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Alternatives for Federal Reserve Remittance Policy[1]

Executive Summary

As discussed in recent FOMC memos, the Federal Reserve could sustain significant losses over the period in which the stance of monetary policy is normalized. Under the exit strategy principles articulated in the minutes of the June 2011 FOMC meeting, such losses could stem from realized capital losses on securities sold over the period when the size and composition of the balance sheet are normalized. In addition, the substantial increase in interest expense when the federal funds rate (and interest rate on excess reserves) is returned to a more normal level could also depress Federal Reserve income for a time. In some scenarios, remittances to the U.S. Treasury could cease altogether and the Federal Reserve could book a sizable deferred asset. The probability of such outcomes is particularly elevated in those scenarios in which the Federal Reserve purchases substantial additional securities over coming quarters and interest rates subsequently rise more rapidly than envisioned in the staff's baseline economic projection. It is important to note, however, that in all scenarios, cumulative Federal Reserve income over the entire period from 2013 to 2020 is positive and substantial.

As discussed in the staff memo on exit strategy considerations, one option that could reduce the odds of realized losses in particular years would be a change in the exit strategy that involved significant changes in the pace and overall level of asset sales. Such approaches could, by reducing the potential for capital losses, reduce the chances of a period of zero remittances.[2] Alternatively, the Federal Reserve could implement changes in its remittance policy that would help to smooth the level of remittances to the Treasury even if the FOMC chooses to follow an exit strategy that could involve substantial capital losses on sales of assets in some years.

The discussion below considers two alternatives for Federal Reserve remittance policy that policymakers might consider to smooth remittances over time. Under the first, the Federal Reserve would base its annual remittances to the Treasury on a forecast of SOMA income over the entire period from 2013-2020. As described in more detail below, this policy would involve substantial additions to surplus over the next few years and then significant drawdowns in surplus over the period in which policy accommodation is removed. Under a second option, the Federal Reserve could retain income and boost surplus over the next few years to achieve a desired ratio of surplus to total assets. This additional surplus could be drawn down over the period in which Federal Reserve income is depressed by asset sales and high interest expense. These options are effective in smoothing remittances to the U.S. Treasury both in a baseline scenario and in a stress scenario involving an elevated balance sheet and high interest rates; both options may also help reduce the odds that the Federal Reserve would record a deferred asset.

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[1] Sophia Allison, Seth Carpenter, Jim Clouse, William English, Greg Evans, Jon Faust, Jeff Huther, Jane Ihrig, Beth Klee, Mike Leahy, Larry Mize, Julie Remache.

[2] See the memo entitled "Exit Strategy Considerations," by Katherine Femia, Jane Ihrig, John Kandrac, Beth Klee, Christian Miller, and Julie Remache.

There would appear to be both significant benefits and costs of changes in remittance policy of the type discussed below, many of which involve reputational or political considerations. Among the benefits, a change in remittance policy could greatly reduce the potential size and duration of a deferred asset and, in many cases, allow the Federal Reserve to avoid booking a deferred asset altogether. A deferred asset could be seen by some as a sign of mismanagement of "taxpayer resources" by the Federal Reserve and might well invite the scrutiny of Congress in a way that could be damaging to the Federal Reserve's reputation and independence. However, a change in remittance policy could also involve significant reputational and political costs. Withholding income from the U.S. Treasury to build a surplus account would no doubt attract the attention of Congress, particularly at time when the federal government is contending with serious fiscal challenges. As in some past episodes, the Congress could appropriate any "excess" surplus the Federal Reserve accumulates. Moreover, Congress could be concerned that an elevated Federal Reserve surplus account could become a factor in a future debt ceiling impasse; for example, a temporary reduction in Federal Reserve surplus could be seen as a way to allow the Treasury more room under the debt ceiling.

Weighing the potential advantages and disadvantages of a change in remittance policy involves difficult judgments. As the discussion below makes clear, reasonable alternative remittance policies could be effective in smoothing remittances to the U.S. Treasury. However, policymakers will need to weigh carefully the benefits and costs of a change remittance policy and whether other actions such as changes in the approach to asset sales during the exit period could achieve many of the same objectives.

Background

The evolution of the Federal Reserve's balance sheet over the next several years could expose the System to notable interest rate risks—particularly during the "exit period" when the Federal Reserve would be removing policy accommodation by raising short-term interest rates and normalizing the size and composition of the balance sheet through asset sales. This potential interest rate risk stems from two basic sources—the risk to net interest income associated with a pronounced maturity mismatch between Federal Reserve assets and interest-bearing liabilities and the risk of realizing capital losses as a result of asset sales.

By design, the expansion of the balance sheet has involved a maturity mismatch between the relatively long-term assets purchased and the accompanying increase in short-term liabilities (largely composed of reserve balances). This maturity mismatch and the fact that the interest rate on excess reserves will likely need to rise along with the FOMC's target for the federal funds rate during the exit period implies a significant downside risk to net interest income at that time. In particular, with reserve balances likely to decline only gradually over time, the Federal Reserve's interest expense will likely increase substantially while the FOMC is raising short-term interest rates. In contrast, interest income on the SOMA portfolio will likely decline over the period of asset sales reflecting the gradual reduction in the size of the SOMA portfolio and

the fact that no maturing securities will be rolled over at higher rates during that period. On balance, then, the Federal Reserve's net interest income may decline significantly as the level of the target federal funds rate is increased, particularly when the level of reserve balances outstanding is still comparatively large.

The Federal Reserve may also incur realized capital losses on sales of securities during the exit period. Under the FOMC's existing exit strategy (as articulated in the June 2011 FOMC minutes), the FOMC plans to sell agency MBS at a gradual pace over a period of three to five years. Given the current size of the portfolio and projections of additional purchases, these sales would be expected to normalize the size of the balance sheet over three to four years.[3] Since longer-term yields will presumably rise significantly during exit, the Federal Reserve could realize significant capital losses on sales that would lower the Federal Reserve's income and depress the level of remittances to the U.S. Treasury.

As detailed in the staff memo on exit considerations, the period of low net income and remittances would be temporary and total remittances over the period 2013-2025 would remain very substantial; indeed, the average level of remittances over this period would be significantly above the pre-crisis level. If policymakers wished to smooth the path of remittances over time, the Federal Reserve could adopt an alternative policy for managing surplus and remittances. Such a policy would essentially involve boosting Federal Reserve surplus over the near term when Federal Reserve net income is expected to be very large and then drawing down the surplus in later years when net income is low or negative. The mechanics of such remittance smoothing policies are described in more detail below.

Do Central Bank Capital and Income Matter?

Before delving more deeply into alternative remittance polices, it is useful to consider the broader question of whether monetary policymakers should be concerned about the path of income and remittances in a larger sense. As noted above, it seems clear that significant changes in the Federal Reserve's income and capital could matter from a reputational perspective. However, the direct economic effects of Federal Reserve income and capital are less obvious. Policymakers might be concerned, for example, that sustained periods of negative capital or negative net income would have adverse consequences for the Federal Reserve's ability to conduct monetary policy. However, other central banks have operated with negative capital for sustained periods with no adverse consequences for their ability to conduct monetary policy.[4] Especially with the authority to pay interest on excess reserves, the Federal Reserve's capital and

[3] In June 2011, sales at this pace were expected to normalize the size of the portfolio within two to three years.
[4] See the memo entitled, "Foreign Central Bank Remittance Practices," by Alain Chaboud and Mike Leahy.

income should not be a constraint on the Federal Reserve's ability to influence the level of short-term interest rates as desired unless losses are extraordinarily large.[5]

Even if the problems associated with losses and low remittances mainly stem from the political implications, there could be indirect effects of central bank capital income for macroeconomic performance. For example, some authors have argued that there might be potential indirect effects of central bank capital and income for macroeconomic performance. In particular, if investors perceive that a central bank may suffer a loss of independence as a result of impaired capital and operating losses, this concern could affect inflation expectations and the value of the currency.[6]

In the current environment, Federal Reserve surplus policy may have some implications for Treasury debt management. In particular, retaining additional surplus implies that the Treasury will issue more debt than would otherwise be the case to finance its spending.[7] That additional debt finance would tend to put some upward pressure on interest rates. In the remittance policies discussed below, surplus would be increased over the short-run and then drawn down later in the decade. The net interest rate effects of this change in remittance policy are likely to be very modest.

Current Surplus and Remittance Policy and Projections

It may be useful at the outset to review briefly the Federal Reserve's current surplus and remittance practices and how those practices affect projections of income, surplus and remittances over time.[8] Under a baseline scenario in which the Federal Reserve purchases about $500 billion of longer-term securities this year and in which rates follow the staff baseline path in the January Tealbook, staff projections for Federal Reserve income are as shown below in Table 1.

[5] To take an especially extreme case, suppose the Fed suffered losses that were as large as currency outstanding (currently about $1 trillion). The book value of the Federal Reserve's capital would then fall to about -$1 trillion. Even in this case, the Federal Reserve arguably could still implement monetary policy effectively. The Federal Reserve could still drain reserves by selling assets or by issuing term deposits and reverse RPs. Moreover, the Federal Reserve could influence the level of short-term rates with the interest rate on excess reserves. The Federal Reserve would continue to earn seignorage income that would grow over time with the trend growth of currency outstanding, allowing the eventual return to positive levels of capital.

[6] See, for example, Stella (1997), (2005), BIS (2011), Adler et. al. (2012), and Hall and Reis (2013).

[7] In normal times, retaining additional surplus would have no significant implications for interest rates because the Federal Reserve would boost its holdings of Treasury securities by an equivalent amount so as to maintain reserves at the level necessary to keep the federal funds rate near the FOMC's target rate. See testimony by Governor Meyer (2000) for a discussion of this point. In the current environment, absent an adjustment to the pace of asset purchases, the Federal Reserve's increase in surplus would reduce the quantity of reserves outstanding. As a result, Treasury securities held by the public would increase, thereby putting some upward pressure on interest rates.

[8] Statutory requirements and Federal Reserve policy regarding surplus have evolved over time. The appendix discusses important developments regarding surplus policy over the Federal Reserve's history.

Table 1: Net Income	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
(1) Interest Income	91	95	95	87	74	60	52	58	66	75	82	88	95	1019
(2) Interest Expense	5	5	5	21	29	19	5	5	5	5	5	5	5	120
(3)=(1)-(2) Net Interest Income	86	90	90	66	46	42	46	53	61	69	76	83	90	899
(4) Realized Capital Losses	0	0	0	4	8	10	11	13	6	0	0	0	0	53
(5) Other Expenses	6	6	6	6	6	6	6	6	6	6	6	6	6	78
(6)=(3)-(4)-(5) Total Net Income	80	84	84	56	31	26	29	34	49	63	70	77	84	768

In this scenario, interest income (line 1) is quite robust in the near term as a result of the elevated level of the Federal Reserve's securities holdings. Interest expense (line 2) begins to increase substantially in 2016 following the assumed lift off of the federal funds rate. The Federal Reserve also is assumed to begin selling MBS securities consistent with the exit principles discussed in the minutes of the June 2011 FOMC meeting. Sales of securities result in modest realized capital losses (line 4) over the period 2016-2021. However, Federal Reserve net income (line 6) remains positive throughout the projection period.

Table 2 illustrates the connection between the net income projections shown in Table 1 and remittances to the U.S. Treasury. Paid-in capital is assumed to grow at 15 percent per year and Reserve Banks transfer net income to surplus in each period so as to equate surplus with capital paid in.[9] In each year, dividends (line 2) and the transfer to surplus (line 3) are deducted from net income and the remainder, shown in line 4, is remitted to the U.S. Treasury. In the baseline scenario, remittances to the U.S. Treasury remain fairly sizable in each year of the projection period and cumulate to $556 billion.

Table 2: Unadjusted Remittances	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
(1) Total Net Income	80	84	84	56	31	26	29	34	49	63	70	77	84	768
(2) Dividends	2	2	3	3	4	4	5	6	6	7	8	10	11	71
(3) Transfer to Surplus	4	5	5	6	7	8	9	11	13	14	17	19	22	141
(4)=(1)-(2)-(3) Remittances to U.S. Treasury	74	77	76	47	20	14	15	18	30	42	46	48	51	556
Memo: Deferred Credit Asset	0	0	0	0	0	0	0	0	0	0	0	0	0	
Memo: Total Surplus	31	36	42	48	55	63	73	84	96	111	127	146	168	
Memo: Paid In Capital	31	36	42	48	55	63	73	84	96	111	127	146	168	
Memo: Total Capital and Surplus	63	72	83	96	110	127	146	167	192	221	255	293	337	

Under the Federal Reserve's current surplus policy, a period of negative net income would not result in a drawdown of the surplus account. Rather, current Reserve Bank accounting practice would imply that the Federal Reserve would not remit funds to the Treasury and would instead book an increase in a "deferred asset" equal to the size of the net loss.[10] The deferred asset

[9] The Federal Reserve Act requires that each member bank subscribe to the capital stock of its Reserve Bank in an amount equal to 6 percent of the capital and surplus of the member bank. Currently, only one-half of the subscription is paid in and the remainder is subject to call. In this example, capital paid in is assumed to grow at a rate of 15 percent per year—about the average pace observed over the last 10 years. If the capital growth assumption was tempered, remittances would be higher and the likelihood of the deferred asset would be lower, all else equal.

[10] Each Reserve Bank remits its residual net earnings to the Treasury after providing for payment of dividends on capital stock and retaining sufficient income to equate surplus to capital paid-in.

represents the amount of the Federal Reserve Banks' earnings that must be retained in the future before remittances to the U.S. Treasury resume.[11] As a result, the absolute magnitude of a deferred asset is best judged relative to the magnitude of anticipated future earnings.

Under the baseline scenario described above, Federal Reserve income remains sizable throughout the period 2013-2025 and a deferred asset is avoided. Table 3 below illustrates the accounting for losses and deferred assets in an alternative scenario in which the Federal Reserve purchases $500 billion more longer-term securities than in the baseline and interest rates move 100 basis points above the path in the baseline beginning in 2016. In this scenario, gross interest income increases modestly in 2013 and 2014, reflecting the assumed expansion of the SOMA portfolio, and thereafter declines despite rising interest rates, reflecting the assumed sales and redemptions of securities. There is a sharp increase in interest expense beginning in 2016 associated with the assumed increase in short-term interest rates. Projected realized capital losses on MBS sales average $28 billion over the five year sales period. Reflecting these factors, the Federal Reserve's total net income is depressed over the period 2016 to 2019 and is negative in 2017 and 2018. As shown in table 4, remittances to the U.S. Treasury drop to zero for five years, and the Federal Reserve would book at deferred asset that peaks at a level of $63 billion in 2018.[12]

Table 3: Net Income, Stress Scenario	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
(1) Interest Income	93	105	101	89	75	60	53	72	85	94	99	102	106	1134
(2) Interest Expense	6	6	33	57	57	35	9	7	7	7	6	6	5	241
(3)=(1)-(2) Net Interest Income	88	99	68	32	18	26	45	65	78	88	93	96	100	894
(4) Realized Capital Losses	0	0	10	23	27	30	32	17	0	0	0	0	0	139
(5) Other Expenses	6	6	6	6	6	6	6	6	6	6	6	6	6	78
(6)=(3)-(4)-(5) Total Net Income	82	93	52	3	-15	-10	6	42	72	82	87	90	94	677

Table 4: Unadjusted Remittances, Stress Scenario	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
(1) Total Net Income	82	93	52	3	-15	-10	6	42	72	82	87	90	94	677
(2) Dividends	2	2	3	3	4	4	5	6	6	7	8	10	11	71
(3) Transfer to Surplus	4	5	5	6	7	8	9	11	13	14	17	19	22	141
(4)=(1)-(2)-(3) Remittances to U.S. Treasury	76	86	44	0	0	0	0	0	16	60	62	61	61	465
Memo: Deferred Credit Asset	0	0	0	6	32	55	63	37	0	0	0	0	0	
Memo: Total Surplus	31	36	42	48	55	63	73	84	96	111	127	146	168	
Memo: Paid In Capital	31	36	42	48	55	63	73	84	96	111	127	146	168	
Memo: Total Capital and Surplus	63	72	83	96	110	127	146	167	192	221	255	293	337	

Alternative Remittance Policy: Baseline Scenario

As an alternative to the existing remittance policy described above, Reserve Banks could expand their surplus accounts significantly over the next few years to build a buffer to absorb potential

[11] Similar to other assets, the value of the deferred asset is subject to periodic evaluation, and the recorded value of the deferred asset could be affected by the length of time over which it is expected to be realized as an offset to future remittances to Treasury. In particular, the value of a deferred asset that is expected to be realized over a lengthy period may require discounting of expected future cash flows.

[12] The annual projections in this memo are illustrative and abstract from some details. For example, remittances occur on a weekly basis. As a result, in contrast to the tables in this memo, it is quite possible to have both a deferred asset and positive remittances in a given year.

future losses during the exit period. A policy of this type might be desired, for example, if policymakers wished to smooth the path of remittances over time.

One such option could be based on projected average net SOMA earnings over the period 2013-2020. Under this option, the Reserve Banks would continue the current policy of equating a base level of surplus to capital paid-in. However, remittances and additions to the expanded surplus would be determined by projections of average SOMA net earnings over the period 2013-2020. Another option would involve building surplus over the next few years to achieve a desired ratio of surplus to Federal Reserve assets by the time asset sales begin. These two options are discussed in more detail below.

Average SOMA Earnings Approach:

Under this option, each year's remittance to the Treasury would be based on an average annual figure for net earnings on SOMA portfolio assets (SOMA net earnings) over the entire period from 2013 until the size of the balance sheet is normalized in 2020.[13] In effect, this procedure spreads the SOMA net earnings across the period and allows for updating of the addition to surplus based on incoming information if a surprise interest shock were to occur. The excess or deficiency of each year's actual SOMA net earnings over the average net earnings amount is added to or deducted from an additional surplus account. Remittances to the Treasury then would be calculated starting from the projected average SOMA net earnings total in each year and subtracting other expenses, dividends, and the usual baseline transfer to the surplus account.

Table 5 illustrates how this procedure works in the baseline scenario discussed above. The projected average SOMA net earnings figure over the period 2013-2020 is $59 billion. Working down the first column of the table, for the year 2013, remittances to the U.S. Treasury are determined by subtracting other expenses, dividends, and the baseline transfer to surplus from this total to arrive at $47 billion. Any amount of net income in excess of remittances, dividends and baseline transfer to surplus is then directed to the additional surplus account, line 7. In 2013, this transfer to additional surplus is $27 billion. Following this procedure, the additional surplus account increases to a total of approximately $92 billion based on the accumulation over the years 2013 – 2016 when net income is relatively high.

[13] SOMA earnings are computed as portfolio interest income, less interest expense and net capital gains or losses from the sale of portfolio assets. Implementing such an approach would require analysis of a number of details such as the treatment of income from the foreign portfolio, securities lending and other technical issues.

Table 5: SOMA Average Earnings, Baseline Scenario	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
(1) Total Net Income	80	84	84	56	31	26	29	34	49	63	70	77	84	768
(2) SOMA Net Earnings	86	90	90	62	37	32	35	40	55	69	76	83	90	846
(3) Average SOMA Net Earnings 2013-2020	59	59	59	59	59	59	59	59						472
(4) Other Expenses	6	6	6	6	6	6	6	6	6	6	6	6	6	78
(5) Dividends	2	2	3	3	4	4	5	6	6	7	8	10	11	71
(6) Baseline Transfer to Surplus	4	5	5	6	7	8	9	11	13	14	17	19	22	141
(7)=(2)-(3) Additional Transfer to Surplus	27	31	31	3	-22	-27	-24	-19						0
(8) Remittances to U.S. Treasury	47	46	45	44	42	41	39	37	30	42	46	48	51	556
Deferred Credit Asset	0	0	0	0	0	0	0	0	0	0	0	0	0	
Memo: Baseline Surplus	31	36	42	48	55	63	73	84	96	111	127	146	168	
Memo: Additional Surplus	27	58	89	92	70	43	19	0	0	0	0	0	0	
Memo: Total Surplus	59	94	130	140	125	106	91	84	96	111	127	146	168	
Memo: Paid In Capital	31	36	42	48	55	63	73	84	96	111	127	146	168	
Memo: Total Capital and Surplus	90	130	172	187	180	169	164	167	192	221	255	293	337	

From 2017 to 2020, when total interest income is lower and interest expense and realized capital losses are large, the additional surplus account is drawn down. Cumulative remittances to the U.S. Treasury over the entire period 2013-2025 (line 8 in Table 5) would be unchanged from the baseline figure shown in Table 2 of $556 billion. The buildup and drawdown of additional surplus under this plan smooths the level of remittances over time relative to the path for remittances shown in Table 2. As discussed in more detail below, in other scenarios, this policy can delay the accumulation and reduce the magnitude of any deferred asset.

Target Surplus Ratio Approach:

Under this option, the Federal Reserve would suspend its current policy of equating surplus with capital paid in. Instead, the Federal Reserve would retain income over the period 2013-2015 sufficient to generate a ratio of surplus to Federal Reserve assets equal to 4 percent by the end of 2015. Thereafter, annual changes in surplus are set to maintain the 4 percent surplus to asset ratio. This option has the feature that surplus is automatically drawn down over the period when the Federal Reserve is selling assets (and possibly incurring losses).

Table 6: Surplus-Asset Ratio Approach: Baseline	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
(1) Total Net Income	80	84	84	56	31	26	29	34	49	63	70	77	84	768
(2) Dividends	2	2	3	3	4	4	5	6	6	7	8	10	11	71
(3) Transfer to Surplus	37	37	37	-17	-19	-21	-6	4	4	5	5	5	6	75
(4)=(1)-(2)-(3) Remittances to U.S. Treasury	41	45	44	70	46	43	30	25	39	52	57	62	67	622
Deferred Credit Asset	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Memo: Capital Paid In	31	36	42	48	55	63	73	84	96	111	127	146	168	
Memo: Surplus Account	64	101	137	120	102	81	75	79	83	87	92	97	103	
Memo: Total Capital and Surplus	96	137	179	168	157	144	148	162	179	198	219	244	271	
Memo: Total Assets	3535	3515	3426	3010	2542	2013	1869	1963	2069	2182	2303	2431	2569	
Memo: 4.0% of Total Assets	141	141	137	120	102	81	75	79	83	87	92	97	103	

As noted in Table 6, this option generates a fairly smooth path of remittances over the period 2013-2020. Moreover, as shown in line 4, cumulative remittances to the Treasury are higher under this option than the current remittance policy or the SOMA average earnings approach ($622 billion compared to $556 billion). The larger cumulative remittance figure under this approach stems from the fact that the 4 percent surplus requirement results in lower cumulative net transfers to surplus over the period 2013-2025 and, therefore, a lower surplus account in

2025 than under either current policy or the SOMA average earnings approach. The lower surplus under this plan results in higher cumulative remittances.

Alternative Remittance Polices: Large Balance Sheet and High Interest Rate Scenario

Under the baseline scenario, the Federal Reserve's current surplus and remittance policy and the two alternative remittance options result in positive remittances throughout the projection period. The alternative remittance policies effectively dampen the year-to-year variation in remittances but offer few other advantages relative to the current remittance policy. The alternative remittance policies may have more advantages, however, in a scenario involving substantial losses and the potential for a deferred asset such as the large balance sheet and high interest rate scenario described in Tables 3 and 4 above. Under the Board's existing surplus and remittance policy, remittances would fall to zero over the entire period from 2016 to 2020 in this stress scenario. Moreover, the Federal Reserve would book a deferred asset beginning in 2016 that would reach a maximum value of $63 billion in 2019. The remittance smoothing policies would dampen these effects.

SOMA Average Earnings Approach:

Table 7 reports projections of surplus and remittances in this stress scenario if one employed the average SOMA net earnings remittance policy. In addition, the calculation assumes that the interest rate shock is a "surprise" to the Federal Reserve. Projected average net SOMA earnings for 2013, 2014, and 2015 are based on the projected SOMA net earnings associated with the baseline interest rate path, while in 2016 and beyond, projected net SOMA earnings are based on the high interest rate path. As a result, the forecast for average SOMA earnings over the 2013-2020 period drops from $59 billion to $38 billion in 2016. Under this policy, the additional surplus account builds to $68 billion by 2015 but it is completely drawn down over the next two years. Thereafter, remittances to the Treasury are zero and a deferred asset is recorded over the period 2018 to 2020. This example illustrates a basic challenge with this type of approach. If the forecasts for average net earnings decline substantially over time, the Federal Reserve would not retain sufficient income in the early years to smooth remittances effectively and avoid a deferred asset, although the peak deferred asset, at $31 billion, is lower than would be the case under current accounting practices.

Table 7: SOMA Average Earnings Approach, Stress Scenario	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
(1) Total Net Income	82	93	52	3	-15	-10	6	42	72	82	87	90	94	677
(2) SOMA Net Earnings	88	99	58	9	-9	-4	12	48	78	88	93	96	100	755
(3) Average SOMA Net Earnings 2013-2020	59	59	59	38	38	38	38	38						365
(4) Other Expenses	6	6	6	6	6	6	6	6	6	6	6	6	6	78
(5) Dividends	2	2	3	3	4	4	5	6	6	7	8	10	11	71
(6) Baseline Transfer to Surplus	4	5	5	6	7	8	9	11	13	14	17	19	22	141
(7)=(2)-(3) Additional Transfer to Surplus	29	40	-1	-28	-39	0	0	0	0	0	0	0	0	0
(8) Remittances to U.S. Treasury	47	46	45	22	13	0	0	0	48	60	62	61	61	465
Deferred Credit Asset	0	0	0	0	0	23	31	5	0	0	0	0	0	
Memo: Baseline Surplus	31	36	42	48	55	63	73	84	96	111	127	146	168	
Memo: Additional Surplus	29	69	68	39	0	0	0	0	0	0	0	0	0	
Memo: Total Surplus	60	105	109	87	55	63	73	84	96	111	127	146	168	
Memo: Paid In Capital	31	36	42	48	55	63	73	84	96	111	127	146	168	
Memo: Total Capital and Surplus	92	141	151	135	110	127	146	167	192	221	255	293	337	

For comparison, Table 7a reports how the numbers would change if policymakers based the calculations from the outset on the "stress scenario" rather than the baseline.

Table 7a: SOMA Average Earnings Approach, Stress Scenario	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
(1) Total Net Income	82	93	52	3	-15	-10	6	42	72	82	87	90	94	677
(2) SOMA Net Earnings	88	99	58	9	-9	-4	12	48	78	88	93	96	100	755
(3) Average SOMA Net Earnings 2013-2020	38	38	38	38	38	38	38	38						301
(4) Other Expenses	6	6	6	6	6	6	6	6	6	6	6	6	6	78
(5) Dividends	2	2	3	3	4	4	5	6	6	7	8	10	11	71
(6) Baseline Transfer to Surplus	4	5	5	6	7	8	9	11	13	14	17	19	22	141
(7)=(2)-(3) Additional Transfer to Surplus	50	61	20	-28	-47	-42	-15	0	0	0	0	0	0	0
(8) Remittances to U.S. Treasury	25	25	23	22	21	19	7	26	53	60	62	61	61	465
Deferred Credit Asset	0	0	0	0	0	0	0	0	0	0	0	0	0	
Memo: Baseline Surplus	31	36	42	48	55	63	73	84	96	111	127	146	168	
Memo: Additional Surplus	50	112	132	104	57	15	0	0	0	0	0	0	0	
Memo: Total Surplus	82	148	174	151	112	78	72	84	96	111	127	146	168	
Memo: Paid In Capital	31	36	42	48	55	63	73	84	96	111	127	146	168	
Memo: Total Capital and Surplus	113	184	215	199	167	141	145	167	192	221	255	293	337	

In this case, the Federal Reserve would transfer substantial amounts to the additional surplus account over the period 2013-2015 and this surplus would be drawn down over subsequent years. This buildup and drawdown of additional surplus generates smooth remittances and avoids a deferred asset. Of course, this approach could have the mirror image challenge of that illustrated in Table 7. If interest rates turned out not to move substantially higher in 2016 as assumed, then the Federal Reserve would be left with a very elevated surplus account. That problem could be easily addressed, however, by simply drawing down the elevated surplus over time through higher remittances in the out years.

Table 7a illustrates one other technical issue worth noting. By construction, the additional surplus account is drawn down to zero by 2020. However, there is no guarantee that the path for additional surplus will not fall to zero before 2020. Indeed, additional surplus falls to zero in 2019 and remittances at that point are determined in 2019 and 2020 as net income less dividends and baseline transfer to surplus.

On balance, the SOMA average earnings approach seems likely to work reasonably well. However, the examples above suggest that it likely would be desirable to implement this approach based on a stress scenario at the outset. This would minimize the problem highlighted

in Table 7 in which unexpected increases in interest rates result in a shortfall in additional surplus.

Another potential pitfall associated with the SOMA average earnings approach is that it seems likely that the Federal Reserve would be called upon by Congress and others to describe in some detail its underlying SOMA earnings forecasts, perhaps on an ongoing basis. Such forecasts would by necessity include forecasts of asset purchases and interest rates. This has the potential to become a distraction in some respects and potentially complicate FOMC communications.

Target Surplus Ratio Approach

Table 8 reports the pattern of income and remittances in the stress scenario under the target surplus ratio approach. A significant advantage of the surplus ratio approach is that it does not rely on projections of asset purchases, interest rates or income.

Table 8: Surplus-Asset Ratio Approach, Stress Scenario	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	Total
(1) Total Net Income	82	93	52	3	-15	-10	6	42	72	82	87	90	94	677
(2) Dividends	2	2	3	3	4	4	5	6	6	7	8	10	11	71
(3) Transfer to Surplus	50	51	21	-21	-21	-24	-8	5	6	4	4	5	5	78
(4)=(1)-(2)-(3) Remittances to U.S. Treasury	30	40	28	21	2	10	10	32	59	70	74	76	78	528
Memo: Deferred Credit Asset	0	0	0	0	0	0	0	0	0	0	0	0	0	
Memo: Capital Paid In	31	36	42	48	55	63	73	84	96	111	127	146	168	
Memo: Surplus Account	77	128	149	128	108	84	76	81	87	91	96	101	106	
Memo: Total Capital and Surplus	109	165	191	176	163	147	149	165	183	202	223	247	274	
Memo: Total Assets	3985	3963	3715	3212	2698	2090	1895	2021	2178	2283	2393	2513	2643	
Memo: 4.0% of Total Assets	159	159	149	128	108	84	76	81	87	91	96	101	106	

Moreover, the target surplus ratio approach effectively "releases" surplus at the time when the Federal Reserve is selling assets in a way that helps to cover losses. This approach results in positive remittances to the U.S. Treasury throughout the projection period and a deferred asset is avoided. As noted previously, this approach generates higher cumulative remittances to the U.S. Treasury because the level of surplus is lower in 2025 than under the current approach of equating capital and surplus.

There are a number of variations on the surplus ratio approach that policymakers might consider. For example, a higher surplus ratio could be established for the assets that the Federal Reserve is most likely to sell during the exit period. This would have the effect of releasing more incremental surplus to cover losses as those securities are sold. There could be some pitfalls with the surplus ratio approach as well. For example, if net income were negative while assets were unchanged, then the Federal Reserve might need to book a deferred asset in order to maintain the desired surplus ratio.

Risk Management

As noted above, under the baseline scenario, the current surplus and remittance policy would result in few problems. Remittances would be very high for the next few years and drop substantially during the exit period, but would remain positive throughout the projection period. Under the elevated balance sheet, high interest rate scenario, the alternative remittance policies

discussed above would substantially smooth remittances relative to current policy and could eliminate a deferred asset entirely. Of course, scenarios with even higher rates may create complications for these alternative strategies. A basic issue is that any plan to build up surplus in advance of potential losses must rely on the high levels of projected income for the next few years as source for the additional surplus. If rates are high enough in the future, it is possible that the Federal Reserve would need to book a deferred asset even with a remittance smoothing plan like those discussed above. Given these uncertainties, if policymakers wished to make adjustments to the remittance policy, it may be desirable to establish the policy at the outset based on a "stress scenario." For the average earnings approach, the stress scenario might involve a larger balance sheet and higher rates than under the baseline. The surplus ratio approach does not rely on interest rate projections, but even with this option it may be desirable to err on the side of a somewhat larger target surplus ratio than would appear to be necessary under the baseline. Such an approach would be similar to the logic underlying bank capital calculations or value at risk. Following this approach, the Federal Reserve would build up substantial additional surplus over the next few years. Then, if conditions evolved more in line with the baseline, the additional surplus could simply be drawn down in the out years.

Benefits and Costs

Of course, a central bank can operate with low or even negative capital, and so accumulating an expanded surplus is not needed for the Federal Reserve to address its dual mandate.[14] And, as noted above, an expanded surplus account does not significantly affect the reporting of losses that the Federal Reserve might face in some interest rate scenarios. Any such losses will be clearly indicated on the Federal Reserve's financial statements in any case. Moreover, since the Treasury can raise funds flexibly and in substantial size in the capital markets, it is not clear that there is a significant economic benefit to using an expanded surplus to smooth remittances over time relative to the current strategy of passing on excess earnings as they accrue.

All that being said, the accumulation of a very large deferred asset might affect the public's perception of the Federal Reserve's ability or willingness to follow appropriate policy, and so influence expectations for growth or inflation. In the adverse scenario discussed above, the Federal Reserve would record a peak deferred asset of about $63 billion (see Table 4). Absent an expanded surplus account, outside parties might wrongly judge that a deferred asset of this magnitude implies that the Federal Reserve is in weak financial condition. Perceptions that the Federal Reserve was in a weakened condition could attract significant public attention and conceivably lead to downward pressure on the dollar and upward pressure on U.S. Treasury yields. Such a situation could also lead to political pressures in Congress that could threaten Federal Reserve independence; as just one example, it seems possible and even likely that the Congress could ask the GAO to review the Federal Reserve's balance sheet and risk management practices.

[14] See the memo by Alain Chaboud and Mike Leahy, "Foreign Central Bank Remittance Practices."

Thus, there could be communications benefits to implementing an expanded surplus program like those described above. Because an expanded surplus account would provide a buffer to absorb losses while eliminating or reducing the need to book a deferred asset, it could help to clarify that Federal Reserve losses during the exit period were "covered" by substantial net income recorded in other years. Such a clarification could help avoid misunderstandings about the financial strength of the Federal Reserve and its ability to carry out its monetary policy mission.

Potential costs of an expanded surplus program

Creating an expanded surplus account could also have several costs. At a time of intense budget pressures, it seems possible that an announcement by the Federal Reserve that it would begin withholding a sizable amount of net income over the next few years would attract substantial attention. Indeed, the management of the Federal Reserve's surplus account has been a focus of considerable Congressional interest in the past.[15] It seems likely, for example, that some members of Congress interested in obtaining funding for particular programs would look to the Federal Reserve's expanded surplus as a potential funding source. As in some past episodes, the Congress could appropriate some or all of the Federal Reserve's expanded surplus.[16] In any case, a decision to accumulate an expanded surplus would likely prompt requests for analyses supporting the specific amount of the increase selected. A related point is that withholding income to build an expanded surplus account would reduce the Federal Reserve's remittances to the U.S. Treasury in the near term. As a result, the Treasury would need to issue more marketable debt to finance the deficit. This could put a little upward pressure on interest rates and would have the effect of pushing federal debt up to the debt ceiling sooner than would otherwise be the case.[17] And there is some risk that an elevated Federal Reserve surplus would be seen by some in Congress as a potential tool that could be employed to temporarily delay breaching the debt limit. For example, there could be speculation that the Federal Reserve (at Treasury's request) could draw down its surplus and increase remittances temporarily in order to provide the Treasury a little more room under the debt ceiling.

An expanded surplus plan may also undercut previous arguments that income and capital for the central bank are not important guides for policy. Indeed, if the Federal Reserve set a policy of accumulating expanded surplus and then nonetheless ran losses that exhausted its surplus, it would be far harder to explain to the public why the accumulation of a deferred asset was not meaningful.

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[15] See General Accountability Office reports (1996), (2002).

[16] Most recently, section 7 of the Federal Reserve Act was amended in November 1999 to require the transfer of $3.8 billion of Reserve Bank surplus to the Treasury in that fiscal year, representing in excess of 50 percent of the aggregate Reserve Bank surplus account. The surplus account was subsequently restored in fiscal year 2000; in order to do so, remittances from selected Reserve Banks ceased for a period of five to six weeks.

[17] An expanded surplus account would reduce IOER-related interest expense. However, during the zero lower bound period, the amount of savings would be minimal and so we abstract from it in these projections.

Appendix: Important Historical Developments Regarding Federal Reserve Earnings and Surplus

Section 7 of the Federal Reserve Act (Act) as originally enacted in 1913 provided that all net earnings of a Reserve Bank after payment of (necessary expenses and dividends) were to be paid to the United States as a franchise tax, except that half of the net earnings were to be paid into a surplus fund until the surplus amounted to 40 percent of the paid-in capital stock of the Reserve Bank.[18] In March 1919, Section 7 was amended to require that *all* net earnings were to be paid into surplus until surplus amounted to 100 percent of subscribed capital, and that thereafter 10 percent of net earnings was to be paid into surplus (i.e., 90 percent was to be paid as a franchise tax).[19]

In 1933, Section 7 was amended to delete the franchise tax provisions and to provide for the transfer of all net earnings (after expenses and dividends) into surplus.[20] The franchise tax was repealed to enable the Reserve Banks to rebuild their surplus accounts, half of which they had been required to expend for the purchase of capital stock of the Federal Deposit Insurance Corporation.[21] Reserve Bank surplus grew considerably during the World War II period and surplus considerably exceeded subscribed capital by 1947. As a result, the Board adopted a policy in April 1947 to require the Reserve Banks to transfer approximately 90 percent of their net earnings to the Treasury after providing for necessary expenses and dividends, and after such provisions as might be necessary to restore the surplus of each Reserve Bank to 100 percent of subscribed capital if it fell below that figure.[22] The Board announced this policy under the authority of the fourth paragraph of Section 16 of the Act, which authorizes the Board to charge the Reserve Banks interest, at such rates as the Board may establish, on Federal Reserve notes issued to them that are not collateralized by gold certificates.[23]

By the end of 1959, the combined surplus of the Reserve Banks again substantially exceeded subscribed capital.[24] In light of this, the Board in December 1959 amended its policy regarding transfers to the Treasury (as "interest on Federal Reserve notes") to provide for two things. First, the amended policy provided for a transfer to the Treasury of all net earnings after necessary expenses and dividends and after provision for building up surplus to 100 percent of subscribed capital at those Reserve Banks where it was below that amount.[25] Second, for Reserve Banks whose surplus already exceeded subscribed capital, the amended policy provided for a transfer of all net earnings after necessary expenses and dividends as well as for a transfer of such amounts

[18] Act of Dec. 23, 1913 (38 Stat. 251, 258).
[19] Act of Mar. 3, 1919 (40 Stat. 1314).
[20] Act of June 16, 1933 (48 Stat. 162, 163).
[21] 51st Annual Report of the Board of Governors of the Federal Reserve System 48-49 (1964).
[22] 51st Annual Report of the Board of Governors of the Federal Reserve System 49 (1964).
[23] Federal Reserve Act, Section 16, paragraph 4, 12 U.S.C. § 414.
[24] 51st Annual Report of the Board of Governors of the Federal Reserve System 49 (1964). Specifically, at the end of 1959 combined subscribed capital amounted to $777 million and combined surplus amounted to $868 million. Id.
[25] 51st Annual Report of the Board of Governors of the Federal Reserve System 49 (1964).

of surplus as exceeded subscribed capital.[26] Following increases in paid-in capital of Reserve Banks over the next five years, the combined surplus of the Reserve Banks stood at nearly $1 billion by the end of 1964. The Board amended its "interest on Federal Reserve notes" policy again in December 1964 to provide for a transfer of net earnings (after necessary expenses and dividends) to the Treasury as well as such amounts of surplus as would reduce surplus to the amount of paid-in capital.[27] Since that time, the policy has required a transfer of net earnings to the Treasury after provision for necessary expenses and dividends and after transferring such amounts to surplus as will equate surplus with paid-in capital.

Apart from the various structural changes over time noted above, Congress amended Section 7 twice to require one-time transfers of surplus for certain specified years to the Treasury. In 1993, Section 7 was amended to require a transfer to the Treasury of surplus for fiscal year 1997-1998 "in excess of the amount equal to three percent of the total paid-in capital and surplus of the member banks of such [Reserve] bank."[28] In 1999, Section 7 was amended to provide for a transfer to the Treasury in fiscal year of $3.725 billion from the surplus funds of the Reserve Banks.[29]

[26] 51st Annual Report of the Board of Governors of the Federal Reserve System 49 (1964).
[27] 51st Annual Report of the Board of Governors of the Federal Reserve System 50 (1964).
[28] Act of Aug. 10, 1993 (107 Stat. 312, 337-338).
[29] Act of Nov. 29, 1999 (113 Stat. 1501, 1501A-304).

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