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Procrastination Does Pay Sometimes: How the Delay in Implementing Basel II Reduced the Effect of the Subprime Financial Crisis

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PROCRASTINATION DOES PAY SOMETIMES: HOW THE DELAY IN IMPLEMENTING BASEL II REDUCED THE EFFECT OF THE SUBPRIME FINANCIAL CRISIS

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Abstract

Basel II, a major international regulatory capital revision, was supposed to have been implemented in the U.S. by 2004, but delays pushed it back more than five years. Basel II could have lowered minimum capital standards and made the largest banks even more vulnerable to the subprime financial crisis and economic downturn had it been adopted before its onset in 2007. Consequently, the procrastination in implementing Basel II made the banking industry more stable as it entered the financial crisis. In this study, the assets of the 11 largest bank holding companies at year-end 2006 were separated into broad asset classes with similar default characteristics as set forth under the second Basel Accord. The hypothetical capital to be held by the BHCs against their loans and leases was computed as required under Basel II and compared with the actual capital the banks held at year-end 2006. Based on these computations, it appears that Basel II would have made banks even more vulnerable to the financial crisis had it been adopted earlier. Consequently, the procrastination in implementing Basel II benefited both the banking industry and the federal government. Among the 11 bank holding companies, total capital could have decreased by more than $170 billion under Basel II compared to the actual capital being held. The change would have amounted to a 29.7% decrease in total capital and a 52.9% drop in capital held against loans and leases, both on a weighted-average basis. Without question, Basel II needs to be adjusted to be more conservative.

Overview of the Basel Accords

Capital provides a firm with a buffer to absorb losses. All other factors being equal, more capital reduces the likelihood of failure because shareholders bear the losses, and, unlike bondholders, shareholders have no legal claim to recoup their equity investment. However, equity is expensive because shareholders require relatively high rates of return given their first-loss position. Consequently, most firms would prefer to finance their operations with a mixture of debt and equity. An important strategic decision for any firm is to determine the optimal level of capital. As a firm's level of equity increases, investors are willing to purchase the firm's debt at relatively low interest rates. In unregulated markets, a firm will choose a capital level that balances the high cost of capital with the lower cost of debt issuance to achieve a low overall cost of capital. Banks, however, operate in regulated markets.

Following the wave of bank failures during the Great Depression, Congress created the Federal Deposit Insurance Corporation to insure domestic deposits. Deposit insurance provides banks with incentives to reduce capital and increase debt (including deposits) because insured depositors are willing to lend their funds to banks at risk-free rates of return regardless of the bank's level of capital. Since the market cannot effectively discipline banks' incentives to hold an appropriate amount of capital, bank regulators must step in to ensure that minimum capital levels are held. The Basel Capital Accord is a regulatory framework that establishes minimum capital holdings for banking organizations.

Basel I, drafted in 1988 and implemented in the US in 1992, was the first international accord to set uniform, international capital standards (BIS, 2003.) The innovation of Basel I was to adjust minimum capital requirements for a bank's credit risk. Over time, however, Basel I was criticized by the industry as being too insensitive to a bank's true credit risks. In the late 1990s, development of Basel II was begun to help better align bank risk and the capital held at each bank.

Although Basel II contains three methods for determining capital requirements, the United States has adopted only the most complex method, called the advanced measurement approach (AMA). Even then, only the very largest banks—perhaps the largest dozen—will implement Basel II. The other 7,000+ banks will continue to operate under Basel I. Basel II has drawn criticism from some regulators and analysts for two primary reasons. First, as Emmons, Lskavyan, and Yeager (2005) argue, the different methods of computing minimum capital requirements can result in giving Basel II banks a competitive advantage over Basel I banks. Second, Basel II may exacerbate economic business cycles because it requires relatively small amounts of capital during booms and large amounts of capital during recessions.

The competitive advantage issue between Basel I and Basel II can be shown by comparing the capital requirements for a generic $200,000 retail mortgage loan. Under Basel I, all retail mortgages are put into the 50% risk weight bracket. The current economic conditions or the creditworthiness of the borrower has no bearing on this determination of risk. The risk-weighted assets for the loan would be $100,000, derived by multiplying the risk weight by the value of the loan. Basel I specifies that banks hold a minimum of 8% of risk-weighted assets in the form of capital; therefore, the minimum required capital for the loan would be $8,000.

Basel II places emphasis on the bank's internal assessment of risk instead of assigning loans to predetermined buckets with arbitrary risk weights (BIS, 2005.) The necessary capital under Basel II requires internal estimates of the probability of default (PD), loss given default (LGD), and the correlation factor (R), which is discussed in greater detail later. As an example, let's assume that

PD, LGD, and R equal 1.17%, 20.3%, and 0.15, respectively. To determine the loan's required capital percentage, the bank would put the variables into the following formula provided by the regulators:

Capital requirement (K) = LGD × N [(1 - R) ^ -0.5 × G (PD) + (R / (1 - R))^0.5 × G (0.999)] - PD x LGD

By doing so, the bank would compute the capital requirement for the residential mortgage under Basel II to be $4,516 or 2.26% of the value of the loan.

This simple comparison of the required capital for the same loan under Basel I and Basel II illustrates the possible competitive advantage for banks operating under Basel II. If a bank can fund a loan with less equity, its overall cost of capital is lower, which potentially allows it to lend at lower interest rates and take away business from other banks. Calem and Follain (2007) performed some benchmark calculations that suggested a significant potential shift of market share and income to the largest banking institutions in the mortgage market. In addition, Berger (2006) studied the likely competitive effects of the implementation of Basel II capital requirements on U.S. banks in the market for credit to small and medium enterprises (SMEs). He found only relatively minor competitive effects on most community banks because the large Basel II adopters tend to make very different types of SME loans to different types of borrowers than community banks. However, there may be significant adverse effects on the competitive positions of large Basel I banking organizations.

A second concern with the Basel II framework is that it is procyclical, encouraging banks to hold less capital during periods of economic growth and more capital during recessionary periods. Kashyap and Stein (2004, p. 28) write that "our simulations suggest that the new Basel II capital requirements have the potential to create an amount of additional cyclicality in capital charges that is, at a minimum, economically significant, and that may be—depending on a bank's customer mix and the credit-risk models that it uses—quite large." Gordy and Howells (2006) argue that the "new capital standards will exacerbate business cycle fluctuations. In brief, the idea is that, in a downturn when a bank's capital base is likely being eroded by loan losses, its existing (non-defaulted) borrowers will be downgraded by the relevant credit-risk models, forcing the bank to hold more capital against its current loan portfolio. To the extent that it is difficult or costly for the bank to raise fresh external capital in bad times, it will be forced to cut back on its lending activity, thereby contributing to a worsening of the initial downturn.

Research Question

This paper addresses the cyclicality of Basel II by estimating the potential reduction in capital requirements for banks adopting Basel II had the new framework been adopted just before the onset of the financial crisis in 2007. The AMA approach enables banks to use internal estimates to determine minimum capital requirements, and the default probability of a loan is a key estimated input. If banks underestimate "true" default probabilities, they may end up holding less capital than necessary. For example, mortgages and mortgage-backed securities had historically low default probabilities prior to the recent financial crisis. Due to their history of low default risk and high credit ratings, it could be hypothesized that, under Basel II, most banks would have held lower capital against their mortgages and mortgage-backed securities than they held under Basel I. Consequently, during the surge of sub-prime residential lending, large quantities of these securities would not have been properly assessed for their credit risk.

Thus the research question is, would Basel II have lowered minimum capital standards and made banks even more vulnerable to the financial crisis had it been adopted before the onset of the crisis? If so, the procrastination in implementing Basel II made the banking industry more stable as it entered the financial crisis.

Research Methodology

In determining the Bank Holding Companies (BHC) to include in this sample, the 11 largest banks were selected according to total assets as of December 31, 2006, the period of time just before the onset of the crisis. Implementing the Basel II Accord requires more time and effort from the BHCs; therefore, it would have been adopted by only a select number of the largest institutions as determined by the United States regulators. The bank holding companies used in this research are shown in Table 1:

Table 1. Bank Holding Company Total Assets As of December 31, 2006 ($000s)

Bank Holding Company	Total Assets
Citigroup, Inc.	1,884,318,000
Bank of America Corporation	1,463,685,485
JPMorgan Chase & Co.	1,351,520,000
Wachovia Corporation	707,121,000
Wells Fargo & Company	481,996,000
HSBC North America Holdings, Inc.	478,025,477
Taunus Corporation	431,865,000
Barclays Group US, Inc.	261,111,792
US Bancorp	219,232,000
Countrywide Financial Corporation	199,946,230
SunTrust Banks Inc.	182,161,609

The next step was to find the account values for all of the loans and leases at each of the BHCs so that these values could be mapped into the Basel II capital formula. These loan numbers can be located in Schedule HC-C, Loans and Lease Financing Receivables in the FR Y-9C filings, which are the report forms on the consolidated financial statements to be filed by bank holding companies with total consolidated assets of $500 million or more. The Schedule HC-C shows the full breakdown of the company's loans and leases on their balance sheets. The main categories include real estate loans, loans to financial institutions, commercial and industrial loans, loans to individuals, and other loans. [1]

Next, loans and leases as reported in FR Y-9C were converted to the classification system used in the Basel II Accord. Under the Internal Ratings Based approach to Basel II, banks must allocate

[1]The schedule also allocates account balances as domestic and/or consolidated. In order to obtain the individual account balances for all real estate loans, I had to solve for foreign real estate holdings. The foreign real estate was only included in the total consolidated figure for real estate loans. Therefore, foreign real estate can only be found using the total consolidated loans secured by real estate and subtracting the sum of all loans secured by real estate in domestic offices. This process allows the total loan values to equal the BHCs' total consolidated loans and leases as reported.

their exposures into different classes of assets with different underlying risk characteristics. Unlike the classification system used for loans in the FR Y9-C reports, loans and leases made according to Basel II are categorized by five main groupings: corporate, sovereign, bank, retail, and equity. Beyond the five main classes, the corporate asset class is divided into five sub-classes, and the retail asset class is separated into three separate sub-classes. The FR Y9-C loan categories can be mapped into the following eight Basel II categories:

Retail Mortgage:
- ✓ Revolving, open-end loans secured by 1-4 family residential properties and extended under lines of credit
- ✓ Closed-end loans secured by 1-4 family residential properties

Qualified Revolving Retail Exposures:
- ✓ Credit card and other revolving credit plans

Small and Medium Enterprise Retail:
- ✓ Loans to finance agricultural production and other loans to farmers
- ✓ Lease financing receivables

Other Retail:
- ✓ Other consumer loans including single payment, installment, and all student loans

Wholesale Corporate:
- ✓ Commercial and industrial to U.S. and non-U.S. addresses (domicile)

Wholesale Bank:
- ✓ Loans to U.S. banks and other U.S. depository institutions
- ✓ Loans for purchasing and carrying securities
- ✓ Loans to foreign banks
- ✓ All other loans to financial institutions

Wholesale Sovereign:
- ✓ Loans to foreign governments and official institutions

Small and Medium Enterprise Corporate:
- ✓ Construction, land development, and other land loans
- ✓ Commercial real estate loans secured by non-farm non-residential properties, multifamily residential properties, or farmland
- ✓ Foreign real estate holdings

The next step was to determine the estimates for the three main variables in the required capital formula under Basel II: the probability of default, the loss given default, and the exposure at default. Probability of default is the chance that a given loan will enter into default before it reaches maturity expressed in the form of a percentage. Loss given default is defined as the portion of the initial loan balance that will not be recovered if the borrower defaults on the loan. To correctly calculate the probability of default for the different asset classes requires knowledge of the number of loans that went into default for the given period and prior periods compared to the total number of loans outstanding of a given type. Unfortunately, all of the financial statement data on the FRY-9C forms are account balance totals. No information is provided on individual loans.

Fortunately, the Fifth Quantitative Impact Study conducted by the Bank for International Settlements on 382 banks worldwide estimates the PD and LGD for each sample BHC (BIS, 2006.) This impact study was the last trial run of Basel II to evaluate the potential changes in the minimum required capital levels under Basel II; thus, it contains the most recent changes proposed to the accord in June of 2004 prior to its delay because of the economic crisis. The appropriate data to use were those from the weighted-average estimates of PD and LGD across all eight asset classes of the G10 Group 1 because of its relevance to the 11 banks chosen for this study. Exposure at default (EAD) was set at the total value of the loans and leases for each of the asset classes. The estimates of PD and LGD gathered from the Fifth Quantitative Impact Study were used for each of the 11 BHCs in the sample and are shown in Table 2.

Table 2. Estimates of PD and LGD for G10 Group 1 Banks from QIS5

	Retail			
	Retail Mortgage	Qualifying Revolving Exposure	Other	Small and Medium Enterprise
Loss Given Default (LGD)	20.3%	71.6%	48.0%	46.2%
Probability of Default (PD)	1.17%	2.95%	3.45%	2.99%

	Wholesale			SME Corporate
	Corporate	Bank	Sovereign	
Loss Given Default (LGD)	39.8%	40.9%	33.3%	35.0%
Probability of Default (PD)	0.99%	0.27%	0.12%	2.10%

A key determinant of the riskiness of an asset is its sensitivity to adverse economic events. The formula for calculating required minimum capital for Basel II requires a systemic correlation factor which measures the relationship between different types of loans and some unspecified adverse event. For instance, imagine that a bank has two loans outstanding with a value of $50,000 each. The first loan is to a blue-collar worker with no savings, and the second is to a local businessman with a large net worth. If the economy turns for the worse, the blue-collar worker is more likely to lose his job and be forced to default on the loan despite all attempts to pay it off. Although still affected by the economic downturn, the local business person is more likely to repay the loan.

This sensitivity to outside factors could also be based on the type of asset or other factors. While the formula for the systematic correlation factor is similar for all bank exposures, the ranges of correlations differ between retail and non-retail exposures. For corporate, bank, and sovereign exposures, the maximum and minimum correlations are set at 0.24 and 0.12, respectively. However, for retail exposures, the systematic correlation factors range from 0.03 to 0.16. For results between the maximum and the minimum, the correlation for each asset class differs because of the use of the historical average probability of default as the sole input in the formula. The higher the average probability of default, the lower its systematic correlation will be, and vice versa. For example, if a loan has an extremely high probability of default, the external factors cannot increase the chances for default much higher than they already are; therefore, the correlation factor will be lower. For retail mortgages and qualifying revolving retail exposures, the correlation factors are given as 0.15 and 0.04, respectively, without the use of a formula.

Correlation (R) for corporate, soverigh, or bank exposure =
$0.12 \times (1 - EXP(-50 \times PD)) / (1 - EXP(-50)) + 0.24 \times [1 - (1 - EXP(-50 \times PD)) / (1 - EXP(-50))]$

Correlation (R) for retail exposure =
$0.03 \times (1 - EXP(-35 \times PD)) / (1 - EXP(-35)) + 0.16 \times [1 - (1 - EXP(-35 \times PD)) / (1 - EXP(-35))]$

The final components in capital formula for non-retail exposures are the maturity adjustment and average maturity. The weighted-average maturity of all loans except the residential mortgage loans were obtained from Schedule RC-C of the Federal call reports for each of the BHCs. The problem is that call reports are done on the bank level and not by the bank holding company. Consequently, each BHC was matched with its national- and state-chartered banks. Schedule RC-C of the call report divides residential mortgages and other mortgages into the following maturity brackets: three months or less, three months to a year, one to three years, three to five years, five to fifteen years, and over fifteen years. A weighted-average formula was then created to compute the average remaining maturity of non-residential mortgages to be used in the maturity adjustment, which only applies to non-retail exposures. The formula used the median of each of the maturity brackets times the value of the loans in that bracket. The next step was to take the sum of the brackets and divide that value by the sum of all of the brackets to end up with the weighted-average maturity of all loans for that type. Under Basel II, the maturity adjustment is calculated using the following formula:

Maturity adjustment (b) = (0.11852 – 0.05478 × ln (PD)) ^2

Last, the required minimum capital ratio for each BHC was determined by using the formula and these inputs: PD, LGD, EAD, correlation factor, maturity adjustment, and average maturity. As a reminder, the maturity portion of the formula is only used for corporate, bank, and sovereign bank exposures.

Capital requirement (K) = LGD × N [(1 - R) ^ -0.5 × G (PD) + (R / (1 - R))^0.5 × G (0.999)] - PD x LGD

Capital requirement (K) = [LGD × N [(1 - R) ^-0.5 × G (PD) + (R / (1 - R))^0.5 ×
w/ maturity adjustment G (0.999)] – PD x LGD] x (1 - 1.5 x b) ^ -1 × (1 + (M - 2.5) × b)

To find the actual dollar value of required capital, the required capital percentages were simply multiplied by the EAD to calculate the actual capital required under Basel II for each loan type. To illustrate, the required capital calculated for a consumer loan is 5.5%, and the loan value is $20,000. Since EAD equals the value of the consumer loan, the required capital is $1,100 or 0.055 x $20,000. Then, the required capital was totaled for each asset class to determine the amount of capital under Basel II based on previous assumptions to be held for each bank holding company. Remember that the required capital is only the capital to be held against the loans and leases of the BHCs.

In order to find the estimated amount of total regulatory capital, the difference between the estimated capital held against loans and leases and the actual capital held had to be calculated and then subtracted from the total regulatory capital the bank holding company held as of December 31, 2006, under Basel I regulations. Even though the consolidated financial statements clearly stated the total regulatory capital held as of December 2006, the capital being held only against the loans and leases was needed. The actual risk-weighted assets held against loans and leases were multiplied by the total risk-based capital ratio. This allowed the most direct comparison between the real capital being held against loans and leases and the estimates resulting from the research. To get the actual capital held, Schedule HC-R of the FR Y9-C for the BHCs was used to find the total risk-based capital. The following demonstration shows the steps to calculate the estimated amount of total regulatory capital for Bank of America Corporation.

1. Calculate the risk-weighted assets of the loans and leases
2. Multiply the risk-weighted assets ($) by the total risk-based capital ratio:

   RWA x TRBC = Capital LnL
   560,812,349 x 11.88% = 66,624,507

3. Subtract the actual capital from the estimated capital held against loans and leases:

   Actual Capital LnL – Estimated Capital LnL = Difference Capital LnL
   $ 66,624,507 – $ 33,334,731 = $ 33,289,776

4. Subtract the difference in capital for loans and leases from the actual total capital:
   Actual Total Capital – Difference Capital LnL = Estimated Total Capital
   $ 125,225,775 – $ 33,289,776 = $ 91,935,999

In order to calculate the estimated risk-weighted assets according to the estimate of Basel II capital derived in this study, the capital was divided by the total risk-based capital ratio. First, eight percent was used as the TRBC because it is the minimum level acceptable under Basel II. Next, the risk-weighted assets were calculated based on the risk-based capital ratio unique to the bank holding companies as of December 31, 2006. For all 11 institutions, the ratios were higher than the required ratio of eight percent, resulting in an even lower figure for risk-weighted assets.

After completing the estimations of required capital and risk-weighted assets under the Basel II, the actual data from the bank holding companies for comparison were looked up. Schedule HC-R Regulatory Capital gives loan and lease value totals and allocates them to the correct risk-weight bucket. Therefore, to calculate the actual risk-weighted assets for the BHCs as of December 31, 2006, the values for each bucket were multiplied by the corresponding risk weight and added together to get the total risk weighted assets (BIS, 2005.) However, the total reported capital must also be equal to the sum of loans and leases held for sale and loans and leases, net of unearned income, as reported in Schedule HC: Consolidated Balance Sheet. Hence, the same calculation was performed for both the loans and leases, net of unearned income, and the loans and leases held for sale. The need for this calculation was particularly evident when it became apparent that some institutions had a majority of their loans and leases classified as held for sale. An important note is that, even though an institution may be attempting to sell loans, it still controls the loans. The bank holding company is still required to hold the capital against the loans just as if they planned to hold them in portfolio.

Results

Based on the results of this study, Basel II would have made banks even more vulnerable to the financial crisis had it been adopted earlier. Consequently, the procrastination in implementing Basel II benefited both the banking industry as a whole and the federal government. Among the 11 bank holding companies,

total capital could have decreased by more than $170 billion under Basel II compared to the actual capital being held. The decrease would have amounted to a 29.7% decrease in total capital and a 52.9% drop in capital held against loans and leases, both on a weighted-average basis. For example, Citigroup Inc., the largest BHC as of December 2006, held $68.1 billion in capital against its loans and leases. According to the calculations, Citigroup Inc. could have held as little as $31.3 billion in capital against its loans, a decrease of 54.1%. Overall, the 11 banks held $321.3 billion in capital against their loans and leases compared to the $151.3 billion minimum capital that was calculated under Basel II.

For total capital held, the differences between the actual and the estimates under Basel II remain the same as those from the capital held against loans and leases. This similarity is due to the fact that Basel II applies only to the calculation of required capital in a BHC's loan and lease portfolio. However, the percentage changes in total capital still illustrate the degree to which the banking industry would have suffered further during the recent economic crisis. Wells Fargo, for example, had total capital of $51.5 billion at year-end 2006. Even today, banks are still struggling with new foreclosures and high loan losses. Just imagine how much worse off Wells Fargo would be today if it had held only $30.1 billion in capital, as calculated using the Basel II formula for required capital. This picture would have been the same for virtually all banks that would have adopted Basel II prior to the economic crisis. All of these BHCs would have run out of capital much sooner than they actually did. The complete statistics for capital held against loans and leases, total capital, and risk-weighted assets for all 11 BHCs are presented in Tables 3 through 5 at the end of this paper.

Conclusions

The second Basel Accord was intended to promote a more forward-looking approach to capital supervision, one that would encourage banks to identify the risks they may face, today and in the future, and to develop or improve their ability to manage those risks. Despite this intent, Basel II definitely has major flaws. The main flaw is its reliance on historical data in determining a BHC's level of credit risk. The present study shows without question that Basel II needs to be adjusted to be more conservative. Although there is nothing inherently wrong in financial institutions' wanting to hold a minimum amount of capital and not one cent more than needed, it does leave the banking industry more vulnerable in times of economic downturn, as the past several years have shown. Fortunately, now that history has clearly demonstrated that there is more risk than previously thought, the implementation of Basel II is somewhat self-correcting. The key internal estimates made by each BHC will be altered to be more conservative, thus hopefully providing a safer financial position for the banking industry in the years to come. Nevertheless, a portion of the change should come from changes to the Basel Accord and its formulas. Indeed, regulators are currently preparing what some are calling "Basel III" to be released by year-end 2010. (BIS, 2009.)

Table 3. Capital Held Against Loans & Leases ($000s)

	Actual Capital	*Hypothetical Basel II Capital*	*Percent Change*
Bank of America Corporation	*66,624,507*	*33,334,731*	*-49.97%*
Barclays Group US, Inc.	*1,730,225*	*730,694*	*-57.77%*
Citigroup, Inc.	*68,060,733*	*31,248,100*	*-54.09%*
Countrywide Financial Corporation	*8,177,335*	*2,828,537*	*-65.41%*
HSBC North America Holdings, Inc.	*27,355,553*	*10,847,357*	*-60.35%*
JPMorgan Chase & Co.	*49,903,491*	*20,318,755*	*-59.28%*
SunTrust Banks, Inc.	*12,125,812*	*6,964,409*	*-42.57%*
Taunus Corporation	*-1,287,955*	*1,450,179*	*-212.60%*
US Bancorp	*16,538,133*	*7,636,451*	*-53.83%*
Wachovia Corporation	*34,867,305*	*20,072,791*	*-42.43%*
Wells Fargo & Company	*37,184,413*	*15,845,438*	*-57.39%*
Total	*321,279,550*	*151,277,443*	
Equally weighted percent change in capital			*-68.70%*
Weighted average percent change in capital			*-52.91%*

Table 4. Total Capital ($000s)

	Actual Capital	Hypothetical Basel II Capital	Percent Change
Bank of America Corporation	125,225,775	91,935,999	-26.58%
Barclays Group US, Inc.	3,491,551	2,492,021	-28.63%
Citigroup Inc.	123,260,000	86,447,367	-29.87%
Countrywide Financial Corporation	17,031,228	11,682,430	-31.41%
HSBC North America Holdings, Inc.	38,338,644	21,830,448	-43.06%
JPMorgan Chase & Co.	115,265,000	85,680,264	-25.67%
SunTrust Banks, Inc.	18,024,866	12,863,463	-28.63%
Taunus Corporation	-3,776,000	-1,037,865	-72.51%
US Bancorp	24,495,000	15,593,318	-36.34%
Wachovia Corporation	60,194,000	45,399,487	-24.58%
Wells Fargo & Company	51,427,000	30,088,025	-41.49%
Total	572,977,064	402,974,957	
Equally weighted percent change in capital			-35.34%
Weighted average percent change in capital			-29.67%

Table 5. Risk-Weighted Assets of Loans and Leases ($000s)

	Actual Risk-Weighted Assets	Hypothetical Basel II Risk-Weighted Assets	Hypothetical Risk-Weighted Assets @ 8% RBC
Bank of America Corporation	560,812,349	280,595,381	416,684,141
Barclays Group US, Inc.	15,097,947	6,376,043	9,133,681
Citigroup, Inc.	584,212,300	268,224,032	390,601,247
Countrywide Financial Corporation	63,885,430	22,097,947	35,356,716
HSBC North America Holdings, Inc.	245,561,518	97,373,047	135,591,968
JPMorgan Chase & Co.	405,060,800	164,924,958	253,984,435
SunTrust Banks, Inc.	109,143,221	62,685,948	87,055,111
Taunus Corporation	33,280,500	-37,472,332	18,127,241
US Bancorp	131,463,700	60,703,110	95,455,640
Wachovia Corporation	307,743,200	177,164,972	250,909,892
Wells Fargo & Company	297,475,300	126,763,501	198,067,970
Total	2,753,736,265	1,229,436,608	1,890,968,043
Weighted average percent change in RWA		-55.35%	-31.33%

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Mentor comments: Dr. Tim Yeager has nothing but praise for Bart Simmons' independence and planning in executing this important piece of research.

In October 2008, the largest U.S. banks such as Citigroup and Bank of America were on the brink of failure threatening to pull the economy into a full-blown depression. Just a few years before, regulators were so impressed with the health and stability of the banking system that they began a process called Basel II to reduce the amount of capital banks were required to hold to protect against failure. The implementation process dragged on for several years so that, even now in 2010, Basel II has never been put into effect. Had Basel II been in place on the eve of the financial crisis, how much less capital might banks have held, and consequently, how much worse might the crisis have been? Bart Simmons was an undergraduate Finance and Accounting major in my advanced banking course when we discussed Basel II. He immediately identified this as a research topic that was difficult and complicated enough to interest him, and he approached me about doing his thesis on this important topic. I don't know of any other research by students or professors alike that explores this issue. Like most students, Bart set aggressive deadlines for working on his project. Unlike most students, he met or exceeded those deadlines. Bart worked independently on his research, including making his way through complex statistical formulas. With little guidance from me, he constructed and completed his empirical tests. When it came time for writing up the results, Bart put together a draft of which many of my PhD students would be proud. I worked with him to polish up the rough edges, but he had clearly articulated his research question and methodology, and described the results. Bart found that procrastination does indeed pay sometimes because delays in implementing Basel II allowed the banking system to have more capital than it would have had otherwise. Bart also knows that procrastination does not pay when it comes to conducting thorough and high-quality research. He proved that as well with his timely and diligent efforts on this important topic.