Introduction to the Policy Forum on Cryptocurrencies

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This issue of the *Policy Forum* focuses on cryptocurrencies. As a monetary economist, I am interested in understanding money. While I am used to think of public money, i.e., money issued by a public institution as a central bank, private money is no less interesting to me. A reality as Bitcoin has indeed forced macroeconomists to ask many questions related to the coexistence, consequence, and optimality of public and private money. The readers of this issue and I are very lucky to find very insightful discussions on public and private money in it.

The issue is opened by a piece by Jesús Fernández-Villaverde, one of the most influential economist of his generation. His piece, titled "Cryptocurrencies: A Crash Course in Digital Monetary Economics", teaches us a lot. In first place, it teaches us why money is different from bananas. Money is different from bananas because the market for the latter typically works well in equating demand and supply at an efficient level. Differently from a competitive market for real goods, the market of private money does not provide the socially optimal quantity of money because of the trading frictions which support the very existence of money itself. Intriguingly, Fernández-Villaverde explains this to us by taking us to an intellectually stimulating tour which reminds us why money is memory; the importance to understand how to organize such memory; the difference between US or AUD dollars (which are government bonds, after all) and fiat money; the fact that fiat money is necessarily a bubble; and the role that this bubble can play for the Society. A very useful policy implications is provided: The competition between public and private money can play a role in disciplining central banks into providing better government-run fiduciary monies. Not all bubbles are bad, after all!

¹ From this point onward, I will refer to public money as fiat money. Again, Fernández-Villaverde carefully explains why this classification, widely used among economists, is questionable. I believe this is yet another reason to read his contribution to this Policy Forum as well as the other three papers in it.

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In "Cryptocurrencies and Digital Fiat Currencies", Robert Kirkby offers an interesting set of facts regarding the volatility of a set of cryptocurrencies as opposed to that of fiat money such as the US dollar, the Argentinean Peso, and the Venezuelan Bolivar.¹ These facts point to the pretty high volatility of cryptocurrencies with respect to reference currencies such as the US dollar, something which could easily lead us to classify Bitcoins et al. as speculative investment. However, countries featuring political instability, often associated to extreme swings in the relative value of their currencies with respect to the US dollar, could theoretically see cryptocurrencies emerge as credible alternative means of transactions. This goes back to Fernández-Villaverde's conclusions on the role of cryptocurrencies as disciplining devices which may force central banks to provide better government-run fiduciary monies. Kirkby's analysis also predicts that, with transactions going increasingly digital in a number of countries, a fiat-digital-currency could at some point become reality, possibly in co-existence with cash.

Donato Masciandaro's paper on "Central Bank Digital Cash and Cryptocurrencies: Insights From a Baumol-Friedman Demand for Money" explores exactly to what extent a demand for a fiat-digital-currency could exist. Typically, the reasons behind money demand according to the tradition established by Baumol and Friedman are money's relevance as a medium of exchange and as a store of value. Interestingly, Masciandaro considers a third one: Money as a store of information. If money is a disseminator of information, agents in the economy consider risks related to their privacy when deciding to holding and using money for trading. This translates into the existence of anonymity costs, which are related the using money as a mean of exchange. The desire for anonymity can be rationalized by various reasons, e.g., resistance to censorship, or money laundering. To the extent that cryptocurrencies carry a different (possibly lower) amount of information than public monies, a demand for cryptocurrencies could be in place. And, to the extent that fiat-digital-money contains a different (possibly lower) amount of information than fiat-money in non-digital form, a demand for fiat-digital-money could arise. But what is the appetite for secrecy, in first place? Does it arise on top of that for transaction and speculation when it comes to money demand? Quite interestingly, an experiment conducted by Masciandaro and co-authors - commented in the piece in this special issue - points to a strong evidence in favor of the traditional money demand motives, and a much weaker one for anonymity. Most of all, Masciandaro's piece reminds us the need of testing our theories, a need certainly present when one investigates cryptocurrencies.

Talking about data, what is the relationship between cryptocurrencies and mainstream assets as of now? George Milunovich investigates this question by formally studying connectedness between five popular cryptocurrencies (bitcoin, ethereum, lightcoin, monero, and ripple) and mainstream financial indicators such as the S&P500 index, US government bonds, US dollar, oil, gold, and a broad commodity index, as well as risk-factors such as the TED spread and a world geopolitical risk measure. A battery of Granger causality tests subsequently mapped into a network and a connectedness investigation are conducted to understand how strong the relationships within each

group and between cryptocurrencies and mainstream assets are. Among other findings of interest, the one that stands out is the weak relationship between the temporal evolution of the market value of cryptocurrencies and that of mainstream assets. One way of reading this result goes back, once again, to Fernández-Villaverde's consideration on the evolution of cryptocurrencies as not being driven by fundamentals: to the extent that fundamentals are (at least in part) behind the fluctuations in mainstream assets, one should probably predict a weak correlation between cryptocurrencies and such assets, which is exactly what Milunovich finds in his analysis.

I am extremely excited by the richness of results and intuitions and the depth of discussions contained in the four articles written for this Policy Forum. I predict a lot of attention will be paid to these four pieces by macroeconomists working in academia, the public sector, and private institutions. I see these pieces as of particular interest to PhD students, who will get excited when thinking of the wide number of unexplored avenues these contributions point to. I feel privileged to have interacted with the contributors to this issue. Going back to Fernández-Villaverde, money is memory. I can certainly state that this issue will be a precious memory for me as Editor of the Policy Forum, and - as all precious things - I am sure that our readers will treasure the teachings contained in this Forum.

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