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Topic 1: Virtual currencies and central banks monetary policy: challenges ahead

Bruegel (Grégory CLAEYS, Maria DEMERTZIS, Konstantinos EFSTATHIOU)

Decentralised ledger technology has enabled cryptocurrencies to become a new form of money that is privately-issued, digital and that permits peer-to-peer transactions. However, the current volume of transactions in such cryptocurrencies is still too small to make them serious contenders to replace official currencies. Underlying this are two factors. First, cryptocurrencies do not perform the role of money well, because their value is very volatile and they are thus not very good stores of value. Second, cryptocurrencies are managed in ways that are very primitive compared to what modern currencies require. These shortcomings might be corrected in the future to increase the popularity and reach of cryptocurrencies. However, those that manage currencies, in other words monetary policymakers, cannot be outside any societal system of checks and balances. For cryptocurrencies to replace official money, they would have to conform to the institutional set up that monitors and evaluates those who have the power to manage money.

Two main questions: can cryptocurrencies acquire the role of money? And what are the implications for central banks and monetary policy?

- With the emergence of decentralised ledger technology (DLT), cryptocurrencies represent a new form of money: privately issued, digital and enabling peer-to-peer transactions.
- Historically, currencies fulfil their main functions successfully when their value is stable and their user network sufficiently large. So far, cryptocurrencies are arguably falling short against these criteria. They resemble speculative assets rather than money. Primarily this is because of their inherent volatility.
- Cryptocurrency protocols could theoretically evolve to limit their volatility and correct their current deficiencies. A successful alternative to official currencies could put pressure on those who manage official currencies to provide better policies. But the widespread substitution of central bank currency for cryptocurrencies would effectively create parallel currencies. This by itself could create risks to the effectiveness of monetary policy, to financial stability and ultimately to growth.
- The risks of cryptocurrencies becoming serious contenders remain small as long as fiat currencies issued by the world's major central banks continue to deliver effectively the three traditional functions of money: unit of account; medium of exchange; store of value. It would

take a deep crisis of trust in official currencies for their widespread substitution by cryptocurrencies to materialise.

- For cryptocurrencies to assert themselves as official currency they would have to overcome a triple challenge. First, in the presence of fractional reserve banking, the supply of cryptocurrency would need to act as an instrument (or identify a different instrument) that affects the economy. Second, the supply would need to respond to liquidity crises and act as a lender of last resort in order to safeguard financial stability. Third, there would need to be a system of checks and balances to keep the agent, ie the cryptocurrency issuer, accountable to the principal, ie society, which is not possible because cryptocurrencies are automatically and privately-issued. For these reasons, official currencies controlled by inflation-targeting independent central banks still appear to be a far superior technology than cryptocurrencies to provide the money functions.

CASE, Centre for Social and Economic Research (Marek DABROWSKI, Lukasz JANIKOWSKI)

Virtual currencies (VCs) are a contemporary form of private money. Thanks to their technological properties, their global transaction networks are relatively safe, transparent, and fast. This gives them good prospects for further development. However, they remain unlikely to challenge the dominant position of sovereign currencies and central banks, especially those in major currency areas. As with other innovations, virtual currencies pose a challenge to financial regulators, in particular because of their anonymity and trans-border character.

- Unlike their 18th and 19th century paper predecessors, VCs are used globally, disregarding national borders. However, as with any money or financial asset, investments in VCs are not without risks (e.g. fraud, bankruptcy, bubbles and bursts).

- In April 2018, there were more than 1,500 VCs; however, only a few recorded meaningful market turnover and capitalisation. Bitcoin, the first VC, created in 2009, remains a leader among them. The VC business has seen continuous development in terms of number of VCs, number of transactions, and market capitalisation. However, as long as major trading platforms and financial intermediaries do not accept payments in VCs, their transactional role will remain limited and they will fulfil mainly the third function of money, the store of value—that is, they will serve as one of many investment assets.

- Similar to previous incarnations of private money, VCs face the challenges of gaining market and governmental recognition as a means of payment, building public trust concerning their stability, and achieving sufficient network externalities related to their use. While governments and central banks will unlikely accept them as an official legal tender in individual jurisdictions, the question of market recognition remains open, and the rapid expansion of Bitcoin and other larger VC projects worldwide indicate that it may happen (to some degree). And unlike previous incarnations, issuers of contemporary private money are able to ensure a transparent global network for circulation, a credible algorithm for the creation of the VC, and a transaction mechanism that is relatively safe, fast, and inexpensive.

- Despite their technological advances and global reach, VCs are far from being able to challenge the dominant position of sovereign currencies and the monetary policies of central banks, especially in major currency areas. However, in extreme cases, such as during periods of hyperinflation, financial crisis, political turmoil, or war, they can become a means of currency substitution in individual economies.

- Financial regulators may dislike VCs because of their anonymity or cross-border circulation. They tend to fear that VCs will facilitate money laundering, the financing of illegal activities, tax

avoidance, the circumvention of capital controls (in countries where such controls are in place), and fraudulent financial practices. Such concerns may be legitimate in some instances but must not be generalised. In most cases, transactions in VCs result from the free business choices of economic agents and, therefore, should be treated by regulators as any other financial transaction or instrument—that is, proportionally to their market importance, complexity, and associated risks. Given their global, trans-border character, it is recommended that regulations concerning VCs be harmonised across jurisdictions (which is far from the case now). Investment in VCs should be taxed similarly to investment in other financial assets.

- Particularly tight, and not easy to design and agree, arrangements with the institution responsible for financial stability and monetary policy in the jurisdiction where the CCP is incorporated, specifically the Bank of England for the London Clearing House (LCH), as well as direct intervention rights for the issuing central bank (i.e. the ECB), can approximate the conditions that would prevail if the CCP was located in the jurisdiction of the issuing central bank.

Kiel Institute for the World Economy (Salomon FIEDLER, Klaus-Jürgen GERN, Dennis HERLE, Stefan KOOTHS, Ulrich STOLZENBURG, Lucie STOPPOK)

Following a brief discussion of the characteristics of money, the paper provides an overview of virtual currencies describing relevant technological aspects and different use cases. Based on this, the paper derives implications for financial market regulations and monetary policy (with a focus on the possibility of central bank digital currencies).

- Cryptocurrencies are a special case of digital/virtual currencies. While cryptocurrencies use cryptographic functions in the processes of e.g. authorizing or verifying transactions, digital currencies include all currencies that are implemented on computer systems (including, for example, in the form of a simple database). Cryptocurrencies can therefore be considered a special case of digital currencies. Characteristic features include the absence of a central counterparty, non-discriminatory public access, and security against fraudulent spending.
- Currently, cryptocurrencies such as Bitcoin could not supplant traditional currencies to any significant degree. So far, the available technology faces severe limitations regarding scalability. In particular, it would be prohibitively expensive to conduct even a moderate share of the transactions now handled via traditional currencies through cryptocurrencies. However, given vibrant innovation process technological restrictions are unlikely to remain a major bottleneck in the longer term.
- Rather than as a medium of exchange, crypto and related assets are now primarily used as a vehicle for financial speculation. The currently observed large swings in value of most cryptocurrencies attract speculators looking for outsized returns. So far, it is hard to get a handle on the volatility of these assets in order to implement proper risk management procedures (this fact supports high capital requirements as an appropriate regulatory response). The fact that cryptocurrencies seem to be uncorrelated with traditional investments make hedging strategies difficult.
- Recently, a number of actors have tried to circumvent existing regulations on traditional financial products by the means of virtual assets (such as coins and tokens). These include a considerable number of intransparent investment proposals that seem unsuitable for typical investors. Additionally, not all of the new assets fit neatly into traditional categories (e.g. are Bitcoins a currency, an investment vehicle, or, depending on the context, a bit of

both?). Furthermore, certain trading practices that are prohibited on traditional exchanges as a threat to efficient market functioning are in use on crypto exchanges. Some regulatory refinements and clarifications could therefore be helpful.

- The effects of a Central Bank Digital Currency (CBDC) can be disruptive. As long as cash, that provides services such as anonymity of payments, is not abolished, a CBDC may not reduce the effective lower bound on interest rates very much. Monetary policy would still be constrained in that regard. Apart from that, the current fractional reserve banking system would be challenged at its core as soon as market participants increasingly held liquidity in the new digital currency accounts instead of bank deposits. To avoid recurrent instability of the banking system, commercial banks would need to come up with more reliable funding sources than deposits. As the fractional reserve character of the current banking system can be a major source of instability, such a disruptive change is not necessarily a bad development, but could finally pave the way for a more stable financial system.

Karl WHELAN (University College Dublin)

Virtual currencies have generated much discussion over the past few years with some believing they are an improvement on state-issued currencies and will end up replacing them. This paper argues this is extremely unlikely. Cryptocurrencies such as Bitcoin do not work well as money because of security weaknesses and the volatility of their price relative to traditional currencies. The theory that the private sector will choose to replace a state-backed currency with privately-issued currency also has little historical backing.

- Virtual currencies have generated a lot of excitement in financial markets over the past few years with some arguing they are an improvement on state-issued currencies and will end up replacing them.
- Advocates of virtual currencies argue they provide more privacy to users and allow people to avoid using untrustworthy financial institutions. They also believe that currencies such as Bitcoin are less likely to lose value over time because their total supply will be fixed.
- This paper argues it is extremely unlikely that virtual currencies will replace sovereign money issued by central banks.
- Claims that cryptocurrencies such as Bitcoin are likely to be attractive to many people do not bear up to close scrutiny. Bitcoin, for example, has a number of safety and security problems relative to existing currencies: Coins held in "hot wallets" are vulnerable to theft via hacking, malware or phishing while coins held in "cold storage" can be lost forever if the storage devices are misplaced or damaged.
- Claims that Bitcoin has superior privacy features to state-issued currencies are also over-stated. People can use dollars or euros to make anonymous cash purchases while every Bitcoin transaction is publicly recorded and the IP addresses associated with Bitcoin wallets can be detected.
- Prices for virtual currencies display bubble-like tendencies including periods of self-fulfilling optimism and pessimism. Higher prices are seen as growing evidence the currencies will be accepted widely for payment, which fuel further increases. Falling prices trigger pessimism and further declines.
- The extreme volatility of cryptocurrencies relative to traditional currencies means they have not been a useful medium of exchange and are rarely used to purchase goods and services.

- The theory that the private sector will choose to replace a state-backed currency with privately-issued currency also has little historical backing. The so-called "Chartalist" school of thought, which argues that the state is best positioned to encourage and enforce its own monetary system, has a better record of explaining how monetary systems came about.
- Even if virtual currencies were one day to replace state-issued money for transactions purposes, there would still be a need for financial intermediation. Banks would still exist and would still need to be regulated. The liquidity and solvency regulations currently enforced by central banks would still be required so central banks could still control the total amount of credit and the supply of broad money (including demand deposits). It is also possible that central banks would continue to have the resources to control short-term interest rates.
- A global crash in the prices of virtual currencies is not likely to cause any major financial stability problems unless the prices end up going far higher than their current value.
- The principal policy issues raised by virtual currencies relate to preventing money laundering and fraud. European policy-makers will need to consider whether these currencies should be subject to EU securities law.

Topic 2: ECB non-standard-monetary measures, collateral constraints and potential risks for monetary policy

Andrew Hughes HALLETT (Copenhagen Business School, Frederiksberg, Denmark), Paul FISHER (Kings College London, Department of Economics and Finance)

This paper explores how, and to what extent, prudential metrics can be used as policy instruments. In particular, the paper explores how these policies work; why they depend on high quality collateral/assets; what happens if policymakers are driven to expand the bounds of "sufficient quality or liquidity"; how new credit risks arise (and for whom). Some of these risks are quite subtle, implicit or indirect. But they all reduce the effectiveness of the measures in question (a transmission problem); and they all require larger interventions to reach certain target values (a feasibility question, given the side effects). Hence, the prudential regulation regime offers several non-standard policy instruments. But they depend of the availability of high quality liquid collateral or assets. Poor collateral makes non-standard measures less effective. Less credit and less cheap credit can be offered due to the credit risks.

- A new prudential and surveillance system was introduced after the Great Financial Crisis (GFC) of 2008-12 to protect financial markets and financial institutions from the consequences of excessive risk, financial instability and destabilising behaviour.
- This system includes a variety of different prudential or regulatory metrics which the ECB or other policymakers can use to provide sufficient liquidity to underpin the stability and safety of the banks; to influence the growth of credit (up or down); to promote lending and recovery without extra inflation); to steer interest rates, the yield curve and the cost of credit; to stabilise financial markets (including insurance, pensions); and to rule out asset price bubbles.
- These metrics provides the ECB and other policymakers with a series of non-standard monetary measures to be used for regulatory purposes. In reality many of these measures had been present before the GFC. But they were seldom used or used systematically; and never for reasons other than prudential regulation. Moreover they were poorly understood, which is what happens when prudential regulation is neglected or low priority.

- These changes automatically raise the question: can the prudential metrics in the new prudential and regulatory system also be used as pro-active policy instruments? Or as passive stabilisation policies that lead to better economic performance through stability and predictability?
- This paper takes a wide view. It does not try to reach a judgment on which non-standard measures are work best. We explore instead how these policies work, why they depend on high quality collateral or assets, what happens if policymakers are driven to expand the list of eligible assets that could be accepted as being of "sufficient quality or liquidity", and how and for whom these credit risks arise.
- What they have in common is that they all depend on the availability of high quality collateral and/or liquid assets in sufficient quantities. This cannot be guaranteed in all cases and at all times of course. If, in response, we extend the list of collateral assets that may be accepted, then the policy impacts become weaker and various credit risks inexorably creep in.
- The exact form and extent of these credit risks depends on the non-standard measure in question. Some of the more important examples are outlined in the text.
- Many of these credit risks are quite subtle, and they may be implicit or indirect. But they all reduce the effectiveness of the measures in question (a transmission problem) and they all require stronger policy interventions to reach certain target values (a feasibility question, given the side effects).
- The overall conclusions: prudential regulation offers a number of additional non-standard monetary measures that can be used as pro-active policy instruments. But they depend of the availability of high quality collateral and/or assets.
- Poor collateral makes non-standard measures less effective, so less credit and less cheap credit can be offered as credit risks expand. There are usually ways that policymakers can offset or reduced those risks, but that comes at the cost of weakening their policy power.

OFCE, Observatoire Français des Conjonctures Économiques - (Christophe BLOT, Jérôme CREEL, Paul HUBERT)

During the crisis, the ECB modified its collateral framework to face increased liquidity needs of commercial banks. This has taken two forms: the minimum required rating for different classes of assets has been reduced and the haircut associated to these assets has evolved conditional on the default risks of these assets. The benefits in terms of cushioning a liquidity crisis and enhancing monetary policy transmission have most probably exceeded the costs in terms of riskier central bank balance sheet and potential capital losses.

- Any collateral framework induces a trade-off between the central bank role of lender of last resort and the risk held in the central bank balance sheet.
- The collateral framework is also essential to the transmission of monetary policy as it sets the rules for the refinancing operations of commercial banks.
- One specificity of the Eurosystem collateral framework, even in normal times, is to accept a large range of assets as collateral, including non-marketable ones. This is due to heterogeneity of banking systems across the euro area countries and because of the importance of banks in the transmission of monetary policy (compared to the US for instance).

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- This has taken two forms: the minimum required rating for different classes of assets has been reduced and the haircut associated to these assets has evolved conditional on the default risks of these assets.
- According to recent empirical evidence, this loosening of the collateral constraint has supported bank lending and reduced financing costs for firms for which credit claims were eligible.
- If ECB's counterparties default, accepting a larger set of assets as collateral put the ECB balance sheet at risk. However, the adjustment of haircuts aims at mitigating this risk.
- In addition, central banks do not face liquidity crisis like commercial banks as they issue the legal tender and may continue their activity even if they have negative equity.