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FORUM

The Value Added of Central Bank Digital Currencies

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Centralisation or Decentralisation of European Fiscal Rules?

When EU countries adopted the euro, they were aware of the challenges posed by decentralised fiscal policy in a monetary union. In particular, this arrangement raises concerns that individual countries will greatly expand their public debt in the common currency, thus complicating and undermining monetary policy. Furthermore, excessive public debt in one country could require large-scale financial assistance from other countries. To prevent the emergence of such fiscal policy externalities, limits on public deficit and debt levels were set in advance.

Initially, monitoring adherence to the reference values was centralised: the European Commission was tasked with acting as guardian of the Treaties, and, together with the European Council, was also given the authority to impose sanctions in the event of rule violations. However, the obligation to adhere to the reference values on a permanent basis proved difficult to enforce as member states considered the values to be targets rather than limits. A reform in 2005 introduced an explicit target in the form of the medium-term budgetary objective (MTO), which envisaged a structural deficit of up to 1% of GDP, i.e. a budget that is close to balance in structural terms.

After the failure of central enforcement of fiscal rules had become obvious, the Fiscal Compact of 2012 introduced the obligation of decentralised compliance monitoring with respect to fiscal rules. Each member state has since been required to establish its own formal rules for a structurally balanced budget. The subsequent "two-pack" regulations strengthened this decentralised approach by stipulating that independent national fiscal institutions (IFIs) must be involved in monitoring compliance with the fiscal rules. Subsequently, many member states have developed corresponding institutions, and before the COVID-19 pandemic we witnessed an emerging structure of decentralised enforcement. As this process is not yet complete, the debate on reforms of EU fiscal rules has intensified in recent years.

Recently, the European Commission has developed a legislative proposal for the reform of the EU's "economic governance rules". The proposal suggests dropping the obligation for a broadly structurally balanced budget as defined by the MTO. In the future, the Commission will instead determine an upper limit for the net primary expenditure path through bilateral negotiations with the member states, which is to be endorsed by the Council, taking into account planned measures in the respective country. This path is to apply for a period of four to seven years.

Putting the technical aspects aside, with the intended bilateral negotiations to determine the respective limits, the proposal includes a new procedural approach. The role of the Commission will be expanded. Beyond budgetary surveillance, it is to be involved in the determination of the fiscal policy of the respective country. According to the Commission, this new approach intends to make the member states more willing to adhere to the fiscal rules – in the jargon of the Commission, the "national ownership" of fiscal rules is to be strengthened. While national ownership would generally be a merit, scepticism is warranted here because there remains a fundamental conflict between the goals of the national fiscal policy and the joint perspective of the union. Moreover, the envisaged involvement of the Commission in determining a country's permissible expenditure path opens up new opportunities for the Commission to influence national fiscal policy in a way that works against national ownership.

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In the past, the European Commission and the European Council themselves have repeatedly shown that Brussels has not really taken ownership of the task of monitoring compliance with the EU fiscal rules, and the rules have been publicly discredited by Commission presidents as non-sensical or irrelevant. From an economic perspective, it should be emphasised that the Commission – in line with its mandate – is pursuing an own economic policy agenda. It sees its role, for example, in strengthening the cohesion of member states, and it is pursuing ambitious decarbonisation targets. In pursuing its agenda, the Commission depends, however, on the Council and on the participation of the individual member states. Even though the objectives of the Commission are shared by most member states, the Commission's own agenda is in conflict with strict enforcement of fiscal rules. As the Commission needs the support of the Council, a generous interpretation of fiscal rules is instrumental for the Commission in gaining approval for its proposals. Moreover, the Commission is dependent on the member states to finance its tasks, and it needs their approval even when setting up the budget. These two channels open up numerous opportunities for the member states to exert pressure on the Commission. Because of these and other conflicting objectives, even if the proposal for the new rules strengthens its bargaining power, the Commission cannot credibly commit to enforcing the rules. Accordingly, even ex ante, member states have little incentive to comply with the rules.

It seems problematic, therefore, that the European Commission's recent proposal foresees a more important role of the Commission in assessing member states' budgets and their development. It also creates a risk that the independent scrutiny of countries' budgetary policies by their national IFIs will be undermined. Currently, it is common practice for national IFIs to examine whether budgets are in line with the MTO, whether they are sustainable in the long term, and what budgetary effects certain reforms have. In the future, there will be no simple benchmarks that define whether public finances are complying with the rules, and therefore national IFIs may lack leverage to effectively assess the fiscal policy and the national budgets.

Currently, the decentralised enforcement of EU fiscal rules rests primarily on ensuring a structural deficit in line with the MTO. Under the proposal outlined by the Commission, however, national fiscal rules in the form of a structural balanced-budget requirement will no longer be consistent with EU fiscal rules. A simple fix is not available: replacing the national balanced budget requirements with an upper limit for the net-expenditure path is not practical, as the net-expenditure paths will differ across countries and years. The lack of consistency with EU fiscal rules is likely to undermine the effectiveness of the national rules.

As the net expenditure path is a macroeconomic concept that has no counterpart in public budgets, it would be necessary to spell out in detail for each national and subnational authority what the net expenditure path requirement actually implies. If it has been agreed between a member state and the Commission that certain reforms will be undertaken by the member state, and if the Commission has then extended the spending path accordingly, what spending path should apply to the different levels of government? Should national and subnational governments be allowed to increase their spending accordingly? Does that apply even if the reforms are primarily reflected in the national government's budget? Political solutions must be found for all these problems. In the end, it will always be a matter of interpretation whether rules are followed or not. Practical experience suggests that this will make fiscal rules less binding.

In light of the aforementioned complications, the path to a more effective decentralised budgetary surveillance initiated by the Fiscal Compact is undermined by the European Commission's recent proposal. Moreover, the Commission's proposal may lead to even greater political capture of budgetary surveillance at the European level. In sum, the proposal does not help in improving compliance with the reference values and is likely to damage existing enforcement structures.

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The Value Added of Central Bank Digital Currencies

Central bank digital currencies (CBDCs) are reshaping the financial landscape globally. Already implemented in ten countries, CBDCs offer digital payment solutions, particularly beneficial for regions with limited access to traditional banking systems that seek to promote financial inclusion. However, in more advanced financial systems, CBDCs may appear less compelling, with existing alternative digital payment methods already prevalent. Still, even these financial systems have incentives to consider the development of CBDCs and to explore how to reap the benefits of this new technology. This Forum features articles by the speakers at our recent event, organised jointly with Bruegel and the Atlantic Council. The authors define CBDCs, debate their pros and cons, examine the issues and prospects they represent, and share country-specific experiences with the development and roll-out of digital currencies.

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Maria Demertzis and Josh Lipsky

The Geopolitics of Central Bank Digital Currencies

According to the Atlantic Council's tracker,[1] 114 countries around the world, representing 95% of global GDP, are at some stage of developing central bank digital currencies (CBDCs). For a total of 11 countries, CBDCs are now a reality and operate in parallel to their physical equivalent. Eighteen of the G20 economies have passed the research stage and are into either the development or the pilot stage. Central banks are cautious institutions by nature, so when they invest time and money in a project that could change the nature of their fiat currency, it is key to understand their motivations.

The motivation for using a digital (almost) equivalent of cash is not the same for all central banks (Demertzis and Martins, 2023). According to the Bank for International Settlements (BIS), countries that have been the first to adopt the idea aim to focus on increasing financial inclusion, in other words, access to digital payments for those that are "unbanked". This was clearly the case in The Bahamas, where the Sand Dollar was one of the first projects to go online. But in jurisdictions like the US and the EU, financial inclusion is a second-order problem and is not necessarily best solved with a digital euro or digital dollar. Instead, the motivation for embarking on CBDCs in many advanced economies comes primarily from a desire to compete with the increased degree of digitalisation in finance that threatens to displace physical cash and challenge the monopoly of sovereign money.

It is often argued that cash is the anchor of trust in the financial system. In a world of fiat money, commercial bank deposits are only partially guaranteed. For the consumer, the only money that is guaranteed in full by the sovereign is cash. Being able to revert to cash at any time is what provides trust in the system. With payments being increasingly digitalised, cash is becoming less popular and central banks are worried that they could lose the anchor of trust in the system. At the same time, the emergence of private cryptocurrencies has raised concern among some central banks that their role as the sole provider of money will be challenged, a fact that would compromise their ability to protect monetary and financial stability.

But while motivations differ across countries, there is one common theme – a recognition that payment systems can and should be improved. Think of CBDCs as a high-speed train – in order for that train to work, you need good rails. Not only CBDCs can ride on the rails, but the emergence of a CBDC can push governments to invest in the rails that both the public and private sector will benefit from. For countries with less developed financial systems, if the necessary digital infrastructure is in place, CBDCs can be a way to increase both the reach and effectiveness of domestic payments. But why is that an issue in the US and the euro area? It has less to do with domestic payment systems – the EU is already fast and the US is developing FedNow – and has more to do with cross-border systems that are used to funnel dollars and euros.

Where CBDCs can provide sizeable gains is in cross-border and cross-currency transactions that are subject to inefficiencies related to the current international correspondent banking architecture (Hebert et al., 2023).

International payment systems have not kept up with the size of cross-border financial flows in an increasingly open world. The systems used are costly, slow and complex. Lipsky and Kumar (2023) note that US $23.5 trillion were transferred across borders in 2020, which cost US $120 billion, the equivalent of one year of Morocco's GDP. This, in turn, has meant that many participants from emerging markets and the developing world have been left to pay a heavy premium for access to the global financial system. In an increasingly interconnected world, the need to improve cross-border payments has been established as a priority by the G20, with the Financial Stability Board leading coordination efforts to improve the existing system (Financial Stability Board, 2020).

1 Atlantic Council, Central Bank Digital Currency Tracker, https://www.atlanticcouncil.org/cbdctracker/.

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Figure 1
How are retail payments changed with central bank digital currencies?

Source: Authors' own illustration.

But notably, in our view, the creation of CBDCs globally has the potential to massively impact cross-border payments. For the moment, one of the reasons the dollar is the currency of choice globally is because it offers the infrastructure for any two parties to settle a transaction. The dollar is by far the currency of choice in trade invoicing (more than 50% of total trade) and foreign exchange transaction volume (almost 90% of the total) globally (Moronoti, 2022). This also means that US settlement authorities and financial institutions are involved in finalising most global transactions. If two countries have CBDCs, then they in principle would have the ability to settle transactions between themselves with near-instant finality, potentially bypassing the current dollar-based system.

In a speech at the New Development Bank in Shanghai on 13 April 2023, President of Brazil Lula da Silva said, "Every night I ask myself why all countries have to base their trade on the dollar" (Leahy and Lockett, 2023). In the wake of Russia's invasion of Ukraine and the G7 sanctions response, there are renewed geopolitical incentives for many countries to invest in CBDCs or other alternatives to dollar-based systems. While it is true that the rhetoric does not always meet the reality when it comes to efforts of "de-dollarisation", technological developments can provide tools that were previously absent. The US and the euro area cannot afford not to be part of this debate and it is critical to understand the two core types of CBDCs.

Understanding the dual use of CBDCs

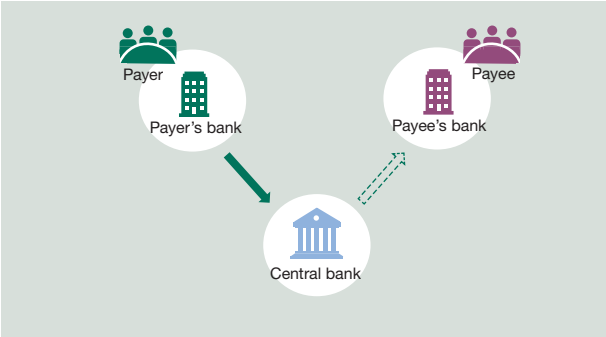
Just like their physical equivalent, CBDCs will have a dual purpose: first, to be used for retail transactions, typically by consumers and small businesses to make daily payments, representing a small part of total payments; and second, to be used for wholesale (i.e. in bulk) purposes by banks and other financial institutions, either domestically or cross-border. In the euro area, most of the efforts so far have focused on how to develop a retail CBDC, and only very recently has there also been an attempt to advance thinking on the wholesale level (European Central Bank, 2023a).

The creation of a CBDC for retail purposes would change the way payments are made in the following manner, schematically presented in Figure 1: currently, a consumer (payer) instructs their bank to make a transfer to the payee's account (left panel). The transaction happens from one bank to the other and is settled by the central bank. With CBDCs, however, both the payer and the payee will have accounts directly with the central bank (right panel). Both the payment and the settlement will happen as a liability of the central bank.[2] On top of that, CBDCs could use new technology, such as distributed ledger technology (DLT), which is being explored to facilitate faster transactions.

However, it is critical to note that all CBDCs currently being developed are intermediated – meaning there is no direct-to-consumer option for a retail CBDC. Instead, the central bank uses existing commercial banks or other providers to manage customer accounts, comply with anti-money laundering/combating the financing of terrorism regulations, and distribute the CBDC. Therefore, it is

2 To be precise, while the consumer will have an account at the central bank, the accounts will be managed by commercial institutions (like banks) so consumers will not necessarily have to do anything different in the way that they issue payments.

Figure 2
Domestic wholesale payments methods remain the same with central bank digital currencies



Source: Authors' own illustration.

unlikely a CBDC could undercut the commercial banking system, as that system is being relied upon for delivery.

What it does mean, however, is that CBDCs as retail accounts in the central bank are guaranteed in full, while retail accounts in commercial banks are only guaranteed partially, through national deposit guarantee schemes.

For wholesale use, CBDCs represent much less of an innovation. In the current system, bank reserves in the central bank available for wholesale transactions are a form of central bank digital currency (see Figure 2). In other words, payers and payees in the wholesale market, namely banks, already have accounts at the central bank. This means that, unlike for retail purposes, wholesale CBDCs do not need to be created from scratch. Rather, it is about using the most modern technology, namely the DLT, to operate wholesale transactions.

The question is whether this new technology can provide efficiency gains in wholesale payments domestically, or between central banks across borders.

Cross-border payments: A CBDC revolution

In countries with more developed financial systems, domestic payment systems are typically very efficient. Examples are the real-time gross settlement systems such as T2, launched by the Eurosystem in March 2023 to improve cost efficiency, provide greater cyber resilience and optimise the use of liquidity by harmonising and integrating various TARGET services (European Central Bank, 2023b). The Fedwire Funds Service, which settles US dollar-denominated transactions is another such example, although it is slower than its European counterpart. Both systems are operated by the respective central bank. Improving the efficiency of the system can still be done in the current technologies.

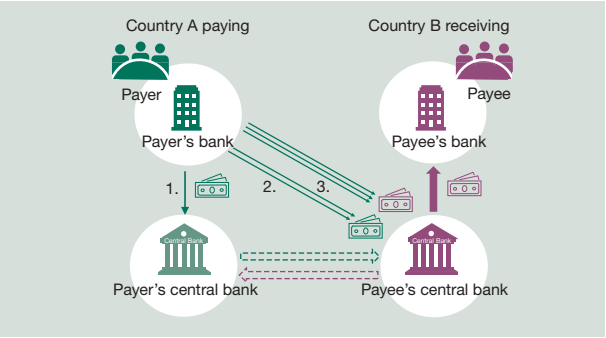
Real gains are possible with CBDCs in cross-border payments (across different currencies). BIS (2021) reports that a transaction that currently takes between three to five days could be completed in less than ten seconds. There are also significant cost savings to be had, but their magnitude would vary between banks and regions. For example, average costs for overseas transactions amount to 2% in Europe, while in Latin America such costs amount to as much as 7%. New payment solutions being explored could reduce this cost to as low as 1%. The way to achieve such savings comes from removing the network of correspondent banks in the chain of transactions and putting direct corridors in place instead that allow banks to communicate.

Such efficiency gains were achieved in a pilot project called mBridge (BIS, 2022). Along with efficiency and cost gains, the project demonstrated an ability to reduce settlement risk and allow for the possibility of local currencies to be used for international payments, a move away from having to rely on international tradable currencies like the dollar and the euro. The pilot revealed though that several complex choices would have to be made that pertain to legal, economic and, importantly, governance issues. mBridge was a joint operation between Thailand, United Arab Emirates, Hong Kong Monetary Authority and China and was the first project to settle real money – US $ 22 million – cross-border on a CBDC platform.

Recently the US released the initial results of its own cross-border wholesale project, called Project Cedar. The results showed it was possible to settle CBDCs between banks cross-border within 30 seconds even if using different technology systems. Similarly, the BIS in collaboration with the Banque de France and the Swiss National Bank successfully concluded a cross-border wholesale CBDC experiment in 2021. However, the European Central Bank although quite advanced in its thinking on how to deal with the complexities of a digital euro, is only actively thinking about its retail usage.

The international financial system has long relied on the dollar as the currency of choice, which in turn meant having to rely on the dollar settlement system. The existence of CBDCs for wholesale purposes has the potential to change this system radically. Central banks would have dedicated corridors that can settle directly between them, without having to rely on correspondent banks. The payer's bank would have an account directly at the country's central bank, which would in turn communicate directly with the central bank of the payee's country. This

Figure 3
Cross-border payments using central bank digital currencies



Source: Demertzis and Martins (2023).

would mean more diversification of currency pairs, with increased liquidity for currency pairs that do not include the US dollar.[3] Also, the more direct relation between parties leads to the de-risking of transactions. Figure 3 shows the three different ways in which a payment could be made. It is true that replacing the liquidity of the dollar in the near-term will present a significant hurdle for cross-border currency corridors, although recent indications show this is possible.

The payer's bank can pay the payee's bank in one of three ways. First, it can hold domestic currency in an account in the domestic central bank, in which case the two central banks will transact on a pre-agreed currency. Second, the payer's bank has a domestic currency account at the foreign central bank and pays with its domestic currency. Third, the payer's bank has a foreign currency account at the foreign central bank and pays with this.

The first method will be the one closest to what happens today and the dedicated corridors between central banks will allow the settlement of any transactions. The mBridge pilot shows that the third method is the most efficient as it involves the smallest number of steps between the two parties that transact.

The oppportunity of standard-setting in CBDCs

Before such dedicated corridors are created, there are a number of choices that need to be made on technical, legal (and governance) and economic issues.

For the system to function, rules must be established to provide legal certainty. Would existing rules for holding foreign securities be sufficient for wholesale CBDCs to function or would there need to be a new legal framework? International coordination on this issue would be necessary for wholesale CBDCs to challenge the current ways of settling international transactions. Arguably, the governance of wholesale CBDCs will be the most significant obstacle to their uptake.

But bilateral recognition of legal systems would also be sufficient for any two central banks to settle between them, provided there is an agreement to do so in one of the two respective currencies and not the dollar. It is not immediately obvious why two countries that currently trade between them in dollars would prefer to (or be able to) trade in their own currencies. The instant settlement requires deep liquidity pools that will be hard for any currency other than the dollar to match in the short-term.

However, if a country was sanctioned by the US, then dollar settlement would no longer be available to them. A case in point is the gas-for-roubles incident last year in the euro area, when European buyers of Russian gas were forced to pay in roubles even though contracts were euro-denominated. Gazprombank was deliberately left outside the sanctions packages that the EU had imposed on Russia, so that European buyers could honour their contracts with the Russian authorities. But as it turns out, that was not enough. Sanctions implied that the Russian authorities did not have access to the euros paid, as they would have to be settled through the euro settlement system, as explained in Demertzis and Papadia (2022).

Having a settlement system that is operational between any two central banks guarantees the continuity of economic activity. Even if this system is more costly than using traditional channels, it may still be less expensive than the current circuitous network of banking relationships that have to be navigated for sanctions evasion today. Many countries that are thinking about strengthening their own resilience will no doubt examine the geopolitical importance of always having a functioning settlement system. It is not a coincidence that in the wake of Russia's invasion of Ukraine, interest in wholesale CBDC projects has more than doubled, according to Atlantic Council (2023) data.

CBDCs are still in the early stages of their development, and it is clear that many difficult questions remain in the months and years ahead. The mBridges pilot showed that the most efficient payment method would be for foreign corporations to have accounts in the domestic central

3 Currently, CLS (https://www.cls-group.com/) is a central player in the clearing and netting of foreign exchange transactions, contributing to reducing settlement risk. However, their services are limited to 18 currencies.

bank, if they trade domestically. What would that mean for monetary sovereignty? How would potential conflicts be resolved? How would countries deal with counterparty risk? Would the domestic central bank agree to carry that risk on behalf of institutions that are not national?

The most pressing issue, however, is not what the questions are but who will be at the table when the questions are answered. If the US and EU want to have a significant impact on this trajectory, it is not enough to poke holes in others' CBDCs; they must bring their own technological solutions to the table and in the process ensure that CBDCs respect privacy and ensure stability in the international financial system. This would be the only way to contribute to setting a global standard and promoting international cooperation.

Conclusions: CBDCs and their geopolitical relevance

The rapid increase in the interest in CBDCs coincides with a visible increase in the deployment of economic statecraft tools since March 2022, when access to the reserves of the Central Bank of Russia were blocked by the G7. This decision and subsequent sanctions on Russia have come to add to the threat of fragmentation in the global financial system.

The question that is of relevance here is not how to prevent countries from developing CBDCs. This would not be possible and it would also not be desirable given the great potential for efficiency gains in cross-border payments that they offer. However, this increased efficiency will come with a major change in the way that global settlements work. If any two central banks are in a position to settle transactions between them, then the dollar (and to a lesser extent the euro) infrastructure will not be needed. Similarly, correspondent banks, which are currently crucial nodes in international financial flows, will see their role eliminated.

Over time, these developments can impact the global role of the dollar and euro. That is why actively participating in the discussions around the development of CBDCs is absolutely essential in order to understand the complex trade-offs that CBDCs entail and how to deal with them. In order to participate in a meaningful way, both central banks need to have models to bring to the table.

Both the EU and the US also need to be active participants in this process that will help create and manage international standards as a way to help preserve their strategic interests. This is not something that will happen overnight. But the general direction is now clear. It would be a mistake to wait too long.

References

Atlantic Council (2023), Central Bank Digital Currency Tracker, GeoEconomics Center, https://www.atlanticcouncil.org/cbdctracker/.

BIS (2021), Inthanon-LionRock to mBridge: Building a multi CBDC platform for international payments, *BIS Innovation Hub,* September, https://www.bis.org/publ/othp40.htm (22 June 2023).

BIS (2022), Project mBridge: Connecting economies through CBDC, *BIS Innovation Hub,* October, https://www.bis.org/publ/othp59.htm (22 June 2023).

Carstens, A. (2022), Digital Currencies and the Soul of Money, Speech at ILF Conference on "Data, Digitalization, the New Finance and Central Bank Digital Currencies: The Future of Banking and Money", 18 January 2022, https://www.bis.org/speeches/sp220118.htm (22 June 2023).

Demertzis. M. and F. Papadia (2023, 19 April), A sanctions counter measure: gas payments to Russia in rubles, *Bruegel Blog*, https://www.bruegel.org/2022/04/a-sanctions-counter-measure-gas-payments-to-russia-in-rubles/ (22 June 2023).

Demertzis, M. and C. Martins (2023), The Value-Added of Central Bank Digital Currencies, *Bruegel Policy Brief*, https://www.bruegel.org/policy-brief/value-added-central-bank-digital-currencies-view-euro-area (22 June 2023).

European Central Bank (2023a, 28 April), Eurosystem to explore new technologies for wholesale central bank money settlement, Press Release.

European Central Bank (2023b, 21 March), Successful launch of new T2 wholesale payment system, Press Release.

Financial Stability Board (2020, 13 October), FSB delivers a roadmap to enhance cross-border payments, Press Release.

Hebert, J., E. Moshammer and H. Barth (2023), Wholesale central bank digital currency – the safe way to debt capital market efficiency, *ESM Discussion Paper Series*, 22.

Leahy, J. and H. Lockett (2023, 13 April), Brazil's Lula calls for end to dollar trade dominance, *Financial Times*.

Lipsky, J. and A. Kumar (2023, 16 May), Not so fast: The case for a new SWIFT, *Atlantic Council Blog*, https://www.atlanticcouncil.org/blogs/new-atlanticist/not-so-fast-the-case-for-a-new-swift (22 June 2023).

Moronoti, B. (2022), Revisiting the International Role of the US Dollar, *BIS Quarterly Review*, December 2022.

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The Evolution of SandDollar

Decentralised finance (DeFi) and financial technology (FinTech) are buzzwords that have been used in the financial arena in recent years, as experts and novices seek to advance financial innovation. One phenomenon that has risen to prominence in the FinTech discussion is the subject of digital currency and its implications towards financial inclusion. In particular, the discussion of a central bank digital currency (CBDC) has gained traction, particularly over the last few years, as a means to improve payment efficiency as well as to reduce the use of physical cash.

A CBDC is defined as a widely accepted digital version of a national currency issued by the central bank. It is denominated in the sovereign currency of the country and is a direct liability of the central bank. There are two types of CBDCs, wholesale and retail. Wholesale CBDCs are used to settle large value financial transactions primarily between regulated financial institutions, such as interbank transfers and reserve settlements. Retail CBDCs on the other hand, are used more broadly by households and businesses.

It is important to note that CBDCs are not a type of cryptocurrency. The primary difference between a CBDC and a cryptocurrency is the fact that a CDBC is regulated by the central bank, whereas cryptocurrencies are decentralised and unregulated. In addition, CBDCs are pegged to the national currency on a 1:1 basis, while cryptocurrencies lack intrinsic value and carry high rates of volatility, given that they are not backed by anything.

With regard to design features, there are key principles and elements of instrument designs that CBDCs should embody. According to a Bank for International Settlements (BIS) report on foundational principles and core features of CBDCs, a group of seven central banks[1] suggested that the three core principles of a CBDC should include: i) the issuance of a CBDC should not compromise monetary or financial stability; ii) a CBDC should coexist with and complement existing forms of money; and iii) a CBDC should promote innovation and efficiency (BIS, 2020).

When designing the instrument, central banks can decide which features they want to link to the digital currency. For example, central banks may decide whether they will place caps or limits on the amount of CBDC individuals can hold at any one time, and whether or not it will bear interest. These features are particularly important to consider in relation to monetary policy, and in particular, its impact on money supply and financial intermediation. To elaborate, making the CBDC interest-bearing will help to spur demand for the digital currency; however, it can also make the CBDC a direct competitor to bank deposits, which has the potential to cause a possible run on banks and thus lead to financial disintermediation. It is equally important that CBDCs are low cost, easy to use, convenient and interoperable to ensure widespread adoption.

Over the last few years, interest in the exploration of a CBDC has grown. In fact, in May 2020 only 35 countries were considering a CBDC, and currently there are 114 countries, representing 95% of global GDP, exploring the digital currency (Atlantic Council, 2023). To date, 11 countries have fully launched a CBDC. In the Caribbean, three CBDCs have been launched, including The Bahamas' SandDollar, Jamaica's JAM-DEX and the Eastern Caribbean Currency Union's D-Cash. Throughout 2023, over 20 countries are expected to take significant steps towards piloting a CBDC, including Australia, Thailand, Brazil, India, South Korea and Russia (Atlantic Council, 2023).

The purpose of this contribution is to present an exploration of the evolution of the SandDollar and assess the trade-offs between cash and the SandDollar within the Bahamian economy using a New Keynesian model. This article first explores the motivation behind the launch and implementation of the SandDollar and considers the progress of adoption thus far. Subsequently, it presents the model used to assess the trade-offs between cash and

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1 The Bank of Canada, the European Central Bank, Bank of Japan, Sveriges Riksbank, Swiss National Bank, Bank of England and Federal Reserve Board of Governors.

CBDC in The Bahamas and discusses some early lessons. The paper concludes with some steps forward, including adoption expansion and future policy considerations.

Motivation

The concept for advancing the national payments infrastructure to include a CBDC in The Bahamas began in the late 1990s, with the Central Bank's push to modernise the domestic payments system to not only align with international standards, but also to serve the development needs of all sectors of the economy. Following this, in early 2000, the Bahamian Payments Systems Modernization Initiative (PSMI) was established with the objective of improving financial inclusion and access, thereby making the domestic payments systems more efficient and non-discriminatory in access to financial services across the entire country. In line with this, the implementation of a retail CBDC acts as an extended phase of the PSMI.

Despite the strides The Bahamas has made in modernising its payments system, there is still a significant portion of the population that remains unbanked. In fact, a 2018 study by the International Monetary Fund (IMF) showed that some 18% of the adult population is considered unbanked (Wright et al., 2022).

The reason behind this high number is twofold. First, given the archipelagic makeup of The Bahamas, the far dispersion and small population of its 700 islands and cays makes the cost of doing business on the outer islands significantly more expensive when compared to the capital, Nassau. Further, de-risking began in 2015 and resulted in the loss of Correspondent Banking Relationships (CBRs) globally, with the World Bank (2015) citing the Caribbean as the most impacted region. As a result of the loss of CBRs, combined with the high cost of doing business, many of the international banks in the domestic sector that had a presence on these islands decided to wind up their operations, leaving the residents there without access to banking services.

Secondly, opening traditional bank accounts is often seen as an arduous task, given the amount of documentation requirements, the long turnaround time and the cost associated with this service. Hence, individuals are less inclined to open bank accounts. Also, in some cases, persons lack the necessary documents required to open bank accounts due to their migrant status and are then excluded from the banking sector.

Therefore, to provide a payments solution for those who do not have access to banking services, as well as to continue the broader payments systems modernisation efforts, the Central Bank of The Bahamas launched the SandDollar in October 2020, becoming the first national retail CDBC in the world.

The broad objectives of the SandDollar are to i) increase the efficiency of the Bahamian payments system through more secure transactions and faster settlement; ii) provide non-discriminatory access to payment systems without regard for age, immigration or residency status; iii) achieve greater financial inclusion and cost-effectiveness, and provide greater access to financial services across all of The Bahamas; and iv) strengthen national defenses against money laundering, counterfeiting and other illicit ends by reducing the ill effects of cash usage.

Implementation and adoption of the SandDollar

The launch of the SandDollar began with a pilot in December 2019 in Exuma, a southern island in The Bahamas that represents a microcosm of the country, given its archipelagic features. Ahead of the pilot, a survey was conducted to ascertain the level of financial inclusion on the island, as well as to get a sense of residents' appetite for electronic payments. The results of the survey showed that 93% of Exuma's residents had high access to basic bank accounts. Some 17% of residents chose not to use bank accounts, and this was due to a lack of trust in the institutions or the inconvenience of getting to a physical bank. The results of the survey also showed that 96% of the residents in Exuma owned mobile devices, 40% of which used their mobile devices to perform some form of bill payment or online banking transaction. Further, while nearly two-thirds of the respondents had a willingness to use their smartphones for payments, there was a reluctance to use electronic banking (mostly among older respondents) due to distrust in electronic platforms and cybersecurity concerns.

Against this backdrop, the pilot was largely successful, notwithstanding setbacks associated with the COVID-19 pandemic, which hit three months after the initial rollout. Following the passage of Hurricane Dorian in 2019, the pilot was extended to Abaco in February 2020, one of the most heavily impacted islands, to help restore its financial system. To operationalise wallets, all Supervised Financial Institutions (SFIs) were given the opportunity to become Authorized Financial Institutions (AFIs), which would act as dealers of the SandDollar. Payment Service Providers (PSPs) were the first to apply, and therefore make up the bulk of AFIs.

The process is quite simple. Once users download the app on their smart devices, they must be onboarded by

an AFI – there are currently seven active AFIs – which validates the required Know Your Customer (KYC) documents. Once the AFI validates the account, users can upload money to their wallets either via bank transfer or via a cash deposit with the AFI. After that, users are free to use their SandDollars for purchases, similar to other electronic means of payment.

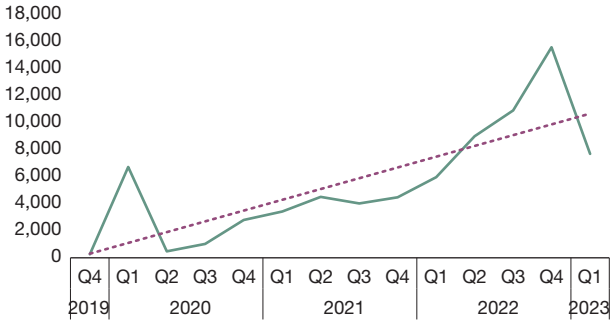
The SandDollar wallet has three tiers, with varying degrees of requirements. Tier 1, or basic wallet, does not require the user to submit any KYC documents. It allows the user to hold up to 500 SandDollars and limits transactions to no more than 1,500 SandDollar per month. The Tier 2, or premium wallet, allows the user to hold up to 8,000 SandDollars, with a 10,000 SandDollar monthly transaction limit. Under this tier, users must have a valid government-issued ID and have the option to link the wallet to a bank account. The Tier 3 wallet is considered a merchant account and allows users to hold between 8,000 and 1,000,000 SandDollars, without transaction limits. To open this wallet, the user must tie the wallet to a bank account and produce a valid business license and a value added tax certificate to the AFI for enrollment.

In order for the SandDollar to achieve its end goal, there were a number of design elements that had to be considered. Firstly, it was important to ensure interoperability between the SandDollar and the various e-wallets offered by the AFIs; that way, users would be able to send and receive SandDollars from each other, no matter which e-wallet developer they were using. Secondly, it was critical that transparency and accessibility were embedded in the platform, as well as real-time transaction processing, point-of-sale support for businesses that would accept the SandDollar, and a fully auditable non-anonymous transactions trail.

As mentioned above, one of the reasons that people chose not to use digital payments was distrust in electronic platforms and cybersecurity risks. Hence, to mitigate this fear, the Central Bank made robust efforts to ensure that every touchpoint of the SandDollar was secure with end-to-end encryption, from the Central Bank's digital currency ecosystem to the e-wallets usability. When institutions apply to be SandDollar distributors, they have to be assessed by an international third party to ensure that their systems are adequate and have the necessary security measures before they are approved as an AFI. At the user level, wallets require multi-factor authentication to gain system access or complete transactions.

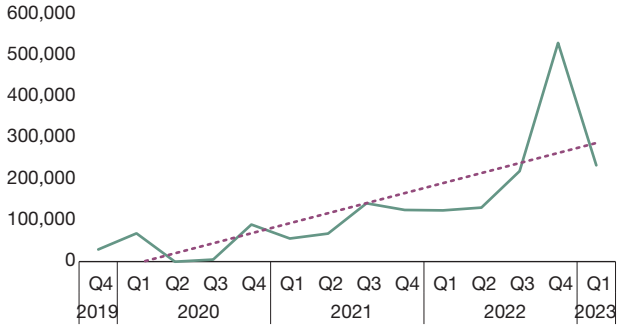
The use of the SandDollar is restricted to domestic transactions only, as a way of mitigating the risk of illicit financial flows, as well as to monitor fraud detection. With regard to

Figure 1
Number of SandDollar transactions, quarterly data



Source: The Central Bank of The Bahamas.

Figure 2
SandDollar transaction value, quarterly data



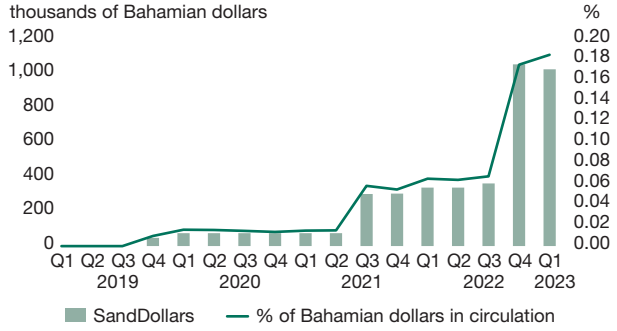
Source: The Central Bank of The Bahamas.

monetary policy considerations, SandDollars are non-interest bearing, with balance caps to alleviate any near-term risks of bank runs, or financial disintermediation.

During the initial rollout, the take-up was low, averaging monthly transactions of some 15,000 SandDollars (see Figures 1 and 2). However, as the impact of COVID-19 began to weaken and the Central Bank resumed its education and promotional campaigns, there was a pickup in 2021, with monthly transactions increasing by 119% to some 33,000 SandDollars. In 2022, transactions continued to trend upwards, averaging roughly 85,000 SandDollars per month by the end of the year, representing an increase of 160% over the previous year.

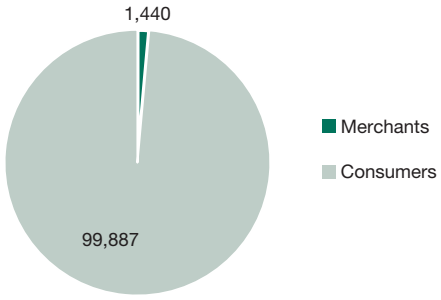
Further, total SandDollars in circulation surpassed the million mark in December 2022, and as of March 2023, there were approximately 1,024,169 SandDollars in circulation. However, SandDollars still represent less than 1% of the total Bahamian dollars in circulation (see Figure 3).

Figure 3
SandDollars in circulation



Source: The Central Bank of The Bahamas.

Figure 4
SandDollar wallets as of March 2023



Source: The Central Bank of The Bahamas.

There are just over 100,000 wallets, and approximately 1,440 of those are merchant wallets (see Figure 4). At the end of 2022, existing wallet holders represented between 20% and 25% of transactional account holders within the banking system. With regard to transaction types, peer-to-peer and peer-to-business payments were valued at $55.7 million in 2022, although SandDollars represented only a marginal portion of this.

To increase adoption, the Central Bank featured the SandDollar at a number of national festivals in 2022. In addition, the Central Bank partnered with a reputable charity – the Salvation Army – during the holidays and allowed persons to donate in SandDollars, which also helped to boost transactions, if only marginally.

During 2022, the Central Bank completed the integration of the SandDollar into the Automated Clearing House (ACH) system, which allows consumers with Tier 2, i.e. premium wallets, and above to move SandDollars between their e-wallet and bank accounts seamlessly. To complete top ups or withdrawals to and from bank accounts to e-wallets, users can log in to their online banking profile with their respective commercial bank. Additionally, all AFIs allowed the two-way movement of funds to bank accounts on their applications by the end of the first quarter of 2023.

The Central Bank is now in the process of rolling out Wallet 2.0, which seeks to enhance the user experience of the SandDollar. In this phase, the bank is working on making improvements to the technology that will allow activation to be done on the app itself for Tier 1 wallets, thereby alleviating the need for users to contact an AFI to activate their wallets and enabling self-onboarding.

In addition, Wallet 2.0 will address transactions and wallet visibility by AFIs, feature enhanced anti-money laundering/combating the financing of terrorism risk management, and enable convenient portability of accounts between financial institutions. Further, it will address anticipated point-of-sale needs for medium and large businesses that require multiple payment terminals, and allow AFIs to offer fee-based merchant services from within the core platform. This is expected to be released by September 2023.

Assessing the trade-offs between cash and the CBDC in The Bahamas

Adopting the model used by Mishra and Prasad (2023) with a banking sector, a general equilibrium model was employed to assess the trade-offs between cash and CBDC in The Bahamas. The parameters were adjusted to accurately depict the Bahamian economy. In the model, it is posited that households and businesses are the two main economic agents, deriving utility by choosing private goods for consumption (c_t), public goods for consumption (c_t^g), physical capital (k_t), bond holdings (b_t), cash (ca_t) and CBDC (dc_t). β represents the discount rate. It is also assumed that the economy is closed, given that CBDC in The Bahamas cannot be used to settle international trade.

$$max \sum_{t=0}^{\infty} \beta^t \left[u(c_t) + v(c_t^g) \right] \tag{1}$$

subject to

$$c_t + c_t^g + i_t + b_t + \phi\left(c_t, \frac{ca_{t-1}}{1+\pi_t}, \frac{dc_{t-1}}{1+\pi_t}\right) + m\varphi\left(\frac{ca_{t-1}}{1+\pi_t}\right) + ca_t + dc_t + \frac{\tau}{1+\pi_t} dc_{t-1}$$

$$\leq f(k_{t-1}) + \frac{l_{t-1}^b}{1+\pi_t} b_{t-1} + \frac{l_{t-1}^d}{1+\pi_t} dc_{t-1} + \frac{ca_{t-1}}{1+\pi_t} \tag{2}$$

$$k_t - (1-\delta) k_{t-1} \leq i_t \tag{3}$$

$$c_t \leq \frac{ca_{t-1}}{1+\pi_t} + \frac{dc_{t-1}}{1+\pi_t} \tag{4}$$

Equation (2) represents the budget constraint, with π_t denoting inflation, and τ denoting the tax rate. Mishra and Prasad (2023) assumed the function $\emptyset$ controls the transactions costs of cash and CBDC, while φ determines the amount of penalty associated with tax avoidance. It is assumed that the relative price of public goods for consumption to private goods, and that the price of investment to private consumption goods is one. Equation (3) shows the evolution of physical capital, with δ representing depreciation, while equation (4) shows a liquidity constraint in that the purchase of private goods for consumption cannot be larger than the amount of cash and CBDC holdings at the beginning of the period.

Table 1 shows the respective values of the parameters used to calibrate an economy akin to The Bahamas.

Discussion

Four autoregressive shocks are employed to ascertain the impact on the economy: a cash, a CBDC, a productivity and a monetary policy shock. The results show that when there is a positive shock to cash (such as a fiscal stimulus payment in the aftermath of a natural disaster), cash usage decreases sharply over the short term, before normalising to trend over the medium term, while CBDC usage has the inverse effect, increasing significantly over the short term and returning to trend in the medium term (quarterly calibration). Comparatively, commercial bank deposits show a sharp spike initially, followed by a decline in the short term, indicating immediate consumption following the cash injection.

In the case of a positive CBDC shock (that is, helicopter drops of SandDollars to e-wallets in The Bahamas), the results show a fall-off in cash usage over the short to medium term, with usage normalising to trend over a longer period of time (see Figure 5a). CBDC usage, on the other hand, increases over the short to medium term, before normalising to trend over the long term (see Figure 5b). In line with this, consumption spikes before declining sharply, representing immediate spending by households following the CBDC wallet top-ups. Commercial bank deposits show a sharp decline in the short term, normalising to trend faster than cash usage, indicating perhaps that in the event of a

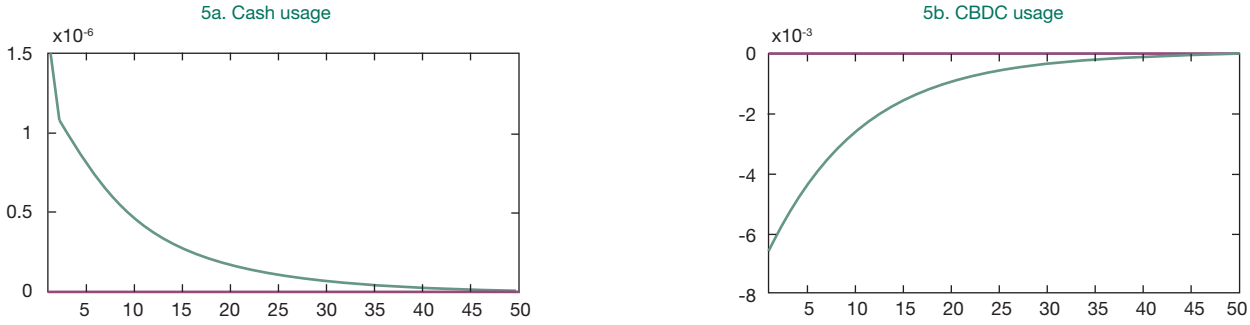
Table 1
Parameters for the calibration of an economy akin to The Bahamas

Parameter	Description	
β	Discount factor	0.95
η	Proportion of government spending on public goods	0.80
ϵ_c	Inverse of IES for private consumption goods	2.00
ϵ_g	Inverse of IES for public consumption goods	1.50
m	Probability of monitoring	0.15
τ	Tax rate	0.08
$\bar{I}d$	Steady state nominal rate of return on CBDC	1.05
μ	Growth rate of money supply	0.01
α	Capital share	0.33
A	Productivity	1.00
δ	Depreciation rate	0.10
θ_1	Level parameter of transaction function	2.00
a	Transaction costs for consumption goods	2.00
γ	Transaction efficiency for cash	1.05
ρ	Transaction efficiency for CBDC	1.75
θ_2	Level parameter of penalty function	2.00
υ	Sensitivity to cash in penalty function	3.00

Note: IES is intertemporal elasticity of substitution.

Source: Authors' estimates.

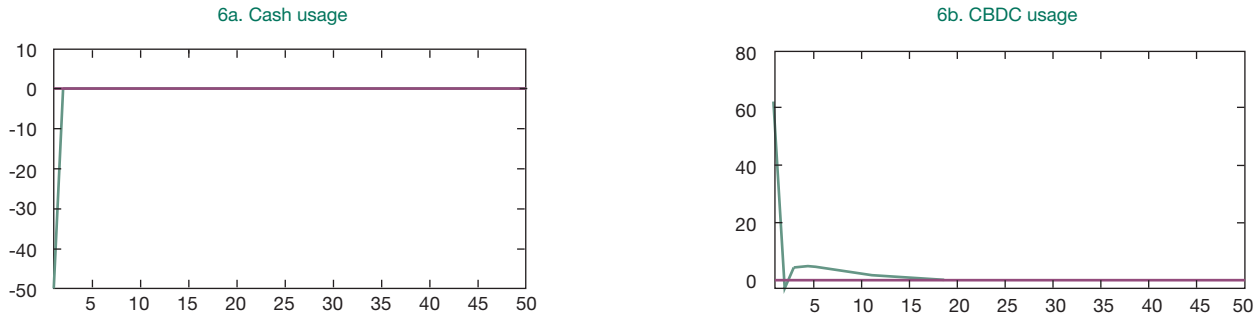
Figure 5
Positive shock to a central bank digital currency



Notes: A positive shock to CBDC would result in a decline in cash holdings and an increase in CBDC holdings. The purple line shows the long-term trend.

Source: Authors' elaboration.

Figure 6
Positive shock to monetary policy



Note: A positive shock to monetary policy would drive an increase in cash usage; CBDC usage would decline initially, followed by a marginal rise, before returning to trend. The purple line shows the long-term trend.

Source: Authors' elaboration.

CBDC shock, persons are more likely to use digital means of payment, as opposed to reverting to cash.

A positive shock to productivity would drive a spike in cash usage, which is intuitive in that, with higher productivity, persons are earning more and subsequently using more cash. Inversely, CBDC usage would decline sharply, although it would return to trend relatively quickly. In addition, commercial bank deposits would dip initially, before increasing over the long term, while consumption would increase in the immediate to short term and remain elevated over the review period.

Finally, a positive shock to monetary policy would drive an increase in cash usage, although CBDC usage would decline initially, followed by a marginal rise, before returning to trend (Figures 6a und 6b), Consumption, however, would increase and remain elevated, corresponding with a decline in commercial bank deposits, although levels would return to trend.

These results demonstrate the importance of understanding the trade-off between holding cash and CBDC. A follow-up project will examine welfare implications of this trade-off.

Early lessons

While digital payments have made strides in recent years, the reality is that CBDCs are still operating in a nascent space. That being said, any marks towards progress will not be without restraints or limitations. Three years into the rollout of the SandDollar, early lessons can be drawn from three broad areas: technology efficiency, interlinkages between education and adoption, and metrics.

Firstly, at the helm of any successful digital payment innovation is robust, efficient and resilient technology. Without a proper functioning technological support system, the rollout of any digital payment solution will fail, including a CBDC. The SandDollar has a strong technological framework, using a Hyper Converged Infrastructure (HCI) that is designed to provide full end-to-end encryption and two layers of secure data storage – the second being Distributed Ledger Technology (DLT), which allows for tokenisation. However, despite how robust the platform may be, without the proper information and communication technology (ICT) infrastructure, merchants and consumers will not have the most optimal experience, which can have a negative impact on adoption and payments efficiency. Hence, the Central Bank has prioritised working with the government to strengthen ICT infrastructure, which is also in line with their push towards digitisation.

Equally, the criticality of the interlinkage between education and adoption became increasingly clear during the rollout. If persons lack a general understanding of financial terms and services, they are less likely to use new payment solutions. Also, when persons do not understand how a financial services firm is conducting business or the technology used to provide payment services, a lack of trust generally follows, and discourages them from using alternative sources of payments. Therefore, the Central Bank has made user education a major focus area in its adoption efforts.

Lastly, despite the three-year-old rollout, it is still too soon to see the impact of the SandDollar on financial inclusion. The pandemic-imposed restrictions made it difficult to ramp up implementation efforts, and also made data collection – a challenge in The Bahamas – problematic to pursue. Now that the restrictions have eased, the Central Bank will crystallise its data goals and efforts by defining its us-

age metrics more clearly so as to be able to ascertain the progress the country has made from the baseline in 2018.

Next steps

Moving forward, the Central Bank is focused on advancing its efforts towards adoption. The bank will increase educational and promotional campaigns on the ground, with the main aim of bringing more users on board. In particular, efforts will focus around three main pillars: i) building a network of merchants that accept and encourage the use of the SandDollar, ii) enlisting participation from the traditional banking sector and credit unions, and iii) the importance of user education and inspiring user confidence.

The Central Bank of The Bahamas has staffed an Adoption Unit, which operates under the Currency Department, and has responsibility for the marketing and promotional efforts surrounding SandDollar, along with operational oversight. Throughout the remainder of 2023 and into 2024, the Adoption Unit will undertake various marketing campaigns throughout the Capital and Family Islands to promote the use of SandDollar.

Further, the bank is also working with commercial banks and credit unions to integrate the SandDollar into their operations, so that they too can become AFIs. The benefits include increasing the avenues by which consumers can create and use SandDollar wallets, which will promote more adoption on the one hand, and, on the other hand, create a more efficient payments space by providing new, innovative payment alternatives and fair competition. The first commercial bank officially became the latest AFI, and is expected to begin offering wallet services in the near future.

On the technology front, the Central Bank is working on moving towards offline functionality, which would allow users to transact in SandDollars without having access to the internet. This is critical to the discussion on financial inclusion. Given infrastructure setbacks, some persons lack access to quality and consistent electricity and internet services. By allowing offline functionality, those without access to connectivity will still be able to complete transactions. This will also assist in the aftermath of a natural disaster, where infrastructure may be temporarily damaged, leaving persons offline. With offline functionality, persons will be able to send payments to and from family members between islands, as opposed to being restricted by delayed restoration timelines.

Finally, the bank has prioritised educating users in an effort to improve the level of financial literacy in The Bahamas, as well as to support increased local adoption of CBDC. Without education on how a CBDC works, persons will be less inclined to use it, thereby restraining adoption. Hence, the bank has committed resources to improving the knowledge of financial products even outside of the scope of the CBDC, in an effort to spur adoption, both on the merchant and consumer sides.

As for policy considerations, the Central Bank will continue to monitor the evolution of the SandDollar and its impact on financial inclusion to determine which policies are most optimal. This includes taking into account considerations around remuneration and cross-border settlement, among others.

References

Atlantic Council (2023), Central Bank Digital Currency Tracker, https://www.atlanticcouncil.org/cbdctracker/ (7 July 2023).

Bank for International Settlements (2021), Central bank digital currencies: system design and interoperability, Group of central banks, Report no. 2.

Bank for International Settlements (2020), Central Bank Digital Currencies: foundational principles and core features, Group of central banks, Report no. 1.

Board of Governors of the Federal Reserve System (2023), Central Bank Digital Currency, https://www.federalreserve.gov/central-bank-digital-currency.htm (7 July 2023).

Caribbean Financial Action Task Force (2019), *De-risking in the Caribbean Region – A CFATF Perspective*, Caribbean Financial Action Task Force.

Caribbean Initiative's Financial Inclusion Task Force (2022), *Financial De-risking in the Caribbean: The US Implications and What Needs to be Done*, Atlantic Council.

Central Bank of The Bahamas (2023), 2022 Annual Report & Statement of Accounts.

Central Bank of The Bahamas (2021), The Bahamas Business Digital Payments Survey (2020).

Central Bank of The Bahamas (2018), An Analysis of The Bahamas Financial Literacy Survey 2018.

Deloitte (2021), An Introduction to Central Bank Digital Currencies (CBDCs), https://www.deloitte.com/global/en/Industries/financial-services/perspectives/cbdc-central-bank-digital-currency.html (7 July 2023).

Leucci, S. (2023), Central Bank Digital Currency, European Data Protection Supervisor, https://edps.europa.eu/press-publications/publications/techsonar/central-bank-digital-currency_en (7 July 2023).

McKinsey & Company (2023), What is a Central Bank Digital Currency (CBDC)?, https://www.mckinsey.com/featured-insights/mckinsey-explainers/what-is-central-bank-digital-currency-cbdc (7 July 2023).

Mishra, B. and E. Prasad (2023), A Simple Model of a Central Bank Digital Currency, *National Bureau of Economic Research*, *Working Paper*, 31198. 14.

Rolle, J. (2019, 18 March), The Bahamian Payment System Modernisation: Advancing Financial Inlcusion Initiatives, Speech at the Central Bank of The Bahamas Blockchain Seminar, Nassau, https://www.bis.org/review/r190321a.pdf.

World Bank (2015), *Withdrawal from Correspondent Banking: Where, Why, and What To Do About it*, World Bank Group, https://documents1.worldbank.org/curated/en/113021467990964789/pdf/101098-revised-PUBLIC-CBR-Report-November-2015.pdf.

SandDollar (2023), Digital Bahamian Dollar, https://www.sanddollar.bs/ (19 July 2023).

Wright, A., C. Belle, S. McKenzie and L. Bodie (2022), Financial Inclusion and Central Bank Digital Currency in The Bahamas, Central Bank of The Bahamas, https://www.centralbankbahamas.com/viewPDF/documents/2022-09-23-13-49-13-CBDCupdated-paper.pdf (7 July 2023).

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Ananya Kumar

Domestic and Global Implications of China's Digital Currency

Russia's invasion of Ukraine and the resulting financial sanctions, as well as the parallel growth in the exploration of CBDCs by other countries have led to increasing interest in payments networks outside of the traditional cash and bank deposit infrastructure offered by "traditional finance." Rapid development of decentralized ledger technology and its applications for the movement of money and other assets has had an enduring impact on the future of money.

Concerns regarding China's central bank digital currency, the e-CNY, have existed since its inception in 2017. Currently, there are several bills in the U.S. Congress that aim to curb e-CNY's development and expansion into American or European payments networks.[1] National security debates around the development of e-CNY have focused on threats to "dollar dominance" (Sullivan, 2023), which largely relates to the role of the dollar as not only the world's reserve currency, but as a highly liquid bridge between different currencies, as an instrument for borrowing as well as global trade. It has also led to concerns regarding sanctions evasion. Given what we know about China's payments architecture, what effect would e-CNY have on the dollar and sanctions? To answer this question, we have to dive deeper into the domestic and international goals that China is seeking to accomplish with its payments architecture, including what recent sanctions on Russia have revealed about the renminbi (RMB).[2]

China's payments landscape

China has been developing indigenous capacity in payments architecture for the last two decades, and it has been largely successful in doing so. In 2002, under the supervision of the People's Bank of China, a card network, China UnionPay was launched (Union Pay International, n.d.). Over the last twenty years, it has been able to create networks into over 100 countries, and partnered with companies such as BNP Paribas, PayPal and Discover to become the third largest card network in the world. In the late 2000s, China was also the first successful playground of mobile wallet applications such as AliPay and TenPay/WePay that converted a mostly cash-dependent society into a largely digital payments based one (Chorzempa, 2022). Together, they now cover more than 90% of China and have over one billion customers, including ones abroad.

UnionPay, AliPay and WePay were meant to create closed-loop payment networks for domestic and retail use primarily. When UnionPay was launched, it was the only card network available in China, since VISA and Mastercard had not yet entered Chinese markets (Perez, 2020). When AliPay and WePay were launched, almost no Western country was developing mobile wallet solutions. They were able to create functionality beyond what was provided by existing networks by enabling peer-to-peer payments.

In 2015, against the backdrop of the first wave of sanctions on Russia for its hostilities toward Ukraine, China began to see the need and potential for offshore RMB settlement. The country then focused its efforts on the Cross-Border Interbank Payments System (CIPS), combining the settlement and messaging system often differentiated in payments networks. CIPS is a wholesale settlement system, which means that it is used to settle money between banks, sometimes across borders (Kumar and Lipsky, 2022). Transaction volume on CIPS has more than doubled since 2020 (People's Bank of China, 2022), and the number of direct and indirect participants in its network has also increased (Duffie, 2023). While CIPS heavily relies on the SWIFT messaging system, it is meant to create an alternative to the dollar-based payments settlement and messaging infrastructure.

In 2017, the People's Bank of China (PBOC) began researching a digital form of its fiat currency, which at the time was called the digital currency/electronic payments project. It has since been renamed e-CNY. China

1 H.R.804 – 118th Congress (2023-2024): Chinese CBDC Prohibition Act of 2023.

2 Throughout this article, I use RMB to denote the fiat currency and e-CNY to denote China's CBDC.

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entered the pilot stage of CBDC development in 2019, which now covers 25 cities including the big commercial hubs of Shanghai, Beijing, Hebei, Yangtze River delta and Pearl River delta (Kumar, 2022). Rollout has now begun in smaller towns and villages as a part of rural development programs. Viewed in the context of China's other payments developments, the creation of e-CNY reveals an ambitious plan to create domestic payments efficiencies, compete with Western private players, support the internationalization of the RMB and prevent effects of the Western sanctions regime.

The e-CNY is supported by both a single tier and two-tier infrastructure, meaning that users can download an app created by the PBOC or by the 14 banks participating in the pilot or indeed, with their AliPay account (Atlantic Council, 2023). It currently has 260 million users (Kumar, 2022), circulating RMB 13.61 billion (Wright, 2023). Adoption numbers are persistently low, and the e-CNY faces stiff competition from the well-developed mobile wallet infrastructure created by AliPay and WePay. But China's pilots do more than just put money in peoples' hands. Domestically, these pilots are in a test-and-learn mode, while internationally, China is creating technical and regulatory models for other states to mimic and repurpose. The following section describes China's current ambitions within its borders and beyond.

Domestic ambitions of the e-CNY

As the pilots have expanded over the last four years, so have the use-cases tested by them. The 200 use-cases being tested through the pilots include: public transportation, public health checkpoints including COVID-19 test centers, integrated identification cards to receive and pay utilities such as retirement benefits and school tuition payments, as well as tax payments and refunds (Kumar, 2023). The pilots have also begun testing technical and programmability functions like smart contracts for business-to-business and business-to-consumer functions, e-commerce and credit provision. The PBOC has issued 7,000 cards that will integrate employee identification (Kumar, 2023) and trade union membership cards into the e-CNY hardware wallet. The "Shanghai Carbon Journey" platform calculates users' low carbon behavior (taking the subway or bus, biking, walking) and converts it into e-CNY (Kumar, 2023). Such tests are unique to the pilot in China, since the other 20 countries in the pilot phase of testing have yet to develop a complex methodology with which they are assessing the use-cases (Atlantic Council, 2023). This kind of testing is likely to grow through the rest of the year and indicates the PBOC's interest in experimentation with real-world scenarios.

The experimentation reveals that the PBOC views e-CNY as more than just a bearer instrument changing hands, and it is interested in leveraging the technology behind it to create an ecosystem of functionality, all going back to the use of e-CNY. Testing like this is meant to encourage the use of e-CNY by broadening the universe of activities that can be included in the network. By doing this, concerns about how data on users' habits and spending using e-CNY is collected, stored and used are rising. This largely has a privacy and surveillance concern in addition to the vulnerability of such data to cyberattacks domestically or abroad.

Beyond testing, a current application of the e-CNY can be to stimulate domestic consumption, as China likely faces an economic downturn. It has already increased banks' short-term liquidity by US $118 billion and long-term liquidity by US $72 billion through reducing reserve ratio requirements this year (Bloomberg, 2023). In the short run, the e-CNY is a useful monetary policy tool in the hands of the PBOC, which it can use to increase or decrease money supply with more direct effects as needed.

International goals

Use of e-CNY largely refers to this domestic retail payments infrastructure. However, the PBOC has been collaborating with other central banks to achieve cross-border settlement as well. Through Project mBridge (BIS, 2022), the PBOC, in addition to the Bank of Thailand, the Central Bank of the United Arab Emirates, and the Hong Kong Monetary Authority has been conducting such wholesale cross-border testing. In October 2022, the project successfully settled a total of US $22 million through 164 transactions in collaboration with 20 banks across the four countries (BIS, 2022). e-CNY had the largest share of all transactions due to its automatic integration with the retail system and its well-developed architecture.

Many have characterized this as a movement toward de-dollarization and internationalizing the RMB (Tett, 2023). However, liquidity constraints that apply to RMB today are not likely to be lifted through its digitization. In other words, even if the use of e-CNY is widespread and its technology is proven to be fairly successful, its use in international finance is still going to be limited due to capital constraints. And given a potential downturn in Chinese domestic markets, it seems even more unlikely that China will lift those controls.

But what about sanctions? Recent trends in RMB internationalization

While the internationalization of RMB through e-CNY is unlikely, the concern over the dollar's potential future

seems to be stemming from the use of other modes of settlement created by China. In April 2023, Bangladesh paid for a nuclear plant built by a Russian company through CIPS, using a Chinese bank and transferring RMB (Gupta and Majumder, 2023). This kind of use of RMB for third country payments was previously extraordinarily rare. It reflects the rising use of the currency for trade settlement. Combined with increased RMB trade settlement in China's own books, this qualifies as "low threshold internationalization" (DiPippo and Palazzi, 2023). But there are several important factors to consider when it comes to assessing this particular transaction and others like it.

First is the role of Russia in all of this. Since being removed from SWIFT, its reliance on CIPS and RMB has grown. Last October, it became the fourth largest RMB offshore clearing center (Fabrichnaya and Shen, 2022). China is Russia's largest trade partner, and Russia is the source of most of RMB's demand (Eichengreen, 2023) as a reserve currency. In addition, the partnership between UnionPay and the Russian Mir card network is the only way Russians abroad can conduct transactions. Russia is an interesting case for understanding the RMB's internationalization efforts since most of the movement in Russia toward the RMB has risen out of necessity and is not a calculated or coordinated move on either country's part. Indeed, this creates dependencies for Russia with grave consequences in the long run (Prokopenko, 2023).

Second is the type of transaction that Bangladesh's deal denoted. Nuclear material, arms deals and oil and gas supply chains are crucial and fragile for most customer countries, and often carved out of secondary sanctions regimes. India's dependence on Russian oil and gas (Surabhi, 2023), and the increasing use of "petroyuan" by OPEC countries in settlements with China denote a movement away from the dollar for specific needs (Holmes, 2023). Economic opportunism (in the case of India's oil and gas imports from Russia at a discounted price) and economic constraints (for instance, in the deal between Pakistan and Russia in yuan for oil due to Pakistan's low reserves) are likely to grow as emerging market demands rise, and denote a kind of "low threshold" internationalization of the RMB (Kimani, 2023).

Wrapped into these assessments is the role of the U.S. and its allies' sanctions regime. While historical evidence suggests that sanctioned countries have not been successful at moving away from the dollar (Arslanalp et al., 2022), who is being sanctioned and how interlinked their economy is with others matters more than ever. Sanctioning Russia has not had a commensurate financial impact because of its trade relationships with other countries. The issue of sanctioning Chinese companies or citizens seems unlikely in the near future, but in the event of such sanctions, could China's emerging payments infrastructure help?

The answer is complicated. mBridge aims to not just create a potential settlement architecture, it seeks to advance technical and regulatory standards coming out of China's CBDC experiments internationally (Kumar, 2023). This could lead to the creation of regional country blocs which accept RMB-based payments and enable Chinese financial architecture that can be tapped into when needed. Indeed, a key takeaway from the Russian example is that countries will tap into such networks, often in conjunction with each other when need arises. While some internationalization away from the dollar is inevitable (Eichengreen, 2011), the success of RMB's internationalization through e-CNY or CIPS is dependent on how useful other countries find these networks. Furthering sanctions or other punitive economic measures will actually lead to a justification for creating and expanding these alternative financial networks. This is to the detriment of U.S. foreign policy goals.

Finally, two findings emerge from this assessment of e-CNY's history, the recent sanctions on Russia and the resulting payments arrangements. First, while the development of e-CNY does not in itself lead to the erosion of the dollar's dominance, Chinese payments infrastructure, including CIPS, UnionPay and e-CNY, can be successfully weaponized given the right need and justification. Second, punitive economic measures have and will continue to enhance the usability of Chinese financial architecture by other countries. Drastic measures like financial sanctions on China therefore will have counterproductive outcomes for the U.S. dollar and its foreign policy ambitions in the region.

References

Atlantic Council (2023), Central Bank Digital Currency Tracker.

Arslanalp, S., B. Eichengreen and C. Simpson-Bell (2022), The Stealth Erosion of Dollar Dominance: Active Diversifiers and the Rise of Nontraditional Reserve Currencies, *Working Paper*, International Monetary Fund.

BIS (2022), Project mBridge: Connecting economies through CBDC, https://www.bis.org/about/bisih/topics/cbdc/mcbdc_bridge.htm (14 July 2023).

Bloomberg News (2023, 30 March), Widening US-China Rate Gap Set to Weigh on Yuan's Resilience.

Business Today (2023, 6 July), Yuan payments for Russian crude oil imports: Economics outweighs politics.

Chorzempa, M. (2022), The Cashless Revolution: China's Reinvention of Money and the End of America's Domination of Finance and Technology, Public Affairs US.

Duffie, D. (2023), Global Reliance on the Dollar: Challenges and US Policy Responses, Conference on International Roles of the US Dollar Federal Reserve Bank of New York.

DiPippo, G. and A. L. Palazzi (2023), It's All about Networking: The Limits of Renminbi Internationalization, Center for Strategic and International Studies.
Eichengreen, B. (2011), *Exorbitant Privilege: The Rise and Fall of the Dollar and the Future of the International Monetary System*, Oxford University Press.
Eichengreen, B. (2023, 19 May), Role of the Dollar in the International Monetary System: Some Updates, Speech at the 2nd Annual International Roles of the U.S. Dollar Conference, New York Fed.
Fabrichnaya, E. and S. Shen (2022, 29 November), Insight: The yuan's the new dollar as Russia rides to the redback, Reuters.
Gupta, A. and A. Majumder (2023, 17 April), Bangladesh to pay off Russian nuclear plant loan in Chinese currency, *Washington Post*.
Holmes, F. (2023, 27 March), Petrodollar Dusk, Petroyuan Dawn: What Investors Need To Know, *Forbes*.
Kimani, A. (2023, 12 June), Pakistan Pays For Discounted Russian Oil In Yuan, Oil Price.
Kumar, A. (2022, 1 March), A Report Card on China's Central Bank Digital Currency: the e-CNY, *Econographics blog*, Atlantic Council.
Kumar, A. (2023, 24 April), Practice makes perfect: What China wants from its digital currency in 2023, *Econographics blog*, Atlantic Council.
Kumar, A. and J. Lipsky (2022, 22 September), The dollar has some would-be rivals. Meet the challengers, *New Atlanticist*, Atlantic Council.
People's Bank of China (2022), Payment System Report (Q2 2022), http://www.pbc.gov.cn/en/3688110/3688172/4437084/4664821/2022092314120713992.pdf (20 July 2023).
Perez, S. (2020, 11 February), Mastercard given approval to prepare for entry into China's payments market, *Tech Crunch*.
Prokopenko, A. (2022, 2 February), The Risk of Russia's Growing Dependence on the Yuan, Carnegie Endowment for International Peace.
Sullivan, J. W. (2023, 4 April), A BRICS Currency Could Shake the Dollar's Dominance, Foreign Policy.
Tett, G. (2023, 30 March), Prepare for the multipolar currency world, *Financial Times*.
Union Pay International (n.d.), Introduction to Union Pay, https://www.unionpayintl.com/en/aboutUs/companyProfile/introductiontoUPI/ (14 July 2023).
Wright, T. (2023, 11 January), China's central bank includes digital yuan in report on currency circulation, *Coin Telegraph*.

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The Business Case for Exploration of a U.S. Central Bank Digital Currency

In May 2020, when the Digital Dollar Project published its initial white paper, *Exploring a U.S. Central Bank Digital Currency (CBDC)*, the world was engulfed by a global pandemic and corresponding economic recession. As the U.S. government struggled to efficiently distribute emergency relief funds to citizens, it became apparent that the United States' financial infrastructure had become just as outdated as its physical infrastructure and that far too many Americans are excluded from the existing financial system.

The pandemic also added a new sense of urgency to already accelerating waves of digital innovation. Public and private entities across the globe expedited their research and experimentation into tokenized assets, including digital commodities, contracts and legal titles. In the years that followed, companies and investors have poured money into developing new digital worlds made accessible via immersive technologies. Novel classes of digital assets underpinned by technologies such as blockchain and distributed ledgers dominated headlines and captured public attention and public awareness of digital currencies increased.

Central banks were watching and have moved to utilize these new technologies – in part because of thoughtful private sector-led education and exploration efforts. Fastforward to January 2023: The central banks of 114 countries or currency unions are at various stages of active CBDC exploration – a significant uptick from May 2020, when just 35 countries were exploring CBDCs (Atlantic Council, 2023). The rise of CBDCs is no longer hypothetical – it is real, and it is happening now. Several central banks have already deployed a CBDC, and major players on the global stage, such as the European Central Bank (2023), have stated a goal of issuing a CBDC this decade. Notably, China has issued its pilot CBDC to 260 million digital wallets and is actively engaging with other countries and international organizations to begin shaping global standards for the future of money (Elston, 2023).

In this context of unparalleled technological change and global activity, the United States has significantly increased its own research and experimentation into a U.S. CBDC – or "digital dollar." From the Federal Reserve Board and System, we have seen three activities: First, in January 2022, the U.S. Federal Reserve Board released *Money and Payments: The U.S. Dollar in the Age of Digital Transformation*, a paper that examines the pros and cons of a potential digital dollar, and whether and how a digital dollar could improve the safe and efficient domestic payments system. Second, in March 2022, the Federal Reserve Bank of Boston, in collaboration with Massachusetts Institute of Technology's Digital Currency Initiative, released phase 1 of Project Hamilton, providing the U.S.'s first and only technical research on the retail application of CBDC (Digital Currency Initiative, 2023). The primary goal of this exploratory research was to design a core transaction processor that meets the robust speed, throughput and fault tolerance requirements of a large retail payment system. For further consideration and iteration, the work was shared under the MIT Open-Source License. And third, in November 2022 and May 2023, the Federal Reserve Bank of New York released findings from Project Cedar Phase 1 and Phase 2 (Federal Reserve Bank of New York, 2022, 2023). Project Cedar is a multiphase technical research effort evaluating the potential applications of financial technology solutions to improve the efficiency of wholesale cross-border payments. Phase 1 developed a prototype for a wholesale CBDC ledger to demonstrate the potential of distributed ledger technology (DLT) to improve the speed, cost and access to a foreign exchange spot transaction. Phase 2 was a joint research experiment with the Monetary Authority of Singapore examining a cross-border multi-currency use case and the ability of DLT to establish connectivity across heterogeneous simulated currency ledgers, reduce settlement risk and decrease settlement time.

Concurrently, in March 2022, the Biden Administration issued an Executive Order on Ensuring Responsible Development of Digital Assets calling for specific federal resources to be dedicated to a variety of measures including the exploration of a U.S. CBDC (The White House, 2022). As a result, several federal agencies requested

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public comment and posted working papers between June 2022 and October 2022. Today the U.S. Treasury Department continues to engage in digital dollar research through an inter-agency working group established via the executive order.

From a legislative perspective, while the United States Congress has been more actively engaged on CBDC than other legislative bodies worldwide and there have been some attempts at legislating CBDC research, none have passed through both chambers of Congress for the President's signature.

And finally, the pace of private sector activity has been similarly constant. In November 2022, the Digital Dollar Project, in partnership with the Depository Trust and Clearing Corporation, released findings from a wholesale CBDC security settlement pilot (Digital Dollar Project and DTCC, 2023). The pilot was the first private sector initiative to explore how tokenized securities and a tokenized wholesale CBDC could operate within the U.S. settlement infrastructure leveraging DLT. Leading market firms participated, including Bank of America, Citi, Nomura, Northern Trust, State Street, Virtu Financial and Wells Fargo. Late 2022 also brought the publication of the proof of concept for a regulated liabilities network (RLN) and use case for a U.S. pilot. The RLN pilot explores the feasibility of a multi-entity distributed ledger for use in settling tokenized bank deposits and tokenized CBDC (Business Wire, 2022). Several non-U.S. pilots have included U.S. multinational corporations, including Swift's multi-phase cross-border CBDC experimentation (2023).

Much criticism about the U.S. role in CBDC experimentation is anchored to the fact that the U.S. has been late to the game. That may be true, at least in public form, but the last 16 months have shown increased activity from both the U.S. public and private sectors. This heightened interest is important as the world considers the potential value of central bank digital currency.

Why the research matters

A CBDC is a digital form of a country's national currency that is issued and backed by the country's central bank. CBDCs are used in a manner similar to physical cash but exist in a digital format. In the context of the United States, a digital dollar would be issued by the Fed with the U.S. government's full faith and credit, a complement to and not a replacement for physical cash.

CBDCs can be used for a wide range of transactions, including retail purchases, peer-to-peer (P2P) payments, and business-to-business (B2B) payments. They may also be used to facilitate the efficient clearing and settlement of financial transactions and to support the operations of payment systems. As central banks evaluate and seek to utilize CBDCs, one of the main goals identified is providing the general public with a safer and potentially more inclusive and accessible payment option. CBDCs could also be used to foster financial stability and support monetary policy.

When discussing CBDCs, it is important to understand the two main forms: retail and wholesale. Retail CBDC[1] refers to a CBDC accessible to individual consumers that can be used for everyday purchases and P2P payments. Wholesale CBDC is a type of CBDC utilized by financial institutions or other major entities rather than individuals that can be used for interbank settlements and other large financial transactions.[2]

The fundamental benefit of the concept of a digital dollar is that there is no better riskless settlement medium than U.S. central bank money, which must be codified for continued relevance and accessibility. A digital dollar could upgrade the infrastructure of money – the ultimate public good – and future-proof the dollar for the increasingly digitized 21st century.

A CBDC is distinct from other forms of existing digital payment instruments, such as credit cards and payments apps, as it would be a direct claim on a central bank instead of a liability of a private financial institution. And a tokenized digital dollar could be a bearer instrument that would represent a significant technical upgrade over the outdated and time-consuming account-based financial system.

Further, if designed to ensure interoperability with existing domestic and foreign payments systems, robust pri-

1 Among the multitude of highly effective payment options in the U.S. (e.g. cash payment, credit, debit, etc.), a digital dollar could offer a new choice for digital transactions, instantaneous P2P payments, and in-person transactions. It could also potentially lower costs and further diversify payment rails. A digital dollar could be distributed to the end user through commercial banks and trusted payment intermediaries while facilitating financial inclusion by broadening access to services via additional mechanisms, such as digital wallets.

2 Today, wholesale payments rest on national payment systems, and they are typically conducted through interbank clearing using central bank money to settle securities and other large value payments in real time gross settlement systems like Fedwire. Current wholesale large value transactions are account-based and predominantly executed by banking and payment providers who have accounts with the Federal Reserve. Due to the nature of the prevailing account-based system, only organizations with accounts can transact in central bank money. Just like a physical dollar, a tokenized digital dollar would provide alternative access to central bank money outside of accounts. Accordingly, it could facilitate broader, more diverse access for institutions to large value payments and support the emergence of digital financial market infrastructures.

vacy protections, and distribution through regulated payments companies and banks, a digital dollar has the potential to increase payments efficiency, lower transaction costs and broaden access to financial services. These benefits could be realized across a range of domestic applications.

Tokenization

Tokenization is the act of turning an asset, good, right or currency into a representation with properties that suffice to attest to and transfer ownership. As an analogy to our current situation, cash is a physical token. To verify the transaction, you only need to verify the authenticity of the bill (the token), and because each bill is unique, it is impossible to spend the same bill more than once at the same time. As a bearer instrument, a dollar bill cannot be physically held by two people simultaneously (i.e. when it leaves one person's hands, it is now in the counterparty's possession). This differs from account-based electronic money, which uses a reconciliation-intensive, message-based approach to adjust entries in a ledger.

While electronic transfers of cash have been evolving for several decades, U.S. central bank money as legal currency has seen few, if any, innovations since the proliferation of bank notes during the nineteenth century. Its circulation has remained strictly local, and its functionalities limited.

Just like a physical dollar, a tokenized digital dollar could provide alternative access to central bank money outside of accounts. It is hypothesized that a token-based digital dollar would not require third-party intervention to be verified and transferred – a significant departure from today's account-based transactions (Digital Dollar Project, 2023). This is because a tokenized digital dollar would be actual money in the form of a digital token, a bearer instrument.

Accordingly, a tokenized digital dollar could facilitate broader, more diverse access for institutions to large value payments and support the emergence and evolution of digital financial market infrastructures. From a settlement perspective, a tokenized digital dollar could provide certainty of settlement with atomic delivery, either Delivery versus Payment (DvP) or Payment versus Payment (PvP). In addition to accelerating settlement, these potential approaches could serve to reduce fraud and counterparty risk. It is worth noting that decisions about settlement duration will be a business and/or policy design choice to determine the optimal settlement window for transactions.

In one example, a U.S. CBDC could support a non-Fedwire and Fedwire participant in sending and receiving payments and could provide a faster and more secure method of B2B payments. A digital dollar could exist alongside Fedwire and complement (not impede) in-flight initiatives like FedNow, a new interbank 24x7x365 real time gross settlement service with integrated clearing functionality. If available by 2023, FedNow will allow 24/7 instantaneous settlement at the Fed account level between two banks (Federal Reserve, 2023). A digital dollar is in line with the precedent set by the FedNow initiative in that it provides real-time settlement to inherently digital and portable tokenized cash without needing an intermediary to debit and credit accounts. Increasing the payment options for banks and businesses offers enhanced choices, could lower the barriers of entry to allow increased competition and encourages a higher standard of service, rather than a network run by the largest banks.

The ability for banks to make real-time debit payments available on a 24x7x365 basis improves the capital requirements and the liquidity of participating banks. A CBDC could also act as a single network throughout the U.S. that would be ubiquitous across all organizations. This stands in contrast to "closed-loop networks," where the sender and recipient must be signed up with the same service or use chains of services. Today's services often carry some degree of credit risk because funds are made available to the recipient before the actual interbank debits and credits necessary to fund the payment have occurred. This delay occurs because funds are still travelling over existing, slower rails like automated clearing house (ACH) or credit cards and are often passing through multiple intermediaries.

For a financial markets use case, optimizations could arise through the settlement of tokenized cash and tokenized securities on ledger that could unlock new market opportunities such as variable settlement time and associated value constructs. It is hypothesized that a CBDC would enable atomic settlement of tokenized cash and tokenized securities on ledger, as well as dynamic settlement windows, without the need for additional cash settlement at the Federal Reserve through nominated banks. These new capabilities could deliver a myriad of benefits including reduction in risk, increased capital efficiency, and reduction in trapped liquidity, among other broad-based efficiency, transparency and workflow benefits.

Standards

As the global exploration of CBDC evolves, the Digital Dollar Project advocates for an active global discussion on governance, interoperability, security, privacy and scalability protections. This should include the development of an international regulatory framework around dig-

Table 1
Summary of use cases for a tokenized U.S. digital dollar

Category	Use case	Impacted stakeholders	Sizing	Hypothesized U.S. CBDC benefits (qualitative and quantitative)	Hypothetical pilots
Domestic payments	Peer-to-peer (P2P) payments	Consumers (end users), commercial banks, mobile payment providers	$3.45 billion transaction value (2022)[1]	Faster accessibility of funds Reduced cost of a mobile payment transfer Increased financial inclusion Increased speed and ease by which developers can build secure digital wallets	• Banking deserts • Effective P2P payments • Offline transactions • Bank-Lite Services (no or low fee) • Privacy enhanced payments
	Domestic retail payments (consumer)	Consumers (end users), commercial banks, retailers, mobile payment providers	$9.43 trillion total card payments value in 2021[2]	Reduction of trapped liquidity Reduced need for intermediaries Additional consumer payment choice Introduction of cash-like treasury benefits Reduced verification costs	P2P Payments hypothetical pilots and: • CBDC as a complementary offering to enhance existing account-based systems • Programmable nature of currency • Treasury management benefits
	Domestic retail payments (business)	Manufacturers, wholesalers, retailers	$25 trillion business-to-business (B2B) payment volume in the U.S. in 2022[3]	Introduction of Fedwire-like benefits for non-Fedwire participants Introduction of settlement finality Reduction of settlement risk	• Digital payment efficiencies • Non-Fedwire participant access to central bank money for settlement
	Delivery versus payments	Settlement and clearing systems, buyer, seller	23.19 trillion equities traded annually in the U.S. (2019)[4]	Introduction of settlement innovation, straight-through processing, and efficiencies in risk and margin requirements	• Settlement of tokenized cash and securities on ledger
International payments	Remittance payments	Consumers (end users), commercial banks, banking intermediaries	$626 billion remittances sent globally in 2022[5] $74 billion remittance payment outflow from the U.S. in 2021[6]	Ability to transfer funds without needing an intermediary Reduced costs to transfer funds Increased speed and efficiency for remittance payment processing	• Remittance efficiencies (e.g. between U.S. and partner countries, given the $48.9 billion in remittances sent from the U.S. to Mexico in 2021)[7]
	Cross-border payments	Institutional payers and payees, correspondent banks, settlement agents	$136 trillon in cross-border payment flows (2018)[8]	Introduction of atomic settlement, trade oversight transparency, risk management, and interoperability Improved efficiency Enablement of front-end modular innovation Improved experience in niche trade corridors	Remittance payments hypothetical pilots and: • Counterparty payments without an intermediator • Bank-to-bank payments • Streamlining the correspondent banking network • Streamlining trade corridors
Government benefits	Benefit administration	Government agencies, consumers (end users)	$1.6 trillon spent on welfare programs in the U.S. in 2021[9] 70 million benefit recipients in the U.S. in 2021[9]	Streamlined, transparent, and expedited distribution of federal, state, and tribal benefit distribution Operational time and cost efficiencies Mitigate fraud increase participation	• Operational efficiencies • Benefits created by programmable tokens • Fraud reduction (e.g. 6.8% of SNAP payments were made fraudulently or in error in 2019)[9]
	Exceptional circumstances	Government agencies, consumers (end users)	165 million COVID-19 stimulus paper checks worth $386 billion distributed as of May 2020[10] $16.9 billon in FEMA aid for New York's Hurricane Sandy recovery[11]	New ability to transfer riskless means of payment quickly and autonomously to households and corporations during times of crisis and national emergencies	Similar hypothetical pilots as outlined under benefit administration use case.

Sources: [1] GSMA (2023), State of the Industry Report on Mobile Money. [2] The Federal Reserve (2023, 21 April), The Federal Reserve Payments Study: 2022 Triennial Initial Data Release. [3] Mastercard (2022), How Industry 4.0 is defining the future of business payments. [4] World Bank (2023), Stocks traded, total value (current US$). [5] The World Bank (2022), Remittances Grow 5% in 2022, Despite Global Headwinds. [6] Statista Research Department (2023, 12 April), Leading countries worldwide, by value of migrant remittance outflows in 2021. [7] BBVA Research (2022), Mexico: Remittances grew 27.1% in 2021, reaching a new historical maximum. [8] McKinsey & Company (2019), Global Payments Report 2019. [9] Lexington Law (2023), 50 important welfare statistics for 2023. [10] AARP (2021), What Is the IRS Timeline to Send the Third Stimulus Checks? [11] FEMA (2015), FEMA aid reaches $16.9 billion for New York's Hurricane Sandy Recovery.

ital currencies, including CBDCs, that prioritizes privacy, consumer protection, financial anti-crime compliance, financial stability and the protection of monetary sovereignty.

With other economies, the United States should play an important role in setting international standards for digital currencies, given the U.S. dollar is the global reserve currency. It is important to note that U.S. engagement in standards setting is independent of whether (or not) the U.S. chooses to deploy a U.S. CBDC.

Global standards are critical to ensure international operability, transferability, consistency and safety. They can reduce barriers and enhance international cooperation, and often promote societal values – including democratic values such as privacy, free enterprise and economic liberty.

Interoperability is particularly important in the design of a CBDC. It can prevent market fragmentation, increase payment provider competition and achieve broad adoption. Recent, observed trends toward siloed development should be a cause for concern.

Privacy

Privacy – a fundamental democratic ideal – is among the core principles underlying the potential success and adoption of a digital dollar. The digital dollar must support a balance between individual privacy rights and necessary compliance and regulatory processes, decided upon by policymakers and considering Fourth Amendment precedent, which generally protects privacy based on a "reasonable expectation of privacy" (see Amdt4.3.3 Katz and Reasonable Expectation of Privacy Test). Even so, Fourth Amendment privacy protections have been eroded considerably since the attacks of September 11, 2001. In fact, no account-based financial transactions are truly private because, in every case, they require personal identity as a prerequisite. The consideration of a U.S. CBDC presents a once-in-a-generation opportunity for Americans to reconsider the state of their financial privacy. Privacy protections, constitutional or otherwise, must clearly apply to data generated by all legal use, not just consumer use, of a U.S. CBDC – if it is to enjoy broad societal support.

With the proper constitutional application and thoughtful design choices relating to anonymity and individual privacy, a U.S. CBDC could well enjoy privacy protections that are far superior to many competing instruments – whether provided by commercial interests or other sovereigns. A U.S. CBDC may have certain advantages over private stablecoins if it is properly and affirmatively bound by constitutional Fourth Amendment protections, to which private stablecoins are not currently subject. Coding traditional democratic ideals of economic liberty and privacy into a U.S. CBDC will greatly enhance its global appeal. Hundreds of millions of people in the U.S. and around the world may well be reluctant to surrender their economic security and autonomy to authoritarian state surveillance simply for the convenience of digital payments.

Privacy remains a complex discussion: the initial proposal for a digital dollar should maintain individual financial privacy while addressing legitimate law enforcement and national security concerns. Additional research is needed to understand the potential trade-offs between privacy and security concerns, and additional discussions are necessary regarding the different types of privacy and the design choices necessary to achieve them.

Use cases

A critical point to reiterate about the introduction of a tokenized U.S. dollar is that it would be used alongside the existing forms of money and would enhance competition and choice in financial service infrastructures. Thus, the expectation is not that it will materially change all existing processes but instead that it will drive benefits and unlock new opportunities in specific use cases. Outlined in Table 1 are several initial use cases where a tokenized U.S. dollar could add material value (Digital Dollar Foundation, 2020).

Conclusion

Until 2022, the United States had been conspicuously absent from global CBDC discussions – an unsustainable position as the issuance of CBDCs by foreign nations will significantly impact the U.S. economy.

As foreign countries develop CBDC systems that replace traditional payment rails and provide CBDC as a service to international financial participants, U.S. policymakers should develop a strategy to preserve the dollar's central role in the global digital economy and consider how best to future-proof the dollar in a way that is consistent with American ideals and values and grounded in empirical data and research. This is becoming increasingly important given rapid changes in consumer and investor preferences and the potential of new products, shifts that could alter the balance of perceived costs and benefits enough to overcome some of the inertia that helps to maintain the dollar's leading role. A digital dollar that seamlessly integrates and transacts in an increasingly digital world could prove critical to retaining the U.S. dollar's status as the world's reserve currency (Bertaut et al., 2023).

Global leaders of CBDC exploration will play an outsized role in setting the standards for the future of money as these technological developments continue to advance. The Digital Dollar Project is focused on supporting the United States in taking a leadership role in exploring and designing a CBDC that upholds American democratic values of freedom, economic stability and personal privacy.

In the future, the United States should actively participate in global governance discussions with a continued focus on interoperability, security, privacy and scalability standards, rather than reacting to foreign CBDC decisions. Independent of a decision to deploy a U.S. CBDC or not, the United States should contribute leadership towards the development of international regulatory frameworks around digital currencies, including CBDCs, that prioritize privacy, consumer protection, financial anti-crime compliance, financial stability and the protection of monetary sovereignty.

References

Atlantic Council (2023), Central Bank Digital Currency Tracker, GeoEconomics Center.

Bertaut, C., B. von Beschwitz and S. Curcuru (2023, 23 June), "The International Role of the U.S. Dollar" Post-COVID Edition, *FEDS Notes*, Board of Governors of the Federal Reserve System.

Business Wire (2022, 15 November), Members of the U.S. Banking Community Launch Proof of Concept For A Regulated Digital Asset Settlement Platform: Platform Design Aims to Prioritize Maximum Participation From Public and Private Sector Regulated Entities.

Digital Currency Initiative (2023), project Hamilton – building a hypothetical central bank digital currency, https://dci.mit.edu/project-hamilton-building-a-hypothetical-cbdc (25 June 2023).

Digital Dollar Project (2020), Exploring a US CBDC, The Digital Dollar Project, http://digitaldollarproject.org/wp-content/uploads/2021/05/Digital-Dollar-Project-Whitepaper_vF_7_13_20.pdf (13 July 2023).

Digital Dollar Project (2023), Revisiting the Digital Dollar Project's exploration of a U.S. central bank digital currency, White Paper 2.0.

Digital Dollar Project and DTCC (2023), Security Settlement Pilot.

Elston, T.-B. (2023), China is Doubling Down on its Digital Currency, Foreign Policy Research Institute, Analysis.

European Central Bank (2023), Digital Euro, Fact sheet, https://www.ecb.europa.eu/paym/digital_euro/html/index.en.html (25 June 2023).

Federal Reserve Board (2022), Money and Payments: The U.S. Dollar in the Age of Digital Transformation, Board of Governors of the Federal Reserve System.

Federal Reserve (2023, 15 March), The Federal Reserve announces July launch for the FedNow Service, Press Release.

Federal Reserve Bank of New York (2022), Project Cedar, Phase 1 Report, New York Innovation Center.

Federal Reserve Bank of New York (2023), Project Cedar Phase II x Ubin+: Improving wholesale cross-border multi-currency payments and settlements, New York Innovation Center.

Swift (2023, 9 March), Successful testing paves way for CBDC use cross-border, News

White House (2022), Executive Order on Ensuring Responsible Development of Digital Assets, Presidential actions.

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Maria Demertzis and Catarina Martins

Progress with the Digital Euro

Interest in central bank digital currencies (CBDCs) has been progressively increasing as the global financial system has become more digitalised. The focus in most countries, and certainly in those that were early adopters, has been on CBDCs for retail use, primarily for individuals and businesses to make payments domestically. Eleven countries already have a CBDC in operation and are motivated by the need to increase financial inclusion in their respective societies. A few other countries are in an advanced pilot stage and close to launching their sovereign currencies in digital form.

The European Central Bank (ECB) is interested in the digital euro for three reasons. First, the process of digitalisation has implied both the emergence of private currencies, like bitcoin, and the reduction in the use of cash. Private currencies challenge the role of sovereign currencies and can be a threat to both financial and monetary stability. At the same time, the reduced use of cash, and the possibility of it disappearing completely, may eliminate the anchor that establishes trust in the financial system. Second, while the euro area has both a deep financial system and advanced payment systems, most payment services are still provided by non-European companies. This, the argument goes, poses a risk to Europe's strategic autonomy. Last, there is always a need to be ready for technologies that are new now but will become mainstream in the future and will help improve payments further.

In the euro area, there is ongoing work on a digital euro for retail use, even though it is still in the investigation phase. The ECB has already produced three reports that explain its opinion about the design and purpose of a digital euro aimed at consumers. There are a few complex trade-offs to be considered and several choices to be made. The ECB's intention, if it were to launch the digital euro now, is to avoid disrupting the current financial system.

Recent geopolitical tensions have stoked the interest in CBDCs for wholesale purposes and brought it forward to the discussion. The ECB has not given the issue much attention until now and has only recently expressed its intention to do so in the future.

The ECB's thinking on the digital euro

The ECB's first thoughts on the digital euro were revealed in a report released in October 2020 (ECB, 2020) and by July 2021, the ECB's Governing Council decided to start the investigation phase (ECB, 2020). During this phase, the objective was to understand and analyse various design options for a retail digital euro that would serve European consumers best.

The digital euro project is still in the investigation phase, which will come to an end in October 2023. At this time, the ECB will decide whether to go on to the next phase and further develop and test the digital euro. The ECB has released three progress reports that demonstrate the evolution of its thinking.

First progress report

Published in September 2022, the ECB's first progress report focused on the functionalities and limits for users (ECB, 2022a). Some key issues analysed were the intended operation of the digital euro, privacy considerations and online/offline use.

The report states that the digital euro should be used exclusively for payments and not as a form of investment. For now, it is intended for payments in physical stores, e-commerce platforms as well as person-to-person payments. This choice also reflects financial stability considerations, particularly as it aims to prevent excessive migration of bank deposits to the central bank, which could disrupt current financial dynamics. To ensure that the digital euro is not used for investment purposes, the Eurosystem foresees a set of tools that will be embedded in its design and that can be calibrated flexibly. One such tool would be a form of tiered remuneration, which would apply less attractive rates for

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holdings above certain thresholds. Another type of tool establishes quantitative limits on the amount of digital euros everyone can hold.

In a speech in June 2022, Executive Board Member Panetta disclosed that individual holdings should be limited to around €3,000-€4,000, while stressing that initially, it would be preferable "to err on the side of caution" (Panetta, 2022). This implies total digital euro holdings of around €1-€1.5 trillion if all euro area citizens were to hold the maximum amount. Such digital euro amounts would represent a very small portion of banknotes in circulation (currently more than €1,500 trillion; ECB, 2023a) and around 11% of households' bank deposits (currently around €9 trillion) if we consider the lower bound (Euro area statistics, 2023). Therefore, it is expected to not cause great disruptions in the financial system.

The digital euro should replicate cash features as much as possible. A key attribute of cash is its anonymity, i.e. people can make payments without transaction being traced back to them. Contrary to cash, digital euros will not be fully anonymous but the ECB will ensure the highest standards of privacy. This is due to worries about money laundering and the difficulty in controlling the amount in circulation, which is necessary to limit its use for investment purposes. Nonetheless, the ECB is looking for options for the digital euro to mimic cash features as closely as possible. This is a priority, particularly given how important privacy is for euro area citizens (ECB, 2021). One option envisions greater privacy for low-value payments while keeping checks in place for higher-value payments ("selective privacy"). The other would take privacy a step further by relying on physical proximity and offline functionality to ensure the transaction information is available only to the parties involved. The latter would already be very similar to paying with cash, even though it would be limited to low-value, low-risk payments. Indeed, it should be possible to pay with digital euros online and offline, with a third-party validated solution for online use and a peer-to-peer validated solution in the case of offline payments. However, as offline solutions involve greater technical difficulties, the digital euro would initially be limited to online payments only.

Second progress report

The second progress report, released in December 2022, focused on defining the settlement and distribution roles, and ensuring an easy conversion between the digital euro and cash/private money (ECB, 2022b). The digital euro would be a direct central bank liability, in other words, account holders will have a direct claim on the central bank that is convertible one-to-one with the euro. This differs from the euros that we use digitally today since deposits in a commercial bank in the euro area are only partially guaranteed by the state, to the amount of €100,000. The Eurosystem intends to retain full control over the issuance, redemption and settlement of digital euros, but has not yet decided which technology to use – traditional, distributed ledger technology (DLT) or a combination of both.

The distribution and direct interaction with the end users would be of the responsibility of so-called supervised intermediaries. These intermediaries would deal directly with the consumer; develop consumer-facing services, such as wallets; perform regular anti-money laundering checks; and provide the devices or interfaces that will enable payment with the digital euro in the various outlets.

The distribution model and ease of conversion between digital euro and cash/private money are important aspects of the design and may affect the uptake by consumers. As such, a seamless experience should be ensured regardless of the intermediary and the country, and the service of topping up or withdrawing digital euro holdings should be available at all times.

Third progress report

The third progress report, released in April 2023, covers the central issue of access by euro area residents vs non-residents and provides more details on the distribution of digital euros and additional functionalities (ECB, 2023d).

Only residents (individuals, merchants and governments) will have access to initial digital euros released, although at later stages, non-residents could have access on the condition that they have an account with a euro area payment service provider. Also, access for citizens in the European Economic Area (EEA) and selected third-party countries could be envisaged in later releases of the digital euro.

The report also goes back to the issue of holding limits, indicating that for individuals there will be uniform holding limits, while zero-holding limits apply to merchants and governments. This means that the latter can receive and make payments in digital euros but will not have holdings. Only one account per individual will be allowed to facilitate the control over the amount of digital euros in circulation.

The process of opening an account ("onboarding") should resemble what is already common practice for

Box 1
The ECB's current thinking on the retail digital euro – main features

Target users: Primarily euro area residents (individuals, merchants and governments). Possible extension of access to non-residents.

Intention: Means of payment but not form of investment (avoid excessive migration of bank deposits to the central bank).

Availability: Both online and offline solutions envisaged.

Limits: Between €3,000 and €4,000 digital euros per capita. Limits apply to individuals, who may have only one account. Merchants would not have digital euro holdings but would accept and receive payments in digital euros.

Privacy: The digital euro should replicate cash features as much as possible, but does not provide full anonymity. There may be anonymity for low-value, low-risk payments.

Issue and settlement: Responsibility of the Eurosystem; digital euro is direct liability of the central bank (convertible one-to-one with the euro).

Onboarding, distribution and services: Responsibility of banks and other payment service providers (supervised financial intermediaries). These would perform the regular onboarding procedures (e.g. anti-money laundering checks) and can develop consumer-oriented services beyond the core mandatory functionalities.

Access and use: Via existing online apps provided by the payment service providers or via a Eurosystem app. Payments done using technology such as contactless payments or QR code.

Quelle: Demertzis and Martins (2023b).

opening an account in private banks. Payment service providers (PSPs) would be responsible for distributing digital euros. They would have to follow strict criteria that would ensure that all expected tasks can be performed and that there is a high degree of harmonisation across euro area countries. The access and use would be done via the existing online apps of the PSPs ("integrated approach") or through a Eurosystem app ("harmonised entry point approach"), as per the choice of the end user. It is worth noting that the Eurosystem app would offer basic payment functionalities that would still be performed by PSPs, but the interface would be one and harmonised across the euro area. Payments would be done using technology already familiar to most European citizens, for instance, contactless payments or QR codes.

Providing core services and functionalities, such as opening or closing the account, or funding or defunding, would be mandatory both online and offline. Optional and value-added services could be provided on a voluntary basis to enhance user experience. A crucial point made in the report is that the digital euro will not be programmable money. This means that the ECB would not determine or interfere with where, when, or for which purpose the digital euro is used for payments. Conditional payments ("payments that are instructed automatically when pre-defined conditions are met")[1] would still be possible, as part of the value-added services PSPs could provide.

Cross-currency functionalities are also being investigated as a way of improving the transparency and efficiency of cross-border payments (as endorsed by the G20). This functionality could be implemented by ensuring interoperability between the digital euro and other CBDCs or by relying on a common infrastructure that could host multiple CBDCs.

Beyond the three progress reports, there have also been developments in other areas, such as a rulebook

1 The ECB Digital Euro Glossary.

for a digital euro scheme, which establishes the main framework for the digital euro, and a compensation model, which aims to address the issue of economic incentives and fees given that the digital euro would be a public good.

Early in the second half of 2023, the Eurosystem will present all the design choices put forward during the investigation phase. The ECB's Governing Council will then reach a decision on whether to go forward with the development of the digital euro. A decision to continue with further development would mean moving on to the next phase and delving further into technical details and testing. It would not be equivalent to a decision on issuance: this would require the approval of regulation establishing a digital euro, which needs to be adopted by the European Parliament and the Council of the EU.

What is the purpose of a digital euro?

CBDCs will have a dual purpose, just like their physical equivalent: first, to be used for retail transactions, typically by consumers and small businesses to make daily payments, representing a small part of total payments; and second, to be used for wholesale (i.e. in bulk) purposes by banks and other financial institutions, either domestically or cross border.

A central motivation for considering a digital euro stems from the increasing digitalisation in financial services. We observe that cash is used less and less, overtaken by digital payments. As the only public money, cash is considered the ultimate anchor of the financial system. The ECB worries that if it were to disappear, the system would also lose the monetary anchor which preserves financial stability and trust in the currency.

This argument derives from the fact that only public money is fully guaranteed and ultimately people run to it in case of distress. In the euro area, the deposit insurance scheme provides for a guarantee of up to €100,000 of commercial bank deposits. Thus, these deposits are generally expected to be convertible to central bank money but are only partially guaranteed.

The ECB sees the digital euro as the evolution of cash in the digital age, and hence a way to keep the trust in the system by protecting the role of public money. However, evidence shows that while cash payments are decreasing, cash will not disappear completely (Demertzis and Martins, 2023b). Additionally, the concern that cryptocurrencies are taking over is unjustified; as such they do not represent a threat to sovereign money (Demertzis and Martins, 2023a). Therefore, right now, this argument alone is not strong enough to justify the launch of a digital euro for retail use. But even if it was, how could a digital euro be the anchor to the system if consumers are only allowed to have limited holdings? What advantage do 3,000 fully guaranteed digital euros offer compared to €100,000 currently guaranteed in commercial bank accounts in the euro area?

If, on the other hand, the ECB were to allow unlimited amounts of digital euros to be held in the form of deposits, that could potentially be a game changer. Having all deposits guaranteed by the state is an attractive proposition for the consumer. But for her to switch from commercial deposits to digital euros, she would need to see interest paid on these central bank accounts or she would be left worse off. But interest-paid deposits at the central bank would transform both the role of central banks as well as the role of financial intermediaries. Commercial banks that are currently mainly funded by deposits would have to find alternative operating models. What would be the cost to the system of providing such a guarantee? Would the money in circulation necessarily have to decrease?

The ECB would need to carefully consider the trade-offs between the number of holdings allowed (and, with it, the attractiveness for citizens) and the potential disruptions to the financial system, particularly to the current banking intermediation model.

The other major point provided as justification for a digital euro relates to Europe's strategic autonomy. The ECB (2023e) observes that "non-European payment-related service providers handle around 70% of European card payment transactions". The worry is that the high external dependency on foreign providers can pose a threat to Europe's payments resilience, especially in the context of heightened geopolitical tensions. The digital euro could address this concern, but it may distort competition and innovation in domestic payment systems. The strategic autonomy argument adds a layer of protectionism that would need to be very carefully formulated economically and politically, or risk going against the EU's own principles.

Lastly, the payment landscape in the euro area is still very fragmented. While the payment infrastructure (Target Instant Payment Settlement) for euro instant payments exists and is operational, there is no unique digital payment method widely accepted across the euro area. While there are PSPs that already provide highly innovative services that allow citizens to send money instantly to each other or pay in stores with a QR code, they operate mostly at a national level or among a few countries.

The digital euro would provide a truly pan-European solution and the ECB would provide a starting point for more innovation in Europe. However, it is important to understand why the digital euro is the best solution to a single pan-European payment system. Imposed coordination (like the IBAN system for bank deposits) could conceivably provide an adequate solution. Regulation therefore can achieve the same result with much less effort. Such a solution could then allow European players to become more competitive and grow, eventually reducing the market dominance of foreign payment service providers. Importantly, a public solution would distort the market for available payment methods in each country.

A digital euro would unequivocally be of great value added for wholesale use, particularly cross-border cross-currency transactions (Demertzis and Martins, 2023b). This is despite the fact that CBDCs for wholesale use are not much of an innovation, since central bank money in digital form is already used for wholesale (i.e., interbank) transactions.[2] Effectively, a wholesale CBDC would innovate simply by using the latest, more efficient technology, namely DLT.

There are two reasons why CBDCs used for cross-border payments may be revolutionary. First, new technology can provide sizeable gains in time and costs by reducing the inefficiencies inherent in the correspondent banking architecture.[3] Pilot projects with DLT show that the technology allows new ways for banks and central banks to connect with each other, bringing time and cost savings, and enabling the use of local currencies for international payments (BIS, 2022).

Second, two central banks that have CBDCs will be able to settle transactions between them and bypass the current dollar-dominated system. Recent geopolitical tensions ignited the interest in CBDCs for wholesale purposes across the globe, especially given financial sanctions. In the current system, the currency in which a transaction is conducted determines which central bank settles this transaction. Since a very big proportion of trade and financial flows are currently done in US dollars, it is US authorities who settle the bulk of global financial flows. Central banks across the world rely on the US infrastructure for settling global transactions. CBDCs have the potential to change that by equipping any central bank with the infrastructure needed to carry out settlements. In an increasingly fragmented world, a settlement system that is operational between any two central banks would guarantee the continuity of economic activity and could bypass the US system.

As other countries start exploring and considering such alternative systems, the Eurosystem cannot afford to be left out of this debate. Now is the time when global standards are being set. For any country to contribute to such standards, they need to both understand the complex trade-offs involved in creating a CBDC and be active participants in global cross-border payment pilot schemes.

Recently, the ECB announced that it will start exploring DLT for wholesale application (ECB, 2023c). Given how much the ECB has already invested in understanding the workings of a digital euro, it can contribute to setting global standards and help promote global coordination.

Last, while the ECB's thinking on the digital euro is advanced, there is still a gap in the public's understanding of why a digital euro is useful to them. The ECB needs to take time to explain its motive for pursuing such a project and change people's perceptions. The public's support will be crucial for take-up. Clear communication that explains the value added of a digital euro and how it fits in the context of global developments would be highly beneficial.

Conclusions

CBDCs constitute an important addition to the way financial systems operate currently. And while money is a public good, central banks need to justify what externality digital cash aims to solve and that physical cash or private payment solutions do not solve. Why is there a need for the state to intervene and provide a public solution?

The ECB's interest in CBDCs stems from the rapid digitalisation in finance that may risk eroding the trust in the financial system. Also, in an increasingly financially fragmented world, the ECB argues that Europe relies excessively on foreign payment service providers and that this poses a risk to the euro's resilience.

Even if a CBDC for retail use in the euro area is not of immediate added value, it is important to invest now to understand the complex trade-offs that are required for digital cash to be ready to operate in the future. The ECB needs to make more effort to participate in global initiatives that study how CBDCs benefit cross-border payments. Pilot studies so far report tangible benefits in both time and cost savings. But importantly, CBDCs

2 Panetta (2021) explains that wholesale CBDCs already exist given that interbank transactions use central bank money.

3 For more details, see Demertzis and Martins (2023b, 10-13).

have the potential to change the global standard in international payments (Demertzis and Lipsky, 2023). The ECB needs to be part of that conversation to help protect the EU's strategic interests in international finance.

References

BIS (2022), Project mBridge: Connecting economies through CBDC, *BIS Innovation Hub*, https://www.bis.org/publ/othp59.htm (3 July 2023).

Demertzis, M. and J. Lipsky (2023), The Geopolitics of Central Bank Digital Currencies, *Intereconomics*, 52(4), 173-177.

Demertzis, M. and C. Martins (2023a), DeFi, good technology, bad finance, *Bruegel Policy Brief*, 9, https://www.bruegel.org/policy-brief/decentralised-finance-good-technology-bad-finance (3 July 2023).

Demertzis, M. and C. Martins (2023b), The value added of central bank digital currencies: a view from the euro area, *Bruegel Policy Brief*, 13, https://www.bruegel.org/policy-brief/value-added-central-bank-digital-currencies-view-euro-area (3 July 2023).

ECB (2020), Report on a digital euro, European Central Bank.

ECB (2021), Eurosystem report on the public consultation on a digital euro, European Central Bank.

ECB (2022 a), Progress on the investigation phase of a digital euro, European Central Bank.

ECB (2022b), Progress on the investigation phase of a digital euro – second report, European Central Bank.

ECB (2023a), Banknotes and coins circulation, https://www.ecb.europa.eu/stats/policy_and_exchange_rates/banknotes+coins/circulation/html/index.en.html (14 June 2023).

ECB (2023b, 22 February), Compensation model for the digital euro, Euro Retail Payments Board, Presentation by European Central Bank.

ECB (2023c, 28 April), Eurosystem to explore new technologies for wholesale central bank money settlement, Press Release, European Central Bank.

ECB (2023d), Progress on the investigation phase of a digital euro – third report, European Central Bank.

ECB (2023e), The EU's Open Strategic Autonomy from a central banking perspective: Challenges to the monetary policy landscape from a changing geopolitical environment, International Relations Committee Work stream on Open Strategic Autonomy, *Occasional Paper Series*, 311, European Central Bank.

Euro area statistics (2023), Banks balance sheet – Deposits, https://www.euro-area-statistics.org/banks-balance-sheet-deposits?cr=eur&lg=en (14 June 2023).

Panetta, F. (2020, 2 October), We must be prepared to issue a digital euro, *ECB Blog*.

Panetta, F. (2021, 19 November), The ECB's case for central bank digital currencies, *ECB Blog*.

Panetta, F. (2022, 15 June), The digital euro and the evolution of the financial system, Introductory statement at the Committee on Economic and Monetary Affairs of the European Parliament.

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Toughening Financial Sanctions on Russia

Enforcing Energy Sanctions and Reducing Shadow Reserves Effectively

Financial sanctions are key in enforcing restrictions on Russian energy exports – in particular the G7/EU oil price cap regime – due to financial institutions' critical role in cross-border transactions. While the energy sanctions regime is having an impact on export earnings and budget revenues, evidence for potentially widespread violations is also emerging. Moreover, favourable external dynamics have allowed Russia to accumulate substantial assets abroad, "shadow reserves", which need to be kept out of reach of the regime. To address this, a number of steps could be taken, including tasking central banks and supervisory authorities with the identification of Russian foreign assets to ensure that funds cannot be used to widen monetary and fiscal policy space, and addressing loopholes in the sanctions regime.

Sanctions on Russian oil exports are one of the most complex interventions into global energy markets ever undertaken in the area of economic statecraft. Two focal measures deserve particular attention: first, with its sixth sanctions package in June 2022, the EU established embargoes on Russian crude oil and oil products, which took effect in December 2022 and February 2023, respectively.[1] Second, the G7/EU price caps reconciled the intention to keep Russian oil on the market – and thus prevent rising global prices – with the objective of limiting the country's export earnings and fiscal revenues, after policymakers had rejected alternative proposals such as a customs tariff on Russian oil (see e.g. Hausmann, 2022). The EU introduced exemptions to its embargo that allow Western shipping and maritime insurance companies to remain engaged in trade with Russian oil as long as the price remains below the cap. The implementation of the price caps coincided with the respective embargoes.

Complex market intervention shows some results

Several months after the initiation of the policy, evidence emerged that the sanctions regime was yielding some results (Hilgenstock et al., 2023). Firstly, Russian oil largely remained on the market and global prices did not increase after the embargo took effect. On the contrary, since the announcement of the policy in July 2022, prices have come down substantially. Secondly, sanctions have created diverging dynamics in different segments of the Russian oil market. Where previously dominant European customers essentially disappeared and were replaced by Indian buyers (e.g. exports from Baltic and Black Sea ports), demand conditions changed dramatically, resulting in significantly lower prices. Where the embargo did not have any noticeable effect on the customer base (e.g. exports from Pacific Ocean ports), prices did not come under additional pressure compared to North Sea Brent in the post-embargo/price cap period. Discounts for Russian oil have led to a significant drop in export earnings. In Q1 2023, the country exported US $38.8 billion worth of crude oil and oil products – a 29% decline vs. Q4 2022. Fiscal revenues have also taken a major hit. According to Ministry of Finance of the Russian Federation (2023b), to-

1 The UK's embargo on crude oil and oil products took effect on 31 December 2022, while the United States and Canada had prohibited such imports already in March 2022.

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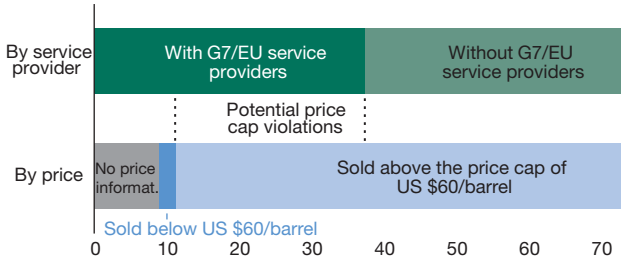
Figure 1
Potential price cap violations in Q1 2023
in million barrels



Sources: Equasis, Kpler, national authorities, authors' calculations.

tal federal government oil and gas revenues dropped by 52% between January and April 2023 compared to the same period in 2022. Together with a sharp rise in spending due to the war, this increased the budget deficit substantially.[2]

Evidence of sanctions violations emerges

While measures targeting Russian energy exports, in particular crude oil and oil products, have had a noticeable impact, evidence for potentially widespread violations of the price cap regime is emerging. Specifically, substantial amounts of Russian crude oil are being transported from the critical Pacific Ocean port of Kozmino with the participation of Western shipping service providers and are being sold above the G7/EU price cap threshold (see Hilgenstock et al., 2023).

In the first quarter of 2023, roughly 50% of total exports from Kozmino involved companies that fell under the price cap regime – largely maritime insurance providers (see Figure 1). At the same time, not only were average export prices around US $73/barrel, a closer look at their distribution shows that 96% of the total volume was priced above the cap of US $60/barrel. While connecting specific export transactions with ship tracking information has proven difficult – and differences in data coverage may partially explain discrepancies – some conclusions can be drawn. If we assume conservatively that shipments for which prices cannot be identified were in compliance with the price cap regime, and if we assume further that these, as well as volumes priced below the cap, involved Western service providers, this leaves roughly 26 million barrels with prices above US $60/barrel transported on G7/EU-owned or -insured vessels.

The existing attestation regime[3] does not allow for an effective enforcement of the price cap, even when it comes to these G7/EU-owned or -insured vessels. Specifically, price cap regulations identify shipowners and maritime insurance providers as so-called Tier 3 actors, and these companies are thus only required to obtain and retain attestations in which their customers declare that they have not purchased the cargo above the cap (see European Commission, 2023a). They do not have to acquire any supporting evidence and are generally not considered in breach of the price cap – even if a sanctions violation took place – as long as they acted in "good faith".[4] While it is understandable that policymakers wanted to avoid creating onerous requirements that would render the system unworkable, or that could have driven G7/EU service providers out of the Russian oil trade, this has turned out to be a key weakness of the price cap regime.

The (shadow) reserves challenge

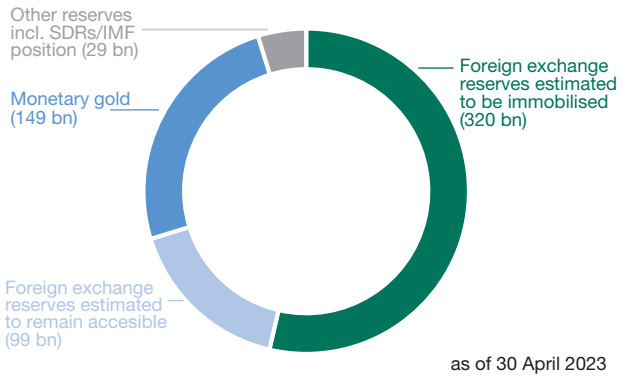
Energy sanctions violations are a critical issue, but so is the Russian regime's access to considerable foreign assets and their utilisation to improve macro stability and finance the war. This touches upon two key dimensions: first, official reserve assets that Russia had built up in recent years and that may or may not be immobilised by sanctions; and second, "shadow" reserves accumulated abroad by Russian entities in the past fifteen months.

2 As with all data from official Russian sources, we recognise that reliability is potentially in question. However, in the context of a broad range of indicators that are still available from Russian and other sources – including energy export statistics, utilisation of the National Welfare Fund and domestic debt issuance – we believe that fiscal data is consistent with overall dynamics as we see in KSE Institute (2023).

3 The price cap regime relies on a "recordkeeping and attestations process that allows each party in the supply chain of seaborne Russian oil to demonstrate or confirm that oil has been purchased at or below the price cap" (see e.g. European Commission, 2023a). Actors who have direct access to price information in the ordinary course of business (e.g. commodities brokers and traders, "Tier 1") should "retain and share, as needed, documents that show that seaborne oil was purchased at or below the price cap." Actors who are sometimes able to request and receive price information from their customers in the ordinary course of business (e.g. financial institutions and customs brokers, "Tier 2") should "when practicable, … request, retain, and share, as needed, documents that show that seaborne Russian oil was purchased at or below the price cap." "When not practicable to request and receive such information, Tier 2 actors should obtain and retain customer attestations in which the customer commits to not purchase seaborne Russian oil above the price cap." Actors who do not have direct access to price information in the ordinary course of business (e.g. insurers, re-insurers, ship owners, and ship management companies, "Tier 3") should "obtain and retain customer attestations in which the customer commits to not purchase seaborne Russian oil above the price cap."

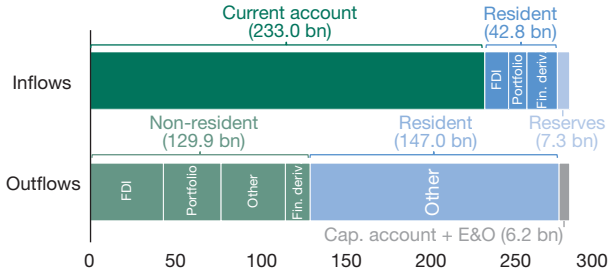
4 Except for the UK where civil penalties for price cap violations are invoked on a strict liability basis. See Office of Financial Sanctions Implementation (2023).

Figure 2
Estimated composition of Russia's official reserve assets
in US dollars



Sources: Bank of Russia, authors' calculations.

Figure 3
Russian balance of payments flows in 2022
in US dollars



Note: E&O stands for errors and omissions.

Sources: Bank of Russia, authors' calculations.

Uncertainty surrounding immobilised reserves

Regarding pre-February 2022 reserves, which were above US $640 billion, Ukraine's allies imposed sanctions on Russia's central bank (CBR) and the country's sovereign wealth fund (National Welfare Fund, NWF) early on. This included banning transactions with the two entities and freezing assets. Governments that imposed sanctions did not provide information on the affected funds. We have therefore used data from Russian authorities to estimate that roughly US $320 billion in foreign reserves (at current valuation) are immobilised, as they were – and presumably still are – held in the jurisdiction of the coalition imposing sanctions (see Figure 2). However, because CBR data on the currency and geographical composition of assets stems from December 2021, there is considerable uncertainty surrounding this number. It is quite possible that, while the CBR was likely not informed in detail about plans for the full-scale invasion, reserve managers were able to move assets right before sanctions took effect.

It is essential for coalition authorities to improve transparency regarding frozen (or immobilised) assets. Only then can agencies tasked with implementing restrictions on the CBR and NWF reliably remove these assets from the Russian state's reach.[5] Furthermore, while the initial measures to freeze Russian state assets may have effectively blocked part of the reserve *stocks*, they did not address the issue of reserve *flows*. Continued current account surpluses and Russia's success in recovering some of the arbitrage created by the price cap regime have allowed Russia to continue generating substantial flows. A lack of transparency regarding beneficial ownership structures of financial flows is the key issue that policymakers need to address.

Accumulation of assets abroad

Russia saw net financial account inflows to the tune of US $283 billion last year, largely driven by a record-high current account surplus of US $233 billion (see Figure 3). Soaring commodity prices and the delayed phasing-in of sanctions on key exports such as oil and gas were key factors behind this extraordinary financial surplus (see Bank of Russia, n.d.). Other inflows consisted of returning resident capital and losses in official reserve assets. On the outflows side, close to US $130 billion in non-resident capital left the country as foreign investors withdrew and external liabilities were repaid.[6] So, what happened to the current account surplus and the corresponding financial flows? The CBR is under sanctions and cannot conduct reserve operations in dollars or euros, including on behalf of the Ministry of Finance.[7] According to official balance of payments data, Russian entities – banks and corporates – accumulated new foreign assets to the tune of US $147 billion in "other investments". There are no further details of their composition available, aside from the in-

5 Some limitations to the sanctions regime are inevitable. For instance, the National Welfare Fund was able to use euro-denominated assets in recent months 2023, although they are likely located in countries imposing sanctions, by selling them to the CBR (see Ministry of Finance of the Russian Federation, n.d.). However, as the central bank does not have access to these reserves either, it was not able to use them for sterilisation purposes.

6 Some of these flows could be Russia's corporates transferring money abroad to their foreign-registered affiliated companies, rather than genuine non-resident investor capital transfers amid severe capital controls and limitations on non-resident divestment from Russia.

7 Russia reinstated foreign exchange purchases under the fiscal rule in January 2023 following a ten-month suspension (see Ministry of Finance of the Russian Federation, 2023a).

formation that US $79 billion of the total is comprised of loans and deposits.[8]

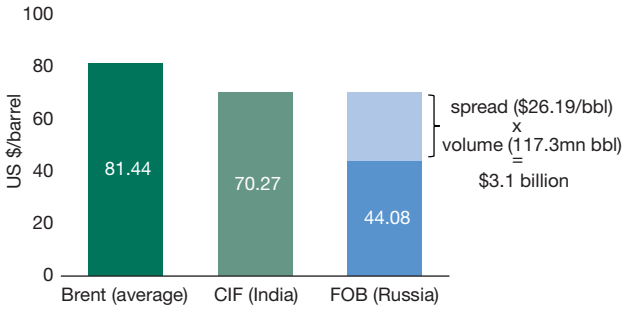
However, the amount could be even higher, as questions have emerged regarding the roughly US $130 billion in non-resident outflows.[9] In any case, Russia accumulated substantial foreign assets in 2022 – a development that will continue as the current account remains in surplus, albeit at a slower pace. While Russia recorded a surplus of only US $18.6 billion in Q1 2023, 50% less than in Q4 2022, remaining foreign capital that could turn into outflows is also limited.

Lack of transparency facilitates arbitrage gains from oil trade

How can Russia take advantage of the lack of transparency regarding beneficial ownership structures to capture some of the arbitrage in the oil market due to sanctions?[10] Russian entities' involvement in the transport of oil as well as in the refinery sector of foreign countries presents a major challenge if Russia can find channels to use the money for foreign exchange acquisition and government funding.

Since the G7/EU introduced price cap(s), there have been major shifts regarding the transport of Russian oil, with new shipping companies emerging on the scene – and some of the new players are suspected of being linked to Russian entities.[11] As the price cap(s) apply to so-called FOB (free on board) prices, which exclude the cost of transportation and insurance, this could enable Russia to capture some of the spread to CIF (cost, insurance and freight) prices ultimately paid by buyers. What is more, in some cases this spread may be inflated and, in effect, represent attempts to circumvent the price cap regime.[12]

Figure 4
Price for Russian crude oil exports to India in Q1 2023



Sources: International Energy Agency, national authorities, authors' calculations.

For instance, Indian buyers paid an average FOB price of around US $44/barrel in Q1 2023 for Russian crude oil (see Figure 4). The driving force behind the sharp discount to North Sea Brent was the EU embargo, which led to a dramatic shift in demand conditions in the segment of the market for Russian crude oil. Europeans, as the most important buyers, essentially disappeared – giving alternative customers considerable pricing power. At the same time, Indian customs data shows that the CIF price for crude oil imports from Russia in Q1 2023 stood at US $70/barrel on average – creating a spread that was significantly wider than what should be expected based on the cost of transportation (despite the long distances). For the entire first quarter of 2023, this represents a value of US $3.1 billion – a spread of US $26/barrel applied to a volume of roughly 117 million barrels.

On the face of it, this is exactly what the sanctions regime – consisting of embargoes and price caps – was intended to accomplish: create downward pressure on prices for Russian oil exports and leave arbitrage outside of Russia's reach. However, this only works if Russian entities cannot capture the discount. With their involvement in shipping, and potentially inflated spreads between FOB and CIF prices, this is in question. Of course, the huge arbitrage in the market for Russian oil also provides incentives for other types of side deals that could channel money to the original sellers. There is also speculation that some of the trading companies

8 Russia is facing some challenges regarding these assets, in particular when they are not held in dollars or euros. For instance, Foreign Minister Sergey Lavrov admitted recently that Russia cannot use substantial rupee-denominated deposits it has in Indian banks (Bloomberg, 2023).

9 With capital controls in place for parts of 2022 and some extended into 2023 (Marrow and Fabrichnaya, 2023), the foreign exchange supply limited, and the Russian government hindering disinvestment (Reuters, 2023), were foreign investors really able to withdraw capital of this magnitude? As far as the repayment of external debt is concerned, liabilities had fallen sharply in the post-2014 period as key Russian corporates could no longer borrow from abroad due to sectoral sanctions, leaving observers wondering where the capital came from that was, allegedly, repaid last year. For this debate, see e.g. Sandbu (2023).

10 For an excellent overview of how authoritarian kleptocrats are thriving on the West's failures and how they can be stopped, see Shin and Judah (2023).

11 See a report by Transparency International on what can be done to strengthen governance at the International Maritime Organization and improve overall transparency of the shipping industry (Amin et al., 2023).

12 Strictly speaking, inflated spreads between FOB and CIF prices could constitute a violation of the price cap as costs for shipping, freight, customs and insurance must be invoiced at commercially reasonable rates (see e.g. European Commission, 2023a).

involved in oil transactions may be connected to Russian entities, providing further opportunities to circumvent the price cap regime.

A related issue is the shift of refining from Russia to third countries. We know that purchases of Russian crude oil by China, India and Turkey have picked up in recent months, while countries in Europe have stepped up product imports from these places (Thieriot et al., 2023). In a way, this is exactly what the sanctions regime attempted to achieve: keep Russian crude oil on the global market to guarantee price stability while reducing export earnings and fiscal revenues, including by removing the value added of the refining process from the country. However, in some cases, Russian companies are (partial) owners of refineries in third countries – e.g. India's Nayara, of which Russia's Rosneft owns 49%. The sanctions regime can still achieve its objectives in such cases – but only if a reshoring or, more broadly, the channeling of money accumulated abroad to Russia's war effort is prevented. Our proposals for sanctions below would make this more difficult.

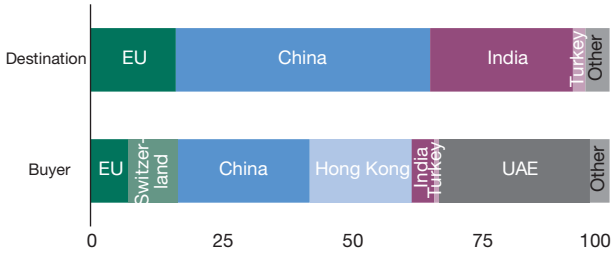
Location of shadow reserves

Returning to the overall issue of foreign asset accumulation, or "shadow reserves," there is no official information on where these are located – and, thus, how easy or complicated their reshoring and use may be in practice. However, a closer look at the location of companies involved in Russian oil exports allows us to draw some conclusions. As far as the physical destination of shipments is concerned, there are essentially three: the European Union (in the form of pipeline oil and some seaborne exports exempt from the embargo), China and India (see Figure 5). In terms of trading companies, the initial buyers in many cases, three additional countries play an important role: Hong Kong, Switzerland and the United Arab Emirates (UAE). Given existing sanctions – fairly comprehensive in the case of the EU and at least partial in the case of Switzerland – it seems reasonable to assume that assets are largely, albeit not exclusively, accumulated in four jurisdictions: China, India, Hong Kong and the UAE.

Using financial sanctions for enforcement

Financial sector sanctions could be an effective tool for stepping up implementation and enforcing existing restrictions on Russian oil exports. The first key issue is to increase transparency so it is harder for Russia to arbitrage the price difference between its export prices and international market prices in its own favour. The second key issue is to restrict access to (shadow) reserves from previous oil and gas sales by identifying them and limiting their accessibility. Finally, bank supervisors and central banks should play a larger role in financial sanctions enforcement.

Figure 5
Composition of Russian crude oil export value in Q1 2023
in %



Sources: National authorities, authors' calculations.

We propose the following specific measures to improve transparency with respect to energy trade-related financial flows as well as Russian holdings of foreign assets – and to limit the extent to which Russia can use energy-related export earnings to continue its war in Ukraine.

Identify reserve assets abroad. The current location of Russia's reserves is not public knowledge. The last available information is from December 2021 from the CBR itself. Public disclosure of locations by Western authorities would increase transparency and make enforcement more credible. Sanctioning countries should clearly identify Russia's foreign assets held in their jurisdictions and ensure that they are effectively removed from the reach of Russian entities. Central banks and bank supervisory authorities should be clearly mandated to request information from all financial institutions in their jurisdiction to establish and disclose Russian ownership of assets.[13]

Investigate shadow reserves. While sanctions may have effectively immobilised a substantial share of Russia's pre-war reserve stocks, they did not immobilise new flows. We have shown that at least US $150 billion in new foreign assets were accumulated in 2022. Furthermore, we identified several avenues through which Russian entities could circumvent the energy sanctions regime, including the lack of disclosure of the beneficial ownership of companies involved in the oil trade on several levels. It is critical for coalition countries to use all available tools to identify the geographic location of these assets and to

13 We acknowledge that the EU has taken an important step by expanding reporting obligations regarding frozen assets in its tenth sanctions package (see European Commission, 2023c).

prevent their use for Russia's war on Ukraine. Such information can be partially obtained through rigorous analysis of detailed financial account data. When information gaps emerge, central banks should ask central banks in third countries to explain gaps (Setser, 2023).

Restrict channels for financial flows to better monitor implementation of energy sanctions. Limiting the channels through which cross-border financial flows can take place would make monitoring easier. Comprehensive restrictions (e.g. specially designated nationals and blocked persons list, or SDN list, or comparable measures) on additional Russian financial institutions as well as cutting off more Russian banks from SWIFT would reduce the number of banks through which energy transactions can be conducted.[14]

Strengthen documentation requirements. The financial sector plays a key role in conducting Russian energy trade. Sanctioning countries can gain information on transactions by stepping up reporting requirements for financial institutions on financial operations related to fossil fuel trade.

- According to EU and US regulations, financial institutions are so-called "Tier 2 actors" as far as the price cap regime is concerned. Thus, they are only required to request, retain and share documents that show oil was purchased at or below the price cap "when practicable" – or, alternatively, obtain attestations from customers in which they commit to compliance with the price cap. Requirements should be strengthened significantly by mandating that financial institutions retain and share full documentation just like "Tier 1 actors". This should include a record on the original contracts with the price of the transaction. While this might sound like an excessively onerous obligation to financial institutions, further restrictions on which institutions can engage in transactions with Russia would mean only a few banks would have to obtain such contracts. It would then be easy for them to establish the appropriate routines.

- To increase overall transparency, financial institutions should be required to inform enforcement agencies of any transactions under the oil price cap that they facilitate.[15] In addition, they should notify such agencies of any suspicious activities that may indicate a violation of the price cap regime.[16]

- Sanctions should be enforced on a strict liability basis, including with regard to the financial institutions involved in transactions. Currently, Western entities involved in violations are generally not considered in breach of the price cap as long as they acted in "good faith." This is too lenient a standard for effective enforcement.

Limit financial access to shipping companies without maritime insurance. Should a shipping company lose its maritime insurance due to sanctions violations, it can continue to transport Russian oil as long as a certain type of insurance is not required by any parties involved (e.g. ports). This not only undermines the effectiveness of the sanctions regime but also represents a significant risk for ecological disasters. Supervisors should explore whether financial sanctions could be applied to reduce financial access of oil shipping companies that do not have proper maritime insurance.[17]

Targeting third-country financial loopholes is increasingly important. Third-country financial hubs, e.g. Hong Kong and the UAE, can be used to circumvent sanction coalitions. In the past, the United States has used extraterritorial or "secondary" sanctions – the threat of imposing penalties on persons and organisations not subject to the sanctioning country's jurisdiction – to address this challenge.[18] However, such measures are a very controversial element of the foreign policy toolbox. For instance, the European Union views extraterritorial sanctions as a

14 SDN listings are the key tool through which the US Treasury Department's Office of Foreign Assets Control (OFAC) imposes comprehensive sanctions on individuals and companies owned or controlled by, or acting for or on behalf of, countries targeted by US sanctions. Through the listing, their assets are blocked, and US persons are generally prohibited from dealing with them (OFAC, 2023b). Another idea that has been put forward is to route all Russian oil sales through escrow accounts as has been done as part of past sanctions efforts, for instance in the Iran case (see e.g. Johnson and Hosoi, 2022).

15 At this time, OFAC requires US parties to report any transactions which seek to evade or violate price cap determinations (see OFAC, 2023a). The recent alert on possible ESPO-related price cap evasion should make it harder for companies under US jurisdictions to claim "good faith" and prompt them to seek underlying evidence in addition to attestations from buyers of Russian crude oil and oil products. Under UK regulations (UK Government, 2023), Tier 1 providers are required to report to HM Treasury each time they provide covered services with respect to Russian oil trade.

16 As of now, US (Financial Crimes Enforcement Network, 2012), EU (Directive (EU) 2015/849) and UK (National Crime Agency, n.d.) law authorises the filing of suspicious activity reports by financial institutions as part of their anti-money-laundering and anti-terrorism financing frameworks. Filing of such reports can be voluntary or mandatory depending on the jurisdiction and case at hand.

17 In addition, lack of adequate insurance or use of ageing vessels carries substantial environmental risks.

18 Secondary sanctions were used after the Trump administration's decision to exit the Iran nuclear deal and in the context of the Nord Stream 2 natural gas pipeline.

violation of international law.[19] Nonetheless, for financial sanctions to be effective, it is critical to target financial channels outside the coalition's immediate jurisdiction. To be less intrusive, we propose limiting such an approach to enforcement of the price cap regime. Governments should explore avenues through which this can be achieved – either the strategic and limited use of secondary sanctions or the imposition of restrictions on third-country institutions that engage in certain transactions with Russian entities.[20] Furthermore, G7 countries should move to reduce the share of transactions taking place through offshore centres.[21]

Conclusions: Strategic measures instead of broad restrictions

Rather than imposing broader financial restrictions that may prove counterproductive due to their high administrative and political costs, we propose focusing financial sanctions specifically on the enforcement of the energy sanctions regime and on limiting the increase of shadow reserve assets, including through offshore centres.

Cross-border trade flows must find a counterpart in international financial flows. The more restrictions are imposed on financial transactions, the more overall trade will be affected. To keep Russian oil supply on the global market, financial sector transactions must take place in some form. Our suggested financial sanctions are targeted specifically at making it more difficult for Russia to sell oil above the price cap, not at limiting financial exchange in general.

The threat of restrictions in the financial sphere or sanctions in general will motivate Russian actors to develop alternatives. In fact, Russian authorities have spent considerable effort in recent years, especially since 2014-15, on establishing domestic systems for many types of financial transactions, including information exchange, credit card payments and rapid transfers. For example, the CBR has actively developed the system for transfer of financial messages (SPFS), a Russian equivalent of the SWIFT payment system, since 2014. This has helped insulate the economy from the impact of additional sanctions and has limited the effect of some of the measures imposed since February 2022. Since 2022, further adjustments have taken place.[22] Additional sanctions may lead to further shifts in the international financial architecture. In addition to increased reliance on domestic systems, Russian authorities have also tried to strengthen links to China's cross-border interbank payment system (CIPS) in recent years. This has proven to be much more challenging in practice than in theory, but the current geopolitical environment will certainly lead to intensified efforts in this direction.

Both China and Russia are by now fully aware that the financial system can be weaponised and therefore are both actively investing in alternatives. It is up for debate whether the narrowly defined expansion of sanctions as proposed in this article would accelerate the development of alternatives. The focus on a narrow set of measures specifically linked to the energy price cap has the advantage of actually strengthening China's and emerging economies' negotiating power vis-à-vis Russia. As such, the proposed measures are more likely to reduce Russia's profits and limit the ability of financial centres to reap extra profits through financial operations outside the Western system. In that sense, they are also different from export restrictions and their enforcement in third countries, which would directly undermine trade rather than relative market power. On the whole, we therefore believe that our proposals are an effective and acceptable way of increasing pressure on the financial resources available to the Russian regime.

19 Therefore, the EU refrains from adopting such measures itself (see European Commission, 2023b), condemns their use by other countries, and has adopted the so-called "Blocking Statute" (see Council Regulation (EC) 2271/96) to protect EU-based entities from them. Regarding the broader issue of European economic sovereignty see also Ribakova and Hilgenstock (2022).

20 The US Department of the Treasury recently indicated that it "will continue to aggressively enforce its sanctions, and individuals and institutions operating in permissive jurisdictions risk potentially losing access to G7 markets on account of doing business with sanctioned entities or not conducting appropriate due diligence to guard against illicit finance risks" (U.S. Department of the Treasury, 2023).

21 Kleptocrats across the globe have been "content to offshore their ill-gotten gains in US, UK, and EU jurisdictions with lax oversight over these types of transactions" (see Shin and Judah, 2023).

22 Since the start of the full-scale invasion, the combined share of US dollar and euro in Russian goods trade has fallen from around 80% to slightly below 50% while, according to the CBR, the rouble's and yuan's shares have grown.

References

Amin, L., A. McDevitt and M. Gibbs (2018), Governance at the International Maritime Organisation: The case for reform, Transparency International.

Bank of Russia (n.d.), External Sector Statistics, https://www.cbr.ru/eng/statistics/macro_itm/svs/ (16 May 2023).

Bloomberg (2023, 7 May), Russia says it has billions of rupees that it can't use, *The Economic Times*.

Council Regulation (EC) 2271/96 of 22 November 1996 protecting against the effects of the extra-territorial application of legislation adopted by a third country, and actions based thereon or resulting therefrom, https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31996R2271 (16 May 2023).

Directive (EU) 2015/849 of the European Parliament and of the Council of 20 May 2015 on the prevention of the use of the financial system for the

purposes of money laundering or terrorist financing, https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:02015L0849-20210630#tocId47 (16 May 2023).
European Commission (2023a), Guidance on Russian oil price cap, as of 27 February 2023, https://finance.ec.europa.eu/system/files/2023-03/guidance-russian-oil-price-cap_en.pdf (16 May 2023).
European Commission (2023b), Overview of sanctions and related resources, https://finance.ec.europa.eu/eu-and-world/sanctions-restrictive-measures/overview-sanctions-and-related-resources_en (16 May 2023).
European Commission (2023c, 25 February), Questions and Answers: tenth package of restrictive measures against Russia, Press release.
Financial Crimes Enforcement Network (2012), FinCEN Suspicious Activity Report (FinCEN SAR) Electronic Filing Instructions, https://www.fincen.gov/sites/default/files/shared/FinCEN%20SAR%20ElectronicFilingInstructions-%20Stand%20Alone%20doc.pdf (12 June 2023).
Hausmann, R., A. Łoskot-Strachota, A. Ockenfels, U. Schetter, S. Tagliapietra, G. Wolf and G. Zachmann (2022), How to weaken Russian oil and gas strength, *Science*, 376 (6592), 469.
Hilgenstock, B., E. Ribakova, N. Shapoval, T. Babina, O. Itskhoki and M. Mironov (2023), Russian Oil Exports under International Sanctions, *KSE Institute Working Paper*, https://kse.ua/wp-content/uploads/2023/04/Russian_Oil_Exports_under_International_Sanctions_23Q1_UPDATE26042023.pdf (16 May 2023).
Johnson, S. and A. Hosoi (2022, 20 April), How to implement an EU embargo on Russian oil, *VoxEU*.
KSE Institute (2023), KSE Institute Russia Chartbook BOP and Budget under Pressure, April 2023, https://kse.ua/wp-content/uploads/2023/04/Chartbook_April2023.pdf (16 May 2023).
Marrow, A. and E. Fabrichnaya (2023, 2 March), Russia to extend capital controls amid continued economic pressure, *Reuters*.
Ministry of Finance of the Russian Federation (n.d.), Фонд национального благосостояния, https://minfin.gov.ru/ru/perfomance/nationalwealthfund (16 May 2023).
Ministry of Finance of the Russian Federation (2023a, 11 January), О проведении операций на внутреннем валютном рынке в связи с формированием дополнительных/выпадающих нефтегазовых доходов федерального бюджета, Press release, https://minfin.gov.ru/ru/press-center/?id_4=38331-o_provedenii_operatsii_na_vnutrennem_valyutnom_rynke_v_svyazi_s_formirovaniem_dopolnitelnykhvypadayushchikh_neftegazovykh_dokhodov_federalnogo_byudzheta (16 May, 2023).
Ministry of Finance of the Russian Federation (2023b, 4 May), Сведения о формировании и использовании дополнительных нефтегазовых доходов федерального бюджета в 2018-2023 году, https://minfin.gov.ru/ru/document?id_4=122094-svedeniya_o_formirovanii_i_ispolzovanii_dopolnitelnykh_neftegazovykh_dokhodov_federalnogo_byudzheta_v_2018-2023_godu (16 May 2023).
National Crime Agency (n.d.), Suspicious Activity Reports, https://www.nationalcrimeagency.gov.uk/what-we-do/crime-threats/money-laundering-and-illicit-finance/suspicious-activity-reports (16 May 2023).
Office of Financial Sanctions Implementation (2023), UK Maritime Services Ban and Oil Price Cap, Industry Guidance, HM Treasury, April 2023, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1149436/OFSI_Industry_Guidance_-_Maritime_Services_Ban___Oil_Price_Cap_-_April_2023.pdf (16 May 2023).
Office of Foreign Assets Control (2023a), Possible Evasion of the Russian Oil Price Cap, https://ofac.treasury.gov/recent-actions/20230417 (16 May 2023).
Office of Foreign Assets Control (2023b), Specially Designated Nationals And Blocked Persons List (SDN) Human Readable Lists, U.S. Department of Treasury, https://ofac.treasury.gov/specially-designated-nationals-and-blocked-persons-list-sdn-human-readable-lists (16 May 2023).
Reuters (2023, 28 March), Russia forces foreign firms to pay into budget as they leave, *Reuters*.
Ribakova, E. and B. Hilgenstock (2022), Countering economic coercion: How can the European Union succeed?, *Policy Brief*, Foundation for European Progressive Studies.
Sandbu, M. (2023, 7 March), Examining Russia's unsanctioned cash pile, *Financial Times*.
Setser, B. (2023, 2 March), Martin Sandbu of the FT picks up on a point that @clichfield1 has emphasized, *Twitter,* https://twitter.com/Brad_Setser/status/1631385567417204736 (16 May 2023).
Shin, F. and B. Judah (2023), Authoritarian kleptocrats are thriving on the West's failures. Can they be stopped?, Atlantic Council.
Thieriot, H., P. Katinas, I. Levi, J. Lietava, L. Myllyvirta and M. Pukarinen (2023), The Laundromat: How the price cap coalition whitewashes Russian oil in third countries, Centre for Research on Energy and Clean Air.
UK Government (2023), General licence – Oil Price Cap, INT/2022/2469656, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1134396/2469656_OFSI_OPC_GL_5_Feb.pdf (16 May 2023).
U.S. Department of the Treasury (2023, 2 February), Under Secretary of the Treasury Brian Nelson's Visit to the United Arab Emirates, Readout, https://home.treasury.gov/news/press-releases/jy1244 (16 May 2023).

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Industrial Policy

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Michael Grömling, Michelle Koenen, Gero Kunath, Thomas Obst and Sandra Parthie

Deindustrialisation – A European Assessment

The war in Ukraine has exacerbated pre-existing production problems in manufacturing networks originating from the coronavirus pandemic. Material shortages are compounded by uncertainties about sufficient energy supplies. Above all, energy has become more expensive for European industrial companies. All this has raised the question of whether permanent changes in economic structures will occur in the wake of these geo-economic burdens. Nevertheless, European economies differ significantly in their manufacturing shares, in the importance of energy-intensive industries and in their energy supply. Based on a survey of members of AIECE, an association of European economic research institutes, the risk of deindustrialisation in Europe is assessed. Thirteen out of 20 AIECE institutes stated that they do not expect the current energy problems and the associated price effects to have a permanent impact on the economic structure of their own country. However, the institutes also point out that structural changes may occur because energy-intensive industries may relocate to non-European countries. In contrast, relocation effects within Europe are estimated to be negligible.

Societies in Europe are facing enormous challenges in the current decade and beyond. Demographic change, most significantly the ageing of societies and the workforce, exacerbates existing shortages of skilled workers in many economies. This reinforces obstacles to production and endangers financing conditions of governments in general. Climate change requires fundamental societal and economic transformations. Technological progress and the various dimensions of digitalisation are putting business models across all sectors under considerable pressure to modernise and to adapt quickly. Last but not least, efficiency and productivity gains from more intensive international cooperation can no longer be reaped in times of geopolitical tensions.

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Multiple disruptions

The pandemic and the war in Ukraine have caused unprecedented economic challenges in many European countries. The coronavirus pandemic was accompanied by immense strains on the supply and demand side of the economy (Grömling, 2021). Production processes were widely disrupted by a lack of workers and disturbed supply networks. Demand came to a standstill as a result of lockdowns – especially in the personal services sectors. As a result, investment activities are still impaired in European countries (European Commission, 2023).

Since February 2022, many European economies have been affected by the burden associated with the Russian invasion of Ukraine (Celi et al., 2022). The war has an impact on three levels:

Additional production shocks. In addition to the supply disruptions caused by the pandemic, some European countries are facing considerable problems in energy supply since spring 2022, depending on the respective national energy supply mix and on the country's own resource endowment. Although substitution options have been developed and deployed to date, the future energy supply – mainly for companies – is not fully secured yet.

Disruptions to critical infrastructure can exacerbate production problems. All this affects not only individual companies, but also complex supply networks.

Additional cost shocks. Historically high costs for intermediate inputs and raw materials occurred already in 2021. The supply side issues with energy and raw materials – mainly due to the war – have lead to additional unprecedented cost shocks in many European economies. This causes increasing uncertainty among companies, creates additional transaction costs and changes international competitiveness within Europe as well as on a global scale. Rising labour costs – aimed at limiting the loss of purchasing power of private households – can further impair the competitiveness of companies. In some areas, these higher costs cannot be passed on to customers and may lead to a sharp drop in corporate earnings, which would have a negative impact on investment activity.

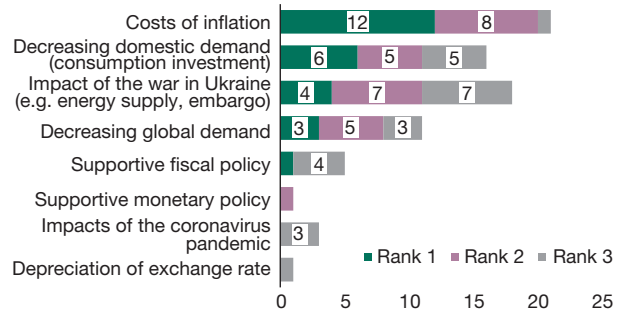
New demand shocks. Significantly higher prices at the producer and consumer level in many countries have a direct impact on the demand for consumer and investment goods. High inflation rates erode the purchasing power of private households. In view of the uncertain economic outlook and rising financing costs, companies are holding back on investment. In addition, there are possible long-term structural and reallocation effects as a result of inflation (Matthes et al., 2023). The global economy is losing momentum again, which affects foreign trade in many countries.

Sectoral adjustments as a result of the shocks

Against this background, many research institutes have revised their forecast for 2023 downwards. This paper illustrates the results of a survey among economic research institutes. The participants are members of AIECE (Association d'instituts européens de conjuncture économique), an association of European economic research institutes. Founded in 1957, the association includes 40 institutes from 20 countries and international organisations such as the European Commission, the Organisation for Economic Co-operation and Development, the International Monetary Fund and the European Central Bank. For the AIECE General Report Autumn 2022, the responses of 25 participating AIECE members were analysed. This survey was conducted and evaluated by the German Economic Institute (Grömling et al., 2022).

Figure 1 shows the main arguments put forward by the AIECE institutes that are driving the business cycle in their own country in 2023. Accordingly, the various effects of high inflation, decreasing domestic demand and the direct impact of the war in Ukraine – for example, through restricted energy supplies or trade restrictions as a result of the sanctions – are the main reasons for the subdued economic outlook in the respective economies. Given the high economic risks posed by the war in Ukraine and the pre-existing production disruptions resulting from the coronavirus pandemic, the current economic outlook is subject to considerable uncertainties. In this context, AIECE members were also asked how they assess certain forecasted downside risks to their respective economies. Commodity price shocks and associated high inflation rates are viewed as the most important downside risk, followed by the possibility of restricted energy supply and related production interruptions. This also applies to an expansion of geopolitical conflicts, including attacks on critical infrastructures. From a demand perspective, a slowdown in advanced economies, such as the United States, also poses a significant downside risk to economic forecasts for 2023.

Figure 1
Drivers of the business cycle in Europe in 2023
Number of AIECE members (rest to 25: no answer)



Notes: Question: Please choose the three most important factors according to their effect on economic growth for 2023 in your country and rank them from 1 to 3, with 1 being the most important.

Sources: AIECE Institutes; German Economic Institute.

This raises the question of whether permanent structural changes can occur in the wake of current economic circumstances. While we acknowledge the long-term effects of climate change and the associated costs of decarbonisation, the effects of demographic changes or the impacts of digitalisation on the economic structure, they are not at the core of our analysis. Rather, the focus is on whether and how the current geopolitical ruptures, the effects of supply and production disruptions and their associated price effects can have a lasting impact on the international competitiveness of companies, on business locations and the economic structure. Specifically, whether the manifold current adjustment burdens can lead to a permanent deindustrialisation.

In view of the current geo-economic conditions, deindustrialisation, i.e. a sustainable decline of the manufacturing share in total economic activities, can take place via various mechanisms:

- The threat of persistent supply chain disruptions due to a lack of or insufficient industrial inputs causes substantial issues to manufacturing production processes based on interconnected supply networks. This can promote incentives to produce more locally in customer markets – for example in North America or Asia. Protectionism, e.g. local content requirements, can reinforce the restructuring and relocation of manufacturing. There is also a debate in Europe on reshoring (Kolev and Obst, 2022; Sandkamp, 2022).

- The energy crisis triggered by the war poses a threat to energy-intensive industries in terms of stable energy supply (Graevenitz and Rottner, 2022). In industrial networks with a high degree of inter-sectoral cooperation, failures in critical domestic intermediates can lead to far-reaching production disruptions in other parts of the economy – causing a chain reaction.

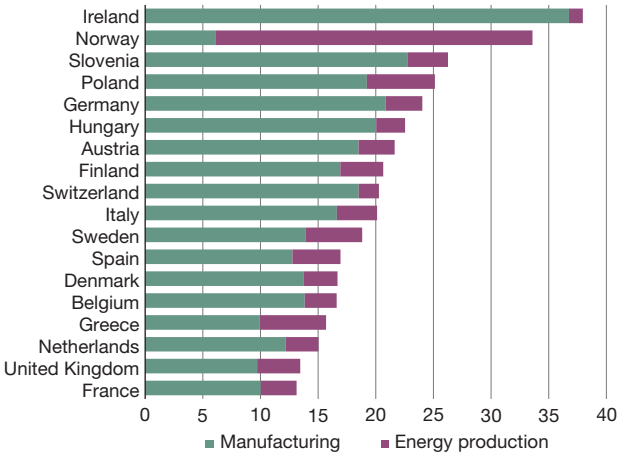
- The geopolitical changes alter the locational conditions of national economies and thus relative costs and relative prices. This leads to changes in price competitiveness in an international context. Examples include a wide range of cost factors, such as energy costs, labour costs, as well as government-set cost factors, e.g. subsidies, R&D conditions and taxes.

This article provides empirical facts about the European countries for which the risk of deindustrialisation may be relevant. Based on the AIECE survey mentioned above, it also elaborates on how the risk of deindustrialisation is assessed for those countries represented by AIECE institutes and it ends with some pertinent economic policy conclusions.

Potential vulnerability to deindustrialisation

The following figures lay the empirical foundation for a discussion on how deindustrialisation is relevant for the economies considered here. First, we look at the importance of manufacturing in the sectoral structure of the economies. Figure 2 shows the share of gross value added by manufacturing as a percentage of total value added. Accordingly, there are considerable differences in the importance of the industrial sector within the 18 countries considered here – and represented by the AIECE institutes in the General Report Autumn 2022 (Grömling et al., 2022). In 2021, four of those 18 countries (Ireland, Slovenia, Germany and Hungary) had a manufacturing share of 20% or more. In this context, the long-term different structural changes in

Figure 2
Industry shares in international comparison
Value added of manufacturing and energy production as a percentage of total economy, 2021



Sources: OECD; German Economic Institute.

Europe must also be considered (Nickel et al., 2008; Romano, 2016; Grömling, 2019). By contrast, four countries (Norway, Greece, United Kingdom and France) had manufacturing shares of 10% or less in 2021.

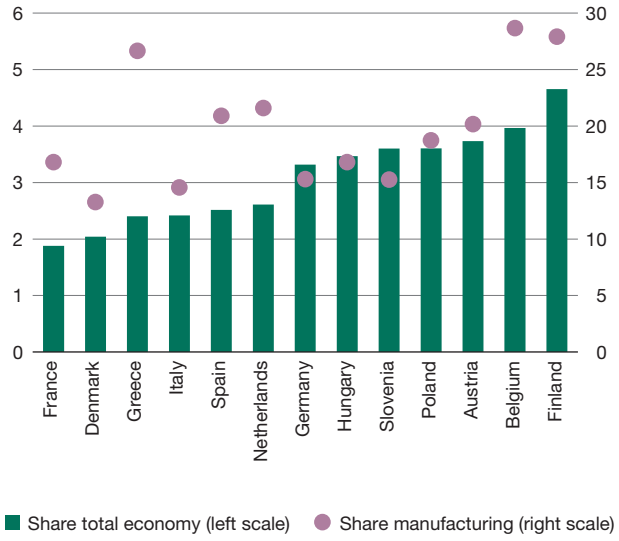
Therefore, the question of deindustrialisation has a very different macroeconomic relevance in the economies considered. As shown in Figure 2, if the value added by the energy-producing industrial sector is also taken into account, the ranking changes somewhat (purple bars). The high importance of energy production in Norway's economic structure is striking. While Norway has the smallest share of manufacturing, energy production plays a central role, accounting for almost 28% of total value added.

As pointed out earlier, the energy crisis triggered by the war in Ukraine can have asymmetric effects in individual economies. This is due, *inter alia*, to the importance of energy-intensive manufacturing branches (Manderson and Kneller, 2020). Their business models and production processes are exposed to considerable uncertainties due to an energy supply that is not fully guaranteed or in the worst case threatened by stoppages, elevating the risk of production relocations and so-called tipping effects. The latter is the case when energy-intensive companies have a central role as suppliers for other manufacturing sectors. In the wake of an exodus of energy-intensive industries, other manufacturing sectors might follow. Figure 3 shows the importance of energy-intensive industries. The definition of energy-intensive industries was adopted from the German Federal Statistical Office. Accordingly, the energy-intensive industries include the chemical in-

Figure 3

Relevance of energy-intensive industries in international comparison

Value added of energy-intensive manufacturing branches[1] as a percentage of total economy and manufacturing, 2019



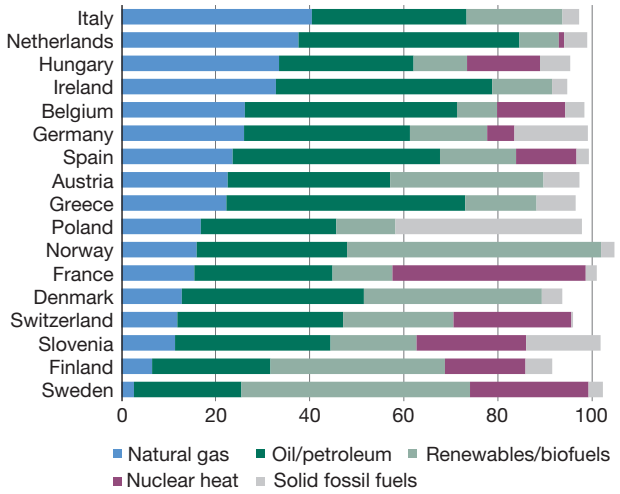
Notes: [1] Chemical industry (C 20), basic metal industry (C 24), coke/refined petroleum products (C 19), non-metallic mineral products (C 23), paper/paper products (C 17).

Sources: OECD; German Economic Institute.

Figure 4

Energy mix in international comparison

Share of energy sources as a percentage of gross available energy, 2020



Note: Difference to 100: Non-renewable waste, net exports of electricity.

Sources: Eurostat; German Economic Institute.

dustry (C 20), basic metal industry (C 24), coke/refined petroleum products (C 19), non-metallic mineral products (C 23), paper/paper products (C 17). The numbers represent the respective NACE codes, an internationally used industry standard classification system. Figure 3 shows that these energy-intensive industries account for 2%-5% of total gross value added in most of the economies shown here (for the other AIECE countries there are no comprehensive data available). Within manufacturing, however, the energy-intensive sectors play different roles in the individual countries. On average, the overall economic weight of energy-intensive industries amounts to around 3% and their significance within manufacturing to around 20%.

So, which economies are likely to face persistent constraints on their energy supply and sustained higher energy costs in the future? The energy crisis affects individual European economies to a different extent, depending on the energy mix of each country – i.e. the structure of their energy supply – as well as the availability of own energy resources (Manderson and Kneller, 2020). In the wake of the war, greater uncertainties and adjustment burdens arose for many economies because the amount of available energy came from imports of Russian natural gas or crude oil. Before the war in Ukraine, almost half of Europe's gas imports came from Russia (IEA, 2022).

In this context, Figure 4 shows the energy mix of the economies considered here for the year 2020. Natural gas and crude oil are very important for a number of European economies. The share of natural gas in gross available energy constitutes 40% in Italy, 38% in the Netherlands and 26% in Germany. Renewable or nuclear energy play a major role in some countries, with the share of renewables at 54% in Norway or at 49% in Sweden. This may not be insignificant for the dispositions of energy-intensive economic sectors with regards to the security of the energy supply and the energy costs, which are of great importance for energy-intensive companies in particular.

Assessment by AIECE institutes

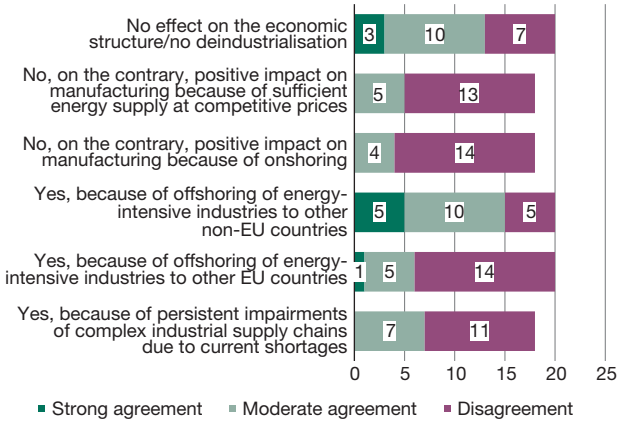
The AIECE institutes were given a question with six possible answers to assess the risk of deindustrialisation (the specific question is given in Figure 5). Of the total of 25 participating institutes, 20 took part in this discussion. Concrete statements for individual countries cannot necessarily be derived from the answers, since for some countries several institutes participated without having a national consensual assessment. In the following, the respective institutes and their assessments will not be specifically named.

Looking at their own economies, 13 institutes generally stated that they do not expect the current energy problems

Figure 5

Evaluation of the risk of deindustrialisation in Europe

Number of AIECE members (rest to 25: no answer)



Notes: Question: Do you expect a sustained deindustrialisation in your country as a result of the current energy supply shortages and high energy prices? Please indicate your level of agreement using the defined categories.

Sources: AIECE Institutes; German Economic Institute.

and the associated price effects to have any lasting impact on the economic structure and thus, in a figurative sense, do not expect deindustrialisation. In contrast, seven institutes did not agree with the question "No effect on the economic structure/no deindustrialisation". This tends to be the case in Austria, Germany, the Netherlands and to some extent, in Belgium and France. In these countries, the issue of a deindustrialisation is discussed more strongly.

The institutes point out that structural changes can occur because energy-intensive industries are relocated to countries outside of Europe. Reference can be made here to countries such as the USA, which offer locational advantages due to the large availability of own energy resources and lower energy prices. Fifteen institutes have affirmed this statement to varying degrees. Institutes from Austria, Belgium, Denmark, France, Germany, Italy, the Netherlands, Slovenia, Hungary and Norway support such a transmission channel of structural changes away from manufacturing in Europe. A deindustrialisation due to persistent impairments of complex supply chains caused by energy shortages and the relocation of energy-intensive industries to other EU countries is only seen by a moderate portion of the institutes surveyed, and only to a moderate extent. This is the case in Denmark, France, Germany, Hungary and Italy.

In this context, it was also asked whether there might be positive effects on manufacturing as a result of the current economic and energy conditions. This could be the case if an economy has a sufficient energy supply with competitive energy prices – and therefore a locational advantage. In addition, global restructuring of supply networks can lead to a relocation of manufacturing production and thus to reindustrialisation in European countries. However, only institutes from Sweden and Poland moderately agree with both options. The majority of the institutes surveyed, on the other hand, do not expect a reindustrialisation in their own country.

In summary: 13 out of 20 AIECE institutes stated that they do not expect the current energy problems and the associated price effects to have a permanent impact on the economic structure of their own country. Nevertheless, the institutes also point out that structural changes may occur because energy-intensive industries may relocate to non-European countries. In contrast, relocation effects within Europe are estimated to be moderate.

Policy implications

European policymakers, sensitive to the plights of energy consumers and potential negative implications of the various shocks to their economies, discussed comprehensive changes and interventions in the design of energy markets as well as support measures to households and industries for the winter 2022/2023. The EU itself has only a shared competence in energy policy and thus cannot, against the will of its members, introduce changes to the national energy mixes, nor to the design of the energy market or to the price-setting mechanisms. It can only provide a forum for exchange, can facilitate voluntary agreements of member states or market actors or produce an impact assessment for different policy measures (European Commission, 2021). Thus, national responses to the energy crisis varied, reaching from the setting of national price caps to the construction of new energy infrastructure, new bilateral purchasing agreements with third country suppliers, to different levels of financial support to their industries and households. This uncoordinated approach already had many negative consequences, such as competition for energy resources, skyrocketing energy prices and the furthering of existing inequalities of the respective economies in 2022. Proposals regarding the joint purchasing platform of, e.g. gas or oil, the rapid improvement of cross-border energy infrastructure, as well as a discussion on the best design for today's energy market therefore have not come to an end.

There is no consensus among the EU member states on whether our energy systems need more or less state intervention, need to be left to the market, or require more regulation. However, like the policy responses to the COVID-19 crisis, e.g. the debate on reshoring, there is a

danger of market distortions given the centralised nature of such emergency measures. In parallel to these discussions at the European level, governments were keen to take national actions, cushioning the energy price shocks or even nationalising some energy companies. To make this possible, however, derogations from the EU's hitherto strict state aid rules became necessary. The relevant regulatory framework had already been temporarily suspended in 2020 (European Commission, 2020) to provide national governments with room for manoeuvre in dealing with the effects of the coronavirus pandemic. It was decided to prolong the suspensions for 2022 (European Commission, 2022) and to also allow state aid for energy-related measures. In the mid-term, however, it is neither sustainable nor good governance to suspend rules ad infinitum.

Considering the challenging geopolitical landscape, a change to the state aid regulatory framework might be warranted. Given its declining share in the global economy, it is imperative that the EU improves its productivity and competitiveness. For this to happen, the EU must adopt a competitiveness agenda that strengthens the conditions for EU businesses to innovate, invest and trade, thereby creating a common good. Europe needs to improve its own industrial capacity and resources, and to develop new business ecosystems. Energy sources and supply chains of raw materials, intermediate products and components must be diversified. The reorganisation of production and supply chains is the responsibility of companies, while the role of policymakers is to support and facilitate it. The Single Market remains the backbone of the EU business environment (as elaborated in the "Single Market Economic Papers" by the European Commission's Directorate General on Growth). But it requires full implementation and enforcement of common rules. Member states must avoid a proliferation of national deviations and new regulations conflicting with common rules. Besides effective market and competition rules, adequate infrastructure is a necessity for the functioning of the Single Market. It requires investment in future-proof transport, energy, and data networks, with particular focus on providing critical infrastructure, which is crucial for emergency preparedness.

A major challenge that remains is dealing with the longer-term effects of the current energy crisis. The outlined policy responses on a national and European level have so far focused mainly on short-term crisis management rather than on maintaining medium-term competitiveness in Europe. A revival of industrial policy in Europe or a possible reform of the common electricity market can alleviate the immediate dangers of deindustrialisation. However, careful preparation in terms of energy policy is necessary, especially for the winter of 2023-24, which could potentially be more problematic than the previous one. In the best-case scenario, gas prices will settle at a significantly higher level than before the war and cause short-term economic losses. If we look at the issue of energy dependency, energy mix and industrial shares in the individual EU27 member states, this has a significant potential to further disrupt production processes and worsen the competitiveness of energy-intensive industries. There is a risk that permanent investment and production will be shifted abroad, where energy costs are lower. Hence, Europe would lose part of its industrial base. While immediate losses in the total manufacturing sector are not yet evident, the risk of a loss of value added and competitiveness presents an economic challenge for Europe; addressing this risk should remain a top priority.

References

Celi, G., D. Guarascio, J. Reljic, A. Simonazzi and F. Zezza (2022), The Asymmetric Impact of War: Resilience, Vulnerability and Implications for EU Policy, *Intereconomics*, 57(3), 141-147, https://www.intereconomics.eu/contents/year/2022/number/3/article/the-asymmetric-impact-of-war-resilience-vulnerability-and-implications-for-eu-policy.html (5 July 2023).

European Commission (2020), Communication from the Commission, Temporary Framework for State aid measures to support the economy in the current COVID-19 outbreak, 2020/C 91 I/01.

European Commission (2021), Communication from the Commission, Tackling rising energy prices: a toolbox for action and support, COM(2021) 660 final.

European Commission (2022), Communication from the Commission, Temporary Crisis Framework for State Aid measures to support the economy following the aggression against Ukraine by Russia, *OJ*, C 426/1, 1-34.

European Commission (2023), European Economic Forecast Spring 2023, *Institutional Paper*, 200.

Graevenitz von, K. and E. Rottner (2022), Do Manufacturing Plants Respond to Exogenous Changes in Electricity Prices? Evidence From Administrative Micro-Data, *ZEW Discussion Paper*, 22-038.

Grömling, M. (2019), Industrieller Strukturwandel im Zeitalter der Digitalisierung, *ifo Schnelldienst*, 72(15), 8-12.

Grömling, M. (2021), COVID-19 and the Growth Potential, *Intereconomics*, 56(1), 45-49, https://www.intereconomics.eu/contents/year/2021/number/1/article/covid-19-and-the-growth-potential.html (5 Jul 2023).

Grömling, M., M. Koenen, G. Kunath, T. Obst and S. Parthie (2022), AIECE General Report Autumn 2022, *IW-Report*, 65.

IEA (2022, 3 March), How Europe can cut natural gas imports from Russia significantly within a year, Press release.

Kolev, G. and T. Obst (2022), Global value chains of the EU member states. Policy options in the current debate, *IW-Report,* 4.

Manderson, E. and R. Kneller (2020), Energy endowments and the location of manufacturing firms, *Journal of Environmental Economics and Management,* 101, 102301.

Matthes, J., M. Grömling, M. Demary, B. Kauder, B. Busch, G. Kunath and T. Obst (2023), Up, Up and Away? A Price Stability Guide for Policymakers, IN FOCUS – Wilfried Martens Centre for European Studies.

Nickel, S., S. Redding and J. Swaffield (2008), The Uneven Pace of Deindustrialisation in the OECD, *The World Economy*, 31(9), 1154-1184

Romano, L. (2016), Understanding Structural Divergence in European Manufacturing, *Intereconomics*, 51(5), 288-294, https://www.intereconomics.eu/contents/year/2016/number/5/article/understanding-structural-divergence-in-european-manufacturing.html (5 July 2023).

Sandkamp, A. (2022), Reshoring by Decree? The Effects of Decoupling Europe from Global Value Chains, *Intereconomics*, 57(6), 359-362, https://www.intereconomics.eu/contents/year/2022/number/6/article/reshoring-by-decree-the-effects-of-decoupling-europe-from-global-value-chains.html (5 July 2023).

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Non-Voting Party and Wage Inequalities: Long-Term Evidence from Italy

By means of a long-run analysis on electoral and inequality data, this article shows that there exists a temporal correlation between inequalities and non-voting behaviour. Non-voting is progressively becoming a widespread phenomenon, beyond specific national contexts, and challenges the functioning of democracies in advanced capitalist countries. Notably, data on electoral results in Italy do not show a clear leading group of non-voters. Although historically concentrated in southern Italy and predominantly female, non-voters are proportionally increasing in the centre and in the north of the country, independently of the gender dimension. The root causes of the phenomenon should be traced back not only to the political and institutional dimension, but also to a widespread socio-economic determinant, namely labour market inequality, the driver addressed in this article.

The last Italian general election has shown a dramatic decline in electoral participation. For the first time since the fascist *ventennio*, a far-right led government has won the majority (Dosi and Roventini, 2022), while in the past decade, mixed, multi-party coalitions were common. The end of Berlusconi's era, including four governments in which he served as Prime Minister from 1994, and the austerity phase in 2011, has ushered in a period of turbulence in the Italian political landscape that lacks dominant leading parties. However, given the strikingly and continuously increasing numbers of electoral abstention in national and local elections, the true emerging winner has been the non-voting party (*partito del non voto*).

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Non-voting and abstentionism have been traced back to multiple causes, namely, disaffection, dismantling of mass parties, decaying participation in democratic processes and different forms of opposition. These causes are often linked to the ideological and political factors (Koch et al., 2021; Mannheimer and Sani, 2001) that emphasise the failure of political parties to mobilise voters (Mair, 2013). Non-voting is also interpreted as an expression of individual alienation (Adams et al., 2006), or rather the emergence of a strong criticism against the political system in place. Few studies challenge the material and economic dimensions behind voter participation decline (Bloise et al., 2021; Dalton, 2017; Pianta, 2020; Schäfer and Schwander, 2019).

In this paper, we link trends in non-voting with the social and economic fragmentation of Italian capitalism in its neo-liberal phase. To this aim, we leverage the comparison between two long-term datasets: electoral ballots from 1948 to the last general election in 2022, and the wage remuneration of private employees from 1983 to 2018.

We embrace the underlying hypothesis of a systematic dismantling of democracy due to, among other factors, the rise of overall wage inequality (Galbraith and Hale, 2008; Sassen, 2003). Hence, we investigate the relationship between non-voting and overall wage inequality and among groups of workers, with a special focus on the gender and geographical dimensions.

We mainly focus on these two issues because, firstly, as shown below, territorial divides are very relevant in explaining the lack of electoral participation and the distrust in traditional political parties (Rodrìguez-Pose, 2018). Secondly, the gender dimension is of crucial importance, especially given the increasing female participation in the socio-economic sphere and in formal labour markets in the examined period; we therefore analyse whether and to what extent male and female non-voting patterns differ. Indeed, historically participation in politics has been more a matter of male rather than female voters. However, greater numbers of women in the workforce may have increased their participation in the electoral process. Is that the case? And how does the gender wage gap lead to non-voting?

To link the long-run evolution of abstentionism and economic inequality trends, we adopt the wavelet analysis, a methodology that allows for the identification of patterns of co-movements and anti-movements (or lack thereof) in long-run time series. Wavelet analysis allows us to move from the time to the time-and-frequency domain, identifying the cycle waves and lengths of distinct time series. Given its explanatory power, this method is increasingly adopted in long-run macro-econometric studies, e.g. on technological evolution (Staccioli and Virgillito, 2021) or labour share long-run dynamics (Charpe et al., 2020).

Data and method

We rely on two datasets on electoral ballots and wage dynamics. Data on voting behaviour is drawn from the Ministry of Internal Affairs open-data website Eligendo,[1] which provides aggregated and disaggregated information on electoral results that covers the 1946 Constituent Assembly, and all political, European, regional and administrative elections.

In particular, we select data on Italian political elections from 1948 to 2022. Results for the elections of both members of the Chamber and Senate are documented, reporting information on the number of electors, voters and blank ballots for each province, constituency and municipality; the number of male and female electors and voters is reported only from 2001 onwards.

In the following analyses, we consider Chamber data only and compute abstentionism including both non-voters and the number of blank ballots, however, not for the gender dimension, as no gender distinction is provided for blank ballots.

1 Available at https://elezioni.interno.gov.it/opendata.

The dataset on wage dynamics relies upon the Italian Institute of Social Security (INPS) longitudinal sample (*Rilevazione dei contratti di lavoro*),[2] a high-quality micro-aggregated level data based on administrative records. The dataset has a longitudinal structure and is based on a large representative sample of employees in the private sector – except for agricultural and domestic jobs – from 1982 to 2018. Therefore, it does not include information on public employees or any type of self-employed jobs.

For each year, the *Rilevazione dei contratti di lavoro* open archive contains information on the number of jobs, yearly or weekly gross salaries and weeks of work as reported by private sector employers, together with a number of socio-professional characteristics, such as gender, age, typology of employment, region and economic sector of activity.

The wavelet transform provides a time-frequency representation of the original signal, thereby retaining all the relevant information carried by the signal but allowing for the capture of long-run movements. The wavelet transform decomposes the time series under analysis x(t) in terms of some basis functions (wavelets), and thus corresponds to the convolution of x(t) and a set of wavelets. In the wavelet approach, the time-frequency window is adaptive and local, and strikes a better balance between time domain and frequency domain.[3]

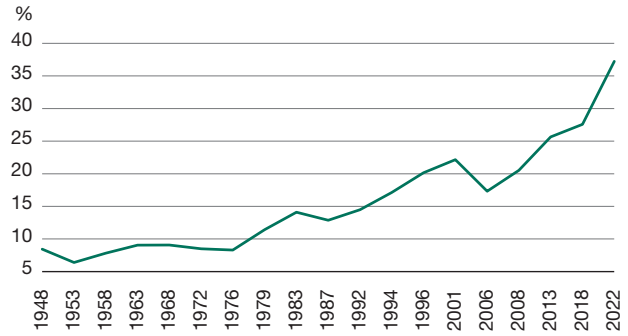
Abstentionism since 1948

Figure 1 shows four phases of abstentionism since the first election in 1948.[4]

Below 10%, from 1948 to 1979. This was the period of the Italian economic miracle, with average growth rates higher than 5% during 1948-1962 and above 4% during 1963-1976 (Barca, 2010). Following 20 years of dictatorship, this was the phase of post-war restructuring and peak politicisation for Italian society characterised by the central role of mass political parties, most prominently the Christian Democrat and the Communist party. This large political participation was both triggered and channelled by mass parties and trade unions until the mid-1960s. From 1968 onwards, political consciousness also developed and found other outlets, outgrowing the perimeter of institutional politics. The final phase

2 INPS Open Data are available online on INPS website.
3 We opt for the classical Morlet mother wavelet function.
4 It is important to recall that, from 1946 to 1993, voting was initially enshrined as an obligation (Art. 1, D.lgs. n. 74/1946). However, consistent with the literature, we do not assume that this obligation has played a significant role in voter participation, since the penalties were almost never enforced (Pallante, 2022).

Figure 1
Abstentionism in Italy, 1948-2022

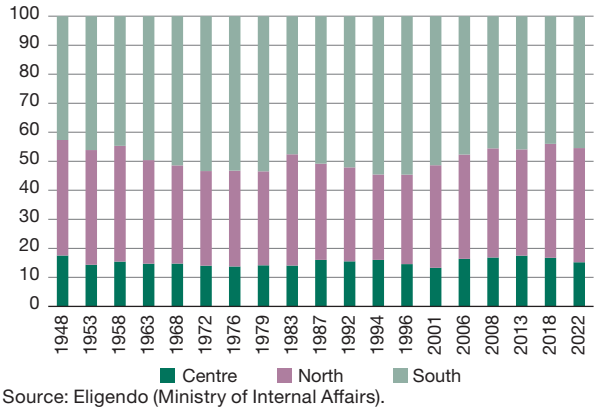


Note: The percentage of abstentions is calculated using both the number of abstentions and the number of blank ballots over the total number of electors.

Source: Eligendo (Ministry of Internal Affairs).

Figure 2
Abstentionism in Italy by geographical area, 1948-2022

percentage share



Source: Eligendo (Ministry of Internal Affairs).

of this period is the last major reformist season in Italian politics. Indeed, different progressive laws on economic, social and civil rights were passed, in many instances thanks to civil society mobilisations. Exemplary laws are, e.g. the Workers Statute (1970), Divorce Law (1970), Fiscal Progressive Income Taxation (1973), National and Public Health Service (1978), and the Abortion Law (1978).

Between 10% and 20%, from 1980 to 1996. This was an important transitional phase in Italian politics, with major parties' realignment (Wellhofer, 2001) and the first of a long series of heavy blows to large political participation. This period went through a major political and corruption scandal *Mani Pulite* ("clean hands") in 1992 that led to the dissolution of the main parties of the so-called First Republic and to the emergence of Berlusconi's political force. This phase started with the largest trade union defeat of the decade at Fiat in 1980 and was marked by the abolition of the wage-inflation indexation in 1992 and the beginning of the *Periodo della concertazione* ("concertation period"), a period of wage compression agreed upon by trade unions confederations and the Ciampi Government in 1993.

Between 20% and 30%, from 1997 to 2018 (except for the 2006 elections). This phase was characterised by alternating "third-way" centre-left and Berlusconi governments in substantial economic policy continuity. It was in fact characterised by deep transformations and a neo-liberal turn in the labour market, with the start of flexibilisation by the *Pacchetto Treu* in 1997 and the subsequent reforms aimed at weakening labour market institutions. The scenario brought out the need for political alternatives, a demand embodied by the new party *Movimento Cinque Stelle* (Five Star Movement), which challenged established parties, particularly during the austerity phase, from 2011, which was managed by technocratic governments substantially supported by the centre-left. The last phase, up until the most recent electoral cycle, has been characterised by an extreme volatility of consensus and a strong decline in electoral participation, symptoms of a less identity-driven vote.

Above 30%, in the last electoral cycle, reaching 37% of non-voters. This was a phase marked by international turmoil due to the pandemic and the war in Ukraine. Two governments led by the Five Star Movement, and a technocratic government led by Mario Draghi have faced exploding inequalities in the labour market, for example, in terms of differentiated access to working from home, exposure to contagion, wage and employment losses (Cetrulo et. al., 2022), and the energy and ensuing profit-inflation spiral (Stiglitz and Regmi, 2023).

Geographically, abstentionism is not equally distributed. It has been historically higher than average in southern Italy, with, for instance, Calabria and Sicily emerging as top non-voting regions. Conversely, central and north-erneastern regions, such as Tuscany and Emilia Romagna, have generally had higher voting rates, as a result of historical and political attitudes and a higher proportion of left leaning voters (Passarelli and Tuorto, 2012).

Figure 2 shows the geographical breakdown of non-voting trends by centre, north and south. Notably, within the increasing pattern documented in Figure 1, we do not detect strong turning points in the overall distribution

Figure 3
Voters and abstainers in Italy by gender and geographical area

Source: Eligendo (Ministry of Internal Affairs).

of the non-voting rate, which remains almost constant across macro-regions. In the last phase of increasing abstentionism since 2006 elections, there is an increase in non-voters in both the centre and north of the country.

In terms of the gender divide, we consider separately the share of male and female non-voters since 2001, the first year in which the information is available. The female share of non-voters is stable at around 60% over time. This information collides, however, with two other coexisting trends: in the examined period, female participation in the labour force at the national level is approximately 50% – albeit with deep regional differences: female participation in the north is around 70%, while it is only 33% in the south (Mancini, 2017). However, such different distribution in labour market participation is not reflected in non-voting behaviour, where we detect an almost constant between males (40% of abstainers) and females (60% of abstainers). According to such evidence, although overall voting participation has been dramatically decreasing, this decrease has been equally proportional across macro-regions and by gender. In this respect, the increasing share of non-voters does not seem to be attributable to any idiosyncratic electoral dynamics linked to specific regions or to a gender dimension.

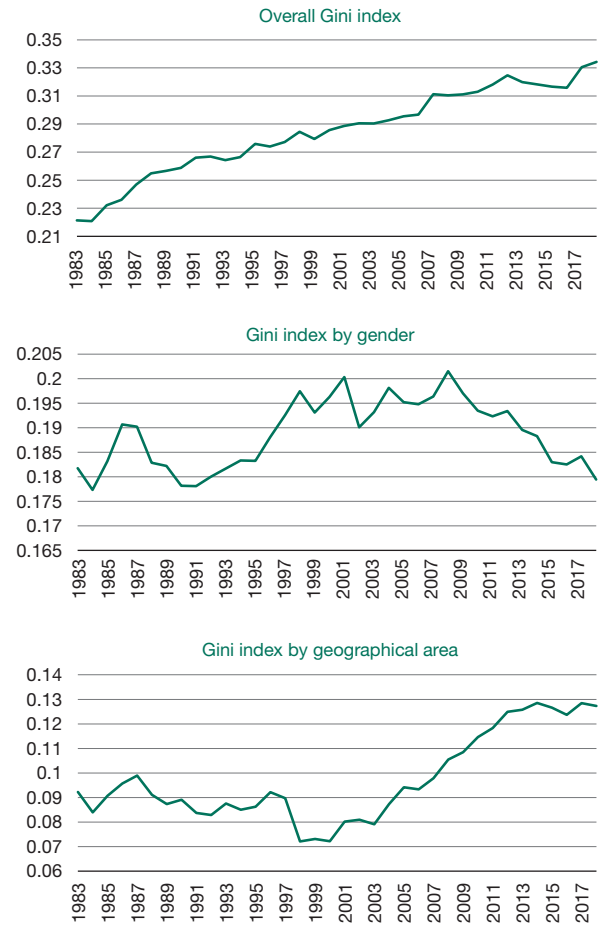
Figure 3 presents non-voting behaviour by gender and geographical area over time. While female non-voters in the south historically represent the largest non-voting group, with a 30%-70% ratio in 2001 compared to a 20%-80% ratio of female and male non-voters/voters in other regions, this ratio keeps increasing over time, and it reaches a maximum of 50% of female abstentionism in the south in 2022. In line with a lack of a specific group behaviour behind non-voting, the ratios of the other groups keep rising, with more similar group dynamics. In fact, in the last electoral ballot, the ratio is in the range of 35%-65% for almost all considered groups except for voters in the south.

The difficulty in identifying clear attributes that are able to explain increasing non-voting prompts us to look at the macroeconomic determinants that might contribute to these patterns. In particular, the impact of wage inequality on voting participation is relatively understudied (Franzini, 2022). We move therefore into the analysis of overall and group wage inequality.

Inequality since 1983

The recent literature has documented a remarkable surge in wage inequality in Italy since 1983 (Franzini and Raitano, 2019). This phenomenon, which started around the same time as the defeat of metal workers in 1980 at the Fiat factory, was then marked by a series of laws aimed at reducing workers' bargaining power and labour protection (Cetrulo et al., 2023). Among the major legislative changes enacted during this period, it is important to mention the end of wage indexation to inflation in

Figure 4
Gini index in Italy, overall and by group, 1983-2017



Source: Rilevazione dei contratti di lavoro (INPS).

1992, the introduction of flexible contracts in 1997 and the Jobs Act in 2015. This radical deregulation process has led to a huge wage compression and a massive rise in the share of non-standard jobs. What is more, consistently with other advanced capitalist economies, increasing inequality among the highest earners has been recorded, with only higher-level professionals among employed workers appropriating the largest benefits in (otherwise stagnant) wage growth.

Figure 4 provides an account of the temporal dynamics of the Gini coefficient overall and by groups, with focus on the gender and geographical dimensions. In the context of a general increasing trend of the overall Gini coefficient (from 20% to 33% in 35 years), we observe that, firstly, the Gini index by gender has been overall stable over time, oscillating in the 18%-20% range, and remarkably increasing until 2008; and secondly, from 2008 onwards, the Gini index by geographical area has been rising more sharply.

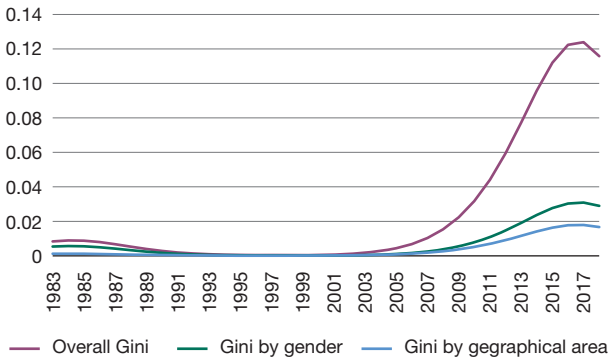
Although the literature shows that within-group inequality is the prevailing component in both the gender and geographical dimensions (Cetrulo et al., 2023), we find it appropriate to look at between-group inequality as it gives an account of the relative positioning among groups. The gender wage gap has remained constant over the past 35 years. This evidence is quite alarming considering the increasing female participation in formal labour markets. Further, it is informative about the lower-level jobs, such as low-paid service jobs, which female workers often fill and which usually offer only temporary or involuntary part-time job contracts. Regarding geographical divergence, the increasing trend observed over time is the exacerbation of territorial divides in Italy, with the north-south gap emerging not only in the specialisation in patterns of production (Sbardella et al., 2021) and infrastructure (Viesti, 2021), but also in the labour market and distribution spheres (Fanti et al., 2023). The increasing geographical divide is also similar to other economies, like the internal vs coastal areas of the US, the north-south divide in the UK and France, and the east-west divide in Germany. These increasing socio-economic divergences within national territories should be acknowledged as key elements in understanding the emerging political distrust of large segments of the population (Mitsch et al., 2021).

Using data from Eligendo, we can account only for the geographical and gender dimensions of voting (while no information is provided in terms of other attributes of voters, such as age or income). Our goal is to understand the extent to which there might be a link between the overall abstentionism rate and the patterns of total and group inequality.

Is inequality the root of non-voting?

To answer our research question, we perform a wavelet analysis between non-voting and inequality, mapped by both the overall Gini index and the group inequality indices. We restrict the analysis to the overlapping 1983-2018 period and, before performing the wavelet analysis, we apply the Christiano-Fitzgerald methodology to filter out the trend component and thus focus only on the cyclical component of the series (Christiano and Fitzgerald, 2003). We deem the cyclical component to be more appropriate for our analysis in view of the time trend dimension and the different frequencies of the events (electoral ballots are quite irregular).

Figure 5
Cross-wavelet power spectra



Notes: Wavelet cross power spectra of CF-filtered series. Time average values between medium-long (>5.5) periods, for overall Gini and by groups.

Sources: Rilevazione dei contratti di lavoro (INPS) and Eligendo (Ministry of Internal Affairs).

Notably, the results of the wavelet analysis indicate distinct behaviours between the overall Gini coefficient and Gini by groups. While co-movements in the overall Gini index emerge only at the beginning and at the end of the timespan and with opposite patterns, out of phase until 1990 and in phase since 2008, with relatively high frequencies (2-5 years on the y-axis), the Gini index by groups appears to be in phase with non-voting, at relatively low frequencies (5-11 years). The co-movements emerge particularly since 2000, when abstentionism reached over 20%, and appears to be long lasting, up until last years in the time frame.

In order to have a comparative account of the intensity of the power spectrum in each of the three series of inequality, we calculate the average intensity of the power spectra for each year and distinguish values at medium-long (low frequencies, above 5.5) and at medium-short (high frequencies, below 5.5) periods. Figure 5 presents the results of the average power spectra across medium-long periods each year. The peak of the cross-power spectra starts after the 2000s and the intensity of the overall Gini power spectrum is larger than the ones of Gini by groups, due to different absolute levels of the three indices. Notably, comparing gender and territorial inequalities, the intensity of the cross-power spectrum is higher with respect to gender-wage, rather than geographical-wage gaps.

Conclusions and policy implications

By means of a long-run analysis on electoral and inequality data, this article shows that there exists a temporal correlation between inequalities and non-voting behaviour. Non-voting is progressively becoming a widespread phenomenon, beyond specific national contexts, and challenges the functioning of democracies in advanced capitalist countries (Mair, 2013; OECD, 2019; Powell, 1982). Europe is gradually converging towards the American model, historically characterised by a dramatically low degree of voting participation (except for the historical record of 66% participation in the 2020 election that pitted Biden against Trump). The lack of participation in voting is not only a signal of detachment from the political sphere, but it also signals an overall dismantling of the coupled dynamics of the economic and social spheres, and the corresponding rights, in democratic institutions.

Notably, data on electoral results do not show a clear leading group of non-voters, who, although historically concentrated in southern Italy and more prevalent among women, are proportionally increasing also in the centre and in the north of the country, independent of gender dimension. If so widespread, the root causes of the phenomenon should be traced back not only to the political and institutional dimension, but also to widespread socio-economic determinants, such as inequality in labour market, the driver we have explored in this article. The increasing intensity co-movements of inequality and non-voting after the 2000s can also be traced back to alternative political and socio-economic sources, given that this phase was characterised by the juncture between the flexibilisation of labour markets and the establishment of the spectacular politics embodied by the Berlusconi era.

The rise of the non-voting party is a threat to the opportunity to manifest contrasting claims and interests in the political sphere, making the conflict of ideas explicit, which is ultimately what democracy should be about. If citizen participation in the political process dwindles, the divide between the elite and the people will be amplified, as well as the growing gap in their respective political influence (Gilens et al., 2014). Noting that inequality is a long-run determinant of electoral disaffection, policies should be aimed at increasing the number of good quality jobs while reducing unequal treatment in the workplace.

References

Adams, J., J. Dow and S. Merrill (2006), The political consequences of alienation-based and indifference-based voter abstention: Applications to presidential elections, *Political Behavior*, 28, 65-86.

Bloise, F., D. Chironi and M. Pianta (2021), Inequality and voting in Italy's regions, *Territory, Politics, Governance*, 9(3), 365-390.

Cetrulo, A., D. Guarascio and M. E. Virgillito (2022), Working from home and the explosion of enduring divides: income, employment and safety risks, *Economia Politica*, 39(2), 345-402.

Cetrulo, A., A. Sbardella and M. E. Virgillito (2023), Vanishing social classes? Facts and figures of the Italian labour market, *Journal of Evolutionary Economics*, 33(1), 97-148.
Charpe, M., S. Bridji and P. Mcadam (2020), Labor share and growth in the long run, *Macroeconomic Dynamics*, 24(7).
Christiano, L. J. and T. J. Fitzgerald (2003), The band pass filter, *International Economic Review*, 44(2), 435-465.
Córdova, A. and G. Rangel (2017), Addressing the gender gap: The effect of compulsory voting on women's electoral engagement, *Comparative Political Studies*, 50(2), 264-290.
Dalton, R. J. (2017), *The participation gap: Social status and political inequalit*y, Oxford University Press.
Dosi, G. and A. Roventini (2022), The Leopard: How a Post-Fascist Party Rose to Power in Italy, *Intereconomics*, 5, 270-271, https://www.intereconomics.eu/contents/year/2022/number/5/article/the-leopard-how-a-post-fascist-party-rose-to-power-in-italy.html (20 July 2023).
Fanti, L., M. C. Pereira and M. E. Virgillito (2023), The North-South divide: sources of divergence, policies for convergence, *Journal of Policy Modeling*, 45(2), 405-429.
Franzini, M. and M. Raitano (2019), Earnings inequality and workers' skills in Italy, *Structural Change and Economic Dynamics*, 51, 215-224.
Franzini, M. (2022), Disuguaglianza economica, comportamenti elettorali e disuguaglianza politica in C. Fumagalli and V. Ottonelli (eds.), *Votare o no La pratica democratica del voto, tra diritto individuale e scelta collettiva*, 61-73, Fondazione Giangiacomo Feltrinelli.
Galbraith, J. K. and J. T. Hale (2008), State income inequality and presidential election turnout and outcomes, *Social Science Quarterly*, 89(4), 887-901.
Gilens, M. and B. I. Page (2014) Testing theories of American politics: Elites, interest groups, and average citizens, *Perspective on politics*, 12(3), 564-581.
Koch, C. M., C. Meléndez and C. Rovira Kaltwasser (2021), Mainstream voters, non-voters and populist voters: what sets them apart?, *Political Studies*, 00323217211049298.
Mair, P. (2013), *Ruling the void: The hollowing of Western democracy*, Verso Books.
Mancini, G. (2017), Women's labor force participation in Italy, 1861-2016, *HHB Working Paper Series*, 8, The Historical Household Budgets Project.
Mannheimer, R. and G. Sani (2001), *La conquista degli astenuti*, V. 120, Il Mulino.
Mendez, J. M. and T. Osborn (2010), Gender and the perception of knowledge in political discussion, *Political Research Quarterly*, 63(2), 269-279.
Mitsch, F., N. Lee and E. R. Morrow (2021), Faith no more? The divergence of political trust between urban and rural Europe, *Political Geography*, 89, 102426.
OECD (2019), Declining voter turnout in OECD countries: Change in average voting rates per decade in OECD countries, 1990s and 2010s, in *Trends Shaping Education 2019*, OECD Publishing.
Pallante, F. (2022), Il dovere che non c'è più? Sull'abolizione delle sanzioni all'obbligo di voto in Italia, in C. Fumagalli and V. Ottonelli (eds.), *Come votiamo? La pratica democratica del voto, tra diritto individuale e scelta collettiva*, 33-45, Fondazione Giangiacomo Feltrinelli.
Passarelli, G. and D. Tuorto (2012), The Lega Nord goes south: The electoral advance in Emilia-Romagna: A new territorial model?, *Political Geography*, 31(7), 419-428.
Pianta, M. (2020), Italy's political upheaval and the consequences of inequality, *Intereconomics*, 55(1), 13-17, https://www.intereconomics.eu/contents/year/2020/number/1/article/italy-s-political-upheaval-and-the-consequences-of-inequality.html (20 July 2023).
Powell, G. B. (1982), *Contemporary democracies: Participation, stability, and violence*, Harvard University Press.
Rodríguez-Pose, A. (2018), The revenge of the places that don't matter (and what to do about it), *Cambridge journal of regions, economy and society*, 11(1), 189-209.
Sassen, S. (2003), The participation of states and citizens in global governance, *Indiana journal of global legal studies*, 10(1), 5-28.
Sbardella A, A. Zaccaria, L. Pietronero and P. Scaramozzino (2021), Behind the Italian regional divide: An economic fitness and complexity perspective, *Sinappsi*, XI(2), 50-73.
Schäfer, A. and H. Schwander (2019), 'Don't play if you can't win': does economic inequality undermine political equality?, *European Political Science Review*, 11(3), 395-413.
Staccioli, J. and M. E. Virgillito (2021), Back to the past: the historical roots of labor-saving automation, *Eurasian Business Review*, 11, 27-57.
Stiglitz, J. E. and I. Regmi (2023), The causes of and responses to today's inflation, *Industrial and Corporate Change*, 32(2), 336-385.
Viesti G. (2021), *Centri e periferie: Europa, Italia, Mezzogiorno dal XX al XXI secolo*, Laterza.
Wellhofer, E. S. (2001), Party realignment and voter transition in Italy, 1987-1996, *Comparative Political Studies*, 34(2), 156-186.

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Jan Greitens

Sustainable Finance and Small and Medium Enterprises

Germany's Bank-Based Financial System and EU Disclosure Requirements

To boost investments into sustainability, small and medium enterprises (SMEs) – a crucial part of the economy – must play a role. The current sustainable finance framework focuses on capital markets. But SMEs normally get external finance from banks, and bank-based financial systems work differently than market-based financial systems. Therefore, the regulation needs to take the characteristics and advantages of bank-financed SMEs into account. Decentralised und individual financing of credible transition plans, rather than extensive disclosure of data, could lead to the necessary rise of investments.

The need to respond to man-made climate change is undeniable. Estimates suggest that the transformation of all sectors of the economy towards climate neutrality in Germany will require an additional €5 trillion, or €190 billion per year, in investment until 2045 (KfW Research, 2021). Although there are large uncertainties in such estimates, substantial increases in investment will be needed to achieve climate neutrality.

There are several options to increase investment volumes in order to fight against climate change. Most economists propose pricing externalities, whether through taxes or certificates, because this method is the most efficient (see e.g. Kalkuhl et al., 2013). In the US, subsidies are used to influence the relative prices between carbon-intensive and low-carbon production processes. The European Union has decided to use another instrument in addition to pricing, namely channeling investments through the financial system (Wissenschaftsplattform Sustainable Finance, 2021a).

The term "sustainable finance" encompasses substantially more goals than just reducing carbon dioxide (CO_2) emissions.

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It includes environmental, social and governance (ESG) investment. However, since the target CO_2 emission reductions require massive investments, which apply to other targets only in a more limited form, the financial system plays a central role in achieving this goal.

Small and medium-sized enterprises (SMEs) in Germany rely primarily on banks for their external financing. At the same time, they play a key role in achieving climate neutrality because of their economic importance. Therefore, the question arises as to how a sustainable finance approach aligned with these financing structures would have to look like.

Allocation on the capital market

The central function of financial systems is to allocate capital, i.e. to decide on investment flows (Levine, 2005, 869). This elevates the financial sector to a prominent role within the economy. This is why the EU is trying to get the financial system to redirect investment flows to sustainable projects through regulation, e.g. ESG taxonomy, Sustainable Finance Disclosure Regulation (SFDR) and Corporate Sustainability Reporting Directive (CSRD). Disclosure of information on the sustainability of economic activities stigmatises unsustainable companies and their funding by financial intermediaries. Although no regulatory capital requirements for banks have been derived from this yet, transparency alone should redirect investment into sustainable projects.

At present, only a part of the planned regulations has been enacted. ESG data is clearly relevant for capital

markets, as it provides investors with necessary information for their decision-making and company valuation. Capital market efficiency increases, as comprehensive and consistent ESG data could further reduce information asymmetries (Wissenschaftsplattform Sustainable Finance, 2019, 3; 2021a, 8; 2021b, 4). Thus, ESG reporting helps capital markets in their allocation of capital in favour of sustainable investments. From this perspective, the goal of climate neutrality legitimises the economic costs connected to collecting the data.

Most economists take a critical view of the use of the financial system to achieve sustainability goals, attributing to it at most an accompanying role. In traditional neoclassical theory, finance and investment are separate (Miller and Modigliani, 1958). Thus, a "green" bond cannot be assigned to a specific asset that could have been acquired through other financing; the same goes for internal cash flow. Therefore, in efficient markets, the effect of sustainable finance is disputed (Krahnen et al., 2021, 4-5; Wissenschaftlicher Beirat beim Bundesministerium der Finanzen, 2021, 4; KfW Research, 2023). The parallelism of two instruments, i.e. CO_2 prices and sustainable finance measures, for the same sustainability target may even lead to welfare losses and reduce climate protection investments (Fuest and Meier, 2022).[1]

The EU sustainability strategy approach is focused on developing capital markets. The EU's promotion of capital market financing over bank financing via loans is a longer-term trend that is reflected in the design of banking supervision as well as in the current plans for the Capital Markets Union.[2]

Bank-based vs. market-based financial systems

What impact does this sustainable finance regulation have on an economy largely dominated by SMEs? Since the beginning of the 20th century, different manifestations of financial systems have been analysed and evaluated in terms of their efficiency and structural consequences (e.g. Weber, 1902; and Hilferding, 1910). In the more modern literature, it has become common to make a stylised classification into bank-based or market-based financial systems.

> The financial system can generally be characterised as an interaction system of supply and demand for the provision of capital and other finance-related services. In addition to the supply side, the financial sector, it also includes the demand side. … Between the surplus units, the intermediaries, and the deficit units, there are not only financial flows. Information and influence relationships also exist in parallel with these. (Schmidt and Hackethal, 2000, 3-4, own translation)

The terms "surplus units" and "deficit units" make clear that financial systems allocate necessary external funding. Financial flows do not simply settle transactions, but relationships between information and influence constitute the systemic character of finance. The controlling influence can be very different in nature. The starting point is a different way of accounting, not only for companies but also for financial institutions. Accounting under the German Commercial Code (HGB) follows debtor-oriented principles, e.g. the lower-of-cost-or-market principle secures repayments of loans and makes it more difficult to distribute unrealised profits to equity investors. In contrast, international accounting standards are equity provider-oriented. In accordance with the fair value principle, the aim is to enable a company to be valued in line with the market, which can represent the value of the investment to the equity provider.

Consistency of financial systems

There are different types of financing and information flows, but the differences go beyond these and are summarised ideally as bank-based or market-based financial systems:

- In market-based financial systems, corporate financing takes place through (organised) markets that bring together supply and demand of capital. Equity financing is at the centre of this process. Investment decisions are made based on disclosed information, beyond balance sheets through commitments to shorter reporting cycles such as quarterly reports, ad hoc announcements or publicly known ratings.

- In bank-based financial systems, corporate financing is provided by banks, which bring together supply and demand and handle the financing flows on their balance sheets. It follows that primarily, debt capital is intermediated to companies in this way. The investment decision is made based on the banks' credit assessments. To this end, banks have privileged access to information that is not made public.

Accounting according to the lower-of-cost-or-market principle, debt financing and universal banks are, therefore, (selected) characteristics of a bank-based financial

1 One can imagine the example of a profitable investment where all externalities are fully internalised and thus have a positive net welfare effect, but could not be implemented because of a static ESG taxonomy.

2 For example, Commissioner McGuinness calls the goal of the Capital Markets Union, "making sure we don't have to rely too much on bank finance which we do today, that we move towards capital markets." (European Commission, 2022).

system that are complementary to each other. Complementary means that these aspects of corporate financing are aligned with one another. A system is consistent "if the advantages of complementarity are used and a small change in the expression … [of the] characteristics does not allow an improvement in the sense of the target or evaluation function" (Schmidt and Hackethal, 2000, 3-5, own translation). Thus, in terms of efficient corporate financing, the complementary characteristics should be used to express a consistent financial system.

Certain characteristics of the financial system and real economy in different economies have emerged in interdependence over time. SME structures are consistent with a bank-based financial system while an economy with many large companies is consistent with a market-based financial system (Greitens, 2022, 118-123).

Different structures of financing, via banks or via financial markets, have effects that go well beyond corporate finance and reach deep into the economy and society. These interrelationships have been discussed under different headings for many decades, most recently under the Varieties of Capitalism approach (see Hall and Soskice, 2001; Schefold, 1994). These differences are reflected in the specific mode of dual vocational training and the strong role of chambers of commerce and industry as parastatals in Germany, and are also shaped by the bank-based structure of the financial system.

Though a trend towards disintermediation – because of the changed regulations of banking supervision and digitalisation – can be observed in the last 20 years, when these descriptive approaches were developed, the situation is still essentially the same. At the very least, the high importance of banks for SMEs remains unchanged.

Dealing with information asymmetries

The task of the financial systems is to overcome the information asymmetries between capital providers and capital seekers. Only then can risks of an investment or a business model be assessed and capital allocated on this basis. This leads to costs, as the financier requires relevant information from and governance over the financed party.

Financial systems differ in the methods used to overcome information asymmetries. In the case of *financing via markets*, these costs are borne directly and at the time of transaction by the companies. They commission rating agencies and investment banks and engage legal advisors for the documents to be published in compliance with the law. Data required on regulated capital markets is massive because the information needs of many different capital providers have to be met.

With *bank financing*, parts of these costs are borne by the banks, which then charge companies over the course of the entire relationship between a bank and a customer and over the life cycle of the company. It is the relationship banking[3] that makes it possible to take a long-term perspective. The level of knowledge required on the part of financial intermediaries to understand the business models of SMEs is high and often includes regional knowledge.

The larger the financing volumes and the better known and more supraregional the business models are, the more cost effective market-based financing is. However, this also means that the specific and small-scale financing in the SME sector can be handled more efficiently by banks. The relationship banking also gives bank financing a longer-term focus that is less oriented towards short-term profit increases. This should suit the financing of investments in sustainability, as these projects require a long-term perspective (Wissenschaftsplattform Sustainable Finance, 2021b, 2-3; 2021, 4).

With the aim of financing the largest possible investments for CO_2 reduction as quickly as possible, therefore, the previous sustainable finance regulation is geared towards the capital market (Polzin and Sanders, 2020, 5). However, to facilitate sustainable SME investments, the orientation of politics needs to change.

Sustainable finance in the SME sector

Fully consistent with the EU strategy and the logic of market-based financial systems, the Sustainable Finance Re-search Platform[4] calls for the most comprehensive pos-sible disclosure obligations for CO_2 emissions that also include SMEs. Disclosure achieved as early as possible would also lead to long-term financing advantages on the international capital market (Wissenschaftsplattform Sustainable Finance, 2019, 1-2; 2021a, 11; 2021c).[5] Conversely, this also means that financing via banks will become more difficult.

CO_2 emissions show strong concentrations that can be attributed to only a few sectors as well as companies and banks; in particular, a large proportion of these emissions can be attributed to a small number of financing banks

3 It is referred to as *Hausbankprinzip* in German.
4 Wissenschaftsplattform Sustainable Finance, https://wpsf.de/en/.
5 But even this is controversial in the literature, see e.g. Christensen et al. (2022).

in Germany, as measured in terms of CO_2 emissions via the European Union Emissions Trading System (EU ETS; Steffen and Hoffner, 2022). Large and capital market-oriented companies dominate the most relevant sectors (e.g. energy, transport), and only a few industries, such as construction and agriculture, are dominated by SMEs from a CO_2 emissions perspective (Wissenschaftsplattform Sustainable Finance, 2021c, 4).

Around 3.35 million SMEs or 99.3% of all companies in the private sector comprised the SME sector in Germany (Institut für Mittelstandsforschung, 2022). The overwhelming majority of these companies are too small to bear the costs of the necessary disclosure for capital market financing and do not have the reporting and controlling structures or adequate expertise in capital markets. Additional costs incurred must be borne without additional expected earnings.

From another perspective, the focus on market-based finance is also harmful to the goal of climate neutrality. According to the KfW Research (2022, 16), 71% of climate protection investments in Germany are financed from own funds, 12% each from loans and subsidies, and 5% from other sources, under which capital market financing is subsumed. This miscellaneous position does not rise above 7%, even when considering large companies. On the other hand, SMEs' credit financing accounts for more than 20%. Therefore, capital market financing is of secondary importance to climate protection investments. Even if the shares were to increase in the next few years, bank-based financing for climate protection investments would have to be the focus. However, the figures also show the mentioned difficulties to allocate financing instruments to investments.

Approaches to bank financing for the transformation

The forms of financing must not be played off against each other in view of the necessary and massive investments. Disclosure obligations introduced by the EU can improve the financing of sustainability investments via capital markets in the medium term. However, it is not a realistic option to bring a larger number of SMEs to capital markets; therefore, there should be solutions other than comprehensive disclosure for non-capital market-oriented companies. ESG regulations demand a large amount of data from these companies, even though relevant information for the individual company's specific business models and markets is smaller and more targeted in the relationship banking.

External financing of the less standardised business models and corporate structures of SMEs is easier for banks with a regional understanding of these companies. Banks must define concretely and specifically the information they need to assess ESG risks. Data documentation can also remain simplified because of non-disclosure. The financing of the transition, i.e. not only the grouping into "brown" and "green" investments but also the definition of company-specific transition paths, can be better designed by a more individual approach than by extensive disclosure. For this to happen, regulation must be changed in the direction of principles rather than detailed rules. Banks should be allowed to give "green loans", approved by the supervision, based on credible transition plans of the SMEs without the need to fulfill all requirements of the capital market-oriented framework. This would help to finance the transformation in a more decentralised und individual manner.

A proportional implementation of the disclosure rules, instead of adjusting the disclosure requirements for bank financing, is often presented as a solution for this problem. The disclosure requirements should be proportion-al to the size of the companies and the negative effects that the businesses can have (Platform on Sustainable Finance, 2022, 99; Wissenschaftsplattform Sustainable Finance, 2021c, 8-9). Unfortunately, it is unclear what this proportionality might consist of (or look like?) and whether such proportionality is even possible in view of the high fixed costs of generating data and the increasing disclosure needs with the number of suppliers and customers of a SME.[6] In principle, a capital market-oriented approach to dis-closure requirements does not allow for gaps along the value chain. Even when SMEs are not directly within the scope of the disclosure requirements, they end up having to prepare the ESG information in any case to satisfy the needs of the larger companies within their value chain. This is called the trickle-down or value chain effect. Only a change in the top-level regulations for the larger companies can lead to a proportionate implementation for SMEs. This could, for example, be a restriction of the disclosure requirements to CO_2-intensive industries, limiting the disclosure of CO_2 emissions, or a larger acceptance of estimations (Platform on Sustainable Finance, 2022, 99-100).

A loan for sustainability investments in SMEs presently leads to a deterioration of the Green Asset Ratio introduced with the EU taxonomy of a bank. Therefore, both in terms of sustainable investments and in terms of exposures, this indicator should be limited to the capital market business of banks. If risks are assessed through banks' regulatory-audited ESG models (as addressing ESG-risks by the enterprises also has a positive effect on

6 EFRAG (2022, 5) also includes a reporting requirement for the entire value chain in the standards for SMEs.

credit risk; see Höck et al., 2020), a reduction in required capital adequacy would have no impact on financial stability. In return, sustainability investments in SMEs could be promoted.

Conclusion

The most efficient way to reduce climate-damaging emissions is to introduce CO_2 prices. The prices should be adjusted based on rules, thus avoiding time inconsistencies, consider distributional effects and tackle questions of international competitiveness. The expansion of the EU Emissions Trading System has brought us closer to this goal, and this path should be pursued further.

The impact of the sustainable finance regulation on the capital market has been the subject of controversial debate. Consistent pricing of the externalities would reduce the pressure to introduce comprehensive sustainable finance regulations, as the capital market would define its disclosure needs in its own interest. Policies should be geared towards achieving the sustainability goals, and disclosure must not become an end in itself.

On the other hand, the promotion of bank financing for sustainable investments, especially for SMEs, has been neglected so far. The focus here should not be on the disclosure of ESG data but on boosting company-specific financing of the transformation. This can decisively advance the transformation.

References

Christensen, D. M., G. Serafeim and A. Sikochi (2022), Why is Corporate Virtue in the Eye of the Beholder? The Case of ESG Ratings, *The Accounting Review*, 97(1), 147-175.

EFRAG (2022), SME standards: approach and methodology, 03.01 EFRAG SRB 14 December.

European Commisison (2022, 7 December), Remarks Commissioner McGuinness at the press conference on new proposals to boost the EU's Capital Markets Union, Statement.

Fuest, C. and V. Meier (2022), Green Finance, die EU-Taxonomie für nachhaltige Aktivitäten und der Klimaschutz: Eine wohlfahrtsökonomische Analyse, *ifo Schnelldienst*, 75(5), 3-5.

Greitens, J. (2022), *Geld-Theorie-Geschichte*, second revised edition, Metropolis Verlag.

Hackethal, A. and R. H. Schmidt (2000), Finanzsystem und Komplementarität, *Working Paper Series: Finance & Accounting*, 50, Johann Wolfgang Goethe-Universität Frankfurt am Main, https://nbn-resolving.de/urn:nbn:de:hebis:30-18230 (4 April 2023).

Hall, P. and D. Soskice (2001), An Introduction to Varieties of Capitalism, in P. Hall and D. Soskice (eds.), *Varieties of Capitalism: The Institutional Foundations of Comparative Advantage*, Oxford University Press, 1-70.

Hilferding, R. (1910), *Das Finanzkapital*, Verlag der Wiener Volksbuchhandlung.

Höck, A. et al. (2020), The effect of environmental sustainability on credit risk, *Journal of Asset Management*, 21(2), 85-93.

Horsch, A., S. Hundt and M. Richter (2023), Innovative Bankkreditfinanzierung durch Sustainability-Linkes Loans, *Zeitschrift für das gesamte Kreditwesen*, 76(6), 294-299.

Institut für Mittelstandsforschung (2022), Informationen zum Mittelstand aus erster Hand, August, https://www.ifm-bonn.org/fileadmin/data/redaktion/ueber_uns/ifm-flyer/IfM-Flyer-2022.pdf (4 April 2023).

Kalkuhl, M., O. Edenhofer and K. Lessmann (2013), Renewable energy subsidies: Second-best policy or fatal aberration for mitigation?, *Resource and Energy Economics*, 35(3), 217-234.

KfW Research (2021), 5 Bio. EUR klimafreundlich investieren – eine leistbare Herausforderung, *Fokus Volkswirtschaft*, 350, https://www.kfw.de/PDF/Download-Center/Konzernthemen/Research/PDF-Dokumente-Fokus-Volkswirtschaft/Fokus-2021/Fokus-Nr.-350-Oktober-2021-Investitionsbedarfe-Klimaneutralitaet.pdf (4 April 2023).

KfW Research (2022), KfW Climate Barometer 2022, In 2021, German enterprises invested around EUR 55 billion in climate action – still too little to reach climate neutrality, https://www.kfw.de/PDF/Download-Center/Konzernthemen/Research/PDF-Dokumente-KfW-Klimabarometer/KfW-Climate-Barometer-2022.pdf (4 April 2023).

KfW Research (2023), Green Finance: der Finanzmarkt als Hebel für die Klimatransformation?, *Fokus Volkswirtschaft*, 413, https://www.kfw.de/PDF/Download-Center/Konzernthemen/Research/PDF-Dokumente-Fokus-Volkswirtschaft/Fokus-2023/Fokus-Nr.-413-Januar-2023-Green-Finance.pdf (4 April 2023).

Krahnen, J. P., J. Rocholl and M. Thum (2021), A primer on green finance: From wishful thinking to marginal impact, *SAFE White Paper*, 87, https://safe-frankfurt.de/fileadmin/user_upload/editor_common/Policy_Center/SAFE_White_Paper_No._87.pdf (4 April 2023).

Levine, R. (2005), Finance and Growth: Theory and Evidence, in P. Aghion and S. N. Durlauf (eds.), *Handbook of Economic Growth*, Elsevier.

Miller, M. and F. Modigliani (1958), The Cost of Capital, Corporation Finance and the Theory of Investment, *The American Economic Review*, 48(3), 261-297.

Platform on Sustainable Finance (2022), Platform Recommendations on Data and Usability, October, https://finance.ec.europa.eu/system/files/2022-10/221011-sustainable-finance-platform-finance-report-usability_en_1.pdf (4 April 2023).

Polzin, F. and M. Sanders (2020), How to finance the transition to low-carbon energy in Europe?, *Energy Policy*, 147, https://www.sciencedirect.com/science/article/pii/S0301421520305802 (4 April 2023).

Schefold, B. (1994), *Wirtschaftsstile, Teil 1: Studien zum Verhältnis von Ökonomie und Kultur*, Fischer.

Steffen, S. and F. Hoffner (2022), Estimating German Bank Climate Risk Exposure using the EU Emissions Trading System, Working Paper, https://ssrn.com/abstract=4269327 (4 April 2023).

Weber, A. (1902), *Depositenbanken und Spekulationsbanken: Ein Vergleich deutschen und englischen Bankwesens*, Duncker & Humblot.

Wissenschaftlicher Beirat beim Bundesministerium der Finanzen (2021), Grüne Finanzierung und Grüne Staatsanleihen – Geeignete Instrumente für eine wirksame Umweltpolitik?, Gutachten 01/2021, https://www.bundesfinanzministerium.de/Content/DE/Downloads/Ministerium/Wissenschaftlicher-Beirat/Gutachten/gruene-finanzierung-und-staatsanleihen.pdf?__blob=publicationFile&v=5 (4 April 2023).

Wissenschaftsplattform Sustainable Finance (2019), Verpflichtende klimabezogene Berichterstattung als Mittel zur Reduzierung von CO_2 Emissionen, *Policy Brief*, 2/2019, https://wpsf.de/wp-content/uploads/2021/09/WPSF_PolicyBrief_2-2019_Unternehmensberichterstattung.pdf (4 April 2023).

Wissenschaftsplattform Sustainable Finance (2021a), Die EU Sustainable-Finance-Strategie – Implikationen für die künftige Bundesregierung, *Policy Brief*, 9/2021, https://wpsf.de/wp-content/uploads/2021/10/WPSF_PB_9-2021_EU_Strategie-1.pdf (4 April 2023).

Wissenschaftsplattform Sustainable Finance (2021b), Welche Informationen sind für die Nachhaltigkeitsberichterstattung relevant? Das Konzept der Wesentlichkeit und die EU-Richtlinie zur Nachhaltigkeitsberichterstattung von Unternehmen (CSRD), *Policy Brief*, 7/2021, https://wpsf.de/wp-content/uploads/2021/05/WPSF_Policy-Brief_7-2021_Wesentlichkeit.pdf (4 April 2023).

Wissenschaftsplattform Sustainable Finance (2021c), Why it would be important to expand the scope of the Corporate Sustainability Reporting Directive and make it work for SMEs, *Policy Brief*, 8/2021, https://wpsf.de/wp-content/uploads/2021/09/WPSF_PolicyBrief_8-2021_Scope.pdf (4 April 2023).

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Bidenomics

Bidenomics means different things to different people. It also seems to mean different things to President Biden. This lack of clear definition is part of why Biden receives little credit for his handling of the economy. A poll conducted at the end of June showed that just one in three U.S. adults approve of his economic leadership.

Bidenomics prioritizes enhancing employment opportunities and conditions for what used to be called the working class. (Nowadays all Americans, other than the wealthiest, are referred to as "middle class.") This aspect emphasizes ensuring that all workers, including those from disadvantaged segments of society, receive good wages and job security. The goal, as the president put it, is economic growth "from the middle out and the bottom up, instead of just the top down."[1]

The Administration has pursued several avenues for achieving this goal, including investing in infrastructure and encouraging unionism. But the key strategy at the outset of Biden's term was "running the economy hot." Biden's $1.9 trillion pandemic rescue package, rolled out in early 2021, included money for unemployment insurance, for payments to families, and for development of COVID-19 vaccines. There were compelling arguments for each form of spending.

But the size of the overall package was seen as a way of avoiding a decade of slow growth and wage stagnation like that following the Global Financial Crisis. Strong demand, the argument ran, would insure that income gains were inclusive. Firms facing tight labor markets would hire workers from underrepresented segments of society. With a foot on the economic ladder, those workers would acquire additional skills and the opportunity for income growth.

In one sense, this strategy worked. Unemployment fell to historic lows, just 3.6% in June of this year. Jobless rates fell to 6% for Blacks and 4.3% for Hispanics. Nominal wage growth in 2022 for Black Americans employed full time was 11.3%, compared to 7.4% for the workforce overall.

Much of the increase in earnings was eroded by inflation, of course: real average weekly earnings, seasonally adjusted, rose by a scant 0.6% in the year ending in June 2023. Biden's economists had assumed that running the economy hot would not fuel inflation. After all, the more limited Obama stimulus following the financial crisis did not create inflationary pressures. By 2021, inflation had been absent for more than a decade. In this respect, clearly, the administration's forecasts were decidedly wrong.

To be sure, Biden's advisors were far from alone in dismissing inflation. And the delayed reaction of the Federal Reserve deserves just as much blame for the inflation that followed as the fiscal stimulus. Still, if one factor explains public dissatisfaction with the president's economic stewardship, it is inflation. Sixty-five percent of Americans surveyed by the Pew Research Center in June viewed inflation as a serious problem, higher than the share responding to questions about 15 other issues ranging from illegal immigration to violent crime.

In their defense, Biden's economists, building on research by academics such as Isabella Weber, pointed to the ability of firms with market power to take advantage of strong demand by marking up prices. This rebuttal dovetailed with a second aspect of Bidenomics, namely vigorous enforcement of competition policy. In July 2022, Biden issued an executive order strengthening

1 White House (2023, 28 June), Remarks by President Biden on Bidenomics, Chicago, IL, Speeches and remarks.

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anti-trust policy. In January 2023, the Antitrust Division of the Department of Justice filed a suit against Google for monopolizing the ad tech business. In March, it sued to block JetBlue Airways from acquiring Spirit Airlines on the grounds that it would raise prices and reduce competition. And on July 20th, the Biden Administation rolled out more restrictive merger guidelines designed to slow corporate consolidation. The result has been a decline in mergers and acquisitions and abandonment of a number of proposed deals. That said, it is too early to know whether lower prices and more competition will result.

A third aspect of the Biden Administration's approach, again justified on grounds of putting the middle class first, is its restrictive trade policy. Biden was widely perceived as more of a free trader than his predecessor, Donald Trump. This proved to be a misperception. Biden has not rolled back, much less abandoned, Trump's tariffs on China. He has gone further by also placing controls on exports to China of semiconductor manufacturing equipment and other high-tech goods. In a speech at the Brookings Institution in April, National Security Advisor Jake Sullivan advocated a "foreign policy for the middle class," arguing that protection of sensitive industries should replace free trade in America's policy arsenal.

That the speech was delivered by Biden's national security advisor and not his treasury secretary is revealing of underlying motives. Sullivan may have invoked the need for good middle-class jobs when justifying the administration's restrictive trade policies, but the dominant motive was to slow the development of high-tech dual-use technologies by China and to enhance America's self-sufficiency in strategically important goods. There may be national security arguments for these measures, but in the short run they make for higher prices for U.S. consumers, as former treasury secretary Lawrence Summers has observed. And higher prices foment dissatisfaction with Bidenomics.

This emphasis on self-sufficiency in the production of strategically important goods leads to the final and most controversial aspect of Bidenomics, namely its industrial policies. The Administration and Congress have agreed to hundreds of billions of dollars of subsidies for semiconductors, renewable energy and infrastructure, begging three questions. First, are these subsidies appropriately targeted – how do we know which sectors and activities are strategically important and worthy of subsidy? Second, will the subsidies work? And third, even if they work, at what cost?

U.S. dependence on Asia for the production, as opposed to design, of advanced semiconductors was a problem during the COVID-19 pandemic, when shipping disruptions prevented their import, causing the motor vehicle industry, among others, to essentially shut down. Hence there is a resilience argument for investment tax credits like those extended under the CHIPS Act for the construction of new semiconductor fabrication facilities, and for R&D subsidies to encourage advanced chip prototyping. But Biden's policies also encompass potential subsidies for a variety of other industries, from steel to solar panels. Political economists worry, not without reason, about capture – that lobbying will cause subsidies to be diverted to less deserving uses.

Whether the CHIPS Act succeeds in boosting the production of, say, semiconductors will depend on the relative importance of investment and research costs, which it addresses, but also on permitting requirements and the availability of appropriately skilled labor, which it does not. As for costs, it is conceivable that domestic fabs could move rapidly down their learning curves and become competitive with foreign facilities. But it is equally conceivable that U.S. consumers will end up with higher costs, paid directly via higher prices or indirectly via the subsidies funded by their tax dollars. These uncertainties – whether bureaucrats will target the right industries, and whether firms will move down their learning curves – make Bidenomics' industrial policies a gamble from the economic, as opposed to the security, point of view.

Thus, the early returns to Bidenomics were strongly positive, if weakly appreciated. The longer-term consequences are still to be determined.