

## Note: Fundamental Equilibrium Exchange Rates (FEERs)

- Calculating FEERs involves using the framework of internal and external balance
- The procedure solves simultaneously, by use of a model, for the values of domestic demand and the exchange rate that will produce a satisfactory configuration of both internal balance (e.g. unemployment) and external balance (e.g. current account)
- This exercise is undertaken for all (major) economies simultaneously, using a world model
- What is taken to be a “satisfactory” configuration has to be specified in setting up the model run

### Cline and Williamson method for calculating FEERs

- Cline and Williamson (C&W)<sup>1</sup> take a satisfactory external position to be a current account deficit/surplus no greater than 3% of GDP; and a satisfactory internal position to be unemployment at or around the NAIRU
- In essence, C&W<sup>2</sup>:
  - Take the projections of IMF World Economic Outlook as their baseline; and then
  - Calculate the exchange rate and domestic demand changes needed, relative to that baseline, for the world to approach a reasonably satisfactory configuration of internal and external balance
- The results presented in C&W’s May 2012 paper purport to indicate how far currencies were from their ‘long-term’ (FEER) values, on the basis of the model being used at that time. (See Figure 1). In summary:
  - The US dollar was judged overvalued by 4.3% in real effective terms<sup>3</sup>
  - The renminbi was judged undervalued by 2.8% in real effective terms (7.7% against the dollar)<sup>4</sup>
  - Both the Australian and New Zealand dollar were judged significantly overvalued in real effective terms (18% and 15.2% respectively) and relative to the dollar (12% and 12.8% respectively)
  - The Swiss Franc was judged (on the face of it surprisingly) as undervalued by 5.5% in real effective terms and 8.8% against the dollar<sup>5</sup>
  - Other major currencies were not required to adjust their real effective exchange rates<sup>6</sup> and the majority were only slightly undervalued relative to the dollar
- The movement in exchange rates since C&W published suggests that most currencies have moved somewhat away from their FEER-consistent dollar exchange rate<sup>7</sup>:
  - The Australian and New Zealand dollar are both judged slightly more overvalued than in May 2012 (12% to 12.9% overvalued for Australia and 12.8% to 15.1% for New Zealand)
  - The euro, Canadian dollar, and the Swiss franc are all more undervalued

Figure 1

	(C&W) 2017 current account	Over/under valued, real effective terms	Model change in REER needed (%)	\$ exchange rate, April 2012	FEER-consistent \$ rate, May 2012	Over/under valued, relative to \$	% over /under valued May 2012	Current \$ exchange rate	% over / under valued March 2013	FEER-consistent \$ rate, May 2011
Australia	-6.5	Over	-18	0.97	1.1	Over	12.0	0.96	12.9	0.98
Brazil	-2.6			1.85	1.8	Under	2.8	2.02	12.2	1.65
Canada	-2			0.99	0.98	Under	1.3	1.02	4.0	0.94
China	4.1	Under	2.8	6.31	5.86	Under	7.7	6.21	6.0	5.09
Euro area	1.2			0.76	0.74	Under	2.7	0.78	5.7	0.67
Japan	2.1			81	78	Under	4.7	94.3	20.8	76
New Zealand	-6.9	Over	-15.2	1.22	1.41	Over	12.8	1.20	15.1	1.43
Switzerland	5.7	Under	5.5	0.91	0.84	Under	8.8	0.95	13.4	0.78
UK	-1.1			0.63	0.61	Under	2.7	0.66	8.5	0.58
US	-3.7	Over	-4.3							

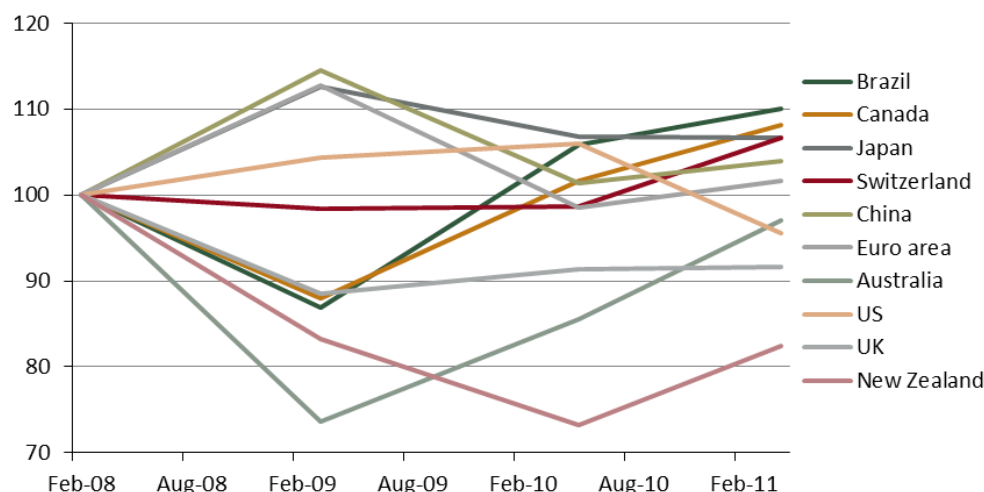
Source: Cline and Williamson, 2012 and FT.com. Note: all currencies expressed as currency per dollar on 27/03/2013.

- Sterling, the Brazilian real, and the Japanese Yen in particular are more substantially undervalued relative to the dollar
- The renminbi appears to be the exception; it has moved (further) towards its FEER-consistent dollar rate, and is estimated to be 6% undervalued at present, compared with the 7.7% in May 2012, and 16% in May 2011
- Note, however, that over time the model used typically has to be changed in the light of its forecasting and other performance. To the extent that this happens, the calculated values of FEERs will change. And the validity of calculating FEERs for an economy subject to large terms of trade changes is highly contentious
- In practice, estimates of FEERs have changed significantly since Cline and Williamson started publishing them in 2008 (see Figure 2). Their next estimates are likely to be published in May 2013.

### Breedon method for calculating FEERs

- The C&W method does not allow for cross-country differences in what may constitute a ‘sustainable’ current account position; a more sophisticated approach, followed for example by Breedon<sup>8</sup>, would allow this
- Breedon calculates FEERs as the exchange rate that would be needed to produce the current account that mirrors the desired net saving position of the economy’s agents (households, companies, and government)
- Breedon’s “macro balance approach” is essentially a three-step process:
  - **First:** estimate the “equilibrium” medium-term current account balance:
    - Breedon looked at the trend, or underlying, capital flows (the basic balance) to judge whether a country is a medium-term exporter or importer of capital
    - He then attempts to gauge the trend in medium-term capital flows that can then be used to finance a medium-term current account deficit
    - This is assumed to be the trend component of the longer-term capital flows (i.e. net FDI and portfolio flows) flowing in or out
    - This is done by looking at the financial account of the balance of payments and separating net FDI and portfolio flows, identifying them as longer-term flows (i.e. the basic balance), and focusing on the trend component in these medium-term flows
    - The “equilibrium current account” is then that which could be financed by these trend flows
    - This approach also allows the equilibrium current account to be inferred through actual investor behaviour
  - **Second:** calculate the structural current account balance; i.e. estimate what the current account would be if output were at potential (i.e. zero output gap)
  - **Third:** estimate what exchange rate would align the structural current account with the equilibrium current account estimate, giving the FEER
- This method has the benefit of taking into account country-specific circumstances that would influence the ‘sustainable’ value of the current account e.g.
  - Demographic factors, such as ageing;
  - Fiscal factors, such as the amount of reserve assets; and
  - Capital inflow characteristics, such as distinguishing ‘hot money’ flows from sustainable flows such as FDI
- Breedon’s paper from 2006 highlights how, for example, Norway and New Zealand lie at two ends of the spectrum, both having ‘equilibrium’ current accounts well in excess of the thresholds used by C&W:
  - New Zealand had an equilibrium current account deficit of 5% of GDP in 2006. This reflects (or is justified by) the longer-term inflows that New Zealand has managed to attract
  - By contrast, Norway was found to have a sustainable current account surplus of 6%
- We like the Breedon approach to estimating FEERs, but we do not have recent data
  - An approach such as this would highlight the important characteristics that determine a sustainable external position and how they may differ across countries
  - Such an analysis would, for example, probably suggest that Australia (in particular) is not as overvalued as Cline and Williamson suggest, given the scale of long-term capital inflows that it could probably sustain.

Figure 2: FEERs, 2008q1=100



Source: Cline and Williamson, 2011

## References

**Breedon, F. and Papadavid, P., 2006.** *Introducing The Macro-Balance Currency Valuation Model*. Lehman Brothers Global Foreign Exchange Research.

**Cline, W. and Williamson, J., 2011.** *Estimates of Fundamental Equilibrium Exchange Rates*. Peterson Institute for International Economics. <http://iie.com/publications/pb/pb11-05.pdf>

**Cline, W. and Williamson, J., 2012.** *Estimates of Fundamental Equilibrium Exchange Rates*. Peterson Institute for International Economics. <http://www.piie.com/publications/pb/pb12-14.pdf>

**Lee, J. et al., 2008.** *Exchange Rate Assessments: CGER Methodologies*. IMF: Washington

**International Monetary Fund, 2012.** *Pilot External Sector Report*. Washington. <http://www.imf.org/external/np/pp/eng/2012/070212.pdf>

## Endnotes

<sup>1</sup> Estimates of FEERs, May 2012. <http://www.piie.com/publications/pb/pb12-14.pdf>

<sup>2</sup> The authors compare their method with one of the three methods employed in the past by the IMF's Consultative Group on Exchange Rates Issues: "Our method is most similar to the first of the three methods employed in the past by the IMF's Consultative Group on Exchange Rate Issues to assess equilibrium exchange rates (Lee et al. 2008). Their macroeconomic balance approach differs in two important ways from our approach ... First, they use an econometric rather than a judgmental approach to determine current account targets ... We in fact see strong disadvantages in their approach, in that some of the targets postulated seem to make little normative sense: For example, average current account targets were -1.9% of GDP for the advanced countries outside Europe versus +1.3% of GDP for emerging Asia the adjustment period ... Second, the IMF used country-specific responses of the trade balance to the real exchange rate rather than using a formula for the response as the SMIM model does. This is undoubtedly preferable in principle, although the uncertainties in estimating elasticities suggest that this method is unlikely in practice to have a big advantage. The second of the IMF's approaches amounts to estimating a behavioural equilibrium exchange rate (BEER). We regard this as appropriate only if it is plausible that on average the exchange rate was in equilibrium over the period of estimation. The third of the IMF's approaches aimed at stabilizing the ratio of net foreign assets (NFA) to GDP at an appropriate level, which it interpreted as the level of 2006. This is not particularly appealing ... but the method has the virtue of ruling out Ponzi strategies (which imply ever-escalating ratios of net foreign liabilities, or net foreign assets, to GDP)."

<sup>3</sup> This can be interpreted thus: the depreciation required in the real effective exchange rate (REER) to reach the FEER was 4.3% in the model simulations.

<sup>4</sup> Other Asian economies with large current account surpluses (Hong Kong, Malaysia, Taiwan, and Singapore) were also judged undervalued (not shown in Table 1). For a full set of results see Table 2, p6 of Cline and Williamson, 2012.

<sup>5</sup> C&W observe that: Switzerland has created the impression that the Swiss franc is overvalued by the market. Given that Switzerland had a current account surplus of 9.9 percent of GDP in 2011 (14 percent before statistical adjustment), and that its surplus is still projected to be 5.7 percent of GDP in 2017 (9.8 percent before statistical adjustment), only those who seek to measure overvaluation by purchasing power parity, and ignore balance of payments considerations, can hold this view. Our view is that Switzerland is *undervalued* and therefore needs a further *appreciation* of about 6 percent. We do not dispute the view that the most important need is for a big expansion of domestic demand and that appreciation might happen as a consequence of such expansion rather than that it has to be the prime mover. But the rest of the world would be mistaken to view Swiss policy with complacency, let alone to join Switzerland in asking for a weaker Swiss franc.

<sup>6</sup> The authors stipulated countries or regions with current accounts less than 3% of GDP with no target change in their real effective exchange rate, however small adjustments (not shown) were required to ensure countries kept a stable current account balance given changes in exchange rates required in other countries to restore internal and external balance.

<sup>7</sup> Source for currency data: FT.com/marketsdata, 27 March 2013. <http://markets.ft.com/research/Markets/Currencies>

<sup>8</sup> See Breedon and Papadavid, 2006.

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