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ABSTRACT

We demonstrate that even though during WWII the interest rate was close to zero supporting the financing of the military effort, dissent inside the FOMC occurred with a similar frequency to other policy episodes. Our analysis highlights that the debates which resulted in dissents turned around two broad issues: the size of the Fed's balance sheet as well as the functioning of and communication with financial markets. Thus, we argue that the conventional view depicting the Fed as merely accommodating treasury needs should be revised. Our detailed investigation of dissents emphasises the modernity of the objections raised by Fed officials.

KEYWORDS

Central banking; federal open market committee; dissent; governance; public debt; World War 2

JEL CLASSIFICATION CODES

D71; D78; E58; N12; N42

Introduction

In this article we analyse the governance of the Federal Reserve (Fed) during the 1939–1945 period. We focus on its monetary policy decision-making body, the Federal Open Market Committee (FOMC). In particular, we inspect the occurrence and reasons for dissent among Fed officials inside the FOMC. The period is characterised by almost immovable interest rates that lie very close to the Zero Lower Bound (ZLB) from large public deficits and monetary financing of public debt through large-scale interventions of the Fed on the markets for Treasury bonds. Although the contexts are of different kinds, this period is one of the first experiences of what is today referred to as unconventional monetary policies, i.e. the combination of very low interest rates and extensive purchases of Treasury securities (Quantitative Easing, QE). Obviously, the economic conditions of the two eras are very different, as the modern programme possesses several features (forward guidance, purchases of private assets, and the purchase of long-term bonds to influence long-term yields, and more generally a monetary policy whose components were directly aimed at stimulating the economy), while the purchase operations during the WWII episode were motivated by very different considerations, as will be exposed below.

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Nevertheless, a comparison between the present-period operations and previous episodes has been realised by Bordo and Sinha (2016) for the brief, 4-month programme of Large-Scale Asset Purchase programmes (LSAPs) run by the Fed in 1932. Carlson and Duygan-Bump (2018) cover the period of the 1920s, and also show similarities between this period and the most recent one. Here, even though the differences are more numerous than the commonalities, we would contend that the war period is even closer to the modern quantitative easing experience than the 1932 one, for at least three reasons. First, while in 1932 the Gold Standard was operating, it was no longer the case during the war. Second, Fed officials had not announced the 1932 programme, whereas policymakers were explicit in the fact that their policy would operate as long as required by the war effort. Third, the speed of accumulation of public debt during the war is quite similar to the recent one (as displayed in Figures 1–4). Put together, these elements render the war period interesting to scrutinise. The Second World War (WWII) period being one of the few experiences of QE that one can observe in American history is strongly significant due to its scale and length of operation. It is thus relevant and worthy to analyse the governance of the main monetary policymaking institution during this period. Our aim in this study is, in particular, to explore the degree of dissent among Fed officials in a context that is marked by an experiment in policies that had never been implemented on such a large scale or for such a long time.

The relative novelty and size of this policy experiment explains that, during the war, the members of the FOMC largely debated it. The Federal Reserve System formally committed to peg the interest rates on government bonds at very low levels. The objective was clearly stated: to help the government finance the war effort by reducing the cost of debt. As a consequence, the Fed was no longer in control of the money stock, nor of the size of its portfolio. Figure 1 illustrates the point, displaying the dramatic increase in the share of US government securities in the total assets of the Federal System, going from 9% in 1941 to almost 54% in 1945, while Figure 2 offers a comparison with the recent period, where the ratio goes from 34% in 2009 to 54% in 2014, thus reaching almost the same level after quantitative easing operations had been implemented by the Fed. A second resemblance is depicted in Figures 3 and 4 comparing the debt-to-GDP ratio evolutions. The sharp increase between 1940 and 1947 (from 52.4% to 109.6%, but the bulk of it – from 54.9% to 117.5% – occurred only between 1942 and 1945) is only slightly more pronounced than the rise from 64.6% to 107.6% between 2007 and 2014. However, Figures 3 and 4 also illustrate the obvious difference between these periods – that is, the deficit is driven by military outlays during the war.[1]

After the Second World War, the Truman Administration tried to force the continuation of this policy upon the Fed, given the new conflict in Korea (1950). This attempt, however, failed, and resulted in an agreement known as the Treasury-Fed Accord (which eliminated the obligation of the Fed to monetise the debt of the Treasury at a fixed rate). This episode is a hallmark of the steps the Fed implemented to assert its independence from the government,[2] which further highlights the peculiarity of policymaking during WWII.

Here, we show that, despite the large patriotic consensus on the need for the Fed to support the war effort, and despite the apparently 'dormant' policy (Calomiris, 2013), occasions of dissent emerged. Obviously, neither the goals of the war were questioned, nor the necessity of supporting the US Administration financing of the war. Moreover, Fed officials insisted on the fact that the policy should not disrupt the functioning of the financial markets.

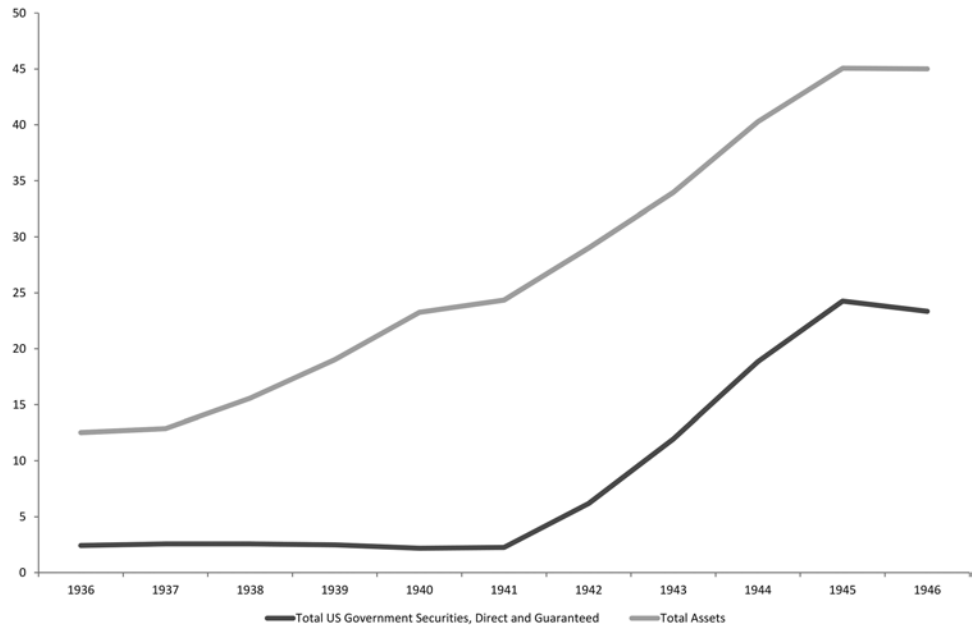

Figure 1. The Fed's balance sheet, billions of dollars (1936–1946, end of year).
Source: authors, data from Fraser (Saint Louis Fed).

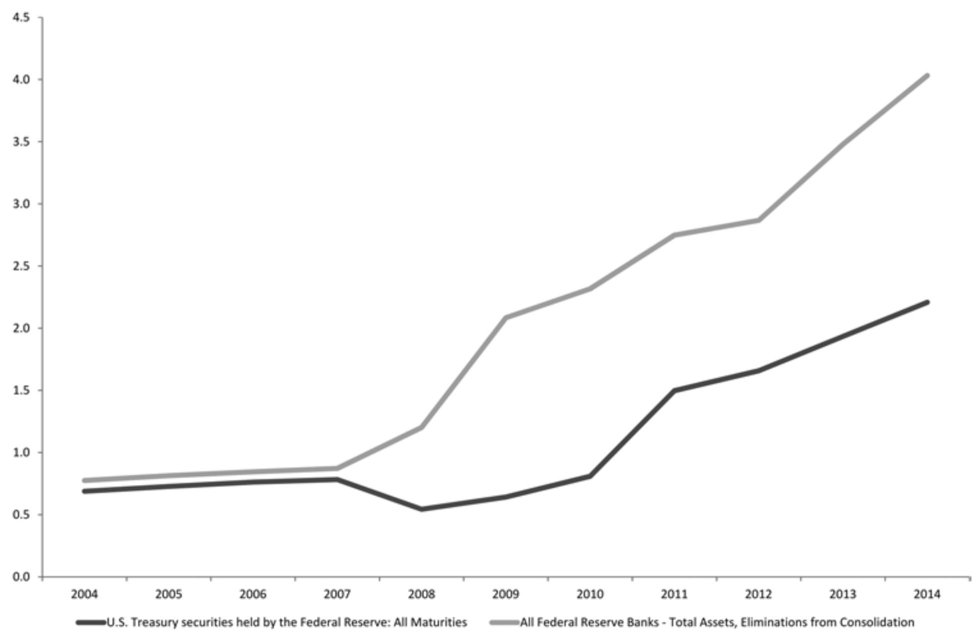

Figure 2. The Fed's balance sheet, trillions of dollars (2004–2014, end of year).
Source: authors, data from Fraser (Saint Louis Fed).

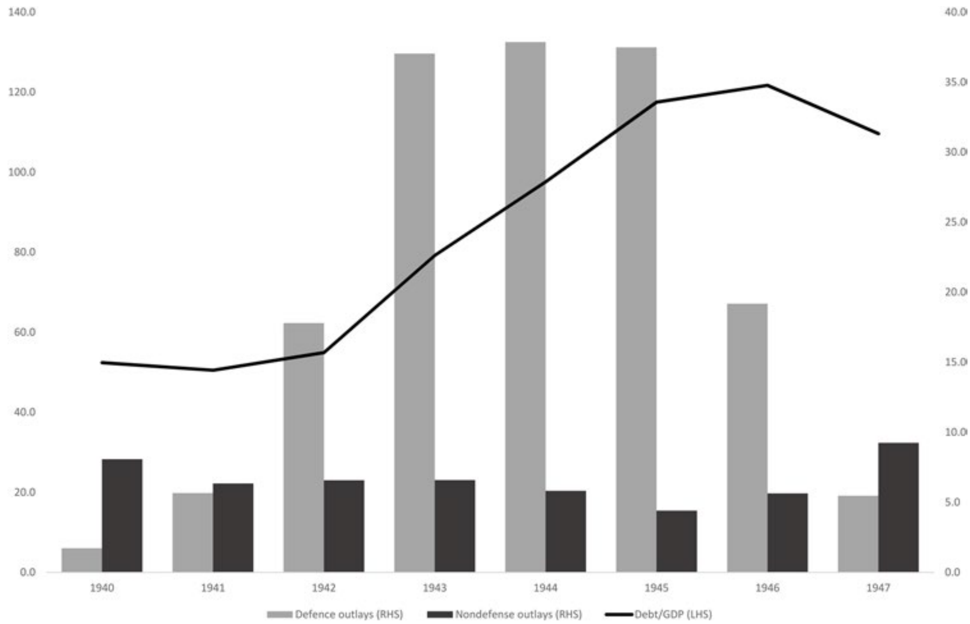

Figure 3. Federal debt and outlays (1940–1947, end of year/annual).
Source: authors, data from US Office of Management and Budget.

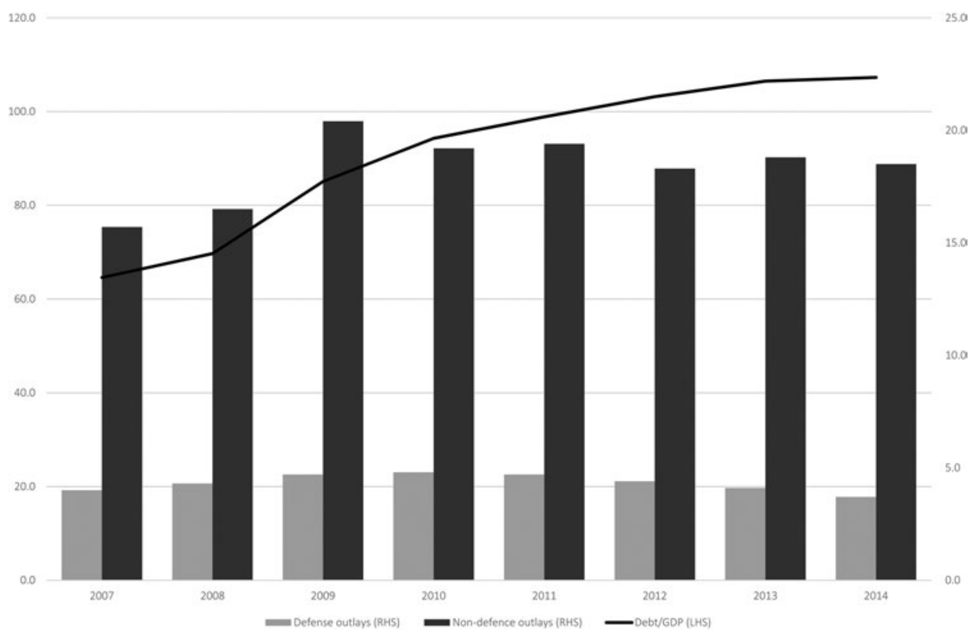

Figure 4. Federal debt and outlays (2007–2014, end of year/annual).
Source: Authors, data from US Office of Management and Budget.

Therefore, dissents occured upon technical issues with significant monetary impacts. Dissenting Fed officials in this case may thus have played the useful role of whistle-blowers (Bashir, Khattak, Hanif, & Chohan, 2011; Brewer & Selden, 1998).

Our contributions in this article are thus the following. First, looking in depth at the governance of the Fed during a troubled period, and focusing on debates inside the FOMC, we detail the occasions and reasons of dissent during this period, building on the minutes (that is, the detailed accounts of the meetings). As we will demonstrate, the consensus is clear on the necessity of pegging the interest rates; dissents are, in fact, related to the quantitative operations (i.e. to the size of the balance sheet of the Fed), to the procedures that the Fed should implement and to the relations the central bank has with the markets. Second, we portray the members of the FOMC that dissented the most, revealing the nature of the objections they raised. Third, in light of our analysis, we engage in a reflection on the monetary 'orthodoxy' of the time and how it was challenged by the extraordinary requirements of war. We assess whether this episode has affected monetary policymaking perceptions.

Note that the period of analysis starts in 1939, and not in 1941, even though the US officially entered the war only at the end of 1941. Although President Franklin D. Roosevelt declared neutrality on 5 September 1939, he also activated the 'Neutrality Patrol', which in fact favoured the Allies (Cressman, 2016; Morison, 1975; Potter, 1960), revealing that the war in Europe already had consequences in the US. Then, as soon as 1940, mobilisation started, preparing the war effort (Rockoff, 1998). Actually, the events that unfolded in Europe from 1939 onwards had consequences on the world financial system and the possibility that the FOMC took care of the war – even before the United States was officially part of it – cannot be disregarded (Bateman & Taylor, 2003). Moreover, the Federal Reserve policy, in terms of discount rates, changed as early as 1938 (see Figure 5).

The remainder of the article is as follows. Section 2 describes the occurrences of dissent during the period under review. Section 3 then explores the reasons for dissents, detailing the debates inside the FOMC, as they are presented in the minutes of the meetings. We classify them by topic, differentiating the issues related to the size of the Fed's balance sheet from the ones related to the way the central bank communicates its operations to the markets. Section 4 portrays the members who we call the 'serial dissenters', while section 5 engages in a discussion of the intellectual context in which Fed officials had to take their decisions during WWII, providing a comparison with the previous and later periods.

Counting dissent during the war

The available accounts of discussion within the FOMC during the WWII period are the (historical) minutes.[3] Danker and Luecke (2005) provide a very useful description and comparison of different types of reports from the Fed's meetings and decisions. Importantly, the historical minutes were recorded from 1936 (when the Banking Act of 1935 setting up the FOMC entered into force) until May 1967. Then, the minutes were replaced by the Memoranda of Discussion and since 1976 the meetings started to be recorded on tape, which allowed for the compilation of verbatim transcripts. Interestingly, the historical minutes were confidential until 1964, when the committee started to release them with about a five-year lag. Such a practice has continued until today with respect to transcripts. Finally, it should be noted that

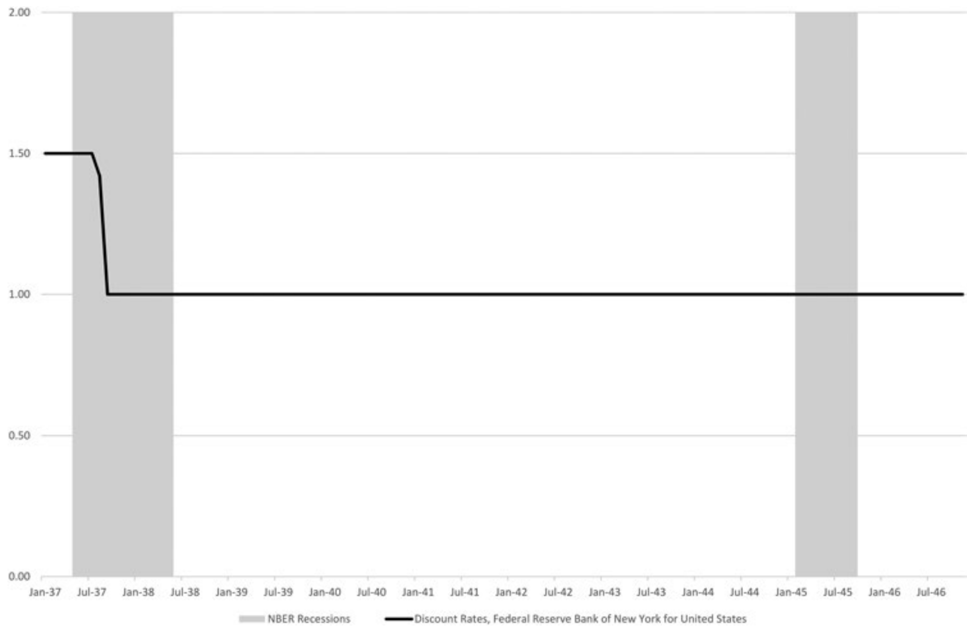

Figure 5. Discount rates, 1937–1946.
Source: authors, data from FRED (Saint Louis Fed).

currently a summary of discussion published three weeks after each regularly scheduled meeting is also called minutes.

The minutes we use, as indicated above, are relatively detailed records. They describe discussions in detail with attribution of individual positions, and report the votes for every meeting of the FOMC. Some administrative elements, for example each meeting starts with an approval of the minutes of the previous one, are present, on which votes are also taken. These are, however, always unanimous.

Hence, we focus on the analysis of the votes that are policy relevant, as is usually done in the literature (Havrilesky & Schweitzer, 1990; Thornton & Wheelock, 2014). Typically, analyses bearing on modern-day FOMC meetings exclusively consider the votes taken on domestic policy directives to be policy relevant. Thus, even though there are other votes taken at FOMC meetings, in particular votes on foreign operations, they are disregarded. Here, given that the period is marked by a troubled international context, one would have expected that some votes would have been devoted to foreign operations. However, and quite surprisingly, from 1939 to 1945, no foreign operations are subject to specific votes.

Our selection is also more extensive than the usual studies, which most frequently concentrate only on the decisions related to the definition of the policy rate. More precisely, Thornton and Wheelock (2014, p. 226) 'focus exclusively on monetary policy votes' and 'exclude votes on authorizations to purchase intermediate- and long-term Treasury securities'. Given that the policy rate during WWII was fixed (see Figure 5), and that operations on Treasury securities define the essence of monetary policy decisions during the war, we have included these votes in the analysis too. In fact, the Fed explicitly stated 'the maintenance of stable conditions in the bond market [to be] an important concern of banking administration', and started a 'flexible portfolio policy'(Board of Governors, 1938). The difference between the pre-war and war periods is that the Fed went from a policy of targeting 'an orderly market for government securities' to a policy that 'pegs' the prices of government securities at defined levels, being ready to buy any quantity of securities that would appear on the market (Chandler, 1949).

In other words, we justify the scope of analysis – with a relatively large selection of policy relevant votes – by the fact that policy rates were not necessarily the most efficient tool since they were fixed and maintained at a low level. Hetzel (2008, p. 30) evokes the Zero Lower Bound problem as starting in the years 1938 to 1940 regarding the 3-month Treasury bill rate. As Figure 5 shows, this condition prevailed over the entire period under review. Also, and even more importantly, as we will detail below, most of the important discussions (and occasions of dissent) were rather concerned with relations between the Fed, the (commercial) banks and the Treasury.

The turning point arrived on 8 December 1941, when the Fed ensured it would offer the government everything that would be needed to finance the war – the expression used by the Fed was 'to whatever extent may be required in the future'(Board of Governors, 1942, p. 1).

From the meeting of March 1939 to the last one considered in October 1945, 40 meetings took place. In 11 of them, some dissent was expressed (i.e. 27.5% of the meetings, see Figure 6). This non-negligible number of dissenting episodes by itself attests a genuine debate inside the committee. On average, 3.33 votes were taken during these meetings, and the number of dissenting votes per meeting, on average, is equal to 0.45 (i.e. on average in 13.5% of votes there was dissent, see Figure 7). This means that a dissenting member of the FOMC did not necessarily dissent in all of the votes taken during a particular meeting, although it happened that dissenters expressed divergent opinions several times during a single meeting (this is the case during the meeting of 21 June 1939, where Ernest Draper – whose portrait is detailed below – expressed two dissenting votes during the meeting).

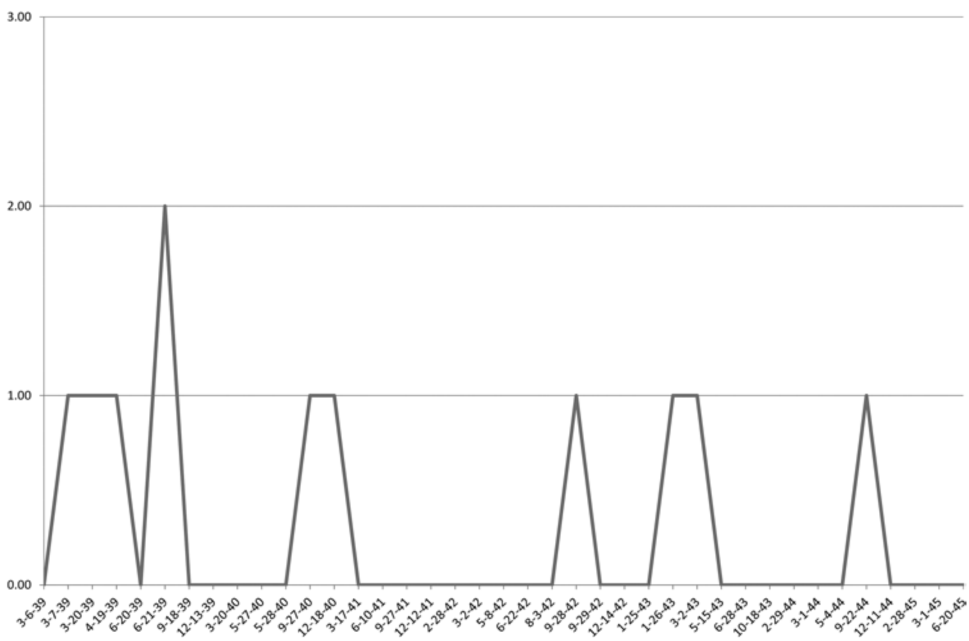

Figure 6. Number of dissents expressed per meeting, 1939–1945.
Source: authors, based on historical minutes of the FOMC.

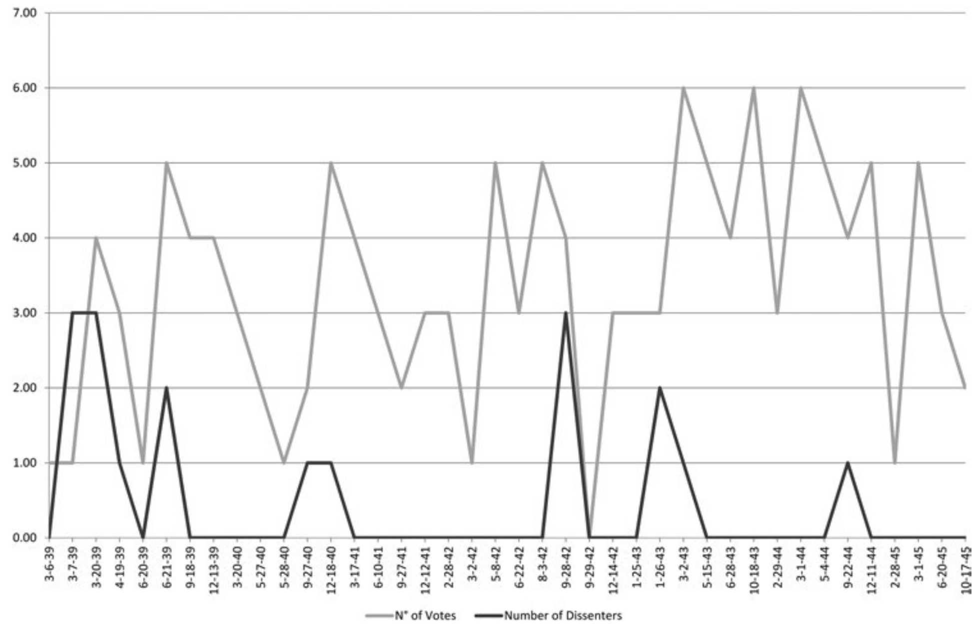

Figure 7. Number of votes and dissenting members, 1939–1945.
Source: authors, based on historical minutes of the FOMC.

These figures reveal that the period bears similarity to the posterior ones in terms of dissent rates. For example, during the chairmanships of William McChesney Martin Jr. (2 April 1951–31 January 1970) and Alan Greenspan (11 August 1987–31 January 2006), i.e. in relatively prosperous time eras, the average number of dissenting votes per meeting was, respectively, equal to 0.51 and 0.54 compared to 0.45 for our sample (Thornton & Wheelock, 2014, p. 218). This is all the more remarkable as one would expect that WWII brought with it an inclination to unanimity, if only for the pressure brought by the emergency of the situation. In such a case, the very rationale of collective decision-making – i.e. the sharing of knowledge and information – could be undermined by the emergence of groupthink. Janis (1972) first introduced the latter concept, but the possibility that such an issue could materialise in central banking was pointed out by Sibert (2006) or Maier (2010). It is even more important that dissenters express themselves openly as, in an otherwise consensual committee, they play the essential role of whistle-blowers (Bashir et al., 2011; Brewer & Selden, 1998).

Nevertheless, the increased frequency of FOMC meetings after 1955 also meant more opportunities for members to dissent, which highlights the peculiarity and paradoxical character of the WWII period: dissent is higher than what could be expected. Yet, the Fed's policies and governance during this period have not been studied extensively, and thus the amount of dissent expressed calls for further exploration.

Explaining dissent during the war

In this section, we first present the conventional view of the period, before challenging it by analysing the FOMC meetings of the period under review. We structure the issues of disagreement into two broad categories: related to the evolutions of the Fed's balance sheet and those concerning the functioning of (and communication with) the markets.

The conventional view: accommodating the Treasury needs

Over the period 1939–1945, the FOMC mostly discussed how to maintain the smooth operation of the government securities market. That is, it was concerned with preventing 'disorderly' market conditions. In other words, during WWII, the main policy issue was not setting the level of short-term interest rates.

The traditional reading of this period in the monetary history of the United States insists on the fact that monetary policy was out of the control of the Fed. It is usually considered that monetary policy was under the exclusive control of the Treasury, with the Fed passively following the former's instructions. The Fed was supposedly relegated by the Treasury to keeping the size and maturity structure of its government debt constant. Any room for manoeuvre by the Fed would have been limited to portfolio management in terms of government securities (Meltzer, 2003).

It has to be reckoned that the context is specific to the advent of World War II and the induced mounting debt to finance the military effort (Rockoff, 1998). As a consequence, the government securities market became important in Treasury operations. The Treasury thus mandated to the Fed a wartime pattern of yield rates and prices on three types of marketable government securities: 3/8 of 1 per cent for 90-day Treasury bills, 7/8 of 1 per cent for one-year Treasury certificates and 2 1/2 per cent for the longest-term marketable bonds. This configuration was known as 'the peg'(Hetzel, 2008; Timberlake, 1999).

Interestingly, this apparently happened with the full approval of the FOMC members, even though the then Chairman of the Fed, Eccles, considered these rates as much 'too low'. He observed later: 'The pattern of war finance had been firmly established by the Treasury; the Federal Reserve merely executed Treasury decisions' (Timberlake, 1999). In other words, throughout the war, monetary policy decisions on rates were strongly linked to the Treasury's needs, with large impacts on money stocks, which grew to unprecedented highs, with consequences on the level of prices which could be anticipated (Meltzer, 2003).

As Timberlake (1999) summarises, the situation evolved all through the war period according to the same lines:

> the Treasury sold its securities to finance the government's spending excesses, security prices tended to fall and their yield rates to rise. To fulfill its commitment to maintain security prices and keep market rates low, the FOMC had to buy securities in the open market and create the money to pay for them. More money in circulation put upward pressure on prices. These dynamics further aggravated the pressures on the government securities market. As long as the Treasury prescribed monetary policy, the Fed was the engine of inflation infamously portrayed in economists' treatises.

Complementing this view is the argument that, even if the Gold Exchange Standard had collapsed by the end of the 1930s, gold inflows were driving the evolution of the Fed's balance sheet. However, the last argument is more than debatable, as it can be argued that gold inflows reflect massively the cash-and-carry clause, rather than the gold import points.[4] This is confirmed by the fact that after1941, the importance of gold inflows decreases in the balance sheet of the Fed (with the US financing its own war effort). Over the period under review here (1939–45), gold reserves in the Fed's balance sheet first increased rapidly, up to 1940, before reaching a plateau, and then decreased after 1942 (see Figure 8).

Under the traditional view, thus, the Treasury dominates the Fed, and the latter's policy mostly consists OF monitoring market conditions. This at least implicitly infers that the policy

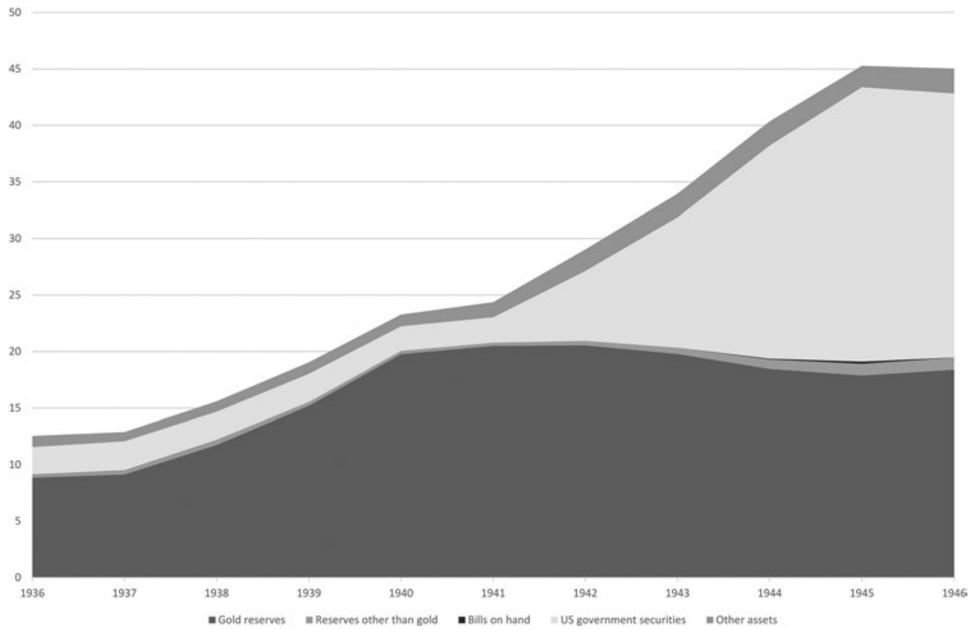

Figure 8. Composition of Federal Reserve's Assets, 1936–1946, end of year ($bn).
Source: authors, based on data from (Board of Governors, 1943, 1976).

was not debated inside the FOMC.[5] We depart from this conventional view and highlight below that there were debates and dissents among FOMC members, which were related to two crucial issues: (i) managing the size of the Fed's balance sheet, and (ii) communicating the policy to the markets.

Revisiting the consensus (1): Questioning the size of the Fed's balance sheet

The first tensions inside the FOMC appear before the war as early as 1938, their source being the divergence of interpretation between the committee and one of its members with respect to the variability of the Fed's balance sheet (or portfolio of T-bills). On 30 December 1938 the committee adopted a communiqué indicating that 'weekly statements of the total holdings in the Federal Reserve System's Open Market Account may at times show some fluctuation depending upon conditions in the market affecting the committee's ability to replace maturing Treasury bills held in its portfolio' explaining this instability by the technical difficulties to replace the maturing bills and maintaining stable yields approaching the zero bound.[6] Thus, the committee seems to aim at preparing the market participants for such evolutions, whereas Ronald Ransom abstains and argues that changes in the Fed's balance do signal a policy change and such a press release risks confusing the markets. We notice the emphasis put in discussions on good communication with the markets and the force of signalling effects.[7]

The next controversies (within the same domain) arise during the meeting on 7 March 1939. Here, the non-replacement of maturing T-bills or T-notes is specified more precisely, as well as the acceptable changes in maturity structure of the portfolio. Additionally, McKee asked a clarifying question related to the common understanding of the statement that the non-replaced securities would be replaced as soon as the market conditions allow for such an action and 'A majority of the members of the committee agreed that this was the understanding as indicated both by the resolution itself, (…), and by the last paragraph of the statement released to the press at that time'.

Another important point for future debates (but also for the interpretation of the FOMC resolutions) is the evolution of excess reserves – as was noted at this meeting by Goldenweiser.[8] The latter, with regard to the position adopted in December 1938, 'made the further observation that with excess reserves of member banks as large as they are at present there was little or no economic significance in a reduction of $100,000,000 or $200,000,000 in excess reserves'. In fact, the excess reserves had been following an upward trend since mid-1937 and reached record levels by the mid of 1939.[9]

Finally, still on 7 March 1939, the committee adopted 'resolutions containing instructions to the executive committee in the same form as resolutions adopted at the meeting on 30 December 1938' with three dissenting votes by Eccles (Chairman), Ransom and Draper.

Only the position of Draper is explained, but his statement leaves no doubt that both Eccles and Ransom were essentially sharing his objections. His statement reads:

> I wish to explain my vote on this resolution. In my opinion many persons interested in financial affairs, and many financial officers of business concerns who follow the Federal Reserve weekly statements, fix their attention particularly upon the size of the System's portfolio. To them a change in its size means a definite change in policy. And this is true, I believe, regardless of explanatory statements to the contrary by officials of the System or anyone else. Therefore, until we are ready to make a real change in policy, I believe it most important to maintain the portfolio at its present size. For this reason, as well as for other reasons given by Chairman Eccles and Mr. Ransom, at the meeting on December 30, 1938, I wish to vote No on the Resolution.

The bottom line is, thus, a trade-off between maintaining an easy monetary policy stance – high and stable volume of government securities, with systematic replacement of maturing bills – and managing the balance sheet with potential variations in its size, which could be misinterpreted by market participants. Draper's position looks very similar to the one of today's advocates of QE: he argues that, unless the committee decides to change the policy stance, the size of portfolio should remain stable, while the majority of the committee prefers to adjust the amount of assets upon market conditions.

The occasion for discussing these issues reappeared only two weeks later, on 20 March 1939. Even if the outcome of this ultimate vote was completely the same (same motion, same votes – including the dissenters) some new elements of evidence emerged. First, during a separate vote following a concrete discussion of the replacement of T-bills worth *c.*$73 million, it turned out to be possible to roll them over without disturbing the markets, and this was unanimously voted through. More interestingly, in a connected but separate issue of $10 million bonds selling on behalf of the Treasury, Harrison pointed out: 'the Committee still feels that the continuing and fundamental problem involved is one of excess reserves'. Thus, the FOMC advised the Treasury to draw on the balances of the depository banks rather than on the Fed (to keep its portfolio constant and to decrease the deposits in the commercial banks – reducing the excess reserve ratio at the same time).[10]

The bottom line is that the FOMC in the first half on 1939 was not focused on financing the government debt but rather on more standard macro-monetary issues: 'It was felt that this question was a part of the general problem of excess reserves of member banks and that it should be considered in that connection and not as a separate question'.

The debate on the systematic replacement of the maturing government securities was continued at the meeting of 20–21 June 1939. The minority opposing any change in the size of the portfolio shrank – only Draper finally dissented. The remaining FOMC members (including Chairman Eccles but also Ransom, who voted "aye" after the final text of the release was agreed) acknowledged 'it would serve no useful purpose to continue full replacement of maturing bills, the supply of which is not always equal to the market demand'.[11]

Then, after the open outbreak of the war in Europe, FOMC decisions were unanimous for more than a year, i.e. until 27 September 1940. The discussions then turn around the following dilemma: what should the actions of the Fed be if, on the one hand, the economic activity seems to rebound but, on the other hand, the government is expected to finance a significant war effort? The first would incentivise the Fed to sell, while expectations of the other would imply buying government securities:

> Vice Chairman Harrison said that it must be borne in mind that there is the possibility of some sort of an inflation following a business recovery together with the preparedness program. He felt that we might find it difficult to use in any substantial volume the only practical implement of control that we have, which is the portfolio, at a time when the Treasury might be borrowing large amounts from the market *to finance the defense program*. (Italics added.)

At the same time Harrison indicates that at the presence of a (nearly) zero interest rate the only remaining instrument of monetary policy is the size of the balance sheet of the central bank. This necessitates a lot of caution, as massive issuance of government securities is to be expected to provide funds for warfare. It is thus necessary that the Fed remains able to influence the markets, which will be only possible on the upper side (by the purchases of securities, given their abundant supply). If inflationary pressures rise, the problem will be almost self-solving: the interest rate instrument will be at the Fed's disposal again.[12] The commercial banks will be reselling the Treasury securities to the Fed and it will have to be prepared to purchase them. In this context, the question of authorisation limits granted to the executive committee emerges and it seems reasonable to reduce the size of the portfolio today (by selling T-bonds), to be prepared to purchase them in the near future – once the government's borrowing needs are fuelled by military spending. As mentioned in the introduction, this was a massive occurrence after the Pearl Harbor attack (but already visible since 1941 – see Figure 3 above).

The question of the size of the Fed's portfolio of government securities becomes a recurrent bone of contention, as demonstrated by the following 'meeting of dissent' held on 18 December 1940:

> There was a discussion of the policy to be adopted by the Committee with respect to the transactions to be effected (…). Reference was also made to the *substantial sales* that had been made from the account since the last meeting of the full Committee (…) and to the many uncertainties in the present situation which have a bearing on the Government securities market including proposals that income from future issues of Government securities be taxable, the question of the extension of the debt limit, the form that defense financing will take, the extent to which defense expenditures will be met by taxation, and the problems growing out of the large and increasing volume of excess reserves. (Italics added.)

Afterwards, the first dissent episode since the United States officially entered into the war arena (with the Pearl Harbor attack) happened during the meeting of 28 September 1942. The Federal Reserve becomes more than ever an instrument of the war financing policy and its attitude towards Reserve Banks turns out to be much more of a directive than previously. Namely, it nearly forces them to accept any T-bills presented for a purchase, which was expressed in the following motion: 'Until otherwise directed by the Federal Open Market Committee, the twelve Federal Reserve Banks are directed to purchase all Treasury bills that may be offered to such Banks (…)'.

This was not accepted unanimously and the opposing members are two governors (Szymczak and McKee) and the President of the New York Fed – Sproul. However, the minutes provide no particular reason for these dissents.

Noteworthy is that the FOMC regains its unanimity in the following motion, affirming the unreserved support to the war financing policy of the Roosevelt Administration:

> That the executive committee be directed, until otherwise directed by the Federal Open Market Committee, to arrange for such transactions for the System open market account, either in the open market or directly with the Treasury (…); provided that the aggregate amount of securities held in the account at the close of this date (other than Treasury bills purchased pursuant to the directions of the Federal Open Market Committee issued under dates of April 30, August 3, and September 28, 1942) shall not be increased or decreased by more than $1,000,000,000.

One should note that the limit of interventions of the Fed was enormously increased – to one billion dollars, that is a fivefold increase on the 1940 limit. At the same time, the Fed reaffirmed the scope of its prerogatives to use all the available instruments being at its disposal.[13]

Otherwise, and in parallel to the discussions regarding the size of the Fed's portfolio, the minutes provide an account of an informal discussion related to the decrease of the discount rate to 0.5% or establishment of a preferential discount rate for government securities at the same level as well as a reduction of reserve requirements. These discussions, however, seem to end without a clear-cut conclusion – feasibility of all these options was agreed, but no decision was made.

Revisiting the consensus (2): operating through and communicating with the markets

The concern for financial system stability is another important worry for the FOMC, as its policy essentially operates through the markets, and several issues are debated.

During the meeting of 20–21 June 1939, an element makes a noteworthy irruption into the debate, concerning the timing of the official release and informing the Secretary of Treasury about such a change in the Fed's portfolio. The text of the release was agreed, but for official publication only after the actual non-replacement of the maturing T-bills would take place and even the Treasury would be notified only ex-post:

> During the course of the discussion the further suggestion was made that the Committee might agree upon the statement but defer its release until there is an actual reduction in the amount of Treasury bills held, with the understanding that at that time the executive committee would release the statement. (…)
>
> Chairman Eccles stated that he would take the matter up with the Secretary when there was a convenient opportunity to discuss it with him (…). [He] added, however, that he would say nothing to the Secretary of the Treasury until it appeared that the reduction in the portfolio would actually take place.

The direct consequence of these decisions was a (temporary) decrease of the Fed's portfolio (Board of Governors, 1940, p. 1).

More than a year later, on 27 September, 1940, Draper argued during the debates that a premature shrinking of the portfolio would send to the markets an opaque signal of a restrictive shift in monetary policy stance, which would have undesirable deflationary effects.[14]

> Mr. Draper stated that with the defense program beginning to get under way and the business economy shifting into high gear he felt that it would be a mistake for the Committee to take an action at this time which might be construed as having deflationary implications. He added that he felt caution was particularly necessary at this time not only because of the domestic situation but also because of the dangerous war conditions abroad.

The response of Vice Chairman Harrison is that there was no change in the policy stance, as long as the details of the operation remain unknown.

The final resolution, moved by Ransom and voted through, in spite of the dissent by Draper, states that:

> the executive committee be directed until otherwise directed by the Federal Open Market Committee to arrange for such transactions for the System Open Market Account (including purchases, sales, exchanges, replacement of maturing securities, and letting maturities run off without replacement) as in its judgment from time to time may be advisable in the light of existing conditions; provided that the aggregate amount of securities held in the Account at the close of this date shall not be increased nor decreased by more than 500,000,000.

This instruction, in fact, left the executive committee with unbound hands, which was necessary given the previous text – repeatedly adopted since December 1938 – allowing only for the shrinking of the Fed's portfolio. The limits set were in fact quite high (*c.*25% of the overall Fed's portfolio of the government securities) and the direction was unspecified. In fact, Harrison was seeing the change (in the instructions) as aligning the official public text with the practice of the NY Fed implementing the guidelines of the May 1940 meeting:

> [Mr. Ransom] asked whether the New York Bank would continue in the market under the proposed change in instructions in exactly the same manner as it had been operating in the market under existing instructions. Mr. Harrison said he did not think there would be any difference in the attitude of the New York Bank under its instructions (…), his only point in the matter being that he felt that it was wiser to have the language of the directions of the full Committee to the executive committee and of the executive committee to the New York Bank changed to conform to the interpretation placed upon those directions rather than rely solely upon the interpretation which would appear in the minutes of the Committee but not in the public record.

One should further note two interesting points brought to the fore during the September 1940 meeting: on the one hand, Draper remains faithful to his reading of the instructions and press releases – a change in the size of portfolio signifies for him a change in policy stance, which he assesses as undesirable in the current conditions. On the other hand, the accents of the discussion are replaced from excess reserves to the implications of war in Europe and to the interpretations the market actors can give to variations of the Fed's balance sheet.

A new, apparently purely technical, element of discussion appearing at the time is the question of the dividends payable by the Federal Reserve Banks to their shareholders (member banks). However, this problem also has a non-negligible macroeconomic dimension: in such a context – which would be called today a 'Zero Lower Bound' – the interest-related revenues shrink. A 'net earnings target' would thus imply a certain minimum size of portfolio, which is even bigger if the yields on government securities are limited. These considerations make the reduction of the portfolio via sales of the securities even more disputable.

At the same time ensuring orderly market conditions remains at the top of the agenda:

> (…) the executive committee should be in position to act in accordance with its best judgment in the light of developments from time to time, especially when it might be deemed desirable to exercise an influence toward preventing disorderly conditions in the market (…) provided that the aggregate amount of securities held in the account at the close of this date shall not be increased or decreased by more than $200,000,000.

The vote on this proposal granting discretionary powers to the executive committee on a day-to-day basis ended up in a consecutive dissent by Draper. He presents two main reasons for his opposition. The first, and the more fundamental, is once again based on the possibility of the rebound of the business cycle. The Fed, faced WITH such a trend reversal should have sufficient 'munitions' at its disposal – it should be able to sell government securities. Thus it would not be sufficiently prudent to shrink too much the portfolio of the Fed at the time. The second argument is, interestingly, somewhat asymmetric: it is less necessary to intervene during a bull market than during a bear market, where the role of the Fed would be to prevent panic.

> In my judgment, also, sales from the portfolio for the purpose of maintaining an orderly market should be resorted to much less frequently and less vigorously than purchases at a time when the market is declining rapidly. Rapid declines are apt to result in a selling wave amounting to panic, which I believe should be prevented when possible. On the other hand, there is little danger of a panic when the market advances, and it makes little difference whether a rise is rapid or slow, so long as the level it reaches is appropriate to existing conditions and is not the result of purely speculative purchases.

Interestingly, such an asymmetric 'reaction function' by Draper, embedding a sort of 'recession aversion' was theorised and tested only recently (Cukierman & Muscatelli, 2008; Surico, 2008). Considered from such a perspective, one could argue that this literature is a strong echo of the debates of the war period.

During the meeting held on 26 January 1943, Chairman Eccles proposed that:

> (…) the executive committee would arrange with the Treasury for the direct replacement, in full, of such maturities as well as of other maturing issues on which the right of exchange might not be extended to all other purchasers. His reason for this position was that such a procedure would eliminate the necessity of the System competing for replacement securities in the market (on which it would be necessary to pay the dealers' commissions) as well as the disturbance to the market that might result from such purchases (…).[15]

Hence, McKee proposed that the executive committee, if it judges necessary, is allowed to directly negotiate with the Treasury a total allocation to the Fed of the newly issued government securities, thus bypassing the markets. This motion was adopted, but with two dissenting votes, by Sproul and Williams. During the discussion, Sproul said that the question, 'does not involve merely the question of denying full allotment to a few dealers in government securities but the broader question of *how far underground* you wish to drive the practice of heavy subscriptions to issues of government securities'. (Italics added.)

Consequently, a direct financing of the Treasury, without a possibility left to the markets to purchase the newly issued government securities is futile or even dangerous: why should the markets be omitted if their support to the policies is effective? This could even question the value of the government's signature and, in turn, send to the markets a signal of non-viability of the government's policies or unsustainability of the newly issued debt. Or, in Sproul's own words:

> (…) nothing should be done which might create public concern about the credit of the Government, direct purchases of this kind should not be resorted to for the purpose of supplying reserve funds until necessity forced such action, which is not the case at present.

The same scenario, with a motion related to the open possibility of direct purchases of the totality of newly issued government debt securities, is repeated during the following meeting, held on 3 February 1943. This time, the only dissenting vote was cast by Sproul, for the same reasons.[16]

The ultimate meeting with a registered dissenting vote during wartime took place on 22 September 1944, two months after the conclusion of the Bretton Woods conference. This time, the discussion concerned public access to information about the Fed operations (notably the reserve ratio), the division of roles between the FOMC and its executive committee in this matter, as well as between the Board of Governors and the Reserve Banks. Ransom voted against the possibility of diffusing declarations offered to the latter, judging it an inadequate institution for such a purpose.[17]

This episode closes the meetings of the wartime period marked by dissenting votes. Afterwards, the discussions are directed towards completely different topics than those of the WWII period. As discussed by Hetzel(2008, p. 40), the opening period will be marked by a progressive acquisition of the real independence of the Fed in terms of monetary policy, but also successfully maintaining price stability and the absorption of the (rarely) occurring shocks in the pre-Accord period (Eichengreen & Garber, 1991, p. 177).

Revisiting the consensus: a summary of the issues

To sum it up, our reading of the debates inside the FOMC during WWII is that its members understood how complex monetary policymaking is and how many variables (prices, reserves, money stock, Fed's balance sheet and its structure, signalling effect of policy statements, etc.) must be taken into consideration.

Moreover, reading of the minutes seems to imply the following mindset of the FOMC:

1. the smooth operation of the financial markets (non-disturbance by unnecessary interventions) is important, as well as the efficient functioning of the banking sector (excess reserves are undesirable);
2. the tools of the FOMC are thus admittedly not only the size of the Fed's portfolio and 'targeted' interest rate on T-bills, but also the communication and ability to convince/surprise the markets as well as coordination (at least ex-post) with the Treasury.

Importantly, the situation in Europe and the imminent risk of war appear early in the debate, even during the period of (official) neutrality. The FOMC reserved the right to intervene in order to maintain the stability of financial markets, in case of a disruption. It thus seems to be ready to follow a 'contingent rule' from which it can divert in case of an important exogenous shock (Bordo & Kydland, 1995; Flood & Isard, 1989; Lohmann, 1992). In the words of the FOMC, this seems to be acknowledged in the following way, as early as June 1939:

> That, in the event that armed conflict or political developments threatening armed conflict abroad result in serious disturbance to the Government securities market in this country, the executive committee be authorized, in addition to the authority granted by the resolutions set forth above and notwithstanding any limitations or restrictions in those resolutions, to *increase the securities in the account* (…), and, if and when market conditions warrant, to *sell* securities in the amount of any securities so purchased. (Italics added.)

Portraying serial dissenters

Among the members of the FOMC present during the episode we just reviewed, several stand out as 'serial dissenters'.[18] It is interesting to recall the personal background of the dissenters, as it can enlighten the way they expressed themselves inside the committee. In the end, this provides a less than consensual view of the FOMC during the war period. However, and quite strikingly, as the dissenters' personalities – as far as we can judge from available information – seem very heterogeneous, they can be classified into two categories: the small business representatives and the financiers.

In the first category, Ernest Draper (1885–1954) dissented the most, with six opposing votes between 1939 and 1940. His stint at the FOMC ran from 1938 to 1950, when he left for retirement. As one can obtain from the FOMC's historical archive,[19] Draper worked in the chemical industry, where he climbed the ladder to be appointed in 1935 at the US Department of Commerce to the position of assistant secretary of commerce, where he stayed for three years. He focused on the role of small businesses in the economy, as testified by a article published in 1939 in the Washington Post, titled 'Small Business and Its Credit Problem', in which he notably writes:

> The whole story must also include the number of employees dependent upon the successful functioning of small business and also the relative importance of small business in providing the nation with its yearly income.

On the basis he in particular advocates that the Fed supports the delivery of long-term loans to small businesses. This concern for small businesses and the jobs they deliver was also at the core of the article he co-signed and published in 1944, in the Federal Reserve *Monthly Bulletin* ('Goods and Dollars in World Trade'), where he defends a quite large use of international loans and reserves to support the world economy after the war. He argued that if the US supports the foreign destroyed economies, it would de facto provide support to the American economy.

Draper can probably be described as what would today be defined as a liberal. In 1935, while he was still vice president of the Hills Brothers Co. (New York), in a statement to a parliamentary committee working on an 'Economic Security Act', he argued in favour of a federal unemployment insurance system. He was a member of the New York State Commission on Unemployment, of the National Labor Relations Board (where his positions also lead McQuaid (1979) to brand him as a liberal), and has been president of the American Association for Labor Legislation. In 1935, he also published a book whose title is quite explicit: 'Can Business Prevent Unemployment'.

Although a more marginal dissenter, John K. McKee (1891–1977) also belongs to the first category. His term at the FOMC (where he stayed from 1936 to 1946) almost coincides with the one of Draper. He also appears as one of the 'common people', if not a self-made man: according to the Fed's historical records, he graduated from local public schools and the University of Pittsburgh Night School, and started a career as a messenger at the Peoples National Bank, to become a cashier after 12 years. He then went into the oil industry (from 1923 to 1928), and finally 'managed family real estate holdings'.[20] His experience at the First National bank, where he had been in charge of supervising doubtful loans before going to the oil industry may explain his appointment, in 1931, as a receiver for insolvent banks in Ohio and Pennsylvania, for the US Comptroller of the currency office. He pursued a career in the banking system until 1948. Finally, let us signal that his obituary in the *Washington Post* mentions that President Franklin D. Roosevelt had appointed him to the FOMC, even though he was a Republican.[21]

Allan Sproul (1896–1978) is the third serial dissenter, with three dissenting opinions expressed through a vote, and the first in the second category (the financiers). He was president of the New York Fed from 1941 to 1956, after a career debut (from 1920 to 1930) in the Fed of San Francisco as head of the division of analysis and research, before joining New York after being scouted by Benjamin Strong (himself President of the Fed from 1914 to 1928). The end of his career inside the Fed coincided with a second life as a director of Wells Fargo Bank (California). Sproul was in charge of open market operations from 1938, which probably gave him a good knowledge of how the bond market operates and reacts to the Fed's announcements and decisions. Sproul was more than concerned with the relations between the Fed and the Treasury and, after the war, he fought with Eccles to make the Fed more independent.[22]

According to Hetzel and Leach (2001, p. 61), Sproul had clearly in mind that, 'the exercise of monetary policy required that the Fed influence the psychology of the financial markets'.

According to the Richmond Fed online archive, he was also in favour of a broad set of instruments through which to convene monetary policy decisions. A letter Sproul wrote in 1954 to Prof. Elmer Wood (University of Missouri) reinforces this impression, as he states that:[23]

> I do not believe we can enjoy the luxury of a fixed formula of monetary management in our complicated money economy. (…) Most often the discount rate and open market operations can be used together; the discount rate to symbolize the policy adopted, and open market operations to keep market rates and member bank borrowing in appropriate relation to the discount rate.

Hence, the self-description of Sproul as a 'technician' (see above) could either be one of humility or, maybe, a rhetorical trick during the debates inside the FOMC.[24] On the contrary, in our view, a deep exploration of his views during WWII can only reinforce the perception of him as a professional central banker, with relatively modern views on the way the economy functions.

Ronald Ransom (1882–1947) also had three registered dissenting votes. He was a member of the FOMC from 1936 to 1947. He graduated in law, and then, as the Fed's website states: 'worked for the Fulton National Bank of Atlanta. He afterwards presided the Atlanta Clearing House Association, was a member of the Georgia Bankers Association (1931–32) and served on several committees of the American Bankers Association between 1932 and 1934'. He is probably the least well known of the members of the FOMC, and of our dissenters. He is mentioned, but only in passing, in the history of the Atlanta Fed,[25] although his career and positions assign him to our 'financiers' category.

To conclude on this point, it seems that a line can be drawn between two types of officials. On one side stand the defenders of small businesses and, in the end, of jobs – which could also represent the 'real side' of the economy. Their positions are clearly towards an active monetary policy even though the context is not favourable. In modern language they could also be classified as 'doves'. On the other side stand the 'financiers', who could also be considered as 'hawks', and have interesting view, even if wrapped in technicalities, of the way monetary policy should be manipulated.

Discussion: are dissent and debates during the war marking the emergence of new perceptions in monetary policymaking?

As we have seen, during the war, the Fed is at the service of the war effort, and thus collaborates closely with the Treasury. The independence of the Fed emerges as a topical issue only afterwards, during the post-war period. It is thus all the more remarkable that the topics and mechanisms that are open to controversies during the war reveal a large degree of modernity. Interestingly, as we have highlighted, during this period important issues in public administration – also discussed nowadays – are present, like the one related to the publicity (in today's words, transparency) of policy debates. Moreover, and even more importantly, the debates bear on the ways and means of funding the war effort, with an explicit monetary financing by successive massive buying of T-bonds. Quantitative easing would simply be the name of such a policy in our contemporary world (Williamson, 2015).

Putting these results in perspective, the question is how much these debates, and occasional dissents, reveal new perceptions about monetary policymaking. Or, to state it differently: how was the monetary 'orthodoxy' of the time challenged by the extraordinary requirements of war – was the understanding of how monetary policy works affected by this exercise in wartime or was it viewed merely as an aberration?[26]

In the literature, unanimously, the famous Fed Treasury Accord of 1951 marks the beginning of the modern era for the Fed, characterised by the pursuit of full employment and price stability, with the potential trade-off between the two goals (Bordo & Wynne, 2016; Eichengreen, 2016; Hetzel, 2018). The 'golden age' of the US central bank is thus associated with the 1950s, when the Fed was able to be responsive to the needs of the domestic economy, and when its policy started to be correctly apprehended as a reaction function and estimated as a Taylor rule (meaning the Fed actually monitored inflation and the business cycle).[27]

Hence, if following a reaction function of this type means being modern, then it is clear that the policy conduct of the Fed after WWII defines a clear rupture with regard to the previous periods.[28] In other words, to the question 'Can one read the actions of the Fed during WWII through the prism of a Taylor rule?', the answer can only be 'No'. As we have seen above, during the war period, the use of open market operations was primarily aimed at monetising government debt. Consequently, a Taylor rule is probably neither applicable nor relevant to the war period, as studying the response functions of free reserves and commercial paper rates to macroeconomic conditions during this period does not make sense, since the interest rate was set constant at its lowest level and the role of the Fed was to support the war effort unconditionally.[29]

Our narrative analysis of the dissents thus appears to be the most appropriate way to capture the stakes of monetary policy in a period marked by an unconditional agreement on the purpose of policy (funding the war effort), but not on the means to be used to achieve it. Debates and dissents inside the FOMC during the war reveal that discussions touched upon which actions should be taken to smooth the functioning of the money market and to manage the financial markets so as to avoid any misinterpretation of monetary policy that could harm the success of the war-related policy. Using the glasses of a Taylor rule to characterise how the Fed managed its policy during WWII would lead one to conclude that the period is marked by fundamentally different perceptions of monetary policymaking, and that no continuity exists with the period that followed the war.

Yet, the conclusion differs if we instead focus on the intellectual origins of central bankers' practices, and on the induced operating procedures. In so doing, one is led to conclude that there is more continuity than rupture, and to emphasise the legacy of some significant beliefs and legislations. As we have shown by portraying the dissenters, emphasising the role of individuals as 'carriers of ideas' allows us to reveal how

> [d]octrines influence policy when individuals involved in the policy making process make a compelling case that the principles or framework in question provide useful guidance and answers to the questions at hand… Doctrines need advocates in order to influence policy. Emphasizing the importance of doctrine in informing the actions of the Fed, thus directs attention to the role of persuasion, personnel and personality in the making of monetary policy (Eichengreen, 2016, p. 15).

And, as dissents reveal, *'[d]escribing at that time the Fed's monetary policy as being informed by an explicit monetary doctrine would be an absurdity'* (p. 27). The debates analysed in this article have illustrated the mixed influence of these – sometimes conflicting – intellectual origins. The Glass-Steagall Act of February 1932, by loosening collateral requirements for Federal Reserve notes, may be considered as a first step in the doctrinal shift that would continue throughout WWII. In fact, before 1932, the Fed could only discount and purchase high quality commercial paper. By removing this restriction and adding government bonds to the list of eligible assets, this legislation induced a shift in the Fed's policy practices that would culminate during WWII with the systematic purchase of T-bonds. Moreover, the Emergency Banking Act of March 1933, the Banking Act of 1935 that expanded facilities and made them permanent and, in particular, sections 13(3) and 13(b) on lending facilities, also constituted the existing legal arsenal inherited from the past that the Fed was able to use during the war.[30] Therefore, in this sense, in terms of doctrinal views about monetary policymaking as well as in terms of operating procedures, it is plausible to detect elements of continuity between the Fed's policy conduct before, during and after WWII.

Ultimately, the parable of a Fed in its infancy,[31] in its first 20 years of existence, can be extended, although in a semi-paradoxical manner: in light of our analysis, we are inclined to conclude that the Fed reveals an unprecedented maturity in managing the turmoil of the war period. In this sense, these years were other 'central bank's formative years', in the sense that the Fed, through its exemplary management of the war, gives evidence of a great maturity, if not modernity.

To conclude, delivering economic stability via collective decision-making inherently involves discussions and dissent, especially in turbulent times. A well designed policymaking structure of the Fed, since its early years has been providing adequate incentives for its members to acquire and share information, debate it, and, if necessary, to dissent. Such behaviour during the FOMC meetings, especially by 'serial dissenters' or 'whistle-blowers' allowed bypassing the pitfalls of groupthink. Thus, we suggest in this article that the occurrence of dissent through the troubled waters of WWII reveal that some of the Fed officials behaved as, to use the expression by Dilulio (1994), 'principled agents'. In other words, responding to the war revealed a capacity by Fed officials to react, adapting policies and procedures to troubled times.

Notes

1. A convincing argument why such an increase in money supply did not end up in inflation was presented, for example, by Toma (1992).
2. See Clifford (1965) and the dedicated website (Federal Reserve Bank of Richmond, n.d.).
3. The whole material is archived and can be accessed (Board of Governors of the Federal Reserve System, n.d.). Note that the minutes of the meetings of the executive committee of the FOMC are also available, and would probably deserve another analysis. As we are interested by the actions of (and interactions inside) the FOMC, such a study, however, would lie outside the scope of the present article.
4. Cash and carry was a policy implemented from the outbreak of war in Europe in September 1939. It replaced the Neutrality Acts of 1936. It allowed the sale of material to belligerents, paid immediately in cash (gold).
5. However, such a view, being the one described in history and economics books, often adopts an ex-post perspective, which was not necessarily shared by the actors at the time the events unfolded.
6. The shrinking share of government bonds with short maturities in the Fed's portfolio at the time is depicted in Board of Governors (1940, p. 10).
7. Current experience of signalling channel of quantitative easing is analysed in detail in, e.g. Krishnamurthy and Vissing-Jorgensen (2011).
8. Emmanuel Goldenweiser was an adviser to the Fed's Board of Governors, but was not a member of the FOMC.
9. From the Fed's point of view (as stated by Chairman Eccles in the meeting of December 1938), excess reserves are potentially important as they may allow banks to intervene directly on the market for Treasury bonds, instead of the Fed.
10. Note that the issue itself is debatable: if the Treasury draws on the tax and loan accounts of banks, only in the first instance do the deposits of banks decline. As the government spends the funds, the total may in the end go back to where it was before. However, financing government spending by drawing down the Treasury's deposits at the Fed at least modifies the distribution of the reserves held by the Fed – more reserves held by banks and less by the Treasury.
11. This motion was introduced by a 'technical' testimony of Sproul (at that time First Vice President of the New York Fed).
12. Although it can be argued that under the operating procedures of the time interest rates would rise only as loans increased, deposits increased, required reserves increased and banks again would be forced into the discount window.
13. 'There appeared to be no disagreement with the thought that there was nothing in the history and experience of the Federal Reserve System that would suggest that the System should abandon any of its powers in the field of credit control or should rely upon any single power to the exclusion of the others, but that it should use any or all of its powers as circumstances might require.'
14. These remarks by Draper may also be taken as hinting towards concerns regarding the eventual 'exit' from the large balance sheet. Although the exit issue has been an important one for modern policymakers, it will essentially be discussed after the period covered in this article, partly leading to the Fed Treasury Accord of 1951.

15. Sproul added a technical remark that apart from the highly supervised market makers there are also less constrained operators, who should be taken into account with their capacity to make some arbitrage profits while trading government securities. He argues that these opportunities should be, obviously, limited by law: 'Consideration must also be given', he said, 'to the treatment to be accorded to brokerage houses, corporations, and individuals who purchase to resell and who, in many cases, are not now policed strictly as are the so-called Government security dealers with respect to the amount of their subscriptions'.
16. The text of the motion was the following: 'that the executive committee would undertake to arrange with the Treasury for an amendment to the terms under which the various issues of government securities are offered so as to permit full allotment to the system of securities, issued to refund maturing direct obligations, to the extent that replacement of such securities held in the system account appeared to the executive committee to be desirable'.
17. More precisely, the question bears on knowing if: 'the question of publicity be left to the Federal Reserve Banks for decision for the reason that the Banks should be free to discuss the matter with anyone in their respective districts who wanted to talk about it.'
18. The expression has also been used in the press, to characterise the persistent opposition of (only) two FOMC members that have dissented while Ms. Janet Yellen was the chairperson of the Fed. See: http://www.economist.com/news/finance-and-economics/21631136-fed-mollifies-its-hawks-now-its-doves-are-fretting-advice-and-dissent (last consulted 15 July 2017.)
19. See http://www.federalreservehistory.org/People (last consulted 15 July 2017.)
20. See note 19 above.
21. Although the Fed's website states that McKee's date of death is ignored, his obituary appeared in 1977 in the *Washington Post*.
22. These debates are also recounted by the Richmond Fed on the Agreement: https://www.richmondfed.org/publications/research/special_reports/treasury_fed_accord/bios/sproul?WT.si_n=Search&WT.si_x=3 (last consulted 15 July 2017.)
23. The letter is available from the Sproul papers, part of the Fraser historical archive, maintained by the Saint Louis Fed. The letter itself is located at the following URL: https://fraser.stlouisfed.org/scribd/?item_id=3404&filepath=/docs/historical/sproul/sprlet54.pdf (last consulted 15 July 2017.)
24. The latter possibility arises even more strongly in the letter to Wood, when Sproul writes as a conclusion that he may be 'too much imbued with the idea of central banking as an art (…)'.
25. See the website: https://www.frbatlanta.org/about/publications/atlanta-fed-history.aspx (last consulted 15 July 2017).
26. We owe this formulation of the question to a referee of the journal.
27. As Carlson and Wheelock (2016) do, defending the view that the behaviour of a « modern » central bank can be tracked by a kind of Taylor rule.
28. Classically, the Fed's history can be divided into distinct eras (Bordo & Wynne, 2016): (i) the first 20 years of existence of the Fed, or the 'learning years'; (ii) the outbreak of the war, when 'monetary policy became subservient to fiscal policy' (p. 1); while (iii) the Fed Treasury Accord of 1951 started the modern era of an independent central bank.
29. Of course, this point of view (which can be inferred from, for example, Carlson and Wheelock, 2016), may overlook the possibility to use 'shadow rates', as popularised by Wu and Xia (2016).
30. See Carlson and Wheelock (2016) for the operating procedures. Damette and Parent (2018) also argue that the Fed, as early as the 1930s, traumatised by the liquidity shortage of 1929, tried to repel its occurrence in the thirties and that this constituted the thread of its policy before the New Deal.
31. Eichengreen, (2016, p. 41), states that the Fed … 'like a child learning to walk, struggled to find its policymaking feet'.

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