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FREE BANKING IS BACK?

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By Thomas R. Saving

About the Series

The Studies in Applied Economics series is under the general direction of Prof. Steve H. Hanke, Founder and Co-Director of The Johns Hopkins Institute for Applied Economics, Global Health, and the Study of Business Enterprise (hanke@jhu.edu). The views expressed in each working paper are those of the authors and not necessarily those of the institutions that the authors are affiliated with.

About the Author

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Saving received his Ph.D. from the University of Chicago in 1960. Prior to joining the economics faculty at Texas A&M University in 1968, he was on the faculty at University of Washington in Seattle and Michigan State University. He attained the rank of full professor at Michigan State University in 1966, six years after the award of this Ph.D. in 1960.

In 2000, President Clinton appointed him as a Public Trustee of the Social Security and Medicare Trust Funds. On May 2, 2001, President Bush named him to the bipartisan President's Commission to Strengthen Social Security. On April 19, 2006, President Bush appointed him to an unprecedented second term as a Public Trustee of the Social Security and Medicare Trust Funds which expired in December 2007.

His early research was on Monetary Theory and Policy. During that time he co-authored two books with fellow colleague Boris P. Pesek, *Money, Wealth and Economic Theory*, Macmillan, 1967 and *Foundations of Money and Banking*, Macmillan, 1968. He has published in all major US economics journals.

He is a co-editor of *Medicare Reform: Issues and Answers*, University of Chicago Press, 1999, the co-author of *The Economics of Medicare Reform*, W.E. Upjohn Institute, 2000 and *The Diagnosis and Treatment of Medicare*, AEI Press, 2007. His current research on Federal Reserve policy has resulted in his newest book, *A Century of Federal Reserve Monetary Policy: Issues and Implications for the Future*, World Scientific Press. He has published editorials in the *New York Times*, the *LA Times*, the *Washington Post* and the *Wall Street Journal*.

Introduction

The rise of cryptocurrencies is being accompanied by a “back to the past” return to something akin to the free banking era of the 19th century. In the 19th century state banks issued currency that was convertible on demand into specie, silver and gold coins minted by the federal government. Both the first Bank of the United States (1791-1811) and second Bank of the United States (1816-1836) also issued currency during their existence. After the demise of the Second Bank, the currency of the United States was produced by state-chartered banks, and we entered a period of so-called “free banking.” According to the U.S. Bureau of Census, during this period the number of banks issuing bank notes – that is, currency -- rose from 788 in 1837 to 1,562 by 1860. During the same period, the stock of bank notes increased from \$149 million to \$207 million. Bank deposits increased from \$190 million to \$310 million, and bank loans rose from \$525 million to \$692 million.

Our early history of free banking was about supplying paper money to facilitate commercial transactions - that is, supplying bank notes that circulated in commerce. This physical money was all backed by the promise of the issuer to redeem it for gold or silver coinage when the notes were presented to the issuing bank. While each banknote was denominated in dollars, the exchange rate among these banknotes varied due to the distance and time required for a receiving bank to present the notes to the issuing bank for redemption. These notes circulated, meaning they were used in commerce, because there was not enough of the alternative, coined money, to support the growing level of national commerce.

This free banking era was also subject to runs on a bank’s notes, or even to a panic run on all notes, resulting in issuing banks being unable to instantly redeem the notes they issued. Meanwhile, there may have also been so-called “wildcat” banks that issued notes with no intention of redeeming those notes for specie. Importantly, wildcat banks were few and far between, and their banknotes would not circulate far from home.¹ The free banking era ended in 1863 with the passage of the National Bank Act that established National Banks, private banks with national charters, and taxed state bank notes out of existence. These National Banks were empowered to issue currency in the form of National Bank Notes, which circulated along with Treasury-issued greenbacks. National banks had to deposit Treasury bonds at the Treasury and could issue banks notes equal to no more than 90% of the Treasury bonds on deposit.

The Rise of Crypto Banks

Today, we are now experiencing a surge in the number of digital assets generally referred as cryptocurrencies. While none of these so-called currencies currently circulate in

¹ For a thorough discussion of the free banking era see Gerald P. Dwyer Jr., “Wildcat Banking, Banking Panics, and Free Banking in the United States”, Federal Reserve Bank of Atlanta *Economic Review*, December 1996.

general commerce, many crypto exchanges have arisen that exchange the various cryptocurrencies for one another and for titles to US dollars, \$.² These new exchanges are essentially banks; they accept cryptocurrency and US dollar deposits and make US dollar loans with crypto collateral. In one sense, at least, we have entered a new era that has parallels to that of the historical free banking era: these cryptocurrencies are convertible through exchanges for the current coin of the realm, US currency, or titles to currency. Since the beginning of the cryptocurrency era, the number of cryptocurrencies has risen to over 20,000, far more than the 1,860 state banks that issued bank notes during the historical free banking period.³ But there is a critical difference between cryptocurrencies and the notes issued during the free banking era. That difference is that the state bank notes were issued by banks and circulated, meaning that they were used in the commerce of the day. Cryptocurrencies are not issued by the exchanges mentioned above and they do not widely circulate, at least not yet. It is the exchanges themselves that serve as crypto banks.

Does the fact that none of the over 20,000 cryptocurrencies are directly used in ordinary commerce mean that they have no monetary function? Clearly, cryptocurrency itself is produced separately from the exchanges. According to Merriam-Webster, a bank is “an establishment for the custody, loan, exchange, or issue of money, for the extension of credit and for facilitating the transmission of funds.” How does the cryptocurrency world fit into this definition? First and foremost, using the Merriam-Webster definition, almost none the producers of cryptocurrency are banks. Does this mean that the tremendous growth of cryptocurrencies has not, nor will it, have any effect on what we think of as money?

Equally important as the development of cryptocurrencies is the introduction of crypto exchanges that allow owners of cryptocurrency to exchange their various cryptos for one another, and for titles to legal tender. The exchanges allow trades in two main forms of cryptocurrency. One form is stablecoin, where each unit of crypto is tied to a specific value of a legal tender currency, such as the dollar or the euro. The second form of cryptocurrencies exchange for legal tender currency at rates that vary over time and are market-determined. This second form of cryptocurrency essentially has a floating exchange rate with respect to legal tender currency.

Crypto exchanges are more than just a place where individuals can exchange titles to cryptocurrencies. That exchange function is much the same function as the NYSE performs in facilitating trade for shares of corporate stock. But in addition to facilitating the exchange of crypto currencies, some of the crypto exchanges have become, for all practical purposes, banks. At least they are banks according to the Merriam-Webster definition. The crypto exchanges take deposits of crypto, thus playing a custodial role for a crypto depositor. The exchanges pay

² Some or all of the exchanges will exchange crypto for other legal tender currencies but this aspect of their business is not relevant for the argument concerning the effect of expanding availability of monetary base substitutes.

³ On September 6, 2022 the crypto site coinmarketcap.com listed 20,885 cryptos.

interest to their depositors. The exchanges also loan legal tender currency, some up to \$1 million, with appropriate cryptocurrency collateral.⁴ Thus, the exchanges both extend credit and facilitate the transmission of crypto funds.

But perhaps the most important thing the crypto exchanges do is to allow depositors to spend their cryptocurrencies in regular commerce. The crypto exchanges accomplish this with the issuance of VISA or Mastercard debit cards, again backed by an individual's holdings of crypto. The use of these debit cards allows the holder to pay merchants in titles to legal tender currency. The cards are loaded with parts of a depositor's crypto wallet and their use implies that the exchange is moving the owner's crypto to legal tender. Essentially, crypto exchanges are banks. They accept deposits and make loans. But more importantly, they convert cryptocurrency into transaction balances by their on-demand conversion of cryptocurrencies into titles to legal tender currency.

Note that the debit cards issued by crypto exchanges work very much like debit cards issued by banks. A U.S. bank accepts dollar deposits, will issue depositors a debit card to use in transferring their dollar balances in exchange for goods and services. These debit cards are useable in foreign countries where a U.S. depositor might visit and use these debit cards to pay for a good or service priced in a foreign currency. For example, a U.S. depositor purchases an item in euros, and the debit card transactions both pays for the good in euros and debits the dollar value of the euro purchase from the U.S. depositor's dollar deposit account.

Crypto Exchanges and the Money Supply

In the 19th century free banking era, state banks issued currency with the promise of its convertibility into hard currency, gold or silver. These notes circulated as they were issued in denominations that allowed them to be more easily used in commerce. What is different about this new era of free banking is that the issuers of cryptocurrency are not banks. Rather, it is the exchanges that have become banks. The crypto exchanges allow cryptocurrencies to be exchanged for one another and for titles to legal tender.

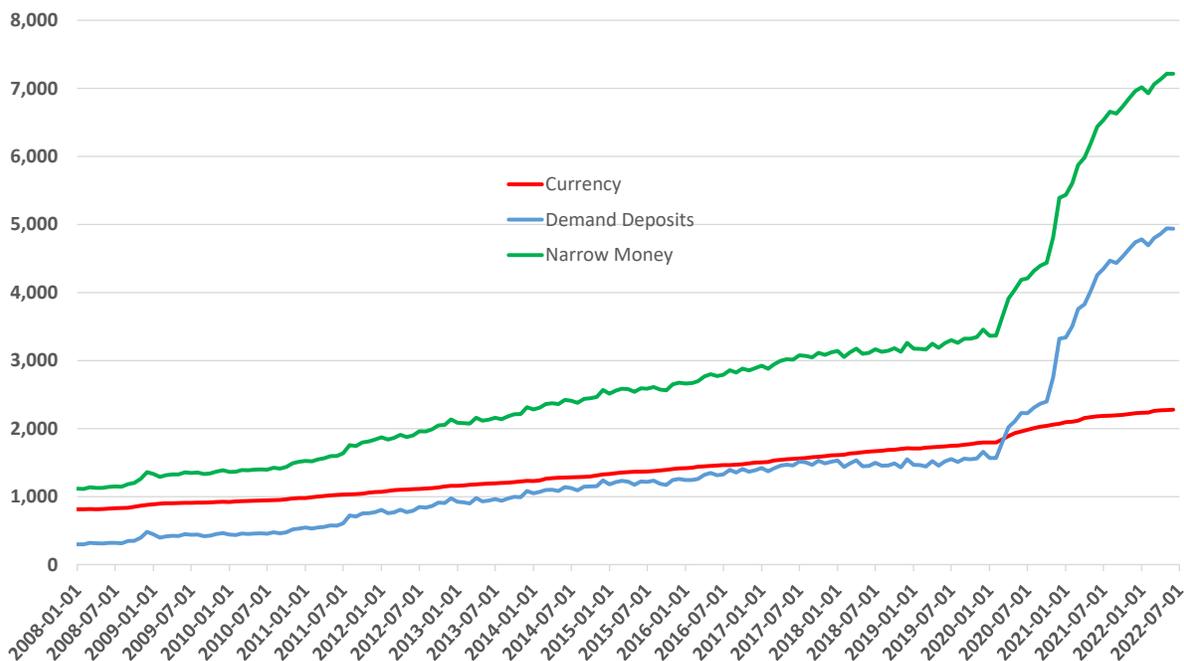
While cryptocurrency itself is not widely used as direct payment in commerce, the exchanges allow crypto deposits to be converted into what might be called "the coin of the realm" and then used directly in local commerce. While the crypto accounts at exchanges are not checkable, the fact that debit cards are available that can be used in the same way that bank-issued debit cards are used make the underlying crypto essentially spendable. Even bank demand deposits are not used directly in commerce, but these bank deposits represent titles to legal tender currency. Demand deposit titles to legal tender can be exchanged for goods and services via checks, debit cards or direct wire transfer. What the merchant gets in a transaction with a check-paying customer when the check clears is the underlying titles to legal tender currency transferred to the merchant's bank account. Thus, while demand deposits are not

⁴ See for example coinbase.com/borrow.

currency, they represent titles to legal tender, i.e., currency. In fact, most commerce is conducted via the transfer of titles to legal tender currency rather than the transfer of physical units of legal tender currency.

All assets where titles to legal tender can be directly used in commerce could be referred to as components of a narrow money stock. This narrow money stock certainly consists of actual currency, but also assets that are directly convertible into currency. Demand deposits are essentially titles to legal tender that can be directly used in commerce through checks or through debit cards are also part of this narrow money stock. Figure 1 shows the narrow money stock, excluding any role for cryptocurrencies that, through the use of debit cards, can be used in ordinary commerce. It shows currency and demand deposit levels from January 2008 through September 2022. This definition of a narrow money stock excludes any other assets that can be directly debited.⁵

Figure 1. Narrow Money Stock
\$Billions



What is surprising is that even as late as the beginning of 2020, currency levels exceeded demand deposit levels. In fact, at the beginning of 2008, currency holdings were more than double the public’s holdings of demand deposits. During the post-2008 Federal Reserve asset expansion, the level of demand deposits rose to almost equal currency. Then, with the unprecedented Federal Reserve pandemic asset expansion that began in March 2020, demand deposits quickly exceeded currency. Demand deposits now exceed the level of currency by

⁵ The largest missing component is deposits at Thrift institutions that allowed negotiable orders of withdrawal (NOWs) that were essentially checks.

almost \$3 trillion. The total level of the narrow money stock as of September 2022 was \$7.381 trillion.

Now that cryptocurrencies can be used as the basis for debit cards, the total value of these currencies is an upper bound measure of their addition to the narrow money stock. In August 2022, the total market capitalization of issued cryptocurrencies was \$1.03 trillion. The cryptocurrency capitalization of \$1.03 trillion makes it just a little less than half the level of currency. However, as late as December 2021, the total capitalization of issued cryptocurrencies was \$2.238 trillion.⁶ But even the smaller \$1.03 capitalization is far above any possible crypto contribution to the narrow money stock.

For crypto assets to be narrow money they must meet two conditions. First, the cryptocurrencies must be on deposit with one of the exchanges that offer debit cards that allow the underlying value of cryptocurrencies to be transferred to merchants as titles to legal tender. Second, the depositors must have assigned some part of their wallet to the debit card. In a sense, these two conditions are the same conditions that bank deposits must meet to be part of the above narrow money definition. First, titles to legal must be on deposit at a bank. Second, they must be in a demand deposit account as these are the only accounts that can be the basis of debit card and check transfers.

Unfortunately, there is no data on the share of the \$1.03 trillion of cryptocurrencies that are on deposit at exchanges that offer debit cards. Furthermore, there is no data on the share of the exchange-deposited cryptocurrencies that have been placed behind the exchange-sponsored debit cards. We do have some data for the share of debit card-eligible assets in the usual measures of the money stock. As of August 2022, the M2 money stock level was \$21.664 trillion.⁷ The August 2022 level of demand deposits, the debit card-eligible assets in M2, was \$5.141 trillion, 23.73% of the M2 money stock. If that same share of all cryptocurrencies is backing exchange debit cards, then the above narrow money stock of \$7.215 trillion increases by \$0.244 trillion to \$7.459 trillion.

Importantly, all assets included in M2 are exchangeable into titles to legal tender currency on short notice, i.e., they are liquid. But in some sense, other assets where continuous markets exist, such as stocks and bonds, can also be converted into titles to legal tender currency, just not on a fixed exchange rate basis as time deposits or money market funds. But this non-fixed exchange rate between the dollar and stocks and bonds is no different than in the case of the non-stable cryptocurrencies.

The narrow money stock as defined here included only assets that are directly spendable in ordinary commerce, i.e., at your local grocery or convenience store. Clearly,

⁶ These estimates are from coinmarketcap.com/charts/

⁷ M2 is constructed by summing currency, demand deposits, and other liquid deposits, each seasonally adjusted separately plus small-denomination time deposits (time deposits in amounts of less than \$100,000) plus balances in retail MMFs less IRA and Keogh balances at depository institutions and MMFs.

currency fits this description, as do demand deposits as well, as they can be used through writing checks or more directly with a debit card. As the role of digital communications expands, the ability to transfer wealth into spendable assets will expand as well. As a result, we should expect that a narrow money stock measure confined to the ability to spend in ordinary commerce will see significant expansion.

The New “Free Banking” and the Money Supply

The rise of digital asset debit cards raises the issue of the relevance of current definitions of the money supply.⁸ Commerce is conducted with the exchange of titles to legal tender and the total quantity of these titles to legal tender is not affected by how many different assets that we include in any definition of the “money” supply. Furthermore, the stock of legal tender, the sum of currency outstanding and bank reserves, the monetary base, is still controlled by the Federal Reserve. Importantly, however, the demand for the monetary base is determined by the public not by the Federal Reserve, but more about that later.

The Merriam-Webster definition of money is “something generally accepted as a medium of exchange.” However, the various measures of money stock are more general than this very narrow Merriam-Webster definition. Specifically, the M2 money stock includes financial assets that can be readily converted into something that will be accepted by merchants in exchange for merchandise but are not themselves money. Essentially, these acceptable items are titles to legal tender currency but not physical legal tender currency. We typically define measures of the money supply as currency plus the financial assets that can be either used to make payments or are convertible into titles to legal tender currency. The various measures of the money supply are often linked to other variables such as price level and real GDP, and indeed the equation of exchange, $MV=PT$, is one way to think of such a link. But does the equation of exchange have implications for what should be used as a measure of M in the equation?

A doubling of the number of current financial assets that can be the basis for a debit card used in ordinary commerce does not change the public’s wealth. While an expansion of debit card eligible assets does not change the public’s wealth, it can change the public’s demand for the monetary base, specifically, currency. While the Federal Reserve controls the nominal issue of currency, it does not control its real value. So, when the public has more currency than it wants it converts the unwanted currency into real consumption or assets. This conversion of currency into real assets or consumption increases the price level and reduces the real value of the fixed quantity of currency.

Certainly, the increase in the variety of assets that can be used in transactions affects the demand for the assets in the narrow money stock: currency and demand deposits. Also, if in the digital world almost all assets can be used in commerce, what determines the price level?

⁸ Perhaps the first recognition of this trend was the 2003 passage of *The Check Clearing for the 21st Century Act* that allowed facsimiles of checks in addition to paper checks to be cleared.

Since the price level is expressed in terms of the unit of account and that unit of account is legal tender, it is the quantity of legal tender demanded relative to the output of goods and services that determines the value of a unit of legal tender, the inverse of the price level. Additionally, no matter how many assets can be used for transactions, the total quantity of units of legal tender, currency plus bank reserves, is still determined by the issuer of legal tender, the Federal Reserve.

We know that the Federal Reserve changes the quantity of legal tender through open-market operations. It buys assets from the public using newly created titles to legal tender that only it can issue. In each of these transactions the public gives up one form of asset, Treasuries, or more recently Mortgage-Backed Securities, and receives deposits of legal tender. Clearly the public has simply exchanged one form of wealth for another, so its wealth is unchanged.

However, the Federal Reserve's wealth has increased by the full amount of the securities purchased. If the Federal Reserve was privately owned, then the owners of the bank would be wealthier and would increase their demand for goods and services. In fact, however, the Federal Reserve is owned by the Treasury since all Federal Reserve revenue, less costs, must be transferred to the Treasury. The Treasury can spend the Federal Reserve's fund transfer on the public or reduce the taxation of the public by the same amount. Either way, the present value of the expenditures of reduced taxation is exactly equal to the increase in the central's banks wealth. Thus, the open-market purchase by the Federal Reserve is an increase in the public's wealth by the amount of the purchase.⁹

The Federal Reserve's newly created titles to legal tender used to purchase the securities from the public become deposits by the public and thus reserves in the banking system. Any reserves, in excess of the level required by the Federal Reserve, or necessary in normal business practice, are used by banks to make loans and investments in the economy and thereby create titles to legal tender. The banking system is effectively a non-central bank producer of titles to legal tender and therefore a contributor to the money supply.¹⁰ But unlike the Federal Reserve that can produce titles to legal tender at will, the banking system requires legal tender produced by the Federal Reserve as an input to its titles to legal tender production. Similarly, the state banks during the free banking era could produce bank notes, a form of currency, but these notes had to be redeemable into hard currency, gold or silver coins.

The New "Free Banking" and the Price Level

⁹ Essentially then an open-market purchase of securities from the public is an increase in the public's wealth by the amount of the purchase. It is equivalent to an air drop of legal tender of the same amount. This equivalence was first pointed out by Boris P. Pesek and Thomas R. Saving in "Monetary Policy, Taxes, and the Rate of Interest," *Journal of Political Economy*, August 1963, pp. 347-362.

¹⁰ For a more complete discussion of private banking and the money supply see Thomas R. Saving "A Theory of the Money Supply with Competitive Banking," *Journal of Monetary Economics*, July 1977, pp. 289-303.

The price level is essentially the exchange rate between goods and services on the one hand and legal tender expressed in terms of the unit of account. That unit of account is a unit of legal tender. All markets for assets and all income flows are expressed in units of legal tender. Financial markets exist where titles to ownership of real assets are traded in terms of titles to legal tender.

The question is, will the digital world's reduced-cost rapid transfer of ownership of assets affect the price level? The answer depends on how this new transfer technology affects the demand for legal tender itself. In the final analysis, the Federal Reserve controls the quantity of legal tender, and that legal tender resides in the public's hands as currency or in bank deposits at the Federal Reserve. The addition of financial market exchanges that allow holders of the financial assets to use these assets in commercial transactions by exchanging a portion of an individual's holdings for titles to legal tender does not affect the total quantity of legal tender in existence but does affect the public's demand for legal tender.

Just as with the state banks during the free banking era, all financial institutions that issue financial instruments that are on-demand refundable into legal tender must have legal tender reserves. Thus, while the ease of using financial assets in ordinary transactions reduces the demand by the public for currency the financial asset offering ease of market use must hold reserves offsets some of the fall in currency demand. Ultimately, however, the expansion of the usefulness of financial assets in transactions will reduce the demand for physical legal tender and result in a fall in the value of legal tender, i.e., an increase in the price level.

The expansion of assets that can be used in ordinary transactions has affected how we measure the money supply. The original M1 measure of the money was essentially the narrow money stock depicted in Figure 1. The more inclusive M2 measure of the money stock includes financial assets that while not immediately usable in commerce could be accessed by the owners and converted into narrow money. As innovations in financial markets make the assets in these markets usable in ordinary commercial transactions, they will be included in the M2 measure of the money stock. The question is whether changes in the level of that expanded M2 money stock says anything about the future of the price level.

Ultimately, the Federal Reserve controls the stock of units of account, known as the monetary base. Moreover, that monetary base consists of currency and deposits at the Federal Reserve. Changes in the level of the monetary base affects the public's wealth and, as a result, their demand for goods and services. These changes in market demand then affect the value of goods and services in terms of the unit of account, and result in what we call inflation or deflation.

The previous free banking period in the United States did not lead to inflation because the dollar as the unit of account was fixed in price in terms of gold at \$35 an ounce. As a result, the expansion of paper money issued by the state banks greased the wheels of commerce and contributed to the general welfare, but the price level was determined by the world market for

gold. Significant new discoveries of gold, both in the United States and elsewhere, then resulted in inflation as gold fell in value.

In this new free banking era, the unit of account is in terms of legal tender. The quantity of this legal tender is determined by the Federal Reserve. But most commerce is conducted by exchanging titles to legal tender, not physical legal tender. While banks cannot print currency as they did in the 19th century free banking era, they can be viewed as creating titles to legal tender. Just as during the free banking era where the currency issued was convertible on demand to gold, bank-created titles to legal tender are convertible on-demand to currency. The total quantity of legal tender for such conversions is controlled by the central bank, the Federal Reserve.

In the free banking era, the legal tender was gold and the market for this legal tender was a world market. Therefore, the supply of bank notes in the United States had a minimal effect on the world gold market and thus the price level. But in this new free banking world the market for United States legal tender is a national market, not a world market. Accordingly, the supply of alternatives to legal tender in transactions will affect the price of legal tender and thus the price level.

The entry of the new digital ‘almost banks,’ will change the industry just as the introduction of Negotiable Orders of Withdrawal (NOW) accounts at savings institutions in the 1970s changed commercial banking forever. The fact that NOW accounts paid interest forced the Federal Reserve to remove Regulation Q restrictions on banks paying interest on accounts that were imposed during the Great Depression of the 1930s.¹¹ Now we have crypto exchanges, essentially digital banks, expanding the ability of crypto holders to use their crypto in ordinary commercial trade. The use of the blockchain digital technology that assures ownership in other financial asset markets will soon make these assets more easily transferable.

An essential question that must be answered is what are the consequences of increasing the ease of transfer of assets into titles to legal tender? Clearly the ease of turning financial assets into titles to legal tender is the basis for inclusion in the M2 money stock. But making assets more fungible in terms of the ease of converting them into titles to legal tender does not change any asset holder’s wealth or income. What it does is it reduces the incentive for holding zero yield transaction balances.

Making financial assets easier to use in ordinary commerce does change the public’s wealth in that the previous holdings of zero yield transactions balances now have a positive yield. The resulting change in the public’ desire to hold physical zero yield legal tender will

¹¹ See Thomas R. Saving “Money Supply Theory with Competitively Determined Deposit Rates and Activity Charges,” *Journal of Money, Credit and Banking*, February 1979, pp. 22-31 for an analysis of the money supply effects of the introduction of allowing interest on bank deposits.

reduce the demand for legal tender at its pre-ease-of-financial-transfer value. The result is a once-and-for-all increase in the price level.

Conclusion: Monetary Policy in the Digital Currency World

The general expansion in the ease of financial investments being converted into titles to legal tender should and has affected measures of the money supply. The Federal Reserve recognizes this trend as they have expanded the class of assets that are included in the M2 money supply. Crypto exchanges perform all the functions of commercial banks such as paying interest on crypto deposits, making legal tender loans and issuing debt cards. Should the definition of M2 be now expanded to include the cryptocurrency exchanges, which are essentially banks? The crypto exchanges' debit cards make individual deposits of cryptocurrency spendable in ordinary commerce by exchanging them for titles to legal tender on demand.

Wyoming is the first state to charter crypto exchanges as Special Purpose Financial Institutions, or SPFIs. The first two SPFIs are Avanti and Kraken. They both have asked to have master accounts at the Kansas City Federal Reserve but have been denied. In all other ways, both are banks with both crypto and legal tender deposits. Importantly, adding more entities that allow users to transfer titles to legal tender does not change the ability of the Federal Reserve to conduct monetary policy. Essentially, the total quantity of legal tender, the official unit of account for all transactions and pricing, is determined by the Federal Reserve and equals its net assets.

Of utmost importance is that the number of units of account in which all prices are expressed is controlled in a well understood way. Historically, that control was a metallic standard. Fixing the exchange rate between a unit of the official legal tender and a specific weight of gold, for example, limited the issue of units of account. In that world, free banking allowed for substitutes for metal to be used in commerce, but the rise of these substitutes did not affect the price level as the value of the monetary base was determined in a world market.

In today's world, while Federal Reserves control the issue of units of account, they do not determine the demand for these units of account. As a result, increasing the ease of converting digital assets to titles to legal tender affects the public's demand for legal tender. Additionally, the value of legal tender is determined not in a world market but in the local market where it is legal tender. Thus, while Federal Reserve still controls the total quantity of units of account the value of these units of account depends on the public's demand physical units of account. It is the public's demand for real, not nominal, units of account that determines the value of each unit of account for any Federal Reserve determined supply of these units of account.