

UNTIL WHEN WILL THE US AND THE EURO-AREA BE AWASH WITH CENTRAL BANK LIQUIDITY?

Francesco Papadia

IF YOU ARE IMPATIENT, my tentative answer to the question in the title is: 2022 for the US and 2028 for the Euro-area, meaning that we can expect another 6 years of abundant central bank liquidity¹) in the US and a dozen years in the Euro-area. If you bear with me a while longer, I can explain how I reach this, I believe surprising, result, and why it matters.

The history of central bank liquidity over the last decade or so in the US and the Euro-area, but also in other advanced economies like the UK, is very simple. Until the beginning of the Great Recession, both the Fed and the ECB only gave banks the liquidity they needed to satisfy reserve requirements and autonomous factors. Basically, they targeted zero excess liquidity. This set the policy rate, the Federal Funds Rate in the US and EONIA in the Euro-area, practically in the middle of the corridor between the absorbing (bottom) and the providing (ceiling) central bank liquidity facilities.

While sharing this fundamental analogy, the Fed and ECB frameworks were different in some respects. The most important difference was that the law did not allow the Fed to pay interest on bank reserves, and thus the bottom of the corridor for the Fed was fixed at 0, while the ECB could remunerate reserves and thus move the bottom together with the entire corridor.

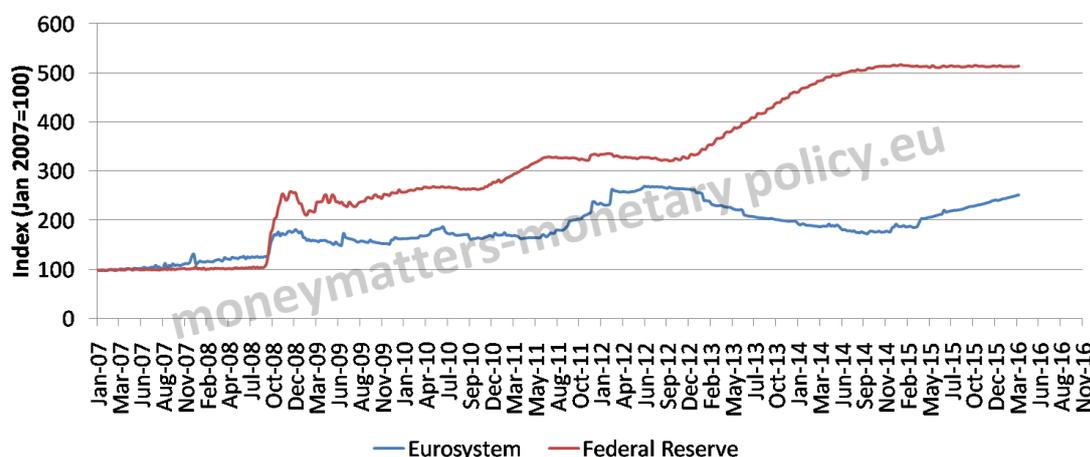
¹ The terms central bank liquidity, bank reserves and banks current accounts with the central banks will be used interchangeably in this post. The adjacent concept of base money will also be occasionally used.

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The liquidity situation changed at the beginning of the Great Recession, particularly after the failure of Lehman Brothers: central banks reacted to the sudden evaporation of private liquidity, both in the form of market liquidity and funding liquidity, by providing a huge amount of central bank liquidity. In essence, this is the phenomenon behind the literal explosion of Fed and ECB balance sheets in October 2008, as seen in chart 1.

Chart 1: Total central bank balance sheets.



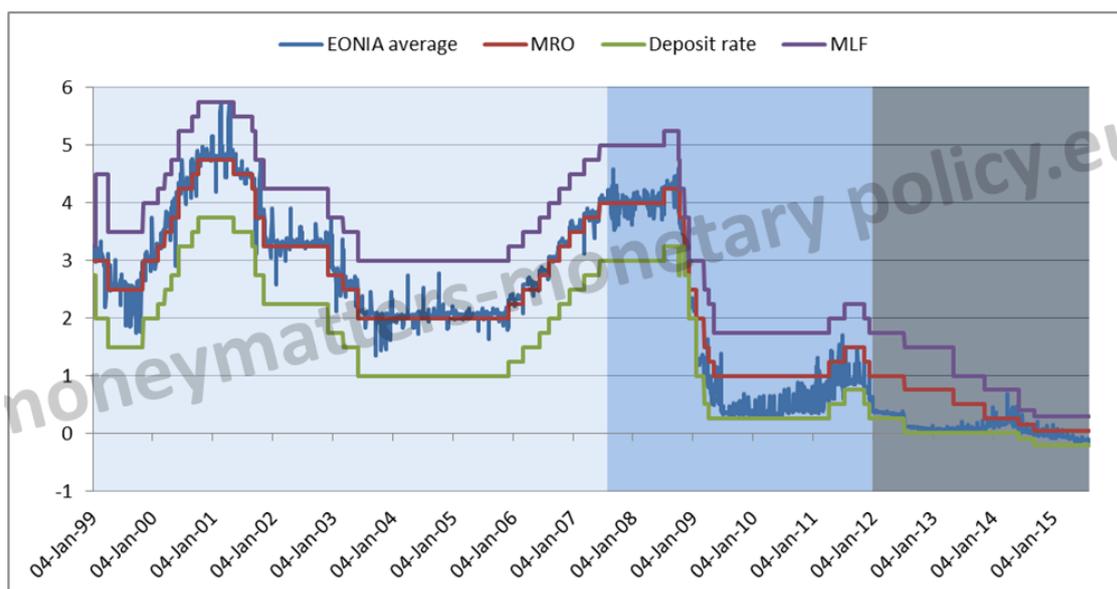
Source: ECB, Fed

The pattern is somewhat different and the increase is larger for the Fed (by a factor of 5) than for the ECB (by a factor of less than 3). In addition, the specific channels through which the Fed and the ECB provided the large amount of liquidity leading to the balance sheet explosion were different. Still, the similarities in the balance sheet developments between the two central banks are more important than the differences, including the fact that their total balance sheet remained very large and did not return to some sort of historic norm in the following 8 years.

The huge increase of the balance sheet and the corresponding increase in bank reserves had two important implications for monetary policy, one theoretical and one operational. The theoretical implication is that it became untenable to maintain any Friedmanian notion of the money multiplier: bank reserves (and, with it, base money) exploded, but monetary aggregates remained very subdued for too long a period to sustain the belief that a constant, or at least forecastable, money multiplier is a stable parameter of the economy. The operational implication is that the central bank interest rate was progressively compressed towards the bottom of the corridor, i.e., the rate of the central bank deposit facility.

This is clearly seen in Chart 2, which reports the ECB interest rate corridor: while EONIA was close to the center of the corridor in the pre-crisis area (shaded in light blue), it moved, albeit with a lot of volatility, to the lower part of the corridor in the first phase of the crisis (shaded in darker blue) and then it settled just above the bottom in the last 5 years or so (darkest area).

Correspondingly, the most relevant policy rate became the one on the deposit facility, which defines the bottom of the corridor: banks were mostly interested about the rate at which they could deposit excess liquidity with the central bank, not about the cost of their recourse to lending facilities, which had become nearly redundant given the large amount of liquidity outstanding.

Chart 2. The ECB interest rate corridor².

Source: ECB

In central bank jargon, the approach of the central bank to steer interest rates moved from a balanced approach to a “floor approach”.

The question addressed in this paper is for how long we can expect, based on current information, this abundant central bank liquidity to last and what the consequences are for the central bank’s control of interest rates and financial stability.

In Chart 3, you find an extrapolation of the balance sheets, particularly of liquidity, of the two central banks. The first panel is for the Fed and the second for the ECB. The linearly increasing reddish bottom area denotes the extrapolation of banknotes, the green area denotes current accounts, which is another name for central bank liquidity, the blue line represents the total size of the balance sheet and the difference between the blue line and the top of the green area represents “other liabilities” (i.e., smaller liability items with no relevance for monetary policy).³

In the Fed chart, you see that liquidity is extrapolated to remain exceptionally abundant, i.e., higher than 100 billion⁴) until between 2022 and 2023. In the case of the ECB, the extrapolation only shows a return to “normality” in 2028. This means that central bank liquidity will remain exceptionally large in the US for around 15 years; in the Euro-area, the period of exceptionally large liquidity will be around 20 years. The fact that central bank liquidity will remain so abundant for so long is an indication of the severity and long lasting effects of the Great Recession.

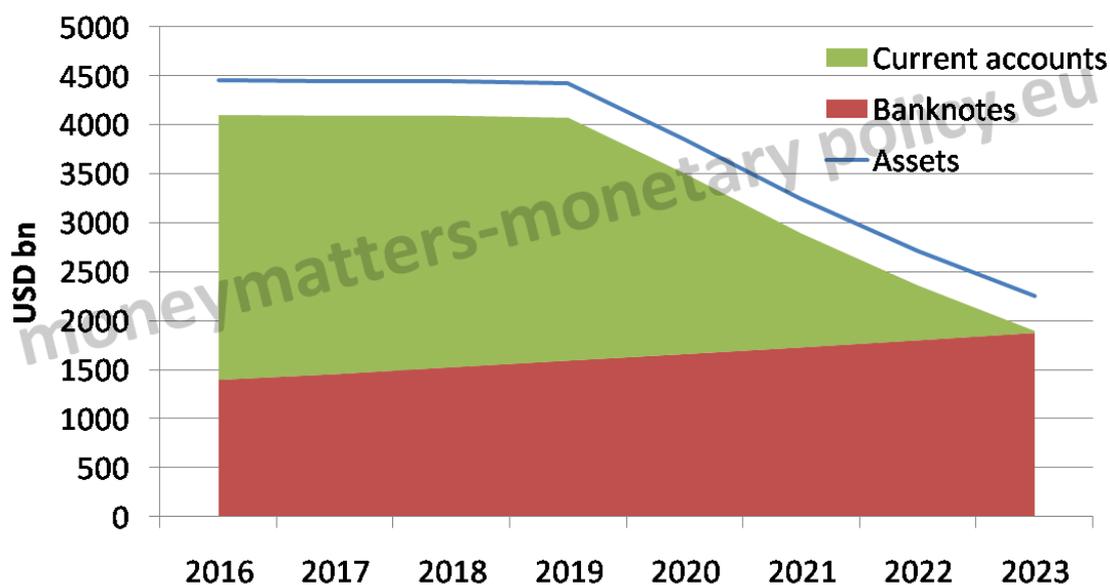
² Eonia is the overnight rate, MRO is the rate on Main Refinancing Operations, Deposit rate is the rate of the ECB absorbing facility, and MLF is the rate of the Marginal Lending Facility, i.e., the rate of the ECB standing lending facility.

³ The rough assumptions for carrying out the calculations are reported in the annex. Basically, two items dominate the balance sheets of the two central banks: securities bought under “QE” programs on the asset side and banknotes on the liability side. Assumptions about these two items are critical for any extrapolation exercise.

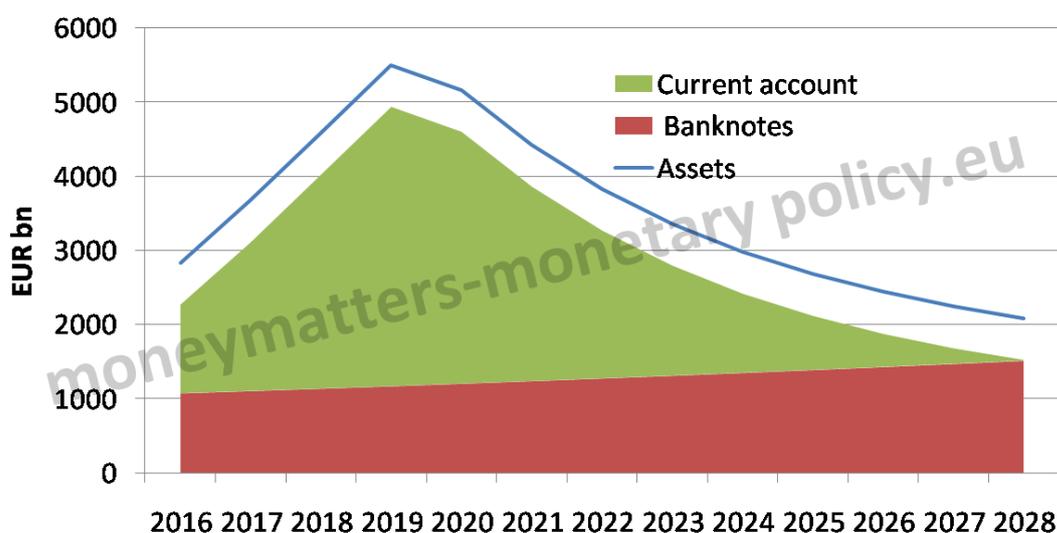
⁴ This is the “normal” level assumed by the FED in its [SOMA report](#) for 2015 that also engaged in an extrapolation exercise similar, albeit more sophisticated, than the one reported in this paper. The Fed exercise sets 2022 as the year in which liquidity will reach its “normal” 100 billion size.

Chart 3. Extrapolation of the Fed and ECB balance sheet.

Fed



ECB



Source: ECB, Fed

Indeed, to find periods of such large increases of central bank balance sheets, one has to go back to the two World Wars, as shown in the paper by Niall Ferguson, Andreas Schaab and Moritz Schularick).⁵ The indication that comes out of this comparison is that, from a monetary point of view, the Great Recession created stress akin to two catastrophes such as the two world wars.

Of course, the assumptions used to extrapolate the balance sheet of the two central banks could turn out to be wrong, particularly because the two central banks may carry out much

⁵ Central bank balance sheets: expansion and reduction since 1900, ECB Forum on Central Banking, May 2014, Monetary Policy in a changing Financial Landscape, Conference proceedings.

more active and early sales of securities than assumed. Still, the change in assumptions with respect to current expectations would need to be quite strong to substantially reduce the time horizon over which liquidity would return to normal.

At the beginning of this paper, I wrote that I would explain, first, how long the exceptionally abundant central bank liquidity situation would last and, second, why it matters. I hope I clarified the first point. Let me now touch, very briefly, on the second one.

The first and obvious consequence of very abundant and persistent liquidity is that the “floor approach” to the steering of interest rates by the central bank is here to stay for quite a while longer. This approach would allow the central bank to raise its rate by increasing the bottom of the corridor, but it was not the one the ECB preferred until the Great Recession, as it was more comfortable to keep the banks always in need of its liquidity. A floor approach is, however, an entirely legitimate way to steer rates. Ulrich Bindseil assessed it 5 years ago⁶ as one of the possible approaches to interest rate control. In addition, it is my understanding that the Fed is viewing this approach with interest as a possible permanent solution in its study of the long-term monetary implementation framework. While feasible and not obviously undesirable, a floor approach is different from one in which liquidity conditions are kept balanced. For instance, in such an approach, the width of the corridor is much less relevant and it makes no sense to say that the rate on refinancing operations is the “main” rate, as the ECB currently does.

Another clear consequence is that the short term money market is unlikely to regain the kind of depth and turnover it had before the Great Recession: if the central bank continues to offer large amounts of liquidity, banks will probably have less of a need for an active market over which to exchange liquidity. An ancillary consequence is that the overnight interest rate loses much of its importance as an indicator of monetary conditions.

It is not easy to predict, instead, what the consequences of a persistent surplus of central bank liquidity would be for financial stability. The fact is that there is hardly a precedent for this situation, and it is thus very difficult to forecast its consequences, especially over the medium to long term. On the one hand, the availability of large amounts of central bank liquidity should help prevent liquidity stress. On the other, its persistence may incentivize financial market participants to engage in unsound practices of the kind that led to the Great Recession. Personally, what bothers me is exactly that we do not know what the consequences could be.

In any event, unless the assumptions used to extrapolate the balance sheets of the two central banks turn out to be severely wrong and the Fed and the ECB engage in an active program of selling of securities, there is still quite some time to decide whether a “floor approach” to interest rate steering by the central bank is desirable or not as a long lasting device and to ascertain what the consequences of a very abundant and persistent provision of central bank liquidity are.

⁶ Theory of monetary policy implementation, in *The Concrete Euro: Implementing Monetary Policy in the Euro Area*, Paul Mercier and Francesco Papadia eds., Oxford University Press, 2011.

Annex

Federal Reserve

The following balance sheet elements were considered:

Assets

- US Treasury securities
- Federal agency debt securities
- Central bank liquidity swaps
- MBS
- Repos&Loans
- Other assets
- Commercial paper funding facility
- Term auction credit

Liabilities

- Banknotes

First part of the exercise

Actual values were considered up until April 2016 for both assets and liabilities. Thereafter, we extrapolated the asset side as follows:

- Until Jan 2019, all items were held constant at the current value. Subsequently, Treasuries were decreased by 20 billion each month until Dec 2020. Each year thereafter, it was assumed that 15% of the stock of Treasuries was sold.
- Federal agency debt securities were considered constant until the end of the exercise.
- Central bank liquidity swaps, Repo&Loans, Commercial paper funding facility, and the Term auction credit were kept at zero for the entire extrapolation.
- MBS were assumed to mature according to the weighted average duration of 6.5 years mentioned by the Fed in the 2015 SOMA report.
- Other Assets were considered constant until the end of the exercise.

The total of these items represents the extrapolated total assets.

Second part of the exercise

- We take the extrapolated total assets of January of each year.
- We increase the value of Banknotes by the GDP growth rate in the below table.
- The difference between the two items gives the extrapolated current accounts.
- The exercise ends in 2023 as the value of 100 billion of liquidity is reached between 2022 and that year.

Table Appendix 1. Fed Extrapolated total assets, banknotes and current accounts.

Forecast table	Growth rate GDP	Assets	Banknotes	Current accounts
2016	4.061	4452	1400	2704
2017	4.588	4445	1458	2638
2018	4.793	4445	1528	2569
2019	4.445	4424	1596	2479
2020	4.158	3853	1662	1842
2021	4.158	3241	1732	1161
2022	4.158	2711	1804	559
2023	4.158	2248	1879	21

European Central Bank

The following balance sheet elements were considered:

Assets

- USD repo
- Net foreign assets
- Domestic assets
- MRO
- LTROs +TLTRO2
- MLF+FTO
- Policy portfolios

Liabilities

- Banknotes

First part of the exercise

The following assumptions were used:

- USD repo, Net foreign assets, Domestic assets, MRO, and MLF+FTO are kept constant at the current values until the end of the exercise.
- LTROs and TLTRO2, as well as policy portfolios, have been extrapolated as follows: for June 2016, we consider this account equal to 15% of the total long-term bank bond issuance. The value is maintained constant until Jan 2020. From then on, it is fixed at 150 bn until the end of the exercise. This was the value for this item in 2007, prior to the crisis.
- For the policy portfolios:
 - Each month, we account for 4 bn maturity under the old purchase programs and new 80 bn purchases under the current purchase program .
 - From Jan 2020, we account for 20% yearly selling of the outstanding stock while the 4 bn of monthly maturing securities continues.

The sum of the above-mentioned items is the Total simplified assets

Second part of the exercise

- We take the extrapolated total assets of January of each year.
- We increase the value of Banknotes by a constant GDP growth rate (see table below).
- The difference between the two items yields the extrapolated current accounts.
- The exercise ends in 2028.

Table Appendix 2. ECB Extrapolated total assets, banknotes, and current accounts.

Forecast table	Growth rate GDP	Assets	Banknotes	Current account
2016	2.91	2833	1073	1195
2017	2.91	3672	1104	2003
2018	2.91	4584	1137	2883
2019	2.91	5496	1170	3762
2020	2.91	5160	1204	3392
2021	2.91	4421	1239	2618
2022	2.91	3830	1275	1991
2023	2.91	3358	1312	1481
2024	2.91	2979	1350	1065
2025	2.91	2681	1389	727
2026	2.91	2438	1429	444
2027	2.91	2243	1471	208
2028	2.91	2088	1514	10
2029	2.91	1964	1558	-158