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## **The Definition of Bank and the Subprime Mortgage Crisis: Tying Bank Regulation to Banks' Risk-Return Trade-offs in the 21<sup>st</sup> Century**

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**Abstract:** Following the onset of the August 2007 subprime mortgage crisis, bank regulators suggest that the old definition of bank may be too narrow – that banking has partially escaped their purview. Perhaps, but this may be partly the regulators' own doing. We develop this proposition through identification of a measure of differences among global financial institutions that drives a bank-specific risk priced by bank shareholders. We find the most profitable banks are also the least regulated. Yet we find that the least profitable regulated banks in our sample were the most exposed to hazards related to the first subprime mortgage crisis. Thus the risk bared by the subprime mortgage crisis was different from the rent-generating risk associated with profitable banking. Our proposed resolution to this conundrum distinguishes between opaque rent-generating risks taken by profitable private institutions, and transparent taxpayer-subsidized risks taken by large banks that are thinly disguised wards of the state.

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# The Definition of Bank and the Subprime Mortgage Crisis: Tying Bank Regulation to Banks' Risk-Return Trade-offs in the 21<sup>st</sup> Century

Kurt Dew

## 1. Introduction

A debate looms over the meaning of the word 'bank.' The debate will, if fruitful, lead to a reduction in the growing disparity between profitable bank activities and *de jure* bank regulated activities. We find evidence that supports a broader scope for bank regulation and a change to the regulatory mandate.

First we ask what activities require regulation, and then contrast them with the activities receiving regulation. There is a troubling disparity between the two. To answer the first question, where is regulation needed, we identify a source of substantial bank risk and return unrelated to market risk. We find that the existence of this source on future bank stock market performance can be identified well in advance of its effects. (Here we show evidence that these risks are identifiable up to four years in advance.)

To look for evidence of banking risk assumption, we compare broad variations among banks' financial reports. Having identified which institutions appear to take this risk, we ask whether they bear a heavier regulatory burden than those with less bank-specific risk. Importantly, we find that institutions most exposed to this risk successfully seek to avoid bank regulation. Regulated institutions, on the other hand, tend to derive low returns from low exposure to this source of risk.

Yet, surprisingly, this unique banking risk was not related to the risk that was associated with the subprime mortgage crisis. Indeed, the banks that took the largest subprime mortgage crisis losses were among the institutions least exposed to our measure of banking risk. Indeed these losses were inversely related to our measure of profitable bank risk-taking.

Put another way, the banks making long-term profits from the assumption of long term banking risks both avoided the risks associated with the subprime mortgage crisis and avoided bank regulation. Which brings us to the question: was regulation itself part of the mechanism by which banks became exposed to the subprime mortgage disaster?

We present evidence that a substantial portion of these losses resulted from regulatory subsidies of bank risk-taking. Thus these losses were in part the result of a failed attempt by regulators to subsidize the risk-taking of their least profitable, most regulated charges. The suggestion is that banking regulation has become a subsidy of the most poorly managed banks, encouraging inefficient risk-taking in the banking system. Banks taking efficient, profitable risks avoid regulation that blocks the assumption of new risks that regulators don't understand. Banks trapped by the past conspire with regulators to manufacture disguises for the same old risks that have long ago ceased to produce long-run profits. But these disguises grow ever more obvious.

One would expect productive banking risk might well be the result of the creative rent-producing activities of the most profitable banks. But this presents the student of banking risk with a major identification problem. If innovation is at the heart of profitable bank risk-taking activities, these activities would possibly be shrouded in trade secrecy and might thus not be identifiable directly – that is, they may be opaque. We therefore attempt to find indirect measures of bank commitment to profitable risk-taking. We look for differences among banks in financial accounting behavior. In particular we ask if “extreme” banks, those that deviated from average behavior, are extreme because they must behave differently to innovate. We find that this approach successfully identifies an important risk-return trade-off .

Thus accounting data can be used to develop an index that predicts our identified banking risk-return trade-off well in advance of the actual bank stock performance being predicted during the post-2000 sample that is our focus. This index is thus likely to be correlated with underlying unidentified profitable risk-taking activities of banks.

These results enable us to approximately rank the banks' appetite for this form of risk. But our results do not permit us to identify the actual risks these more profitable banks are taking. We doubt that seeking to identify the actual risks being taken is likely to be fruitful. Indeed, it may be self-defeating. If the innovations producing profitable risks and returns by healthy banks are valuable intellectual property that cannot be protected from imitation from other institutions, revealing the risky activity will destroy its economic rents in the following rush of imitators.

The implications of the inability to identify these risky profitable banking activities for appropriate regulation are simple and profound. Unless our indexes can be tied to specific rent-generating activities of banks, *ex ante* risk management rules will restrict or encourage activities that were important in the past, at the expense of activities important in the future. They must then inevitably place restrictions on banks that have little to do with their now profitable activities and risks or worse – unintentionally curb banks' profitable activities, encouraging instead less productive risks. The banks' need to protect profitable trade secrets and to avoid regulatory constraints might necessitate the departure of profitable institutions from the regulatory system.

This departure might in turn have undesirable side effects. A prominent example is current regulations governing required capitalization of off-balance-sheet variable interest entities. These regulations in particular were designed, with help

from bank regulators, to subsidize risk-taking by banks off-balance sheet that exceeds the risk banks are permitted to take on the balance sheet. This is an example of regulatory subsidy of risk-taking. It is “exhibit one” in the case for a change in the way banks are regulated.

In what follows we present first the evidence of banks escaping regulation and of regulators seeking to regain control of the system. We then argue that the transparency of the contractual creation and destruction of banking assets creates a fundamental difference between the opportunity to identify bank profitability and non-bank profitability. We identify an important risk/return trade-off associated with a measure of bank operating activities constructed from bank financial reporting values. Having identified a source of profitable risk-taking, and also having identified which banks are prone to this risk, we seek to compare the banks who take this risk to those affected by the subprime mortgage crisis. We show that the crisis resulted in large part from a regulatory subsidy of unproductive risk-taking by regulated banks. The subsidy in question was the negligible capital required of banks in support of mortgage conduits and other off-balance sheet variable interest entities, a prominent source of the first subprime mortgage crisis. Finally we consider possible implications for bank regulation.

## 2. Regulation-Avoiding Banks

Some financial institutions now appear to believe the designation “bank” has a negative market value. Examples abound. Most blatantly, in August, 2007 after the onset of the subprime mortgage crisis, Macquarie Bank announced its intention to form a holding company in order to move its investment banking activities from the bank to a newly formed non-bank subsidiary. At first glance, this might appear to be Australian imitation of the “U.S. Model” – holding companies with bank subsidiaries.

Nothing could be further from the reality. Macquarie's reason is not the historical U.S. reason for holding company formation in the banking business. The historical reason was to bring activities not permitted to banks with presumed banking synergies into the bank's profit tent. Macquarie is seeking a different result. This new holding company will be formed for the purpose of separating activities already permitted to Australian banks from the banking entity. Macquarie's stated intent is to avoid bank regulatory impact on its activities. The global commercial banks intending to finance this restructuring believe a reorganized Macquarie Holdings to be worth \$A8 billion more than the old Macquarie Bank, in spite of Macquarie's assurance that there will be no change in business activities or management.

Another example is Blackstone. In the prospectus associated with its initial public offering, Blackstone avoids the designation "financial institution," eschewing the label "investment bank" as well. Thus replacing "bank" with "financial institution," as the texts have done long ago, won't eliminate the problem of definition-induced tunnel vision. The minority limited-partnership status of Blackstone's public holders of shares, called "units," assures shareholders that they will have neither decision-making responsibilities of any kind nor any knowledge of Blackstone's activities other than the bare minimum required by law. Does Blackstone's opacity enhance the value of its shares? It might if investors believe that disclosure would reduce the economic rents flowing from Blackstone's otherwise opaque trade secrets.

Thus there may be incentives for some institutions to avoid banking regulation, with at least two prominent avoiders who have highly profitable recent histories. However, institutions may have a reason to reconsider avoiding the name "bank." Changing names in order to avoid regulation may not be a successful long

term strategy. The world's financial regulatory system may simply adopt a broader definition of the term. "Bank" is easy to say, and if bank is defined usefully, Macquarie Holdings and Blackstone are banks – like it or not. The public is not fooled by the name change, and a corporate plea to "trust me" without a regulatory string attached has lost its public appeal in this age of frequent corporate criminality.

### 3. Bank-Seeking Regulators

On the other side of this dispute, bank regulators complain of the limits placed on their powers. Axel Weber, President of the German Bundesbank, in a September 1, 2007 speech to attendees at the annual Jackson Hole Central Banking Conference, pointed to the collapse in asset values of many bank-affiliated mortgage conduits that were "outside the regulated banking sector." He noted that this non-banking source produced a subprime mortgage disaster that had the characteristics of a classic banking crisis. The suggestion is that if these companies had not escaped regulation, the crisis would not have occurred or would have been better managed.

In his October 16<sup>th</sup>, 2007 speech at Georgetown University Law Center, Treasury Secretary Hank Paulson provided the first indication that U.S. bank regulators are planning specific regulatory reforms. He said, "We [The President's Working Group] will examine ... finally, how our long-standing regulatory structure and tools respond to today's continuously evolving financial system." But he also stated,

The real irony [of the mortgage crisis] is that the material problems arising in recent months were in regulated institutions in certain markets. Many regulated institutions, both in the U.S. and elsewhere, appear not to have fully appreciated all of the risks associated with the securitized assets on their balance sheets or the many risks associated with commitments to provide liquidity to off-balance sheet vehicles, such as conduits and structured investment vehicles. (Paulson, 2007)

It would be easy to conclude from Weber's and Paulson's remarks that the inappropriate assumption of risks by banks in creating mortgage conduits came as some surprise to regulators, an act of the banks' doing perhaps. But this conclusion is contradicted by the actual historical development of the mortgage conduit. In reality, bank regulators were intimately involved in the process by which off-balance sheet mortgage conduits have come to thrive today.<sup>1</sup> The mortgage conduit survived Sarbanes Oxley-related rule-making in 2003 due to lobbying on the behalf of off-balance sheet conduits by bank regulators. The survival of the mortgage conduit followed changes to the final version of the accounting rules, FIN 46R, designed to implement Sarbanes Oxley, following the bank regulators' opposition to elimination of regulatory subsidies, as proposed in the draft version, FIN 46 (ABA, 2003; FDIC, 2005.)

Indeed, one "innovative" creation of the final set of accounting rules was the expected loss note, a new security designed by regulators expressly to meet a regulatory mandate. The mandate to create expected loss notes was the result of a compromise between U.S. bank regulators and the accounting profession that kept the mortgage conduit alive in the U.S. and Canada. Mortgage conduits outside North America do not require the "protection" of the expected loss note. We will show that the expected loss note is a regulatory g-string devised by American bank regulators because, as Citibank CEO Charles O. Howell III so aptly put it a few weeks before the crisis, "... as long as the music is playing, ya gotta keep on dancin'" (*Financial Times*, 2007), even if full nudity is only permitted in Europe. Thus in spite of the abuses of Enron, and the abuses associated with off-balance-sheet entities, the conduit

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<sup>1</sup> This section and the later summary of the relationship between our ordering of bank risk and exposure to the subprime mortgage crisis relies heavily on the work of Bens and Monahan (2007). However, all errors remain my responsibility.

lived on, perhaps because of competition between European and North American bank regulators.

Will regulators chastened by the crisis pass new rules closing the mortgage conduit loophole, solving the problems of the banking system? Interestingly, there appears to be a relatively high likelihood that the market will resolve this issue simply by refusing to buy the commercial paper liabilities of the conduits. It appears possible the market will reject the liabilities of the other variable interest entities as well, ending the suspense over the answer to the regulatory question, “Will bank regulators bail out any liability of a large bank subsidiary, even if the bank has no legal commitment to support it?”<sup>2</sup>

An alternative to changing the rules is to move away from rules-based regulation. The U.K. style of regulatory dialogue removes the option to play games with the rules that the mortgage conduit exemplifies. The regulator can say to the regulated, “I hold you responsible, period.” The elected can say the same thing to the regulator, and the electorate, to the elected. The expression “True and fair” may be vague in implementation before the fact, but it is clear in interpretation after the fact, if the penalties for recklessness fit the crime. We will argue that *ex ante* regulation is self-defeating in the business of banking.

A broader definition of the word “bank” would not be without possible beneficial disciplinary impact on bank regulation as well. One effect would be to clarify the existing regulatory realities. It would be useful to shine the light of public scrutiny on the fact that bank regulators have expanded their purview over the past 10-15 years. An expanded definition of bank would provide the public with a more accurate description of the existing objectives of prudential financial regulation, as

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<sup>2</sup> See Section 8 for the most current version of our analysis of these unfolding developments.

governments have thrown their implicit financial safety net over nonbank institutions such as hedge funds and the commercial paper that funds mortgage conduits. An expansion of the scope of the term bank would lead to a more appropriate meaning of the expression “bank regulator” as well. Thus the *de facto* regulatory purview would no longer contrast with the *de jure* regulatory purview. Responsibility for banking crises might then be moved closer to where responsibility belongs. These considerations favor the broadest possible definition of bank – in particular, one that can neither be avoided by essentially financial institutions nor offer up excuses for regulatory failure.

#### 4. What is Different about a Bank?

Any economic entity is, in its financial textbook essence, a web of contracts. A bank, as we would have it, is different from a non-bank because of contracts on the asset side of the balance sheet. In other words, we are arguing for the traditional textbook definition of financial institution, the predominance of financial assets, to provide our definition of bank. This would certainly be an easily implemented way of distinguishing banks from non-banks. And it would satisfy the objective of expanding the class of institutions subject to regulation. The challenge in putting this definition forward is to demonstrate that it provides a compelling regulatory motive and regulatory *modus operandi*. This section pursues these objectives.

##### 4.1. Banks and Being Different Historically

Historically financial institutions have been separated from others is by reference to the unique hazards to which other economic actors are subjected by the very existence of banks. Reasonably, the focus has been upon bank liability-holders, as they are the investors confronting the hazards of banks most directly.

However it is difficult to distinguish a bank liability from a non-bank liability with the sole exception of bank deposits. Thus, the natural focus has been on exposure of deposits. Their exposure is typically to bank liquidity or asset valuation problems, although a number of other reasons for “differentness” may be found in the literature (c.f. Saunders, et. al. 2006, Chapter 1).

However, deposits are a shrinking share of total financial institution claims and the relationship between government deposit insurance protection and the regulatory mandate is becoming foggier. Australia, for example, has no deposit insurance and seemingly has been unaffected by this reality in recent decades. Yet the U.K. appears to be in the process of a very disorderly retreat from its relatively new “co-pay” system of partial deposit insurance to 100% coverage of all insured depositors. Indeed, the intent seems to be to protect all liability-holders, including commercial paper holders in the case of Northern Rock. The collapse of the second tier British bank has British banking regulators offering to finance the bank directly through purchase of the riskiest assets of the bank financed by the issuance of government debt. At a minimum, we can say that the regulatory understanding of the relationship between deposit protection and regulatory burden is in disarray. Bank liabilities provide at best a very uncertain regulatory prescription. The focus is now clearly on banking assets.

The modern bank regulatory literature focuses on moral hazards resulting from implicit regulatory protection of investors as a motive for mitigation of deposit protection. Indeed the U.K. co-pay deposit protection scheme was designed to create depositor incentives to discipline their chosen banks, hopefully reducing moral hazard. But the subprime mortgage crisis has given the lie to governmental claims of a serious plan to permit bank non-equity liability-holders to pay the consequences of

bank moral hazard. The U.K. plan, which has been denounced by nobody at the regulatory level, amounts to governmental assumption of the liabilities of the entire banking system. Worse, there is no indication of governmental intent to manage the risks associated with this assumption of liability more responsibly.

Our argument will not deviate from the moral hazard issue as an important underlying concern in formation of regulatory rule-making. Our contribution responds instead to the possibility that the sources of threats that may require regulatory intervention have become exceedingly difficult to identify. Indeed, we will argue that the attempt to identify them is counterproductive. We further argue that investors requiring protection have diversified their holdings and are adjusting them dynamically at a pace regulators will find impossible to follow. Thus we will look for a broader definition of bank and seek to explain how bank regulation would fit within this new construct, taking account of potential moral hazard issues.

#### 4.2. How Does the Predominance of Financial Assets Affect Bank Regulation?

The answer to this question, if it is to stem from financial analysis, must hinge on the possibility of social costs resulting from a different set of project choices that financial asset managers would select but managers of real assets would not. What are the motives companies have for holding financial assets? We argue the primary motive is expertise in benefiting from their innate transparency. Because the values of bank assets are defined by financial contracts, these asset values cannot be opaque near the time of the transaction creating or destroying them, since every bank asset has a counterparty that has separately estimated asset value. Thus at least one bank outsider has valued each banking asset at some point, present or past.

If “outsider knowledge of asset value” is renamed “transparency of asset value,” the transactions by which banking assets are created and destroyed can be

seen to create both a fundamental opportunity and a fundamental problem for banks. The opportunity created by asset value transparency is liquidity and its by-products. If the market is focused on the value of an asset, it will willingly trade that asset. The disadvantage resulting from asset value transparency is that banks begin with acquisition or sale of a known forecast of cash flow and, without any weapon other than the ability to rewrite the agreements by which that cash flow is dispersed, alter its value through factors such as changes in managerial or investor incentives that result from their re-specification of claimholder rights and obligations.

To accomplish their objective, banks must then convince the market that their original counterparty undervalued the asset sold to the bank, finally capturing the value of this change in market perception by selling the revised obligations to a new counterparty at a greater value. But the source of the increase in valuation may simply be the slim reed of the bank's reputation.

Importantly, the transparency of asset agreements at origination and offset requires banks to disguise the remainder of the transformation process if banks are to be viable in a market environment – that is, if banks are to generate economic rent. The more obvious the process by which the bank opens and closes its contractual positions, the easier these transactions will be to imitate, with the result that any rents associated with the transactions themselves will quickly disappear. Thus rents, if they exist, must be created internally by banks in the course of their activities between transactions.

Banking is a three step process: buy money, do something with the money, sell money. Only the second step produces significant economic rents, due to the transparency of the other steps. Transparency of bank transactions forces an intervening opaque process of asset transformation. It is this opacity during the

interval between asset purchase and sale with its ambivalent implications for society that, as we would have it, makes banks special and drives the appropriate principles of bank regulation.

#### 4.3. The Recent History of Bank Differentness

Financial asset values have become more transparent in recent decades through three developments:

1. The shift of banking balance sheets from wholesale large scale assets to retail assets along with the securitization of these retail assets;
2. Disintermediation by investors, shifting investment away from private agreements such as loans toward market-traded assets such as commercial paper with values reported to the public daily; and
3. Bank regulations designed to pressure banks to provide the public with market values of an expanding class of traditionally book-valued assets.

Market Disclosure is the third of the “three pillars” of the Basel II Conventions being introduced to banking systems around the world (c.f. Saunders, 2002).

Increased transparency resulting from both changing technology and bank regulation is forcing banks to provide more information about asset market values. But if financial institutions are to be permitted to compete with each other, then rent-producing behavior remains a responsibility of banks to their stockholders – one that may be becoming more costly to meet. Providing the market with full information about internal non-transaction innovations is the equivalent of stripping bank shareholders of their intellectual property.

#### 4.4. Identifying Effects of Bank Differentness

Valuable opacity creates the essential paradox in valuing the stock of a financial institution. Its value depends on what you don't see. Put another way, in a

21<sup>st</sup> century bank, current bank asset market values are known with a greater degree of certainty than in the past, but we may have no idea how increased values are produced. It is in this sense that banks are opaque. Quite obviously, there is risk associated with this form of opacity. What an institution is hiding might well be simple fabrication, or worse.

Interestingly then, if we knew how to measure opacity that is productive of economic rents, we would know how to measure its impact on stock prices. It would tend to increase anticipated returns, but there would inevitably be risk associated with it. That is to say, if productive opacity were measured, this measure would be “priced,” in the sense that market risk is priced in CAPM, because it produces a unique return and has associated with it a unique risk. The size of the opacity effect in the model would be directly related to opacity through a factor comparable to CAPM’s ‘beta.’

By definition, opacity cannot be measured directly, but perhaps it can be measured by application of the Heisenberg Principle. Heisenberg’s principle in physics tells us we cannot see small particles, but we can infer their existence and location because the physical system around them behaves differently than it would in the particle’s absence. The case for use of indirect methods of observing banking opacity may actually be stronger in finance than that for using indirect methods for identifying particles in physics. After all, small particles would not actually cease to exist if they were observed, but the rents from opacity would disappear if bank trade secrets were observed.

Like small particles in physics, we cannot “see” bank opacity. So we look for institutional unexplained behavior, and then determine whether financial markets assign value to these behavioral differences. That is, we approach the problem of

measuring the opacity that generates bank uniqueness and importance as a two step process.

- First, we seek a broad measure of the operating characteristics by which banks establish their differences from their competitors.
- Second we demonstrate that this differentness was highly correlated with an unmeasured factor we call opacity that explained a large portion of the long run risk-return trade-off among financial institutions' shares. This risk-return trade-off had very low correlation with long run market index returns.

In other words, we seek an unobserved factor important in identification of bank stock performance that can be measured but not named.

## 5. Finding Opacity

Since we cannot observe this “opacity” directly, we are reduced to asking, “If this factor exists and produces value for stockholders under some circumstances, what telltale properties would a productively opaque bank exhibit?” We expect that important opacity would require an institution to report financial results that are different from those of the average institution.

If such differences were evidence of an **important** source of risk and return, they would not be difficult to identify. Thus we proceed by seeking very broad measures of the systematic differences among institutions in the accounting data. Our estimate of opacity, by analogy to the Heisenberg Principle, is the systematic deviation of individual institution financial reporting results from the normal sample averages. The logic is that productive opacity won't come without a cost, and since the average institution cannot produce economic rent in competition by definition of rent, the cost in question must not be borne by the average institution. Thus

institutions with productive opacity bear the burden of reporting aberrant financial results. They cannot produce unusual returns without exhibiting unusual behavior.

Our putative measure of bank relative opacity is the deviation of individual institution financial reporting data from the mean of bank reporting values for our entire sample. We seek a general measure of opacity. Our estimated opacity measure is a measure of the difference (in the sense of explaining the covariance) between the important characteristics of the institution being graded for symptoms of opacity and the sample of institutions as a whole.

In choosing the variables characterizing institutional behavior, we therefore use a broad brush. We excluded government-determined variables such as taxes and capital. We included loans, total assets, deposits and trading assets. If we had removed any one of these and added investments held to maturity we would have gotten similar results due to the balance sheet accounting identity. Non-earning assets were included in one ranking exercise without producing a significant difference in ranking outcome. We considered income statement numbers at a similar level of generality, using interest income, net interest income, trading profits, personnel expenses and operating expenses other than personnel expenses. Several alternatives, such as the ratio of personnel expenses to employees and other operating income were considered as well without a significant effect on results. The choice among these alternatives had no substantial effect on our institutional rankings or on the relationship of our innovation rank to long run profitability. Thus our measures of estimated opacity are apparently not dependent on actual accounting values used, as long as values relevant to broad differences among banks were chosen.

This is not particularly surprising. An implication of our theory is that there should be nothing particularly unique about our identifier of estimated opacity. If

different financial reporting variables that are equally important to the operations of the institutions and related to the systematic differences between institutions are used, a similar decomposition of the covariance ought to produce an equally valid measure of estimated opacity.

Our results show that although estimated opacity is not identified by any single financial reporting entry, it is possible to construct robust measures of estimated opacity from financial reporting data found in annual reports. More interestingly, we find **every** measure of estimated opacity that we considered provided a similar opacity ranking of the sample banks. We find that much (about 50% in 2006) of the covariance of estimated opacity-defining characteristics is captured by a single opacity rating, a linear combination of financial reporting statistics that separates the unusual institution from the average one, and that this measure of opacity is very persistent over time. If an institution shows high estimated opacity in one year, it shows high estimated opacity in every year of the sample period by this measure.

### 5.1. Who is Opaque?

Table 1 provides our sample of banks, listed by headquarters country. We wanted to expand the universe of financial institutions beyond those headquartered in the United States while limiting ourselves to institutions serving a global clientele. We limited ourselves to other common law compliant countries, all of which, except the U.S., are characterized by relatively few large financial institutions. We used the nine largest institutions in the United States (one of the ten largest is HSBC, headquartered in the U.K. and therefore already in the sample.) We also included Blackstone in our 2006 ranking, since their IPO gives us an opportunity to examine accounting data that had intentionally been hidden from public scrutiny before

August, 2007. This gives us insight into the relationship between explicit opacity and our measure of estimated opacity. Are they closely related?

Table 1: Financial Reporting Data

Value
Total Assets
Customer Loans Net of Loan Loss Reserves
Trading Assets
Deposits Due to Customers (individuals, corporations and governments, excluding banks)
Net Interest Income
Other Operating Income (including both commissions and trading gains)
Personnel Expenses
Operating Expenses Other than Personnel Expenses

\* The values from financial reports used in constructing the measure of institutional propensity to innovate

Table 2 displays the estimated opacity ranking of our sample banks based on 2006 Annual Reports of the sample banks. (The Blackstone opacity estimate comes from their prospectus.) As the ranking makes clear, Blackstone was opaque by both the SEC's definition and ours. We identified extremal institutions as those with the highest **absolute values** of the product of the first eigenvector with the accounting values of each institution. That is, both extremes of the distribution of those accounting values were considered important in explaining institutional covariance. The principle is that being different matters for institutional opacity more than the particular form of differentness.

Table 2: Adjustments to Financial Reporting Variables

Natural Logarithm of Total Assets	logA
Ratio of Loans to Total Assets	LA
Ratio of Trading Assets to Total Assets	Trading
Ratio of Customer Deposits to Total Assets	DA
Ratio of Net Interest Income to Total Assets	NIIA
Ratio of Other Operating Income to Total Assets	OOIA
Ratio of Personnel Expenses to Total Employees	PEA
Ratio of Other Operating Expenses to Assets	OEA

\*Adjustments made to annual report values to adjust for non-normality, size-related correlation and differences in variable magnitudes. Second column provides symbols for variables used in following tables.

Table 3 provides the ranking of bank opacity constructed from 2006 Annual Report figures from the sample banks.

Table 3

Opacity Rankings and Values for Sample Banks Based on 2006 Annual Reports (Prospectus for Blackstone)		
Banks	Rank	Opacity Value
Babcock and Brown	1	7.37
Blackstone	2	3.75
Wells	3	3.32
Lehman	4	2.40
Goldman Sachs	5	2.22
Morgan Stanley	6	1.73
Macquarie	7	1.59
Merrill	8	1.58
ANZ	9	1.55
WestPac	10	1.34
Bank of America	11	1.31
Commonwealth	12	1.25
Wachovia	13	1.24
Bank of Nova Scotia	14	1.13
National Australia Bank	15	1.08
Standard Chartered	16	1.04
HSBC	17	0.98
HBOS	18	0.92
Allied Irish	19	0.90
Royal Bank of Scotland	20	0.86
Toronto Dominion	21	0.69
Citibank	22	0.64
Bank of Montreal	23	0.61
Bank of Ireland	24	0.50
Canadian Imperial	25	0.49
Lloyds	26	0.48
JP Morgan	27	0.42
Barclays	28	0.19
Royal Bank of Canada	29	0.18
National Bank of Canada	30	0.11

Table 4 presents the covariance matrix of the various banks' accounting value differentials in the 2006 year.

Table 4: Correlation Matrix

	LogA	LA	Trading	DA	NIIA	OOIA	PEA	OEA
LogA	1.000							
LA	0.121	1.000						
Trading	0.308	-0.604	1.000					
DA	0.134	0.733	-0.265	1.000				
NIIA	0.400	0.760	-0.362	0.753	1.000			
OOIA	-0.653	-0.539	-0.182	-0.532	-0.567	1.000		
PEA	-0.499	-0.465	0.092	-0.321	-0.441	0.563	1.000	
OEA	0.529	0.314	0.001	0.262	0.657	-0.383	-0.616	1.000

\* Correlations of transformed values from 2006 annual reports. Transformations are identified in Table 2

Extremal institutions, it turns out, are either deposit-and-loan-eschewing, trading-intensive, low margin, high-personnel-compensation investment bank-like entities, or loan- and deposit-generating machines that avoid employees as a proportion of assets, avoid liquid assets and earn relatively high net interest margins (Wells Fargo being the stand-out example of the latter class in 2006). The vast majority of institutions with very high estimated opacity are in the former category. Transparent institutions are, by definition, average institutions. The “financial supermarkets” such as JP Morgan Chase and Citigroup are found close to the average, as would be expected of an institution attempting to be all things to all people. Thus the LCFIs (Large Complex Financial Institutions) tag that is often applied to the financial supermarkets may be a misnomer. The institutions that appear at the lowest opacity rank are not complex in any way important for producing recent long-run profits. They may be too big to fail, but they may also be too simple to succeed.

Table 5 and Table 6 provide the Eigenvalues and -vectors for the 2006 correlation matrix in Table 4.

Table 5: Eigenvalues for the 2006 Correlation Matrix

	1	2	3	4	5	6	7	8
Value	0.50	0.23	0.11	0.07	0.05	0.02	0.01	0.01

\* Eigenvalues are expressed as a percentage of the total covariation of the correlation matrix explained by each consecutive eigenvector.

Table 6: Eigenvectors of the 2006 Correlation Matrix

Vector	1	2	3	4	5	6	7	8
LogA	0.285	-0.501	-0.003	0.024	0.643	0.436	0.250	0.045
LA	0.402	0.369	0.096	0.220	0.081	-0.354	-0.698	-0.159
Trading	-0.126	-0.614	0.382	-0.214	-0.418	-0.134	-0.311	-0.355
DA	0.371	0.258	0.451	-0.240	-0.364	0.543	-0.054	0.322
NIIA	0.449	0.143	-0.017	-0.448	0.148	-0.041	0.375	-0.643
PEA	-0.388	0.249	-0.449	-0.279	-0.091	0.476	-0.423	-0.308
OEA	-0.362	0.185	0.363	-0.601	0.444	-0.266	-0.121	0.245

Although our actual rankings were products of the first eigenvector with each institution's financial reporting observations from 2001 through 2006, the ranking resulting from combining the first two eigenvectors was also examined. There was no important effect on institutional ranking from including the second eigenvector's effect and no important effect on the relationship between opacity and long-run returns resulting from adding the second eigenvector. The single vector characterization was therefore chosen because of the ease of identifying the significance of each explanatory variable in characterizing the institutions.

Table 7 provides a more comprehensive listing of the rankings of institutions over the sample period, so that the reader can observe the stability of rankings over time.

Table 7: Institutional Propensity to Innovate Scores and Ranks, 2001 – 2005

Bank	2005		2004		2003		2002		2001	
	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank
ANZ	2.01	7	2.05	7	1.787	6	1.40	8	1.82	6
WestPac	1.94	8	1.94	8	1.431	9	1.07	13	1.82	7
Macquarie	4.08	2	4.08	2	1.611	7	2.68	5	3.42	3
NAB	1.49	12	1.49	12	0.965	14	0.82	17	1.29	13
Commonwealth	1.45	13	1.45	13	1.145	15	0.93	15	1.10	16
Goldman Sachs	4.97	1	4.97	1	3.934	1	4.18	1	4.37	2
Bank of America	0.86	18	0.86	18	1.444	11	1.07	12	1.47	12
Citibank	0.27	24	0.27	24	0.770	26	0.55	21	0.72	19
JP Morgan	0.26	26	0.26	26	0.912	19	0.09	27	1.11	15
Lehman	3.39	3	3.39	4	3.950	2	4.02	2	4.76	1
Merrill	3.24	4	3.24	5	2.655	4	3.07	4	3.24	5
Morgan Stanley	3.08	5	3.08	5	3.505	3	3.54	3	3.34	4
Wachovia	0.31	23	0.31	23	0.369	22	0.33	24	0.55	23
Wells	0.74	19	0.74	19	2.249	5	0.75	19	1.77	8
Barclays	2.14	6	2.14	6	0.891	24	0.49	23	0.28	25
HBOS	1.01	16	1.01	16	0.547	18	1.38	9	1.64	9
HSBC	1.61	11	1.61	14	0.991	12	1.33	10	0.95	17
Lloyds	1.08	14	1.08	14	0.725	23	0.91	16	0.63	22
RBS	0.68	20	0.68	20	1.236	10	0.72	20	0.67	20
Scotia Bank	1.77	9	1.77	9	1.071	16	1.48	7	1.64	10
Bank of Montreal	0.22	27	0.22	27	0.027	27	0.13	26	0.18	26
CIBC	0.26	25	0.26	25	0.735	25	0.77	18	0.66	21
TD Bank	0.51	22	0.51	22	1.811	8	1.63	6	0.90	18
National Bank of Canada	0.53	21	0.53	21	0.692	21	0.21	25	0.15	27
Royal Bank of Canada	1.00	17	1.00	17	0.953	17	0.54	22	0.50	24
Allied Irish	1.61	10	1.61	10	1.031	13	1.24	11	1.60	11
Bank of Ireland	1.06	15	1.06	15	0.823	20	0.96	14	1.21	14

The scores of each bank are the product of the bank's transformed accounting values, as characterized in Table 2 with the first eigenvector of each year. The year is identified in the first row of the table. Ranks show where the ranking falls in a descending sort of the scores for each year.

## 6. Opacity Effects on Returns

Investors, other things equal, might punish institutions for greater than average estimated opacity if unusual financial accounts are associated with uncertainty.

Investors could then only be persuaded by higher earnings to hold the stocks of "different" banks. If economic rent and estimated opacity are related in banking, estimated opacity of a bank would tend to be linked to higher expected returns to its shares. So the question becomes, "Have the market- and regulation-driven increases in transparency of banks created an offsetting need to flee the banking system in order to pursue profitability?" The anecdotal evidence of the introduction suggests that to

some degree the answer is in the affirmative. We look for evidence of this behavior in the bank stock return data.

### 6.1 Empirical Relationship between Estimate of Opacity and Bank Share Returns

This section investigates whether our estimate of opacity has an important *ex ante* relationship with financial institution returns. Basic financial theory militates against a yes answer. The theory of efficient markets asserts that known information cannot have a lasting impact on market returns unless that information identifies a risk that cannot be diversified away. In an efficient market if estimated opacity adds value, demonstrably opaque institutions should simply have higher prices, rather than higher rates of return than other firms under the Capital Asset Pricing Model (CAPM) and its variants, since estimated opacity can be diversified away.

Our counterargument is that bank estimated opacity goes uncapitalized because it cannot be diversified away. The number of financial institutions with high estimated opacity is too small and other industries are not so opaque or have opacities uncorrelated with bank opacity. This is a critical assumption. If there were enough otherwise different kinds of companies with high estimated bank opacity related to factors uncorrelated with those defining financial institution estimated opacity, the risk effect of estimated opacity could be diversified away, leaving the effect of estimated opacity in the value of the company's stock alone, with no effect on the long run return.

Further, productive estimated opacity cannot be productively imitated. While imitators can easily match the **measure** of estimated opacity of the banks identified in this study, they cannot successfully produce these banks' higher long term stock returns by increasing estimated opacity. An imitator cannot produce higher future returns, for example, by giving all its employees a raise, unless there are real creative

rents within the firm that are protected by the increased compensation. Thus our estimate of opacity should produce both higher excess return and greater risk as it rises.

This study is based upon estimated opacity measures for fiscal years 2001-2006. We found that our measures of individual institutional opacity, consistent with the hypothesis that opacity is a corporate characteristic rather than a random development, do not change very much over the period. We suspect it likely, however, that the factors that made innovative banking a possibility have only existed since the legislative fetters historically preventing bank innovation were gradually released during the latter three decades of the 20th century. Thus the factors measuring opacity were relatively robust to both the choice of time and the choice of financial reporting variables from which they were constructed within our sample period.

Least squares regressions were estimated for the cross-sectional long-run actual U.S. dollar-denominated returns, specifically average values over the study period, December 2001- December 2006. Long run average returns for individual banks were the dependent variable; the independent variables were country long run average index returns from Fama-French, Fama-French average estimates of the effect of country book/market equity ratios and the measure of opacity for each bank in 2001 constructed here. The values of the variables used are found in Table 8; the results of the estimated opacity regression, in Table 9; and that of the combined estimated opacity, book-to-market regression in Table 10.

Table 8: Values of Dependent and Independent Variables in Cross-Sectional Tests

Bank Name	2001 Opacity	Fama-French Country Market Returns	Fama-French Country High – Low Book/Market	Actual Annual Return
ANZ	1.82	0.2136	0.0357	0.2283
WestPac	1.82	0.2136	0.0357	0.2324
Macquarie	3.42	0.2136	0.0357	0.2763
National Australia Bank	1.29	0.2136	0.0357	0.1498
Commonwealth	1.10	0.2136	0.0357	0.2381
Goldman Sachs	4.37	0.0739	0.0605	0.1179
Bank of America	1.47	0.0739	0.0605	0.1460
Citibank	0.72	0.0739	0.0605	0.0355
JP Morgan	1.11	0.0739	0.0605	0.0873
Lehman	4.76	0.0739	0.0605	0.1524
Merrill	3.24	0.0739	0.0605	0.0863
Morgan Stanley	3.34	0.0739	0.0605	0.0877
Wachovia	0.55	0.0739	0.0605	0.1494
Wells	1.77	0.0739	0.0605	0.1402
Barclays	0.28	0.1310	0.0259	0.1043
HBOS	1.64	0.1310	0.0259	0.1422
HSBC	0.95	0.1310	0.0259	0.1267
Lloyds	0.63	0.1310	0.0259	0.0139
Royal Bank of Scotland	0.67	0.1310	0.0259	0.0865
Bank of Nova Scotia	1.64	0.2063	0.0015	0.1659
Bank of Montreal	0.18	0.2063	0.0015	0.1565
Canadian Imperial	0.66	0.2063	0.0015	0.1084
Toronto Dominion	0.90	0.2063	0.0015	0.1043
National Bank of Canada	0.15	0.2063	0.0015	0.1793
Royal Bank of Canada	0.50	0.2063	0.0015	0.1567
Allied Irish	1.60	0.1770	0.2851	0.1898

\* The cross-sectional sample values of variables used regressions found in Tables 9 and 10 below.

Table 9:  
Regression Results, Long-run Financial Institution Returns vs. Opacity  
and Market Returns

Regression Statistics					
Multiple R	0.706				
R Square	0.499				
Adjusted R Square	0.455				
Standard Error	0.045				
Observations	26				
ANOVA					
	df	SS	MS	F	Significance of F
Regression	2	0.046	0.023	11.448	0.000
Residual	23	0.046	0.002		
Total	25	0.092			
Coefficients					
	Coefficients	Standard Error	t Stat	P-value	
Constant	0.002	0.031	0.073	0.942	
Opacity	0.021	0.008	2.715	0.012	
Fama-French Market Returns	0.728	0.157	4.643	0.000	

- The dependent variable is annualized average sample monthly U.S. Dollar return for the sample institutions. The independent variables are average market returns from the sample period constructed from monthly U.S. Dollar market returns provided on Kenneth French's web site. Opacity is the measure of opacity for 2001 from Table 7.

Table 10:  
Regression Results, Long-run Financial Institution Returns vs. Opacity  
and Market Returns

Regression Statistics					
Multiple R	0.726				
R Square	0.527				
Adjusted R Square	0.462				
Standard Error	0.045				
Observations	26				
ANOVA					
	df	SS	MS	F	Significance of F
Regression	3	0.049	0.016	8.168	0.001
Residual	22	0.044	0.002		
Total	25	0.092			
Coefficients					
	Coefficients	Standard Error	t Stat	P-value	
Intercept	-0.009	0.032	-0.274	0.787	
Opacity	0.019	0.008	2.500	0.020	
Mkt Rtns	0.759	0.158	4.802	0.000	
Book to Market	0.197	0.172	1.142	0.266	

\* The dependent variable is annualized average sample monthly U.S. Dollar return for the sample institutions. The independent variables are average market returns and book-to-market indexes from the sample period constructed from monthly U.S. Dollar market values provided on Kenneth French's web site. Innovation is the measure of opacity for 2001 from Table 7.

As Table 9 indicates, 2001 estimated opacity is significant at the 1 percent level in explaining actual returns over the five year period in spite of the full-sample information upon which the index model estimates of the market index variable depend. That is, 2001 estimated opacity was competing with 2001-2006 average market index returns to explain 2001-2006 individual bank returns. The statistic estimating opacity of individual banks varies between zero and 4.76. The product of maximal estimated opacity and its coefficient produces an estimated increased return

from investing in innovative financial institutions' stock in excess of 9.7% per annum or a compounded return for the entire sample period of more than 53%.

## 6.2 Relationship to Fama-French

Fama-French's country-specific average high minus low book/market ratio portfolio returns does not have a significant coefficient in the regression for the three variables combined. This insignificant result in a sample of large financial institutions is not particularly surprising, given the Fama-French analysis (e.g. [1995], [1999]). In particular, the original Fama-French 1995 study of the three factor model in the United States omits financial institutions because the effect of leverage on book-to-market returns has a different interpretation for financial institutions than for operating companies.

## 7 Estimated Opacity and the Subprime Mortgage Crisis

### 7.1 Short Term Effects of the Crisis

Although it is early to divine the relationship between estimated opacity and the losses of the banks due to the subprime mortgage crisis, it is not too early to determine there is one, and that the relationship is complex.

Babcock and Brown, Goldman Sachs and Macquarie, among the financial institutions in the sample with the largest estimates of opacity, have all produced higher earnings, year-over-year, during the third quarter and fourth quarters that includes the crisis period to date. Reported losses among the relatively opaque institutions seem generally lower than those of the relatively transparent large financial supermarkets in particular.

Yet these banks with high opacity estimates were among the biggest losers of equity value during the early days of the crisis. The common stock of iconic Macquarie, a symbol of bank opacity, lost almost a third of its market value in the

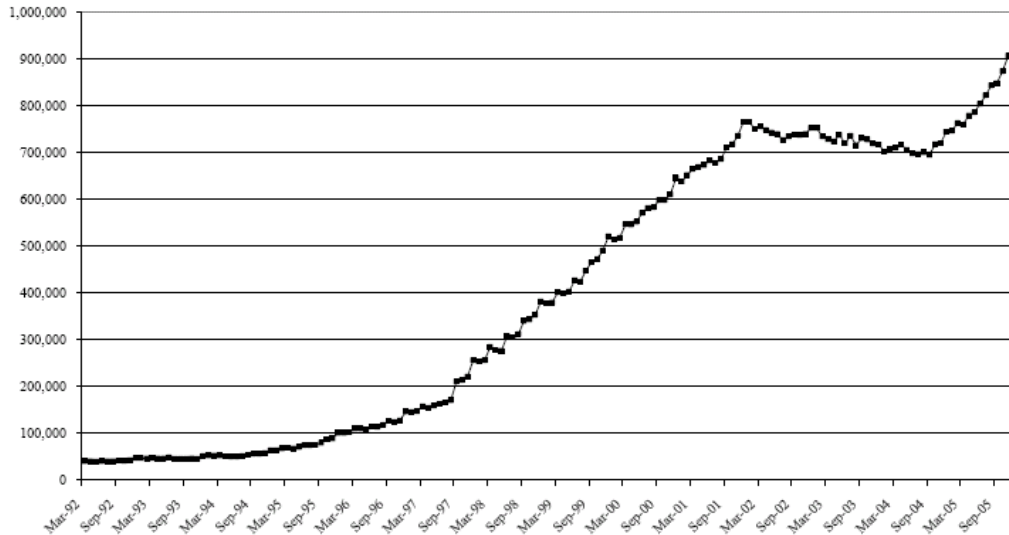
early days of the crisis, in spite of Macquarie's assurances to the market that it held no subprime mortgage assets whatsoever. However in spite of the early losses, these banks' stocks had largely returned to pre-crisis levels by the beginning of October. At this writing, the three banks' stocks are trading off again, this time as a part of a general market rout that may or may not be stemmed by a 75 basis point reduction in the Federal Reserve's interest rate target.

On the other hand, large write-downs associated with the crisis have been taken by the large banks among our transparent institutions, led by Citibank's 3<sup>rd</sup> quarter \$5.9 billion figure. The U.K. names and other European names in the Large Bank category under the Basel Accords have suffered similar write-downs. Most of these institutions suffered even greater write-downs in the fourth quarter and have been forced to tap sovereign funds in Asia to meet bank regulatory capital requirements.

The root source of write-downs to date has been write-downs to mortgage securitized assets and increasingly, other off-balance sheet securitized assets, along with increased regulatory capital charges as the risky assets are transferred to bank balance sheets. However, it has come to light (NY Times, October, 16, 2007) that refinancing of the entire class of asset-backed commercial paper more generally is proving problematic. If this refinancing were to fail, it would result in the revaluation of almost \$1 trillion of collateral assets (see Chart 1 below from Bens and Monahan) and the shifting of these assets and their valuation effects directly to the balance sheets of sponsoring banks. These conduits are almost entirely sponsored by large European and American commercial banks. Assuming the rating of these assets to be between BBB+ and B-, the increased capital charge associated with the transfer would be no

less than \$80 billion, before any actual write-downs. At this writing, the total reduction in bank capital globally now comfortably exceeds \$100 billion.

Chart 1: Global Asset-Backed Commercial Paper Outstanding



Source: Bens and Monahan (2007)

## 7.2 Source of the Regulation Problem

Mortgage conduits are a class of asset-backed commercial paper, which is itself a variety of special purpose entity. Special purpose entities are shell corporations, designed for no other purpose than redistribution of payments associated with the assets of the entity. Absent tax, regulatory and bankruptcy effects, the primary benefit of such conduits seems to have been the opportunity to create a statistical dimension to liability payments through diversification and pecking order effects, permitting easier assessment of credit risk, in great part due to the ability of rating agencies to grade the vehicles.

However, in the case of asset-backed commercial paper, a substantial regulatory arbitrage existed using the Basel II permission to treat asset-backed commercial paper as an off-balance sheet entity under the internal ratings based approach available to large banks.

Of particular interest is the growth of the global asset-backed commercial paper market during the period from late 2001 to September 2004. This history is covered in greater detail in Bens and Monahan. In late 2001 the financial system began to adjust to an anticipated curtailment or elimination of asset-backed commercial paper conduits that had become an important source of bank-assisted corporate fundraising. The threat arose because Sarbanes Oxley legislation could be interpreted as finding them impermissible. Asset-backed commercial paper was a form of special purpose vehicle that had the transparent purpose of reducing the regulatory capital associated with the implied exposure to risk of capital loss associated with the assets in these vehicles. The accounting profession, in the first draft of FIN 46, the accounting rulemaking intended to implement Sarbanes-Oxley, ruled that asset-backed-commercial paper conduits should be discontinued and the associated assets returned to bank balance sheets. The growth rate of variable-interest-entities (henceforth VIEs), as these conduits are called for regulatory and accounting purposes, declined in the United States during the period between the onset of the dialogue concerning their fate in late 2001 and the point at which the initial draft of FIN 46 was replaced by FIN 46R. FIN 46R was the result of a “compromise” between bank regulators and accountants that gave new life to VIEs in North America. The compromise was that North American VIEs would remain off bank balance sheets if banks could show they do not have a “controlling economic interest’ in the entity. The interesting part of the accounting rule is the definition of “controlling economic interest” for the purpose of determining propriety of off-balance sheet accounting treatment. A party has controlling economic interest if it “absorbs a majority of the entity’s expected losses, receives a majority of its expected residual returns, or both.”

Such a controlling economic interest would carry the assets of the VIE on its balance sheet, a practice known as “renting out the balance sheet.”

The controlling economic interest usually qualifies by absorbing “a majority of its [the VIE’s] expected loss” through taking ownership of a vehicle called the expected loss note, designed at the time of the promulgation of FIN 46R. To show how the value of an expected loss note might be calculated, we use an example of the calculation of expected losses on a typical BBB rated note as provided by Creditmetrics (1997) in a technical document commonly cited in the credit risk management literature (c.f. Saunders 2002). Table 11 presents the estimates of bond values, based on default probability data and yields provided by Standard and Poor’s in Table 12. The example shows that the expected value of the example VIE in the following year would be \$107.09, and the value of the assets assuming no change in rating is \$107.55, resulting in an expected loss of \$0.46 in the following year. In order to absorb a majority of this loss, the expected loss note would need to have a value greater than \$0.23. That this note would provide any real protection to the commercial paper holders is laughable. expected loss notes are paid a fixed compensation “based on the perceived risk of loss, usually 25%” (Bens and Mahoney).

Table 11

**Example one-year forward zero curves by credit rating category (%)**

<b>Category</b>	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>
AAA	3.60	4.17	4.73	5.12
AA	3.65	4.22	4.78	5.17
A	3.72	4.32	4.93	5.32
BBB	4.10	4.67	5.25	5.63
BB	5.55	6.02	6.78	7.27
B	6.05	7.02	8.03	8.52
CCC	15.05	15.02	14.03	13.52

Source: Creditmetrics – Technical Document 1997.

Table 12

## Calculating volatility in value due to credit quality changes

Year-end rating	Probability of state (%)	New bond value plus coupon (\$)	Probability weighted value (\$)	Difference of value from mean (\$)	Probability weighted difference squared
AAA	0.02	109.37	0.02	2.28	0.0010
AA	0.33	109.19	0.36	2.10	0.0146
A	5.95	108.66	6.47	1.57	0.1474
BBB	86.93	107.55	93.49	0.46	0.1853
BB	5.30	102.02	5.41	(5.06)	1.3592
B	1.17	98.10	1.15	(8.99)	0.9446
CCC	0.12	83.64	1.10	(23.45)	0.6598
Default	0.18	51.13	0.09	(55.96)	5.6358
		Mean =	\$107.09	Variance =	8.9477
				Standard deviation =	\$2.99

Source: Creditmetrics – Technical Document 1997.

Following the introduction of this “safeguard,” the growth rate of asset-backed commercial paper in the United States returned to its trend growth rate and the flight of asset-backed commercial paper abroad slowed (Bens and Mahoney). As subsequent events have demonstrated, in the event of real problems with the value of the assets in these conduits, the protection provided to commercial paper holders flows from the bank sponsor, not the holder of the expected loss note, as any experienced banker would have predicted. The vast majority of the burden in practice falls on the financial institution sponsoring the conduit, which absorbs all but an insignificant share of total losses and takes the surviving assets back onto its balance sheet.

These rules were an apparent result of competition among regulators. The North American regulators introduced this weak “protection” under the pressure of regulatory competition from Europe where asset-backed commercial paper continued to be offered without any protection. U.S. regulators also faced pressure to disguise

off-balance sheet flimflam flowing from public awareness of this sort of disguised risk due to the Enron revelations.

In a London speech on October 1, 2007, Alan Greenspan remarked that the “repackaging and sale to investors of risky home loans — not the loans themselves — was to blame for the current global credit crisis,” referring to asset-backed commercial paper as “the poster child of this crisis.”

## 8 Implications for Bank Regulation

The conclusion the data appears to support is that the degree of bank estimated opacity may be tentatively related to the degree to which a bank has the risk/return properties unique to banks, and thus, the extent to which the bank provides social benefit and hazard different from those presented by non-banking firms. This possibility draws attention toward two regulatory issues.

The first issue appears in Weber’s speech at Jackson Hole, which drew attention to the fact that the banking crisis was taking place largely outside the traditional banking sector. But our arguments and evidence point to another interpretation – that banking itself is largely taking place outside the regulated banking sector. Thus the regulatory spotlight is shining on the wrong institutions. By our definition of banking risk, the Large Complex Financial Institutions (LCFIs), upon which so much attention has been focused, present the minimum levels of bank-related hazard of our sample banks. They are risky, but **because** of regulation. The regulatory system from which they draw their subsidies could not sustain their unprofitable weight, resulting in a regulatory crack-up.

The investment banks and perhaps the private equity and hedge funds as well as other non-bank financial entities may present the greatest bank-related profitable hazards. The fact that we don’t even measure the bank-related hazards of the latter

institutions speaks for itself. Thus the focus of bank regulation apparently falls on the wrong institutions, a conclusion that might have been reached by 2001 if our results are the appropriate guide.

The second conundrum is perhaps of even greater concern. The essence of our banking hazard is that it is unidentified, and by its very definition can only be regulated *ex post*. By measuring it indirectly as we have here, we can show it did exist and that it had a social benefit in the past that was commensurate with its social cost. But how would we place limits on this unobservable activity if that were a socially efficient thing to do?

The results of this study suggest regulators unintentionally have already placed limits on bank-like risk, with the effect that it has been driven underground. Furthermore even though driven underground, the estimated direct benefits of this opacity have been substantial over the period we examined. In summary, regulators have inadvertently raised the social cost of bank-like risk-taking activity by driving it into private hands. But luckily, they have failed to some extent to eliminate bank-like risk-taking as it migrated away from the regulator's restraints.

One might be tempted to conclude that a case exists for no regulation. That, however, is not what we conclude from our results. Ultimately there are essential flaws in the argument that banking is a risk that must be self-managed. The hazards and social costs of bank-like risk did not follow bankers underground. When the system fails, bank regulators will have no alternative but to expand the scope of their implied regulatory powers. And it is not appropriate to a democratic form of government that this be done as it has been, like a thief in the night. A rationale for qualification for a governmental bailout must be enunciated and penalties for failure to act responsibly within the system exacted.

However, an effective regulatory system may be in need of some flexibility of the kind a rules-based system of bank regulation does not provide. Bankers have found it necessary to become more creative in the information age. Apparently they have risen to this challenge in spite of the regulators' unintended obstruction. This creativity must be afforded protection from the public gaze if it is to produce rents for the banks that support it. But we must find a way for regulators to consider the implications of existing banking activities, not those that posed a threat ten years ago, if we are prepared to ask the public to bail out the system when crisis threatens. And rules based regulation may be too inflexible to permit this.

## References

- Andrews, Edmund L. (2007). "Treasury Chief Aims to Steady Credit Markets."  
*NYTimes*, October 16.  
[http://www.nytimes.com/2007/10/16/business/16rescue.html?\\_r=1&emc=eta1&oref=slogin](http://www.nytimes.com/2007/10/16/business/16rescue.html?_r=1&emc=eta1&oref=slogin)
- Bens, Daniel A. and Monahan, Steven J., "Altering Investment Decisions to Manage Financial Reporting Outcomes: Asset-Backed Commercial Paper Conduits and FIN 46" (September 19, 2007). Available at SSRN:  
<http://ssrn.com/abstract=1015582>
- Blackstone Group, L.P., 2006, Prospectus filed pursuant to Rule 424(b)(4),  
<http://www.edgar-online.com>
- Creditmetrics, 1997, "A Benchmark for Understanding Credit Risk," Technical Document 1997, April 1, JP Morgan Chase.  
[http://www.creditriskresource.com/papers/paper\\_125.pdf](http://www.creditriskresource.com/papers/paper_125.pdf)
- Fama, E., French, K., 1995. Size and book-to-market factors in earnings and returns. *Journal of Finance* Vol. 50, 131-155.
- \_\_\_\_\_. 1998. Value vs. growth, the international evidence. *Journal of Finance*, Vol. 53, 1975-1999.
- Guha, K., 2007, Shadow Run Leaves Central Banks Behind, *Financial Times*, September 2.
- Greenspan, A., 2007, "Financial Stability and the Consequences of Globalization for Britain," Speech to the London School of Economics, October 1.

- Kambhu, John, Schuermann, Til and Stiroh, Kevin J., "Hedge Funds, Financial Intermediation, and Systemic Risk". Economic Policy Review, Forthcoming  
Available at SSRN: <http://ssrn.com/abstract=1012348>
- Paulson, H., 2007 "Remarks by Secretary Henry M. Paulson, Jr. on Current Housing and Mortgage Market Developments. Georgetown University Law Center, October 16th. <http://www.treas.gov/press/releases/hp612.htm>
- Saunders, A., Allen, L., 2002, Credit Risk Measurement, John Wiley and Sons, New York, NY, 2<sup>nd</sup> ed. pp. 23-46.
- Saunders, A., Cornett, M., 2006, Financial Institutions Management, McGraw-Hill, New York, NY, 5<sup>th</sup> ed. pp. 2-21.