



Updated Estimates of Fundamental Equilibrium Exchange Rates

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In 2008 we introduced a semiannual series providing estimates of fundamental equilibrium exchange rates, or FEERs (Cline and Williamson 2008a). The economic concept of FEERs was first set forth by Williamson (1983). An operational method for arriving at multilaterally consistent estimates of FEERs was developed by Cline (2008) and has been applied over the past five years in this series of estimates. This issue marks the valedictory round of the series for Williamson, who is retiring.¹

The first section of this policy brief is devoted to an exposition of the main changes that have occurred in the international economy since our last set of estimates of FEERs, which was issued in May (Cline and Williamson 2012, referred to below as PB12-14). The second section updates our estimates of FEER targets to the most recent available information, namely the International Monetary Fund's balance of payments forecasts issued in the October 2012 issue of the *World Economic Outlook* (henceforth WEO; see IMF 2012b). The third section presents

1. For a retrospective on Williamson's contributions on exchange rate policy and a wide range of other economic issues, see the recent *Festschrift* edited by Bergsten and Henning (2012).

the results of the analysis. The final section contains comments on the IMF's recent *Pilot External Sector Report*, since it is directed at a similar range of problems to those with which we have been concerned.

We reiterate that our aim is to calculate a set of exchange rates that are desirable and not ones that we consider probable. That is, the exercise is wholly normative and not at all positive. The exchange rates are normatively desirable in the sense that, if achieved and sustained for a five-year period, they would be consistent with desirable external and internal balances in all the countries covered. This assumes that all countries would aim for, and achieve by the later years, internal balance.

We refer the reader to appendix A of PB12-14 for notes on the concept of the FEER and the nature of the model employed in undertaking these calculations.

DEVELOPMENTS SINCE APRIL 2012

The real effective exchange rate (REER) of the US dollar appreciated almost 4 percent from April (the base of our last review, which concluded that it was about 3 to 4 percent too strong) to June, but thereafter depreciated back until it was at virtually the same level in October as it had been in April. The surge and ebb reflected in part the vicissitudes of the European debt crisis, which worsened in the second quarter with adverse events in Greece and heightened concerns about banks in Spain, but then eased in the third quarter after the announcement of the European Central Bank's (ECB) program of Outright Monetary Transactions and the European Council and euro area summit decision to move to banking union. Table 1 shows the net movements of our currencies since April. In East Asia, a region that has tended to be undervalued in the past, real exchange rates remained almost unchanged for China and Malaysia, but appreciated modestly for Korea, the Philippines, Singapore, and Taiwan (and also for India). Like the dollar, the Japanese yen rose about 4 percent from April to July, likely also reflecting safe haven effects, and had kept about 1 percent of this increase by October. A notable change over the period was the depreciation of the Brazilian real, which we discuss in detail later. The Swiss franc also depreciated over the period, following the action of the Swiss authorities in capping its value at a rate of Swiss franc 1 = €1.20. The South African rand depreciated quite significantly, while smaller depreciations

occurred in Indonesia and Israel. Apart from modest appreciations of the Chilean peso and the Hungarian forint, all other currencies, including the euro and the Chinese renminbi, were close to their April values in October.

These exchange-rate movements took place within the context of a world economy that continued to be bifurcated. That is, most developing economies continued to be reasonably buoyant, although there was a dip in the growth rate of many emerging markets, while the advanced economies continued (with a few exceptions) to suffer major unemployment, low growth, and much slack. It is now becoming clear that the dip

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in the growth rate of the developing countries was a temporary phenomenon.² Unfortunately the same is not true of the slack in most advanced economies. Even apart from the European economies that continue to be mired in the sovereign debt crisis, the advanced economies as a group have large excess supply and weak fiscal positions.

Monetary policies have remained generally accommodating and expansionary. The United States has embarked on a new round of quantitative easing, for which it has been criticized for ignoring the exchange rate consequences. It may well deserve criticism for ignoring the exchange rate consequences, but given that fiscal policy is currently not available because of the debt situation, it is possible to conclude that the action was nonetheless right, given the need to stimulate the economy.

The European debt crisis continued to smolder on, though the immediate tensions were relieved by the announcements of the ECB in August and September. There seems little prospect of Germany agreeing to reflationary measures to stem the crisis. That means waiting until austerity has the effect of pricing the southern European countries back into competitiveness. There are signs that the competitiveness of the southern European countries is indeed improving, but it could be several years before the results become apparent in stronger growth statistics.

2. In one sense China is an important exception, because its growth has decelerated from an average of 11.2 percent annually in 2002–07 to 9.6 percent in 2008–11 and 7.8 percent in 2012, and is projected by the IMF to return to a plateau of 8.5 percent (IMF 2012b). In another sense China is an exception that proves the rule, considering that its prospective growth remains high by international standards.

Table 1 Changes in exchange rates, April to October 2012

Country	Percent change in REER	Percent change in nominal dollar rate
Argentina	-0.8	-7.0
Australia	-1.2	-0.5
Brazil	-7.1	-8.8
Canada	-0.3	0.6
Chile	2.8	2.1
China	0.3	0.7
Colombia	-1.7	-1.7
Czech Republic	-1.3	-1.9
Euro area	-1.1	-1.4
Hong Kong	-2.2	0.1
Hungary	4.4	3.3
India	2.7	-2.7
Indonesia	-3.7	-4.5
Israel	-2.3	-2.8
Japan	1.0	3.0
Korea	2.7	2.7
Malaysia	-0.4	0.3
Mexico	2.1	1.2
New Zealand	-0.2	0.2
Philippines	3.6	3.1
Poland	0.6	0.3
Singapore	3.4	2.3
South Africa	-8.0	-9.4
Sweden	1.3	1.5
Switzerland	-2.4	-2.0
Taiwan	2.0	0.8
Thailand	1.6	0.7
Turkey	0.3	-0.7
United Kingdom	1.3	0.6
United States	0.1	0.0

REER = real effective exchange rate

Source: Datastream; authors' calculations.

For long after that time, we are likely to continue to have a Europe that does not fully utilize its productive potential.

UPDATED EQUILIBRIUM EXCHANGE RATES

For the reasons discussed in appendix A, for this semiannual update of our FEERs estimates we have decided to calculate a full new set of FEERs based on the most recent round of the IMF's WEO, rather than retaining the spring estimates and

merely tracking exchange rate movements in the interim as in past fourth-quarter updates. This update is less comprehensive than the spring round in just two aspects: We have not attempted to calculate an alternative projection for the US current account, nor have we attempted to arrive at an independent judgment on the future path of oil prices, but instead have simply accepted the WEO projections on both counts.

We take as our point of departure the figures for exchange rates and current account projections published by the IMF in its October WEO (IMF 2012b). The statistical appendix to that publication contains projections of individual country current account positions on the technical assumption of no further changes in real exchange rates and IMF projections about the future of commodity prices.

Two main assumptions are used in estimating FEERs (apart from those embodied in the models we use, notably Cline's symmetric matrix inversion method, or SMIM).

The first is that in determining the baseline current accounts against which our targets are gauged, there are no further changes in (real) exchange rates. The same assumption is made by the IMF in its WEO. However, we update the WEO forecasts of 2017 current account balances to take account of exchange-rate changes between the IMF's base period of July 30 through August 27 (2012) and our base period of October.

The second main assumption concerns the objectives that macroeconomic policy pursues in each of the countries. We assume, uncontroversially, that all countries pursue the objective of internal balance. It is true that some countries (such as those in southern Europe and Ireland) are presently constrained from pursuing this objective by creditworthiness concerns, but we do not believe that their predicament is sufficiently general or long-lasting to negate the value of assuming that this is a general objective. They presumably do this by manipulating fiscal-monetary policy appropriately, thus offsetting changes in internal demand that result from pursuit of the external objective. This is not the same thing as ignoring internal balance and assuming that the authorities are only interested in pursuing external balance, as is sometimes (wrongly) inferred. In order to understand our results it is important to remember that we assume that the authorities manage internally generated demand so as to maintain continuous internal balance.

We also assume that countries pursue an objective of external balance, in the sense of a current account that does not differ from zero by more than 3 percent of GDP. It is true that in the era of floating exchange rates many countries have taken to proclaiming that they pursue no external objective. We doubt that this is either descriptively accurate or normatively sensible. What may well be true is that within wide margins (like within 3 percent of GDP) countries are content with the outcomes given by market forces, and we think it would not be advisable for the international community to interfere in their decisions. But

beyond some point countries do indeed become concerned, as they should. Admittedly our tolerance level of 3 percent GDP is to some extent arguable; it should in principle depend both on a country's stock position and on the form of the capital inflows that finance it. But there is a need to pick a specific number and 3 percent is clearly in the right ballpark for the level at which a current account deficit should spark concern.³ And if one has a constraint on deficits, then one also wants to constrain surpluses, or the sum of the global surpluses aimed for may greatly exceed the sum of global deficits aimed for. In the present context of high unemployment in most advanced countries, the presence of current account surpluses aimed for may have the effect of exporting unemployment in a beggar-thy-neighbor fashion, emphasizing the need to place some bound on surpluses.

We continue to decline to estimate FEERs for the oil exporters, on the grounds that at least some of them conceive themselves as exchanging oil in the ground for paper assets and that it would be contrary to the international interest to attempt to limit the size of their current account surpluses since the presumption is that they would satisfy such a constraint by curtailing oil output. We recognize that this is a weakness in the approach, but at present we do not have a solution.

The calculations of the new FEERs are shown in tables 2 and 3. Table 2 calculates the current account targets. The first column (shown purely for reference) shows the WEO estimates of this year's current account balance. Column 2 shows the WEO forecast of 2017 GDP in dollars at market exchange rates. Column 3 shows the IMF's projections of the 2017 current account balance as a percentage of that year's GDP. Column 4 shows our adjusted projection of the balance after taking account of the changes in exchange rates between the IMF's July/August base and our October base, and also deducting 4.1 percent from the estimated Swiss current account surplus to allow for the effect of international accounting conventions when applied to the case of Switzerland with its unusually high presence of multinational firms.⁴ Column 5 shows the target current account

3. For industrial countries, Freund (2000) found that reversals of deficits tend to begin around 5 percent of GDP and involve a slowdown of growth during the adjustment period. Mann (1999, 156) identified 17 episodes in the 1980s and 1990s when a widening of the current account deficit was reversed, and the average current account deficit was 4.5 percent GDP. Cline (2005, 172-74) argued that a prudent current account deficit for the United States was 3 percent of GDP, despite the past national advantage in earning more on assets than it paid on liabilities (reinforced on average by favorable valuation effects). For emerging-market economies, Reinhart, Rogoff, and Savastano (2003) identify 40 percent as a critical external debt/GDP ratio, beyond which countries may be liable to default. With emerging-market growth typically in the range of 4 to 5 percent and the world inflation around 2 percent in dollars, nominal GDP growth would be about 7 percent. Forty percent of this is about 3 percent, so their criterion translates into a current account deficit of about 3 percent of GDP.

4. By international accounting conventions, earnings retained abroad are attributed to the country in which the multinational firm in question is

Table 2 Target current accounts (CA) for 2017

Country	IMF projection of 2012 CA (percent of GDP)	IMF 2017 GDP forecast (billions of US dollars)	IMF 2017 CA forecast (percent of GDP)	Adjusted 2017 CA (percent of GDP)	Target CA (percent of GDP)
Pacific					
Australia	-4.1	1,787	-5.6	-4.9	-3.0
New Zealand	-5.4	195	-6.9	-6.8	-3.0
Asia					
China	2.3	13,212	4.3	4.3	3.0
Hong Kong	4.1	364	6.5	7.1	3.0
India	-3.8	3,171	-2.3	-3.1	-3.0
Indonesia	-2.1	1,843	-2.9	-2.2	-2.2
Japan	1.6	6,611	1.9	2.3	2.3
Korea	1.9	1,629	0.7	0.2	0.2
Malaysia	7.5	465	5.8	5.6	3.0
Philippines	3.0	346	1.8	1.9	1.9
Singapore	21.0	329	16.3	15.9	3.0
Taiwan	6.9	645	7.4	7.2	3.0
Thailand	-0.2	512	1.0	0.4	0.4
Middle East/Africa					
Israel	-2.1	323	1.2	0.8	0.8
Saudi Arabia	26.1	779	12.8	13.4	13.4
South Africa	-5.5	496	-5.9	-4.3	-3.0
Europe					
Czech Republic	-2.4	218	-2.0	-2.4	-2.4
Euro area	1.1	13,321	1.8	1.3	1.3
Hungary	2.6	158	-2.2	-2.2	-2.2
Norway	15.2	575	13.4	13.2	13.2
Poland	-3.7	623	-3.5	-3.6	-3.0
Russia	5.2	2,977	-1.1	-1.1	-1.1
Sweden	7.2	635	7.5	8.5	3.0
Switzerland	10.1	652	9.4	5.2	3.0
Turkey	-7.5	1,170	-7.9	-7.4	-3.0
United Kingdom	-3.3	3,098	-0.7	-0.5	-0.5
Western Hemisphere					
Argentina	0.3	553	-1.9	-1.3	-1.3
Brazil	-2.6	3,254	-3.3	-3.1	-3.0
Canada	-3.4	2,117	-3.0	-2.9	-2.9
Chile	-3.2	386	-2.7	-2.7	-2.7
Colombia	-2.9	482	-2.4	-2.1	-2.1
Mexico	-0.9	1,490	-1.1	-1.6	-1.6
United States	-3.1	19,745	-3.5	-3.1	-3.0
Venezuela	6.7	375	2.7	2.4	2.4

IMF = International Monetary Fund

Source: IMF (2012b); authors' calculations.

Table 3 Results of the simulation

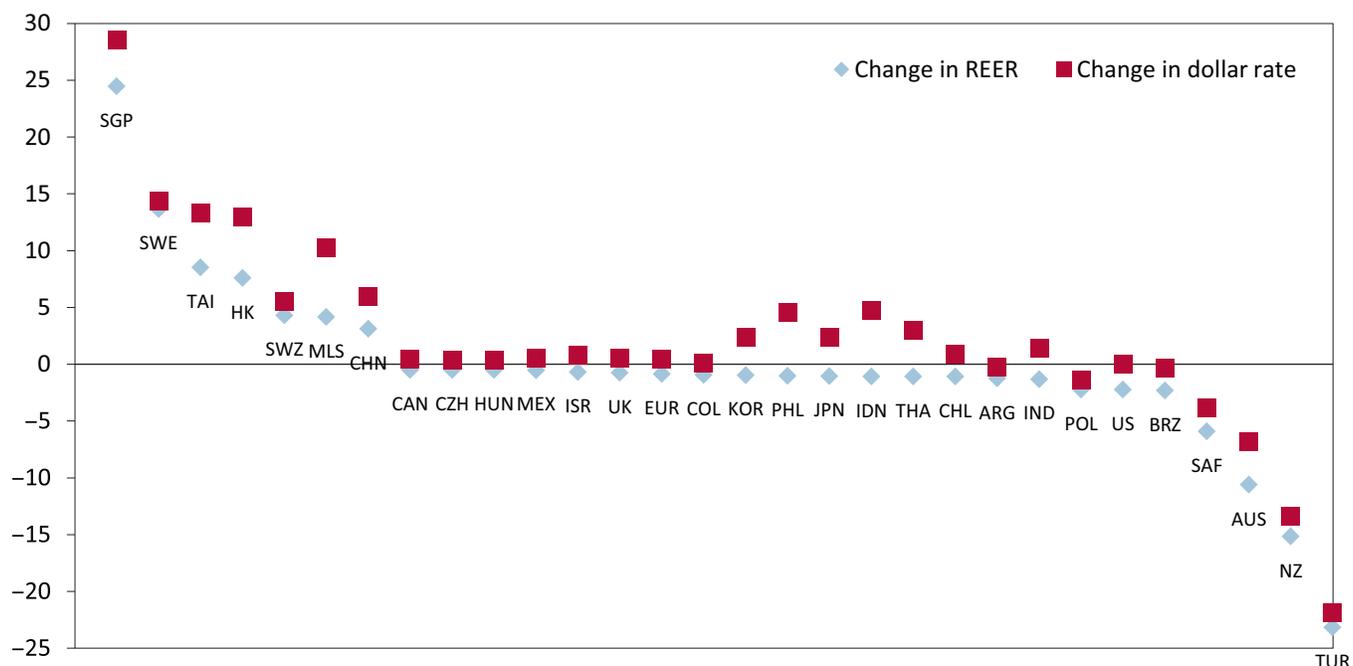
Country	Changes in current account as percentage of GDP		Change in REER (percent)		Dollar exchange rate		FEER- consistent dollar rate
	Target change	Change in simulation	Target change	Change in simulation	Actual, October 2012	Percentage change	
Pacific							
Australia*	1.9	2.2	-9.4	-10.6	1.03	-6.8	0.96
New Zealand*	3.8	4.1	-14.1	-15.2	0.82	-13.4	0.71
Asia							
China	-1.3	-0.9	4.2	3.1	6.26	5.9	5.91
Hong Kong	-4.1	-3.8	8.2	7.6	7.75	12.9	6.86
India	0.1	0.3	-0.4	-1.3	53.1	1.4	52.4
Indonesia	0.0	0.2	0.0	-1.1	9,593	4.7	9,160
Japan	0.0	0.2	0.0	-1.1	79	2.4	77
Korea	0.0	0.4	0.0	-1.0	1,106	2.4	1,080
Malaysia	-2.6	-2.1	5.2	4.1	3.05	10.2	2.77
Philippines	0.0	0.3	0.0	-1.0	41.4	4.5	39.6
Singapore	-12.9	-12.2	25.7	24.5	1.22	28.5	0.95
Taiwan	-4.2	-3.8	9.4	8.5	29.3	13.3	25.8
Thailand	0.0	0.5	0.0	-1.1	30.7	3.0	29.8
Middle East/Africa							
Israel	0.0	0.2	0.0	-0.7	3.86	0.8	3.83
Saudi Arabia	0.0	0.4	0.0	-0.8	3.75	2.2	3.67
South Africa	1.3	1.5	-5.2	-5.9	8.65	-3.8	8.99
Europe							
Czech Republic	0.0	0.2	0.0	-0.5	19.2	0.4	19.2
Euro area*	0.0	0.2	0.0	-0.9	1.3	0.4	1.30
Hungary	0.0	0.3	0.0	-0.5	217	0.3	217
Norway	0.0	0.2	0.0	-0.7	5.71	1.5	5.63
Poland	0.6	0.8	-1.6	-2.2	3.17	-1.4	3.21
Russia	0.0	0.1	0.0	-0.5	31.1	0.4	31
Sweden	-5.5	-5.2	14.4	13.7	6.64	14.4	5.81
Switzerland	-2.2	-1.9	4.8	4.3	0.93	5.5	0.88
Turkey	4.4	4.5	-22.5	-23.2	1.8	-21.9	2.31
United Kingdom*	0.0	0.2	0.0	-0.8	1.61	0.5	1.62
Western Hemisphere							
Argentina	0.0	0.3	0.0	-1.2	4.73	-0.2	4.74
Brazil	0.1	0.3	-1.0	-2.3	2.03	-0.4	2.04
Canada	0.0	0.1	0.0	-0.5	0.99	0.4	0.98
Chile	0.0	0.4	0.0	-1.1	476	0.8	472
Colombia	0.0	0.1	0.0	-0.9	1,806	0.1	1,804
Mexico	0.0	0.1	0.0	-0.5	12.9	0.5	12.8
United States	0.1	0.5	-0.6	-2.2	1.00	0.0	1.00
Venezuela	0.0	0.2	0.0	-0.7	4.29	1.0	4.25

*dollars per currency unit

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

Source: Authors' calculations.

Figure 1 Changes needed to reach FEERs (percent)



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, MEX = Mexico, MLS = Malaysia, 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: Authors' calculations.

imbalance. It is equal to a surplus or deficit of 3 percent of GDP or the actual projected imbalance where this is less in absolute value. Half of our 30 economies (excluding the oil exporters of Norway, Russia, Saudi Arabia, and Venezuela) showed projected imbalances of less than 3 percent of GDP and therefore are not called on to change their effective exchange rates.

Table 3 contains the essence of the calculations. Column 1 is derived from table 1, being the difference between columns 4 and 5 (with appropriate sign). Column 3 is column 1 divided by the impact parameter γ , which is Cline's estimate of the impact of a 1 percent change in the (effective) exchange rate on the current account balance, holding total demand constant. This column shows our estimate of how misaligned a currency was in October 2012, from the standpoint of the individual country. Column 4 shows our estimate of the corresponding multilater-

ally consistent change needed in the real exchange rate, which incorporates the effects of the constraint of global adding up. Column 5 shows the actual dollar exchange rates in the month of October (generally to three significant figures). Column 6 shows what change in the dollar exchange rate would have been needed, according to the SMIM model, to achieve equilibrium, assuming that all other currencies also move to equilibrium rates. (Comparison of columns 2 and 4 to columns 1 and 3, respectively, shows the degree to which it is possible for the SMIM model to achieve the individual country objectives of the exercise given the model's requirement of global consistency.) Column 7 is a direct product of columns 5 and 6.

The adding-up discrepancy caused by the world current account not summing to zero is automatically resolved by the SMIM model, obviating any need for us to make ad hoc adjustments.

RESULTS

Figure 1 shows the extent to which the several currencies that we deal with were out of line with their estimated equilibrium rates in October 2012. Currencies are listed according to the results

domiciled; only distributed earnings are attributed to the country of residence of the shareholder. Because many large multinational corporations (MNCs) are domiciled in Switzerland, and Swiss residents own only a portion of their shares, the treatment of retained earnings substantially overstates the current account income of Swiss residents. The corresponding overstatement in the other direction is widely distributed and proportionately much smaller (OECD 2007, 27).

in column 4 of table 3, with the most undervalued currencies (requiring the largest appreciation) appearing at the left and the most overvalued (requiring the most depreciation) at the right. The figure also shows the extent to which FEER-consistent dollar rates are out of line, from the estimates presented in columns 5 and 7 of table 3.

Turkey is judged as the country with the most overvalued currency. This is ironic, given that Fitch recently upgraded Turkey to investment grade. We believe that investors in Turkey need to recognize that at some stage they are likely to face losses on their investments, and that credit-rating agencies need to recognize that Turkey's situation has this element of precariousness hanging over it.

The next most overvalued currency is reckoned to be the **New Zealand** dollar, with the **Australian** dollar not far off. We have commented before that we believe the authorities of these two countries are excessively complacent regarding their overvaluations.

The overvaluation of the **South African** rand is now only about half as great as it was in our last review. This is primarily because of the depreciation of the rand shown in table 1. We welcome this depreciation.

The **Polish** zloty and the **Indian** rupee are also shown as marginally overvalued. We do not believe that the countries involved should take any action, but the situation bears watching.

The **Brazilian** real and the **Argentine** peso are also reckoned to be marginally overvalued. Argentina will pay a price for attempting to restrain inflation by not fully devaluing to match inflation if it persists with this policy. It is worth remarking that Brazil was not reckoned to be overvalued last time. Yet despite the fact that (as table 1 shows) there was a large depreciation of the real in the interim, we do not find that it has entered into undervaluation. There are two reasons for this paradox. One is the issue of "path dependency" in our method, which is discussed in appendix A. The other is that the IMF made essentially no adjustment in its forecast of the Brazilian current account in 2017.⁵

The **euro** is shown to be about right. There is a feeling in parts of Europe that the euro ought to depreciate as a contribution to resolving the European crisis. That it would be helpful to this end is undoubtedly true, although about half the benefit would accrue to the chronic surplus countries that have no need

5. It cut the forecast current account deficit for 2017 by only 0.1 percent of GDP. If one takes seriously the statement that IMF forecasts are constructed on the assumption of no changes in future real exchange rates, this suggests that it believes the Brazilian impact parameter γ is a de minimis -0.012 , as opposed to Cline's estimate of -0.16 . If it were generally true that the IMF country desks ignore the exchange rate in their forecasting, that would cast doubt on the validity of our whole exercise, which is premised on reasonability of the medium-term WEO forecasts in the absence of further exchange rate changes.

of a stronger current account and little need of stronger demand. One may doubt whether the market will spontaneously take the euro down, or whether if not the ECB will be prepared to deploy policy instruments (like accumulating reserves) to achieve that end. But the point that our analysis emphasizes is that in order to increase the European current account balance it is necessary that current accounts elsewhere in the world need to deteriorate. In practice, a substantial part of the deterioration would be likely to fall on the United States, pushing the US external deficit back to excessive levels and thus both imposing a beggar-thy-neighbor impact boosting US unemployment and increasing the risk of a mega-crisis down the road. One facet of having a common currency is that its external value is the same for all participants and is determined by the needs of the group as a whole. In our judgment that criterion is satisfied by the present value of the euro. Adjustment is an intra-European problem that should not be resolved at the expense of third countries.

The **United States** dollar is also shown as marginally overvalued, but the extent of overvaluation is far less than it has been in the past, and less even than in our last estimate. This is despite the fact that the US dollar appreciated slightly between April and October of this year (table 1). Of course, the depreciation needed to achieve a more ambitious payments objective than a 3 percent deficit would be larger.⁶

The **Chinese** renminbi is again shown as somewhat undervalued, as it was in our last results. As discussed in PB12-14, the disequilibrium estimated is far smaller than it was before the IMF revised its forecasts.⁷

Several other East Asian countries' currencies, like those of **Hong Kong**, **Malaysia**, and **Taiwan**, are also shown as undervalued. The most notable change here is that the Malaysian undervaluation has been significantly reduced, as a result of a revision in the IMF forecast.⁸

Switzerland is again shown to be undervalued, in sharp distinction to the IMF proposition that the Swiss franc is overvalued. We comment on this in the final section.

The European currency that needs the largest revaluation is, once again, estimated to be the **Swedish** krona.

6. If target current account balances were set at zero not just for the United States but also for China and Japan, their respective target changes in 2017 current accounts would amount to +3.1 percent of GDP, -4.3 percent of GDP, and -2.3 percent of GDP. Applying their γ impact parameters, the target changes in real exchange rates would amount to a depreciation of 14.8 percent for the United States and appreciations of 14.3 percent for China and 14.9 percent for Japan.

7. Thus, in the April 2011 WEO, the IMF projected the 2016 current account surplus at 7.8 percent of GDP; in the April 2012 WEO, it cut the 2016 estimate to 3.9 percent (IMF 2011, 2012a).

8. The April 2012 WEO placed Malaysia's 2017 surplus at 8.6 percent of GDP; the October WEO placed it at 5.8 percent.

The largest revaluation overall, according to our estimates, once again needs to be undertaken by the **Singapore** dollar.

In Gagnon (2012), our colleague names 12 of “our” 30 non-oil countries as foreign currency “manipulators”: Hong Kong, Israel, Japan, Korea, Singapore, Switzerland, Taiwan, Argentina,⁹ China, Malaysia, Philippines, and Thailand. To be labeled a manipulator, a country has to have: reserves above six months of imports; had a positive current balance over the period 2001–11; increased reserves proportionately more than GDP over the last decade; and not be low income. There are important overlaps with our currencies that are labeled undervalued (Hong Kong, Singapore, Switzerland, Taiwan, China,

The countries that [Gagnon] labels manipulators, which we do not consider undervalued, often fall within our 3 percent of GDP tolerance limit (like Israel, Philippines, and Thailand), but the backward-looking nature of his criteria means that they also tend to be countries that do not seem likely to have large surpluses in the future (like Japan, Korea, and Argentina).

and Malaysia). But there are also differences; he labels Israel, Japan, Korea, Argentina, Philippines, and Thailand as manipulators, while he misses Sweden (as well as all cases of overvaluation). The countries that he labels manipulators that we do not consider undervalued often fall within our 3 percent of GDP tolerance limit (like Israel, Philippines, and Thailand), but the backward-looking nature of his criteria means that they also tend to be countries that do not seem likely to have large surpluses in the future (like Japan, Korea, and Argentina). It is the backward-looking nature of the criteria, in association with the fact that the market rather than the government is responsible for the undervaluation, that causes him to overlook the Swedish krona.

THE IMF'S PILOT EXTERNAL SECTOR REPORT

In July 2012, the IMF issued its first External Sector Report (ESR). This parallels our own work in certain respects, which has led us to offer this comparison. We very much welcome the fact that the IMF is intending to strengthen its surveillance by predicting current account imbalances and comparing predicted

9. Argentina is omitted in his subsequent work, since it was already close to the line but is pushed beneath it by updated statistics.

imbalances and exchange rates with those implied by a norm (IMF 2012c, 2012d), but we have certain reservations about the development of these norms.

The new approach is an outgrowth of the Fund's previous work on exchange rate surveillance within its Consultative Group on Exchange Rate Issues, or CGER (see Lee et al. 2008). As before its methodology applies three approaches: the macro-economic balance approach, which is most similar to ours; what amounts to the behavioral equilibrium exchange rate (BEER) approach; and a debt sustainability approach that examines current account levels needed to keep the ratio of net foreign assets (NFA) to GDP unchanged in the future. In aiming to dispense advice on anti-cyclical policy, the new effort of the Fund differs from both its predecessor and our approach. Explicit attention to cyclical adjustment is a useful advance. Although our own approach does not incorporate cyclical adjustment, our use of five-year-forward current account estimates rather than prior year actual current account levels means that we have much less need to do so. That is, the medium-term WEO projections broadly assume elimination of business cycle gaps over the five-year horizon.¹⁰

The new IMF work applies panel regressions to 50 countries for 1986–2010 to estimate cyclically adjusted current account balances (relative to GDP) as a function of several variables, including NFA relative to GDP, per capita GDP (purchasing power parity), oil trade for large oil exporters, the speed of aging of the population, the social safety net as proxied by public health spending relative to GDP, the output gap, the cyclically adjusted fiscal balance, a measure of global financial market risk aversion, and the joint presence of capital controls and reserve changes. The equation includes a shift variable for financial centers that sharply boosts their expected current account, although the authors reveal considerable doubt about its justification.¹¹ It does not, however, contain a variable for the exchange rate.

With this “positive” (i.e., factual-empirical) equation in hand, the ESR then essentially treats departures from the predicted current account (given country characteristics) as the “current account gap,” which is equal to the regression residual plus the impact of policy distortions. The latter is calculated as the product of a series of policy departures from international norms (for example, deviation of the fiscal balance from the norm) multiplied by the regression equation parameters for the respective policies.

10. Thus, for those of our economies for which the WEO includes 2017 projections of output gaps—the United States, euro area, Japan, United Kingdom, and Canada—the GDP-weighted output gap falls from –3.1 percent of GDP in 2011 to –0.3 percent in 2017 (IMF 2012b).

11. Thus, the authors write: “The use of a financial center dummy follows tradition and serves the purpose of avoiding potential bias in estimates of other regression coefficients, but otherwise does not advance the understanding of assessment of the CAs of such economies, which remains problematic” (IMF 2012d, 7).

While the current account regression gives the macro-balance component of the ESR approach, it appears that a corresponding cross-country regression on the real effective exchange rate (REER) relies on the second, “BEER,” approach. In this equation country-specific intercepts are allowed, and the variation of the REER for the given country is strictly against its own long-term average rather than against an international comparator. As such, this approach suffers from the implicit assumption that, on average over time, every country has the “right” real exchange rate, whereas a country pursuing a consistent mercantilist strategy is in fact chronically undervalued.¹² The final “sustainability” approach identifying the current account needed to perpetuate the present ratio of NFA to GDP similarly assumes that economies that have built up massive external assets as a consequence of persistent mercantilism need to maintain outsized surpluses in the future. There is nothing in the final two approaches which guarantees consistency with the first.

The Fund then combines the approaches (presumably the first and third) to identify a range, for each major economy, of the extent to which its current account balance departs from the level that would be justified based on international norms. Similarly, the Fund apparently uses the second approach to calculate the REERs supposedly consistent with fundamentals and desirable policies.¹³ Typically there is a 2 percent of GDP range of ambiguity around the central estimate for the current account, and a 5 to 10 percent range for the exchange rate (IMF 2012c, 11). A striking result, however, is that the majority of economies are found to have meaningful imbalances. Of 28 major economies, for the 2011 base year used in the ESR, only six are centered on a zero departure of their cyclically adjusted current accounts “from those consistent with fundamentals and desirable policies.” The departures range from a maximum excessive balance of 4 to 6 percent of GDP (Malaysia) to a maximum excessive deficit of 3 to 5 percent of GDP (Spain). The report thus finds that “Policy actions are needed across many countries, as most of the analyzed economies have balances that are to some degree out of line with fundamentals” (IMF 2012c, 1).

In an impressive display of transparency, moreover, the IMF report presents country-specific estimates of the appropriate versus actual current account balances for the major economies. After translating from the Fund’s graphical display, these are reported in table 4.

12. For discussion of the earlier CGER methods, see Cline and Williamson (2008b).

13. It is not clear in the Fund’s ESR exactly how each of the three methods enters into the calculation of the “desirable adjusted for policies” norm for the country’s current account and for its exchange rate. Applying the current account equation norm as an input to calculating the exchange rate deviation from norm would seem to require some set of parameters relating the current account to the exchange rate, yet the Fund’s approach conspicuously omits such parameters.

The Fund’s analysis leads it to conclude, for example, that the “desirable” current account balance for China should be only +0.7 percent of GDP, far below the surplus of about 2.5 percent of GDP in 2011. The desirable balance for the United States is –2.6 percent of GDP, whereas that for Japan is +2.9 percent. The contrast between the United States and Japan presumably reflects the more rapid aging of the population in Japan than in the United States. But the Fund does not explain why a country with low per capita income like China (or Thailand) should be a capital exporter while the United States is a capital importer. Also, the financial center shift variable contributes to causing

[In the IMF’s new *Pilot External Sector Report*] the financial center shift variable contributes to causing the desirable current account target to be set at 20 percent of GDP for Singapore and 15 percent of GDP for Switzerland...an acute instance of the problem of conflating positive and normative analysis.... Excluding Switzerland, the ESR tends to call for major appreciations (depreciations) in the same cases as in the estimates here.

the desirable current account target to be set at 20 percent of GDP for Singapore and 15 percent of GDP for Switzerland. The financial sector shift variable is an acute instance of the problem of conflating positive and normative analysis.

It seems unlikely that the new IMF point-estimates of external balance targets based on a set of cross-country regressions will (or even should) lead to forceful efforts to adjust to those targets. The broader latitude of the +/- 3 percent of GDP current account that we have used in the FEERs estimates dating back to 2008 would constitute an already ambitious first step for the international community for limiting imbalances.

It is useful to compare the results in the estimates of the present study with those of the IMF’s ESR. Figure 2 shows this comparison for the needed change to reach fundamental equilibrium in the current account. Thus, on the x-axis, we show the needed change in current account at +4.5 percent of GDP for Turkey (against the 2017 baseline projection); the ESR shows the needed change at +3.3 percent of GDP (against the cyclically adjusted 2011 outcome). For the estimates from the present study, the concept used is the change in the simulation.

Table 4 IMF Pilot External Sector Report estimates of actual, cyclically adjusted, and target current accounts, 2011 (percent of GDP)

Country	Actual	Cyclically adjusted	Desirable: Adjusted for policies
Australia	-2.3	-2.9	-0.8
Brazil	-2.2	-1.8	-0.8
Belgium	0.0	0.9	0.9
Canada	-2.8	-3.4	-1.9
China	2.8	3.2	0.7
Euro area	0.3	0.9	1.3
France	-2.2	-2.2	-1.3
Germany	5.6	7.2	2.5
India	-3.4	-1.6	-1.6
Indonesia	0.3	0.6	-1.6
Italy	-3.2	-2.8	-0.9
Japan	1.9	1.6	2.9
Korea	2.2	4.4	1.9
Malaysia	11.3	11.2	6.2
Mexico	-0.6	-0.6	-0.6
Netherlands	7.5	8.1	6.3
Poland	-4.4	-3.1	-3.1
Russia	5.3	4.4	5.3
Singapore	22.4	24.8	20.1
South Africa	-3.2	-3.2	-1.9
Spain	-3.8	-3.8	0.3
Sweden	6.9	8.1	5.0
Switzerland	13.8	15.1	15.1
Thailand	3.4	3.4	0.5
Turkey	-10.0	-7.3	-4.0
United Kingdom	-1.9	-2.2	-0.7
United States	-3.1	-4.1	-2.6

IMF = International Monetary Fund

Source: IMF (2012c, 14).

The concept applied in the ESR is the change needed to reach levels “consistent with fundamentals and desirable policies.” The point estimate shown here is the center of the range shown in the ESR. Figure 3 shows the corresponding comparison for target changes in the real effective exchange rate in this study (again, the simulation result) against the corresponding target changes in the IMF ESR. Both figures also show the 45° line along which the two studies would give identical results.

Outright opposite results occur in the northwest and southeast quadrants. There is only one significant case where this occurs: that of Switzerland for the exchange rate (figure 3).

(The small devaluations shown as desirable for countries like Indonesia are an artifact that results from applying the SMIM model.) Our FEERs estimate calls for a real appreciation of the effective exchange rate of Switzerland by over 4 percent; the ESR calls for a depreciation (its central estimate is about 10 percent). These, together with the limited size of the revaluations called for in the cases of Singapore and Hong Kong, are results of the use of a financial center dummy with no rationale plus the assertion that having a current account surplus in the past is a good reason for having one in the future. For a country at full capacity with a large current account surplus, actual and prospective, to be told that it is overvalued makes no sense.

Excluding Switzerland, the ESR tends to call for major appreciations (depreciations) in the same cases as in the estimates here. Thus, Turkey is seen in both studies as needing a sizable depreciation; Singapore, a sizable appreciation. However, there are important differences. The size of the appreciation estimated for Sweden and especially Singapore is much smaller than that estimated here, a divergence that also applies to Hong Kong. In contrast, the ESR identifies larger depreciations needed for Brazil and South Africa than estimated here.

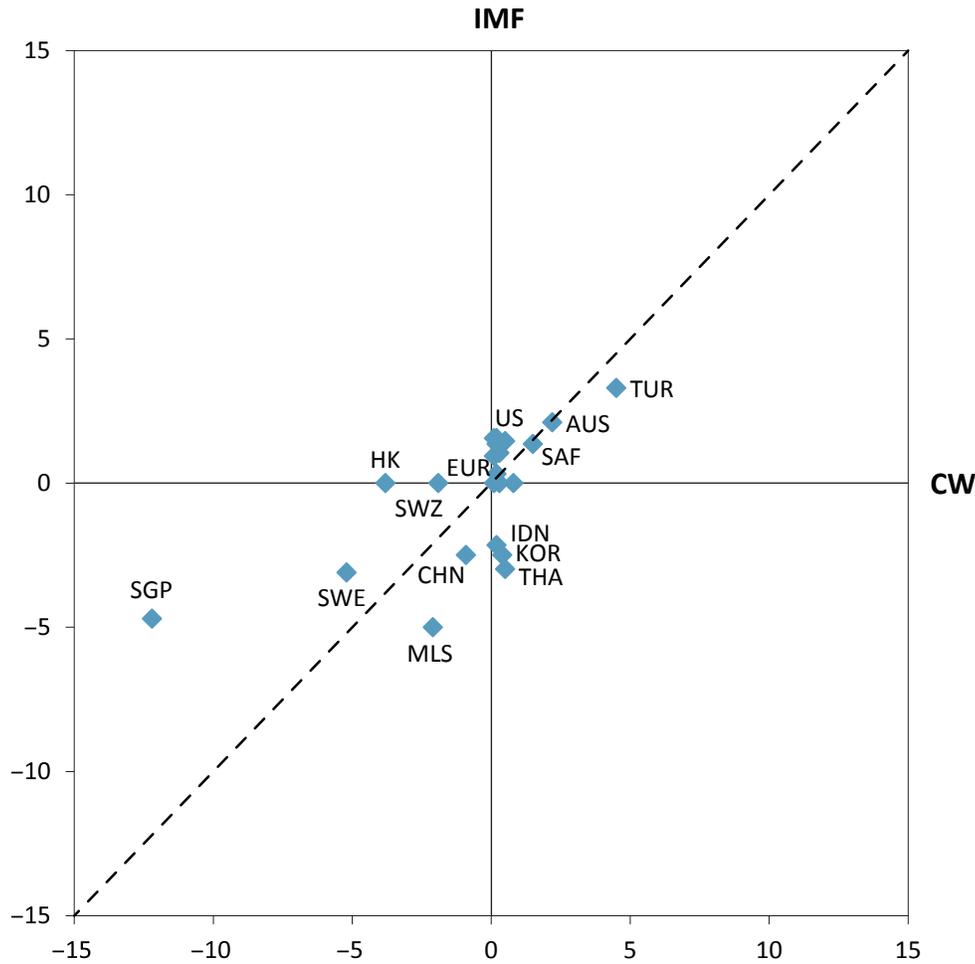
Another difference in the results is the clustering of a number of economies along the zero-change axis in the present study (strung along the vertical axis), in contrast to a dispersion of estimates away from the zero-change axis in the ESR (there is almost no clustering of ESR estimates along the horizontal axis). This difference stems directly from the wide range of latitude that we allow for the current account to be in fundamental equilibrium: between plus and minus 3 percent of GDP.

For the two important cases of the United States and China, the two studies differ but not radically so. The centerpoint of the IMF’s real effective exchange rate change needed for China is +7.5 percent; the (simulation) estimate here is +3.1 percent. For the United States, the ESR estimates the need for a real effective exchange rate change of –5 percent; the estimate here is –2.2 percent.

Finally, it is important to highlight the fact that the IMF’s approach usefully decomposes the sources of current distortions in the external balance and exchange rate in a manner that we do not attempt. They divide these sources into “fiscal,” “social protection,” “capital controls and intervention,” and “other.” For China, capital controls and intervention boost the current account by 2 percent of GDP; the lack of social protection boosts it by another 1.2 percent of GDP; tight fiscal policy increases it by an additional 1.0 percent of GDP. However, “other distortions” reduce it by 1.8 percent of GDP, leaving the overall excess current account at 2.4 percent of GDP (IMF 2012c, 15).¹⁴ The

14. Note that the Fund’s estimate of the excess surplus or deficit (which it calls the “current account gap”) is equal to the difference between the second and third columns of table 4, except for rounding errors.

Figure 2 Target changes in current account: Cline-Williamson and IMF *Pilot External Sector Report* (percent of GDP)



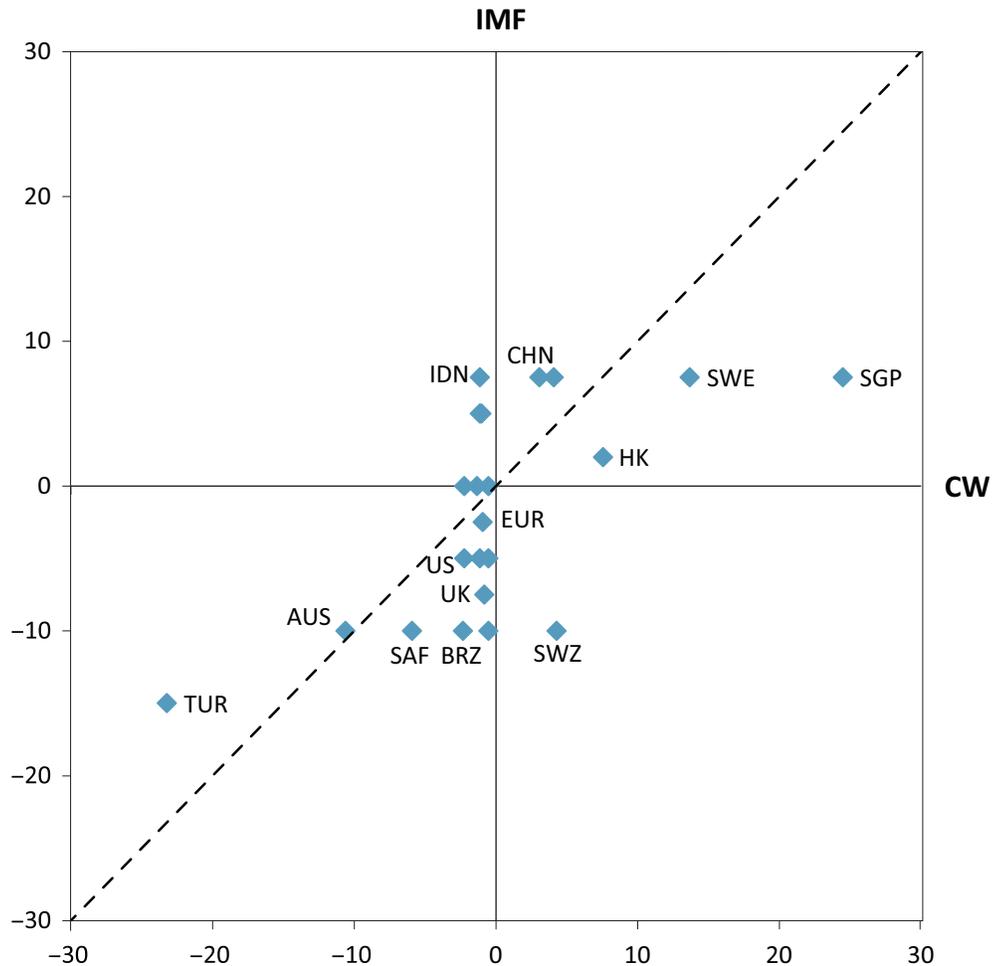
IMF = International Monetary Fund
 Note: For country abbreviations, see figure 1.
 Source: IMF (2012c); authors' calculations.

United States has an overall excessive current account deficit of 1.5 percent of GDP. Its sources are excessive social protection (as measured by health spending), contributing 0.7 percent of GDP; loose fiscal policy, contributing 0.6 percent of GDP; and (curiously) “capital controls and intervention” contributing 0.4 percent of GDP. “Other distortions” provide a slight offset of 0.2 percent of GDP boost to the current account.

We suspect that the somewhat black-box nature of these estimates means that at best they will serve as a point of departure for discussions about policy corrections needed for external adjustment, rather than providing more concrete guidelines. It is also important to keep in mind that the distortions they measure are gauged against international norms calculated as GDP-weighted averages. There are surely cases where such averages do not provide a good guide to whether the country in question is deviating from good policy.

In revising its estimating procedures, we believe that the Fund should (a) give explicit attention to the path of the real exchange rate over time as an influence on the current account, rather than omitting the exchange rate from the current account equation; (b) ensure consistency between the estimated misalignments in exchange rates and the deviations of projected current account imbalances from country norms; (c) either explain or drop the “financial center” variable; and (d) eliminate the NFA variable as a factor justifying a large current account surplus. The latter recommendation amounts to a plea to distinguish sharply between what is normatively desirable and what has happened in the past. We believe that policy recommendations should be based on the former and not the latter.

Figure 3 Target changes in real effective exchange rate to reach fundamental equilibrium: Cline-Williamson and IMF *Pilot External Sector Report* (percent)



IMF = International Monetary Fund
 Note: For country abbreviations, see figure 1.
 Source: IMF (2012c); authors' calculations.

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APPENDIX A

PATH DEPENDENCY AND POTENTIALLY WIDE RANGE OF THE FEER ESTIMATE

The purpose of this appendix is to clarify that any given estimate of “the” FEER of a currency must be carefully interpreted when reaching any judgment about any subsequent misalignment of the currency because of changes in exchange rates subsequent to the base period of the estimate. Specifically, the two facts that: (a) a currency is judged to be “at” its FEER in the base period, and (b) that currency then appreciates (depreciates) substantially over an intervening time period may or may not imply that (c) the currency has become overvalued (undervalued) by the end of the intervening time period. The reason is that the country may have been anywhere within a relatively wide band of acceptable current account positions in the base period. Only if it were at the extreme upper bound (+3 percent of GDP) would a subsequent effective depreciation necessarily mean that it had become undervalued; and only if it were at the extreme lower bound (–3 percent of GDP) would an effective appreciation necessarily mean that it had become overvalued. Because the country’s position in the base period affects the judgment on the appropri-

ateness of the evolution of its exchange rate subsequently, the method may be said to be “path dependent.”

This issue has become highlighted in this particular round of the FEERs estimates because of the anomalous case of Brazil. We were already concerned in our spring issue that the real might be somewhat overvalued even though the IMF’s medium-term projection showed its current account deficit approximately compatible with the FEER for the currency. We worried that the Fund’s current account projection of a deficit of about 3 percent of GDP was overly optimistic.

Since then, the real has depreciated substantially, falling by about 11 percent in real effective terms from mid-February/mid-March (the spring WEO base) to October, and by about 7 percent from April (our FEERs base in our May issue) to October. It would be problematic, however, to conclude that because the real was judged to be at its FEER in April and has since depreciated substantially, that by October it had become undervalued. A part of this problem, as noted in the main text, is apparent inconsistency in the IMF forecast. Another part of the problem is that this case reveals the potential for misinterpretation of whether a currency has become under- or over-valued when the approach is to update an earlier benchmark by tracking exchange rate changes (our usual approach in the second issue of the year) instead of carrying out a full-fledged model estimate based on the latest current account projections (our approach for the first issue each year and for this current issue as well). That is, Brazil illustrates the path-dependency problem summarized in the first paragraph of this appendix.

Brazil was indeed at one end of the acceptable current account range when we calculated its FEER in our spring issue. Because it has a relatively low impact parameter, a swing in its current account all the way to the opposite end of the acceptable current account range (i.e., from –3 percent of GDP to +3 percent) would have needed the currency to depreciate by as much as 37.5 percent (= 6 percent/0.16) in order to be judged undervalued.

The simplest way to address the path dependency problem, and its potential for sending inappropriate signals that a currency has become overvalued or undervalued because it has appreciated or depreciated during the time interval since the most recent full estimate of FEERs, is to prepare full new estimates of FEERs each time they are measured, rather than drawing inferences from the exchange rate trends since the previous full estimate. For this reason this update carries out a full reestimation of FEERs, based on the new round of IMF current account projections.

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