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DP18103

## **MONETARY POLICIES WITHOUT GIVEAWAYS TO BANKS**

Paul De Grauwe and Yuemei Ji

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Discussion Paper DP18103

Published 22 April 2023

Submitted 21 April 2023

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[www.cepr.org](http://www.cepr.org)

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# MONETARY POLICIES WITHOUT GIVEAWAYS TO BANKS

## Abstract

The massive programs of government bond buying have led to a fundamental change in the operating procedure of the major central banks. The latter now operate in a regime of abundance of bank reserves. This makes it impossible to raise the money market rate except by increasing the rate of remuneration of bank reserves. This, in turn, leads to a massive transfer of the central banks' profits to commercial banks that will become unsustainable. We argue that the remuneration of bank reserves is not inevitable and that there is an alternative to the current central banks' operating procedure that avoids making profit transfers to private agents. We propose to use minimum reserve requirements as a policy tool to achieve this objective. Our favoured proposal is a two-tier system of reserve requirements that would only remunerate the reserves in excess of the minimum required. This would drastically reduce the giveaways to banks and allow the central banks to maintain their current operating procedures.

JEL Classification: E52, E58

Keywords: Monetary policy, Central bank reserves, inflation

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April 2023

## **Monetary policies without giveaways to banks**

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### *Abstract*

The massive programs of government bond buying have led to a fundamental change in the operating procedure of the major central banks. The latter now operate in a regime of abundance of bank reserves. This makes it impossible to raise the money market rate except by increasing the rate of remuneration of bank reserves. This, in turn, leads to a massive transfer of the central banks' profits to commercial banks that will become unsustainable. We argue that the remuneration of bank reserves is not inevitable and that there is an alternative to the current central banks' operating procedure that avoids making profit transfers to private agents. We propose to use minimum reserve requirements as a policy tool to achieve this objective. Our favoured proposal is a two-tier system of reserve requirements that would only remunerate the reserves in excess of the minimum required. This would drastically reduce the giveaways to banks and allow the central banks to maintain their current operating procedures.

We are grateful to Ignazio Angeloni, Daniel Gros, Karel Lannoo, Wim Moesen and Theo Peeters for comments and suggestions.

## 1. Introduction

The recent increases in the interest rates have important implications for the profits and losses of central banks. Since the major central banks pay interest on commercial banks' holdings of bank reserves (held at the central bank), interest rate increases also lead to larger interest payments by the central banks to these commercial banks<sup>1</sup>. Taking the example of the Eurosystem: bank reserves held by credit institutions at the national central banks and the ECB amounted to €4.1 trillion in March 2023 (ECB, Statistical Data Warehouse). In the same month the remuneration rate on these bank reserves held by commercial banks was raised to 3%. This means that the Eurosystem is paying out €121 billion interest to credit institutions as from March 2023, on a yearly basis.

Other central banks, in particular the Federal Reserve and the Bank of England are now following the same procedure of raising the interest rate by increasing the rate of remuneration on bank reserves. In Table 1, we compare the interest transfers for these three central banks. We find that these transfers to commercial banks have become substantial. The last column of the table shows these interest payments as a percent of GDP. One observes that in relative terms the transfers made by the Bank of England are the highest followed by the ECB and the US Fed.

Table 1

Bank reserves and interest payments to banks (March 2023), billions				
	Bank reserves	Interest rate	Interest payments	percent GDP
ECB	€ 4.034	3,00%	€ 121	0.99%
Fed	\$3.370	4,90%	\$165	0,66%
BoE	£909	4,25%	£39	1,75%

Sources: Bank of England, Board of Governors Federal Reserve and European Central Bank  
See list of references for more detail on the sources.

These are substantial numbers. The interest transfers to the banks imply that the respective central banks will have to reduce their profit transfers to their national governments by the same amounts. This loss of revenue of national governments amounts to 0.99% of Eurozone

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<sup>1</sup> They also lead to valuation losses of the central banks. To the extent that these losses are realized on government bonds they do not matter as they are compensated by equal gains of the national treasuries that have issued these bonds (see Gali(2020), Muellbauer(2016)).

GDP, 0.66% of US GDP and 1.75% of UK GDP, leading to increases in the budget deficits of these countries of the same magnitude. This will require additional fiscal austerity in the future.

Many economists and central bankers today take it for granted that bank reserves are remunerated. Yet this remuneration is a recent phenomenon. Prior to the start of the Eurozone in 1999 most European central banks, with the exception of the Bundesbank, did not remunerate banks' reserve balances. The ECB started this practice in 1999. The Federal Reserve introduced the remuneration of banks' reserve balances only in 2008. Thus prior to 2000 the general practice was *not* to remunerate banks' reserve balances. This made good sense: commercial banks themselves do not remunerate demand deposits held by their customers. These demand deposits have the same function as bank reserves at the central bank: they provide liquidity for the non-bank sector. These are not remunerated. It is difficult to find an economic justification why bankers should be paid when they hold liquidity while everybody else should accept not to be remunerated.

The lack of economic foundation for paying massive interest on banks' liquid reserves becomes even more striking when considering the following. When the central bank makes interest payments to commercial banks it transfers part of its profits to the banking sector. Central banks make profit (seigniorage) because they have obtained a monopoly from the state to create money. The practice of paying interest to commercial banks thus amounts to transferring this monopoly profit to private institutions. This monopoly profit should in fact be returned to the government that has granted the monopoly rights. It should not be appropriated by the private sector, which has done nothing to earn this profit. The present situation of paying out interest on banks' reserve balances amounts to a subsidy to banks paid out by the central banks at the expense of taxpayers.

The paying of interest on banks' reserve accounts has another unfortunate consequence. It transforms long-term government debt into a short-term debt. Most of the government bonds held by the central banks have been issued at very low interest rates, often even zero or negative. This implies that governments are immune for some time from the interest rate rises. By paying an interest rate of 3% (Eurozone) to 4.9% (US) on bank reserves and thus reducing government revenues in the same amount, the central banks transform this long-

term debt into highly liquid debt forcing an immediate increase in interest payments on the consolidated debt of the government and the central bank.

Several questions arise here. First, is this remuneration necessary to conduct monetary policy? Second, do there exist alternative policy procedures that avoid making large interest payments to banks? We will argue that central banks can use minimum reserve requirements as an important monetary policy tool. Third, why is the use of minimum reserve requirements so unpopular among central bankers and economists? These are the questions we wish to analyze in this paper.

## **2. Is the remuneration of bank reserves necessary to conduct monetary policy?**

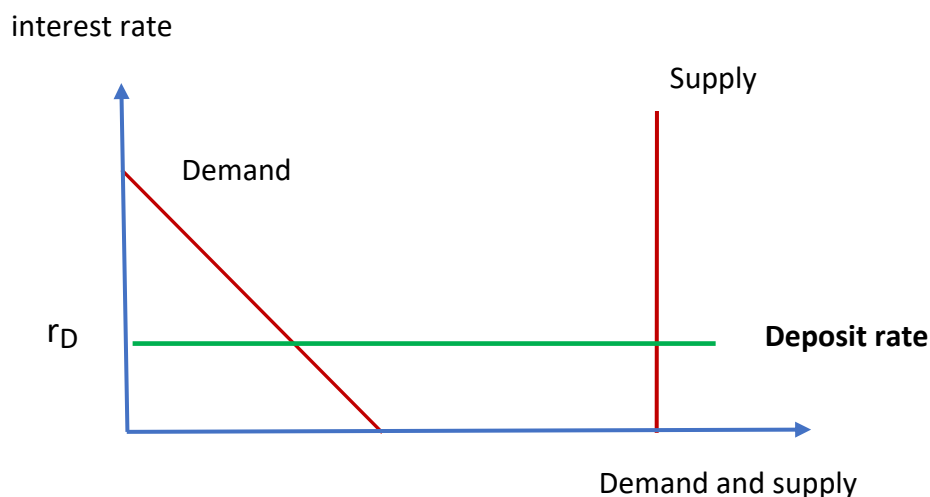
The standard answer of many economists and central bankers is positive. Here is the argument. Today, there is an oversupply of bank reserves thanks to the large-scale QE operations of the past. There is, in other words no scarcity of liquidity, on the contrary there is an abundance. This creates a problem for the central banks when they want to raise the interest rate. We show this in Figure 1. This represents the demand for reserves (by banks) and the supply (by the central bank). The demand is negatively related to the money market interest rate (interbank rate). The supply is determined by the central bank. The latter increases (reduces) the supply by buying (selling) government bonds. Figure 1 presents the regime of reserve abundance: the central bank has bought large amounts of government bonds in the past and thereby created excess supply of reserves. As a result, without remuneration of bank reserves the interest rate is stuck at 0% and the central bank cannot raise the interest rate.

In order to raise the interest rate in this reserve abundance regime the central bank can remunerate bank reserves, which are essentially deposits at the central bank held by commercial banks. In doing so, the demand curve becomes horizontal at the level of the deposit rate, i.e. the deposit rate,  $r_D$ , acts as a floor for the interbank interest rate. The reason is that banks will not be lending in the interbank market at an interest rate below the (risk-free) deposit rate. Given the abundance of bank reserves this is the only way to raise the money market interest rate.

An increase in the interest rate on bank reserves (deposit rate) is then transmitted into an increase of the money market interest rate and to the whole structure of interest rates (Ihrig

and Wolla(2020), Baker and Rafter(2022)). Today such an increase in the interest rate is necessary to fight inflation. Therefore, in the present regime of reserve abundance, the only way to raise the interest rate is to remunerate banks' reserves and to increase this rate of remuneration.

**Figure 1: Demand and supply of reserves in reserve abundance regime**



Note: This is a stylised representation of the market for bank reserves. It does not show the marginal lending rate which acts as a ceiling and is raised together with the deposit rate.

The present regime of reserve abundance has affected economists' view of the role of central banks. There was a time the central bank was viewed as an institution that could create money out of nothing. Probably, the best-known proponents of this view are Milton Friedman and Anna Schwartz (Friedman and Schwartz(1963)). The present operating procedure of central banks whereby the central bank is "forced" to pay a rate of remuneration on bank reserves has led to the view that the money base created by the central bank is part of the public debt. Thus, when the central bank buys government bonds and creates bank reserves, it substitutes one form of public debt (government bonds) for another form of public debt (interest bearing bank reserves). In this view government bonds and money base are different forms of public debt and monetary policy is fundamentally fiscal policy (for examples of this view, see Gros and Shamsfakhr(2022), Reis(2022)<sup>2</sup>).

<sup>2</sup> This view leads Reis to write that central banks "pay for purchases of government bonds by borrowing more from banks" (Reis(2022), p.10). Actually, central banks create deposits when they buy bonds.



This view cannot be accepted. There is nothing inevitable in the present situation where central banks remunerate bank reserves. It is not inherent in central banking that money base should be remunerated. In most of the history of central banking money base has been created without paying interest to the holders of the money base.

The ECB has announced that it will gradually reduce its holdings of government bonds by not reinvesting in new bonds when old bonds come to maturity. This will lead to a gradual decline of the amount of government bonds on its balance sheet. It will take many years, however, to reach the point where the excess supply of reserves has been eliminated. The Federal Reserve is also reducing its holdings of government securities. It has made it clear, however, that it wants to remain in the reserve abundance regime by keeping a sufficient amount of government securities on its balance sheets. The Bank of England has announced a gradual depletion of its holdings of UK government bonds. To maintain the abundant reserve regime the Bank of England offers reserves through short-term repo operations at the same rate of remuneration of bank deposits at the central bank. This will keep the supply of bank reserves sufficiently high so that the regime of reserve abundance can be maintained, while allowing the Bank of England to unwind its stock of government bonds (see Schnabel(2023)).

Thus, it appears that we will remain in a reserve abundance regime for many years to come in the Eurozone, the US and the UK. This implies that the operating procedure of these central banks will continue to be based on manipulating the rate of remuneration of banks reserves as their central policy tool, which in turn also implies that these central banks intend to continue to make large transfers of their profits to commercial banks for many years, if not decades to come.

In order to get some idea about the order of magnitude of these expected future transfers we analyzed the case of the ECB. The latter has announced the pace of the gradual decline of its government bond holdings, i.e. €15 billion a month. At this pace it will take more than 20 years for the Eurosystem to eliminate its government bond holdings from its balance sheet. During this period, it is likely that interest rates will settle to a new normal. What this is, is difficult to predict but it is not unreasonable to expect that this may be around 3% if the ECB manages to stabilize the rate of inflation at 2%.

Under these assumptions, the Eurosystem will pay out cumulatively more than €1 trillion to banks during the next 10 years. Note that our assumption that the interest rate stabilizes at

3% implies that the ECB is successful in bringing the rate of inflation back to its target level of 2% rather quickly. If the ECB is not successful, the interest rate is likely to be higher, thereby leading to even higher future transfers to banks.

It is illuminating to compare the size of these future transfers to banks to the size of the grants to be distributed to governments in the context of the multi-annual NextGenerationEU programme. These NextGenerationEU grants amount to €340 billion. It will be remembered that this programme was decided after long and sometimes acrimonious political discussions and that numerous conditions were imposed on governments receiving these grants. In contrast, no political discussion has preceded the decision made by the ECB to hand out grants to banks that are three times the size of the NextGenerationEU grants. In addition, the ECB did not impose any conditions when granting this money to banks.

It is likely that the US Federal Reserve and the Bank of England will make similarly large transfers to commercial banks during the next ten years. All this leads to the question whether such large cumulative transfers to commercial banks will be sustainable, not only financially for the central banks but also politically when voters become aware of the sheer magnitudes of these transfers that actually belong to taxpayers, and when they realize that banks receive these large interest payments on risk free assets.

### **3. Alternative policies that avoid making large interest payments to banks**

In this section we discuss the different alternatives the central banks have to conduct monetary policies without having to transfer large parts of their profits to banks.

#### ***3.1 A return to the scarce reserve regime***

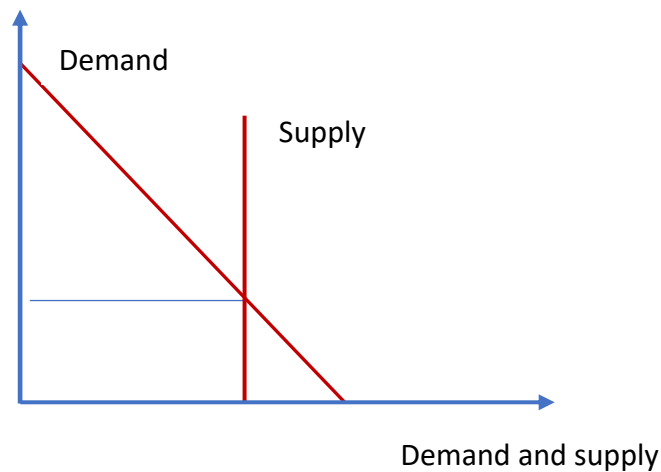
The first alternative is to sell government bonds (in today's parlance: Quantitative Tightening, QT). This has two effects. First, the sales of government bonds reduce the amount of bank reserves, and therefore the amount of liquidity in the system. We show this in Figure 2. By selling a sufficient amount of government bonds the supply of reserves shifts to the left until it intersects the demand curve in the downward sloping part. The interbank interest rate is then determined by the intersection point of demand and supply of reserves.

This recreates the situation that existed prior to QE. This was a regime of reserve scarcity. The central bank would set a target interbank interest rate and would guide the market rate

towards this target by manipulating the supply of reserves. This operating procedure would then determine the interbank rate without the need for the central bank to remunerate bank reserves (see Ihrig and Wolla(2020) for more detail).

**Figure 2: Demand and supply of reserves in reserve scarcity regime: no remuneration**

interest rate



The problem with this approach today is that the central banks would have to sell large amounts of government bonds. For example, in March 2023 the ECB was holding €4.9 trillion of bonds (mostly government bonds)<sup>3</sup>. This has led to reserve balances of the banking system of €4.1 trillion, 99% of which are reserves in excess of minimum reserve requirements (of 1%). In order to bring back the supply curve in the range given by the downward sloping part of the demand curve, the ECB would have to sell almost all the government bonds it holds. An operation that would create havoc in government bond markets.

A similar problem arises in the US and the UK. In March 2023 the US Federal Reserve was holding government securities and government backed securities amounting to \$7.9 trillion<sup>4</sup> which, as in the Eurozone, has created a huge oversupply of bank reserves. The Bank of England is in a similar position. As was mentioned in the previous section, these central banks have made it clear that they wish to maintain the reserve abundance regime and that they do not wish to return to the previous reserve scarcity regime. This, as we argued earlier, implies

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<sup>3</sup> See ECB, Consolidated Financial Statement of the Eurosystem, <https://sdw.ecb.europa.eu/reports.do?node=10000024>

<sup>4</sup> Federal Reserve System, <https://www.federalreserve.gov/releases/h41/20230323/>

that central banks intend to continue to make massive transfers of their profits to commercial banks. Surely there should be a better way to conduct monetary policy. This alternative consists in using minimum reserve requirements. We discuss two scenarios. A system of minimum reserve requirements that absorbs the excess reserves and a two-tier system of minimum reserve requirements.

### ***3.2 Minimum reserve requirements that absorb the excess reserves.***

Central banks could decide to raise minimum reserve requirements while paying no interest on bank reserves. Most central banks have minimum reserve requirements in their toolkit. In fact, in the past this was a policy tool actively used by central banks. Its use, however, has fallen out of fashion. The ECB, for example, has chosen not to use this instrument and has kept it constant most of the time. Today it stands at 1%. The Federal Reserve has abolished minimum reserve requirements altogether. Nothing prevents these central banks from using it again. Thus, they could decide to raise minimum reserve requirements so that the excess reserves banks hold today become required reserves on which no interest is paid. What would be the effect on the interest rates?

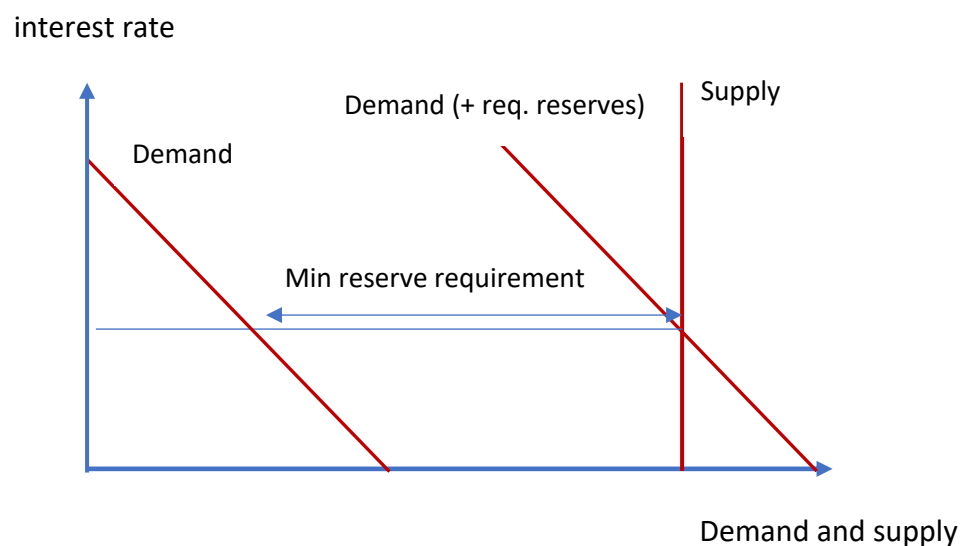
We show these effects in Figure 3. As a result of the increase in minimum reserve requirements, the demand for reserves shifts horizontally to the right. We are back in the reserve scarcity regime: the interest rate is determined by the intersection of the new demand curve with the unchanged supply curve. Banks are not remunerated on their bank reserves and the central bank can manipulate the supply of reserves to guide the money market rate by relatively small open market operations. For example, if it wishes to raise the money market rate it can reduce the supply of reserves by relatively small sales of government bonds thereby shifting the supply of reserves to the left. These interest changes can be achieved with relatively small changes in the supply of bank reserves because the supply curve intersects the demand curve in the negatively sloped segment.

Note also that banks would now have a larger proportion of their balance sheet in the form of assets that have no return. In order to restore their overall interest spread (the difference between the interest earned on their assets and the interest paid on their liabilities) they would have to increase the interest rate they apply on their loan portfolio. This would lead to

a generalized increase in interest rates. This is exactly what central banks today pursue in their strategy to fight inflation.

In fact, the existence of non-remunerated minimum reserve requirements makes the transmission of monetary policies to the real economy stronger. In their attempt to restore their profit margin (that is reduced by the existence of non-remunerated minimum reserves), banks will tend to increase the loan rate more than proportionately to the increase in the central bank's policy rate (remuneration rate). Thus, a given increase of the policy rate is amplified in the loan rate. This also makes it possible for the central bank to have the same impact on the real economy with a lower increase in the policy rate.

**Figure 3: Demand and supply of reserves with reserve requirement: no remuneration**



At the end of 2022 total assets reported by Eurozone credit institutions stood at €37.5 trillion<sup>5</sup>. Their reserves held in the form of deposits at the central banks of the Eurosystem amounted to €4.4 trillion. In the limit minimum reserve requirements could be raised to encompass the whole of these bank reserves. This would imply that 12% of the balance sheet of these credit institutions would be tied up in non-interest-bearing assets. For the US we obtain similar figures. In March 2023, total assets of US domestically chartered banks stood at \$19.7 trillion<sup>6</sup>. Bank reserves amounted to \$3.4 trillion on the same date, leading to a ratio

<sup>5</sup> See <https://sdw.ecb.europa.eu/browse.do?node=9691315>

<sup>6</sup> See <https://www.federalreserve.gov/releases/h8/current/default.htm>

of 17%. These are percentages that are not unusual in countries that apply minimum reserve requirements as a policy tool (see IMF, Integrated Macprudential Policy (iMaPP) Database). An often formulated objection to the use of minimum reserve requirements is that these amount to an implicit tax on the banking sector. Thus, it is said, the central bank is mixing monetary and fiscal policies. A central bank does not have a mandate to do fiscal policies. This is a strange objection. After all, the monetary authorities often use bank regulations that affect the profitability of banks. Minimum equity ratios come to mind. These regulations, including minimum reserve requirements, do not lead to tax revenues and therefore have no budgetary implications. In contrast, the present system where central banks transfer large amounts of their profits to banks and not to their respective governments have important budgetary implications as they reduce government revenues. If anything, it is the present operating procedure of central banks that mix monetary and fiscal policies. And surely, central banks do not have a mandate to transfer their profits to private agents rather than to the national budget.

A combination of sustained sales of government bonds and minimum reserve requirements would probably be the best policy option. Thus, the central bank would raise minimum reserve requirements to move into the scarce reserve regime as in Figure 3. It would then gradually start reducing its bond holdings allowing the supply curve to shift to the left. This then also would make it possible for the minimum reserve requirements to be relaxed gradually. In Figure 3 both the supply and the demand curves would then shift to the left, maintaining a regime of reserve scarcity and allowing the central bank to use its monetary policy tools without subsidizing banks.

We conclude that it is perfectly possible for central banks today to raise the interest rates to reduce inflation without having to transfer large parts of their monopoly profits to commercial banks. These profits belong to society as a whole and should be transferred to governments.

### ***3.3 A two-tier system of reserve requirements***

We are aware that the proposal formulated in the previous section is quite intrusive and is resisted by the banks who will see an easy source of profit disappear at once. It is likely to be resisted by central banks also because it implies a return to operating procedures that existed in a reserve scarcity regime prior to the financial crisis. The major central banks now embrace

their new operating procedure (arising from the abundant reserve regime) which consists in raising the rate of remuneration on bank reserves as an instrument to increase the market interest rate in their fight against inflation. This has also led to a surprising but widespread conviction among central bankers and economists that this is the only reasonable operating procedure.

Can one design a system that will avoid having to make massive transfers to banks while maintaining the current operating procedure used by the central banks, and in doing so (hopefully) gaining their backing? We believe it is possible to design such a system. It is a two-tier system.

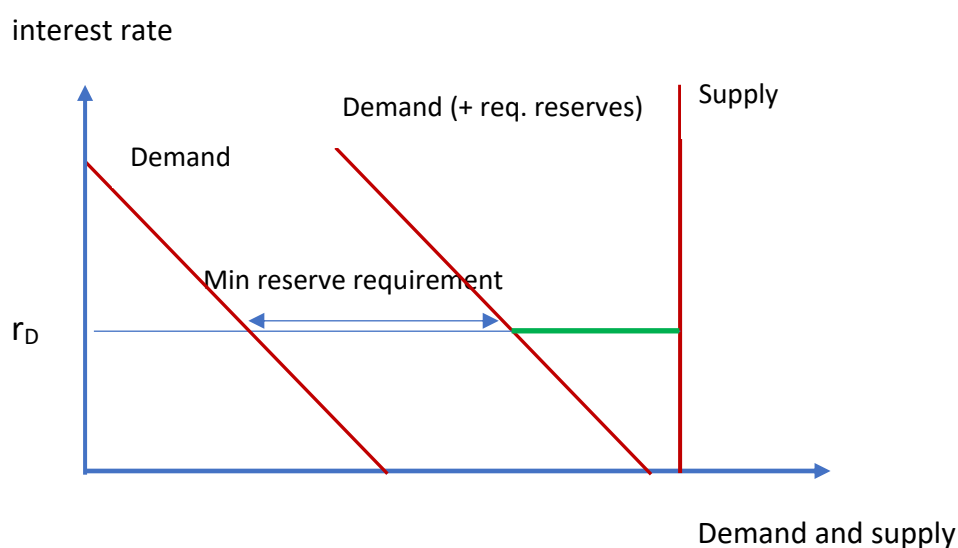
The two-tier system consists in imposing non-interest-bearing minimum reserve requirements on *part* of the bank reserves. The bank reserves exceeding the minimum requirement (excess reserves) would then be remunerated as they are today (for similar proposals for a two-tier system, see Whelan (2021), Buetzer(2022), van Lerven and Caddick(2022). See also Angeloni(2023) for a proposal not to remunerate bank reserves).

The imposition of minimum reserve requirements leads to a horizontal displacement of the demand curve to the right (see Figure 4). The minimum reserve requirement would apply only on part of the total bank reserves (in contrast with the previous section where we assumed that the whole of the existing bank reserves would be transformed into required reserves). As a result of this partial displacement of the demand curve, we remain in the abundant reserve regime. The central bank then remunerates the excess reserves with the rate  $r_D$  (the horizontal green line). As before, this rate of remuneration acts as a floor for the market rate, and the central bank can raise the market rate by increasing the interest rate on (excess) bank reserves.

The advantage of this two-tier system is that the operating procedure so cherished by central bankers can be kept unchanged. The central bank continues to use the interest rate on bank reserves as its monetary policy instrument. However, the transfer of central banks' profits to commercial banks can be reduced significantly. We show this in Table 2, where we assume that the central banks would block 75% of the existing bank reserves in the form of non-remunerated minimum reserves. The remuneration would then be on the excess reserves using the same interest rates as shown in table 1. We observe that in our proposed system there would be a significant reduction of interest transfers to bank. In our two-tier system the

banks would continue to profit: they would continue to receive relatively large transfers (call them subsidies) on what is essentially a risk free asset. This would be much less than today, however, and surely less “exorbitant”. It appears to us that if the central bank cares about the general interest, in particular the interest of the taxpayer, a two-tier system that allows the central bank to maintain its operating procedure intact but that reduces the massive subsidies to banks should be agreeable.

**Figure 4: Demand and supply of reserves: two-tier system**



**Table 2**

Interest transfers in 2023 (billions)		
	present system	two-tier system
ECB	€ 121	€ 30
Fed	€ 165	\$41
BoE	€ 39	£10

Sources: Own calculations based on Bank of England, Board of Governors Federal Reserve and European Central Bank, See list of references for detail sources

It should be noted that some central banks, in particular the ECB, used a two-tier system in the recent past when it charged a negative interest rate of -0.5% on bank reserves. When the ECB introduced this negative rate, the bankers did not like it. This led the ECB to introduce a two-tier system in 2019 in which the banks were exempted from paying this interest rate on part of their reserve holdings (6 times the minimum reserves). As a result, banks paid interest on only a fraction of their bank reserves (see Boucinha, et al. (2022)). The total cost for the



banks from the negative interest rate amounted to approximately €17 billion in 2021. (This compares to the subsidy of €121 billion that the banks will receive in 2023 in the present system). It would be incomprehensible if the ECB today, when the taxpayers are hurt, was not willing to introduce a similar two-tier system that would alleviate the burden on taxpayers, in the same way as it was willing to alleviate the burden on banks when they were hit by a negative interest rate.

#### **4. The unpopularity of minimum reserve requirements**

Minimum reserve requirements were a standard tool of monetary policy in the past in many industrialized countries. This monetary policy tool is still being used in many emerging countries. Its use as an active tool of monetary policy has been discontinued, however, in most industrialized countries. In this section we analyze why minimum reserve requirements have become so unpopular among central banks and economists.

##### ***4.1 Tradeoff between efficiency and stability***

The decline in the use of minimum reserve requirements by central bankers was very much the result of a paradigm shift from the 1980s on; a shift that stressed the use of market forces and that frowned upon policy induced distortions. Minimum reserve requirements were seen as introducing important inefficiencies in the financial markets that had negative effects on the optimal allocation of capital. It was often seen as a form of financial repression that leads to wasteful investment with a negative effect on economic growth (see McKinnon(1972) for an early and influential analysis of this view). The corollary of this view was that in truly free markets (and provided the monetary authorities maintained price stability) the risk of financial crises would be minimal.

How large the cost of the inefficiencies, induced by minimum reserve requirements, are is an empirical matter<sup>7</sup>. The jury is still out on this<sup>8</sup>. But clearly there is a tradeoff between efficiency and stability of financial markets. The existence of such a tradeoff has now been

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<sup>7</sup> We also have to evaluate whether the cost of these distortions of minimum reserve requirements is offset by gains. These gains are that the authorities can eliminate another distortion which is the subsidy that is granted to the banks today.

<sup>8</sup> See, for example, Cuaresma, von Schweinitz and Wendt (2019) who find medium levels of reserve requirements may be optimal for medium- to long-run growth.

firmly established both theoretically and empirically. On the one hand there is a large literature documenting how financial liberalization spurs efficiency and growth (see Levine(1997), Beck and Levine(2004), Bekaert et al. (2005) for both theory and empirical validation). On the other hand there is an equally large literature showing that financial liberalizations tend to lead to excessive risk taking in financial markets increasing the risk of crises (Stiglitz(2000)). As a result, most banking crises in the postwar period have occurred after financial liberalizations (see Demirgüç-Kunt and Detragiache (1999), Kroszner et al. (2007) and Arregui et al. (2013)). The fact that financial liberalization leads to more efficiency and more instability leads to the conclusion that financial liberalization leads to a tradeoff between efficiency and stability.

By abandoning the use of minimum reserve requirements, central banks also abandoned the use of an instrument of monetary policy whose primary aim is stabilization of the banking sector and, more generally, the business cycle . Thus, one can also conclude that in the choice between efficiency and stability, central banks chose for efficiency at the detriment of stability.

Historically central banks tended to use minimum reserve requirements as a tool to achieve greater stability even if this choice led to less efficiency. This choice made in the past by central bankers also reflected the analysis made by economists. The most extreme example of this was the “Chicago Plan” published by economists of the University of Chicago in 1933 in which they proposed to impose a 100% reserve requirement on banks issuing demand deposits (Simons, et al. (1933)). These economists took the view that the link between the payment system and credit creation made the banking system unstable, producing bank runs and crises and thus endangering the stability of the whole economy. In proposing a 100% reserve requirement they aimed at de-linking money and credit creation. This was the only way, they argued, to avoid destructive banking crises in the future. Clearly, these economists chose stability over efficiency, mainly because history taught them that banking crises are extremely destructive.

#### ***4.2 A tradeoff between liquidity and profitability***

One would have expected that after the banking crisis of 2008 monetary authorities would have taken recourse to minimum reserve requirements as an instrument to stabilize the banking system. They did not. Instead under Basle III they introduced a new instrument of

liquidity control. Banks of a certain size were subjected to a “Liquidity Coverage Ratio” (LCR) (see BIS(2013)). The Basle III agreement defines the assets that qualify as liquid assets to be included in the LCR and calls them “High Quality Liquid Assets” (HQLA). The problem is that there are just too many HQLAs eligible for liquidity purposes. Not only bank reserves at the central bank qualify, but also government bonds and even certain types of corporate bonds. In appendix we show a table with the different types of assets and the percentages of their permitted use. It strikes the reader that many of these assets, even with much imagination, do not qualify as liquidity because their prices in times of crises become extremely uncertain.

We know what happened recently. The Silicon Value Bank had an extremely high LCR as a large part of its assets consisted of long-term government bonds. Yet it was unable to confront large deposit withdrawals. With the increase in interest rates the market value of long-term government bonds had declined significantly. When it was forced to sell these bonds to satisfy deposit withdrawals the losses incurred on these bonds made the bank insolvent.

It is difficult to understand how regulators designed such a caricature of liquidity management. The commonsense dictated that they would reactivate the only sound instrument of liquidity control, i.e. reserve requirements at the central bank. They did not do so. This seems to be an example of capturing of the regulators by banks that want to have their cake and eat it: they want to have liquidity and make profits. The holdings of truly liquid assets should not be profitable. Here also there is a tradeoff: a tradeoff between liquidity and profitability.

By remunerating bank reserves the central banks have created a land of plenty for the banks. Central banks have made it possible for banks to have their cake and eat it: banks can hold highly liquid assets and make a lot of profit. Central banks have eliminated the tradeoff between liquidity and profitability for the banks. The rate of remuneration on bank reserves at the Fed (4.9%) is now (April 2023) substantially higher than the yield on 10-year US government securities (3.4%). Also, in the Eurozone, banks can earn more on their bank reserves (3%) than on 10-year German government bonds (2.3%). An extraordinary act of generosity towards bankers, at the expense of taxpayers.

## 5. Conclusion

The massive programs of government bond buying in the framework of QE have led to a fundamental change in the operating procedure of the major central banks. The latter now operate in a regime of abundance of bank reserves. This makes it impossible to raise the money market interest rate except by increasing the rate of remuneration of bank reserves. This, in turn, leads to a massive transfer of the central banks' profits to commercial banks. We have argued that this is unsustainable, not only because of the sheer size of these transfers, but also because central banks' profits belong to governments that have granted the monopoly power to create money base, and the accompanying profits, to central banks. We have also argued that there is no serious economic argument to justify why banks should receive an interest rate that now varies between 3% (Eurozone) and 4.9% (US) on liquid deposits that carry no risk.

Many economists tend to believe that all this is inevitable. This sense of inevitability has been reinforced by a curious change in narrative about the meaning of money base. The new operating procedure has convinced many economists that money base (in the form of bank reserves) is part of public debt. In this view when the central bank buys government bonds it substitutes one form of public debt (government bonds) for another form of public debt (bank reserves) that has to be remunerated. This view goes counter to the traditional view of money base that stresses that the central bank creates money base that should not be remunerated.

We argued that the remuneration of bank reserves is not inevitable and that there is an alternative to the current central banks' operating procedure that avoids making profit transfers to private agents. We proposed to use minimum reserve requirements as a policy tool to achieve this objective. Thus, the central bank could transform the present stock of bank reserves to required reserves without remuneration. This would bring us back to the pre-QE reserve scarcity regime where the central bank can manipulate the supply of reserves to guide the money market rate by relatively small open market operations. When over time the central bank gradually reduces its holdings of government bonds it could also gradually relax the minimum required reserves.

We are aware that this is quite an intrusive proposal that will be opposed not only by commercial banks but also by central banks that have now become used to an operating procedure based on the reserve abundant regime. That's why we also formulated as an

alternative and more realistic proposal, a system of two-tier minimum reserve requirements. This consists in freezing part of the existing bank reserves in non-interest bearing deposits, while remunerating the reserves in excess of these minimum requirements. This achieves two things. It allows to drastically reduce the transfer of central banks' profits to private agents and it makes it possible for the central banks to maintain their current operating procedure. We believe that this is a reasonable alternative to the present system that subsidizes banks in an exorbitant and unsustainable manner.

The use of minimum reserve requirements as a tool of monetary policy has fallen out of fashion since the 1980s. This was mainly driven by a switch in paradigm that focused on efficiency made possible by liberalized financial markets. Minimum reserve requirements that in the past were seen as essential instruments of stabilization were rejected because they introduced distortions and departures from efficiency. But we are learning from successive financial crises that there is a tradeoff between efficiency and stability. The emphasis of central bankers on using policy tools that do not interfere with market forces comes at the price of less stability and more financial crises. It is time for central bankers to rediscover their main *raison d'être* which is the maintenance of financial and monetary stability, even if this comes at the price of less efficiency and fewer profits for banks.

## Appendix: High Quality Liquid Assets (HQLA)

### Illustrative Summary of the LCR

(percentages are factors to be multiplied by the total amount of each item)

Item	Factor
<b>Stock of HQLA</b>	
<b>A. Level 1 assets:</b>	
<ul style="list-style-type: none"> <li>• Coins and bank notes</li> <li>• Qualifying marketable securities from sovereigns, central banks, PSEs, and multilateral development banks</li> <li>• Qualifying central bank reserves</li> <li>• Domestic sovereign or central bank debt for non-0% risk-weighted sovereigns</li> </ul>	100%
<b>B. Level 2 assets (maximum of 40% of HQLA):</b>	
<b>Level 2A assets</b>	
<ul style="list-style-type: none"> <li>• Sovereign, central bank, multilateral development banks, and PSE assets qualifying for 20% risk weighting</li> <li>• Qualifying corporate debt securities rated AA- or higher</li> <li>• Qualifying covered bonds rated AA- or higher</li> </ul>	85%
<b>Level 2B assets (maximum of 15% of HQLA)</b>	
<ul style="list-style-type: none"> <li>• Qualifying RMBS</li> <li>• Qualifying corporate debt securities rated between A+ and BBB-</li> <li>• Qualifying common equity shares</li> </ul>	75%
	50%
	50%
<b>Total value of stock of HQLA</b>	

Source: Bank for International Settlement (BIS), (2013), Basel III: The Liquidity Coverage Ratio and liquidity risk monitoring tools, Basle, <https://www.bis.org/publ/bcbs238.pdf>

Note: the percentages in the last column represent the percent of the value of the assets that can be counted as liquidity in the LCR

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