 to 0.4 percent of the aggregate GDP of the 30 economies, and for the excess-deficit economies excluding the United States, the aggregate excess deficit has remained at about 0.1 percent of the 30-economy aggregate GDP.

Similarly, as shown in figure 5, the GDP-weighted sum of absolute percent changes in REERs needed to reach FEERs is currently relatively low compared to past estimates in this series (albeit higher than in November 2012 through November 2014).

Figure 4   Excess surpluses and deficits as percent of aggregate GDP for 30 major economies

Note: See table 1 for list of included economies (excluding Norway, Russia, Saudi Arabia, and Venezuela).
*Source:* Calculated from IMF (2017b).

Whereas global imbalances and exchange rate misalignments have moderated since the end of the Great Recession, political tolerance of imbalances has declined in at least the United States. The Trump administration's rhetoric of outrage about US trade deficits far exceeds any comparable critiques in 2005–08, even though the US current account deficit has fallen by about half since then. The dislocation caused by the Great Recession, and the growing attention to geographically concentrated adjustment problems from the impact of rising trade with China, have no doubt contributed to this decline in political tolerance of trade imbalances.[30] The ±3 percent threshold for limiting the current account deficit is designed to reflect economic sustainability with respect to long-term external indebtedness. The threshold for political sustainability could be smaller, but there has

been no international agreement on the size of acceptable imbalances.[31]

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30. For the administration's attack on excessive trade deficits with China, NAFTA, and Korea, and its attribution of the deficits to past unfair trade agreements, see USTR (2017). For the benchmark study on geographically concentrated disruption from trade with China, see Autor, Dorn, and Hanson (2013).

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31. At the Seoul meeting of the G-20 in October 2010, Germany and Japan openly resisted US Treasury Secretary Timothy Geithner's effort to reach agreement among the major economies to limit their current account imbalances to ±4 percent of GDP. Although China had already planned to curb its surplus to below 4 percent by 2015, at the time it was criticizing the United States for engaging in its own currency manipulation through quantitative easing. The G-20 instead agreed only to pursue the goal of "reducing excessive imbalances ...". Sewell Chan, "Nations Agree on Need to Shrink Trade Imbalances," *New York Times*, October 22, 2010; Patricia Zengerle and Krittivas Mukherjee, "Obama returns fire after China slams Fed's move," Reuters, November 8, 2010. The G-20 did go a step further in February 2013, when its communique pledged: "We will refrain from competitive devaluation. We will not target our exchange rates for competitive purposes." Charles Clover, Robin Harding, and Alice Ross, "G20 agrees to avoid currency wars," *Financial Times*, February 17, 2013.

Figure 5   GDP-weighted average absolute percentage change in REERs needed to reach FEERs (for 30 major economies)
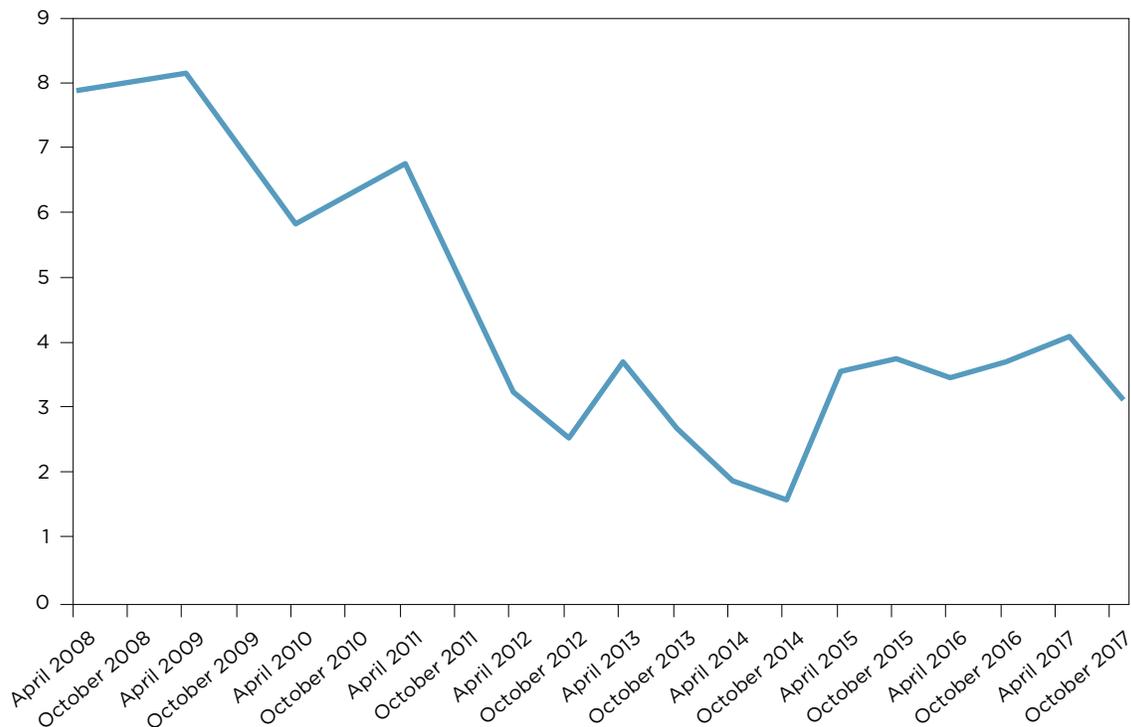
FEER = fundamental equilibrium exchange rate; REER = real effective exchange rate
Note: See table 1 for list of included economies (excluding Norway, Russia, Saudi Arabia, and Venezuela).
Source: Author's calculations from past estimates in this series. For a time series of misalignments, see
https://piie.com/publications/policy-briefs/estimates-fundamental-equilibrium-exchange-rates-november-2015.

PROSPECTS FOR MEDIUM-TERM CURRENT ACCOUNT IMBALANCES

The most recent World Economic Outlook (WEO) of the International Monetary Fund (2017b) serves as the basis for assessing prospective external imbalances of the economies covered in this series. An important exception is the United States, for which the projections apply an updated version of the model developed in Cline (2016a, appendix A). Table 1 reports the WEO projections for 34 major economies. The first column indicates the current account balance expected for 2017 as a percent of GDP. The second column shows projected GDP in dollar terms for 2022. At that time, the US economy will still be 28 percent larger than that of China and 53 percent larger than that of the euro area.[32] The third column of the table indicates the Fund's projection of current account balances in 2022, as a percent of GDP. These show several familiar patterns: extremely large surpluses for Singapore, Taiwan, and to a lesser extent

Switzerland; sizable surpluses for Korea and to a lesser extent Japan; and sizable surpluses for oil economies Norway and Russia. Only five countries show deficits exceeding 3 percent of GDP (Argentina, Chile, New Zealand, South Africa, and Turkey), and their excess imbalances are typically on the order of 1 percent of GDP beyond the 3 percent limit, far smaller than the excessive imbalances of the high-surplus economies.

The fourth column indicates an adjusted projection for 2022 based on the IMF projection but taking account of changes in exchange rates from the WEO base period to the October base in this study.[33] For the United States, the adjusted estimate is the 2022 balance projected in my own current account model.[34] A special adjustment (–3 percent)

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32. The corresponding differences for 2017 are 62 percent against China and 55 percent against the euro area.

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33. The WEO base period is July 20–August 17, 2017. The adjustment to an October base applies one-half of the change implied by the change in the REER multiplied by the country's current account impact parameter in the SMIM model, γ.

34. With updated parameters of the model estimating through 2016, the core equation is: $NOTB_t = 14.49 - 0.115\ REER_{t-2} - 3.96\ QU/QR_t - 0.101\ gdif_t - 0.114\ T$; $R^2 = 0.88$, where $NOTB$ is the nonoil trade balance in goods and services as a

Table 1   Target current accounts (CA) for 2022

Country	IMF projection of 2017 CA (percent of GDP)	IMF 2022 GDP forecast (billions of US dollars)	IMF 2022 CA forecast (percent of GDP)	Adjusted 2022 CA (percent of GDP)	Target CA (percent of GDP)
Pacific					
Australia	–1.6	1,786	–2.3	–2.1	–2.1
New Zealand	–3.6	260	–3.9	–3.2	–3.0
Asia					
China	1.4	18,383	0.2	0.1	0.1
Hong Kong	3.0	401	3.5	4.4	3.0
India	–1.4	3,924	–2.4	–2.1	–2.1
Indonesia	–1.7	1,580	–1.9	–1.7	–1.7
Japan	3.6	5,482	3.7	4.1	3.0
Korea	5.6	1,878	5.3	5.8	3.0
Malaysia	2.4	500	1.8	1.6	1.6
Philippines	–0.1	543	–1.0	–0.8	–0.8
Singapore	19.6	366	16.9	17.6	3.0
Taiwan	13.8	662	14.6	15.2	3.0
Thailand	10.1	524	2.9	3.1	3.0
Middle East/Africa					
Israel	4.1	421	3.2	3.4	3.0
Saudi Arabia	0.6	814	1.6	2.0	2.0
South Africa	–2.9	419	–3.8	–3.2	–3.0
Europe					
Czech Republic	0.6	295	–1.4	–1.5	–1.5
Euro area	3.1	15,389	2.6	2.8	2.8
Hungary	4.8	168	1.4	2.2	2.2
Norway	5.5	448	6.1	6.4	6.4
Poland	–1.0	698	–2.2	–2.0	–2.0
Russia	2.8	1,805	4.0	3.8	3.8
Sweden	3.9	711	3.0	3.2	3.0
Switzerland	9.9	789	8.6	6.4	3.0
Turkey	–4.6	1,132	–3.8	–3.3	–3.0
United Kingdom	–3.6	2,961	–2.5	–2.5	–2.5
Western Hemisphere					
Argentina	–3.6	870	–4.3	–4.6	–3.0
Brazil	–1.4	2,629	–2.0	–1.8	–1.8
Canada	–3.4	2,052	–2.1	–0.4	–0.4
Chile	–2.3	320	–3.5	–3.5	–3.0
Colombia	–3.8	402	–2.9	–2.5	–2.5
Mexico	–1.7	1,551	–2.2	0.4	0.4
United States	–2.4	23,505	–2.5	–3.4	–3.0
Venezuela	–0.4	161	–1.6	–3.5	–3.5

IMF = International Monetary Fund

Sources: IMF (2017b) and author's calculations.

is made to the Swiss current account to take account of over-attribution of capital income of Swiss-headquartered multinationals to residents.

My projection of the US current account deficit is again significantly larger than that of the IMF. The Fund projects the 2022 deficit at only 2.5 percent of GDP, a reduction from its spring WEO projection of 3.2 percent of GDP (IMF 2017a). I estimate the 2022 deficit at 3.4 percent of GDP, down from the estimate of 4.0 percent in the May 2017 projection (Cline 2017a). The adjusted current account estimates in the fourth column of table 1 incorporate the effect of reallocating across trading partners the difference between the IMF's projections and mine for the United States. This shift is especially important for Canada and Mexico.

Whereas global imbalances and exchange rate misalignments have moderated since the end of the Great Recession, political tolerance of imbalances has declined in at least the United States.

The final column of table 1 indicates the target medium-term current account for each economy. This target is simply the (adjusted) baseline estimate, if it lies within the range of ±3 percent of GDP, or the relevant 3 percent limit otherwise. The oil-exporting economies are exceptions, however. Their need to replace natural resource wealth with financial assets means their surpluses are not subject to the general 3 percent of GDP limit.

The exchange rate realignments needed to bring currencies to their FEER levels compatible with target current accounts are shown in table 2. The first column indicates the target change in the current account, equal to the difference between the last two columns of table 1. For the majority of economies, the target change is zero, because the projected current account lies between ±3 percent of GDP. For the United States, the target change is an increase of 0.4 percent of GDP. There are large targeted reductions in the surpluses

of Singapore and Taiwan and sizable reductions called for in the cases of Korea and Switzerland.

The third column of table 2 shows the percent change in the REER needed to accomplish the target change in the current account. This change equals the current account change (percent of GDP) divided by the impact parameter. For the United States, simulations place this parameter at −0.165, such that a 10 percent appreciation of the REER causes a 1.65 percent of GDP reduction in the current account balance. The target 0.4 percent of GDP improvement in the current account thus translates to a target REER depreciation of approximately 2 percent. Smaller, more open economies have higher impact parameters because trade is larger relative to GDP in those economies.[35]

Once the targets for all of the economies are taken into account jointly, international consistency means that each country's target cannot be met exactly. The second column in table 2 reports the simulation results for overall consistent current account changes. Because of the lopsided profile of the imbalances, with high excess surpluses in a few countries and much smaller excess deficits in a few countries, the SMIM model solution gives current account changes that underachieve the desired reduction of excess surpluses and overachieve the desired reduction in excess deficits. Even countries that had a zero target change thus have an increase in surpluses (or reduction in deficits), typically amounting to a few tenths of a percentage point of GDP. Correspondingly, in the fourth column of table 2, the model solution changes in REERs show depreciations that are about 1 to 1.5 percentage point larger than called for by the individual country's target, and appreciations for excess surplus countries that are about 1.5 percentage point smaller than the target changes. For the United States, whereas the change in the REER needed to meet the target change in the current account in isolation would be just 2 percent, the model result for international consistency boosts the depreciation to about 4 percent. On this basis, *the US dollar remains about 4 percent overvalued* in comparison to its FEER.

The fifth column of table 2 reports the actual average exchange rate of the currency in question against the US dollar in October 2017. The penultimate column shows the percent change in the bilateral exchange rate against the dollar needed to reach the FEER, and the final column shows the FEER in terms of the bilateral exchange rate against the dollar.

percent of GDP, *REER* is the broad real effective exchange rate of the Federal Reserve (March 1973 = 100), *QU/QR* is the ratio of real US GDP to rest-of-world real GDP (with 1990 = 1), *gdif* is the difference between US and rest-of-world growth (percentage points), *T* is time trend (1990 = 1), and subscript "t" is the year in question. The model incorporates capital income by projecting international assets and liabilities and taking into account rates of return by asset class, as well as transfers and a projection of the oil trade balance.

35. For example, the parameter is −0.40 for Korea, so the target change of −2.8 percent of GDP for the current account requires a real appreciation of 7 percent. Earlier individual country impact parameters are reported in Cline (2013, appendix B). Updated parameter values calculated in 2016 and used in the current SMIM model are broadly similar.

**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 2017	Percentage change	
Pacific							
Australia*	0.0	0.3	0.0	–1.6	0.78	5.6	0.82
New Zealand*	0.2	0.6	–0.8	–2.1	0.70	3.9	0.73
Asia							
China	0.0	0.4	0.0	–1.7	6.63	4.9	6.32
Hong Kong	–1.4	–0.9	2.7	1.8	7.81	9.2	7.15
India	0.0	0.4	0.0	–1.6	65.1	3.3	63.0
Indonesia	0.0	0.3	0.0	–1.6	13,528	8.2	12,504
Japan	–1.1	–0.8	6.7	5.2	113	11.3	101
Korea	–2.8	–2.2	7.0	5.7	1,134	11.8	1,014
Malaysia	0.0	0.8	0.0	–1.6	4.23	8.7	3.89
Philippines	0.0	0.3	0.0	–1.4	51.4	7.9	47.6
Singapore	–14.6	–13.8	29.3	27.5	1.36	34.8	1.01
Taiwan	–12.2	–11.6	28.2	26.8	30.3	33.3	22.7
Thailand	–0.1	0.7	0.1	–1.4	33.2	5.9	31.4
Middle East/Africa							
Israel	–0.4	–0.1	1.4	0.3	3.51	4.1	3.37
Saudi Arabia	0.0	0.4	0.0	–1.2	3.75	5.2	3.56
South Africa	0.2	0.4	–0.6	–1.6	13.70	2.9	13.32
Europe							
Czech Republic	0.0	0.4	0.0	–0.9	21.9	1.7	21.6
Euro area*	0.0	0.5	0.0	–2.0	1.18	1.9	1.20
Hungary	0.0	0.4	0.0	–0.8	264	1.8	259
Norway	0.0	0.3	0.0	–1.0	8.00	1.9	7.85
Poland	0.0	0.4	0.0	–1.0	3.63	1.5	3.57
Russia	0.0	0.3	0.0	–1.0	57.7	2.8	56.2
Sweden	–0.2	0.2	0.7	–0.6	8.18	2.1	8.01
Switzerland	–3.4	–3.0	7.7	6.9	0.98	10.0	0.89
Turkey	0.3	0.5	–1.2	–2.2	3.68	1.2	3.64
United Kingdom*	0.0	0.3	0.0	–1.1	1.32	2.2	1.35
Western Hemisphere							
Argentina	1.6	1.8	–10.3	–12.1	17.46	–9.0	19.19
Brazil	0.0	0.2	0.0	–1.9	3.19	1.3	3.15
Canada	0.0	0.2	0.0	–0.6	1.26	1.1	1.25
Chile	0.5	0.9	–1.6	–3.0	630	1.0	624
Colombia	0.0	0.2	0.0	–1.3	2,954	1.3	2,915
Mexico	0.0	0.2	0.0	–0.7	18.8	1.3	18.6
United States	0.4	0.7	–2.2	–4.4	1.00	0.0	1.00
Venezuela	0.0	0.3	0.0	–1.4	10.05	2.2	9.84

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

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

Source: Author's calculations.

Figure 6   Changes needed to reach FEERs
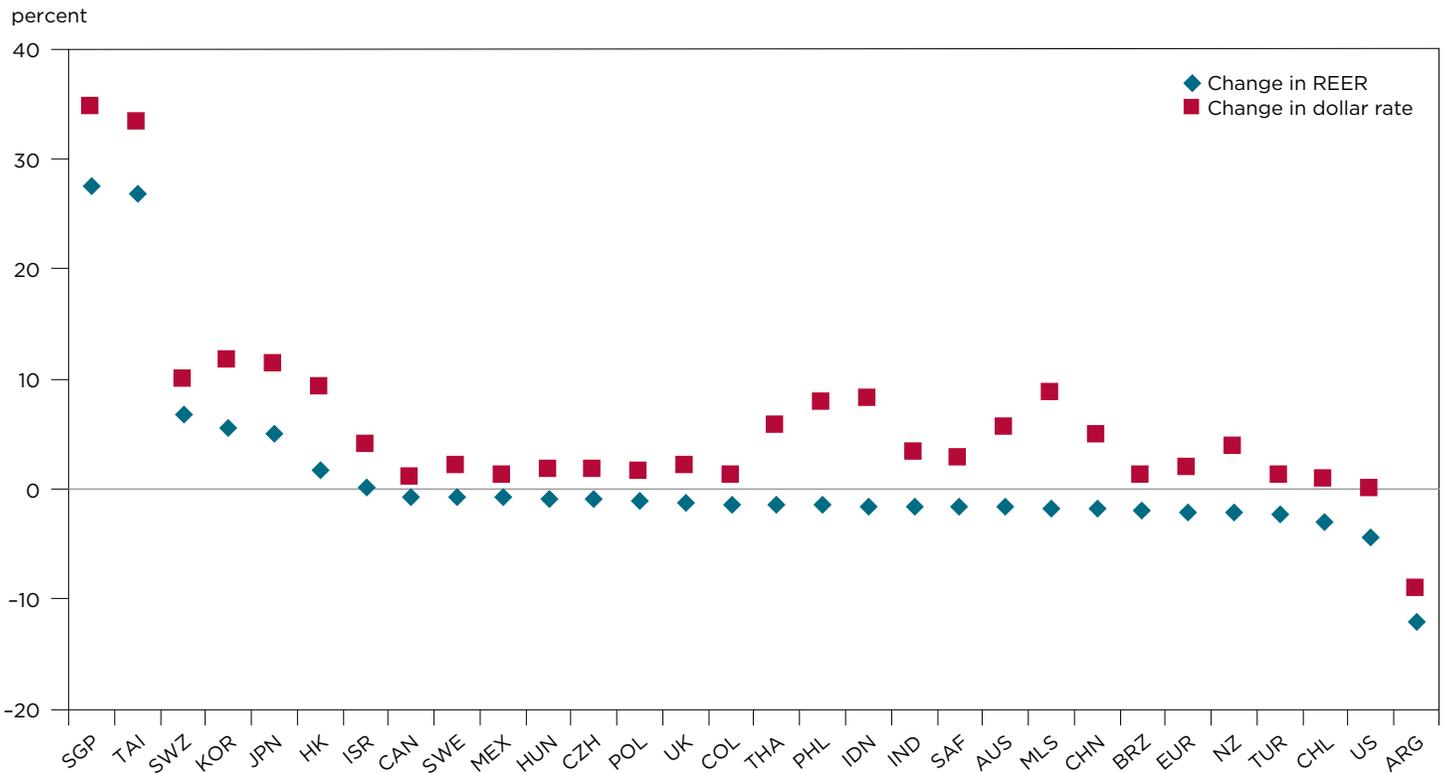
ARG = Argentina, AUS = Australia, BRZ = Brazil, CAN = Canada, CHL = Chile, CHN = China, COL = Colombia, CZH = Czech Republic,
EUR = Euro area, HK = Hong Kong, HUN = Hungary, IND = India, IDN = Indonesia, ISR = Israel, JPN = Japan, KOR = Korea,
MLS = Malaysia, MEX = Mexico, NZ = New Zealand, PHL = Philippines, 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 rate; REER = real effective exchange rate
Source: Author's calculations.

Figure 6 shows the percent changes in exchange rates needed to reach FEERs for both the REER and the bilateral exchange rate against the US dollar. Just one country—Argentina—needs a bilateral depreciation against the dollar, whereas large appreciations of both REERs and bilateral rates against the dollar are called for in the cases of Singapore and Taiwan. Significant appreciations of both REERs and bilateral rates against the dollar are also needed for Switzerland, Korea, and Japan. Other economies have minimal required changes in REERs but sizable bilateral appreciations against the dollar—especially in Asia—reflecting trading partner patterns. In this regard, the model results for changes in bilateral rates against the dollar are closest to changes in REERs for the two economies that trade the most with the United States: Canada and Mexico.

CONCLUSION

The REER for the US dollar fell by 6.3 percent from its monthly peak in December 2016 to the October base period used in this study. As a consequence, *whereas the dollar was overvalued against its FEER by 8 percent in May (Cline 2017a), its overvaluation has narrowed to about 4 percent.* Through May the slide of the dollar could be explained by the path of interest rate differentials, as the US Treasury benchmark 10-year rate declined significantly, even as those of Germany and Canada rose. Thereafter the additional decline of the dollar was increasingly unexplained by changing interest differentials. Rising political risk domestically (from concern about political dysfunction) and externally (from tensions with North Korea) may have played an important role in the additional downward pressure on the dollar.

A source of uncertainty for the dollar going forward is whether Congress will pass a tax reform that causes a significant widening in the fiscal deficit. In estimates using

a general equilibrium model, the prospective revenue loss on the order of 1 percent of GDP annually would boost interest rates by about 25 basis points and cause a rise in the REER by about 2 percent. Although such a rise would only partially reverse the decline of the dollar in the first 10 months of 2017, it would add to the potential upward pressure from prospective renewed widening in US relative monetary tightening, given the still asynchronous normal-ization of monetary policy in the United States versus that in the euro area and Japan. Thus, although the degree of dollar overvaluation by October was modest, grounds for concern remain, especially in view of the potential for overvaluation and larger future deficits to intensify trade conflict. The Trump administration's seeming objective of balanced trade with major trading partners, even on an individual-country basis, heightens the potential for such conflict.

APPENDIX A

SHOULD THE US CURRENT ACCOUNT TARGET BE MORE DEMANDING?[36]

The target of limiting the current account deficit to no more than 3 percent of GDP has remained unchanged since the initial estimates in this series. It is reasonable to ask, however, whether changes in long-term economic prospects warrant a change in this target, at least for the important case of the United States. Cline and Williamson (2008) and Cline (2005, 172–74) set forth the various grounds for setting the deficit limit at 3 percent of GDP for both developing and advanced economies. (The 3 percent ceiling on surpluses reflects symmetry and global adding-up.) At a summary level, the analytics behind this target derive from setting a reasonable target for the long-term ratio of net external liabilities to GDP and from recognizing that in the long term the marginal ratio becomes the average ratio.

Suppose the desired limit for net international liabilities relative to GDP is λ. Define π as the ratio of the current account deficit to GDP, Y as GDP, and L as net international liabilities. Let g be the nominal growth rate. The change in net international liabilities is the current account deficit, and the change in nominal GDP is the nominal growth rate multiplied by GDP. Thus, at the margin, the ratio of additional external net liabilities to additional GDP, defined as z, will be:

$$z = \frac{\pi Y}{gY} = \frac{\pi}{g} \qquad (A.1)$$

In the long term this marginal ratio becomes the average ratio, which is not to exceed the target λ. At this limit,

$$z = \lambda; \; \pi = \lambda g \qquad (A.2)$$

For advanced economies prior to the Great Recession, benchmark growth rates were on the order of 3 percent in real terms, and inflation was on the order of 2 percent, placing g at 5 percent. In order to hold λ to no more than 0.6 (60 percent of GDP), the current account deficit could be no more than 3 percent of GDP ($\pi = 0.6 \times 5$ percent).

For the United States, in the "Old Normal" base period of 1990–2007, real GDP growth was an average of 2.98 percent, and average inflation for the GDP deflator was 2.32 percent, conforming to the benchmark 5 percent for nominal growth. In the post–Great Recession period of 2010–16, real growth was an average of 2.14 percent and GDP inflation an average of 1.56 percent, reducing nominal growth to 3.72 percent (BEA 2017c). For the prospective

"New Normal," as projected by the Congressional Budget Office, real growth in 2019–27 is placed at 1.83 percent and nominal growth at 3.81 percent (CBO 2017b, 21). So the term "g" has indeed fallen from about 5 percent to about 4 percent. If the target for λ remained unchanged at 0.6, this reduction in the growth rate would imply a limit of 2.4 percent of GDP for the target current account deficit.

However, there is another major change that has occurred that should affect one's thinking about the sustainable level of external liabilities: The real interest rate has fallen. From 1990 through 2007, the average real 10-year Treasury rate was 2.86 percent.[37] For 2010–16, the real rate fell to 0.35 percent. Going forward, the CBO (2017b) projects the 10-year Treasury rate at an average of 3.63 percent in nominal terms and 1.63 percent in real terms.

The burden of debt depends on its price, the interest rate. From the Old Normal to the New Normal, the real interest rate for the "safe" 10-year Treasury obligation will have fallen from about 2.9 percent to about 1.6 percent. Adding say 200 basis points to translate to private financial market rates including risk spread, the corresponding real decline would be from about 4.9 percent to 3.6 percent. For the same real burden of net external liabilities as 60 percent of GDP under the old benchmarks, the new benchmark would become 82 percent (= 60 × [4.9/3.6]).

As a consequence, an appropriate change in the benchmark for sustainable net foreign liabilities can yield a current account deficit limit that is not much changed despite the decline in the prospective growth rate. For π, λg yields 0.6 × 5 = 3 percent under the Old Normal conditions. But adjusting the target for the long-term ratio of net liabilities to GDP, the same equation yields 0.82 × 3.81 = 3.1 percent under New Normal conditions.

The decline in the prospective real interest rate thus offsets the decline in the prospective growth rate, if the objective is to hold the real burden of long-term net international liabilities unchanged. This conclusion is reinforced when it is considered that asymmetric returns on external assets versus liabilities have continued to yield a relatively large surplus for net capital income in the US current account, even though net international liabilities have risen significantly (see appendix B). The offsetting influence of lower interest rates is similar to that in the standard equation for stability of public debt: $ps = \beta(r^* - g^*)$, where ps is the primary surplus (percent of GDP) required to hold the ratio of debt to GDP constant, β is the debt to GDP ratio, r^* is the real interest rate, and g^* is the real growth rate (Cline 2010).

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36. I thank my colleague Joseph Gagnon for raising this question.

37. For 2003 and after, this rate is the inflation-indexed rate (Federal Reserve 2017c). For 1990 through 2002 the real rate is calculated as the nominal rate for the 10-year obligation minus the average of consumer price inflation in the current and three previous years (Federal Reserve 2017c, BLS 2017).

APPENDIX B

## REAL EXCHANGE RATE TRENDS AND CURRENT ACCOUNT PROSPECTS FOR THE UNITED STATES

Figure B.1 shows monthly values of the Federal Reserve's broad real exchange rate index for the US dollar from January 1973 to October 2017 (with March 1973 = 100). This long-term path serves as an important reminder that even with the downward reversal since the December 2016 peak, the dollar remains considerably stronger than its low point in July 2011 (the month of the debt-ceiling crisis). After declining by 6.2 percent from its monthly peak in December to its average in October, the real value of the dollar is close to the level in 2004. There is a two-year lag from the exchange rate signal to the current account outcome (see Cline 2016a). The largest US current account deficit on record was the 5.8 percent of GDP reached in 2006 (BEA 2017a, Cline 2005, 2). It is thus reasonable to ask whether an extremely large current account deficit should be expected two years from now despite the recent reversal of the post-election surge.

Mainly because of the reduction in the US deficit in oil trade, but also because of a rise in net capital income, the size of the overall current account deficit is now about 2.3 percent

smaller than it would have been for the same real exchange rate in the mid-2000s, before incorporating long-term trend effects.[38] The oil deficit has fallen from almost 2 percent of GDP in 2016 to about 0.3 percent in 2016 (Census 2017). The balance on capital income has risen from an average of 0.3 percent of GDP in the decade 1997–2006 to an average of 1.1 percent in the decade 2007–16 (BEA 2017a). The decline in interest rates has thus more than offset the rise in US net international liabilities from 13 percent of GDP in 2006 to 45 percent in 2016 (Federal Reserve 2017b). The overall effect is that the US current account deficit is on track to widen but not as much as might have been expected from the 2006 experience. As indicated in table B.1, the current account balance is likely to rise from 2.4 percent of GDP in 2016 to 2.9 percent this year, 3.3 percent next year, and 3.4 percent by 2022.

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38. The current account projection model used in this study includes an adverse time drift amounting to 0.1 percent of GDP annually; see note 34. The adverse time trend is consistent with the Balassa-Samuelson hypothesis that real exchange rates of developing countries should rise over time (implying a decline over time for real exchange rates of advanced economies) because of greater relative catch-up in relative productivity in tradables than in nontradables (mainly services).

Figure B.1   Federal Reserve's broad real exchange rate for the dollar

index (March 1973 = 100)
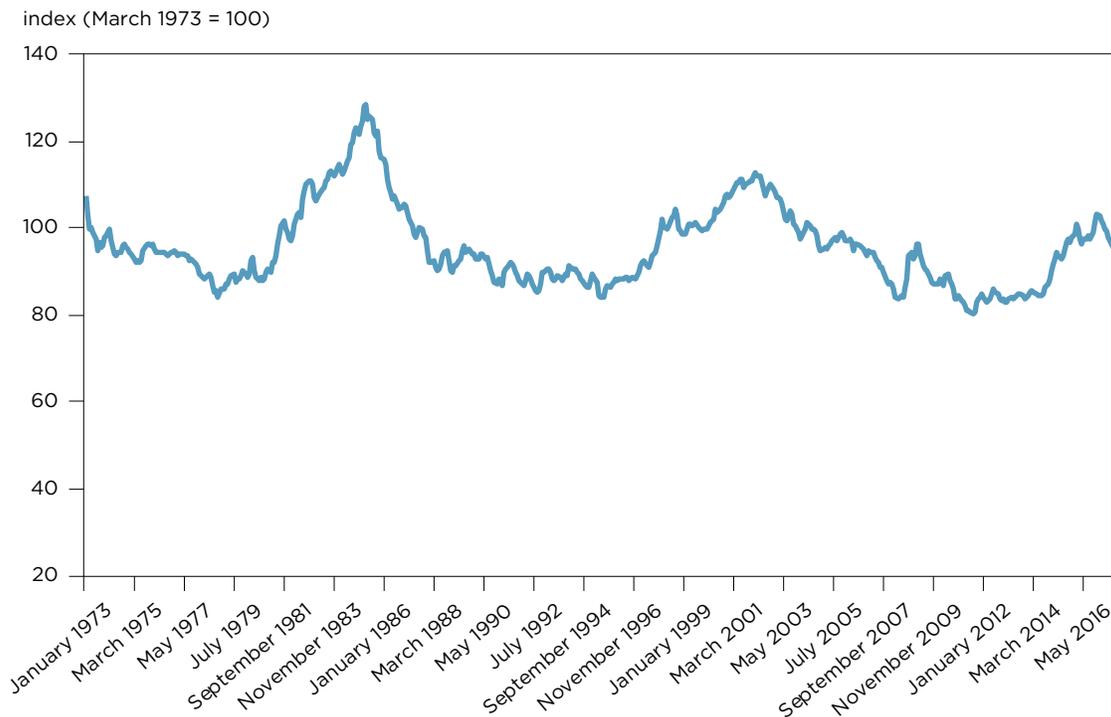
Source: Federal Reserve 2017a.

Table B.1   US current account and net international investment position as percent of GDP, and REER (March 1973 = 100)

	2006	2009	2014	2016	2017	2018	2020	2022
Nonoil goods and services	–3.54	–1.24	–1.73	–2.41	–3.17	–3.69	–3.43	–3.53
Oil and gas	–1.95	–1.42	–1.09	–0.31	–0.42	–0.44	–0.39	–0.34
Capital services	0.28	0.86	1.27	1.01	1.35	1.56	1.35	1.19
Transfers[a]	–0.60	–0.78	–0.60	–0.72	–0.69	–0.69	–0.69	–0.69
Current account	–5.82	–2.58	–2.15	–2.43	–2.93	–3.27	–3.17	–3.37
REER (Federal Reserve, broad)	96.02	91.17	86.07	99.02	98.20	96.22	96.22	96.22
NIIP	–13.48	–19.10	–40.62	–45.13	–40.74	–42.01	–44.84	–47.88

NIIP = net international investment position; REER = real effective exchange rate

a. Includes employment income.

Sources: BEA (2017a, b), Census (2017), Federal Reserve (2017a), IMF (2017b), and author's calculations.

APPENDIX C

ALTERNATIVE ESTIMATES OF THE IMPACT OF US TAX REFORM

The Tax Policy Center estimates that the Tax Cuts and Jobs Act passed by the US House of Representatives in mid-November would raise US GDP from its baseline by 0.4 percent by 2022, easing to 0.3 percent by 2027 (Page et al. 2017). It finds that dynamic revenue offset effects would be small, cutting the 10-year revenue loss from $1.4 trillion to $1.3 trillion. Initially investment would rise, but "rising interest rates would eventually negate the incentive effects of lower tax rates on capital income and decrease investment below baseline levels in later years" (Page et al. 2017, 2). These results are broadly consistent with the diagnosis in the main text that implications for the external balance would be modest given fiscal deficit effects that amount to less than 1 percent of GDP.

In contrast, the Tax Foundation (2017; 5, 7) estimates that the broadly similar Senate version of the tax plan would boost US GDP by 3.7 percent above baseline by 2027. Whereas the static revenue loss would be $1.78 trillion over 10 years, dynamic gains would cut the net revenue loss to $516 billion. The model's results are driven by a large increase in investment in response to the corporate tax cut. The capital stock in the economy would rise by 9.9 percent above baseline by 2027. Considering that the capital/output ratio for the US economy is 3:1, the extra net investment of 1 percent of capital stock annually would translate to a requirement of 3 percent of GDP annually. The model assumes that "the U.S. economy behaves as a small open economy, where domestic investment is not constrained by domestic savings" (as reported by the Tax Foundation's contribution to a model survey by Auerbach et al. 2017, 828). As Paul Krugman has pointed out, the implication is that an additional foreign capital inflow over the 10-year period amounting to a cumulative 30 percent of the level of GDP would be required.[39] If this scenario were to occur, the broad result would be to return the United States to its 2006 peak external deficit of 6 percent of GDP and sustain this large imbalance for a decade.

The Tax Policy Center projections seem much more likely to capture realistic prospects than do those of the Tax Foundation. Nonetheless, the Tax Foundation projections serve as a caveat about possible downside risk to the implications of the US tax reform plans for external imbalances and possible associated escalation of trade conflict.

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39. Paul Krugman, "Leprechaun Economics, With Numbers," *New York Times*, November 9, 2017. Krugman emphasizes that as a consequence, the bulk of the extra GDP created would go to foreign investors.

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