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Technical Issues Associated with the Payment of Interest on Reserves¹

Executive Summary

Staff analysis of the effect of changing the interest rate on excess reserves (IOER) has noted that banks should tend to view IOER as an important benchmark in their asset and liability management decisions.² In particular, an increase in the IOER rate should lead to a corresponding increase in the rate of return that banks require on alternative investments. In addition, banks should be willing to arbitrage in overnight funding markets by borrowing at rates below the IOER rate and maintaining the proceeds in their reserve account at the Federal Reserve. As discussed in more detail below, in cases when the IOER rate is changed in the middle of a reserve maintenance period, the IOER rate may not be fully supportive of arbitrage activities and thus the federal funds rate because of a technical issue stemming from the existing reserve management structure and the current methodology for calculating interest payments on reserves. This memo explains the technical issue, outlines two options for addressing it, and ultimately recommends the option that would base interest payments on the IOER rate prevailing at the end of a reserve maintenance period. Of the two options, this option can be executed immediately while the other option would not be available until the middle of 2015, at the earliest.

Background

In December 2008, the Federal Reserve established interest rates on required reserve balances and excess balances at 25 basis points. Since that time, the *effective* IOER rate for the purpose of interest payments on excess reserves has been calculated as the

¹ James Clouse, Marnie Gillis DeBoer, Jeff Huther, and Mary-Frances Styczynski.

² See staff memos entitled “Federal Reserve Administered Rates and Money Market Rates” and “Analytical Perspectives on Federal Reserve Policy Tools” from April 2014.

arithmetic average of the IOER rate over each reserve maintenance period.³ This approach to calculating interest payments on excess reserves has some drawbacks at times when the FOMC changes the target range for the federal funds rate in the middle of a reserve maintenance period. For example, if policymakers raised the IOER rate from 25 basis points to 50 basis points at an FOMC meeting that occurs in the middle of a reserve maintenance period, the effective IOER rate for that reserve maintenance period would be 37.5 basis points. Following the FOMC meeting, banks would then base their asset-liability management decisions on the expected *effective* IOER rate of 37.5 basis points for the remainder of that reserve maintenance period—and not the IOER rate of 50 basis points. As a result, the full effect on the level of market interest rates of the increase in IOER to 50 basis points may not occur until the beginning of the subsequent reserve maintenance period. This implies that the full effect of the increase in the IOER rate may not show through to market rates for a few days following its announcement.⁴

The discussion below suggests two possible approaches that could address this technical issue. First, policymakers could better align the timing of FOMC decisions and the beginning of reserve maintenance periods by shortening the length of reserve maintenance periods from 14 days to 7 days. Assuming that the FOMC maintains its recent practice of releasing policy statements on Wednesdays, this shortening in the length of the reserve maintenance period would align the beginning of a reserve maintenance period with the FOMC meeting schedule. A new IOER rate announced following the release of the FOMC statement on Wednesday afternoon would then take effect with the beginning of a new reserve maintenance period on the following day. While this approach has some advantages, it could not be implemented for at least six months and could impose significant costs on the banking system in the short run. A second approach would retain the existing two-week reserve maintenance period structure, but interest payments to banks would be based on the IOER rate in effect at the *end of the reserve maintenance* period rather than the average IOER rate over the period.

³ A bank's excess reserve position is calculated as the greater of zero or the bank's maintenance period average level of reserve balances less the top of the penalty-free band around its required reserve balance.

⁴ While this memo addresses IOER alone, the issue also affects the rate paid on balances maintained to satisfy a bank's reserve balance requirement, or IOR. Since IOER and IOR will likely be the same for the foreseeable future, the solution adopted for IOER would apply to IOR.

As discussed in more detail below, this approach has some drawbacks as well, but it is available now.

Option 1: Shift to a one-week reserve maintenance period.

Under this approach, the Federal Reserve would shift to a one-week reserve maintenance period from the current length of 14 days.⁵ The one-week reserve maintenance period would begin on a Thursday and end the following Wednesday. As long as the FOMC maintains its current practice of issuing press releases on Wednesday afternoons, a change to the IOER rate could be announced with the release of the FOMC statement and become effective the following day—the first day of a new one-week reserve maintenance period.

There are a couple of drawbacks to this option, most importantly the time needed to implement this option. This option could take as long as six months for Federal Reserve staff to implement and would require depository institutions to make changes to their operating procedures. Indeed, shifting thousands of depository institutions from a two-week reserve maintenance period to a one-week reserve maintenance period over a short time period might impose significant adjustment costs. Also, this option would not be fully effective in cases in which rate changes do not occur on a Wednesday.⁶

Option 2: Base the Effective IOER Rate on the IOER Rate Prevailing at the End of the Reserve Maintenance Period.

Instead of changing the length of the reserve maintenance period, the effective rate could be set equal to the IOER rate prevailing at the end of reserve maintenance periods, thereby tightening the link between the announced IOER rate and the effective IOER rate without any delay. Operationally, this option is almost costless and can be implemented upon policymakers' request, since no technology updates are needed. Moreover, this approach should be somewhat familiar to banks given that policymakers employed a similar approach to calculating interest payments on excess reserve balances in the past.

⁵ This approach was also discussed in Wrightson ICAP (2014). "Effective Date of Fed Rate Hikes," The Money Market Observer, September 1.

⁶ In September 2015, for example, the FOMC meeting ends on a Thursday.

In late 2008, as policymakers were reducing the target funds rate and IOER rate, the effective IOER rate was calculated using the lowest IOER rate prevailing over the reserve maintenance period.

There are also some potential drawbacks to this option. Notably, to the extent that an increase in the IOER rate is anticipated by banks and the public, this approach could result in some upward pressure on the effective federal funds rate and other short-term market rates prior to the FOMC announcement of a change in the target range and the accompanying increase in the IOER rate. For example, if banks expected policymakers to increase the IOER rate from 25 basis points to 50 basis points following an upcoming FOMC meeting that falls in the middle of a reserve maintenance period, they would expect that their interest payments over the entire maintenance period would be based on the end-of-period IOER of 50 basis points. As a result, in theory, banks would view each additional dollar of reserve holdings as earning 50 basis points, even in the first week of the reserve maintenance period prior to the increase in the IOER rate from 25 to 50 basis points.

Recommendation

Although both options discussed above have some drawbacks, staff recommends the option that would base interest payments on the IOER rate prevailing at the end of a reserve maintenance period because it can be implemented immediately while the other option would not be available for at least six months. As noted above, this approach may cause market rates to depart from the FOMC's current desired level in advance of an anticipated change in the FOMC's target range. However, especially at the time of liftoff, some upward pressure on rates before the announcement might be acceptable. Indeed, in some ways, this advance upward pressure on rates might be viewed as a useful early reading on the strength of IOER in lifting the level of money market interest rates. That is, if policymakers observe the level of short-term interest rates moving up appreciably once the reserve maintenance period encompassing an anticipated liftoff decision and increase in IOER begins, they may be confident that liftoff will proceed successfully. On the other hand, if the level of short-term rates does not move much and

market participants have a high degree of confidence that liftoff will occur at a specific meeting, that may suggest that the upward pull on market rates from IOER is relatively weak. And that early reading would allow the FOMC at least a few days to make adjustments to its liftoff plans if desired.