

Global (Crypto)-Currencies and Currency Competition

Pierpaolo Benigno, LUISS Guido Carli University

Linda Schilling, Ecole Polytechnique CREST

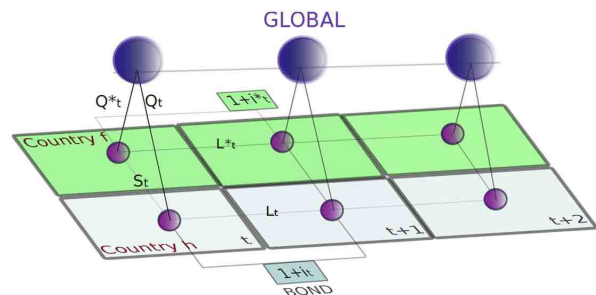
Harald Uhlig, The University of Chicago

At the Jackson Hole conference of August 2019, Mark Carney, the Bank of England governor, has argued that it is time to wean the world off its reliance on the U.S. dollar, and replace it by a new international monetary system instead. He eloquently argued that more thought should be given to creating a global electronic currency that could act as “synthetic hegemonic currency”, thus “dampen[ing] the domineering influence of the US dollar on global trade”.

Mark Carney: be careful what you wish for! Your wish may be granted: sooner than you think and in a different manner. The rise of cryptocurrencies, starting with Bitcoin, has shown that the introduction and circulation of a global currency no longer requires a central bank: private entities can create them too. While many find fault with the design of Bitcoin and other early entries, competitive pressure has resulted in ever more attractive-looking proposals. The latest attempted entry making a considerable splash is Libra, a cryptocurrency to be issued by a Facebook-led consortium, and it surely will not be the last. We believe that we will soon have one or several well-established and much-liked privately issued global cryptocurrencies. What then are the consequences for national monetary policies? What are the consequences for exchange rates?

These are the questions that we seek to answer in our recent working paper, called “Cryptocurrencies, Currency Competition, and the Impossible Trinity.” In that paper, we envision a two-country world, where each country has its own national currency and national central bank, but where there is also a global currency in circulation. We also allow bonds and other financial assets to be traded and assume that capital flows freely. However, money is special, as it is used as a means of payment, and therefore provides additional liquidity services compared to, say, interest-bearing bonds. These services must be equal to the opportunity cost of the foregone nominal interest rate on bond that agents could have held instead of money. We suppose that the global currencies can potentially offer same liquidity services as traditional money in each national market.

What are the consequences of all currencies being incirculation, i.e. the national currencies in their home



country, and the global currency in both? We show that this leads to what we call a “crypto-enforced monetary policy synchronization” or CEMPS. This means, that nominal interest rates set by the monetary authorities in the two countries must now be equal, and that the exchange rate between the two national currencies must be a martingale: the expected exchange rate tomorrow is equal to the exchange rate today. The monetary authorities are no longer free to pursue their own monetary policy or to set exchange rates as they please!

This result is reminiscent of the classic “Impossible Trinity” result. According to the “Impossible Trinity”, one cannot have free capital flows, fixed exchange rates and independent monetary policy, all at the same time. But things are even tighter here: the exchange rate must be fixed or, at least, a martingale, and monetary policy must be synchronized! The “Impossible Trinity” becomes even less reconcilable.

The logic for this result can be understood most easily without stochastic uncertainty. Consider the nominal return on holding a unit of the home currency, expressed in that currency. That return is zero percent: a Dollar bill today is still a Dollar bill tomorrow. On a nominal bond, one might earn some nominal interest, but not on the home currency. This is the price to pay for its liquidity services. One can now ask, what is the nominal return on holding a unit of the global currency? One unit of the global currency today is one unit of the global currency tomorrow: so, expressed in units of the global currency, the return is zero too. But what is that return, expressed in units of the home currency given that the global currency is purchased today at the global-to-home exchange rate and sold tomorrow at that prevailing

exchange rate? This return is the variation in the exchange rate between today and tomorrow. When both the global and the local currency are used at home, it means that households must be indifferent between either currency. Since the liquidity services provided are (assumed) to be the same, it then must be that the return expressed in the home currency is the same as well. It follows, that the time variation in the exchange rate between the home and the global currency must be zero and therefore their exchange rate constant.

One can go through the same logic in the foreign country. And again, it follows that the exchange rate between the foreign currency and the global currency must be constant. Putting the results together, it then must be the case that the exchange rate between the home and the foreign currency is constant! With a constant exchange rate, one can then show that the nominal interest rates at home and abroad must be the same too. The two monetary policies are synchronized, enforced by that global cryptocurrency.

Are there really no choices for the national monetary policies? Not really. Assume that the global currency is used abroad alongside the foreign currency. The home central bank could then seek a monetary policy, making its own currency more attractive than the global currency, by preventing its adoption at home. Such a monetary policy would require setting the home nominal interest rate below that of the foreign country. While this may sound good at first, troubling implications immediately arise. The home and foreign-country central banks may both seek to free themselves from the shackles imposed by that global currency by racing towards the zero-lower bound. In the end, they will both find themselves there: a situation that has plagued the major central banks throughout the world and that no one seeks to repeat.

What happens if the home country raises the nominal interest rate at home instead, while the global currency is used abroad alongside the foreign currency? In that case, the home currency becomes too expensive to use at home and only the global currency will circulate there. The home central bank effectively abolishes its own *raison d'être* and might enter unknown territories.

If all this already sounds rather constraining for national central banks, things become even tighter, if that global cryptocurrency is issued by a private consortium against a basket of interest-bearing bonds. This is, essentially, the idea of Libra: anyone can exchange a Libra coin for the underlying bonds and vice versa, thereby fixing the exchange rate of Libra against that bond portfolio. If the consortium does not charge a management fee, its assets and liabilities should grow at the same rate, i.e. the rate of interest on the bond portfolio. This means that Libra coin should appreciate at the same rate of interest. At the end of the day, the consortium is transforming less liquid assets into very liquid money, both with the same return. The first result is that all liquidity premia will be eradicated

to zero and the economy satiated in its liquidity needs. The second result is that government money, with zero return, will be completely crowded out by a Libra coin having same liquidity value but paying a positive return. The only way out for national central banks to have their currency circulating at all is to be again stuck at the zero-lower bound.

Presumably, though, the consortium will charge a management fee for the trouble of administering the bond portfolio, so then things relax a bit. But if that management fee is small, this relaxation is small too: the nominal interest rates charged in these two countries are now bound from above by that (small) fee.

Our paper lays out all these arguments in more careful and mathematical detail, including stochastic considerations.

One might wish to argue that such a bond-backed cryptocurrency is just a money market fund in disguise. Can't one also convert a money market fund unit into the underlying bonds and vice versa? Where is the difference, and why has this not yet led to monetary policy synchronization? We view the distinction as a matter of degree. Cryptocurrencies are just that: currencies. Currencies are the tokens used as a medium of exchange, while money market funds still typically need the detour of conversion into the home currency, so they might be less liquid. Moreover, it is hard to find a money market fund, which is widely used on a global scale for transaction purposes. Therefore, money market funds differ in their economic impact from Libra.

Will Mark Carney be happy then? Perhaps. Only time will tell. ■

REFERENCES

Benigno, Pierpaolo, Linda Schilling and Harald Uhlig (2019). "Cryptocurrencies, Currency Competition and The Impossible Trinity," CEPR Discussion Paper No. 13943.



Pierpaolo Benigno

Professor of Economics
LUISS Guido Carli University

Dipartimento di Economia e Finanza
LUISS Guido Carli
Viale Romania 32
00197 Rome
ITALY



Linda Schilling

Assistant Professor
for Financial Economics
Ecole Polytechnique CREST

CREST,
5 Avenue Henry Le Chatelier,
91120 Palaiseau,
FRANCE



Harald Uhlig

The Bruce Allen and Barbara Ritzenthaler Professor
in Economics and the College
The University of Chicago

Department of Economics
The University of Chicago
Saieh Hall of Economics #317
5757 South University Avenue
Chicago, IL 60637
USA