Are Stable Coins Stable?

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Discussion Paper

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Abstract: Stable coins attempt to resolve the problem of wide volatility in dollar-denominated prices that characterize most cryptoinstruments, by "pegging" their value to fixed amounts of traditional monetary instruments. This discussion paper considers the challenges faced by "stable coin" cryptocurrencies, at different levels of collateralization, through comparison with pegged currencies, which follow a similar dynamic in terms of maintaining support for a given monetary value. The paper suggests that the novelty of cryptocurrencies should not detract from observing what are fundamental difficulties in constructing pegs to traditional currencies.

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Cryptocurrencies have generally been characterized by wide fluctuations in their dollar-denominated prices. This volatility has proven dissuasive to users as a unit of account and store of value, and to a portion of traditional investors attempting to grapple with what is already a complex domain and novel asset class. However, a new breed of cryptocurrencies, termed "stable coins," have emerged in the recent past with an approach to mitigate this volatility through a sustained peg (or in cryptocurrency jargon, a "tether")[3] with traditional instruments such as the US dollar or a basket of currencies.

Does this resolve the problem of volatility without raising new concerns in turn? In pondering this question, the purpose of this discussion paper is to consider the challenges faced by "stable coin" cryptocurrencies through comparison with pegged currencies, which follow a similar dynamic (depending on their level of collateralization) in terms of maintaining support for a given monetary-value peg. The paper suggests that the novelty of cryptocurrencies should not detract from observing what are fundamental difficulties in constructing pegs (or tethers) to traditional currencies.

In what has culminated in a substantial public interest in cryptocurrencies and a burst of research into the promise of blockchain technology at the global level,[4] it is

[3] See Tethering in Chohan 2018l

[4] see also discussions in Decourt et al., 2017; Chohan 2017a, 2017b, 2017c, 2017d, 2017e, 2017f, 2017g, 2017h, 2017i, 2017j, 2017k, 2017l, 2017m, 2017n, 2017o, 2017p, 2017q, 2017r, 2017s, 2017t, 2017u, 2017v, 2018a, 2018b, 2018c, 2018d, 2018e, 2018f, 2018g, 2018h, 2018i, 2018j, 2018k, 2019a, 2019b

worth noting that these novel and alternative assets face a series of problems that traditional asset classes too have grappled with.

Tethering (pegging) the value of stable coins, at different levels of collateralization, is but one such example that has borne out many a times in traditional currencies. The most prominent names among the stable coins are *Tether,*[5] *Basis,* and *Sagacoin*, but newer names continue to enter the space as of this writing. Their value is generally rigidly tied to a specific currency such as the dollar or euro, or in turn pegged to a basket of national currencies.

Pegging appears *prima facie* to be a useful solution to the volatility problem, which would allow for greater adoption of cryptocurrencies across societies. The value of stable coins is "stable" on a dollar-denominated basis, which makes them more viable as units of account or stores of value. This would also seem to remove some of the speculative aspect underlying the prices of cryptoinstruments.

However, a closer inspection of the challenges to using tethered cryptoinstruments leaves some of the optimism directed towards them to dissipate, irrespective of the level of collateralization of the coin, which can be seen conceptually by segmenting the problem into fully collateralized, partially collateralized, and uncollateralized cryptoinstruments. As of this writing, the most prominent stable coin is *Tether*, which is purportedly a fully collateralized coin.

First, for a fully collateralized coin, i.e. one whose value is fully pegged to a traditional currency on a 1-to-1 basis, the coin issuer must hold reserves in excess (or at least equal to) the value of circulating coins, which raises expenses in terms of

[5] See discussion in Chohan 2018l

raising capital, as well as issues with respect to their scalability.[6] *Tether* is an example of one such cryptocurrency which claims to have coins in reserve greater than those in circulation. However, a lack of transparency regarding Tether's mechanism has led this to be disputed.[7]

Second, for a partially collateralized coin, the problems of bank runs emerge, as they would in pegs of traditional currencies which are at risk. A partial collateralization implies a fractional reserve pegging mechanism, as is found in traditional currencies (particularly those of emerging markets), where pegging at only a portion of the reserve heightens the risk of coin holders selling whenever the durability of the peg is in question. This in turn depends on the actual reserves held by the coin issuer. Due to a lack of transparency among coin issuers (such as Tether), there are risks of bank run behaviour, further combustible due to the mercurial attitudes of a segment of investors towards cryptocurrencies. In a crisis event, the coin issuer shall be forced to purchase its issuance using its dollar reserves to prevent the coin's price from precipitous falls. The durability of the peg, already a tough proposition given the trust deficit faced by cryptocurrencies issuers, is therefore a key determinant in such conditions.

Third, for uncollateralized coins, the need for transparency and bridging the trust deficit is even greater. A coin issuer that is uncollateralized and pegged would require not just coin issuance but a fixed income issuance ("crypto-bonds," so to speak), with the interest repaid in coins. At falling price levels for the coin, the issuer would be forced to buy the coins through the emission of additional crypto-bonds, and these bonds would need to be emitted at below par value (at a discount), so as

[6] See discussions on regulation in Chohan 2017a-f
[7] See Chohan's (2018l) description of a lack of transparency with respect to Tether

to attract fixed-income investors with the potential of a price rise, in addition to the coin-bearing interest. Coin-bearing interest would be premised on future earned income through issuances. For this to occur, the issuer would require ever larger fixed-income emissions (a high growth trajectory), which in turn would depend on investor interest in such an asset. Without future issuances, current interest liabilities will not be met, and so greater discounts or higher coin interest rates would need to be applied, exacerbating the problem over time. This would destroy the issuers ability to maintain the peg.

In sum, irrespective of the level of collateralization, stable coin issuers will face substantial challenges, relating to credibility of their pegs and resources to assure the viability of the peg, that are often present in currencies (particularly in emerging markets) where pegs have at times not been sustainable. At full collateralization, substantial reserves will need to be held, which would also need the assurance of transparency, which in current cases has been left wanting.[8] At partial collateralization, the tether (peg) will be susceptible to traditional bank run behaviour. At no collateralization, coin issuers would need to emit fixed-income instruments which would be even more susceptible to bank run behaviour.

As of this writing, the precipitous decline in cryptocurrencies, and the marked volatility of the larger (and unpegged) cryptocurrencies would suggest that investor appetite for such risk is far lower than in the period 2015-2017. While volatility is an issue that is *prima facie* dealt with through tethers, the viability of such a tether - or to put it another way: the stability of the stable coin - remains an open question,

[8] See Chohan 2018l

irrespective of the level of collateralization, and particularly more so for lower levels of collateralized cryptocurrencies.

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