Paper: Synthetic International Indexed Unit of Account

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Referee Report by Douglas L. Campbell

**Summary**: A Synthetic International Indexed Unit of Account is proposed which fixes a unit of global purchasing power. It is suggested that this could replace the dollar as an international unit of account, and that countries could peg to this new “currency” instead of the US dollar. I found the topic and discussion to be interesting, and I enjoyed reading this paper. However, to my mind there are a number of flaws in the index proposed, which is not very well thought-out or explained. While the key problems with the index could be fixed, I also believe the authors oversell the potential benefits, and ignore the very real risks of imposing deflation on countries who choose to peg to the WCU. Altering the index to fix the problems I discuss below would, to my mind, be to propose an altogether new index and thus new paper. And if all of the problems are fixed, then the result would likely closely resemble an RER index which is already in the literature (GDP Weighted Average Relative Prices). Pointing out a new use for an old index would be interesting, however. If the authors chose to go this route, I could think they could be encouraged to submit as an altogether new submission.

**Major problems with the Proposed index:**

* This index (unnecessarily) suffers from the standard index numbers problem (see [Thomas, Marquez, and Fahle](http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1090526), 2008 – “TMF”), which the literature on real exchange rate indices has already devoted so much space to, although this literature is not referenced, and the authors seem unaware of the problem.
	+ The price indices in this equation are calculated using divisia/Tornquist, which are notorious for having an index numbers problem, called the outlet substitution bias problem, or alternatively import-substitution bias. These indices become increasingly biased over time. An alternative would be to use price levels computed using the Penn World Tables which in turn are based on the benchmark years of the World Bank’s ICP. Using these would also eliminate the problem that country-specific CPI deflators are computed differently and become biased over time.
	+ The index is essentially a weighted average of *changes* in prices and nominal exchange rates. Even if the price level problem is fixed, the index numbers problem is here is again. In this case, it will be worse, as it appears from equation (4) that the index will be sensitive to the (arbitrary) choice of the base year.
* The weights are arithmetic and not geometric in equation (4). There are good reasons why RER and CPI indices are computed using geometric weights. *I.e.*, the decision to define the exchange rate in terms of the local or foreign currency should be arbitrary. At the end, you should be able to take the inverse of the full index and have it be unchanged. This would be the case with geometric weights. Not so with arithmetic weights.
* The evolution of the index in 4 will also depend crucially on the base year chosen. But, what is the logic for choosing one base year over another? Virtually all other RER indices used are impervious to such choices.
* Pegging to such an index will likely imply substantial currency appreciation vs. hard currencies and thus deflation in the pegging country. The authors seem unaware that sustained deflation, or at least very low levels of inflation, could be problematic. (I suggest they go read Barry Eichengreen’s “Golden Fetters”.) Issuing debt in this appreciating currency would be similarly problematic, and thus potentially a worse solution than issuing currency in US dollars. To fix this issue, one might use relative prices instead of price indices in 4. Now, however, you would be ostensibly be getting close to a GDP Weighted Average Relative Price index. This might, indeed, be an interesting proposal. But I would have liked a discussion of the relation between your index and commonly used RER indices.

**Smaller/More Pedantic Issues with the paper**:

* Need a period after “Mr”. *I.e*., “Mr Zhou” should be “Mr. Zhou”…
* I would recommend going with a standard way of citing newspaper articles, such as the quote of Mr. Zhou Xiaochuan in the first sentence. Also, there should be a space between quotes and parenthesis. I.e., ”( should be ” (.
* I would probably define the SDR on the first usage.
* On page 3, I am curious what the authors mean by “The way the SDR is designed”. Just the dollar’s weight?
* *P.3: “et.al.*(2007)” Need space between *al.*and (2007). This comment appears to apply to all citations in the paper. In general, I think this paper could benefit a lot from hiring a native speaker to edit. Indenting new paragraphs would also help readability.
* I would also refer the authors to John Cochrane’s helpful guide on writing papers. I would prefer the authors got to the point immediately in the introduction, even though I think the information in the first few pages is largely important, and is an interesting read.
* At times the rhetoric appears too strong. One example: “A standardized unit of account that can represent a unit of real global purchasing power can **revolutionize international trade** and international finance, and will enhance economic efficiency and equity.”
* One question, if this could revolutionize trade and minimize risk in contracts all over the world, then why hasn’t it been done? In that case, I would advise the authors not to bother with publishing it at JIMF, but to launch such a currency post-haste, and thus become fantastically wealthy like the bitcoin founder. I’m partly joking, but it is a point that needs to be addressed. If potentially so lucrative, why hasn’t it been introduced? Recent advances in index numbers theory? Did Keynes and White consider this at Bretton Woods?
* I may be nitpicking, but the gravity model here would not exactly imply GDP weights. It would imply that countries in Europe would be given relatively higher weights, since they are geographically close to many other countries. Rich countries also trade more, and so if you ran gravity and used the weights, you’d want to give the rich countries upward biased weights relative to GDP weights. Countries which are remote, such as New Zealand and Australia, would get smaller weights. Also, large countries will trade less as a share of GDP simply because they trade more with themselves. Similarly, should Europe get the same weights before and after the Euro? After the introduction of the Euro, much European trade was inside of its own currency bloc. If gravity is the justification, then why not do country’s share of world GPD? (Although, I’m not sure you’d want to do this necessarily, but a gravity justification isn’t totally convincing here.)
* How will the GDP weights be updated? Will they be updated at discrete points in time? Will this create arbitrage opportunities?
* I suppose it is obvious that, in equation 4, the e’s are the nominal exchange rate relative to the US dollar? The foreign currency price of a dollar? Or the dollar price of a foreign currency? Given Figure 1, I guess it must be the dollar price of currency i. (As we said – given the arithmetic index, this question suddenly becomes important.) Or the WCU? And the GDPs are of course also nominal? What is equation 4 precisely? I.e., how do we get from equation 4 to Figure 1? Or, is it an equation for a specific country (whichever is the reference in e?) This all may be obvious, but it would be good to spell everything out. Perhaps it is, and I just missed it, but the most appropriate location to define terms of an equation is in the text immediately before or after that equation. I found I had to guess at the precise details of the index. This includes the data used for e and P. Did you use the year-end exchange rate? Or an average?
* My own personal preference for working papers is that the Figures and tables be intermixed with the text as a courtesy to the readers. In this case, readers don’t have to scroll to the end of the document to see the table and then scroll back.
* In Figure 5. RER indices are typically plotted so that higher means appreciation. My preference would also be to see the same for Figure 1, although this is a matter of taste.
* In Figure 1, given the tendency of the index to drift higher, it might be more appropriate to plot in logs.
* I’m also curious why the data begins only in 1977. Data exists previous to this.
* It would be interesting to see this series plotted using PWT data instead. In that case, as well, going back to 1950 would be straightforward.
* I would like to see footnote 10 visually. In principle, you can separate out changes in the index due to exchange rate movements and those due to price changes.
* The discussion in section 4 presupposes that a new use for this index is that it functions as an effective RER indice. However, I don’t see the advantages of this index over either, as a big chunk of the movements will be determined by the average inflation rates around the globe. Even if it didn’t, the index contains the bad parts of divisia indices without the good parts. (In fact, a simple discussion of how this index differs from extant RER indices would be helpful.) But, I don’t see the advantages of this index compared to the branch of weighted average relative RER indices in terms of talking about the Asian Financial Crisis, for example.
* Pegging to the WCU implies a substantial nominal appreciation over time. This could imply a substantial deflation or very low levels of inflation in countries pegging to the WCU. Given the problems which seem apparent with monetary policy at the zero lower bound, and debt-deflation dynamics – problems which are not discussed in this paper -- this proposal seems uninformed. At the very least, it should be discussed why this may not be a problem in practice. It is argued that by pegging to the WCU Asian countries could have avoided the AFC, but had these countries pegged to the WCU, Figure 1 implies that their currencies would have appreciated roughly 100% vs. the US dollar in the decade leading up to the AFC.
* There isn’t much discussion about the intuition for the choices made in designing the index.
* The most recent estimates of the impacts of currency unions on trade are statistically indistinguishable from 0%. 30% to 90% are fanciful estimates which are some 5 to 15 times larger than the estimated impact from the Smoot-Hawley tariff. Wildly implausible.

Note: I do not provide any confidential comments to the editor on principle.