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# COMMENTARY

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Paul Bennett and Stavros Peristiani offer an interesting paper that marshals a good deal of empirical evidence to address an important policy question: do reserve requirements affect banks' decisions concerning the quantity and composition of their reserve holdings? A key motivation for examining this issue is the fact that required reserves have fallen dramatically in recent years as reserve requirements have been reduced and as banks have implemented so-called sweep accounts for their retail customers.<sup>1</sup> In fact, required reserves are down so much that many depository institutions now regularly meet their reserve requirements incidentally as a consequence of holding vault cash for *business purposes*. That is, many banks hold significant amounts of vault cash to stock automated teller machine (ATM) networks and to meet customers' withdrawal requests—a move that banks would make regardless of the level of reserve requirements. In many cases, the levels of vault cash that banks hold to meet customer demands more than adequately meet reserve requirements.

However, Bennett and Peristiani reason that banks might manage their vault cash somewhat differently when not faced with binding reserve requirements. In this “unbound” situation, banks' desired levels of vault cash holdings should be driven largely by inventory management considerations. The inventory management problem faced by unbound banks involves balancing two competing concerns. On the one hand, vault cash is expensive for banks to hold because it earns no interest and must be financed with interest-bearing liabilities.

Moreover, banks incur storage and security costs for holding vault cash. On the other hand, banks need to meet customer demands for cash on a regular basis to maintain client relationships. The inventory management problem is similar for banks bound by reserve requirements, but with one important exception. In the case of bound banks, the interest cost of vault cash should not be an especially important factor in determining desired vault cash holdings. When banks are bound by reserve requirements, they must hold non-interest-bearing deposits at the Federal Reserve to meet the requirements. For bound banks, then, any increase in vault cash held to meet customer demands—and the associated increased interest costs—would be offset by a decline in the level of non-interest-earning deposits at the Federal Reserve. Thus, unlike in the case of unbound banks, a marginal increase in vault cash holdings for bound banks does not imply an increase in the overall opportunity costs of holding reserves.

The authors investigate the vault cash management behavior of banks using data at the individual bank level. Their regressions include numerous variables, such as seasonal dummies, deposit growth, branch dispersion, and number of ATMs, which one can basically think of as proxying for customer demands for vault cash. The regressions also include the federal funds rate as a proxy for unbound banks' opportunity costs of holding vault cash. Curiously, in the regressions, the coefficient on the federal funds rate is negative for both bound and unbound banks. As noted above, the

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standard theory would suggest that the coefficient on the funds rate should, indeed, be negative for unbound institutions but should be zero for bound institutions. It may be that the negative coefficient on the funds rate for both bound and unbound institutions is a sign that the funds rate is picking up some of the effects of customer demand for vault cash that are not fully captured by the other right-hand-side variables in the regressions. That is, periods of high federal funds rates are probably associated with low customer demand for cash and, faced with lower customer demand, both bound and unbound banks would likely choose to lower their vault cash inventories.

Bennett and Peristiani might be able to control for this somewhat by focusing the regression analysis on institutions that have moved from bound to unbound status. For example, one could estimate an equation for vault cash holdings for individual institutions during a period when they were bound and then determine whether this equation significantly overpredicted actual vault cash holdings when those same institutions became unbound. If so, this could be taken as indirect evidence that banks lower their vault cash holdings relative to what they would otherwise hold when they face a significant positive opportunity cost.

Another possibility for sharpening the econometric work might be to write down a simple inventory model for vault cash and use the derived theoretical demands for vault cash to help specify the econometric equations. As it stands, the authors have specified intuitive vault cash equations, but the lack of an underlying optimizing framework makes it difficult to interpret the coefficients. One theoretical result that seems worth testing is that the level of required reserves should have no impact on the level of desired vault cash holdings for unbound and for bound institutions. As noted above, unbound institutions need not factor in the level of required reserves

when deciding how much vault cash to hold. For bound institutions, too, an increase or decrease in required reserves is likely to be reflected primarily as an accompanying increase or decrease in the level of required reserve balances rather than vault cash.

As a final general comment, it might be appropriate for the authors to change the title of the paper to something more descriptive, such as “Factors Determining Banks’ Holdings of Vault Cash.” The current title, and to some extent the paper’s introductory paragraphs, tend to lead the reader to believe that the authors produce evidence that reserve requirements are less effective as an instrument for monetary control and for the implementation of monetary policy. For a time in the late 1990s, it did appear that the declining level of required reserve balances in the System might make it more difficult for the Federal Reserve to keep the funds rate close to the target rate on a daily basis. During this period, daily funds rate volatility and demands for excess reserves seemed to be on the rise. However, consolidation in the banking system and various technological improvements since then seem to have allowed banks to economize on the level of reserve balances they need for clearing purposes. Thus, it appears that supply and demand in the federal funds market are still driven importantly by the needs of some banks to meet an average balance requirement over a maintenance period. Consistent with this hypothesis, daily funds rate volatility has been quite low in the last couple of years and demand for excess reserves has fallen back to historical levels. In this sense, one might argue that despite the marked decline in aggregate required reserves, reserve requirements—together with clearing balance requirements—continue to be an important element in the current structure for the implementation of monetary policy.

## ENDNOTES

1. The details of sweep accounts vary somewhat, but they basically involve sweeping balances above a certain threshold in customers' transaction accounts into savings accounts. As customers write checks for various payments, funds are periodically swept back into their transaction accounts to cover those payments. The net effect is that transaction account balances are lower and savings account balances are correspondingly higher. Furthermore, reserve requirements do not apply to savings accounts, which implies that banks' required reserves are lower on average.

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