
Are banks still special?



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Abstract

Banks have long played a special role in the financial system. Individuals and institutions use banks to access the payment system, and central banks rely on banks to transmit monetary policy to the real economy. Hence, financial and economic stability has rested on the stability of the banking system, in particular, on the safety and soundness of systemically important banks. This is the primary reason why banks have access to central banking lending facilities, as well as why banks are regulated and supervised. It has also served as the overriding rationale for the reform of regulation and resolution that the G20 initiated and implemented in the wake of the financial crisis of 2007–08.

But, banks are not inherently special. Banks are only as special as central banks make them. Via quantitative easing (QE) as well as eligibility easing (EE), central banks have broadened the transmission mechanism beyond banks. As a result, banks have become less special. This in turn has significant implications for central banks' responsibilities for liquidity provision, and for the regulation and supervision of financial institutions.

Banks' special role could erode further if central banks introduce central bank digital currencies. Such an innovation would not only replace cash, but could also displace deposits. Central banks could not only impose significantly negative rates of interest; they could potentially determine the volume, distribution and pricing of credit, so that the transmission mechanism becomes direct. That in turn would have significant and not necessarily positive implications for banks, for financial markets and for the economy at large.

1. The “traditional” financial system

Traditionally, the financial system has operated on a hub-and-spoke basis (see Figure 1). In this framework, banks are special.² Nonbanks (individuals and institutions) have their accounts at banks; banks have accounts at the central bank. Individuals and institutions therefore use banks to access the payment system. Banks lend to nonbanks and provide the economy at large with a liquidity backstop.

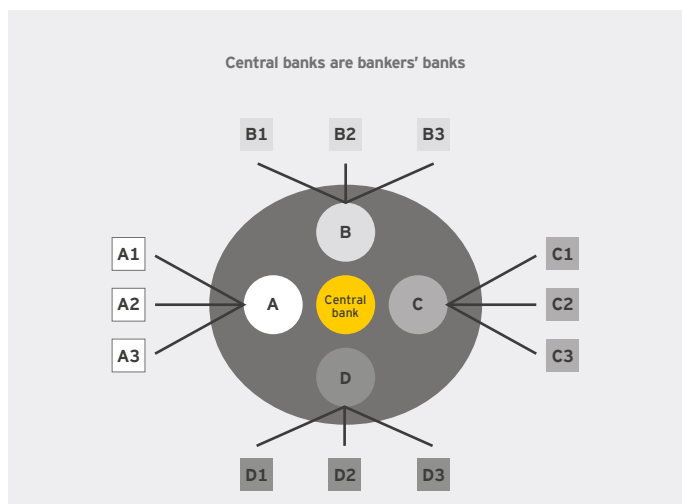


Figure 1

In this framework, financial stability depends largely on ensuring the stability of the banking system and that, in turn, hinges heavily on maintaining the continuity of banks' critical economic functions.

Central banks align their functions to this framework. They restrict access to their payment systems to banks. They transmit monetary policy to the economy at large via banks. They provide liquidity to banks, and they play a significant role in their regulation and supervision. In sum, central banks act as bankers' banks.

² Corrigan (1982). Separately, various scholars (Gande and Saunders (2012)) have argued that banks are special, due to the monitoring that they provide in connection with loans. However, other financiers (notably private equity firms) also monitor firms in which they invest or to whom they extend credit.

2. A new framework for finance is emerging

However, the crisis has, together with technology and central banks' concerns about their own risk management, eroded the basis for this traditional framework. A new framework is emerging, one in which central banks are banks, not only to banks, but to financial institutions generally and, to an increasing extent, to the economy at large.

2.1 The transmission mechanism has become multi-channel

To be effective, central banks need a transmission mechanism or an ability to translate policy decisions into marketplace reality. Two aspects are important: first, what the mechanism does to the economy as a whole (i.e., how it affects output, employment and inflation) and second, what the mechanism does to the market(s) in which the central bank chooses to intervene.

To impact the economy as a whole, the central bank needs to send a strong and steady signal. Changes in the signal should result from policy decisions rather than market static or noise. In designing its signal, the central bank has to decide with whom it will deal, how it will transact and what assets it will buy or refinance.

However, with the asset(s) in which it chooses to intervene, the central bank will be no ordinary market participant. Given the size of its portfolio as well as its ability to determine the eligibility of assets as collateral, the central bank is likely to have a dominant position in any asset in which it chooses to invest or to accept as security. Prices of such assets are likely to reflect not only the risk of the borrower, but the degree to which the central bank's position “overhangs” the market for particular issues and the possibility that the central bank will change the level of its holdings, the pace of its purchases or the haircuts that it applies. In other words, for such assets the central bank will be a price maker and its actions will confer (or constrain) liquidity on such assets.

Traditionally, central banks have principally used banks to transmit monetary policy to the economy at large. The policy rate set by central banks has either been the rate at which the central bank lends to banks³ or the rate at which banks can borrow central bank money in the market.⁴

³ For example, the Bank of England employs bank rate to set sterling interest rates.

⁴ In the US the Federal Reserve (Fed) targets the federal funds rate.

Central banks have largely executed monetary policy by conducting open market operations with banks or by varying the amount that they lend directly to banks. This alters the level of reserves at banks, with knock-on effects on banks' capacity to lend to individuals and institutions. That in turn drives changes in output, employment and prices.

Yet, banks (as well as other financial intermediaries) had practically no place in the macroeconomic models that central banks used to determine monetary policy. Indeed, monetary economics generally regarded the banking system as neutral: it was merely a transmission mechanism without any effects on the real economy.⁵

However, during and after the financial crisis of 2008, this transmission mechanism broke down. Banks failed, credit contracted and the real economy went into a tailspin. Although government intervention rescued the banks, it did not fully restore the transmission mechanism. Nor has regulatory reform. Although such reform has greatly strengthened banks' condition, credit growth has been weak and the recovery sluggish, particularly in the Eurozone.

Central banks have responded by resorting to extraordinary measures. They have suppressed interest rates to zero and, in some cases, pushed them below zero. They have also initiated a program of QE and implemented a policy that could be labeled as EE (see below).

QE has helped to keep interest rates at very low levels for a very long period of time. QE has allowed the central bank to set the risk-free rate as well as the term structure of such rates (if it buys securities across the entire yield curve). This has in turn helped the economy get on and stay on the recovery path.

But, QE has also diluted the distinction between monetary and fiscal policy. This is perhaps most clearly the case in the Eurozone, where the European Central Bank (ECB)'s purchases of government bonds have contributed to a narrowing of spreads between the more highly indebted, deficit-prone, lower-rated "peripheral" member states and the less indebted, higher-rated member states.

The narrowing in spreads has reduced the government's interest expense, creating in turn the potential to sustain government spending on goods and services or to reduce the overall budget deficit. In effect, the ECB has given member states the opportunity to create a virtuous circle. Lower-rated governments can "invest" the savings in interest expense to improve their budgetary position so that spreads need not rebound after QE ends.

Under QE, central banks also expanded the range of assets acquired directly via open market operations. In the US, the Federal Reserve (the Fed) bought massive amounts of mortgage-backed securities.⁶ In the Eurozone, the ECB has started to purchase corporate bonds as part of its supplemental asset purchase program.⁷

These central bank purchases have supported the price of such assets, enhanced their market liquidity and reduced the spread over the government rate of equivalent maturity that borrowers have to pay. As a result, the creditworthiness of institutions holding such assets improved.

Taken together, QE and EE proved remarkably effective in stabilizing the world economy. Indeed, in my view, it is one of the principal reasons that economists describe 2008 to 2010 as the Great Recession and not as the start of the Greater Depression.

2.2 Payment systems are becoming robust

Well-functioning payment systems help generate the confidence and trust on which any currency is ultimately based. They are critical to maintaining financial stability and generating economic growth. Indeed, if payment systems cease operation, so will financial markets and the economy at large. For this reason, ensuring the integrity and continuity of payment systems is a major public interest.⁸

Traditionally, banks have acted as the front end of the payment system. Individuals and institutions make payments by ordering their bank to debit their deposit account and transfer funds to another person's or entity's account. If the beneficiary has its account at another bank, the payer's bank utilizes a payment

6 FRB (2017)

7 ECB (2017)

8 Committee on Payments and Securities Settlement (2001)

5 Adrian & Shin (2008, 301); Huertas (2011a, 103); King (2012)

system to make a transfer to the payee's bank. The payee's bank then credits the beneficiary's account.

For much of the 20th century, the failure of a major bank could cause the payment system to fail, with knock-on effects on other participants and on the economy at large. Banks were exposed to one another via multilateral netting arrangements, and central banks were exposed to banks via the daylight overdrafts that central banks routinely extended to banks.

Following the failure of Herstatt and Continental Illinois in 1984, central banks led a long and ultimately successful effort to make payment systems robust so that the payment system would be able to continue in operation, even if one or more of its major participants were to fail.⁹ This involved shifting central bank payment systems to real-time gross settlement and putting private, multilateral netting systems, such as the clearing house interbank payments system (CHIPS), on a sound basis.

In almost all jurisdictions, the central bank operates its own payment system to enable banks to transfer funds to one another. Settlement occurs via book transfers of "central bank money": the deposit (reserve) account of the sending bank is debited and the deposit (reserve) account of the receiving bank is credited. Central banks generally guarantee the payments made over their systems so that receiving banks have no exposure to the sending bank if the sending bank were to fail. This provides certainty, immediacy and finality to both sending and receiving banks, and their respective clients.¹⁰

The central bank itself does not take any risk on the sending bank. The systems that central banks own and operate are now generally on a real-time gross settlement (RTGS) basis, so that banks have to debit their reserve account at the central bank as soon as they initiate a payment instruction. Central banks have drastically curtailed the provision of daylight overdrafts to banks in connection with payment systems.¹¹

9 However, significant operational risk remains particularly in connection with cybercrime and cyber terrorism (<http://www.bankofengland.co.uk/education/Documents/ccbs/handbooks/pdf/ccbs31.pdf>). The US Federal Reserve detected more than 50 cyber breaches between 2011 and 2015, many of which were suspected to have involved hackers or spies <http://www.reuters.com/article/us-usa-fed-cyber-idUSKCN0YN4AM>. In 2016, hackers stole US\$81 million from the Bangladesh central bank account at the New York Fed via false orders on the SWIFT network <http://www.reuters.com/article/us-bangladesh-heist-fed-insight-idUSKCN0XX28F>.

10 Committee on Payment and Settlement Systems (2003)

11 If banks do require credit in order to fulfil their obligations to payment systems, central banks increasingly require banks to make such requests under either a normal discount window or

If a bank wants to initiate a payment, it has to have the money in its reserve account. Private payment systems have also become robust. They have practically eliminated any extension of credit to a sending bank and have instituted frequent intraday settlements of net exposures via special zero-balance accounts at the central bank.¹² Together with the initiation of RTGS in central bank payment systems, the improvements in private payment systems have greatly reduced systemic risk.

Making payment systems robust has, in turn, served as the basis for making other financial market infrastructures robust. Directly or indirectly, central banks ensure that the "P" works as it should in delivery versus payment (DVP) for securities settlement systems¹³ and in payment versus payment (PVP) in foreign exchange settlement.¹⁴ In each case, the "settlement asset" is a claim on the central bank. This not only ensures certainty, immediacy and finality, but it also creates neutrality – each member uses the safest asset (a deposit at the central bank) to settle its obligation to other members of the settlement system.

2.3 Central banks are easing eligibility requirements

Central banks act as the ultimate provider of liquidity. This takes two forms: ordinary facilities and lender-of-last-resort (LOLR) facilities (also known as emergency liquidity assistance (ELA)).

Central banks extend ordinary facilities to eligible counterparties on the basis of eligible assets.

Conceptually, ELA encompasses (1) loans to eligible counterparties on the basis of ineligible assets, (2) loans to

a lender-of-last-resort or emergency liquidity facility (see below). Under the Federal Reserve's Payment System Risk Policy, FRB (2012), institutions wishing to access the Federal Reserve's intraday credit facilities must meet safety and soundness standards and stand ready to collateralize any exposure that may result from drawing on such a facility. In addition, the Fed sets a limit (the "net debit cap") on the total amount of the Fed's intraday credit that an institution may use. Finally, the Fed reserves the right to curtail or even cut off an institution's access to intraday facilities, consistent with the view that borrowing from the central bank is a privilege, not a right. This stricter policy has led to the virtual disappearance of daylight overdrafts (see http://www.federalreserve.gov/paymentsystems/psr_data.htm).

12 For example, final settlement for CHIPS occurs via a special zero-balance account at the Federal Reserve Bank of New York and final settlement for the EURO 1 payment system operated by EBA Clearing occurs via a similar account at the ECB.

13 Comotto (2011)

14 CLS operates a global foreign exchange settlement system. Trades are settled across the books of CLS Bank a special purpose bank chartered, regulated and supervised by the US Federal Reserve Bank under a Cooperative Oversight Arrangement (http://www.federalreserve.gov/paymentsystems/cls_protocol.htm) with other central banks. Settlement occurs on a PVP via payments in central bank money via the RTGS systems operated by central banks so that CLS Bank itself has a zero-balance account at the central bank for each of the currencies for which CLS offers FX settlement services. See also Kahn, Quinn, & Roberds (2014)

ineligible counterparties on the basis of eligible assets and (3) loans to ineligible counterparties on the basis of ineligible assets (see Figure 2).

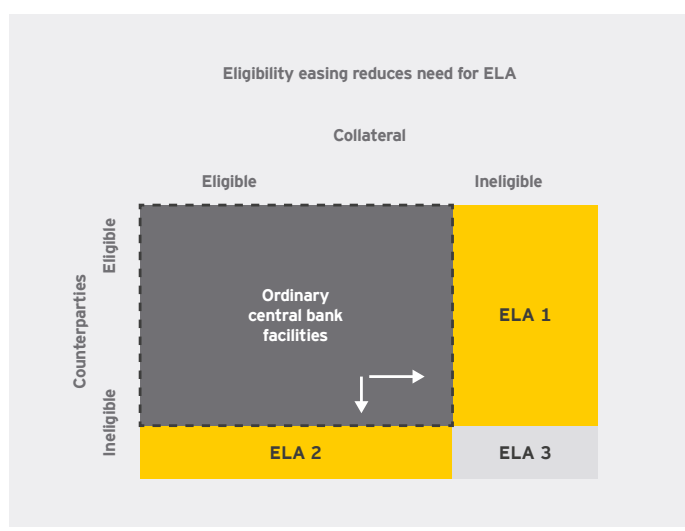


Figure 2

Traditionally, banks have been the only counterparty eligible to access ordinary central bank facilities, and the only collateral eligible to pledge was high-quality securities and loans. During the crisis, however, central banks supplemented QE with EE. They expanded the collateral eligible to support normal central bank liquidity facilities¹⁵ and they extended the range of counterparties eligible to access normal central bank liquidity facilities.¹⁶ This reduced the need to resort to LOLR/ELA. It also reduced the special role of banks.

2.4 Supervision is broadening beyond banks

Banks' special role has long served as the rationale for the regulation and supervision of banks as well as the rationale for the central bank's involvement in such functions. In particular, central banks need to be sure that the banks it extends credit to are solvent (particularly, if the bank is making a request for ELA). In fact, the prudential standards that regulators impose on banks are akin to the covenants that banks themselves put into loan agreements with corporate borrowers.¹⁷ But, the supervision

that central banks and other authorities exercise over banks is far stricter than the control that banks can exercise over borrowers via the monitoring and enforcement of covenants.

In the wake of the crisis, authorities strengthened regulation and sharpened supervision. To reduce the probability that banks would fail, Basel III increased capital requirements and introduced global liquidity standards. To make banks "safe to fail," jurisdictions reformed their resolution regimes to enable the authorities to ensure that a failing bank's critical economic functions could continue, even in the absence of taxpayer support. To enforce these tougher regulations, jurisdictions granted supervisors broader powers, especially to central banks.¹⁸

The crisis and its aftermath confirmed that systemic risk could not be controlled simply by regulating and supervising banks. More was required and more has been accomplished, including strengthening the stability of the derivatives market, bringing shadow banking under control and introducing the concept of macro-prudential supervision under the aegis of systemic risk boards.¹⁹

3. The choice facing central banks and society at large

In sum, the current financial system differs from the traditional one. The transmission mechanism is now multi-channel. Payments systems no longer depend on banks: they can continue to operate, even if a bank fails. Nor is access to payment systems restricted to banks. Under "open banking," banks have to grant access to their systems to third-party providers.²⁰ Central banks no longer extend credit or provide liquidity exclusively to banks. Finally, prudential supervision now extends beyond banks. Banks are no longer as special as they once were.

Should the authorities keep this current approach? If so, what measures should authorities take to improve it? If not, what are the alternatives? We consider two measures: one that is conceivable for the near future, namely, reverting to banks as the single transmission mechanism; and one that could be feasible in

¹⁸ For example, the UK dissolved the Financial Services Authority and returned responsibility for prudential supervision of banks to the Bank of England. In the Eurozone, the Member States established a Single Supervisory Mechanism under the aegis of the Single Supervisory Board at the ECB.

¹⁹ Financial Stability Board (2017); Llewellyn, Nieto, Huertas, & Enoch (2017)

²⁰ In the EU, banks are required to grant such access from January 2018 under the terms of the Second Payments Services Directive.

¹⁵ Breeden & Whisker (2010)

¹⁶ BoE (2014)

¹⁷ Dewatripont & Tirole (1994)

the not too distant future, namely, eliminating the intermediaries entirely and transmitting policy directly to financial markets and the economy at large.

3.1 Strengthening the current multi-channel framework

The case for retaining the multi-channel approach is strong. It is consistent with the hypothesis that the transmission mechanism works through total credit, not just bank credit or bank money. The multi-channel approach has also apparently worked in practice, at least as a means to arrest recession and to foster recovery.

The case for the multi-channel approach would be stronger still if the authorities aligned liquidity provision to the transmission mechanism. Now that the recovery is finally taking hold, central banks are struggling with the question of when and how to end QE.

A similar debate needs to take place with respect to EE. In particular, the debate should consider whether QE and EE should be regarded as temporary expedients or permanent macro-prudential tools. The bias must be in favor of the latter, especially if policymakers can exit from these programs without disrupting the recovery.

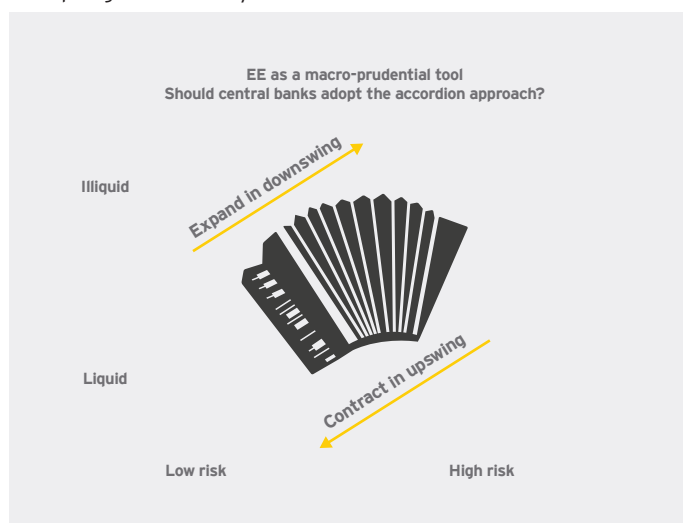


Figure 3

In my view, the authorities should consider transforming EE into a macro-prudential tool. In such an approach, as an upturn progressed, the central bank would narrow the range of assets eligible as collateral for ordinary central bank facilities and broaden the range as a downturn took hold. In effect, this would create a countercyclical “accordion” (see Figure 3). Note that the central bank could supplement these measures by varying the haircut on assets that do remain eligible as well as varying the term of its ordinary facilities.²¹

With respect to the counterparties eligible to access ordinary central bank facilities, it would seem sensible to align this to the transmission mechanism. As this has become multi-channel, so should central banks’ liquidity provision. Eligible counterparties would, therefore, include not only broker-dealers, but also, potentially, all financial institutions.

A separate question concerns the counterparties to whom the central bank can extend ELA or act as a lender of last resort. At a minimum, this should include counterparties that have access to ordinary central bank facilities. Should the central bank have broader powers? This certainly proved useful in the crisis: the Fed made ample use of its extraordinary powers under Section 13(3) of the Federal Reserve Act, but the Dodd-Frank Act repealed this authority.

Some have argued that this should be reinstated, subject to certain safeguards.²²

	Ambiguity	Certainty
Applicability	LOLR/ELA	Ordinary facilities
Basis	Privilege	Right
Precondition	Solvency check	Eligible collateral
Conditionality (in addition to normal regulation and supervision)	Yes	No
Commitment fee	No	Yes?

Table 1

²¹ Huertas (2011, 106-110)

²² Calomaris et al. (2017)

Finally, there is the question of the terms and conditions on which central banks should provide liquidity facilities. Here, central banks should draw a distinction between LOLR/ELA and ordinary liquidity facilities. In the former, ambiguity is essential: no one should have the right to receive LOLR/ELA (the review of EE will determine which counterparties have the right to request LOLR/ELA). In contrast, certainty is constructive with respect to ordinary central bank facilities: eligible counterparties should be able to expect that the central bank will provide liquidity upon the pledge of eligible collateral. This distinction is particularly important in connection with resolution (see table 1).

In sum, EE deserves as much attention as QE. It too played a significant role in containing the crisis. The time has now come to determine its future role, both as a macro-prudential tool and as a determinant of what really constitutes the “last” resort when it comes to LOLR/ELA.

4. Central bank decisions on liquidity can determine course of resolution

A central bank’s decisions can affect both the timing and outcome of resolution. If a bank asks for LOLR/ELA, this may be a sign that it has reached the point of non-viability (PONV). Correspondingly, the central bank must rapidly decide whether to grant or decline the request for LOLR/ELA. In making this decision, the central bank should first consider whether the bank requesting LOLR/ELA is solvent. If it is not, LOLR/ELA could amount to what under normal bankruptcy procedures might be judged a fraudulent conveyance. However, the central bank should also take into account that the decision itself (whether or not to grant LOLR/ELA) may have an influence on asset prices and hence on the solvency calculation.

The central bank’s decision also affects the bank’s continuity. Granting the bank’s request for LOLR/ELA permits the bank to continue to function, but it also creates the possibility that the authorities exercise forbearance. Indeed, without liquidity support from the central bank, the supervisor alone cannot (except where the bank finances itself exclusively with insured deposits) exercise forbearance.

Declining the request will almost certainly lead to the immediate failure of the bank and force the supervisor/resolution authority

to put the bank into resolution, regardless of the views that these authorities may have regarding the bank’s condition.

Financial stability will be enhanced if markets know what will happen next. To this end, the central bank and resolution authority should make clear that they will pursue the following presumptive path: they will put the bank into resolution. They will immediately bail-in instruments qualifying as total loss absorbing capacity (TLAC) so that the bank is not only solvent, but also meets minimum requirements for CET1 capital. They will ensure that the bank in resolution retains access to financial market infrastructures. Finally, they will make ordinary central banking facilities available to the recapitalized bank on the basis of the bank’s unencumbered assets.

In particular, the central bank should stand ready to take over both the financing and the collateral from repo providers. It makes no sense for the central bank to create the impression that it will refuse to grant the recapitalized bank access to ordinary central bank facilities. Such a position would undermine practically any resolution plan that the resolution authority might devise.

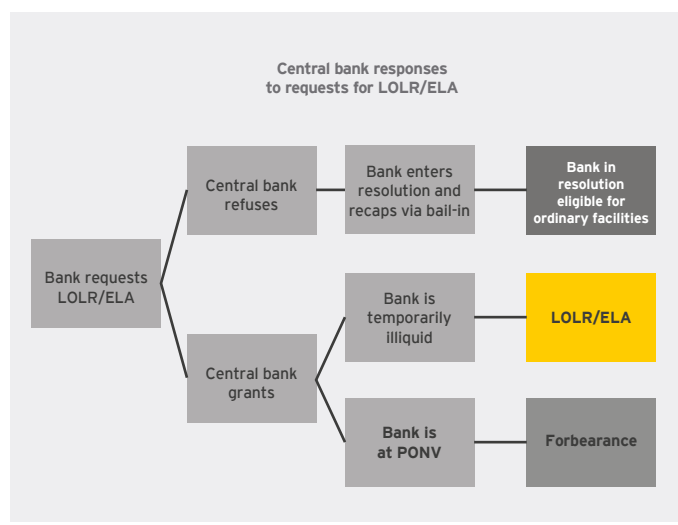


Figure 4

4.1 Reverting to banks as the single transmission mechanism

In contrast, the case for attempting to reinstate banks as the single channel for the transmission mechanism is weak, particularly in the US. First, banks account for a diminishing share of total credit. The role of nonbanks, including so-called shadow banks, is growing. These entities do not necessarily depend on banks for their own financing, particularly during the upswing of the business cycle.

Second, banks and central banks have different perspectives. Banks (or at least the major banks) operate across many jurisdictions. A central bank must focus primarily, if not exclusively, on its own jurisdiction. Legislation sets the central bank's objectives (price stability, financial stability, and, in some cases, growth and full employment) in domestic terms.

As a consequence, focusing the transmission mechanism solely on banks is likely to be ineffective. Although the central bank can determine the risk-free rate (and therefore the appropriate floor price for credit), it cannot determine the volume of credit. In an upturn, borrowers can turn to nonbank sources of credit. If credit is fuelling the boom, restricting bank credit alone will not necessarily reduce the pace of expansion in overall credit to a sustainable rate.

Nor will focus on banks alone ensure that credit will flow at the trough of the business cycle in amounts sufficient to initiate and sustain the recovery. Banks lack the capacity to do so, and banks lack the incentive. In theory, macro-prudential supervisors would give banks the capacity to expand credit at the trough by rescinding the countercyclical capital surcharge that they had imposed prior to the peak. In practice, however, banks find that capital held to meet the surcharge is needed to meet the hurdle rate imposed under the stress test (or tests) that micro-prudential supervisors conduct.

Central banks, therefore, face a conflict between their macro-economic policy objectives and their supervisory responsibilities. Extending credit at the trough can facilitate the recovery. As borrowers spend the proceeds of the loan, this will stimulate output and employment. Enough lending can produce enough stimulus to jump-start the recovery.

But there is no guarantee that it will do so. At the trough of the cycle, borrowers find it prudent not to count on any improvement in economic conditions until the "green shoots" of recovery are well on their way to becoming sturdy plants. Until such time, borrowers are likely to be looking to strengthen their balance sheets and the higher-rated borrowers are more likely to be successful in doing so. Many of the borrowers who do not strengthen their balance sheets cannot. They lack the current income to do so and/or the prospective future income necessary to attract new equity. Accordingly, the demand for bank credit at the trough of the cycle is likely to come disproportionately from lower-rated borrowers - precisely the segment bank supervisors will be most concerned about. Indeed, at the trough of the cycle, supervisors are much more likely to be urging banks to deal with their nonperforming loans than to extend new credit to those who are more likely to have difficulty in paying it back.

In sum, for the near future, banks are likely to remain semi-special. Although they will remain the most important element in the transmission mechanism, they will by no means be the only one. Although they will be the primary interface with the payment system, the advent of open banking will further reduce the benefits banks derive from this position.

However, in the not too distant future, banks may not be special at all. A central bank could shift to direct transmission: they would interact directly with the individuals and institutions that constitute the "real" economy rather than indirectly via banks or financial institutions. This may not be feasible today, but could well be within the next five to 10 years.

How might central banks do this? One possible route is central bank digital currency (CBDC). This is essentially today's currency in digital form. In fact, a CBDC will be far superior to alternative digital currencies (ADCs), such as bitcoin. What ADCs lack, central banks have. ADCs do not function well as a store of value: their price is too volatile, their defenses against hacking are too weak and their backing is nonexistent. Central bank money is the quintessential store of value. What ADCs have (distributed ledger technology), central banks can and will acquire. This will enable central banks to issue CBDC.

A number of central banks are already considering how this might be done, including the Bank of England,²³ the Sveriges Riksbank,²⁴ the Norges Bank,²⁵ the Bank of Canada,²⁶ the Monetary Authority of Singapore,²⁷ the European Central Bank,²⁸ the Federal Reserve²⁹ and the People's Bank of China.³⁰ Central banks are not only exploring how digitization might enhance the current role of central bank money in clearing and settlement infrastructures. They are also considering whether central banks could and should issue digital currency more broadly to the general public either as a token or in the form of an account at the central bank.³¹

	Transmission mechanism for monetary policy	Access to central bank payment system	Access to central bank liquidity facilities	Supervisory focus of central bank
Traditional	Banks	Banks	Banks	Banks
Current	Multi-channel	Banks via RTGS	All FIs?	All systemic institutions Macro-prudential supervision
Near future	Strengthen multi-channel	Greater indirect access for all via "open" banking	Align to transmission mechanism	Align to transmission mechanism
Not-so-distant future	Direct	All direct via RTGS	All against eligible collateral	Solvency/capital check only

Table 2

Prospectively, everyone would have access to a CBDC. Indeed, if governments begin to use CBDC to distribute benefits, collect taxes, pay interest on government bonds and pay suppliers, practically everyone will have to have a CBDC account at the central bank. Once an individual or institution has such an account, they can use it for other transactions, such as receiving their salary or paying their bills. They can also allow cash to accumulate in the account as an investment.

23 Broadbent (2016)
 24 Sveriges Riksbank (2017); Kingsley (2016)
 25 Nicolaisen (2017)
 26 Wilkins (2017); Fung & Halaburda (2016)
 27 Monetary Authority of Singapore (2017)
 28 Mersch (2017)
 29 Powell (2017)
 30 Fan (2017)
 31 Bech & Garratt (2017); Hileman & Rauchs (2017:88)

For macroeconomists, a CBDC holds a certain charm.³² It would expand the policy tool kit: it would greatly increase the ability to employ negative interest rates³³ and it would facilitate the distribution of "helicopter money"³⁴ or the introduction of basic income.

For banks, however, a CBDC should hold considerably less charm. A CBDC would not only replace cash, it could also displace deposits. CBDC outstandings will be direct senior obligations of the central bank. They will effectively be backed by the full faith and credit of the government. They will not be subject to bail-in.

They will, therefore, have lower risk than bank deposits, particularly uninsured deposits.³⁵ This could lead to a significant shift of funds from banks to CBDC accounts, particularly if the central bank pays interest on funds held in CBDC accounts - something the central bank is likely to want to be able to do.³⁶ With the advent of CBDC, the central bank balance sheet could grow very large indeed. Over time, the central bank could well become the largest single source of credit to the economy as a whole as well as to specific institutions. This prospect intensifies the debate over the type of assets that the central bank should acquire, and over the impact that the central bank would have on the markets for such assets and financial markets overall.

First, the central bank will need to decide the framework for its liquidity facilities. If central banks continue to grant all account holders access to ordinary lending facilities, this would imply that anyone with a CBDC account could borrow from the central bank against a pledge of eligible collateral. The central bank would then have to decide the basis on which such lending could take place. The simplest - as well as the one that facilitates the operation of the direct transmission mechanism - would be for the central

32 Bordo & Levit (2017)
 33 Rogoff (2016); Haldane (2015); Broadbent (2016); Wissenschaftlicher Beirat beim Bundesministerium für Wirtschaft und Energie (Germany) (2017)
 34 Rather than dropping dollar bills from helicopters, the central bank could simply credit CBDC accounts with additional funds. If CBDC accounts were linked to tax identifier numbers, there is the additional possibility for such distributions of "helicopter money" to be targeted toward lower income individuals (who have a higher propensity to spend).
 35 We assume that bank deposits will continue to be exchangeable with currency on a one-to-one basis in unlimited amounts as long as the bank issuing the deposit remains in operation. In this respect, the analysis here differs from those who envision a variable exchange rate between the CBDC and bank deposits that is either set by the market bidding for a limited amount of CBDC, Barrdear & Kumhof (2016), or set by the authorities in a managed fashion. Agarwal & Kimball (2015)
 36 Indeed, the ability to vary that rate of interest would constitute another policy tool. In effect, it would be the deposit rate on bank reserves writ large.

bank to give account holders the right to borrow. Under such an approach, the central bank would commit (possibly upon payment of a commitment fee) to refinance any eligible collateral that the account holder had prepositioned with the central bank. Note that the actual amount that the account holder could draw (the advance rate) and the interest rate the account holder would pay would depend on the haircuts and rates in force at the time.³⁷

Second, the central bank will need to decide whether it should assume a more direct role in the extension of credit. To date, central banks have generally not played a prominent role - aside from their activities vis-à-vis banks - in either the origination of credit or in the exercise of creditors' rights against obligors who violate covenants or actually default. They have restricted purchases of corporate bonds and asset-backed securities to the secondary market. Additionally, they have taken care to ensure that their holdings of such securities do not constitute a majority of any one issue or class of debt so that private creditors retain the primary responsibility for dealing with troubled borrowers.

Could central banks take on such a task? Probably, yes. Central banks already collect, collate and calibrate credit information on the obligors issuing the instruments that the central bank purchases outright or accepts as collateral. This enables central banks to assess the risks that they incur as well as to monitor overall credit conditions.³⁸

Should central banks take on such a task? That is a different question entirely. An argument in favor is that they may need to do so. As outlined above, a CBDC may be superior to bank deposits, especially uninsured deposits. This could lead to a situation where the central bank has excess funds to invest, while banks struggle to find the funding to finance the loans that individuals and institutions are requesting banks to grant. In such a situation, central banks' direct extension of credit could help ensure an adequate flow of credit to the "real economy."

³⁷ King (2016)

³⁸ For example, the ECB is laying the foundation for an analytical credit database (AnaCredit) see European Central Bank (2016). This builds on prior work in various member states to create and maintain a credit register. Globally, the Legal Entity Identifier (LEI) project, LEI ROC (2015), assigns a unique number to each legal entity. This facilitates aggregation of exposures to that entity and provides the potential to extend the AnaCredit approach to other jurisdictions on a standardized basis.

However, this course of action is filled with well-known dangers: it politicizes the extension of credit as well as the exercise of creditors' rights - hardly a situation in which central banks are likely to be able to maintain their independence. At a minimum, legislatures and governments will want to review the criteria that the central bank uses to allocate credit. But, it is far more likely that legislatures and governments will seek to set the criteria along political as well as economic lines. The criteria would include both the terms and conditions on which the central bank extends credit as well as the rigor and vigor with which the central bank would seek to exercise any remedies available to it as creditor. This could easily lead to credit allocation toward favored sectors as well as forbearance for troubled creditors within such sectors. Neither of these outcomes would be good for efficiency or growth.³⁹

As yet, no central bank is ready to introduce a freely available central bank digital currency. In part, this is because they are acutely aware of the technology, security, privacy and legal challenges that such an instrument would have to meet before a central bank could stake its reputation, its citizens' wealth and its nation's fortunes upon it.⁴⁰ A CBDC would have to be universally and continuously available to eligible participants as well as able to handle a vast volume of transactions at speed and with accuracy. In addition, the CBDC would have to be robust against the cyber attacks that it would undoubtedly attract as a single point of failure for the economy as a whole. Finally, decisions regarding privacy would be required, not the least the entities with whom and the procedures by which the central bank might share the detailed information that a CBDC could generate about the transactions, finances and even possibly the location of participants.

In part, however, central banks hesitate to introduce a CBDC due to the disruption to the banking system that such an innovation could cause. As Vitor Constâncio, Vice President of the European Central Bank, recently remarked:

"[T]he use of the blockchain by central banks to create digital currency open to all citizens without limits would be really disruptive. This would be a radical political choice that

³⁹ In addition, central bank digital currency potentially aggravates privacy concerns. It would facilitate government tracking of an individual's receipts and expenditures as well as their physical presence at the point at which such expenditures are made.

⁴⁰ Powell (2017); Hileman & Rauchs (2017:103)

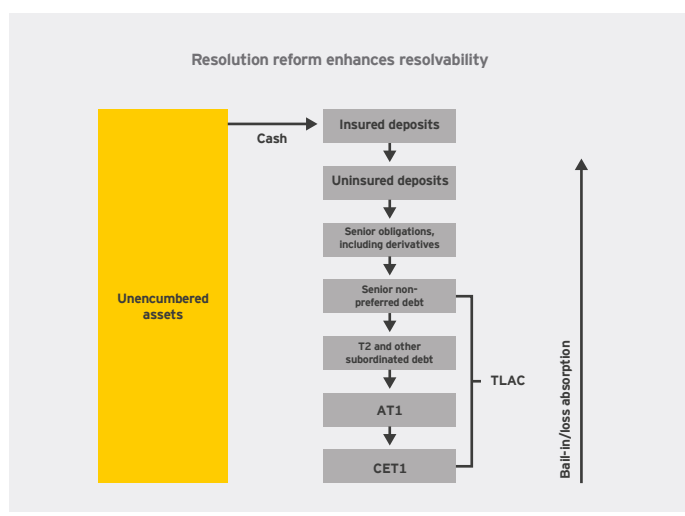


Figure 5

could end banking as we know it and is therefore unlikely to happen.”⁴¹

For the near future, that is undoubtedly true. But, that may not always be the case. Over the next five to 10 years, technology will continue to advance and this may enable central banks to satisfy their security, privacy and legal concerns. In other words, nothing would stand in the way of a central bank issuing a CBDC. Will they always refrain from doing so?

There are two circumstances in which they might not. If ADCs were to gain significant traction, this could threaten a central bank’s ability to exercise its macroeconomic mandate. If the central bank perceived the threat to be serious, it might well respond by issuing a CBDC.

A second possibility is perhaps more plausible. Suppose there were another crisis, and suppose that banks were to blame (or seen to be so). That could give rise to political pressure to “end banking as we know it,” and a CBDC could well be the way to do it.

As noted above, the introduction of a CBDC enables the central bank to perform directly the critical economic functions currently performed by banks. In particular, via the CBDC and its associated accounts at the central bank, institutions and individuals can hold

41 Constâncio (2017)

deposits, make and receive payments, and potentially obtain credit.

Accordingly, banks and other financial institutions would become less systemic and that in turn would make the resolution of failing banks much more straightforward.

Resolution reform has already led to a reordering of the creditor hierarchy so that deposits have preference in liquidation (and insured deposits a first preference)⁴² (see Figure 5). Provided the authorities intervene in a timely manner,⁴³ banks could potentially be resolved by transferring – together with an equivalent amount of the failed bank’s unencumbered good assets – the failed bank’s insured deposits (and possibly all deposits) to the central bank. The central bank would then credit each customer’s deposit to its CBDC account⁴⁴ and customers could continue to conduct critical economic functions via their CBDC accounts. After the deposit transfer, a rump bank would remain. This would be restructured or liquidated. Thus, if a CBDC existed, it could facilitate resolution and enhance financial stability.

This is perhaps one more reason to characterize central banks’ current verdict on CBDC as “not now” rather than “never.” There may come a time when central banks opt or are told to “end banking as we know it” by introducing a CBDC. In that case, banks would not be special at all.

5. Conclusion

In sum, this paper argues that banks are only as special as central banks make them. Traditionally, that was very special indeed, for central banks restricted access to their payment systems to banks, while central banks themselves used banks as the transmission mechanism for monetary policy. To facilitate the transmission mechanism, central banks extended credit facilities to banks. This in turn propelled the central bank into supervising banks.

42 Note that according insured deposits, a first preference very significantly reduces the risk of deposits (and correspondingly the risk to the deposit guarantee scheme), particularly if there were substantial layers of subordinated liabilities below the insured deposit layer. This is essentially the case under the EU Banking Recovery and Resolution Directive (BRRD), particularly for significant institutions that will be required to maintain TLAC equal to 18% of its risk-weighted assets.

43 The key to timely intervention is timely valuation. This would enable the authorities to avoid forbearance and to institute resolution, while the bank still had positive net worth.

44 To be able to effect such a transfer smoothly, the “single view of the customer” contained in the bank’s resolution plan could be adjusted to include the number of the CBDC account to which the deposit would be transferred in the event the bank failed.

However, over time, banks have become less special. Central banks have moved payment systems to a RTGS basis.

The transmission mechanism for monetary policy now has many channels, not just banks. Central banks now extend credit to a broad range of institutions, not just banks. Supervision is broader as well.

Central banks are now considering whether to introduce central bank digital currencies. If they do, practically everyone may be able to have an account at the central bank. This would allow central banks to transmit monetary policy directly to the economy at large, to extend credit facilities to all, and to move away from much if not all of bank regulation and supervision. But, this could politicize credit as well as harm efficiency and growth. In the process, banks would not only become less systemic, they could well become collateral damage, for a central bank digital currency would not only replace cash. It would displace deposits.

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