



Estimates of Fundamental Equilibrium Exchange Rates, May 2022

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This study updates estimates of Fundamental Equilibrium Exchange Rates (FEERs) using April 2022 as the base month. These new estimates take as their point of departure the most recent issue of the World Economic Outlook (WEO) of the International Monetary Fund (IMF, 2022a). I apply the real effective exchange rate series of the Bank of International Settlements (BIS, 2022a) to take account of changes in real exchange rates subsequent to the base period used in the WEO.

Trends in Exchange Rates

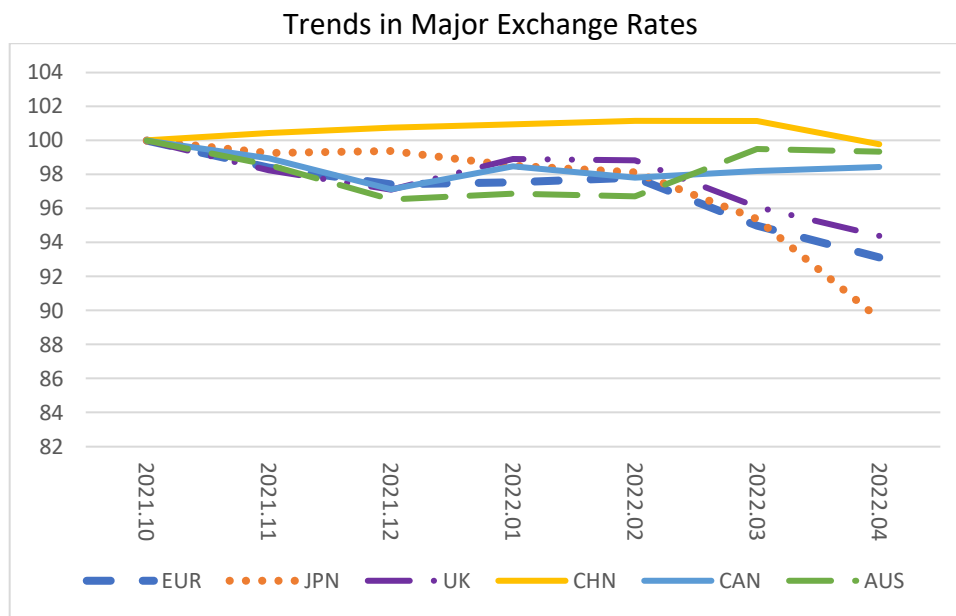
In recent months the US dollar has strengthened substantially, reflecting a shift in monetary policy toward curbing persistent inflation rather than assuming higher prices were only temporary consequences of the pandemic, as well as a safe-haven effect of the Russian invasion of Ukraine in late February. From end-2021 to May 23, 2022, the dollar rose from 1.14 to 1.07 dollars per euro, from 1.35 to 1.26 dollars per pound sterling, and from 115 to 128 yen per dollar. The Federal Reserve's broad real index for the dollar rose by 2.1 percent from December 2021 to April 2022 (Federal Reserve, 2022).

Figure 1 shows the paths of six major currencies against the US dollar from October 2021 through April 2022 (indexed to 100 for October). Only the Chinese yuan avoided a decline against the dollar in this period. The largest decline was for the yen, which fell by about 11 percent against the dollar. The decline for the euro against the dollar was about 6 percent, and that of the pound sterling, about 7 percent. However, the Australian and Canadian dollars declined only about 1 to 2 percent against the US currency, and the Chinese yuan held flat against the dollar. For its part, the International Monetary Fund substantially strengthened its forecast of dollar strength against the yen and euro for 2022 and 2023.²

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² In the October 2021 WEO, the Fund placed the euro at \$1.208 for 2022; by April, it had cut the forecast to \$1.114. The corresponding shift for the 2022 forecast for the yen was from 106.7 to 114.7 per dollar. By May the actual changes had already substantially surpassed both of the forecast changes. IMF (2021b, p. 83; 2022b, p. 109).

Figure 1



Source: calculated from FRED (2022)

Figure 2 shows the 10-year government note interest rate for the US, Japan, and the euro area average. The rise in the US rate from about 150 basis points in the last quarter of 2021 to about 275 basis points by April reflected the move toward monetary tightening. Quantitative easing during the pandemic will now shift to quantitative tightening. Monthly purchases of treasury and agency-backed obligations averaged about \$120 billion during March 2020 through March 2022. These purchases will now phase down, so maturing obligations will cause net redemptions capped at \$48 billion monthly in June-August 2022 and then \$95 billion monthly during September 2022 – December 2023 (Ihrig and Wolla, 2022).³ The figure shows that euro area interest rates have also risen, but those of Japan have remained little changed.

Among the other economies covered in the FEERs estimates, recent trends in the currencies of Russia, Turkey, and Brazil warrant special mention.

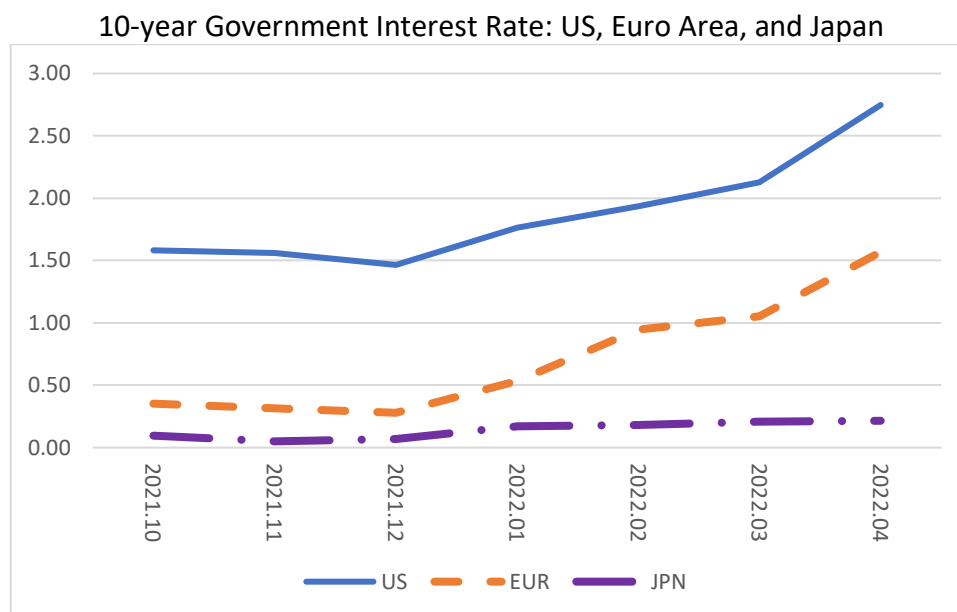
Russia's invasion of Ukraine in late February brought almost immediate economic sanctions imposed by the United States, European Union, Japan, Switzerland, Australia, Taiwan, United Kingdom, Canada, and by mid-March more than 30 countries were imposing sanctions. The banning of major Russian banks from the SWIFT international payments system was a key instrument.⁴ From a level of about 76 per dollar in the first few weeks of 2022, by the second

³ About two-thirds of the purchases, and prospectively the redemptions, are in treasury obligations, and about one-third in agency-backed obligations. Securities holdings of the Federal reserve approximately doubled from \$3.9 trillion in March 2020 to \$8.5 trillion in May 2022.

⁴ See Michelle Toh et al, "The list of global sanctions on Russia for the war in Ukraine," CNN, February 28, 2022, and White House Fact Sheet, "United States, European Union, and G7 to Announce Further Economic Costs on Russia," March 11, 2022.

week of March the rouble had fallen to almost 140 per dollar, before returning to about 80 per dollar in early April. However, the rouble then gradually strengthened to about 60 per dollar by late May.⁵ Capital controls imposed by Russia were a major reason, along with currency conversions by export-oriented companies for payment of taxes.⁶

Figure 2



Source: FRED (2022)

More fundamentally, the sharp increase in oil prices that the invasion precipitated provided prospects of a stronger rather than weaker trade balance. Whereas the October 2021 WEO had projected Russia's 2022 current account surplus at \$75 billion, the April 2022 WEO boosted the forecast to a surplus of \$227 billion (IMF, 2021a, 2022a), likely reflecting a reduction in imports as well as an increase in export earnings.

The *Turkish Lira* fell against the US dollar by 37 percent from October 2021 to April 2022. This sharp decline partly reflected relatively high inflation in Turkey (projected at 60 percent for 2022 in the April WEO; IMF, 2021a). However, it also represented the shift of President Erdogan to a lower-interest rate policy under his view that high interest rates cause high inflation, and currency risk from low foreign exchange reserves (Cline, 2021, p. 32).

From October 2021 to April 2022, the *Brazilian Real* rose 16 percent against the dollar. The real effective exchange rate (REER) for the real rose 21.2 percent (BIS, 2021a). The appreciation largely reversed the sharp depreciation of the currency in the pandemic years 2020 and 2021.⁷ A proximate cause was the sharp increase in domestic interest rates to deal

⁵ See Yahoo Finance data for RUB=X.

⁶ "Russian rouble firms past 57 to the dollar for first time in four years," *Reuters*, May 24, 2022.

⁷ From its 2019 level, the REER for the real fell 20.5 percent in 2020 and another 2.7 percent in 2021 (BIS, 2022a).

with rising inflation (projected at about 8 percent for 2022; IMF, 2022a). The central bank has raised the policy interest rate (SELIC) from 2 percent in early 2021 to nearly 13 percent, making Brazil a rare major market with at least slightly positive real interest rates and attracting foreign capital. Brazil has also benefited from higher prices for raw material exports (including maize, soybeans, iron ore, and oil).⁸

Inflation Accelerates

The pace of inflation in most major economies has accelerated sharply in recent months. The Covid-19 pandemic shifted aggregate supply curves backward to the left, as lockdowns and then supply chain bottlenecks hindered production. At the same time, large pandemic relief expenditures pushed aggregate demand curves out to the right (especially in the United States). Until late 2021 the dominant diagnosis of “temporary” price increases delayed a shift toward tighter monetary (or fiscal) policies to guard against inflation. An extremely tight labor market in the United States has raised the likelihood of upward pressure on wages that tend to perpetuate the higher inflation rate.

For the first few months of 2022 the pace of inflation has accelerated, rather than falling as would have been expected if the pandemic price shock had been simply transitory. It is well known that in the United States, the inflation rate calculated from one year earlier reached over 8 percent in March and again in April, the highest levels in 40 years. What is not widely recognized, however, is that the rate has accelerated during the past few months to a double-digit annual pace, not only in the United States but also in the euro area and the UK. For these four economies, panel A of figure 3 shows the annual rate of inflation from the same month a year earlier. Panel B instead shows the annualized rate of inflation reached in the month in question when based on comparison of prices to three months earlier rather than a year earlier. By April, these rates had reached 16 percent annually in both the euro area and the UK, with a sharp surge reflecting in part the oil price shock precipitated by the Russia-Ukraine war. The three-month pace reached an annual rate of 11 percent in March and 10 percent in April in the United States, and above 5 percent in April even in Japan.

Table 1 reports full year-over-year consumer price inflation for 2020 and 2021 for most of the economies covered in the FEERs series. The final column reports the annual pace of inflation that would occur in 2022 if the pace over the past 6 months were to continue throughout the year. This rate is calculated by comparing consumer price indexes for April against their corresponding levels in October 2021, and then extrapolating this pace (implicitly measuring prospective inflation from October 2021 to October 2022).⁹ Of the 31 countries with data available, only one – Saudi Arabia – shows a decrease rather than an increase from the

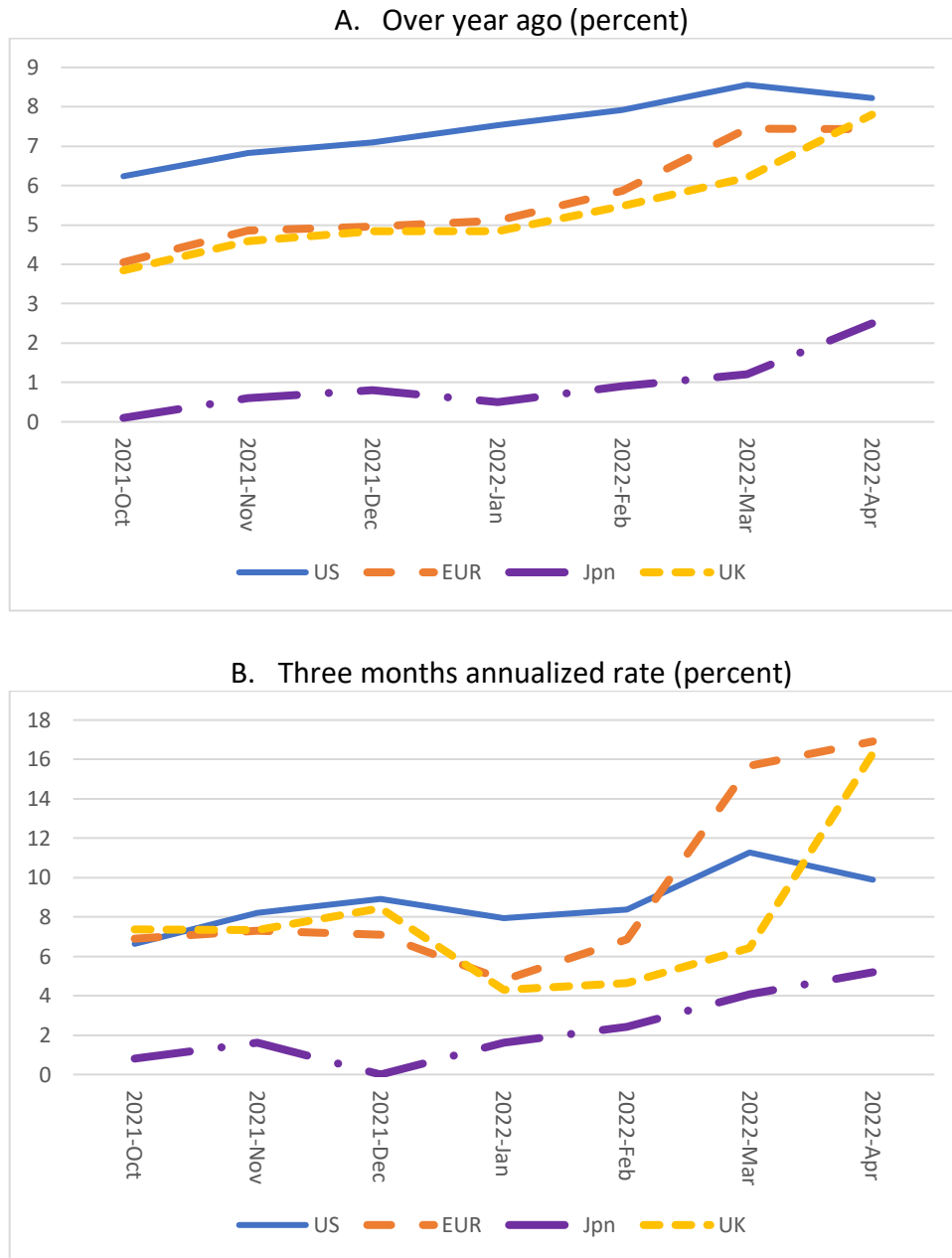
⁸ See Alexander Busch, “Análise: Por que de repente o real está tão forte?” *DW*, May 2, 2022. Note that although traditionally a major oil importer, Brazil became an exporter in 2016, with net oil exports averaging about 660,000 barrels per day (or about \$27 billion annually at a price of \$107 per barrel). Worldometers (2022).

⁹ The calculation is: $z = 100 \times ((1 + (p_{apr}/p_{oct}))^2 - 1)$, where p is the level of the price index.

2021 rate of inflation. The median increase in the inflation rate from 2021 to the “inertial” 2022 rate calculated in this manner is 4.3 percentage points.

Figure 3

Inflation Trends in the US, Euro Area, Japan, and UK



Source: FRED (2022); Japan (2022); UK (2022)

Table 1
Consumer Price Inflation: 2020, 2021, and 6 Months Ending
April 2022 at Annual Rate (percent)

	2020	2021	2022: 6moAR	
Pacific				
Australia	0.83	2.90	7.02	a
New Zealand	1.75	3.96	6.66	a
Asia				
China	2.55	0.86	3.59	a
Hong Kong	0.30	1.56	8.37	a
India	6.65	5.15	5.57	a
Indonesia	2.06	1.56	6.37	
Japan	0.00	-0.28	3.28	
Korea	0.52	2.50	6.80	
Malaysia	-1.15	2.50	4.61	a
Philippines	2.39	3.92	7.34	
Singapore	-0.17	2.28	...	
Thailand	-0.88	1.25	6.33	
Middle East/ Africa				
Israel	-0.56	1.49	3.48	a
Saudi Arabia	3.49	3.05	2.56	
South Africa	3.28	4.58	7.02	
Europe				
Czech Republic	3.18	3.83	21.26	
Euro area	0.27	2.57	10.65	
Hungary	3.37	5.09	12.70	
Norway	1.25	3.53	6.87	
Poland	3.32	5.16	19.12	
Russia	3.38	6.69	28.06	a
Sweden	0.54	2.16	9.29	
Switzerland	-0.70	0.61	3.43	
Turkey	12.29	19.60	139.85	
United Kingdom	0.91	2.55	11.66	
Western Hemisphere				
Argentina	40.47	47.10	71.58	
Brazil	3.23	8.28	12.70	
Canada	0.68	3.40	8.25	
Chile	3.04	4.58	12.63	
Mexico	3.46	5.67	9.36	
United States	1.28	4.72	9.36	

a. Based on September to March ... not available

Source: BIS (2022c); Japan (2022), IBGE (2022)

The broad picture that emerges is that inflation has once again become a major problem in most of the major economies. The problem is worse in Europe, where the median recent pace has been 12 percent, and the Americas (11 percent); intermediate in Australia-New Zealand (6.8 percent) and Asia (6.3 percent); and the lowest in the three Middle-East/Africa economies covered (3.5 percent).

For exchange rates, an important implication of higher inflation is that those economies that have had the largest increases in inflation are likely to have become overvalued compared to those economies that have had smaller increases in inflation. Sooner or later currency markets are likely to reestablish more normal relative real values by causing depreciations in the former relative to the latter.

Commodity Prices

Recent high inflation has shown up dramatically in prices of several major commodities. Appendix table A shows two sets of IMF projections of average commodity prices for 2022: first, those from the October 2021 WEO, and second, those from the April 2022 WEO. The expected average price of oil in 2022 has surged from \$65 per barrel to \$107. The expected price has risen by 46 percent for wheat, 60 percent for palm oil, 37 percent for aluminum, 34 percent for nickel, and 32 percent for tin. The increases are 20 to 30 percent for poultry, coffee, cotton, and zinc. Although the surge for oil and wheat can be explained in part by the Russia-Ukraine war, the pattern of relatively generalized commodity price increases suggests a manifestation of the broad pattern of accelerating inflation reflected in the aggregate price indexes. Supply chain problems associated with the pandemic may also be a factor in explaining the commodity price surge.

Results of the Main Calculations

Table 2 reports the current account projections of the IMF for the 34 countries (with the euro treated as one economy) covered in the FEERs series dating back to 2008. The first column reports the IMF's estimates of current account balances in 2021 in the April 2022 WEO. The second column reports the Fund's projection of the current dollar value of GDP for each economy in 2027.

The third column of the table reports the Fund's 2027 current account projections, as a percent of GDP. The fourth column then adjusts the 2027 outlook to take account of the change in exchange rates from the February-March base period used in the April WEO to the April base used in this report.¹⁰ The adjustment applies the percent change in the real effective exchange

¹⁰ The April 2022 WEO uses February 22-March 22, 2022, as its base period (IMF, 2021b, p. 83). The adjustments here approximate this period using the average for March. Changes in the real effective exchange rate (REER) from March to April use the Bank of International Settlements "broad" series (BIS, 2022a).

rate (REER) to the current account impact parameter (“gamma”, the percent of GDP change in the current account for a 1 percent rise in the country’s REER).¹¹

The FEERs methodology sets ± 3 percent of GDP as the permissible external imbalance.¹² A deficit of 3 percent of GDP could eventually bring the economy to a precariously high level of net external debt. The ceiling of 3 percent on the surplus is meant to provide symmetry for the purpose of global adding-up. The final column of table 4 accordingly shows the target current account as either ± 3 percent of GDP (the limit) or the actual projected current account if it is within this limiting range. The four oil-exporting economies are exceptions, with no limits imposed because they are primarily transforming resource wealth into financial wealth rather than increasing total wealth.

¹¹ This parameter is essentially an overall export price elasticity set at unity, applied to the size of exports of goods and services relative to GDP. The relationship is less than linear and is subject to a ceiling of 0.5, such that for a small open economy with exports at 100 percent of GDP a 1 percent rise in the REER would reduce the current account by 0.5 percent of GDP. Note that for the adjustment from the WEO base month, the calculation further applies only one-half of the normal impact calculation, reflecting past experience with slowly-changing IMF projections of the long-term current account. There is also a special adjustment reducing Switzerland’s estimated surplus by 3 percent of GDP to account for the fact that current account data do not separate out the portion attributable to foreign multinational companies.

¹² For a summary of the FEERs methodology, see Cline and Williamson (2012), Appendix A.

Table 2: Target Current Accounts (CA) for 2027

Country	IMF Estimate of 2021 CA (percent of GDP)	IMF 2027 GDP forecast (billions of US dollars)	IMF 2027 CA forecast (percent of GDP)	Adjusted 2027 CA (percent of GDP)	Target CA (percent of GDP)
Pacific					
Australia	3.5	2,186	-0.1	-0.3	-0.3
New Zealand	-5.8	331	-4.3	-4.3	-3.0
Asia					
China	1.8	29,129	0.4	0.5	0.5
Hong Kong	11.2	478	7.4	7.2	3.0
India	-1.6	4,917	-2.6	-2.8	-2.8
Indonesia	0.3	1,868	-1.5	-1.7	-1.7
Japan	2.9	6,260	3.2	3.8	3.0
Korea	4.9	2,300	4.1	4.0	3.0
Malaysia	3.5	634	3.6	3.8	3.0
Philippines	-1.8	615	-1.8	-2.0	-2.0
Singapore	18.1	544	12.0	12.0	3.0
Taiwan	14.7	1,095	8.5	8.6	3.0
Thailand	-2.1	693	3.3	3.3	3.0
Middle East/Africa					
Israel	4.6	669	2.2	2.2	2.2
Saudi Arabia	6.6	1,108	4.6	4.4	4.4
South Africa	3.7	513	-2.0	-2.2	-2.2
Europe					
Czech Republic	-0.8	402	-0.5	-1.0	-1.0
Euro area	2.4	18,558	2.6	2.9	2.9
Hungary	-0.9	289	0.5	0.5	0.5
Norway	15.4	591	10.4	10.3	10.3
Poland	-0.9	994	-2.0	-2.4	-2.4
Russia	6.9	1,796	3.1	-1.7	-1.7
Sweden	5.5	833	3.6	3.4	3.0
Switzerland	9.3	1,064	7.0	4.2	3.0
Turkey	-1.8	1,136	-1.6	-2.4	-2.4
United Kingdom	-2.6	4,552	-3.5	-3.7	-3.0
Western Hemisphere					
Argentina	1.3	646	0.7	0.6	0.6
Brazil	-1.7	2,448	-2.1	-2.5	-2.5
Canada	0.1	2,799	-1.8	-1.8	-1.8
Chile	-6.7	457	-2.5	-2.5	-2.5
Colombia	-5.7	461	-3.9	-4.0	-3.0
Mexico	-0.4	1,646	-1.1	-1.3	-1.3
United States	-3.5	30,966	-2.1	-2.1	-2.1
Venezuela (a)	-1.4	50	6.5	...	6.6

a. 2023 except 1st column

Table 3 reports the results of running the Symmetric Matrix Inversion Model (SMIM) to obtain the globally-consistent set of exchange rate changes that most closely approximate the target changes of REERs needed to bring the current account imbalances to their target levels (Cline, 2008). The first column shows the target change in the current account as a percent of GDP. This change is the difference between the ± 3 percent limit and the baseline projection for 2027 if it is outside this limit. As usual in this series, there are large required reductions in the surpluses of Singapore (by 9 percent of GDP) and Taiwan (by 5.6 percent of GDP).¹³ There are also required reductions of 4.2 percent of GDP for Hong Kong, 1.2 percent of GDP for Switzerland, 1 percent of GDP for Korea, and 0.8 percent of GDP for both Japan and Malaysia.

Only three of the 34 economies show required improvements in current account balances to limit their deficits to no more than 3 percent of GDP: New Zealand (by 1.3 percent of GDP), Colombia (by 1.0 percent of GDP), and the United Kingdom (by 0.7 percent of GDP). There are no required corrections for the United States, the euro area, or China.

The second column of table reports the actual changes in the current accounts achieved in the globally-consistent simulation. There is a strong asymmetry between sizable surplus reductions required for several economies but only modest deficit reductions required for just New Zealand, Colombia, and the United Kingdom. As a consequence, the globally-consistent solution under-adjusts for excess surplus countries by 0.8 percent of GDP for Singapore and 0.6 percent of GDP for Malaysia; by 0.4 percent of GDP for Hong Kong, Korea, and Taiwan; and by 0.2 to 0.3 percent of GDP for Japan and Switzerland. The simulation correspondingly generates an improvement of typically 0.2 to 0.3 percent of GDP for economies not needing any improvement.

The third column shows the change in the REER implied by the target change in the current account. Thus, for Singapore, the target reduction in the current account surplus by 9 percent of GDP requires an appreciation of the REER by 17.9 percent in view of the “gamma” coefficient (constrained to the maximum allowed in the model, 0.5 percent of GDP change for 1 percent REER change). The fourth column shows the change in the REER accomplished on a globally-consistent basis in the SMIM simulation. There is a 1.6 percent REER depreciation needed for the United States for this global adding-up, even though for its own equilibrium the US does not need any depreciation.¹⁴

¹³ Note, however, that these required adjustments are narrower than those identified in the November 2021 issue of this FEERs series (12 percent of GDP target reduction in surplus for Singapore and 7.9 percent of GDP for Taiwan). Lower baseline surpluses in the WEO forecasts likely reflect in part the considerably higher projected path of oil prices and higher oil import expenditures.

¹⁴ The Fund estimates that the 3.5 percent of GDP current account deficit reached by the United States in 2021 and projected to continue in 2022 will gradually decline to 2.1 percent of GDP by 2027 (IMF, 2022a).

Table 3: 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	Apr 2022	Percentage Change	
Pacific							
Australia*	0.0	0.3	0.0	-1.3	0.74	2.1	0.76
New Zealand*	1.3	1.6	-5.1	-6.3	0.68	-3.4	0.65
Asia							
China	0.0	0.3	0.0	-1.4	6.43	2.3	6.29
Hong Kong	-4.2	-3.8	8.5	7.7	7.84	11.2	7.05
India	0.0	0.3	0.0	-1.3	76.2	0.5	75.8
Indonesia	0.0	0.3	0.0	-1.2	14389	3.7	13876
Japan	-0.8	-0.6	4.9	3.6	126	6.5	119
Korea	-1.0	-0.6	2.6	1.6	1237	4.4	1185
Malaysia	-0.8	-0.2	1.6	0.4	4.27	6.5	4.01
Philippines	0.0	0.3	0.0	-1.1	52.0	3.5	50.3
Singapore	-9.0	-8.2	17.9	16.5	1.37	20.3	1.14
Taiwan	-5.6	-5.2	12.9	11.9	29.1	16.2	25.0
Thailand	-0.3	0.4	0.6	-0.7	33.8	3.1	32.8
Middle East/Africa							
Israel	0.0	0.3	0.0	-0.9	3.25	0.1	3.24
Saudi Arabia	0.0	0.4	0.0	-0.9	3.75	1.2	3.71
South Africa	0.0	0.2	0.0	-0.8	15.05	0.0	15.05
Europe							
Czech Republic	0.0	0.4	0.0	-0.8	22.6	-1.2	22.9
Euro area*	0.0	0.4	0.0	-1.7	1.08	-0.9	1.07
Hungary	0.0	0.3	0.0	-0.6	347	-0.9	350
Norway	0.0	0.3	0.0	-0.9	8.89	-1.4	9.02
Poland	0.0	0.3	0.0	-0.8	4.30	-0.3	4.31
Russia	0.0	0.2	0.0	-0.9	77.9	-0.2	78.1
Sweden	-0.4	-0.1	1.2	0.2	9.54	-0.2	9.55
Switzerland	-1.2	-0.9	2.7	2.0	0.94	2.5	0.92
Turkey	0.0	0.2	0.0	-0.9	14.73	-1.0	14.88
United Kingdom*	0.7	0.9	-2.6	-3.6	1.29	-3.1	1.25
Western Hemisphere							
Argentina	0.0	0.2	0.0	-1.4	113.3	-1.1	114.59
Brazil	0.0	0.2	0.0	-1.5	4.75	-0.5	4.77
Canada	0.0	0.1	0.0	-0.4	1.26	0.0	1.26
Chile	0.0	0.3	0.0	-1.1	815	0.1	814
Colombia	1.0	1.1	-5.9	-6.9	3793	-6.3	4046
Mexico	0.0	0.1	0.0	-0.4	20.1	0.1	20.1
United States	0.0	0.3	0.0	-1.6	1.00	0.0	1.00
Venezuela	0.0	0.2	0.0	-0.8	...	-0.2	...

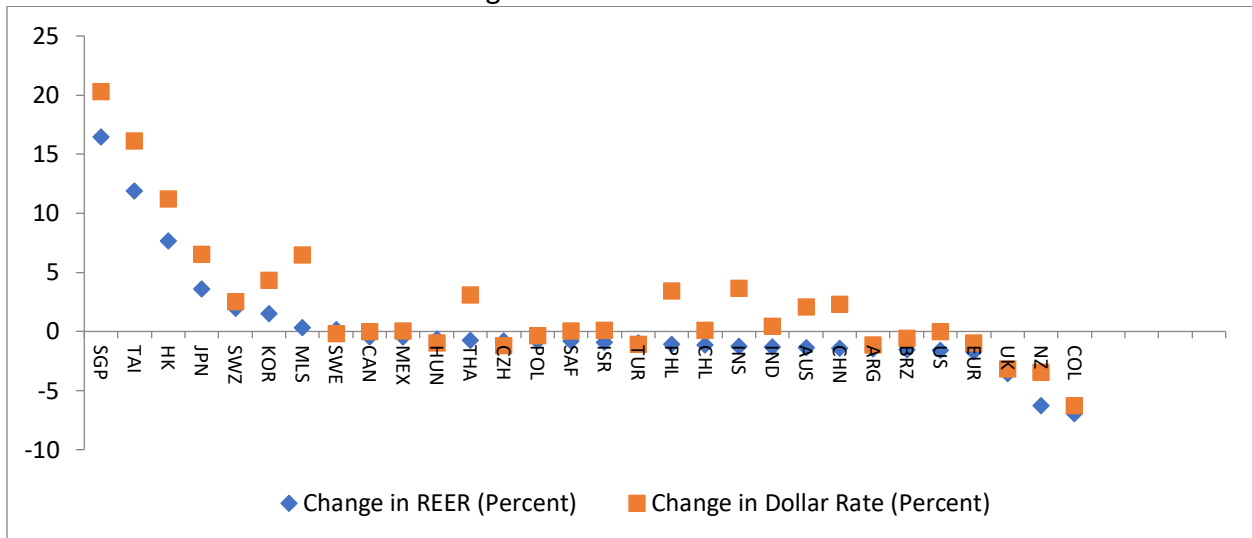
* dollars/currency

... not available

The fifth column in table 3 reports the average exchange rate for each country against the US dollar in April 2022 (BIS, 2022b). The sixth column shows the percent change in the dollar rate obtained in the globally-consistent simulation. The final column applies this percent change to the actual rate in April to arrive at the FEER-consistent dollar exchange rate for each country. This rate is 1.07 dollars per euro, 119 yen per dollar, 6.29 Chinese yuan per dollar, and 1.25 dollars per pound sterling. Australia and New Zealand have FEER-consistent US dollar rates of 76 US cents and 65 US cents, respectively.¹⁵

Figure 4 shows the percent changes in exchange rates needed to bring current accounts into alignment with the FEERs targets. The economies are ordered from the largest REER appreciations to the largest REER depreciations. Following the pattern usually found, for the Asian economies there tends to be a greater (positive) difference between the amount of change needed in the bilateral rate against the dollar than in the multilateral REER. The countries with the highest needed appreciations (especially Singapore and Taiwan) tend to be in Asia, and the countries with high trade shares with these economics also tend to be in Asia. These regional trading partners tend to need to appreciate against the dollar to avoid experiencing a depreciation in the multilateral effective exchange rate as key partners appreciate against the dollar.

Figure 4
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

¹⁵ There is no estimate for Venezuela, where hyperinflation and import controls turn an estimate meaningless.

Conclusion

The principal misalignments of exchange rates identified in this study are highly concentrated, with large real appreciations needed for Singapore (by 16.5 percent), Taiwan (by 11.9 percent), and Hong Kong (by 7.7 percent). Other misalignments are smaller and confined to just a few economies. Globally-consistent REER appreciations are estimated at 3.6 percent for Japan, 2 percent for Switzerland, and 1.6 percent for Korea. The needed REER depreciations in the globally consistent solution stand at 6.9 percent for Colombia, 6.3 percent for New Zealand, and 3.6 percent for the UK. In addition, global consistency imposes REER depreciations in the range of 1 to 1.6 percent for many economies even though their deficits do not exceed the allowed ceiling of 3 percent of GDP.

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Appendix A: Changes in the IMF's Projections of Commodity Prices from October 2021 to April 2022 (US \$ and percent)

	2021	2022		% change		2023		% change
		Oct21	Apr22			Oct21	Apr22	
Crude Oil / bbl	69	65	107	65.6		61	93	51.1
Wheat /metric tonne	266	279	406	45.6		264	343	30.0
Maize /metric tonne	259	266	300	12.7		245	270	10.1
Rice/ metric tonne	442	464	428	-7.8		464	425	-8.4
Soybeans/ metric tonne	505	486	574	17.9		452	510	12.9
Palm oil/ metric tonne	1074	907	1449	59.7		784	1185	51.1
Beef/ pound (a) (b)	236	275	268	-2.7		275	284	2.9
Lamb/pound (a)	147	150	167	11.3		150	167	11.3
Swine (pork)/ pound (a) (c)	91	89	95	6.7		86	87	0.4
Poultry (chicken) /pound (a)	136	142	171	20.4		142	171	20.4
Commodity Sugar Index	101	108	105	-3.2		94	101	7.3
Commodity Coffee Price Index	119	116	144	23.5		117	137	17.1
Cocoa beans/ metric tonne	2425	2559	2389	-6.7		2517	2419	-3.9
Commodity Timber Index	108	111	103	-7.4		111	100	-10.0
Cotton/pound (a)	101	99	128	28.8		90	102	13.2
Commodity Wool Index	100	104	101	-2.5		104	101	-2.5
Rubber/ pound (a) (e)	95	91	99	8.2		91	99	8.8
Copper/metric tonne	9317	9060	10105	11.5		9026	10048	11.3
Aluminum/metric tonne	2473	2540	3479	36.9		2496	3360	34.6
Iron Ore/metric ton	158	135	147	8.5		135	149	10.4
Tin/ metric tonne	32387	34163	45063	31.9		33331	44758	34.3
Nickel/metric tonne	18467	18887	25239	33.6		18913	24783	31.0
Zinc/metric tonne	3003	2977	3789	27.3		2925	3569	22.0
Lead/metric tonne	2200	2247	2376	5.8		2212	2342	5.9
median				12.1				11.3

a. US cents. b. Australia, New Zealand. c. US. d. US, Georgia docks e. Singapore

Source: IMF (2021a, 2022a)