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## KEEP THE LEVERAGE RATIO FOR LARGE BANKS TO LIMIT THE COMPETITIVE EFFECTS OF IMPLEMENTING BASEL II CAPITAL REQUIREMENTS

R. Alton Gilbert\*

**Abstract:** In October 2005, the agencies that supervise U.S. depository institutions proposed changes in the Basel I capital requirements that will apply to the banks that *will not* be subject to the new Basel II capital requirements. An objective of the U.S. bank supervisors for proposing changes in Basel I capital requirements is to mitigate any competitive inequalities created by implementing Basel II capital requirements. This paper explains why the proposed changes in Basel I capital requirements would not mitigate such competitive inequalities for many of the banks that will continue to be subject to the Basel I capital requirements. In addition, this paper argues that an important means of limiting competitive effects from implementing Basel II capital requirements is to maintain the leverage ratio as one of the capital requirements for the banks that adopt Basel II capital requirements.

**About the Author:** R. Alton Gilbert is a Senior Fellow at Networks Financial Institute. He previously was Vice President and Banking Economics Advisor at the Federal Reserve Bank of St. Louis. His major research interests include the effects of regulation on financial institutions, specifically microeconomic effects and implications for macroeconomic policies. Dr. Gilbert has published widely, including articles in *The Journal of Financial Services Research*, *Journal of Banking and Finance*, *The Journal of Economics and Business*, and *Explorations in Economic History*. He received his Ph.D. in economics from Texas A&M University.

**Key words:** Basel II, capital requirements, banking supervision

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# KEEP THE LEVERAGE RATIO FOR LARGE BANKS TO LIMIT THE COMPETITIVE EFFECTS OF IMPLEMENTING BASEL II CAPITAL REQUIREMENTS

**R. Alton Gilbert**

This paper is a comment on changes in Basel I capital requirements that the U.S. bank supervisors proposed in October 2005. The implications of these proposed changes for the banking industry can be analyzed most effectively as part of an overall plan for changing capital requirements.

During recent years the federal agencies that supervise U.S. depository institutions have released for public comment several proposals for revising the capital requirements for the institutions under their jurisdiction.<sup>1</sup> They propose to require a small number of relatively large U.S. banking organizations to adopt a new method of setting capital requirements, commonly called “Basel II,” that has been developed by the supervisors of banks in the U.S. and in several other developed nations. Other large banking institutions would be permitted to adopt the Basle II capital requirements, in place of Basel I, if their procedures for measuring and managing risk meet the standards of the supervisors.

The supervisors of the nations that agree to implement the Basel II capital requirements determine the capital requirements of the smaller banks under their jurisdiction at their own discretion. The U.S. supervisory agencies plan to retain the

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<sup>1</sup> These proposals are available on the web site of the Board of Governors of the Federal Reserve System. For convenience this paper refers to all depository institutions as banks.

current system of capital requirements (generally known as Basel I) for the banks in the U.S. that will not be subject to the new Basel II capital requirements.

Controversy over plans for implementing Basel II has included concern that the banks that will continue to be subject to Basel I will have a disadvantage in competing with the banks that will adopt Basel II. This concern about competitive inequality has been heightened by evidence that a small number of large U.S. banks would be able to reduce their capital substantially under the risk-based capital requirements of Basel II.<sup>2</sup> The large U.S. banks that adopt Basel II may be able to bid more aggressively for the customers of other banks if the supervisors permit the Basel II banks to reduce their capital ratios substantially.

The U.S. bank supervisory agencies addressed these concerns about competitive inequalities in October 2005, by releasing for public comment a proposed list of changes to the version of Basel I capital requirements that will apply to the banks that will not be subject to Basel II. The following paragraph from the document released by the U.S. supervisory agencies in October 2005, states two objectives for the proposed changes in Basel I:

“The proposed revision should more closely align risk-based capital requirements with the risk inherent in various exposures and could mitigate competitive inequalities that may arise as new capital rules, known as Basel II, are implemented for the most complex internationally active banking organizations.”

This paper argues that the proposed changes in Basel I capital requirements *would not* mitigate the competitive effects of implementing Basel II for many of the banks that will continue to be subject to Basel I capital requirements. For various reasons some of these banks are not bound by the minimum capital requirements of Basel I, in the sense

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<sup>2</sup> For this evidence, from the *Fourth Quantitative Impact Study*, see the statement of Powell (2005).

that they would not reduce their capital if the supervisors reduced the minimum capital requirements. Other banks are bound by the leverage ratio, rather than the risk-based capital requirements of Basel I. The leverage ratio is a minimum ratio of Tier 1 capital to a measure of total assets.

It is necessary to present some of the details of Basel I capital requirements to explain the basis for this conclusion. Table 1 presents the components of the two key measures of capital (Tier 1 and total capital). Table 2 gives the weights used to calculate risk-weighted assets under the current version of Basel I. Table 3 describes the standards for classifying banks as adequately or well capitalized, which are based on two risk-based capital ratios and the leverage ratio. All of the proposed changes in Basel I capital requirements (summarized in Table 4) apply to the risk weights in Table 2. The proposed changes in Basel I capital requirements, therefore, do not affect the leverage ratio. Thus, the proposed changes in Basel I capital requirements would not facilitate reductions in capital ratios at the banks that are bound by the leverage ratio rather than the risk-based capital requirements.

This paper also argues that the U.S. supervisors can limit competitive inequalities created through implementation of Basel II capital requirements by retaining the leverage ratio for the banks that adopt Basel II. Public statements by policymakers of the U.S. bank supervisory agencies maintain that the leverage ratio will continue to be part of bank capital requirements under the proposals to change the risk-based capital requirements of Basel I, and under Basel II.<sup>3</sup> The leverage ratio would constrain the increases in leverage that would be possible under the risk-based capital requirements of

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<sup>3</sup> See Bies (2005). Powell (2005) argues that the leverage ratio should apply to the banks that adopt Basel II capital requirements.

Basel II. The following section illustrates how an increase in leverage at the banks that adopt Basel II capital requirements could pose a threat to the competitive viability of the banks that will continue to be subject to Basel I.

## IMPLICATIONS OF CAPITAL REQUIREMENTS FOR COMPETITION AMONG BANKS: AN ILLUSTRATION

A simple example illustrates how a change in the capital requirements of some banks, but not others, could affect competition among banks. Suppose initially that Banks A and B are subject to only one capital requirement: they must have equity that is at least a 10 percent of their total assets.<sup>4</sup> Initially, annual profits after tax of each bank are 1.5 percent of their total assets. If the banks keep their capital equal to required capital, each earns an annual return on equity of 15 percent.

Suppose the supervisor cuts the capital requirement of Bank B to 5 percent, but keeps the capital requirement of Bank A at 10 percent. The implications of this change in regulations for Bank A depend on the business strategy of Bank B. Bank B might respond by cutting its equity in half through dividends and stock repurchases. Under this first strategy, Bank B would not change the prices it charges on services, and would keep its assets unchanged. The annual earnings of Bank B would be just under 30 percent of equity under this first strategy, and the annual earnings of Bank A would continue to be 15 percent of equity.<sup>5</sup>

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<sup>4</sup> See Emmons, Lskavyan and Yeager (2005) for a more complex and realistic example of how changes in capital requirements may affect competition among banks.

<sup>5</sup> Under the first strategy the liabilities of Bank B would rise by 5 percent of total assets, since total assets remain unchanged. The net income of Bank B before taxes would fall by the amount of interest it has to pay on the additional liabilities.

Under an alternative strategy, however, Bank B might respond to the reduction in its capital requirement by bidding business from Bank A. With its new capital requirement of 5 percent, Bank B could earn an annual return on equity above 15 percent with net income that is less than 1.5 percent of total assets. To meet the competition from Bank B, Bank A would be forced to accept a return on assets below 1.5 percent, and therefore, to accept a return on equity below 15 percent.

This example illustrates why small banks in the U.S. are concerned about the implementation of Basel II. The banks in the U.S. that will adopt Basel II are represented by Bank B, and the other U.S. banks are represented by Bank A.

#### THE CONCEPT OF BINDING CAPITAL REQUIREMENTS

Analysis of the effects of changes in capital requirements on bank behavior rests on the concept of *binding* capital requirements. This section develops a conceptual framework for thinking about binding capital requirements. The next major section uses the framework to draw conclusions about the effects of proposed changes in capital requirements for bank behavior.

For purposes of this paper, capital requirements are binding if banks would reduce their capital ratios in response to a reduction in capital requirements. Reductions in capital requirements do not affect the behavior of banks that are not bound by capital requirements.

Since reductions in capital requirements are infrequent, it is not possible to determine the identity of the banks bound by capital requirements by observing whether they reduce their capital when their supervisors reduce capital requirements. One

approach to determining whether capital requirements are binding might involve comparing the level of capital at individual banks to their required capital. Using this approach, we might conclude that capital requirements are *not* binding at banks with capital substantially above or below their required levels. This approach, however, could result in a false classification of some banks as unbound that actually are bound by capital requirements. For instance, capital requirements could be binding at a bank with capital *below* the required level, if the supervisors have imposed sanctions on the bank to reduce its risk and increase its capital.

Capital requirements could also be binding at banks with capital *above* required levels. Another concept that is relevant for the cases in which capital exceeds the required level is a *capital cushion*. There are important reasons for a bank to maintain a cushion of capital above its required level. One reason is to limit interference by supervisors in the routine operation of the bank. If a bank attempted to keep its capital equal to the regulatory minimum, a loss that is a small percentage of bank's total assets would make the bank undercapitalized. Supervisors generally impose some constraints on the operation of undercapitalized banks. Owners and managers of the bank will want to continue operating without such constraints when they incur losses. A capital cushion allows a bank so absorb losses without violating the minimum capital requirements.

Another reason for a capital cushion involves freedom for banks to take advantage of opportunities for acquisitions and new lines of business. Raising additional capital involves time and expense, and might involve diluting the percentage of shares owned by a group that currently controls the bank. A cushion of capital allows a bank to quickly

pursue opportunities that tend to reduce its capital ratios without the delays, expense and other issues involved in raising additional capital.

#### Which Standard is Relevant: Adequately Capitalized or Well Capitalized?

The conclusions of this paper are based on measures of the capital cushions for individual banks. Calculation of capital cushions must be based on a standard for meeting capital requirements. Is the standard that for being classified as *adequately capitalized* or as *well capitalized*? The measures of capital cushion in this paper are based on the assumption that banks consider the relevant capital requirements to be those for classification as *well capitalized*, for two reasons. *First*, the nature of bank supervision and regulation gives banking institutions incentive to be classified as well capitalized. An institution rated as well capitalized can receive expedited processing by their supervisors of applications for approval of transactions, including acquisitions of other banks. In addition, classification as well capitalized makes approval of transactions more likely. Classification as well capitalized also gives a bank greater freedom to attract deposits. If any of the three capital ratios of a bank fall below the levels identified in Table 3 for classification as well capitalized, its federal supervisor will notify the bank it is not permitted to borrow brokered deposits.

*Second*, several of the largest banks in the U.S., which operate with relatively low capital ratios, tend to meet all three standards for well capitalized banks, with at least one of the three ratios just above the level for classification as well capitalized. Table 5 presents the two risk-based capital ratios and the leverage ratios for the 40 largest banking organizations in the U.S. with their parent organizations headquartered in the

U.S. as of June 2005.<sup>6</sup> These data are for the entire organizations, including their bank and non-bank subsidiaries. U.S. supervisors apply capital requirements to individual banks and to their parent organizations. Note that the leverage ratios of the two largest banking organizations as of June 30, 2005, were just above 5 percent, the minimum ratio for well capitalized organizations. At 10 of the 15 largest banking organizations, the ratio of total capital to risk-weighted assets was below 12 percent, whereas the standard for being classified as well capitalized is a ratio above of 10 percent. None of the capital ratios in Table 5 violated the standards for well capitalized banks.

Another way to observe the tendency for the largest banks in the U.S. to keep their capital ratios only slightly above the levels for classification as well capitalized is to examine fluctuations in their capital ratios over time. Table 6 presents the leverage ratios for the 40 banking organizations listed in Table 5 in each of the five quarters ending in September 2005. The leverage ratio was above 5 percent for each institution in each quarter. The asterisks indicate whether the leverage ratio was the binding capital requirement in each quarter for each institution. For 35 of these 40 institutions, the binding capital requirement was either the leverage ratio in each of the five quarters, or one of the risk-based capital requirements in each of the five quarters. This evidence on consistency in the binding capital requirement over time (either the leverage ratio or the risk-based capital ratio) supports the idea that these large banking organizations tend to

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<sup>6</sup> Ten of the 50 largest banking organizations in the U.S., identified on the web page of the Federal Financial Institutions Committee ([www.ffiec.gov](http://www.ffiec.gov)), are owned by parent organizations headquartered outside of the United States. These ten foreign owned institutions are excluded from Table 4 for two reasons. First, some of these U.S. subsidiaries of the foreign institutions do not meet the U.S. minimum capital requirements. But these organizations are supervised by agencies of other nations, which look at safety and soundness from the perspective of the parent organization. Second, the 40 institutions listed in Table 4 are the parent organizations; they are not subsidiaries of other firms. It is better to avoid mixing parent organizations with subsidiaries of other organizations in the same analysis, since a parent organization can alter the capital structure of a subsidiary without altering its own capital structure.

focus on a target for a capital cushion on one of the three capital ratios, while meeting each of the three capital requirements for classification as well capitalized.<sup>7</sup>

### Which of the Three Capital Requirements is Binding?

Analysis in this paper rests on the assertion that the binding capital requirement is the one with the smallest dollar amount of capital cushion: capital minus required capital. The following reasoning indicates why the dollar amount of capital cushion for each of the three capital requirements is the basis for identifying the binding capital requirement. Suppose the dollar amount of the capital cushion for Bank A is smaller for the leverage ratio than for either of the two risk-based capital requirements. We can interpret the dollar amount of capital cushion for Bank A on the leverage ratio as the minimum cushion consistent with the objectives of the bank. If this were not the case, the bank would have taken actions to reduce this measure of capital cushion: reducing Tier 1 capital, increasing total assets, or both.

The risk-based capital requirements are not binding for Bank A in the sense that the bank could have changed the composition of its assets in such a way that it increased its risk-weighted assets (like selling Treasury bills and making loans, or issuing additional standby letters of credit) without increasing its capital. In this case, therefore, the risk-based capital requirements do not constrain the actions of Bank A to assume greater risk. We may think of risk-weighted assets as a *free good* in the sense that Bank A could increase its risk-weighted assets (holding total assets constant) without the penalty of a requirement for more capital.

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<sup>7</sup> The capital ratios of two organizations stand out from those of the others: MBNA Corporation and Capital One Financial Corporation. These financial institutions have something in common: specialization in credit card loans. Their capital ratios indicate the combined influence of market participants and special requirements of supervisors for institutions that specialize in one form of risky lending.

Alternatively, suppose Bank B has the smallest dollar amount of capital cushion on one of the risk-based capital requirements: the requirement that total capital of the bank exceeds 10 percent of its risk-weighted assets. This capital requirement is binding in the sense that any transactions that increase risk-weighted assets force the bank to increase its total capital in order to maintain its desired capital cushion. At the margin the leverage ratio does not constrain the leverage of Bank B. To illustrate, Bank B could have increased its leverage by increasing its deposit liabilities and using the proceeds to buy Treasury bills, keeping Tier 1 capital unchanged. These transactions would not have increased the risk-weighted assets of Bank B, and therefore, would not have required additional total capital to maintain Bank B's desired level of capital cushion. The fact that Bank B did not take these actions to increase its leverage indicates that the leverage of Bank B is not limited by the leverage ratio. For Bank B, leverage is a type of free good, holding risk-weighted assets constant.

FOR MANY BANKS THE PROPOSED CHANGES IN BASEL I CAPITAL  
REQUIREMENTS WOULD NOT MITIGATE COMPETITIVE INEQUALITIES  
CREATED BY IMPLEMENTING BASEL II

This section examines the implications of the proposed changes to Basel I capital requirements using data on individual banks. The data are from the Uniform Bank Performance Report (UBPR). Table 7 describes the characteristics of banks in 15 peer groups, based on their total assets, number of banking offices, and location in urban or rural areas. Banks in existence less than five years, which tend to have relatively high capital ratios, are placed in a separate peer group not used in this paper.

Capital Ratios of Large and Small Banks. The UBPR provides information on the distribution of capital ratios among the banks in each peer group. Table 8 presents capital ratios at the 20<sup>th</sup> percentile (relatively low) and at the 50<sup>th</sup> percentile (the median) for the banks in each of the 15 peer groups. Observations for the 20<sup>th</sup> and 50<sup>th</sup> percentile indicate that under Basel I the larger banks tend to operate with lower capital ratios than the smaller banks. These observations have implications for the issues that Basel II capital requirements raise for competition among banks of different size. The concern by the relatively small banks is not whether Basel II capital requirements will facilitate the operation of larger banks with lower capital ratios, but whether Basel II capital requirements will exacerbate an existing competitive inequality based on differences in capital ratios by bank size.

How many Banks are Bound by the Leverage Ratio under Basel I? It is difficult to determine whether capital requirements are binding by examining the capital ratios of banks. The banks with capital ratios substantially above required levels may hold capital for reasons that are independent of the minimum capital requirements. For instance, the capital ratio associated with maximum market value of a bank may be above the level required by its supervisor. Stakeholders of the bank in addition to its stockholders have interest in the level of a bank's capital, including management, depositors not fully insured by the FDIC, customers who have received off-balance sheet commitments from the bank, and customers who rely on credit lines of the bank for their liquidity. If the capital of a bank is determined by such influences, a reduction in capital requirements would not induce the bank to reduce its capital.

Other banks may have been told by their supervisors to hold capital in excess of the minimum capital requirements. These banks would not reduce their capital if the supervisors reduce the minimum capital requirements.

This section does not attempt to identify the banks that would reduce their capital if the supervisors reduce the minimum capital requirements. Instead, this section considers the following question: if capital requirements were binding for each bank, how many banks would be bound by the leverage ratio? The capital ratio associated with the smallest dollar amount of excess capital (capital minus required capital) is the binding capital requirement, for the reasons argued above.

Table 9 reports the number of banks in each peer group that have smaller capital cushions for the leverage ratio than for either of the two capital requirements based on risk-weighted assets. The capital cushion is smallest for the leverage ratio at 239 of the 721 banks in peer group 15. Reductions in the risk-weights in Basel I capital requirements would not be relevant for the capital of these 239 banks, since the capital cushions for each of the two requirements based on risk-weighted assets are larger than the capital cushions for the Tier 1 leverage ratio. Changes in the weights used in calculating risk-weighted assets would not be relevant for mitigating competitive inequalities created by implementation of Basel II capital requirements for at least one third of the banks in peer group 15. This is the minimum number of banks for which the proposed changes in Basel I capital requirements are irrelevant. Many of the 428 banks in peer group 15 with smaller dollar amounts of capital cushion on one of the capital ratios based on risk-weighted assets (721 minus 239) may determine the level of their capital for reasons other than the levels of the minimum capital requirements.

Some banks are bound by the leverage ratio in each of the 15 peer groups. The percentage of banks bound by the leverage ratio is smallest for the banks in peer groups 2 and 3 (total assets between \$300 million and \$3 billion).

Table 9 also indicates that reductions in the weights used in calculating risk-weighted assets would increase the number of banks bound by the leverage ratio. Reductions in the weights used in calculating risk-weighted assets would increase the two measures of capital cushion based on risk-weighted assets through reductions in risk-weighted assets. Table 9 presents the results of reducing the weight on first-lien residential mortgages from 50 percent to 25 percent. Residential mortgages are selected for this simulation because much of the discussion of problems with Basel I capital requirement has focused on arguments that the risk weight on residential mortgages in Basel I has been too high (Hancock, 2005). Table 9 indicates that among the 721 banks in peer group 15, a reduction in the weight on residential mortgages to 25 percent would increase the number of these banks bound by the leverage ratio from 239 to 311. In peer group 15, therefore, 72 banks that had been bound by one of the capital requirements based on risk-weighted assets would become bound by the leverage ratio if the risk weight on residential mortgages was cut in half. For the banks in each peer group, a reduction in the risk weight on first-lien residential mortgages from 50 percent to 25 percent would have a large effect on the percentage of banks bound by the leverage ratio.

The conclusion is that if the supervisors retain the leverage ratio, actions to mitigate competitive inequalities created by implementing Basel II capital requirements by changing the weights used for calculating risk-weighted assets will not be effective for many of the banks that will continue to be subject to Basel I.

TO MITIGATE COMPETITIVE INEQUALITIES RESULTING FROM  
IMPLEMENTATION OF BASEL II, KEEP THE LEVERAGE RATIO FOR THE  
BANKS THAT ADOPT BASEL II

In his testimony before Congress on November 10, 2005, Chairman Powell of the Federal Deposit Insurance Corporation, presented a table that is useful for considering the effects of Basel II on capital requirements. The data are for the 26 large banking organizations that participated in the *Fourth Quantitative Impact Study* of the effects of Basel II capital requirements on individual institutions. Powell (2005) reports that Basel II capital requirements would reduce risk-based capital requirements substantially at most of these banks. Table 10 of this paper, derived from Powell (2005), presents one way to summarize the results.

The results in column 2 of Table 10 indicate the capital adequacy classification that would apply to each of the 26 banks if their Tier 1 capital was equal to the level of Tier 1 capital required under the risk-based capital requirements of Basel I. One of the institutions would be classified as “undercapitalized” (Tier 1 capital less than 4 percent of total assets) and two of them would be classified as “significantly undercapitalized.” These institutions are not, in fact, subject to these capital classifications, because their Tier 1 capital exceeds the minimum levels required under the current risk-based requirements. The distribution in column 2 of Table 10 is useful because it provides a baseline for comparing capitalization levels under current requirements to those under Basel II, based on the results of the *Fourth Quantitative Impact Study*. Column 3 indicates that if Tier 1 capital equaled the level required under the risk-based capital

requirements of Basel II, only nine of the 26 institutions would be classified as adequately or well capitalized.

Under the current plans of the U.S. supervisors, the leverage ratio would constrain the large reductions in the ratios of Tier 1 capital to total assets indicated the column 3 of Table 10. Table 5 provides additional perspective in the increase in leverage that would be permissible under Basel II if the supervisors retain the leverage ratio for the banks that adopt Basel II. The last column of Table 5 presents the percentage increase in total assets (with Tier 1 capital unchanged) at which the leverage ratio would become the binding capital requirement, rather than one of the risk-based capital requirements. For the banking organizations with the leverage ratio as the binding capital requirement, the percentage increase in the last column of Table 5 is zero: any increase in total assets at these banks, with Tier 1 capital fixed, would drive their capital cushion below the desired level.

Some of the banks that are bound by one of the risk-based capital requirements would become bound by the leverage ratio if they increased their leverage only slightly. I will illustrate the effect of a small increase in leverage on the capital cushion of the Wachovia Corporation, the fourth largest U.S. banking organization in June 2005. The asterisk in Table 5 indicates that under Basel I, the dollar amount of capital cushion was smallest in June 2005 for the requirement that total capital be at least 10 percent of risk-weighted assets. Thus, under Basel I, Wachovia was bound by one of the risk-based capital requirements, not the leverage ratio. How much could Wachovia increase its assets under Basel II capital requirements (with capital unchanged) before it becomes bound by the leverage ratio? To answer this question, we need the following information

for Wachovia under Basel I: its Tier 1 capital (\$29,176 million as of June 2005), the measure of total assets used for calculating the leverage ratio (\$478,524 million) and the capital cushion under Basel I: total capital minus 10 percent of risk-weighted asset (\$4,639.9 million). How much could Wachovia increase its assets, for given levels of Tier 1 and total capital, before the leverage ratio becomes the relevant capital requirement? We derive the answer by solving for assets\* in equation (1):

$$\text{Tier 1 capital/assets}^* = 0.05 + \text{capital cushion/assets}^* \quad (1)$$

With total assets equal to assets\*, the dollar amount of capital cushion on the leverage ratio is the same as the dollar amount of capital cushion on the risk-based capital ratio. Any increase in assets above assets\* would drive the capital cushion below the desired level.

For Wachovia, we solve for assets\* in equation (2):

$$\$29,176 \text{ million/assets}^* = 0.05 + \$4,639.9 \text{ million/assets}^* \quad (2)$$

In the solution, assets\* for Wachovia equals \$490,722 million, which is only 2.55 percent higher than assets as of June 30, 2005 (see the last column of Table 5). A small percentage increase in assets would make Wachovia bound by the leverage ratio. In contrast, it would require very large percentages increases in assets under Basel II capital requirements to make some of the other banking organizations bound by the leverage ratio. For instance, the leverage ratio would become binding for SunTrust only after it increased its total assets by 28.25 percent (holding capital constant). The last column of Table 5 presents this information for each of the 40 banking organizations.

We can use the information in the last column of Table 5 to derive the maximum percentage increase in total assets (with capital fixed) for groups of large banking

organizations. The ten largest banking organizations as a group (the organizations most likely to be required to adopt Basel II) would hit the leverage ratio after they increased their assets by 4.2 percent.<sup>8</sup> The leverage ratio, therefore, sets a tight upper limit on the amount by which the largest U.S. banking organizations could increase their assets under Basel II capital requirements, with existing capital.

## CONCLUSIONS

During recent years the supervisors of U.S. depository institutions have announced plans to implement a new method of calculating risk-weighted assets for the largest banking organizations, commonly called Basel II. Quantitative impact studies indicate large reductions in risk-based capital requirements under Basel II capital requirements. These results have sparked concern that Basel II will threaten the competitive of viability of the banks that will continue to be subject to the current Basel I capital requirements when a small number of large U.S. banks adopt Basel II. The U.S. bank supervisors responded to these concerns about competitive inequalities in October 2005 by proposing changes in capital requirements for the banks that will not adopt Basel II.

These proposed adjustments to the Basel I capital requirements, however, would *not* mitigate the competitive effects of Basel II for many of the banks that will continue to be subject to Basel I capital requirements. The capital ratios of many of the banks that will continue to be subject to Basel I capital requirements are substantially above the minimum requirements for classification as well capitalized. Some of these banks may

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<sup>8</sup> This percentage increase in total assets of the top ten institutions is calculated by weighting the percentage increase in the last column of Table 4 by the share of total assets at the top ten banking organizations.

have excess capital because of market pressures, whereas the supervisors require other banks to hold capital ratios above the levels specified in the minimum requirements under Basel I. Banks that maintain excess capital for either of these reasons would not reduce their capital ratios in response to the changes in Basel I requirements proposed in October 2005.

There is another group of banks that would not be able to reduce their capital ratios in response to the proposed changes in Basel I. They maintain cushions of capital above the levels necessary for classification as well capitalized and they would lower their capital ratios if the supervisors reduced the minimum required ratios. For many of these banks, however, the binding capital requirement (the one associated with the smallest dollar amount of capital cushion) is the leverage ratio, not the risk-based capital requirements under Basel I. Reductions in the risk weights used in calculating risk-weighted assets would not permit these banks to reduce their capital ratios. In addition, even more banks would become bound by the leverage ratio, rather than the risk-based capital requirements of Basel I, if the supervisors reduced the risk weight on residential mortgages.

One way to mitigate competitive inequalities under Basel II is to maintain the leverage ratio for the large banks that will be subject to Basel II. The leverage ratio places a tight limit on the percentage by which the largest U.S. banking organizations would be permitted to increase their assets (for given capital) under Basel II. Chairman Powell of the Federal Deposit Insurance Corporation recently argued for retaining the leverage ratio for the banks that adopt Basel II. He argued for retaining the leverage ratio on the basis of the degree of risk assumed by the individual banking institutions that will

adopt Basel II capital requirement. This paper adds another reason for retaining the leverage ratio for the banks that adopt Basel II. The changes in Basel I capital requirements the at the supervisors proposed in October 2005 will not affect the capital held by many of the banks that will continue to be subject to Basel I capital requirements. For these banks retaining the leverage ratio for the banks that adopt Basel II is a means of mitigating competitive inequalities created by implementing Basel II.

## REFERENCES

Bies, Susan Schmidt. Governor of the Federal Reserve Board. Testimony before the Committee on Banking, Housing, and Urban Affairs, U.S. Senate, November 10, 2005

Emmons, William R., Vahe Lskavyan and Timothy J. Yeager. "Basel II Will Trickle Down to Community Bankers, Consumers," *Regional Economist*, Federal Reserve Bank of St. Louis (April 2005), pp. 12-13.

Hancock, Diana, Andreas Lehnert, Wayne Passmore and Shane M. Sherlund, "An Analysis of the Potential Competitive Impacts of Basel II Capital Standards on U.S. Mortgage Rates and Mortgage Securitization," Board of Governors of the Federal Reserve System, April 2005.

Powell, Donald E. Chairman of the Federal Deposit Insurance Corporation, "Development the New Basel Capital Accords," Committee on Banking, Housing and Urban Affairs, November 10, 2005.

Spong, Kenneth. *Banking Regulation: Its Purposes, Implementation, and Effects*, Federal Reserve Bank of Kansas City, Fifth Edition, 2000.

Table 1  
Components of Tier 1 and Total Capital<sup>9</sup>

**Tier 1 Capital<sup>10</sup>**

Common stockholder's equity.  
Non-cumulative perpetual preferred stock.  
Minority interests in the equity accounts of consolidated subsidiaries.

**Tier 2 Capital**

The allowance for loan and lease losses (up to a maximum of 1.25 percent of risk-weighted assets).  
Cumulative perpetual or long-term preferred stock.  
Hybrid capital instruments and mandatory convertible debt securities.  
Subordinated debt and intermediate-term preferred stock.  
Unrealized holding gains on equity securities.

The amount of subordinated debt and intermediate-term preferred stock that a bank may count as Tier 2 capital cannot exceed 50 percent of its Tier 1 capital. In addition, these two components and any other limited-life capital instruments are discounted in Tier 2 computations as they approach maturity.

**Tier 3 Capital** allocated for market risk.

**Total Capital** is the sum of Tier 1, Tier 2 and Tier 3 capital.

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<sup>9</sup> For more details of the risk-based capital requirements under Basel I, see Spong (2000).

<sup>10</sup> Goodwill and certain other intangible assets are deducted from Tier 1 capital. Any items that are deducted from capital are also deducted from risk-weighted assets in computing risk-based capital ratios.

Table 2  
Risk Weights for Calculating Risk-Weighted Assets under Basel I

**Category 1: zero percent weight**

Cash, including balances due from central banks in OECD countries.  
U.S. Treasury and Government securities and claims unconditionally guaranteed by OECD governments.

**Category 2: 20 percent weight**

Cash items in the process of collection.  
All claims on or guaranteed by U.S. depository institutions and banks in OECD countries.  
General obligation bonds of state and local governments.  
Portions of claims secured by U.S. government agency securities or OECD central governments that do not qualify for a zero percent weight.  
Loans and other claims conditionally guaranteed by U.S. Government securities and other claims on U.S. Government-sponsored enterprises.  
OFF BALANCE SHEET:  
Short-term trade-related contingencies, such as commercial letters of credit.

**Category 3: 50 percent weight**

Loans secured by first liens on 1-to-4 family residential property and certain multifamily residential properties.  
Certain privately issued mortgage-backed securities.  
Revenue bonds of state and local governments.  
OFF BALANCE SHEET:  
Performance bonds and performance-based standby letters of credit.  
Unused portions of commitments with original maturity over one year.  
Revolving underwriting facilities.

**Category 4: 100 percent weight**

All loans and other claims on private obligators not placed in a lower risk category.  
Bank premises, fixed assets, and other real estate owned.  
Industrial development revenue bonds.  
Intangible assets and investment in unconsolidated subsidiaries, provided they are not deducted from capital.  
OFF BALANCE SHEET:  
Financial standby letters of credit.  
Sale and repurchase agreements.  
Asset sales with recourse.  
Forward agreements to purchase assets.  
Securities lent that place the bank at risk.

Table 3  
Criteria for Classifying Banks as Adequately and Well Capitalized

Capital classification	Total capital as percentage of risk-weighted assets		Tier 1 capital as percentage of risk-weighted assets		Leverage ratio
Well capitalized	10 percent or greater	AND	6 percent or greater	AND	5 percent or greater
Adequately capitalized	8 percent or greater	AND	4 percent or greater	AND	4 percent or greater
Undercapitalized	Less than 8 percent	OR	Less than 4 percent	OR	Less than 4 percent
Significantly Undercapitalized	Less than 6 percent	OR	Less than 3 percent	OR	Less than 3 percent

NOTE: In addition to meeting these criteria, a *well capitalized* bank must also be free of any directive from its supervisor to maintain a specific capital level. A bank is classified as *critically undercapitalized* if its ratio of tangible equity to total assets is equal to or less than two percent.

Table 4  
Changes to Basel I Proposed in October 2005

Increase the number of risk-weight categories. Currently the categories for risk weights are zero, 20 percent, 50 percent and 100. Additional risk-weight categories might permit the supervisors to more closely match the risk weights to the risk inherent in various categories of assets. The agencies propose adding weights of 35, 75, 150 and 305 percent. The weights that exceed unity would be for high-risk assets.

Greater use of the ratings of assets by rating agencies for purposes of setting risk weights.

Expand the types of guarantees and collateral that may be recognized in setting risk weights. Banks attempt to limit the chances that the loans they make will not be repaid by requiring some borrowers to post collateral, which the bank may claim if a loan is not repaid. In other arrangements, banks get parties other than borrowers to guarantee that if the borrowers do not repay their loans, the guarantors will repay the bank. The proposal calls use of information on collateral and guarantee agreements in setting risk weights on loans.

Modifying the risk weights associated with one-to-four family residential mortgages. The risk inherent in residential mortgages varies substantially among various categories of mortgages, based on the characteristics of the mortgage contracts and the borrowers. Under Basel I, in contrast, the risk weight on all residential mortgages is 50 percent. The proposal describes possible methods for making the capital requirements on residential mortgages more sensitive to risk, based on the loan-to-value ratios of mortgages and information on the creditworthiness of borrowers.

Modifying capital requirements related to commitments made by depository institutions and their participation in the securitization of assets. The risk weights on commitments by depository institutions for periods shorter than one year would be increased from zero to 10 percent.

Modifying the risk weights for loans that are ninety days or more past due or in nonaccrual status. These loans would have risk weights of 100 percent or higher, to reflect the risk of loss on the loans revealed by their status as nonperforming loans.

Table 5  
Capital Ratios of the 40 Largest U.S. Banking Organizations  
June 30, 2005

Name of banking organization	Total assets (billions of dollars)	Tier 1 capital/RWA	Total capital/RWA	Tier 1 capital/TA	Percentage increase in assets at which the leverage ratio becomes binding
Citigroup Inc.	\$1,547.8	8.71 %	11.97 %	5.19% *	0
Bank of America Corporation	1,251.0	8.06	11.12	5.59 *	0
JPMorgan Chase & Company	1,171.3	8.21	11.30 *	6.21	4.13 %
Wachovia Corporation	511.8	7.85	11.25 *	6.10	2.55
Wells Fargo & Company	435.0	8.57	12.17 *	7.28	8.75
U.S. Bancorp	204.0	8.14	12.5 *	7.51	4.09
SunTrust Banks, Inc.	169.0	7.04	10.25 *	6.65	28.25
Countrywide Financial Corporation	158.6	10.41	10.98 *	7.19	30.30
National City Corporation	144.0	7.96	11.20 *	7.36	25.05
BB&T Corporation	105.8	8.74	14.20	6.73 *	0
State Street Corporation	104.3	12.44	13.57	5.47 *	0
Fifth Third Bancorp	103.2	8.48	10.80 *	7.76	40.56
The Bank of New York Company	103.1	8.07	12.49	6.55 *	0
Keycorp	91.0	7.68 *	11.72	8.49	32.56
The PNC Financial Services Group, Inc.	90.8	8.27	11.85 *	7.22	12.11
Regions Financial Corporation	85.3	8.73 *	12.95	7.35	1.05
MBNA Corporation	63.0	21.15	24.47 *	21.98	38.97
North Fork Bancorporation, Inc.	60.4	10.49	13.01	6.56 *	0
Capital One Financial Corporation	57.0	19.59	22.09 *	17.39	33.22
Comerica Incorporated	55.1	8.49	12.08 *	10.36	56.50

Amsouth Bancorporation	50.6	8.17	11.64 *	6.79	8.61
Charles Schwab Corporation	46.5	16.16	16.32	7.57 *	0
Northern Trust Corporation	46.3	9.77	12.71	6.88 *	0
Popular, Inc.	46.0	11.48	12.77 *	7.62	15.71
Marshall & Ilsley Corporation	43.5	7.55 *	11.92	6.91	9.82
First Horizon National Corporation	37.2	8.61	12.60	6.59 *	0
Mellon Financial Corporation	37.1	10.85	16.91	8.40 *	0
Commerce Bancorp, Inc.	33.4	12.39	13.29	6.20 *	0
Huntington Bancshares	33.0	9.18	12.39 *	8.50	25.66
Zions Bancorporation	32.9	9.55 *	14.12	8.53	7.28
Compass Bancshares, Inc.	29.6	9.02	12.07 *	7.70	18.66
Synovus Financial Corp.	26.7	9.96 *	14.07	9.74	17.39
New York Community Bancorp, Inc.	25.2	14.47	15.79	8.03 *	0
Hiberia Corporation	22.1	10.42	12.26 *	8.27	29.64
Colonial Bancgroup, Inc.	21.0	8.84	11.06 *	7.59	33.51
Associated Banc-Corp	20.8	9.60	12.26 *	7.25	10.74
First Bancorp	19.8	11.73	12.94 *	7.69	15.16
Webster Financial Corporation	17.5	8.61	11.36 *	6.71	13.02
BOK Financial Corporation	15.9	9.84	12.54 *	8.08	19.87
Sky Financial Group, Inc.	15.2	9.02	11.37 *	7.60	28.90

Note: RWA is “risk-weighted assets,” and TA is “total assets.” The asterisks indicate for each banking organization the capital requirement with the smallest dollar amount of cushion (capital minus required capital).

Note: the 40 banking organizations listed in this table are from the list of the top 50 banking organizations in the U.S., from the web page of the Federal Financial Institutions Examination Council ([www.ffiec.gov](http://www.ffiec.gov)). Banking organizations in the top 50 which are owned by foreign banking organization are excluded from Table 4.

Table 6  
Capital Ratios of the 40 Largest U.S. Banking Organizations  
June 30, 2005

Name of banking organization	September 2005	June 2005	March 2005	December 2004	September 2004
Citigroup Inc.	5.53 % *	5.19% *	5.19 % *	5.20 % *	5.01 % *
Bank of America Corporation	5.85	5.59 *	5.85 *	5.82 *	5.92 *
JPMorgan Chase & Company	6.19	6.21	6.26 *	6.22 *	6.51 *
Wachovia Corporation	5.96	6.10	5.99 *	6.38	6.21
Wells Fargo & Company	7.16	7.28	7.17	7.08	6.97
U.S. Bancorp	7.67	7.51	7.90	7.88	7.94
SunTrust Banks, Inc.	6.64	6.65	6.61	6.64	7.71
Countrywide Financial Corporation	6.35	7.19	7.93	7.85	7.92
National City Corporation	7.03	7.36	7.22	7.31	7.35
BB&T Corporation	7.31 *	6.73 *	7.04 *	7.10 *	7.08 *
State Street Corporation	5.55 *	5.47 *	5.52 *	5.52 *	5.58 *
Fifth Third Bancorp	7.93	7.76	7.62	8.89	9.13
The Bank of New York Company	6.59 *	6.55 *	6.56 *	6.41 *	6.38 *
Keycorp	8.60	8.49	7.91	7.96	8.27
The PNC Financial Services Group, Inc.	7.12	7.22	7.26	7.65	7.72
Regions Financial Corporation	7.36	7.35	7.46	7.47 *	7.26 *
MBNA Corporation	21.50	21.98	21.94	22.80	21.55
North Fork Bancorporation, Inc.	7.09 *	6.56 *	6.48 *	6.23 *	6.32 *
Capital One Financial Corporation	17.89	17.39	15.12	15.38	NA
Comerica Incorporated	10.07	10.36	10.5	10.37	10.28
Amsouth Bancorporation	6.72	6.79	6.61	6.73	6.56
Charles Schwab Corporation	7.79 *	7.57 *	7.46 *	7.76 *	7.72 *
Northern Trust Corporation	7.19	6.88 *	7.13	7.56	8.13
Popular, Inc.	7.71	7.62	7.46	7.78	7.12
Marshall & Ilsley Corporation	7.01	6.91	6.82	6.72	6.40
First Horizon National Corporation	6.45 *	6.59 *	6.80 *	7.16 *	7.38

Mellon Financial Corporation	8.21 *	8.40 *	8.06 *	7.87 *	8.13 *
Commerce Bancorp, Inc.	6.18 *	6.20 *	6.22 *	6.19 *	6.30 *
Huntington Bancshares	8.50	8.50	8.44	8.42	8.36
Zions Bancorporation	8.67	8.53	8.47	8.31	8.07
Compass Bancshares, Inc.	7.77	7.70	7.63	7.51	7.35
Synovus Financial Corp.	9.99	9.74	9.65	9.77	9.77
New York Community Bancorp, Inc.	8.27 *	8.03 *	8.18 *	8.19 *	7.94 *
Hiberia Corporation	7.86	8.27	7.72	7.51	7.46
Colonial Bancgroup, Inc.	7.26	7.59	7.38	7.14	7.26
Associated Banc-Corp	7.52	7.25	7.44	7.79	8.52
First Bancorp	NA	7.69	8.91	9.25	9.16
Webster Financial Corporation	6.82	6.71	6.58	6.36	6.37
BOK Financial Corporation	8.01	8.08	8.36	7.94	7.81
Sky Financial Group, Inc.	7.76	7.60	7.49	7.72	7.58

Note: RWA is “risk-weighted assets,” and TA is “total assets.” The asterisks indicate for each banking organization whether the leverage ratio is the capital requirement with the smallest dollar amount of cushion (capital minus required capital).

Note: the 40 banking organizations listed in this table are from the list of the top 50 banking organizations in the U.S., from the web page of the Federal Financial Institutions Examination Council ([www.ffiec.gov](http://www.ffiec.gov)). Banking organizations in the top 50 which are owned by foreign banking organization are excluded from Table 4.

Table 7  
 Characteristics of Banks in the Peer Groups of the Uniform Bank Performance Report

Peer group Number	Average assets for latest quarter (millions of dollars)	Number of banking offices	Location
1	In excess of \$3,000	-	
2	Between \$1,000 and \$3,000	-	
3	Between \$300 and \$1,000	-	
4	Between \$100 and \$300	3 or more	MSA
5	Between \$100 and \$300	3 or more	non-MSA
6	Between \$100 and \$300	2 or fewer	MSA
7	Between \$100 and \$300	2 or fewer	non-MSA
8	Between \$50 and \$100	3 or more	MSA
9	Between \$50 and \$100	3 or more	non-MSA
10	Between \$50 and \$100	2 or fewer	MSA
11	Between \$50 and \$100	2 or fewer	non-MSA
12	Less than \$50	2 or more	MSA
13	Less than \$50	2 or more	non-MSA
14	Less than \$50	1	MSA
15	Less than \$50	1	non-MSA

Table 8  
Distribution of Capital Ratios by Peer Group  
June 2005

20<sup>th</sup> percentile

50<sup>th</sup> percentile

Peer group no.	Tier 1 capital/RWA	Total capital/RWA	Tier 1 leverage Ratio	Tier 1 capital/RWA	Total capital/RWA	Tier 1 leverage ratio
1	8.69	10.81	6.48	10.16	11.75	7.5
2	9.53	10.79	7.37	10.47	11.68	8.36
3	9.6	10.71	7.63	10.92	12.11	8.56
4	9.88	11.03	7.82	11.74	12.91	8.83
5	10.48	11.6	7.97	13.08	14.19	9.15
6	9.73	10.91	7.97	11.72	12.86	9.21
7	11.27	12.48	8.25	14.49	15.57	9.75
8	10.73	11.74	7.94	12.82	13.96	9.16
9	10.97	12.1	7.99	13.72	14.82	9.44
10	10.27	11.28	8.05	13.27	14.39	9.54
11	11.85	12.99	8.34	15.83	16.96	10.24
12	11.38	12.57	8.22	15.53	16.72	10.01
13	11.42	12.48	8.23	14.87	15.93	9.81
14	13.43	14.68	8.92	19.2	20.25	11.14
15	13.36	14.46	9.06	18.48	19.51	11.41

Source: the Uniform Bank Performance Report.

Table 9  
Banks with Smallest Capital Cushion on the Tier 1 Leverage Ratio  
June 2005

Peer group no.	Total no. of banks in peer group	Banks with capital cushion smaller for the Tier 1 leverage ratio than for either of the capital ratios based on risk-weighted assets			
		With current Basel I capital requirements		With weight on residential mortgages reduced to 25%	
		No. of banks	Percentage	No. of banks	Percentage
1	168	36	21.4%	57	33.9%
2	261	16	6.1	30	11.5
3	1039	91	8.8	142	12.8
4	777	81	10.4	133	17.1
5	925	104	11.2	213	23.0
6	335	42	12.5	54	16.1
7	273	59	21.6	87	31.9
8	158	20	12.7	38	24.1
9	436	70	16.1	127	29.1
10	340	53	15.6	72	21.2
11	724	187	25.8	262	36.2
12	106	25	23.6	40	37.7
13	406	76	18.7	139	34.2
14	219	86	39.3	107	48.9
15	721	239	33.1	311	43.1

Source: the Uniform Bank Performance Report.

Note: Six banks were excluded because one or more of their capital ratios were below the levels for adequately capitalized banks.

Table 10

The Capital Classifications that Would Apply to Banking Organizations if their Tier 1 Capital was equal to their Risk-Based Tier 1 Capital

<b>The capital classifications are based the ranges for Tier 1 capital as a percentage of total assets that trigger supervisory action under prompt corrective action (PCA) standards.</b>		
<b>(1)</b>	<b>(2)</b>	<b>(3)</b>
	<b>Number of banks in PCA leverage category based on risk-based capital requirements</b>	
<b>Leverage PCA Category</b>	<b>Current risk-based</b>	<b>Basel II risk-based</b>
Well Capitalized	7	2
Adequately Capitalized	16	7
Undercapitalized	1	5
Significantly Undercapitalized	2	9
Critically Undercapitalized*	0	3
Total Number of QIS-4 Banks:	26	26
*Substituted tier 1 risk-based capital requirement for tangible equity capital requirement.		

Source: Powell (2005): FDIC calculations based on QIS-4 data.