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Central Bank Digital Currencies Analyzed in a Banking School versus Currency School Framework

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Abstract. *This article analyses the justifications for the creation of central bank digital currencies – CBDCs – and their anticipated features with the aim of looking at them from two different and somewhat opposing perspectives. These perspectives define the two broad historical and logical currents that emerged in the Banking School versus the Currency School debates. We are going to investigate to which extent can the concept of CBDC be embedded into the Banking School's body of thought and to which extent can it be criticized with the arguments of the Currency School.*

Keywords: CBDC, central banking, monetary policy, Currency School, Banking School, cryptocurrencies, decentralized finance

Introduction

With the advent of cryptocurrencies, the institution of the central bank and indeed the whole banking sector is once again at a crossroads. New technologies in money and payments require a response from the monetary and banking authorities. Part of this response are Central Bank Digital Currencies (CBDCs), considered by some authors an alternative form of money to riskier private digital currencies (Ozili, 2023), and also the most important counteraction of the state to the emergence of cryptocurrencies and decentralized finance (Cong & Mayer, 2021). Representing a central bank's liability that can be used to make payments and simply defined as monetary value stored electronically (Engert, 2017), Central Bank Digital Currencies could promise advantages as reducing some sources of financial instability (Hoening & Knight, 2022), improving the efficiency and safety of payments systems (Fung & Halaburda, 2016) and discouraging tax evasion and illegal activities (Bordo & Levin, 2017). There are also researchers who argue that, despite the narratives about CBDCs assuring a better protection of cashless payment users, they are in fact nothing less than a means enabling central banks to have more control (Forgac, 2020), to be used as a tool for different political purposes (Polleit, 2022).

But, beyond the economic, ethical or environmental arguments (Jora, Apăvăloaei, Roșca, & Iacob, 2020) that can be applied in favor or against them, the question is: are Central Bank Digital Currencies a revolutionary invention, or just a new appearance for some old practices? In this paper we will argue that CBDC are indeed a new hybrid instrument that applies some of the new technologies used in

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cryptocurrencies to an already established practice. Their new features have an impact that we will analyze in more detail below.

Banking versus Currency: historical Schools and universal principles

In order to understand this new evolution we need to set it against the historical background. The discussions about the ideal monetary standard and institutional setting for banking have been defined by an old and ongoing clash between the opposing views of two broad currents: the Banking School versus the Currency School. This classification, like all classifications, is to a certain extent reductionist. Some thinkers belong into one of the schools by some criteria and, at the same time, into the other, by different criteria. Some writers differentiate between the two aforementioned schools and a third one, the Free Banking School (Schwartz, 1989). However, for the purposes of the present analysis, we consider that we can take into account just the two currents mentioned above, ignoring third Schools and other sub-classifications. Also, they can be reframed as polar opposites without the risk of betraying their essential characteristics and purposes.

The Banking School could be defined as the current of thinkers and proponents that are favorable to state control of the money supply and banking activity. It is also the school of inflationism and credit expansion. The purpose of this current is money and credit abundance and the control, diminution, and even abolition of the interest rate. Its means is the centralization and socialization of money and credit – thus, this is the School that backs consistently the creation and existence of a central institution to control the money and banking sectors: the central bank. Also, it is the School that advocates fractional reserves as a modus operandi in banking – with banknotes and deposits as substitutes only partially covered in commodity money. Moreover, it is the current that later in its development, as a logical evolution, supported unbacked paper money and substitutes that rely solely on decree, that is, fiat money.

The Currency School, on the other hand, can be defined as the current that backs a market evolution in money and banking, advocating for commodity money and a banking sector that creates substitutes that are backed with said commodity money to a rather greater than lesser extent. From this point of view they are restrictionists. Many members of the Currency School wanted to have a central bank for this very purpose: to control and assure that the dynamic of money and credit is more or less strictly limited by the evolution of commodity money supply. The most consistent members of the Currency School advocated for the extension of private property, entrepreneurship and free markets into the areas of money production and supply, payment services and credit intermediation. They supported a „natural" inflation of the money supply and credit expansion, and a market-driven rate of interest.

The purpose of this current is the free play of supply and demand of whatever markets deem fit for the role of money. Also, in the area of credit intermediation, it is the school that advocates for the interplay of market forces and the absence of intervention from any authority in the availability of credit and the level of the interest rate. As such, it is the School that ultimately advocates for 100 percent reserves in baking and against the central planning of monetary and credit policy via a central bank.

Toward a better representation of the two currents

Vera Smith, in her famous book *The Rationale for Central Banking* (Smith, 1990), has the following classification of the different thinkers on these matters, as they envisage a central bank or a free banking arrangement.

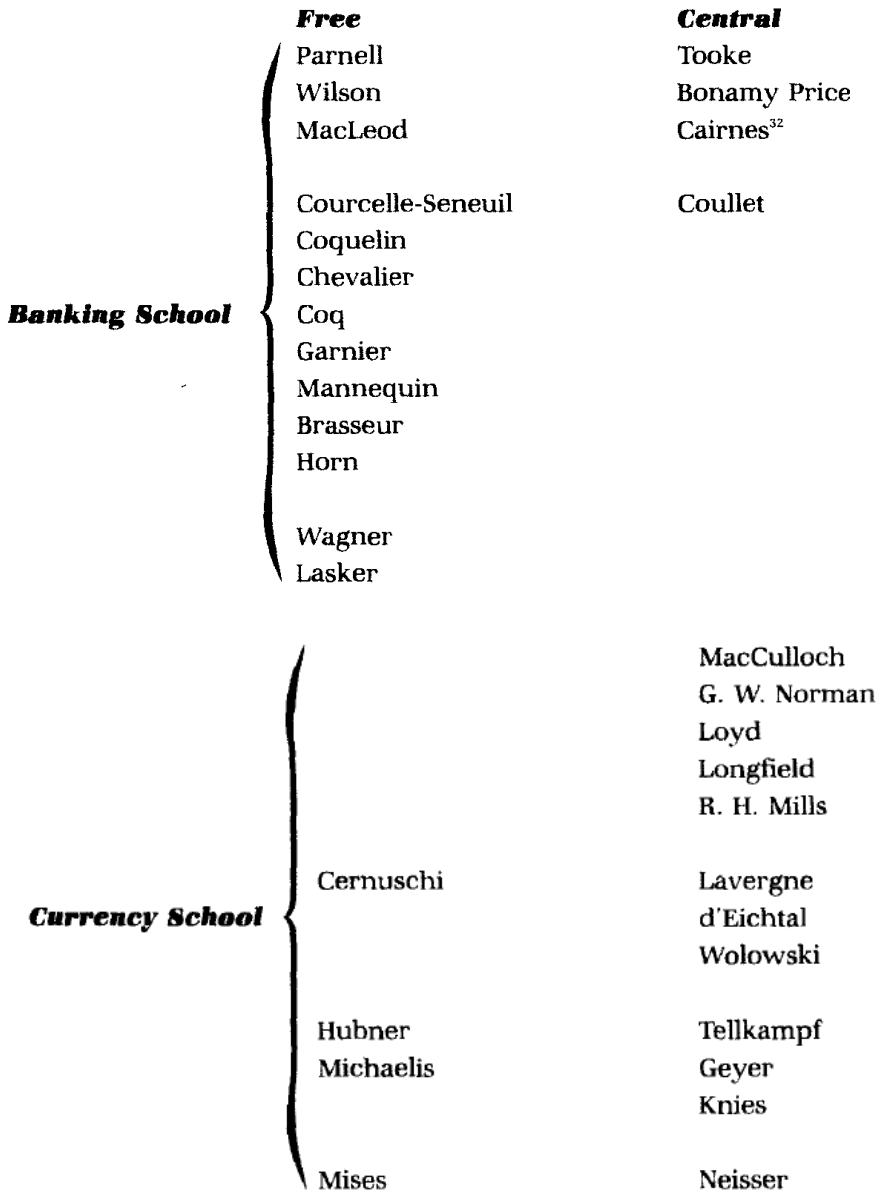

Figure 1. Vera Smith's representation of the two Schools

Source: Smith (1990), p. 144-145.

Huerta de Soto, in his *Money, Bank Credit, and Economic Cycles* (Huerta de Soto, 2012) has a similar and updated approach:

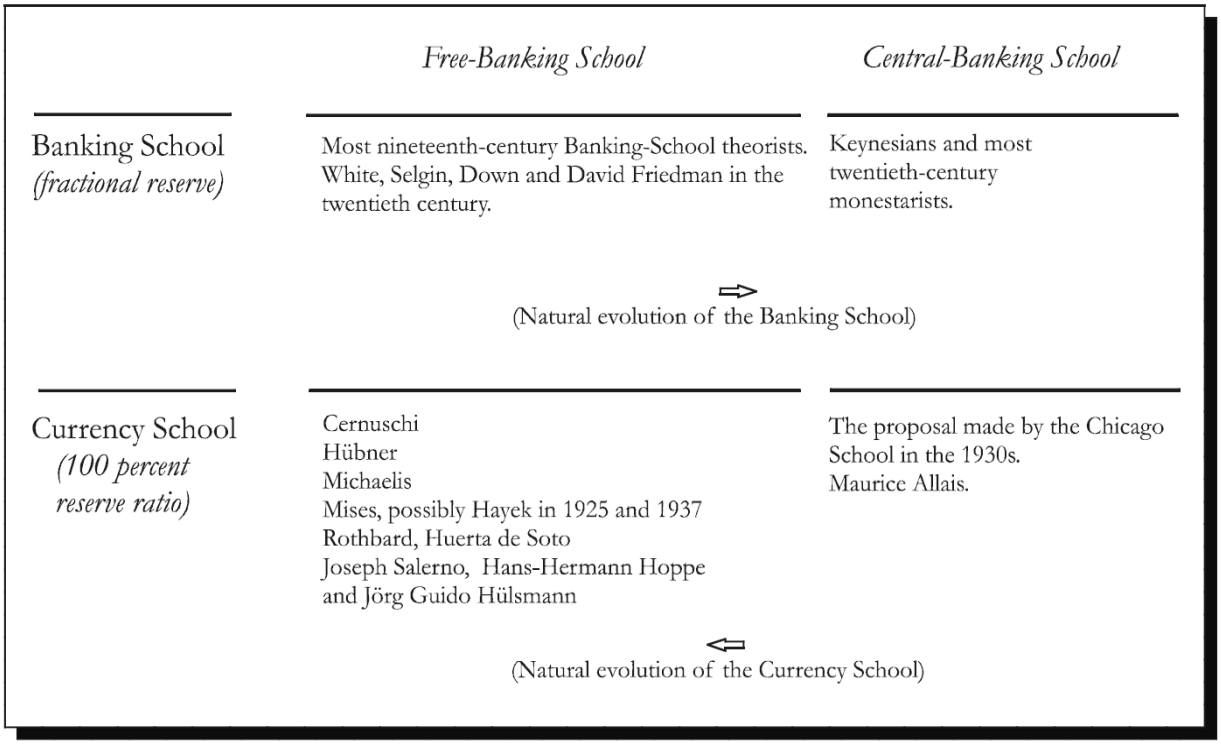

Figure 2. Huerta de Soto's updated representation of the two Schools

Source: Huerta de Soto (2012), p. 645.

Smirna has offered a more detailed variant of this approach, with three categories on each of the two axes of the two-dimensional representation for the thinkers that discussed and contributed to the creation of the National Bank of Romania and the money and banking institutional arrangements that preceded it (Smirna, 2017).

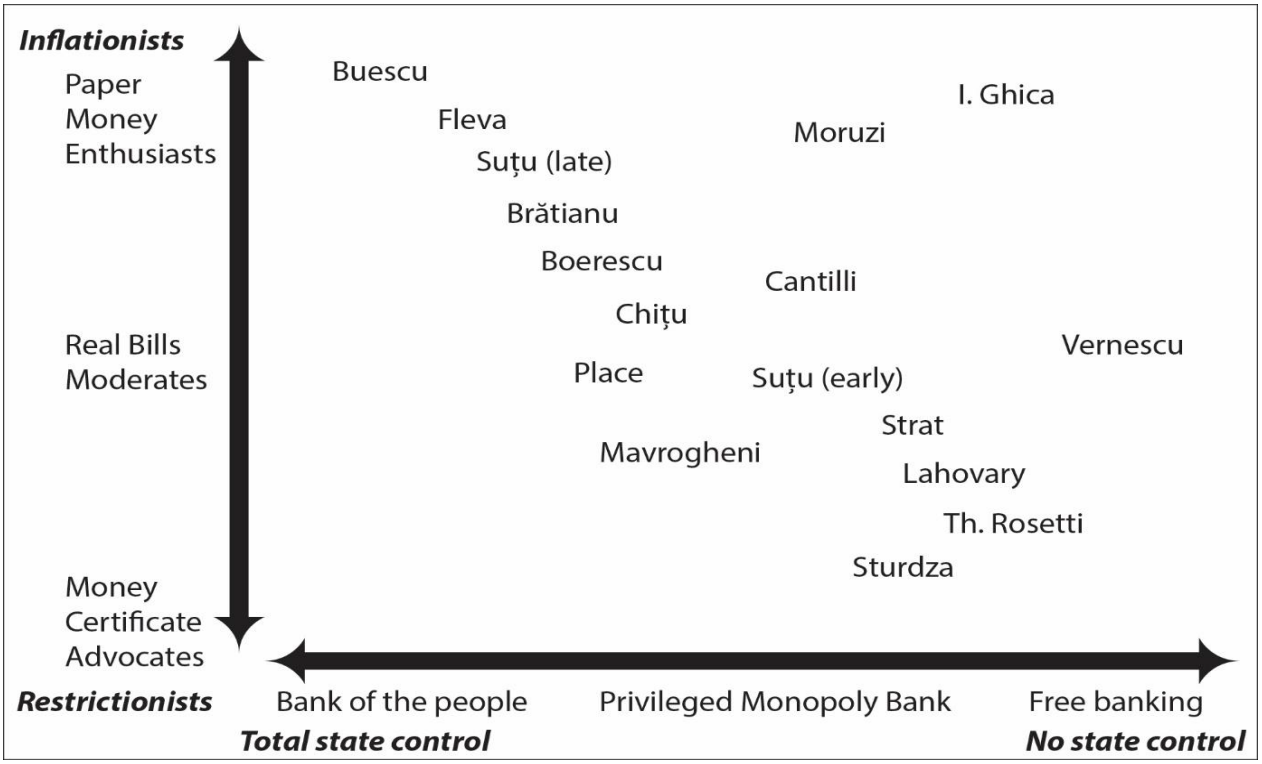

Figure 3. Smirna's framework for the representation of Romanian protagonists in the late 19th century Banking vs. Currency debate

Source: Smirna (2017), p. 263.

For this article, we have developed a new schematic presentation with the purpose of giving an outline of the relations between different monetary standards and their inflationary capacity, on the one hand, and the different possible setups of the banking sector, arranged from the most centralized to the most decentralized:

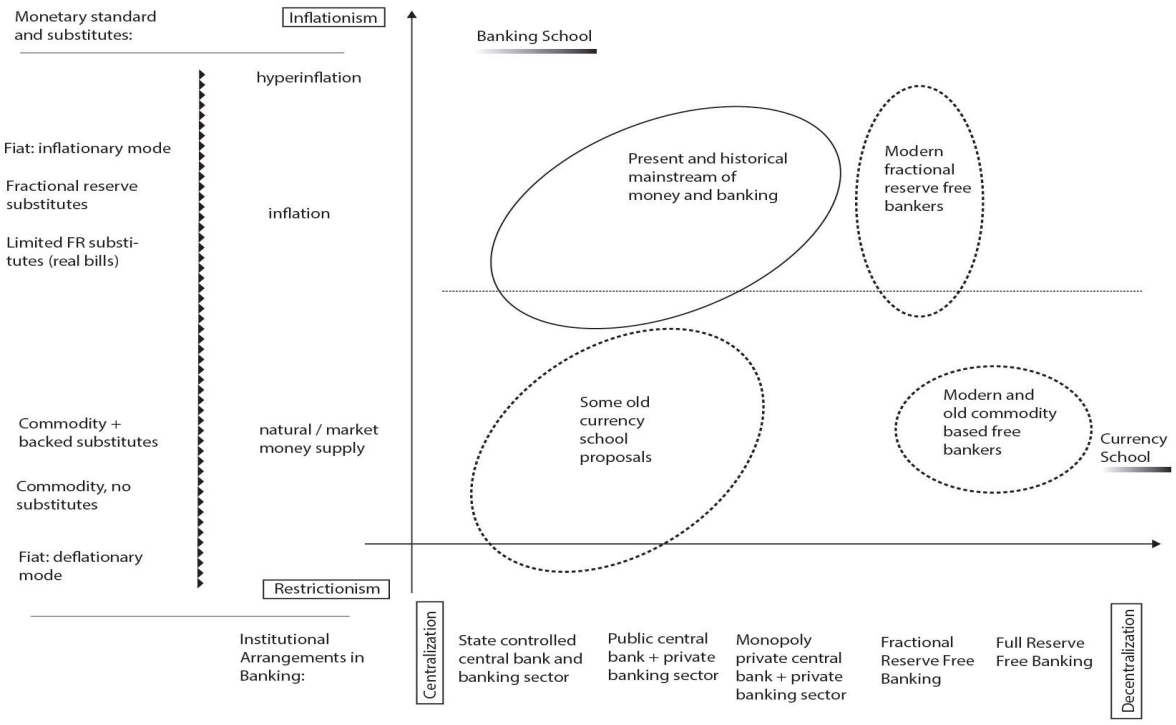

Figure 4. A new schematic representation for the Banking vs. Currency framework

Source: Authors' own research.

Next we are going to analyze CBDCs and propose a placement of this new evolution in the above framework.

CBDC: deposit or token money?

According to several authors (Block, Hoppe, & Hülsmann, 1998; Huerta de Soto, 1995; Mises, 1980)(Bagus, 2008; Block, Hoppe, & Hülsmann, 1998; Huerta de Soto, 1995), central banks are the logical fulfillment of particular institutional settings that involved a repression of free initiative and private property in money and banking. The Progression Theorem states that the commodity money standard has transitioned into a fiat standard and then into a deposit standard (Smirna, 2015) by way of accumulating interventions. We consider that CBDCs can be viewed from this perspective as another step in the consolidation of a deposit standard for money.

Researchers (Chaum, Grothoff, & Moser, 2021) argue that the best way to design a CBDC is either as a deposit (reserves of commercial banks with the CB) or as a token (technical solutions that offer a CBDC as a service similar to banknotes and coins – a sort of electronic banknote). We can see that even in this last case and under the most favorable conditions the feature that would qualify CBDC as a banknote is a sort of conditional privacy. This limited privacy would allow the system to identify the users but would hide the identity to sellers and the issuer (the central bank).

It may be argued that inasmuch as the CBDC is offered with features intended to give it token as opposed to deposit functions it is different from a classical deposit with a commercial bank or even the central bank. However, in our opinion it would still not be enough of a difference to consider CBDC a type of enhanced banknote, but rather a type of enhanced deposit. To understand and support this assertion, we have to discuss the features of a CBDC.

Differences of CBDCs from banknotes and coins

To the extent that CBDCs would replace banknotes and coins, there are logistical and security advantages for the issuer.

Security: Elimination of banknotes implies the elimination of the risk of counterfeiting. On the other hand, the wide usage of CBDCs will increase the risk of attacks on the electronic wallets of holders, and the infrastructure provided by the central bank and its partners.

Logistics: To the extent that an electronic substitute for physical money is widely accepted, the costs involved with transportation and administration of numeraire will be significantly reduced.

However, even under these most favorable circumstances, CBDC would allow the issuer to act in ways that are not practical or even possible with banknotes now:

Imposing a *time limit* on the CBDC units – either an expiration term for the spending or the conversion to new coins. This limit can be and in fact is practiced in the case of conversion of banknotes and coins also, but the costs and organizing complexity involved with redemption are arguably orders of magnitude higher.

Imposing a *limit on the size* of cash holdings. The issuer can decide that certain or all wallets are limited up to a certain level. Thus it can impose and control the maximum cash holdings of all or part of the users. For evident reasons, this anti hoarding policy is impossible in the case of paper banknotes. Incidentally, this measure is considered essential to counter a possible migration from commercial bank deposits to central bank deposits, thus leading to a disintermediation of the banking sector and a diminished role for the commercial banks in money and credit policy.

Disintermediation, therefore, must be included in this list, although it is not a feature CBDC per se but rather an effect.

It must be noted here that this size limit can also work as a minimum on cash holdings – e.g. when the central bank decides, after a pandemic with lockdowns and feeble spending, that it must impose a forced saving or hoarding policy in order to avoid spikes in consumer prices.

Another possible use case for CBDC is the *controlled allocation of cash deposit tranches*. Suppose that the monetary policy of the central bank is called to align with the general economic policy of the national, regional or global governing bodies and this implies using the CBDC instrument to impose a certain demand structure – e.g. if the public agenda pushes for a "green" orientation of consumption, CBDCs could be used to restrict other purchases and force the allocation of a certain minimum percentage of individual and corporate cash holdings for "green" purchases.

Discretionary suspension or cancellation of certain CBDC units. Since all users are KYC checked and identified, it is possible – and even considered desirable for the AML/CFT reasons – to invalidate the coins belonging to wallets considered undesirable. This feature is nonexistent in the case of banknotes.

Impose a *negative interest rate* – in fact a tax – on CBDC units. For reasons pertaining to monetary, credit, and banking policy, it may appear desirable for the issuer to tax the holding of CBDC by users. Again, this option is not available to the central bank or commercial banks in the case of banknotes held outside the banking system. CBDC opens a possibility that would otherwise be impractical under current conditions, with the use of "dumb" money – paper banknotes and coins. Before the emergence of the conditions for the creation and implementation of CBDCs, the envisaged solutions were not very promising. Under the current technical conditions, when interest rates are at a range slightly above zero, the conventional monetary policy cannot be used anymore – i.e. further lowering the reference interest rate as a means toward monetary policy ends. Opening this course of action would require either outlawing banknotes, having them periodically marked or stamped , or use an elaborate mechanism to separate the function of money as "numeraire" vs the medium of exchange function (Buiter, 2009, p. 226). With CBDCs this option is straightforward.

Only some of these features can be considered advantages of CBDC over banknotes without qualification. From the point of view of the Banking School, some or all of these features can be considered advantages. From the point of view of the Currency School, many are negative features.

A note on the evolution of the banknote

Before being an instance of fiat money, paper banknotes emerged, along with token coins, as private paper substitutes issued by private banks as titles for commodity money, i.e. usually gold or silver. Later, with the spread of central banking, the monetary standard ceased to be gold or silver and the issuance of banknotes was monopolized by the central bank. Thus, the substitutes became the standard. Paper and metallic titles to a more essential form of money became *the* money and the proper standard by fiat (Hülsmann, 2008).

We can see, therefore, that the banknote has an ambivalent significance. On the one hand it can be viewed as a natural manifestation of technical progress. On the other hand, it can be viewed as a form of interventionism. This is why both the Banking and the Currency principle admit it as a means to attain differing ends.

In similar fashion, the emergence of digital and electronic means of payment, to the extent they are offered and demanded through the free interplay of entrepreneurial innovation and demand in the market, can be considered a means accepted by the Currency principle.

CBDC in light of Banking vs. Currency approach

In order to have a synoptic view of our analysis of CBDC features, we define here four criteria for the Banking and Currency views:

Banking School: «centralization of the banking sector / central bank» and «inflationism and credit expansion»

Currency School: «decentralization» and «natural supply of money and credit»

In the table below we will qualify the features described above according to these criteria. It offers an overview of the compatibility of CBDC with the goals ascribed to the two opposing Schools:

Table 1. A qualification of CBDC features

		Banking principle		**Currency principle**	
CBDC features		**Centralization**	**Inflation and credit expansion**	**De-centralization**	**Natural supply of money and credit**
1	Security	+	+	+	+
2	Logistics	+	+	+	+
3	Time limit	+	+	-	-
4	Size limit	+	+/-	-	-
5	Discretionary suspension	+	+/-	-	-
6	Controlled allocation of cash deposit tranches	+	+/-	-	+/-
7	Negative interest	+	+	-	-
8	Disintermediation of commercial banks	+	-	-	+/-

Source: Authors' own research.

To sum up the table above, we can observe that all the analyzed features are reflected positively from the perspective of the centralization involved by the Banking School principal. As for the second criterion – inflation and credit expansion – our assessment reveals that only half of the features are conducive to its fulfillment, whereas three of them are ambivalent and one is considered to be negative. When it comes to the first criterion pertaining to the Currency School, namely decentralization, we note that all the features except the first two are detrimental to its fulfillment. And for the second criterion of the Currency School – the natural or market supply of money and credit – we deem that half of the analyzed CBDC features are qualified as negative, whereas two are ambivalent and only two are clearly positive.

With this approach, CBDCs can now be described as a hybrid between a deposit and a banknote that allows for a further step in the centralization of the money and banking sector. From this point of view, it appears as an advancement toward the logical purposes of the Banking School.

It is consistent with the arguments of the Banking School to pursue a novel instrument given the last innovations in this area. CBDCs are a response to the emergence of cryptocurrencies and the technologies they have brought to light. However, CBDCs should be deemed a reaction in the opposite direction from the original cryptocurrency proposal, Bitcoin, and other similar proposals.

We think that the analysis above justify us in placing the new central bank instrument as in the figure below.

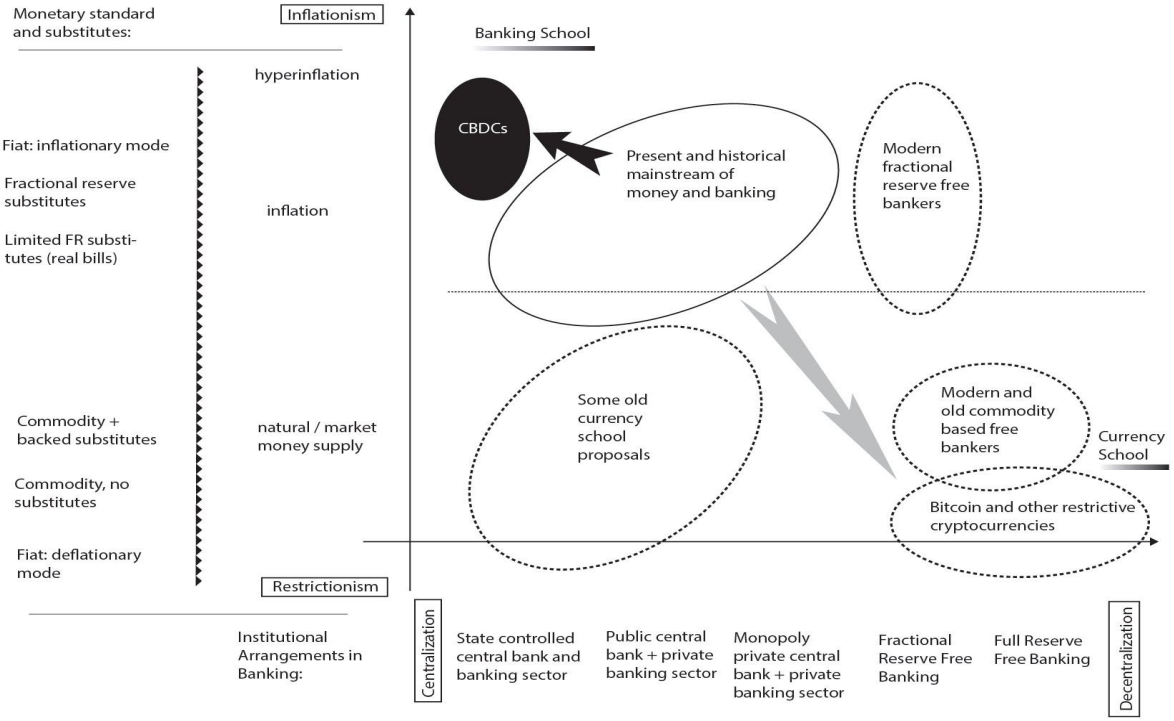

Figure 5. A schematic representation of CBDCs in a Banking vs Currency framework

Source: Authors' own research.

A note on Bitcoin and the emergence of cryptocurrencies

There are various types of cryptocurrencies. A classification based on their underlying economic, monetary and financial conceptions would most probably populate all areas of the two-dimensional representation that we have described above. However, at least in the case of true DLT and commodity-like cryptocurrencies, such as Bitcoin, there can be no doubt that its justification falls squarely into the Currency School. This is why we consider that it must be placed in our proposed framework in the lower right corner. Bitcoin is a currency of fixed final amount, limited gradual issuance, open entry and market-democratic control. As a monetary standard proposal, it is perfectly compatible with the free market and a private production of money. Other cryptocurrencies present this sort of compatibility and may very well be adopted ultimately by the markets, given a calculated option for all the advantages and disadvantages involved (Jora, Damoc, Roșea, Apăvăloaei, & Iacob, 2022).

Conclusion

In this paper we have proceeded to analyze the CBDC as a new monetary instrument against a specific framework that we have conceptualized based on the historical opposition of the Banking School vs. the Currency School. As a precondition for the analysis, we have defined the essential characteristics of the two Schools and delineated the underlying opposite principles that they contain. Then we have analyzed CBDC proposals with the purpose of conceptualizing a few common traits, features and consequences of such a type of instrument. We have then set the selected features of CBDCs with the purpose of qualifying them in relation with the diametrically opposed conceptions of the Banking School and the Currency School. We did this by ascribing a positive/negative value to each of the selected features as against four defining traits of the two opposing currents. Moreover, we have developed a graphical representation for our proposed framework and updated this representation with a placement of CBDCs according to our findings and discussion.

We conclude that CBDCs sit squarely within the conceptions and they are a means to the goals of the Banking School, advancing toward the logical fulfillment of this School's policies. Moreover, although CBDCs are designed to use part of the technologies involved in the newly emerged cryptocurrencies, they represent an evolutionary development that is oriented in a completely opposite direction from Bitcoin and certain other cryptocurrencies.

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