Examining The Digital Dollar And The Digital Euro: A Historical Institutionalist Perspective

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Introduction

Money began as tangible objects that acted as placeholders in trade. When paper money was issued, it was still backed by tangible objects, mostly gold. Those days are long since past and money now is backed mainly by people's trust in the central bank. This has worked relatively well for the better part of half a century, but central bank money is facing a new challenge as more payments trend digital, and more consumers adopt de-centralized anonymous cryptocurrency.

In response, central banks around the world are considering issuing their own digital currency, still backed by the promise of central bank security. It is imperative that any central bank digital currency (CBDC) does not disrupt the public's trust in their bank, because doing so would be disastrous for the entire economy. Because digital currencies are so new, their projects should be understood as their template will profoundly influence how the currency interacts with existing money and markets. The introduction of a CBDC will cause ripples in its economy whose impacts cannot yet be understood. Will central banks think that it is worth the risk?

While decentralized currencies are influenced by the market, centralized digital currency will be shaped by its institutional context. Institutional rules and customs define and constrain the policies that it creates. The influence of institutions can be conceptualized in several ways, with sociological institutionalism focusing on external cultural aspects and rational choice institutionalism assuming that the institutions instigators designed it according to their best interests at the time. When looking at the construction of the European Central Bank and the Federal Reserve, historical institutionalism is the most appropriate lens to look through. Historical institutionalism says that timing and path dependence can play a powerful role in how institutions behave.[1] Historical institutionalism is most useful as an explanatory role, rather than predictive.[2]

[1] Voeten, Erik. 2019. "Making Sense Of The Design Of International Institutions". *Annual Review Of Political Science* 22 (1): 147-163. doi:10.1146/annurev-polisci-041916-021108.
[2] Drezner, Daniel W. 2010. "Is Historical Institutionalism Bunk?". *Review Of International Political Economy* 17 (4): 791-804. doi:10.1080/09692291003723656.

When looking at how the institutional pattern of the ECB, it is clearly influenced by past events such as the 2010 financial crisis which has shaped and will continue to shape its future policy patterns. The banking union in the European Union (EU) is not as effective as it ought to be.[3] The banking union in the United States (US) is much older and more fully formed and is therefore more able to disruptions.[4] However, the payments system in the EU is much more centralized than in the US.[5] CBDC is a relatively new concept and the literature on it is still being written. Most of the world's largest economies are in the proposal stage of their centralized digital currency.

81 percent of transactions were non-cash in the United States in 2020 and cash transaction declined 20 percent in the EU in 2020, most likely due to the Covid-19 pandemic.[6] These trends suggest that the prevalence of digital transactions is not going anywhere. Decentralized currency use increased 10 percent during the pandemic as well and is projected to continue growing until at least 2028 as cryptocurrency is being used more and more in venture capital.[7] Decentralized currencies like Bitcoin threaten the supremacy of central and commercial bank money. When considering these two factors, it is likely that governments will follow through on their plans to issue digital currency. Examining the influence of institutions on digital currency will reveal insights into the probable design of digital currency and policy around CBDC.

This paper focuses on how the institutional design of the European Central Bank influences the digital euro project as compared to the institutional design of the Federal Reserve and their theoretical digital dollar. To answer this, I will look at the institutional designs of the ECB and the Federal reserve and compare them with the shifting attitudes the respective banks have over time by examining their published CBDC literature.

When comparing the two projects and their timelines, I find that the product designs are incredibly similar and based on similar logic. However, the ECB has a more active pro-CBDC

[3] 45 Geo. J. Int'l L. 1057 (2013-2014) The Banking Union: Flawed by Design
[4] Belke, Ansgar Hubertus, and Daniel Gros. 2015. "Banking Union As A Shock Absorber". *SSRN Electronic Journal*. doi:10.2139/ssrn.2618397.
[5] Banco de Espana. 2016. "PAYMENT SYSTEMS IN THE US AND EUROPE: EFFICIENCY, SOUNDNESS AND CHALLENGES". Eurosystem.
[6] Bank, European. 2022. "Cash Still King In Times Of COVID-19". *European Central Bank*. https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp210615~05b32c4e55.en.html.
[7] Cryptocurrency Market Size, 2021-2028. 2022. "Cryptocurrency Market Size, Growth & Trends | Forecast [2028]". *Fortunebusinessinsights.Com*. https://www.fortunebusinessinsights.com/industry-reports/cryptocurrency-market-100149.

position than the Federal Reserve. This can be explained in part by regulatory context of the Fed and by the bank's differing perceptions of their own roles.

Theorizing the Federal Reserve and the European Central Bank

Traditionally, economic institutions like banks have been approached from a neoliberal perspective. The ECB has been theorized this way in relation to the euro-crisis. Its hands-off regulatory approach created a created a lax regulatory environment that greatly contributed to the global financial crisis of 2007-2009 and that the strong regulatory response points to a higher degree of financialization and deregulation.[8] Young and Park found that financialization, defined by them as the structural dominance of the financial sector in an economy was a more important factor for a significant regulatory response over state intervention and that more financialization and therefore a more deregulated starting point was positively associated with a strong regulatory response.[9]

The ECB has also been theorized as a driver of legal change. Lamandini et al. argue that this is what happened in the case of the euro crisis. In the Treaties, the EU did not confer any competences specifically regarding financial stability or lender of last resort status, though these were the results after Draghi announced they would do whatever it takes. There is an opening for the Council to give the ECB certain tasks relating to supervision of financial institutions. These tasks, as they are not spelled out in the primary law, must be given by secondary legislation and do not cover other areas that the ECB branched out into like financial stability or the ability to be a lender of last resort and purchase an unlimited amount of bonds, though they did so on the secondary market. While some of these powers are conferred under the limits of 127(6) TFEU, Lamandini et al. argue that the independence and actual powers taken by the ECB are not consistent with the treaties. The ECB can also be considered a strategic actor in the euro

[8] Chang, Michele. 2019. "The Constraints Of Central Bank Independence: The European Central Bank's Unconventional Monetary Policy And Incremental Accountability In The Euro Crisis". *Journal Of Contemporary European Research* 15 (2): 143-161. doi:10.30950/jcer.v15i2.1006.
[9] YOUNG, KEVIN L., And SUNG HO PARK. 2013. "REGULATORY OPPORTUNISM: CROSS-NATIONAL PATTERNS IN NATIONAL BANKING REGULATORY RESPONSES FOLLOWING THE GLOBAL FINANCIAL CRISIS". *Public Administration*, N/A-N/A. Doi:10.1111/J.1467-9299.2012.02102.X.

crisis as it made unconventional decisions while other institutional actors like the Council dithered.[10]

A historical institutionalist framework is important to consider when theorizing the ECB. Looking at the EU over time, using a historical institutionalist framework, shows an increasingly politicized landscape and this applies to the ECB as well which has seen deeper financial integration with the Next Generation EU fund which represented a paradigm shift from previous crisis response measures. The EU is expanding its capabilities and capacities.[11] The euro crisis can also be understood through a historical institutionalist lens. The asymmetric design of the EMU created problems for the crisis management mechanics. The structure of the other EU institutions slowed down the process, as they are not designed for speedy decision making.[12]

The Federal Reserve is theorized in a similar way to the ECB in that they are both central banks who work as market actors and independent government officials. They oversee market behaviour and intervene when economically necessary.[13] The Federal Reserve is slightly different to the ECB in that it is a national central bank instead of a supranational central bank. It can be considered an actor on the world stage. While it is tied to US domestic law, it has an international profile and operates independently. It has an authority as a market leader, outside of any definite legal status[14]. Its role can be understood as a keeper of the status quo who maintains neutral positions on regulatory issues.[15] The Fed can also be viewed through the historical institutionalist lens. These accounts typically differentiate between the static institution and changes in it. Those who focus on an unchanging Federal Reserve focus on path dependency and the deterministic view of the future that provides. Others focus on internal change and agency but lose the point of institutional constraint. A holistic view accounts for agency and constraint. When taking both together, it accounts for the 2008 financial crisis in that bankers were

[10] Henning, C. Randall, The ECB As A Strategic Actor: Central Banking in a Politically Fragmented Monetary Union (January 11, 2015). C. Randall Henning, "The ECB as a Strategic Actor: Central Banking in a Politically Fragmented Monetary Union," in Europe's Crises: Economic and Political Challenges of the Monetary Union, edited by James A. Caporaso and Martin Rhodes (New York: Oxford University Press, Forthcoming)., School of International Service Research Paper No. 2015-1, Available at SSRN: https://ssrn.com/abstract=2548333
[11] Schmidt, Vivien A. 2020. "Theorizing Institutional Change And Governance In European Responses To The Covid-19 Pandemic". *Journal Of European Integration* 42 (8): 1177-1193. doi:10.1080/07036337.2020.1853121.
[12] Amy Verdun (2015) A historical institutionalist explanation of the EU's responses to the euro area financial crisis, Journal of European Public Policy, 22:2, 219-237, DOI: 10.1080/13501763.2014.994023
[13] Hockett, Robert C., and Saule T. Omarova. 2013. "'Private' Means To 'Public' Ends: Governments As Market Actors". *SSRN Electronic Journal*. doi:10.2139/ssrn.2222444.
[14] Bradlow, Daniel D., and Stephen Kim Park. 2020. "A Global Leviathan Emerges: The Federal Reserve, COVID-19, And International Law". *American Journal Of International Law* 114 (4): 657-665. doi:10.1017/ajil.2020.62.
[15] Riaz, Suhaib, Sean Buchanan, and Hari Bapuji. 2011. "Institutional Work Amidst The Financial Crisis: Emerging Positions Of Elite Actors". *Organization* 18 (2): 187-214. doi:10.1177/1350508410389630.

pressured to maximise returns from their institutional structure, but differing behaviour suggests that agents respond differently to similar institutional pressure.[16] When comparing the two banks, the circa-2000s opinion was that the Federal Reserve demonstrates flexibility and adjustment in the face of changing circumstances while the ECB is considered overly cautious.[17] However, during the euro-crisis, the ECB showed unprecedented activism.[18] In the case of the digital euro, that activism has not gone away.

Centralized digital currency policies are relatively new policy topic, which speaks to the changing role of money. Traditionally, money is defined as a medium of exchange, a unit of account, and a measure of value.[19] It requires stability to function well as money. Decentralized currencies have become more prevalent on the payments landscape. The ECB does not consider cryptocurrencies like Bitcoin to be money, but instead financial assets, as their value – measured in fiat currency – fluctuates wildly over time and even day to day, and they lack the backing of a central bank.[20] The Fed also operates in an environment where private currencies are not money. They incur capital gains tax every time they are used in a transaction.[21] Digital currency is proposed as an alternative to these decentralized digital currencies. Issued by a central bank, a digital currency pegged to the current fiat money is considered stable and therefore, is a new form of money rather than a financial asset. It would be more protective for the consumer. Digital currencies also protect public money as cash becomes less and less frequent and cashless/contactless payment rises everywhere. Digital currencies also state that they will reduce friction in cross border retail payments.[22]

Central bank digital currencies are a new policy topic and have broadly been categorized into two groups, general and wholesale. General, or retail CBDC refers to the type of coin that is directly available to all users, while a wholesale CBDC is available only to financial institutions

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[16] Bell, Stephen. 2017. "Historical Institutionalism And New Dimensions Of Agency: Bankers, Institutions And The 2008 Financial Crisis". *Political Studies* 65 (3): 724-739. doi:10.1177/0032321716675884.
[17] Sardoni, Claudio, and Wray Randall. 2005. "Monetary Policy Strategies Of The European Central Bank And The Federal Reserve Bank Of The US". *Levy Economics Institute Of Bard College, Annandale-On-Hudson, NY.*
[18] Saraceno, Francesco. 2016. "The ECB: A Reluctant Leading Character Of The EMU Play". *Economia Politica* 33 (2): 129-151. doi:10.1007/s40888-016-0032-4.
[19] A. Mitchell Innes, "What is Money," The Banking Law Journal 30, no. 5 (1913): 377-408
[20] Bank, European. 2022. "What Is Bitcoin?". *European Central Bank*. https://www.ecb.europa.eu/ecb/educational/explainers/tell-me/html/what-is-bitcoin.en.html.
[21] "Bank Secrecy Act (BSA) | OCC". 2022. *Occ.Treas.Gov*. https://www.occ.treas.gov/topics/supervision-and-examination/bsa/index-bsa.html.
[22] BRUNNERMEIER, Markus, and Jean-Pierre LANDAU. 2022. "The Digital Euro: Policy Implications And Perspectives". https://www.europarl.europa.eu/committees/en/supporting-analyses/sa-highlights.

who have reserve deposits for the issuing central bank.[23] Both the Federal Reserve and the ECB propose a retail from in the official proposal. The Federal Reserve defines a CBDC as a "digital liability of a central bank that is widely available to the general public."[24] The European Central Bank uses almost the exact same wording to define a CBDC, so it safe to assume that they are discussing a similar end product in their proposals.[25]

The two banks have a similar definition for what constitutes financial stability. The ECB defines financial stability as a "state where the financial system withstands shocks and financial imbalances can be unravelled to mitigate disruption in the real economy."[26] The Federal Reserve has a similar definition, that financial stability is a system that can function no matter the state of the economy and which can absorb financial shocks.[27]

The regulatory environment in Europe is generally thought to be stricter than the United States and that trend has increased in the past 40 years. While consumer and environmental regulations have become more strict and more political in Europe since the 1980s, this trend has not emerged in the US. Instead, environmental and consumer regulations have become less controversial and have shuffled off the political stage.[28] With that in mind, it can be expected that the Federal Reserve will have less environmental and consumer concerns in their project than the ECB.

Case Selection & Methodology

Using a historical institutionalist approach, I will look at the institutional set up of the ECB and Federal Reserve and identify key influences around the digital euro and digital dollar project. These two case studies were selected because they are from two of the foremost banks in the world. They are both incredibly influential. The ECB presides over the largest single market in the world and the Federal Reserve hold the most foreign reserve currencies as a single entity. [29,30]

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[23] Bech, Morten, and Rodney Garatt. 2017. "Central Bank Cryptocurrencies". BIS Quarterly Review. BIS.
[24] Federal Reserve. 2022. "Money And Payments: The U.S.Dollar In The Age Of Digital Transformation". Washington DC: Federal Reserve.
[25] European Central Bank. 2020. "Report On A Digital Euro". Frankfurt: Eurosystem.
[26] Bank, European. 2022. "Financial Stability". *European Central Bank*. https://www.ecb.europa.eu/pub/financial-stability/html/index.en.html.
[27] "The Fed - What Is Financial Stability?". 2022. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/faqs/what-is-financial-stability.htm.
[28] Lofstedt, Ragnar E., and David Vogel. 2001. "The Changing Character Of Regulation: A Comparison Of Europe And The United States". *Risk Analysis* 21 (3): 399-416. doi:10.1111/0272-4332.213121.
[29] "Single Market For Goods". 2022. *Internal Market, Industry, Entrepreneurship And Smes*. https://ec.europa.eu/growth/single-market/goods_en.
[30] Fischer, Stanley. 2015. "The Federal Reserve And The Global Economy". *IMF Economic Review* 63 (1). https://www.jstor.org/stable/24738074.

These factors will be a combination of external, structural, and actor-based factors. The external to the institution, i.e., the rise of cryptocurrency, changing consumer preferences in the face of Covid-19, and climate change risk – as well as structural and actor-based. Structural factors will include the bank's mandate and its broader commitment to financial stability, the surrounding regulatory environment, and its economic environment, specifically the payments system. Actors will be bank specific. For the Federal Reserve, I will look at Jerome Powell, the Chair of the Federal Reserve, and for the ECB, it will be Christine Lagarde. Another factor at play will be the more nebulous self-perception of the bank – what they see their role as and what they feel they must safeguard. For each case study, I will examine how these factors have waxed and waned over time, and what possible implications they have for the CBDC projects.

To identify the chosen factors of influence in the publications, I will use document analysis, coding the different text sections with referring to one or more of the chosen factors. Because of the brief nature of the proposals and some of the surrounding documents, I have focused on sentence-level segments. I will look both at how often specific factors are referenced in the text and what context they appear in. To see the impact of institutional influence in the proposals, I will focus on two main outcomes: rationales and requirements. Other main aspects touched on by the proposals are the legal considerations and the technical specifications. These are less useful to examine as neither the ECB nor the Federal Reserve are far enough into their project to have published official specifications or verifiable indications for their specifications. The legal requirements then, are based on the specific technical design of the CBDC, so are also currently up in the air.

The proposal of CBDC is a comparatively new policy initiative, so to have the most historical approach possible, I have examined the documents leading up to the CBDC proposals, and how the language has changed in the time since. The European Central Bank published 56 documents from 2018 to 2022 on their CBDC website, including interviews, speeches, reports, blog posts and press releases and their proposal.[31] The Federal Reserve published 27 documents from 2016 to 2022 on their CBDC website, including academic papers, speeches, and their proposal.[32]

[31] Bank, European. 2022. "Publications On Digital Euro". *European Central Bank*. https://www.ecb.europa.eu/home/search/html/digital_euro.en.html.
[32] "Federal Reserve Board - Central Bank Digital Currency (CBDC)". 2022. *Federalreserve.Gov*. https://www.federalreserve.gov/central-bank-digital-currency.htm.

Finally, I will compare the two cases looking for key similarities and differences to discuss the possible implications of two differently shaped sovereign CBDCS in an increasingly global payments landscape.

The Institutional Structure - European Central Bank

The ECB was created in 1998 with the Treaty of Maastricht and gained more of a role when the euro was implemented on the first day of 1999. It was created after the general acceptance that central banks run best when decentralized, and its main activity is monetary policy.[33]

The European Central Bank is part of the European System of Central Banks (ESCB). The ESCB consists of the ECB and the national central banks (NCBs) of the 27 member states. It is also part of the Eurosystem, which consists of the ECB and the 19 NCBs of the eurozone countries. Here, national central banks implement the monetary policy set by the ECB. The ECB has several decision-making bodies. Its Executive Board is responsible for the implementation of monetary policy as defined by the Governing Council and the everyday workings of the bank. The Executive board may exercise powers delegated to it by the Governing council and issue decisions to the NCBs. The President of the Bank (as of writing, Christine Lagarde), Vice-President and four members make up the Executive board. This allows for the members to retain independence from the other EU institutions. The ECB Governing Council is the main decision-making body within the bank. [34]

Christine Lagarde took over from Mario Draghi in 2019 as President of the ECB.[35] Under her leadership, the ECB reviewed its monetary policy strategy, a task it had previously left alone for 17 years. The results of this review were published in 2021 and said that the new inflation rate would be 2%, not under and this rate could be overshot in certain circumstances.[36] She also continued practices begun under Draghi such as quantitative easing that began in 2015 and went on intermittently until the Covid-19 crisis.

The ECB's original mandate and still primary mandate is to maintain price stability. The priority placed on the price stability means that when it conflicts with other ECB objectives, price

[33] Pollard, Patricia S. 2003. "A Look Inside Two Central Banks: The European Central Bank And The Federal Reserve". *Review* 85 (2). doi:10.20955/r.85.11-30.
[34] Bank, European. 2022. "Organisation". *European Central Bank*. https://www.ecb.europa.eu/ecb/orga/html/index.en.html.
[35] Bank, European. 2022. "Christine Lagarde". *European Central Bank*. https://www.ecb.europa.eu/ecb/orga/decisions/html/cvlagarde.en.html.
[36] Bank, European. 2022. "An Overview Of The ECB'S Monetary Policy Strategy". *European Central Bank*. https://www.ecb.europa.eu/home/search/review/html/ecb.strategyreview_monpol_strategy_overview.en.html.

stability is put first. Price stability is not defined by the treaties, but by the ECB itself. The ECB has chosen to define price stability as an inflation rate of close to, but not more than 2% over a medium amount of time.[37] The ECB's secondary objective is to support the European Union's general economic policies, which promote economic growth, a social market economy, full employment, environmental protection, and price stability. Supporting these objectives, however, must not conflict with maintaining price stability.

The basic tasks of the ESCB are set out as: defining and implementing EU monetary policy, conducting foreign exchange operations, holding, and managing official foreign currency reserves, and promoting the smooth operation of payment systems. The ECB has the sole right to issue euro notes. [38] To achieve these objectives, the ECB has a variety of tools at their disposal. They can set out rules and regulations, or internal guidance to national central banks. They may also use informal communication about what they hope to achieve. They define and implement monetary policy to achieve their tasks and can also operate on the financial markets and lend credit. They can conduct lending and borrowing operations with third countries and acquire/sell foreign exchange assets as they feel is necessary. [39]

The Institutional Structure - The Federal Reserve

The current iteration of the Federal Reserve was created in 1913, following two previous iterations. When the Federal Reserve was first created, monetary policy was not part of its mandate.[40] Policy making was not added to its repertoire until 1936.[41] The Federal Reserve has a dual-purpose mandate. It intends to control inflation and promote full employment. Controlling inflation is defined 2 percent when looking at the Price Index for Personal Consumption Expenditures.[42] There is no explicit goal for measuring full employment; instead, the Fed looks

[37] European Central Bank. 2021. "Occasional Paper Series The Mandate Of The ECB: Legal Considerations In The ECB'S Monetary Policy Strategy Review". Frankfurt: Eurosystem.
[38] European Union. 2016. "Consolidated Version Of The Treaty On The Functioning Of The European Union PROTOCOL (No 4) ON THE STATUTE OF THE EUROPEAN SYSTEM OF CENTRAL BANKS AND OF THE EUROPEAN CENTRAL BANK". Brussels: European Union.
[39] European Central Bank. 2021. "Occasional Paper Series The Mandate Of The ECB: Legal Considerations In The ECB'S Monetary Policy Strategy Review". Frankfurt: Eurosystem.
[40] Pollard, Patricia S. 2003. "A Look Inside Two Central Banks: The European Central Bank And The Federal Reserve". *Review* 85 (2). doi:10.20955/r.85.11-30.
[41] "What Is The Fed: History". 2022. *Federal Reserve Bank Of San Francisco*. https://www.frbsf.org/education/teacher-resources/what-is-the-fed/history/.
[42]"Federal Reserve Board - Structure Of The Federal Reserve System". 2022. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/aboutthefed/structure-federal-reserve-system.htm.

at a variety of labour market indicators. Another main goal of the Fed, connected to controlling inflation, is ensuring there are moderate long-term interest rates. The Federal Reserve has three main instruments: discount rate/interest rate, reserve requirements and open market operations. The discount rate is the interest rate the Fed charges to those borrowing money directly from them. Reserve requirements is the amount of money commercial banks need to keep on hand to back up their liabilities. [43]

The Federal Reserve is led by the Board of Governors, also known as the Federal Reserve Board. The board is made up of seven governors who are appointed by the US President and confirmed by the Senate. The Board of Governors is responsible for monetary policy, analysing domestic and international conditions, and studying current issues such as central bank digital currency. The Board is also in charge of supervising the financial services industry, administering some consumer protection tasks, and overseeing the national payment system. It oversees the 12 Reserve Banks; it sets reserve requirements and approves changes in the discount rate proposed by the Reserve Banks.[44]

Institutional Influencing Factors

External Factors: Cryptocurrency, Consumers, Covid & Climate Change

Part of the institutional environment is the external environment it is set in and how it responds to that environment. An influential external factor for the instigation of digital central bank currency is the rise of cryptocurrency over the past few years. The first major cryptocurrency, Bitcoin, was created in 2008.[45] For many years, consumer uptake was small, and governments viewed them as a non-threatening experiment.[46] However, they have quickly become more popular, especially with the shift away from physical money spurred by the Covid-19 pandemic, and governments have become concerned that they are a threat to the current payments system. Jerome Powell, the Chief of the Federal Reserve, said in 2021 before the publication of the

[43] "Federal Reserve Board - Structure Of The Federal Reserve System". 2022. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/aboutthefed/structure-federal-reserve-system.htm.
[44] See 43
[45] Nakamoto, Satoshi. 2008. "Bitcoin: A Peer-To-Peer Electronic Cash System". *SSRN Electronic Journal*. doi:10.2139/ssrn.3977007.
[46] European Central Bank. 2012. "Virtual Currency Schemes". Frankfurt: Eurosystem.

digital dollar proposal, "You wouldn't need stablecoins; you wouldn't need cryptocurrencies if you had a digital U.S. currency. "I think that's one of the stronger arguments in its favour."[47]

Nothing can be examined in the present and near-past without accounting for the Covid-19 pandemic. It exacerbated already emerging trends in the payments landscape. In the EU, e-commerce sales jumped by 33% during the Covid lockdowns as compared to before the pandemic. Cash also declined in both volume and value of transactions while cashless payments have increased.[48]

Another strong external factor affecting the institutions is the overall pivot to combating climate change at the institutional level. Climate change affects all sectors, and the financial sector is responsible for massive amounts of carbon emissions – in 2020 it was the fifth biggest emitter in the world, releasing more carbon dioxide than the entirety of Russia.[49] Cryptocurrencies, and the distributed ledger technologies that they are built on consumes an estimated 121-terawatt hours per year, which is more than Argentina and just under Sweden.[50] They are not energy efficient, which may be something a centralized digital currency considers and mitigates.

European institutions have made climate change one of their most visible priorities in the last few years, most notably, the European Green Deal, which aims to create a climate-neutral bloc by 2050.[51] The European Central Bank has also incorporated looking at climate risks in their policy decisions. Christine Lagarde championed this transition when she took over the ECB presidency in 2019 and has continued to speak about its importance since.[52] For example, how climate risks will affect inflation projections, and how will climate risks will affect different

[47] "Why The Fed Hates Cryptocurrencies And Especially Stablecoins". 2022. *CNBC*. https://www.cnbc.com/2021/07/16/jerome-powell-promotes-cbdc-digital-dollar-warns-against-stablecoins.html.
[48] Bank, European. 2022. "On The Edge Of A New Frontier: European Payments In The Digital Age". *European Central Bank*. https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp201022~d66111be97.en.html.
[49] Sierra Club. 2021. "WALL STREET'S CARBON BUBBLE."
[50] Cho, Renee. 2022. "Bitcoin'S Impacts On Climate And The Environment". *State Of The Planet*. https://news.climate.columbia.edu/2021/09/20/bitcoins-impacts-on-climate-and-the-environment/.
[51] "Een Europese Green Deal". 2022. *Europese Commissie - European Commission*. https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_nl.
[52] Bank, European. 2021. "The Contribution Of Finance To Combating Climate Change". *European Central Bank*. https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp211012~bfe7738d35.en.html.

bond purchases.[53] The ECB feels that it is not their job to make political policy, but that climate is a recognizable risk to their price stability mandate.[54]

Structural Factors: Economic Background, Regulatory Environment & Financial Stability

To understand how the bank operates, it is important to understand its operating environment. The US has a market economy. It prides itself on its innovations and manages most of its services through the private sector. This can be seen through its relatively low public spending in the economy. On average, over the last 50 years, government spending to GDP was 37%.[55] Compared to many European economies, this is quite low. This focus on markets to provide services and solutions can exhibit itself in more focus on private solutions, even by government entities.

Major changes in the consumer protection act include the 2010 Dodd-Frank act that reorganized the financial regulatory system and was found improve financial stability and consumer protection.[56] This act was partially repealed in 2018 with the Economic Growth, Regulatory Relief and Consumer Protection Act which raised the threshold for a bank to be deemed too big to fail and removed the rule that banks cannot make speculative investments not in the consumers favour for smaller banks.[57] This loosened the regulatory environment, and potentially consumer protection, for the US financial sector.

The EU economy operates with a mixture between free market and social model principles.[58] Compared with the US, it has stronger social protections and regulations.[59] The payments system

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[53] Bank, European. 2020. "Interview With "Challenges" Magazine". *European Central Bank*. https://www.ecb.europa.eu/press/inter/date/2020/html/ecb.in200108~f3ba434000.en.html.
[54] Bank, European. 2020. "Interview With Le Monde". *European Central Bank*. https://www.ecb.europa.eu/press/inter/date/2020/html/ecb.in201019~45f5cf8040.en.html.
[55] "United States Government Spending To GDP - 2021 Data - 2022 Forecast". 2022. *Tradingeconomics.Com*. https://tradingeconomics.com/united-states/government-spending-to-gdp.
[56] Martin Neil Baily, Aaron Klein, and Justin Schardin. 2017. "The Impact Of The Dodd-Frank Act On Financial Stability And Economic Growth". *RSF: The Russell Sage Foundation Journal Of The Social Sciences* 3 (1): 20. doi:10.7758/rsf.2017.3.1.02.
[57] "The Economic Growth, Regulatory Relief And Consumer Protection Act | United States Committee On Banking, Housing, And Urban Affairs". 2022. *Banking.Senate.Gov*. https://www.banking.senate.gov/about/key-issues/the-economic-growth-regulatory-relief-and-consumer-protection-act#:~:text=Key%20Issues-,The%20Economic%20Growth%2C%20Regulatory%20Relief%20and%20Consumer%20Protection%20Act,institutions%20in%20nearly%20a%20decade.
[58] Schubert, Ludwig. 2003. "Constitution, Economic Policy And Full Employment In The European Union". *Transfer: European Review Of Labour And Research* 9 (4): 723-727. doi:10.1177/102425890300900413.
[59] Lofstedt, Ragnar E., and David Vogel. 2001. "The Changing Character Of Regulation: A Comparison Of Europe And The United States". *Risk Analysis* 21 (3): 399-416. doi:10.1111/0272-4332.213121.

has strong digital capabilities. In 2018, the Eurosystem set up instant payment infrastructure across Europe, so that banks across the bloc could settle with each other in real time.[60] The EU also has the Single Euro Payments Area (SEPA) which allows consumers to pay across borders more easily, and in 2017 the instant payment system for consumers was built off this system.[61] Based off of estimates, Europeans pay less for payments services than Americans.[62] While there is a strong payments network, there are also a number of foreign service providers, and in 2018, Visa and Mastercard processed more than two thirds of European card payment transactions.[63]

There is little to no bank-to-bank instant payment service in the US. For peer-to-peer payments, most people use private tools like Venmo. To deal with this public sector gap, the Federal Reserve is developing a new instant payment service infrastructure to enable businesses and customers to pay instantly through their banking app, should the bank choose to be a part of FedNow. The Federal Reserve developed this project as it historically provides payment services in parallel with the private sector. It is intended to launch in 2023.[64] A CBDC could also fill this need or complement the system further down the line.

The bank itself also affects the design of CBDC, both in how its structured and how it perceives itself. A strong structural factor that differs between the banks is their mandate. The ECB must prioritize price stability above all while the Fed has more leeway with its dual-purpose mandate. Therefore, financial stability is an incredibly important thread throughout the proposal and its surrounding documentation. The Federal Reserve has been around a long time. It has been issuing the US dollar since 1913 and its strong global position offers the currency legitimacy. The ECB on the other hand, issues a currency created within living memory. It is not a sovereign nation's bank but a supranational one. The European Central Bank has had problems with its

[60] Bank, European. 2020. "Interview With "Challenges" Magazine". *European Central Bank*. https://www.ecb.europa.eu/press/inter/date/2020/html/ecb.in200108~f3ba434000.en.html.
[61] "21 November 2017 - Successful Go-Live For EBA CLEARING's Instant Payment System RT1". 2022. *Ebaclearing.Eu*. https://www.ebaclearing.eu/news-and-events/media/press-releases/21-november-2017-successful-go-live-for-eba-clearings-instant-payment-system-rt1/.
[62] McKinsey and Company. 2019. "The 2020 Mckinsey Global Payments Report". Washington DC: McKinsey and Company.
[63] Bank, European. 2022. "On The Edge Of A New Frontier: European Payments In The Digital Age". *European Central Bank*. https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp201022~d66111be97.en.html.
[64] "About The Fednow Service". 2022. *Frbservices.Org*. https://www.frbservices.org/financial-services/fednow/about.html.

legitimacy, especially after the financial crisis where it seemed to have overstretched its mandate.[65] The Federal Reserve on the other hand, has a much stronger hold on its legitimacy.[66]

Data protection and privacy laws differ widely between the US and EU. One of Bitcoin's main selling points is that it is completely anonymous. Central bank digital currency cannot be as anonymous since the banks' need to prevent money laundering, but how anonymous the currency will be is dependent on how it is structured. It will also depend on the ambient privacy laws in which the currency operates. There are no federal laws relating to data privacy in the United States.[67] The EU, on the other hand, is considered a leader in the data protection space with the ground-breaking General Data Protection Regulation that went into force in 2018 and requires, among other things, for companies to process data only for relevant purposes and to store it only so long as it has a legitimate business use.[68] Further acts regulating the digital space, such as the Digital Markets Act and Digital Services Act proposed in 2020 show that the EU plans to continue this policy going forward.[69]

Influential Actors: Christine Lagarde, Jerome Powell & the Banks

Specific actors within the institution also influence how the institution behaves. Most visible are the heads of the bank. Christine Lagarde is the president of the ECB and has been since 2019. When she took office, she signalled her intent Lagarde has also discussed the desire for the ECB to review its monetary policy on a more frequent basis than it was previously doing and continued a policy of quantitative easing that had begun under the previous president, Mario Draghi. Lagarde has said that the plan is to launch a digital currency, although the final decision-making power rests with the Governing Council of the ECB.[70]

The President of the Federal Reserve is Jerome Powell and as stated above, is openly against cryptocurrency. When discussing digital currency, he has outlined four requirements for any

[65] Högenauer, Anna-Lena, and David Howarth. 2019. "The Democratic Deficit And European Central Bank Crisis Monetary Policies". *Maastricht Journal Of European And Comparative Law* 26 (1): 81-93. doi:10.1177/1023263x18824776.
[66] Skinner, Christina Parajon, and Carola Binder. 2021. "The Legitimacy Of The Federal Reserve". *SSRN Electronic Journal*. doi:10.2139/ssrn.3956847.
[67] Boyne, Shawn Marie. 2018. "Data Protection In The United States". *The American Journal Of Comparative Law* 66 (suppl_1): 299-343. doi:10.1093/ajcl/avy016.
[68] European Commission. 2012. "Proposal For A REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL On The Protection Of Individuals With Regard To The Processing Of Personal Data And On The Free Movement Of Such Data (General Data Protection Regulation)". Brussels: European Union.
[69] "DMA". 2022. *Competition Policy*. https://ec.europa.eu/competition-policy/sectors/ict/dma_en.
[70] 2022. *Youtube.Com*. https://www.youtube.com/watch?v=vdqfIYj6oDc&ab_channel=BankforInternationalSettlements.

digital currency: it must be identifiable, as bank accounts currently are, intermediated through the current banking system, but it also needs to ensure user privacy and be accepted widely as a means of payment.[71]

Another actor influencing the institutional space is the bank's self-perception. How does the bank see its role in the community? While this cannot be pegged to one single person, it is an important aura that shades everything the bank does. It can be seen in how it describes its rationale for actions, and this can in turn inform how the digital currency is shaped.

The Federal Reserve and the Digital Dollar

2017 to January 2022

The first documents that the Federal Reserve published about central bank digital currencies appeared in 2017 in the context of innovating the payments system. At this time, the bank and Jerome Powell's position was one of caution. While the digital payments system spurred the conversation, Powell stated that the United States had a highly developed banking system, and a large ongoing demand for physical cash. The risks, including cyberattacks, innovation impediments to the private sector, financial instability, outweighed the benefits. Therefore, the position was that investigations into CBDC should be limited to the wholesale payment system.[72]

In 2018, the position remained that there was no compelling need to issue a federally backed digital currency, as the private sector had solved peer to peer payment solutions and other real-time private payment solutions. The same challenges as 2017, and now including money laundering are brought up as reasons not to issue a CBDC.

On June 18th, 2019, Facebook announced their intention to create a cryptocurrency called Libra – later Diem. This new crypto project is mentioned in the next speech the Federal Reserve gave connected to CBDC. Libra was intended to be a stablecoin, connected to global fiat currencies. [73] This project lent new urgency to the CBDC conversation, since other private currencies were

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[71] "BIS Innovation Summit 2022". 2022. *Bis.Org*. https://www.bis.org/events/bis_innovation_summit_2022/overview.htm.
[72] "Speech By Vice Chairman For Supervision Quarles On Thoughts On Prudent Innovation In The Payment System". 2022. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/newsevents/speech/quarles20171130a.htm.
[73] "Meet Morgan Beller, The 26-Year-Old Woman Behind Facebook'S Plan To Make Its Own Currency". 2019. *CBNC*. https://www.cnbc.com/2019/07/20/facebook-libra-partly-created-by-female-engineer-morgan-beller.html.

small and slow on the uptake, whereas Facebook reached a third of the world's population.[74] The Federal Reserve stated that there were compelling reasons to maintain the current payments system, including the increasing demand for cash, the importance of the dollar as the world's reserve currency, the strong banking system, and the variety of private digital payment options currently available.[75] The language heavily focused on the risks of a CBDC, but instead of dismissing it as an option outright, the position is that it will continue to be studied and that they will closely monitor other central banks who do proceed with CBDCs'.

From 2016 to 2019, CBDC's are discussed in one document* per year on average. In 2020, that number jumps to seven. Before the pandemic in 2020, the Federal Reserve focuses on the need to expand regulation over the private payment system.[76] Documents published after March 2020 show a rapidly evolving position to embrace a possible CBDC. A paper was published discussing its potential benefits, the first that focused on the positives, rather than the risks of a CBDC.[77] The pandemic was in full swing and cash on the decline when this paper was published, thus altering the landscape for a CBDC. Although the potential benefits depend on the final design, possible benefits listed included better financial inclusion, improved monetary policy conduct, and enhanced privacy of digital transactions.[78] The papers also focused more on the technical aspect of a potential CBDC and looked into how distributed ledger technology could be implemented there and into the broader payments system.[79] A research project collaboration with MIT was launched to fully study the efficiency and safety of a potential CBDC.[80] Focus is put on the existing literature surrounding CBDCs and on how previously

[74] "Speech By Governor Brainard On The Digitalization Of Payments And Currency". 2022. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/newsevents/speech/brainard20200205a.htm.
[75] "Federal Reserve Board - Data". 2022. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/paymentsystems/coin_data.htm.
[76] "Speech By Governor Brainard On The Digitalization Of Payments And Currency". 2022. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/newsevents/speech/brainard20200205a.htm.
* as listed on the Federal Reserve website
[77] Wong, Paul, and Jesse Maniff. 2022. "Comparing Means Of Payment: What Role For A Central Bank Digital Currency?". *Federalreserve.Gov*. https://www.federalreserve.gov/econres/notes/feds-notes/comparing-means-of-payment-what-role-for-a-central-bank-digital-currency-20200813.htm.
[78] Wong, Paul, and Jesse Maniff. 2022. "Comparing Means Of Payment: What Role For A Central Bank Digital Currency?". *Federalreserve.Gov*. https://www.federalreserve.gov/econres/notes/feds-notes/comparing-means-of-payment-what-role-for-a-central-bank-digital-currency-20200813.htm.
[79] Buttecali, Jillian, Zachary Proom, and Paul Wong. 2022. "Observations From The Foowire Project: Experimenting With DLT For Payments Use". *Federalreserve.Gov*. https://www.federalreserve.gov/econres/notes/feds-notes/observations-from-the-foowire-project-experimenting-with-dlt-for-payments-use-20200813.htm.
[80] "Federal Reserve Highlights Research And Experimentation Undertaken To Enhance Its Understanding Of The Opportunities And Risks Associated With Central Bank Digital Currencies". 2022. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/newsevents/pressreleases/other20200813a.htm.

nebulous terms will be defined in the Federal Reserve context. Both these actions show that the Fed was narrowing and specifying what they were talking about when discussing a CBDC.

In 2021, the first glimpse of a timeline appears. Jerome Powell states that there is no need for the US to issue their CBDC first, as the strong position of the US dollar means that they have first mover advantage. Instead, a digital dollar was years away so they could examine the surrounding policy questions.[81] Also in 2021, the conversation explicitly shifts to a general purpose CBDC. A paper is released discussing what a general purpose CBDC would look like and what it would take for the public to accept it as money.[82] This is a shift from the first position that the only CBDC the Fed was looking into would be wholesale. Cross-border payments are raised as a reason to look into more innovative payment systems, again spurred by the pandemic.[83] The Federal Reserve homes in on the actuality of a CBDC by issuing a discussion paper. Policy considerations listed include preserving general access to safe central bank money, improving efficiency in the payments system, and promoting competition. Certain considerations are laid out for the CBDC. It needs to complement currency and bank deposits, preserve financial stability and monetary policy transmission, protect consumer's privacy, and increase financial inclusion.[84] There is some pushback following this announcement, which includes the Vice Chair for Supervision of the Federal Reserve, Randy Quarles, comparing CBDC to parachute pants, i.e., a novelty, and a speech by a different governor stating that CBDC's are a solution in search of a problem.[85,86] Influencing factors leading up to the proposal include cryptocurrency, the Covid-19 pandemic, financial stability and innovating the payments system.

When considering the time frame in the run up to the proposal, cryptocurrency has been a driving factor affecting the CBDC conversation since the start of the Federal Reserve's consideration of the project. It is mentioned in 15 of their 27 documents, and discussion of Libra

[81] "Fed'S Powell: CBDC Is Years, Not Months, Away". 2022. *Pymnts.Com*. https://www.pymnts.com/news/payment-methods/2021/fed-powell-cbdc-years-not-months-away/.
[82] Cheng, Jess, Angela Lawson, and Paul Wong. 2021. "Preconditions For A General-Purpose Central Bank Digital Currency". *Federalreserve.Gov*. https://www.federalreserve.gov/econres/notes/feds-notes/preconditions-for-a-general-purpose-central-bank-digital-currency-20210224.htm.
[83] "Closing Remarks By Chair Powell At A Conference Hosted By The Committee On Payments And Market Infrastructures". 2021. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/newsevents/speech/powell20210318a.htm.
[84] "Speech By Governor Brainard On Private Money And Central Bank Money As Payments Go Digital: An Update On Cbdcs". 2021. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/newsevents/speech/brainard20210524a.htm.
[85] "Speech By Vice Chair For Supervision Quarles On Central Bank Digital Currency". 2021. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/newsevents/speech/quarles20210628a.htm.
[86] "Speech By Governor Waller On Central Bank Digital Currency". 2021. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/newsevents/speech/waller20210805a.htm.

is included in every document written between its announcement and its wind down.[87,88,89] Jerome Powell explicitly stated in 2021 that the reason they started seriously pursuing a CBDC was because of private digital currencies, which are in his words, not money.[90] This shows it was a strong impetus for the project.

Once the Covid-19 pandemic appears, it is pretty quickly addressed in the Federal Reserve's documents, first appearing in August 2020. It is mentioned in the context both that it was a shock to the payment systems, and also in connection to the emergency relief payments extended under the Coronavirus Aid, Relief, and Economic Security Act. The logistics of sending these payments revealed the importance of immediate access to funds in an emergency, which is a possible benefit of CBDC.[91] This logic holds through 2021, and is referenced three more times, both in the context of economic stimulus and as a factor in hastening the transition to contactless payments.[92,93,94] Therefore, while Covid-19 is undeniably an external economic factor, the Fed chose to focus on updating the payment systems as a reason behind their CBDC project.

On the other hand, consumer preferences are not a strong factor discussed in the documents. In 2018, the position was that there was no compelling reason to issue a CBDC given current consumer preferences. These were that consumers already use digital payments through credit cards, private applications, and the automated clearinghouse network, so no additional value would be generated through a CBDC.[95] In 2020 and 2021, little notice is given to consumer preference; the focus is on innovating the payments system. Climate change is also not an important factor in the project, as it is never mentioned before the official proposal.

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[87] "Speech By Governor Brainard On Digital Currencies, Stablecoins, And The Evolving Payments Landscape". 2019. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/newsevents/speech/brainard20191016a.htm.
[88] "Speech By Governor Brainard On The Digitalization Of Payments And Currency". 2020. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/newsevents/speech/brainard20200205a.htm.
[89] "Speech By Governor Brainard On The Digitalization Of Payments And Currency". 2020. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/newsevents/speech/brainard20200205a.htm.
[90] "Fed'S Powell: CBDC Is Years, Not Months, Away". 2021. *Pymnts.Com*. https://www.pymnts.com/news/payment-methods/2021/fed-powell-cbdc-years-not-months-away/.
[91] "Speech By Governor Brainard On "An Update On Digital Currencies"". 2020. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/newsevents/speech/brainard20200813a.htm.
[92] Cheng, Jess, Angela Lawson, and Paul Wong. 2021. "Preconditions For A General-Purpose Central Bank Digital Currency". *Federalreserve.Gov*. https://www.federalreserve.gov/econres/notes/feds-notes/preconditions-for-a-general-purpose-central-bank-digital-currency-20210224.htm.
[93] "Speech By Governor Brainard On Private Money And Central Bank Money As Payments Go Digital: An Update On Cbdcs". 2021. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/newsevents/speech/brainard20210524a.htm.
[94] "Closing Remarks By Chair Powell At A Conference Hosted By The Committee On Payments And Market Infrastructures". 2018. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/newsevents/speech/powell20210318a.htm.
[95] "Speech By Governor Brainard On Cryptocurrencies, Digital Currencies, And Distributed Ledger Technologies". 2022. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/newsevents/speech/brainard20180515a.htm.

Financial stability is the first context that CBDC are looked at in. They are considered in the context of being a risk to financial stability, not in the context of a policy objective that has its own risks and rewards. It is also a concern when it comes to private digital currencies, and here the Reserve proposes stronger regulations to maintain a well-functioning financial system. The Federal Reserve is cautious in its language in the run up to the proposal, and they have a good reason. Powell states the strong international role of the dollar meant they had first mover advantage, no matter when they issue their proposal.[96]

January 2022 - Money and Payments: The US Dollar in the Age of Digital Transformation

Powell's cautious timeline is borne out in the evidence – the US was relatively behind when it came to issuing their CBDC proposal. It was published in 2022, two years after the ECB proposal. China rolled out large-scale testing for their digital yuan in 2021.[97] Nevertheless, in January 2022, the "Money and Payments: The US Dollar in the Age of Digital Transformation" discussion paper was published. It laid out the Federal Reserve's requirements for a digital dollar as well as the risks and benefits for proceeding.

Four principles were laid out for a potential CBDC. It should be privacy-protected, intermediated through commercial banks, widely transferrable and identity-verified.[98] The first requirement for a digital dollar is to balance consumer privacy with necessary transparency to deter crime. This shows the influence of the regulatory framework as and fraud would be fought by compliance with current regulations and privacy concerns would be leveraged using existing tools.

The second requirement is that any CBDC would be intermediated. This is because the Federal Reserve Act doesn't authorize direct interfacing with customers and doing so would expand the banks role quite a bit. An intermediated model is preferred, so then the private sector, both banks and nonbanks, can offer digital wallets to help manage a person's CBDC. This shows the constraints of the Federal Reserve and its solution shows the priorities of the economic design.

[96] "Fed'S Powell: CBDC Is Years, Not Months, Away". 2022. *Pymnts.Com*. https://www.pymnts.com/news/payment-methods/2021/fed-powell-cbdc-years-not-months-away/.
[97] "China Charges Ahead With A National Digital Currency (Published 2021)". 2022. *Nytimes.Com*. https://www.nytimes.com/2021/03/01/technology/china-national-digital-currency.html.
[98] Federal Reserve. 2022. "Money And Payments: The U.S.Dollar In The Age Of Digital Transformation". Washington DC: Federal Reserve.

There is also some circumspection when it comes to the bank's role in this requirement, because it immediately takes the expansion of their responsibilities off the table Importantly, one of the requirements for a CBDC is that it must complement current forms of money and financial services.[99] This is to mitigate financial instability. They are also strongly concerned with the risk a CBDC would pose to financial stability, and to stability of the payments system. The stated reason of the risk to the financial system is that having easy digital access to central bank money could appeal to risk averse investors which could possibly increase runs on the financial system and traditional measures may be insufficient to prevent these runs. They go on to say that some of these factors can be mitigated by design choices, such as interest free CBDC.[100]

A third requirement is that the CBDC must be transferable from one intermediary to another. This is to make it accessible to the public and make the payment system as efficient as possible.[101] This is to maintain smooth operations of the payment system and therefore maintain financial stability. The fourth requirement is that any CBDC must be identify-verified. Their justification for this is that banks are required to comply with regulations that deal with terrorism and money laundering.[102] This shows the regulatory constraints that the project is created in.

If the CBDC proceeds with these requirements, there are some expected benefits. These include providing households and businesses electronic central bank money, giving entrepreneurs a platform to create new financial products on, supporting faster and cheaper payments, and expanding consumer access to the financial system. One of the main benefits is to extend public access to safe central bank money. The proposal recognizes both that the number of digital transactions are on the rise in the US and reference other countries (Sweden, China) where these trends are even more pronounced. They state that if these trends emerged in the US, consumers might prefer a CBDC that acted like cash.[103] This is listed as a possible benefit of a CBDC. This benefit shows the influence of consumer preferences, and again an awareness of the bank's role on the international stage. Because these trends are not American, this ties into the benefit of

[99] Federal Reserve. 2022. "Money And Payments: The U.S.Dollar In The Age Of Digital Transformation". Washington DC: Federal Reserve.
[100] Federal Reserve. 2022. "Money And Payments: The U.S.Dollar In The Age Of Digital Transformation". Washington DC: Federal Reserve
[101] See 100
[102] See 100
[103] See 100

promoting the dollar internationally. The emphasis on safe also harkens back to crypto which the Fed has well established that it is full of risk.

Another benefit is that CBDC could safely meet future demands for payment services. Here there is a concern about cryptocurrencies, as they state private options incur risk for users, while a CBDC could mitigate these risks while still allowing private innovation. There is a faint nod to consumer preferences, by recognizing current and future demand, and allowing that CBDC might be better suited to micropayments, which the current payment system is not set up to deal with. The report also suggests that other solutions could meet the demand for payment solutions, such as the FedNow system. This solution would upgrade the payment system to allow for instantaneous lower-value and peer-to-peer payments. [104]

The Fed also states that a CBDC could support the dollar's international role. there is a case for the influence of financial stability to be made there, as the Fed points out that the international role of the dollar allows for better domestic prices. it also shows something outside the mandate, which is what the bank perceives its role to be – safeguarding pride of place for the USD. The Reserve says one benefit of a CBDC is that it will help preserve the dominant role of the US dollar internationally. This allows the US to influence standards in the global monetary standards and lowers costs domestically.[105] If other countries create a better CBDC, this could negatively influence the role of the dollar. Taking this into account shows a consideration for financial stability and for the international role of the Federal Reserve.

There are also some risks associated with a possible CBDC. The Federal Reserve lists these risks as possible destabilization of the financial sector, financial instability, negative impacts on the efficacy of monetary policy cost and availability of credit.[106]

A CBDC would change the balance of power between private and public solutions. If CBDC were non-interest bearing it would be a nearly perfect substitute for commercial money, which could defund banks who rely on deposits to make their loans.[107] These changes could affect the financial market sector, which shows a concern for financial stability and the current economic

[104] Federal Reserve. 2022. "Money And Payments: The U.S.Dollar In The Age Of Digital Transformation". Washington DC: Federal Reserve.
[105] See 104
[106] See 104
[107] See 104

structure. They acknowledge also that stablecoins and other non-bank money could cause this shift anyway. This destabilization shows concern for the economic structure as maintaining the status quo allows for predictable movements within the system. It also shows a broader concern for financial stability as they want to maintain the way banks are currently funded to prevent imbalances. Another potential risk is the stability of the financial system.[108] Here the Fed is concerned that the safety of a retail CBDC could encourage runs on commercial money in times of crisis. To limit this, they suggest limiting the total amount an end user can hold. This risk is influenced by the concern for financial stability.

The Federal Reserve is also concerned with the efficacy of their monetary policy. Currently, the Reserve controls rates through setting their own rate, and not by actively managing the reserves. Introducing a CBDC would alter the supply of reserves in the system. If the CBDC were not interest bearing, it would have a similar effect on the reserves as cash does – eventually it would expand the balance sheet but would not affect interest rates too much. If CBDC is interest bearing, with a relatively low rate of return, it may affect consumer behaviour and foreign demand which would affect the Federal Reserve's behaviour. It may need to increase securities. Additionally, CBDC itself may have influence on monetary policy.[109] This listed risk shows a concern again for financial stability, but also the Federal Reserve's own role in the economy, as it introduces more external factors that they cannot account for.

Another risk associated with issuing a CBDC is safeguarding privacy while still ensuring enough information is available to prevent crime. To mitigate this, they state that CBDC will act much like commercial money in terms of how much identification is attached to it. CBDC would also comply with anti-money laundering regulation. These two risks show influence from their regulatory environment. They decide to comply with current laws under both banking and money laundering. This adherence to the law and no further shows that the prevailing motivation is to the law and not to consumer preference for more security. Finally, there is a risk to

[108] See 104
[109] Carapella, Francesca, and Jean Flemming. 2022. "Central Bank Digital Currency: A Literature Review". *Federalreserve.Gov*. https://www.federalreserve.gov/econres/notes/feds-notes/central-bank-digital-currency-a-literature-review-20201109.htm.

cybersecurity.[110] This shows influence of the payments system because the risks are discussed in the context of risks to the current payments system.

Overall, the report is concerned with risks to financial stability and the lax regulatory environment for private currencies. Although it is not included in the scope of the paper, the report states state that there is a gap in the regulatory authority when it comes to reducing the risks of stablecoins to the broader financial system.[111] When discussing their ongoing research, they focus on mitigating financial instability. It is also high on their list of risks, which suggests it is a main concern of theirs going forward.

The Digital Dollar - January to June 2022

After the proposal was published, the papers surrounding the topic move from more existential "should CBDC exist?" topics to practical legal, technical, and security-related considerations.[112,113] Policy issues are also discussed, which examine if the benefits proposed by the Federal Reserve have evidence backing them, and how much further research needs to be done on the questions.[114] The most recent publication discusses preparing for the financial system of the future. Concerns were raised about financial stability and international considerations, but the final sentiment was "The financial system is not standing still, and neither can we."[115] By 2022, the position is that a possible CBDC will be "the digital analogue of the Federal Reserve's issuance of physical currency."[116] In documents written after the CBDC proposal, cryptocurrencies remain an ongoing concern, yet are continually credited as an innovation to the payments system.[117] These changes show a narrowing of focus, as it becomes increasingly clear that digitalization will continue, and research must continue. This is over a

[110] Federal Reserve. 2022. "Money And Payments: The U.S.Dollar In The Age Of Digital Transformation". Washington DC: Federal Reserve.
[111] See 110
[112] Hansen, Tarik, and Katya Delak. 2022. "Security Considerations For A Central Bank Digital Currency". *Federalreserve.Gov*. https://www.federalreserve.gov/econres/notes/feds-notes/security-considerations-for-a-central-bank-digital-currency-20220203.htm.
[113] Cheng, Jess, and Joseph Torregrossa. 2022. "A Lawyer's Perspective On U.S. Payment System Evolution And Money In The Digital Age". *Federalreserve.Gov*. https://www.federalreserve.gov/econres/notes/feds-notes/a-lawyers-perspective-on-us-payment-system-evolution-and-money-in-the-digital-age-20220204.htm.
[114] Congressional Research Service. 2022. "Central Bank Digital Currencies: Policy Issues". Washington DC: US Congress.
[115] "Speech By Governor Brainard On Central Bank Digital Currencies". 2022. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/newsevents/speech/brainard20220218a.htm.
[116] "Testimony By Vice Chair Brainard On Digital Assets And The Future Of Finance". 2022. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/newsevents/testimony/brainard20220526a.htm.
[117] "Testimony By Vice Chair Brainard On Digital Assets And The Future Of Finance". 2022. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/newsevents/testimony/brainard20220526a.htm.

fairly short timeframe and could switch shortly. The Federal Reserve is looking at clarifying the definition of a CBDC without committing to any further steps.

Looking at the shift over time, several factors have remained prominent in the conversation, while others have faded. The regulatory environment and the threats posed by cryptocurrency appear at all points throughout the project lifecycle. There are many calls throughout the documents for a stronger regulatory environment around cryptocurrency. A strong throughline in the documents surrounding CBDC is an emphasis on private innovation. When discussing the CBDC, the Fed is careful to always say it will be developed alongside private innovation and will not take its place. Even in documents which endorse the need for stronger regulations around private currencies, they speak to the place for private payment innovation in the system. Concerns about financial stability are also consistent as well as monetary policy and the role of the bank. Financial instability is the driver behind two of the five main threats and the follow-on work the proposal suggests is focused on mitigating this threat.

Other factors fade in and out. Consumer preferences are not discussed in the run-up to 2022, though they cropped up in the proposal and documents after. They are often discussed in the context of the international environment, which suggests that the Federal Reserve is more concern about international competition than domestic preferences. Consumer privacy and anti-money laundering are considered sufficiently dealt with by the current system. The influence of Jerome Powell could partially account for the timeline, as he is publicly cautious about the project and the digital dollar project lags behind most others. In 2021, when the pandemic was still very much on everyone's minds, it is referenced several times as context for the faster expansion of the digital transition, but by 2022 it is no longer discussed. This suggests that the Covid-19 pandemic, while not a directly influencing factor, is indirectly influencing the context of the proposal.

Throughout its lifecycle, the project pays little attention to consumer preferences and emphasises the private solutions available when it comes to innovating the payment system with the correct regulatory environment. It leans on current and in progress solutions such as the FedNow system as substitutes for a digital currency. For these reasons, it appears that the digital dollar projects trends towards maintaining the status quo.

The European Central Bank and the Digital Euro

2018 to October 2020

Like the digital dollar, the ECB first discusses CBDC in the context of changing payment infrastructure. They are noted as something that may occur with the digitalization of the economy.[118] Quickly, though, documents appear around the digital euro project. The ECB states that they are open to examining both a wholesale and a general purpose CBDC.[119] They are aware that recent innovations in the payment system lend urgency to the discussion, but to expect at least a ten-year lead time. The next published document is in January of 2020, where Lagarde states in an interview that the ECB will continue to look at the costs and benefits associated with issuing a CBDC, though this prospect should not discourage private innovators.[120]

By May of 2020, this examination is clearly underway, as the ECB clarifies that they intend to focus on a retail CBDC. They pledge only to introduce a digital currency if it serves the stability of the euro. Their reasoning for examining this idea is that they must be ready for innovation.[121] They state that they want European citizens to have all available choices, but they are not committing to anything.[122] Here we see the beginnings of rumblings about maintaining financial stability instead of simply being aware of potential disruptions that can be seen in earlier documents.

In 2020, they also stake a stronger position on cryptocurrencies, stating that they are not money as they do not have the backing of a central bank.[123] The ECB does not cite emerging cryptocurrencies as an impetus for their project; it treats the growing prominence as something

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[118] Bank, European. 2018. "The New Frontier Of Payments And Market Infrastructure: On Cryptos, Cyber And Ccps". *European Central Bank*. https://www.ecb.europa.eu/press/key/date/2018/html/ecb.sp181115.en.html.
[119] Bank, European. 2018. "The New Frontier Of Payments And Market Infrastructure: On Cryptos, Cyber And Ccps". *European Central Bank*. https://www.ecb.europa.eu/press/key/date/2018/html/ecb.sp181115.en.html.
[120] Bank, European. 2018. "Interview With “Challenges” Magazine". *European Central Bank*. https://www.ecb.europa.eu/press/inter/date/2020/html/ecb.in200108~f3ba434000.en.html.
[121] Bank, European. 2020. "An ECB Digital Currency – A Flight Of Fancy?". *European Central Bank*. https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp200511~01209cb324.en.html.
[122] Bank, European. 2020. "Interview With Bloomberg". *European Central Bank*. https://www.ecb.europa.eu/press/inter/date/2020/html/ecb.in200923~f7b5fd1a9f.en.html.
[123] Bank, European. 2020. "Q&A On Twitter". *European Central Bank*. https://www.ecb.europa.eu/press/inter/date/2020/html/ecb.in200924~1b1474c3d6.en.html.

occurring parallel to the digital euro in the payments system.[124] The ECB identifies two trends in the payments system – growing digitalization and increased foreign competition in the EU. Coronavirus also makes its first appearance as a factor which has accelerated the short-term trend towards digitalization.[125] Almost half of consumers prefer to pay digitally, a trend which has increased since the pandemic and is unlikely to wane. References to coronavirus as a contributing factor the changing payments landscape crop up often in the documentation. [126] The second trend is that there are more foreign payments services in the EU, and this both presents limits for the consumer and risk for the system and the consumer within it if there are protectionist policies enacted, cyberattacks, or other external outages. Monetary sovereignty is also a concern; if a foreign CBDC such as the digital yuan takes over the bulk of the payments system, that would weaken the euro.[127] These two trends reflect concerns about financial stability and monetary policy, as well as illustrate the shift in consumer preferences as the driver behind the digital euro project. Ahead of the proposal being officially published, in October of 2020, Fabio Panetta released a blog post that the ECB needs to be prepared to issue a digital euro, which means they need to be working on it now, so they are prepared for when the time comes. He states that inaction is not an option.[128]

Although climate change is not discussed in relation to the digital euro leading up to the proposal, it is discussed in a broader ECB-focused context. Lagarde has been open about her policy to "green" up the ECB. She stated that climate risks impact their mandate and so must be dealt with.[129] In the run-up before releasing the proposal, the ECB invoked the idea of financial stability as a reason for the issuance of a CBDC. If financial technology advanced, they said, then trust in money would rely on trust of private intermediaries.[130] The number of foreign providers in the EU market space appeared to worry the ECB. Payment systems have strong network effects, and the European system has fallen behind the competition. The risk then, is

[124] Bank, European. 2020. "The Future Of Money – Innovating While Retaining Trust". *European Central Bank*. https://www.ecb.europa.eu/press/inter/date/2020/html/ecb.in201130~ce64cb35a3.en.html.
[125] Bank, European. 2020. "Payments In A Digital World". *European Central Bank*. https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp200910~31e6ae9835.en.html.
[126] Fernandez, S., Jenkins, P. and Vieira, B. (2020), "Europe's digital migration during COVID-19: Getting past the broad trends and averages", McKinsey Digital, July.
[127] European Central Bank. 2020. "Report On A Digital Euro". Frankfurt: Eurosystem.
[128] Bank, European. 2020. "We Must Be Prepared To Issue A Digital Euro". *European Central Bank*. https://www.ecb.europa.eu/press/blog/date/2020/html/ecb.blog201002~12ab1c06b5.en.html.
[129] Bank, European. 2020. "Interview With Le Monde". *European Central Bank*. https://www.ecb.europa.eu/press/inter/date/2020/html/ecb.in201019~45f5cf8040.en.html.
[130] Bank, European. 2020. "An ECB Digital Currency – A Flight Of Fancy?". *European Central Bank*. https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp200511~01209cb324.en.html.

being dependent on foreign providers who can choose to offer sanctions or experience outages.[131]

October 2020 – A Report on a Digital Euro

In October 2020, the ECB released a report on the digital euro. It was written from the perspective of the Euro system and focuses only on the retail form of a CBDC which would be accessible to the public. The report discusses the rationales behind a digital euro project, as well as the risks, benefits, and general requirements any potential CBDC would have. The ECB gives their rationale for looking at CBDC as the changing technological landscape, a more competitive European payment system, a symbol of European integration, a way to contribute to the strategic autonomy of the EMU, a way to reduce costs and the ecological footprint of the payment system, and as a way for the ECB to continue to secure trust in money.[132] Listed risks in the proposal are a risk of higher criminal activity, increased cyber risk, increased risk of financial volatility. There are also concerns about citizen's data privacy, a diminished role for cash and a reputational loss for the ECB. These risks are addressed by the general requirements. The listed benefits are that issuing a digital euro would support ECB economic policy, meet payment needs, mitigate cyber risks, and stimulate innovation in the private sector. These benefits are buoyed by the requirements.[133]

The ECB has seven requirements no matter what scenario spurs the digital euro. The first is that the ECB should be able to control the number of digital euro in circulation. Their reason for this is that there could be large effects to the banking sector, monetary policy, and financial stability. Issuing a digital euro could encourage movement from commercial to central bank holdings. It could also force the ECB to expand its holdings and securities. It could also promote instability by changing the amount of credit available if banks' costs went up.[134] Here, the ECB is concerned about controlling monetary policy and potentially destabilizing the financial stability. They are also concerned about major shifts in the financial sector.

[131] Board, European. 2020. "ESRB Publishes Report On Systemic Cyberattacks". *European Systemic Risk Board*. https://www.esrb.europa.eu/news/pr/date/2020/html/esrb.pr200219~61abad5f20.en.html.
[132] European Central Bank. 2020. "Report On A Digital Euro". Frankfurt: Eurosystem.
[133] See 132
[134] See 132

Another requirement is that the digital euro ought to be worked on in a way that allows access to all participants at the same time. As the CBDC would expand the ECB's balance sheet, which would increase its risk exposure. They could also be exposed to liability as a retail payment operator. To mitigate this risk, they require the digital euro to be designed with the utmost scrutiny to IT practices.[135] Here the ECB is concerned with their reputation as a provider of secure money. The ECB also stated that the CBDC must comply with the regulatory framework although the Eurosystem is exempt from such regulation. Their logic is that issuing a CBDC will affect the image of a central bank. If there were a cyberattack or if they did not comply with regulations, their reputation could suffer.[136] This is a clear example of the banks self-perception playing a role in the thinking around the project.

Another requirement is that a CBDC be designed in a safe and efficient way. It should be cost-effective as compared to its benefit as the CBDC would affect private payment services. Therefore, the CBDC should be designed in a way that promotes the smooth operation of the payment system. Another requirement is that the digital euro should be easily available to consumers throughout the euro area and operate with private payment services. It should also coexist with cash.[137] The ECB is promoting the use of an intermediated digital euro. Here there is the influence of the economic structure, as the ECB wants to maintain the homeostasis of the payments system, and it reflects consumer preferences that it should be accessible and safe.

There are concerns about the cross-border use of the euro. The proposal states some concerns about capital flights if digital euro use is allowed outside the euro area. If there were no limits on cross-border use, it could increase international linkage and amplify shocks. There are also concerns that global investors using the digital euro would strengthen the euro's exchange and hurt domestic competitiveness. Therefore, access should be conditional to non-euro area residents.[138] The logic behind this is to maintain financial stability in the euro area by reducing possible volatility. Finally, there is a concern that a digital euro would be a target for fraud and cyber-attacks. The requirement then is that that the digital euro should be resilient to attacks and

[135] See 132
[136] European Central Bank. 2020. "Report On A Digital Euro". Frankfurt: Eurosystem.
[137] See 136
[138] See 136

capable of providing protection to the financial ecosystem. the underlying logic in this is financial stability also.

The ECB states in their proposal that their tasks are to maintain monetary and financial stability, and that the design of the digital euro will be with specific reference to maintaining financial stability. When discussing their general design for the CBDC, they say that it should be designed to avoid potential undesirable consequences on financial stability and should mitigate risks with its design. Some of the potential risks they list to financial stability are a challenge to bank's intermediation capacity and possibility to affect risk-free interest rates. They are also concerned about the possibility of bank runs, where in a crisis situation, money will shift rapidly from less secure commercial deposits to more secure CBDC. They state that these risks can be mitigated through limiting the quantity of digital euro users can hold at one time, or by offering digital euro with a variable rate.[139]

In the proposal, the ECB discusses how privacy laws would relate to a digital euro. They state that it would depend on the model, but that national and European privacy laws would apply, depending on the design.[140] A digital euro would have consequences for the payments system, so it must work to improve it. However, the digital euro should not stop alternatives. The ECB envisages an intermediated CBDC, and one that integrates with the current pan-European payments system set up by infrastructure like SEPA.[141] Disruption of the payments system is a strong risk for them; innovating the payments system and the associated concerns are mentioned in almost every piece of documentation around their project.

The proposal shows similar reasoning for launching the project – changing consumer preferences and strategic autonomy. It is also most concerned with financial stability and the role of the bank and its monetary policy when looking at risk and shaping the general requirements to mitigate this risk. There is a concern for the ecological footprint of a digital euro, which could have been included because of the ECB's current focus on climate change, but also could be for cost reasons. Cryptocurrencies are not discussed in the main body of the text. The bank is also explicit about its concern for its own reputation. It must design a secure digital currency to

[139] European Central Bank. 2020. "Report On A Digital Euro". Frankfurt: Eurosystem.
[140] See 139
[141] See 139

maintain a strong reputation. The proposal states that it is in way advocating a policy decision, which dovetails with documents from before the proposal is published. However, this attitude turns sharply in the post-proposal documentation.

Just after launching the proposal, in November 2020, the ECB's attitude is that the project is meant as a readying action, to make sure they are prepared if the time should ever come.[142] Lagarde stated that she was motivated to push CBDC onto the ECB's agenda, so that the ECB would be ready for the digital age.[143] This attitude subtly shifts over time and in an interview in 2021 the Vice President of the ECB states that "For us, the digital euro is not an option, it's something we just have to do."[144] The possibility of a digital euro has hardened into a probability. This attitude continues, with the conversation shifting from the risks of issuing a digital euro to the risks of not issuing one.[145] The language also changes from lots of use of the word "considering" issuing the digital euro to "should" issue it.[146] By 2022, members of the ECB executive board are arguing that CBDCs are not only useful, but necessary to preserve the role of central bank money in a rapidly digitalizing world.[147]

In April 2021, the results of the public consultation on the digital euro were published, and from there, in July the Governing Council of the ECB decided to launch the investigative phase of the project.[148] This phase will look at the particular design of the digital euro, utilize focus groups, concepts, and protypes. The European institutions encouraged this decision.[149] The next concrete step happened in October of that year when they appointed the Digital Euro Market Advisory Group, a group of 30 professionals to advise the Eurosystem on the design and distribution of the potential digital euro. The latest official action on the digital euro project was in March 2022

[142] Bank, European. 2020. "From The Payments Revolution To The Reinvention Of Money". *European Central Bank*. https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp201127~a781c4e0fc.en.html.
[143] Bank, European. 2021. "Interview With Bloomberg". *European Central Bank*. https://www.ecb.europa.eu/press/inter/date/2021/html/ecb.in210916~5b06e18ebc.en.html.
[144] Bank, European. 2021. "Interview With Público". *European Central Bank*. https://www.ecb.europa.eu/press/inter/date/2021/html/ecb.in210302~c793ad7b68.en.html.
[145] Bank, European. 2021. "Digital Central Bank Money For Europeans – Getting Ready For The Future". *European Central Bank*. https://www.ecb.europa.eu/press/blog/date/2021/html/ecb.blog210325~e22188c522.en.html.
[146] Bank, European. 2021. "Central Bank Digital Currencies: A Monetary Anchor For Digital Innovation". *European Central Bank*. https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp211105~08781cb638.en.html.
[147] Bank, European. 2022. "Central Bank Digital Currencies: Defining The Problems, Designing The Solutions". *European Central Bank*. https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220218_1~938e881b13.en.html.
[148] Bank, European. 2021. "A Digital Euro To Meet The Expectations Of Europeans". *European Central Bank*. https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp210414_1~e76b855b5c.en.html.
[149] Bank, European. 2021. "Preparing For The Euros Digital Future". *European Central Bank*. https://www.ecb.europa.eu/press/blog/date/2021/html/ecb.blog210714~6bfc156386.en.html.

when the ECB published a report on European's payment preferences as part of the project's research.[150]

Some of the influencing factors continue to crop up. The cryptocurrency conversation continued, with the ECB explicitly stating that the digital euro is not a reaction to cryptocurrencies. Instead, the main impetus for the digital euro is the digitalization of the world.[151] In 2022, the ECB's also said on crypto that its growth shows an unmet demand for digital assets, and central banks need to meet this demand before unregulated entities do.[152] Another continuing trend is Covid, which is still invoked throughout the documents, now as a reminder that these payment trends will not be reversing.[153]

One of the first things they do in the investigative portion of the digital euro project was to conduct and release a report about consumers' payment preferences.[154] They found that citizens want universal and convenient payment options. Once this report is published, they established it as a baseline and discuss the digital euro in context of making it attractive to users.[155] The ECB also discusses privacy regulations in the context of consumer preference. They are aware of the fact that a digital euro would interface with privacy regulations, they state that a CBDC would enhance consumers' privacy because they are not interested in monetizing the data.[156]

In 2021, in the report accompanying the decision to launch the investigative phase of the project, one of the experiments already conducted is that by using a specific infrastructure, energy use is negligible compared to current cryptocurrencies.[157] Although there is not much ink spilled connecting climate change to the euro, its precedence in the experimental order shows that it is an important concern for the ECB. After the proposal, there is concern that a digital euro could

[150] Bank, European. 2022. "ECB Publishes Report On Payment Preferences As Part Of Digital Euro Investigation Phase". *European Central Bank*. https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.pr220330~309dbc7098.en.html.
[151] Bank, European. 2021. "Interview With Público". *European Central Bank*. https://www.ecb.europa.eu/press/inter/date/2021/html/ecb.in210302~c793ad7b68.en.html.
[152] Bank, European. 2022. "Interview With La Stampa". *European Central Bank*. https://www.ecb.europa.eu/press/inter/date/2022/html/ecb.in220505~c0c4aa67ab.en.html.
[153] Bank, European. 2021. "Preparing For The Euro's Digital Future". *European Central Bank*. https://www.ecb.europa.eu/press/blog/date/2021/html/ecb.blog210714~6bfc156386.en.html.
[154] Bank, European. 2022. "ECB Publishes Report On Payment Preferences As Part Of Digital Euro Investigation Phase". *European Central Bank*. https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.pr220330~309dbc7098.en.html.
[155] Bank, European. 2022. "The Digital Euro And The Evolution Of The Financial System". *European Central Bank*. https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220615~0b859eb8bc.en.html.
[156] Bank, European. 2021. "Interview With Financial Times". *European Central Bank*. https://www.ecb.europa.eu/press/inter/date/2021/html/ecb.in210620~c8acf4bc2b.en.html.
[157] See 155

be too successful for its own good. Aside from the concerns raised in the proposal, they add that its existence could affect the international financial system. It is important therefore, to be careful with its design. This speech, occurring in February 2021, as the stakeholder consultation phase wrapped up pre-empts the ECB's next moves. It emphasises the importance of creating a digital euro while reassuring its audience that the ECB will be careful and not rush into anything.[158]

In the post-proposal setting, several factors become more important. The first of these is strategic autonomy. The ECB advocates that a CBDC would be a buffer against foreign influence and monopolies in the payments space. It is mentioned in four of five publications in 2022 but in less than half of the documents in 2020. In the latest iteration, it appears in conjunction with the Russian invasion of Ukraine, as a warning of what happens when Europe is not autonomous although discussion of it started well before the invasion.[159] The rhetoric also moves from a careful position that does not advocate for any position, to proactively promoting the CBDC project. They state that as public money must keep its monetary anchor in the system, it must keep up with digitalization. A CBDC would do this and help the EU maintain monetary sovereignty.[160] They state that a digital euro would be a symbol of unity which shows Europe's willingness to embrace change and lead from the front, supporting the digitalisation of the European economy.[161] They state that they are designing a digital euro to benefit their citizens and the European project.[162]

In the first mentions of the project, the ECB stated that they needed at least a decade of lead time before any meaningful work is done. Now, the digital euro is at the investigative phase which concludes in 2023, and at that point they will decide whether or not to start an experimental phase that could take three years before launch. If everything is approved on the current timeline, that would put a digital euro on the market in 2026, eight years after the ECB stated at least ten years. Two years earlier is not much earlier, but it is earlier. This decrease of timeline can be

[158] Bank, European. 2021. "Evolution Or Revolution? The Impact Of A Digital Euro On The Financial System". *European Central Bank*. https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp210210~a1665d3188.en.html.
[159] Bank, European. 2022. "Public Money For The Digital Era: Towards A Digital Euro". *European Central Bank*. https://www.ecb.europa.eu/press/key/date/2022/html/ecb.sp220516~454821f0e3.en.html.
[160] See 158
[161] Bank, European. 2020. "We Must Be Prepared To Issue A Digital Euro". *European Central Bank*. https://www.ecb.europa.eu/press/blog/date/2020/html/ecb.blog201002~12ab1c06b5.en.html.
[162] Bank, European. 2021. "Interview With La Repubblica". *European Central Bank*. https://www.ecb.europa.eu/press/inter/date/2021/html/ecb.in210503~e92f2b65ef.en.html.

correlated with stronger demands for digitalization, increased desire for strategic and monetary autonomy, and Lagarde's agenda setting.

The ECB's main concerns around the digital euro are maintaining the efficacy of their monetary policy and keeping the financial system stable. At the beginning of the project, the prevailing reason to pursue a digital euro is that consumers are moving towards digital solutions. However, strategic autonomy becomes more important as a rationale. It makes its first appearance in the proposal but hardens into a driving factor behind the project in 2021 and 2022.

At the start, the ECB is careful not to push an opinion. They are a neutral entity studying the pros and cons of a potential project. As time goes on, they change to a more positive approach and begin recommending CBDC as a policy choice.

Comparing the Digital Dollar and the Digital Euro

The Federal Reserve and ECB have similar requirements for their potential CBDC projects. They both want a general-issue currency that respects some privacy but is identity-verified, when necessary, is intermediated through commercial banks and is easily accessible and safe for consumers. However, there are some notable differences between the two projects. Below is a table of how often the identified factors were discussed in the two banks' respective CBDC documents as a percentage of the total number of documents. It shows some interesting results.

Table 1: Frequency of Topic as Percent of Total Documents[163]

Influencing Factor	**European Central Bank**	**Federal Reserve**
Regulatory Framework	9%	15%
Consumer preferences	39%	7%
Covid-19	15%	15%
Climate Change	18%	0%
Foreign Competition	34%	30%
Data Privacy	20%	7%
Financial Stability	30%	30%
Payments System	56%	52%
Role of the Bank	32%	30%
Cryptocurrency	21%	56%

[163] All percentages have been rounded

There are some expected results, such as the ECB is more concerned with data privacy and climate change than the Fed is. Covid is mentioned equally by both banks, which means it is most likely a background factor that affected the landscape but did not radically alter the banks' positions. They are about equally concerned about foreign competition, though the Fed is mostly concerned about China while the ECB is concerned primarily with the US, and China only secondarily.[164,165]

The first interesting finding is that the Federal Reserve placed more emphasis on the regulatory space than the European Central Bank. They are far more concerned about cryptocurrency regulation in particular. Considering that Europe is a tighter regulatory space, the expected result was that they would spend more time on it. However, paradoxically, because the Fed has less as less regulatory environment, it may need to discuss it more to advocate for change.

Monetary policy and financial stability are the most important concerns for the both the Federal Reserve and the ECB. They spend the exact same amount of time discussing stability concerns and almost the same of what they feel the role of their bank is. Both have a number of requirements that address these concerns, both consider CBDC a risk on these two elements, and both state that CBDC could mitigate larger risks to financial stability and monetary policy from private actors. However, they are using these same risks and concerns as different engines in their project.

The ECB pushes the digital euro as a symbol of unity, and their own role as necessary innovators in the payments system to maintain public trust in money and to keep a cutting economic edge. Maintaining an effective monetary policy and stable financial system are imperative, but a digital euro is the answer to these concerns, not an obstacle.

The Federal Reserve, on the other hand, is much more cautious. They have the same concerns, but do not have any overriding motivations to get past these concerns. There is more talk of regulating private currencies as a substitute for introducing CBDC as they believe this will have similar mitigating effects on disruptions to the financial system and possible fragmentation of

[164] "Speech By Governor Brainard On Digital Currencies, Stablecoins, And The Evolving Payments Landscape". 2019. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/newsevents/speech/brainard20191016a.htm.
[165] Bank, European. 2022. "Interview With Redaktionsnetzwerk Deutschland". *European Central Bank*. https://www.ecb.europa.eu/press/inter/date/2022/html/ecb.in220211~237298e6fa.en.html.

money, and therefore their monetary policy effect.[166] This may partially stem from their focus throughout the documents on private innovation. There is no external push as seen in the ECB's documents. There is no symbolic meaning, no need to become an international currency because the US dollar already is.

The two possible currencies follow the same logic but are set in different institutional contexts. As an actor, the ECB's documents show a much more proactive approach than the Federal Reserve. It is likely then that a digital euro will materialize before a digital dollar. The digital dollar will probably not come to fruition until they have a compelling policy reason. In the end, this reason may be that a digital euro, with its proposed no-cost to banks, internationally accessible nature, has enough advantage to eclipse the dollar as the world's reserve currency.

Conclusions

As time progresses, a clearer picture emerges of different visions of central bank digital currency. The Federal Reserve Throughout the project, the two central banks have demonstrated similar project goals. Their stated requirements for a CBDC as well as the risk and benefits that would derive from one often match entirely. They have equal amounts of consideration for their two biggest priorities, monetary policy and financial stability.

The most dramatic differences in the two projects are how the banks are positioning themselves within it. The ECB has decided on proactive approach that pushes nebulous goals like unity and symbolism, whereas the Fed has not offered such a clear policy outlook and spends much time discussing regulating private options alongside the CBDC discussion. The clearest influencing factors on the project then, are the regulatory environment the banks are in and their own perception of their role. The ECB is not concerned with regulating cryptocurrency as the EU is already working on that, but they are interested in promoting the international role of the euro and upholding their own legitimacy as a supranational bank. The Federal Reserve is set in a lax regulatory environment, so must spend time advocating for stricter regulations. They dollar already plays a strong international role, so they do not need to promote it. The position of the

[166] "Testimony By Vice Chair Brainard On Digital Assets And The Future Of Finance". 2022. *Board Of Governors Of The Federal Reserve System*. https://www.federalreserve.gov/newsevents/testimony/brainard20220526a.htm.

Federal Reserve on the digital euro project then is another example in the timeline of its behaviour as a neutral entity whose first priority is to maintain the status quo.

There is much more that goes on behind the scenes; this project only had access to publicly available files, so it is not a complete picture of what the bank is thinking. There is also no way to prove causation, as influences can only be observed after they make their way into public view, so all conclusions are only correlative. There is also a staggered timeframe to be aware of; the Federal Reserve's project is two years behind the ECB. This could account for the more clarified position of the ECB in later documents. It is possible that the Fed is not far enough into the process to have a policy perspective. However, the lag in the timeline is telling in itself towards their perspective, as it is more of a "wait and see" approach. There are also factors that were not discussed due to the limited scope. These include financial inclusion as a rationale for a CBDC, and cross-border effects of one.

If the observed trends continue, it is likely that the digital euro will materialize much sooner than a digital dollar, which could threaten the dollar's position as the world's reserve currency, depending on what consumer uptake of a CBDC looks like. Moreover, the ECB's shift to supporting a CBDC despite the risks that they are well aware of, shows a more activist position for the central bank. This could be isolated to the CBDC project, or it could be indicative of a shifting paradigm. The Federal Reserve's more reserved position is in line with how they are traditionally thought about, and they show no softening towards a CBDC as a policy solution. This threatens to leave them behind as the world becomes more rapidly digital, which will have implications for the dollar's international role. These implications may be negligible, or they could be profoundly upsetting to both the international monetary order and by extension, the American economy.

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