Volume 8, Numbers 1 and 2 **ISSN 1939-2230**

ACADEMY OF BANKING STUDIES JOURNAL

Kurt Jesswein
Sam Houston State University
Editor

The *Academy of Banking Studies Journal*, formerly known as the *Journal of Commercial Banking and Finance*, is owned and published by the DreamCatchers Group, LLC, and printed by Whitney Press, Inc.

Whitney Press, Inc.

Printed by Whitney Press, Inc.
PO Box 1064, Cullowhee, NC 28723
www.whitneypress.com

All authors must execute a publication permission agreement taking sole responsibility for the information in the manuscript. The DreamCatchers Group, LLC is not responsible for the content of any individual manuscripts. Any omissions or errors are the sole responsibility of the individual authors.

The *Academy of Banking Studies Journal* is owned and published by the DreamCatchers Group, LLC, PO Box 2689, 145 Travis Road, Cullowhee, NC 28723, U.S.A., (828) 293-9151, FAX (828) 293-9407. Those interested in subscribing to the *Journal*, advertising in the *Journal*, submitting manuscripts to the *Journal*, or otherwise communicating with the *Journal*, should contact the Executive Director of the Allied Academies at info@alliedacademies.org.

ACADEMY OF BANKING STUDIES JOURNAL

CONTENTS OF VOLUME 8, NUMBER 1

LETTER FROM THE EDITORS

The *Academy of Banking Studies Journal* is owned and published by the DreamCatchers Group, LLC. The Editorial Board and the Editors are appointed by the Allied Academies, Inc., a non profit association of scholars whose purpose is to encourage and support the advancement and exchange of knowledge, understanding and teaching throughout the world. The *ABSJ* is a principal vehicle for achieving the objectives of the organization.

The *ABSJ* has undergone a name change effective with this issue. It was formerly known as the *Journal of Commercial Banking and Finance*. We have changed its name to more closely match its editorial mission, which is to publish theoretical and empirical manuscripts which further the disciplines of banking and institutional finance. The name change resulted in the issuance of a new ISSN, 1939-2230. The former ISSN was 1544-0028. We have retained the numbering sequence for the issues, so this is Volume 6. The journal continues to follow its established policy of accepting no more than 25% of the manuscripts submitted for publication. All articles contained in this volume have been double blind refereed.

It is our mission to foster a supportive, mentoring effort on the part of the referees which will result in encouraging and supporting writers. We welcome different viewpoints because in those differences we improve knowledge and understanding.

Information about the Allied Academies, the *ABSJ*, and the other journals handled by the Academy, as well as calls for conferences, are published on our web site, www.alliedacademies.org, which is updated regularly. Please visit our site and know that we welcome hearing from you at any time.

Kurt Jesswein
Sam Houston State University

This is a combined edition containing both Volume 8, Number 1, and Volume 8, Number 2

Articles for Volume 8, Number 1

MICRO CREDIT: A DIFFERENT APPROACH TO TRADITIONAL BANKING: EMPOWERING THE POOR

Mohammed Ashraful Haque, Texas A&M University-Texarkana
James L. Harbin, Texas A&M University-Texarkana

ABSTRACT

Traditionally, banks have lent money to those that have money because they are credit worthy. Under this approach, the rich get more credit to make even more money. The Microcredit approach is an attempt to get money into the hands of the poor by extending credit to the "have-nots". Microloans to the poor have, for the most part, been limited to the third world countries. This paper suggests that a need exists in the United States for such an approach. By comparing the financial success of the Microcredit program of Grameen Bank in Bangladesh to traditional banks in the United States, an economic justification can be made for making micro loans to the poor in America. The paper further suggests how this might be accomplished.

INTRODUCTION

Micro Credit was unheard of until Dr. Muhammad Yunus, an American educated economics professor, began his Micro Credit Scheme as a poverty busting tool. Dr. Yunus had a deep conviction from the beginning that it was a tool that could serve to alleviate poverty. Micro Credit is the concept of extending loans to those who live on income in some cases as low as a $1 per day or less. The loan is usually offered without any of the collateral usually required by traditional banks. Loan sizes vary from country to country, but typically range from $25 to $250.

Grameen Bank, the Micro Credit established by Dr. Yunus, extends this credit without collateral under the premise that the borrower will use the money to develop or expand his/her small business. Inspired by Grameen Bank's success, many Micro Credit institutions have evolved extending credit of up to $1000 or more. Dr. Yunus further believes that by targeting women for such loans, their families and the villages in which they live, can escape the extreme depths that poverty has saddled them with. Unique in Dr. Yunus' assumption is the fact that Micro Credit loans, which improve the economic status of the borrower, also results oftentimes in better education and healthcare for the whole family. Dr. Yunus has found that 99 percent of borrowers repay their loans. Ninety-seven percent of the borrowers from Grameen Bank are female.

It is often difficult to establish Micro Credit in many countries because of traditional banking regulation. Governments in developing countries must show a firm commitment in their support of

Micro Credit for it to be an effective tool in alleviating poverty. Micro Finance is a means to help the underprivileged in our society.

LITERATURE REVIEW

Micro Credit programs have their beginning roots in the late 1980's. The table below represents a sampling of the countries in which this concept has been utilized.

Table 1: Sampling of Countries Using Microcredit Programs
Argentina
Bangladesh
Bolivia
Ecuador
Honduras
India
Mexico
Nicaragua
Peru
South Africa
Spain
United Sates
Zambia

It is difficult to be critical in any way of a concept whose goals are so lofty. Considering the fact that one-fifth of humanity or 1.3 billion people live in "absolute poverty" (Rubinstein, 1998), any dent in such a large number is worthy. If one-fifth of the world lives in absolute poverty, the next fifth cannot be that much better off. Yunus (1994) estimated that borrowers from these microcredit loans could cross the poverty line in ten to fifteen cycles of such loans. The awarding of the Nobel Peace Prize to Muhammad Yunus in 2006 also serves notice as to the value placed on the concept by world leaders in this field. In addition to its main goal of alleviating poverty, there are many more promises of value: empowerment of women; increased health care benefits; and a multitude of spillover effects both economic and social.

Since the early 1990's there have been several research efforts to prove the benefits or identify the limitations of microcredit loans. Impact assessments of this program are difficult and costly. Their conclusions, depending on a host of definitions and interpretations, are subject to varying opinions. After reviewing numerous published articles, the authors of this paper found that

while the reported gains may sometimes be marginal, and there is the potential for downside, virtually no one in the review was found suggesting microcredit loans be discontinued. The story of the man, who was questioned why by another gentleman, for picking up and throwing back in the ocean the sea urchin when there were thousands on shore comes to mind. His reply was "at least I saved that one" aptly applies for microcredit loans and its benefits. Although not totally unanimous on whether or not microcredits increase incomes and therefore contribute to the fight against poverty, most agree that they help reduce the vulnerability of the borrowers. In other words, microcredit programs do assure that the situation of their poor members does not deteriorate any further (Develtere & Huybrechts, 2005).

It is obvious that one's income and one's health are positively correlated; thus another benefit of micro loans. Meesen (2003) says that a prerequisite for the alleviation of poverty is a mitigation of the income-erosion effect of illness. Women, typically, make up more than 90 percent of all micro-loan borrowers; and they devote a higher percentage of their income to children's nutrition and other family basic needs and hold back a smaller proportion of income under their control for their personal needs than do men (Goetz, & Gupta, 1995; Kabeer, 2000). Ahmed, et. al., in a 2006 Bangladesh study found that the increased income generated through microloans interventions lead to an increased expenditure on illnesses. Of all the risks that poor households face, health risks probably pose the greatest threat to their lives and livelihoods (Krishna, 2004; Noponen, & Kantor, 2004; Russell, 2004).

While the goals of microfinance are both lofty and well intentioned, these efforts are not without their problems and limitations. On the alleviation of poverty argument, several studies expressed doubts about the extent of such efforts. Develtere and Huybrechts ((2005) in their study of the impact of microcredit on the poor in Bangladesh concluded that although definitely succeeding in reducing their member's vulnerability and by consequence succeeding at preventing them from falling even further into poverty, they could not conclude that the programs also reduced poverty per se. Except on a case by case basis, it may be that the difficulty of measuring success or failure and thus arriving at a consensus may mean that we are unable to provide a final answer to the question of the total effect of microcredit on local livelihoods (Hietalahti & Linden, 2006).

There does seem to be agreement that in many cases these micro-loans do not reach the "poorest of the poor". Even if they did reach down to this level of the poor, there are valid questions as to the benefits derived as a result. Loaners are reluctant to take in the bottom poor into the groups participating because of the risk to the sustainability of the programs. The bottom poor themselves often consider a loan as too risky. Khandker and Zaman (1999) recognize that while microcredits can contribute to poverty reduction, they only work if the poor have achieved a certain economic level to begin with. All of this may mean that microcredit is not necessarily the way out for all the poor. Poor people who do not have the needed assets, social relations, or self-confidence have to be reached in different ways (Develtere & Huuybrechts, 2005).

Even where there is a positive impact on the borrower's income, it does not come over night. One would also hope that benefits to the borrowers of small loans are not just temporary but have some long term sustainability. Khandker and Chowdbury (1996) point out that it takes approximately five years for a poor member to work up to above the poverty line; and it generally takes eight years before the member is able to function independently from the micro-credit institution.

A host of obstacles stand in the way of success for the poor with micro-loans. Most women do not want to be entrepreneurs – they want a job that pays a living wage (Khan, 1999). Those that do are constrained by the household-level duties which women must do to perform the normal schedules and obligations. These duties would include: buying and cooking food, doing laundry, cleaning, attending to children, having children, transportation issues, etc. These women also have the fewest resources with which to develop a viable business, time, labor, knowledge, skills, least educated (Shaw, 2004); all of which taken together limit the range of business options to those which are time and labor-intensive, where the market is saturated, and pay is low and unpredictable. The end result is that not only do many may fail to receive benefits from participation, they may suffer in ways that they would not have otherwise as Mosley (2001) found in Bolivia. Maybe the harshest criticism was made by Gill (2000) in the statement that microfinance serves best to transfer wealth from the poorest segments of society to the wealthiest.

THE GRAMEEN BANK MODEL

The policy of Grameen Bank, the pioneer of Micro Financing, has been exactly the opposite of conventional banks. Conventional banking is based on the more you have, the more borrowing power you have. This means more than half of the population of the world is shutout of the financial services offered by conventional banking. Conventional banking is based on collateral, Grameen Bank requires no collateral.

Grameen Bank views credit as a basic human right; and has a philosophy that those who do not have anything should get the highest priority. It is based on the future potential and not the present collateral of a person. Conventional banks look at a person's past achievements, whereas Grameen Bank looks at the future potential in a person which is waiting to be unleashed.

Grameen Bank, which literally means village banks, is located in rural areas unlike conventional banks which thrive in urban areas. Grameen Bank's philosophy is not for the clients to come to the bank, but for the bank to go to the prospective clients. Grameen Bank's 18,795 staff members make it a point to meet over six million clients in more than 71,371 villages spread out all over Bangladesh. Repayment of a Grameen loan is made easy with very small weekly installments. This means that the bank has to do a lot of the leg work, but one in which it is very convenient for the bank's clients.

There is basically no contract to enforce in a court of law in case the borrower defaults on the loan. This is totally different from the conventional system of banking. Conventional banks go into a punishment mode when a borrower fails to repay on time, calling the borrower a defaulter. Grameen Bank does not take such steps; rather they allow the borrower to reschedule the payment and do not imply that the borrower has done anything wrong. With conventional banks, when a borrower faces difficulty, the bank worries about recovering their money, usually taking over the collateral. With Grameen Bank borrowers, since there is no collateral, they work extra hard and works with the borrower to enable the borrower to repay the loan. This enables the borrower to maintain their confidence and strength in difficult times.

In conventional banking the interest keeps on building up, and sometimes results in the bank charging interest on interest. This is different with Grameen Bank. Interest on Grameen Bank's loans are never allowed to exceed the principal borrowed, regardless of the time it takes to pay back the loan. Once the interest charges equal the principal no interest is charged after that. Conventional banks compound interest quarterly, whereas Grameen Bank uses simple interest in all cases. In the Grameen system if the borrower dies, the burden of repaying does not fall on the family. There is an insurance which pays back the loan with interest.

The Grameen system encourages it's borrowers to set certain social, educational and health goals known as "Sixteen Decisions" which include educating children, planting trees, eating vegetables, and arranging clean drinking water. Conventional banks rarely, if ever, are concerned about any aspect of a borrower's social or educational goals.

In the Grameen system, the poor are seen as human "bonsai". If a healthy seed of a giant tree is planted in a pot, it will always only be a miniature version of the giant tree because it has not been allowed the space to grow. Grameen Bank is making an effort to give the poor a bigger pot and real soil so they too can grow. This is a banking system based on mutual trust, accountability, participation, and creativity. At Grameen Bank credit is viewed as a weapon to fight poverty.

As of May 2006, Grameen Bank with 2,247 branches, had 6.67 million borrowers. It served 72,096 villages, representing 86 percent of Bangladesh. They have disbursed over Taka 290 billion in loans (US $4,409 million) and the loan recovery rate is 99 percent. It also provides low interest housing loans and interest free educational loans. The success of Grameen Bank has been phenomenal.

DATA

Table 2: Grameen Bank Financial Information in US$

	31/12/06	31/12/05	31/12/04	31/12/03	31/12/02
Exchange Rate used	68.987	66.225	59.6	57.013	55.928
for Conversion	BDT/USD	BDT/USD	BDT/USD	BDT/USD	BDT/USD

Table 2: Grameen Bank Financial Information in US$					
	31/12/06	31/12/05	31/12/04	31/12/03	31/12/02
Balance Sheet					
Gross Loan Portfolio (in US$)	482,104,480	424,439,392	337,700,853	283,062,888	228,139,038
Total Assets (in US$)	819,830,340	632,974,469	514,718,860	416,138,587	337,448,954
Savings (in US$)	211,846,749	194,707,645	147,694,625	112,089,633	92,159,116
Total Equity (in US$)	88,584,042	71,184,163	79,096,919	82,213,698	36,474,18
Financing Structure					
Capital/Asset Ratio	10.81%	11.25%	15.37%	19.76%	10.81%
Debt/Equity Ratio	825.48%	789.21%	550.74%	406.17%	825.17%
Deposits to Loans	43.94%	45.87%	43.74%	39.60%	40.40%
Deposits to Total Assets	25.84%	30.76%	28.69%	26.94%	27.31%
Gross Loan Portfolio/Total Assets	58.81%	67.05%	65.61%	68.02%	67.61%
Overall Financial Performance					
Return on Assets (%)	2.44%	2.33%	0.18%	0.77%	n/a
Return on Equity (%)	22.15%	17.79%	1.04%	4.87%	n/a
Operation Self-	115.97%	116.09%	101.29%	105.41%	96.43%
Revenues					
Financial Revenue Ratio (%)	17.82%	16.91%	15.03%	15.14%	n/a
Profit Margin (%)	13.77%	13.86%	1.27%	5013%	-3.70%
Expenses					
Total Expense Ratio ((%)	15.37%	14.57%	14.84%	14.36%	n/a
Financial Expense Ratio (%)	3.99%	6.07%	7.06%	6.39%	n/a
Loan Loss Prov. Exp. Ratio (%)	1.48%	0.43%	1.76%	0.91%	n/a
Operating Expense Ratio (%)	6.90%	8.07%	6.02%	7.06%	n/a
Efficiency					
Operating Exp./LoanPortfolio(%)	11.06%	12.16%	9.02%	10.41%	n/a
Productivity					
Borrowers per Staff member	n/a	313	284	242	178
Savers per Staff member	n/a	n/a	n/a	n/a	n/a
Risk					
Portfolio Risk>30 days Ratio (%)	1.79%	2.57%	7.98%	6.98%	18.41%
Loan Loss Reserve Ratio (%)	6.70%	6.44%	9.24%	12.18%	15.81%
Risk Coverage Ratio (%)	374.89%	250.58%	115.72%	174.58%	85.88%
Write Off Ratio (%)	2.06%	4.21%	4.05%	5.34%	n/a
Source: Grameen Bank Annual Report					

Table 3: Top 25 Earners in Banking – 2006
(Ranked by 2006 net income)

			Profitability Ratios (%)			
	Net Income (Mil $)		Return on Assets		Return on Equity	
Company	2005	2006	2005	2006	2005	2006
1. Citigroup Inc.	19,806	21,249	1.33	1.25	17.98	18.41
2. Bank of America	16,465	21,133	1.37	1.53	16.39	18.07
3. J.P. Morgan Chase	8,483	13,649	0.72	1.07	7.98	12.25
4. Wells Fargo	7,671	8,482	1.69	1.76	19.53	19.59
5. Wachovia	6,429	7,745	1.27	1.26	13.55	13.21
6. US Bancorp	4,489	4,751	2.22	2.19	22.66	23.35
7. PNC Financial Services	1,325	2,595	1.54	2.68	16.51	26.81
8. National City Corp.	1,985	2,300	1.41	1.63	15.61	16.90
9. SunTrust Banks	1,987	2,117	1.17	1.17	12.09	12.33
10. BB&T Corp.	1,654	1,528	1.58	1.33	15.03	13.36
11. Regions Financial	1,001	1,353	1.18	1.19	9.37	8.64
12. KeyCorp	1,129	1,193	1.23	1.29	15.34	15.59
13. Fifth Third Bancorp	1,549	1,184	1.55	1.15	16.87	12.17
14. State Street Corp.	945	1,096	0.98	1.07	15.09	16.10
15. M&T Bank	782	839	1.45	1.50	13.48	13.81
16. Marshall & Ilsley	727	808	1.68	1.58	17.00	14.93
17. Comerica	861	782	1.64	1.41	16.93	15.30
18. Synovus Financial	516	617	1.96	2.07	18.48	18.53
19. Zions Bancorp.	480	583	1.29	1.29	13.66	12.90
20. Huntington Bancshares	412	461	1.26	1.35	16.18	16.56
21. Compass Bancshares	402	460	1.36	1.42	18.72	18.20
22. Associated Banc-Dorp.	320	317	1.50	1.47	14.75	13.86
23. Commerce Bancorp	283	299	0.82	0.71	14.24	11.71
24. Colonial Bancgroup	229	266	1.13	1.20	13.72	13.32
25. First Horizon National	441	251	1.33	0.67	20.27	10.51

Source: Standard & Poor's INDUSTRY SURVEY 2005-2006

RESULTS AND ANALYSIS

Table 4: Grameen Bank Financial Information (US$)				
	2006	2005	2004	2003
Gross Loan Part	482,104,480	424,439,392	337,700,853	283,062,888
Savings	211,846,749	194,707,645	147,694,625	112,089,633
Financing Structure				
Capital/Asset Ratio	10.81	11.25	15.37	19.76
Debt/Equity Ratio	825.48	789.21	15.37	19.76
Deposit/Loan Ratio	43.94	45.87	43.74	39.60
Gross Loan Part/T. Assets	58.81	67.05	65.61	68.02
Financial Performance				
Return on Assets (%)	2.44	2.33	.18	.77
Return on Equity	22.05	17.79	1.04	4.87
Loan Loss Res. Ratio (%)	6.7	6.44	9.24	12.18
Loan Recovery Rate	99% (A recovery rate which exceeds any traditional banking system.)			
Diversified Banks' Return				
on Assets	1.4	1.6	1.5	1.2
Return on Equity	15.3	16.9	14.8	13.1

Table 5: Comparative Study of Earnings in Banking 2006				
	Return on Assets	Return on Assets	Return on Equity	Return on Equity
	2005	2006	2005	2006
1. Citigroup	1.33	1.25	17.98	18.41
2. Bank of America	1.37	1.53	16.39	18.07
3. J.P. Morgan Chase	.72	1.07	7.98	12.25
6. US Bancorp	2.22	2.19	22.66	23.35
11. Regions Financial	1.18	1.19	9.37	8.64
21. Compass Bancshares	1.36	1.42	18.72	18.20
25. First Horizon National	1.33	.67	20.27	10.51
Grameen Bank	2.33	2.44	17.79	22.15
Sources: Standard & Poor's INDUSTRY SURVEY 2007 Grameen Bank: Annual Report 2006				

The data includes years 2002 to 2006. The data basically covers financing structure, overall financial performance, revenues and expenses, efficiency, productivity and risk measures. The data is depicted to clearly show that Micro Credit is viable and can be implemented in developed countries in an effort to get people off of welfare and offer an opportunity to those who are the have-nots. The data clearly reflects the success of Micro Credit in Bangladesh.

Table 2 shows the performance of Grameen Bank, while Table 3 shows the performance of the top 25 earning traditional banks in the U.S. Table 4 shows Grameen Bank financial information in U.S. dollars.

As can be seen for 2005 and 2006 Grameen Bank (Bank of the Have-Nots) had a higher return on equity compared to traditional banks in the United States. The reason for the success of Grameen Bank in alleviating poverty is that Grameen Bank starts with the problem. Borrowers are encouraged to think for themselves how they can use credit to get themselves out of poverty. In other words, credit must work for the poor and not the other way around. Borrowers are continuously monitored and advised by the Grameen Bank staff, who work as constant cheerleaders, and make every effort for the borrower to succeed.

The results clearly reflect the success of Grameen Bank compared to traditional banks. The repayment rate of over 99 percent clearly reflects the willingness and credit worthiness of the poor. The higher return on assets and equity compared to traditional banks shows that loans without collateral can be successful if the lender takes interest in the borrower's success. Grameen Bank constantly monitors the progress of the borrowers and continues to provide guidance and advice to enable the borrower to succeed. The data is presented to show a comparison of the success of the Grameen Bank, a non-traditional bank, to the traditional banks in the U.S. This reflects that Micro Credit can be successful in the U.S. if properly implemented. Given the current banking crisis it seems to have a banking system where profit is privatized and risk nationalized. Grameen Bank takes the approach of both privatizing profit and risk. They constantly guide and advise borrowers so that the borrowers will be successful in their pursuit of getting out of poverty. The recovery rate of 99 percent exceeds any traditional bank. Table 5 shows the performance of Grameen Bank compared to traditional banks in the U.S.

THE NEED FOR MICRO CREDIT LOANS IN THE UNITED STATES:

Making the case for needing micro credit loans in the United States as a tool to enable the poor to make strides up the ladder should in no way denigrate or detract from the need that exists globally. In most cases, but not all, poverty in other countries is much more extreme than the U. S. That aside, as President Franklin D. Roosevelt said, "the test of our progress is not whether we add more to the abundance of those who have much, it is whether we provide enough for those who have little". f/n One trend that is universally accepted is the widening wealth disparity between those at the very top and bottom. This is true in America and around the world. Indeed, Robert Reich,

previous secretary of labor, believes that shrinking wages and the growing inequality are America's central social problems (Benson, 2007). The income gap in American has nearly doubled in the last 25 years (Benson, 2007). Some studies show that mobility in America is actually declining and that the U. S. has less mobility than Canada, Scandinavia, Germany, and France (Mishel, 2007) Inequality, over the past few decades has risen more in the U. S. than in most other advanced industrial countries, and ranks near the bottom in terms of household income inequality (Yellen, 2006).

Where does the American poor turn to for financial assistance? A growing number are turning to alternative institutions such as: payday lending; check cashing; pawn lending, various in-house financiers; rent-to-own outlets, and others. These institutions have such a high cost and typically result in the borrower ending up even worse off. Having access to credit should be an opportunity for upward social and economic mobility, but according to Nouriel Roubini, an economics professor at New York University, loans from these alternative sources becomes a debt trap for many trying to move up (Grow & Epstein, 2007).

IS MICRO CREDIT FEASIBLE IN U.S.A.?

The success of Grameen Bank in Bangladesh raises the question whether the same model can be used in the United States to help those below poverty line. American banks can play a lead role in combating poverty, but government has a role also. Unfortunately, the U. S. government does the least of the 30 Organization for Economic Cooperation and Development countries in targeting government taxes and transfers towards moving families out of poverty (Yellen, 2006).

While Yunus argues that the poor are not a tool to make money and that rich people should not make money out of the poor people. Surely, as a result of the need for practicality and reality, there is some middle ground here. If the poor in America did not have to resort to alternative sources for financing and could avail themselves of traditional banks, with the encouragement and support of government, money could be lent at a lower interest rate with both the poor and the banks benefiting.

In the United States most business ventures require a relatively large sum of money. The authors of this paper contend that there is a need for smaller sums. A few hundred, in some cases a few thousand given to those who have no collateral might serve to greatly improve their families' lives. If one had just a little money, one might start a lawn service, landscaping venture, plumbing operation, carpet/tile company, a small restaurant and the list goes on and on. Many of America's poor work as hourly employees for others; yet they have the expertise and motivation to do it themselves. But without access to capital, they are forever shut out.

The success of Grameen Bank clearly shows that Micro Credit can be successful in the U.S. All the bank needs to do is take a little interest in their borrowers and guide them and monitor them to attain success. This way both the borrower and lender will benefit. This will also benefit the

society by getting people out of welfare and give people pride and determination to get out of poverty. The lender must take some responsibility to make sure that the borrowers succeed in their venture. If Dr. Yunus can turn beggars into entrepreneurs (Yunus, 2008), then it can be done here.

CONCLUSION

In light of the economic and financial meltdown the United States is currently going through, micro credit loans may be an extremely tough sell to the banks. On the other hand, we are not suggesting a need that would approach the $700 billion plus amount put forth for the bailout of our financial institutions. A much, much lower figure could lift hundreds of thousands, if not millions of Americans out of the grips of poverty.

The success of Micro Credit in other countries proves that the have-nots can be just as credit worthy as the haves. An essential ingredient to make it a success is for the Micro Credit establishments to work with the borrowers and make them feel they can be part of success. Creditors will need to constantly monitor the use of credit, help the borrowers during the difficult times, as well as continually encouraging the borrowers in an attempt to give them a sense of confidence. Micro Credit organizations can be just as successful as traditional banks. The success of Micro Credit in Bangladesh serves as a model for American banks and the American poor.

The government can take measures to require traditional banks to make available a certain percentage of their loan portfolio for Micro Credit without collateral. The government can provide clear guidelines to make these loans available to those who are below poverty line. Along with the banks, the government needs to play a role through regulation to help people get out of poverty.

REFERENCES

Ackerley, Brooke A., "Testing the Tools of Development: Credit Programs; Loan Involvement, and Women's Empowerment," *HS Bulletin*, 25, 1995, pp. 56-68.

Ahmed, Masud (December 2006). Targeted intervention for the ultrapoor in rural Bangladesh: Does it make any difference in their health-seeking behavior? *Social Science & Medicine*, 63(11).

Benson, Heidi (September 23, 2007). The Class Warrior: Robert Reich Expounds on the Dangers of Capitalism. Retrieved from http://www.sfgrate.com/cgi?=/c/a/2007/09/23/CMC9SOD8I.DTL.

Develtere, Patrick, Huuybrechts, An, "The Impact of Microcredit on the Poor In Bangladesh," *Alternatives*, 30, (2005), pp. 165-189.

Gill, Lesley, *Teetering On the Rim: Global Restructuring, Daily Life, and the Armed Retreat of the Bolivian State*, 2000, New York, Columbia University Press.

Goetz, Anne Marie, Sen Gupta, Rina, "Who Takes the Credit? Gender, Power and Control Over Loan Use in Rural Credit Programs in Bangladesh," *World Development*, 1995, pp. 45-63.

Grameen Bank Annual Report (2002-2006).

Grow, Brian & Keith Epstein (2007). The Poverty Business. *Business Week,* 56.

Hietalathi, Linden (2006). Socioeconomic impacts of microfinance and repayment performance: A case study of the Small Enterprise Foundation, South Africa. *Progress in Development Studies*, 6(3).

Kabeer, N., "Conflicts Over Credit: Re-evaluating the Empowerment Potential of Loans to Women In Rural Gangladesh," *World Development*, 29, 2000, pp. 63-84.

Khan, M.R. Domestic violence against women: Does development intervention matter? *BRAC-ICDDR Joint Research Project Working Paper Dhaka Research and Evaluation Division BRAC,* 28.

Khandker, S. R., Chowdbury, O. H., "Targeted Credit Programme and Rural Poverty in Bangladesh," World Bank Discussion Papers 336, 1996, p. 15.

Khandker, Zaman, H. (1999). Assessing the impact of microcredit on poverty and vulnerability in Bangladesh. *Policy Research Working Paper 2145*, 3.

Krishna, A., "Escaping Poverty and Becoming Poorer: Who Gains, Who Loses, and Why?", *World Development*, 32, 2004, pp. 121-136.

Meesen, B., Zhenzhong, Z., Damme, W. V., Devdasan, N., Criel, B., Bloom, G., "Iatrogenic Poverty", editorial, *Tropical Medicine and International Health*, 8, 2003. pp. 581-584.

Mishel, Bernstein, Allegretto. *State of Working America 2006/2007*.

Mosley, Paul, "Microfinance and Poverty in Bolivia," *The Journal of Development Studies*, 37(4), 2001, pp. 101-132.

Nopen, H., Kantor, P., "Crises, Setbacks and Chronic Problems – the Determinants of Economic Stress Events Among Poor Households In India", *Journal of International Development*, 16, 2004, pp. 529-545.

Rahman, R. I., *Poverty Alleviation and Empowerment Through Microfinance: Two Decades of Experience in Bangladesh*, Dhada: Bangladesh Institute of Development Studies, 2000.

Rubenstein, J. (1996). Excerpts from Grameen Support Group's *A Poverty Eradication Strategy That Works* and *Grameen Bank: Banking on the Poor.* Retrieved October 5, 2002, from http://ccdev.lets.net/materials/microcredit.html.

Russell, S.(2004). "The Economic Burden of Illness For Households In Developing Countries: A Review of Studies Focusing on Malaria, Tuberculosis and Human Immunodeficiency Virus/Acquired Immunodeficiency Syndrome," *American Journal of Tropical Medicine and Hygiene*, 71, 147-155.

Shaw, Judith (2004). Microenterprise occupation and poverty reduction in microfinance programs: Evidence from Sri Lanka. *World Development*, 32(7).

Standard & Poor: Industry Survey (2005-2006).

Yellen, Janet L. (December 1, 2006). Economic Inequality in the United States. *Federal Reserve Bank of San Francisco, FRBSF Economic Letter.*

Yunus, M., "Grameen Bank, Bangladesh – Does the Capitalist System Have to be the Handmaiden of the Rich?". Extracts from a keynote address delivered at 85th Rotary International Convention held in Taipei, Taiwan, on June 12-15, 1994.

Yunus, Mohammad, (Spring 2008). Turning beggars into entrepreneurs. *New Perspectives Quarterly,* 25(2).

BANK FRAUD: PERCEPTION OF BANKERS IN THE STATE OF QATAR

Reem Abdul Latif Nabhan, Qatar University
Nitham M. Hindi, Qatar University

ABSTRACT

The objective of this research is to investigate whether the management level are aware of the banking fraud, which department has the fraud occur in banking sector and how much amount they were reported as fraud in banking sector in State of Qatar. Other objective is to evaluate the current internal process that had been followed to detect fraud, reaching to a stage for designing a framework or solution to minimize the fraud in the banking sector in State of Qatar.

This study surveyed all management levels in all departments in banks about their knowledge and information they have towards the banking fraud in general and how they were dealing with fraud cases discovered. Also the study focused more deeply on the particular management levels in specific departments such as Auditors, Finance and Risk Management who consider the major areas to protect the banks from fraud occurrence. Surveys were distributed to 16 banks operating in Qatar. Additionally interviews were conducted with the members of the Association of Fraud Examiners to obtain more details in this field.

The results of this study demonstrate that all the demographic factors have different impact on the banking fraud, because each category had different point of view of evaluating the causes that affect the fraud and the way the management they will deal with it.

INTRODUCTION

Fraud has been the major risk that attacks the structure of firms regardless of the size or the industry. Latest study by PriceWaterhouse Coopers (2007) showed that over 43% of companies surveyed from 40 countries from all over the world had reported losses from economic crimes during the previous two years. The study presented that a total of US$ 4.2 billion loss over the last two years was reported by these companies. It is estimated that undiscovered fraud cost US$ 5.7 billion due to the lack of internal controls of the organization.

Insurance industry seems to suffer the most from fraud. Accordingly, PriceWaterhouseCoopers (2007) indicated that this industry lost a total of US$ 4.5 million on average in (2007) mainly in asset misappropriation, while spending on average US$ 1 million in

strengthening internal controls. It is impossible to eliminate the fraud but it can be minimized by understanding the reasons that cause fraud and develop a solution to diminish its occurrence.

Fraud started a long time ago and was related to goods in general, like, trading in goods by trying to avoid customs that must be paid or by hiding the poor quality of the goods. The purpose was to gain more profit. Also, fraud was related at that time to livestock and cattle which involved ways to make livestock bigger, healthier or heavier and selling meat by passing horsemeat instead of beef meat. In the late 1960s in America, fraud was perpetuated by filling tanks with oil except the top which was filled with water.

There are many definitions that explain fraud; all of them are around the same concept but in different applications or contexts. According to Spam laws (accessed on 30 May, 2008), "Fraud involves deception and misrepresentation in order to make money. Deception could involve manufacturing counterfeit *credit cards* or padding *insurance claims*, or making false claims to receive *mortgage loans* you wouldn't have received otherwise." Fraud Advisory Panel (accessed on 30 May 2008) defined fraud as "the removal of cash or assets to which the fraudsters is not entitled – or false accounting- the classification or alternation of accounting records or other documents". Another definition of the fraud by Advfn PLC is "illegal activity of trying to conceal information intentionally for personal gain. Many frauds involving financial transactions are committed by business professionals, who use their knowledge and gained credibility to deceive customers". Association of Certified Fraud Examiners (2004) defined fraud as "the use of one's occupation for personal enrichment through the deliberate misuse or misapplication of the employing organization's resources or assets".

KPMG (2002) reported several causes of fraud. However, the major cause of fraud was the collusion between employees and third parties (55%) followed by poor internal controls (48%). Other causes of fraud are illustrated in the table 1 below:

Table 1: Several Causes of Fraud

Causes of Fraud	Percentage Reported by Respondents
Collusion between employees and third party	55%
Poor internal controls	48%
Management override of internal controls	32%
Collusion between employees	30%
Type of industry (i.e. Industry at high risk of fraud)	23%
Poor hiring practices	16%
Poor or non- existent corporate ethics policy	14%
Lack of control over management by directors	10%
Other	9%

Source: KPMG (2002)

Banking fraud could be divided to two main categories; namely External and Internal fraud. Examples of external fraud are credit and debit cards transactions, or theft done using automated teller machine to obtain cash in advance. Internal fraud relates to employees inside organizations who can steal cash or inventory from the company or from other employees, or allowing other staff to steal. Internal fraud also called occupational fraud and abuse. Joseph T. Wells (1997) defined occasional fraud as "the use of one's occupation for personal enrichment through the deliberate misuse or misapplication of the employing organization's resources or assets." According to this definition, internal fraud includes asset misappropriations, corruption and fraudulent financial statements.

To minimize and detect fraud, the firm has to focus on its corporate governance which is based on a set of ethical principles that guide the company to take actions, including introducing new products. In addition, corporate governance establish a framework for reducing risk and detecting the fraud that might arise.

OBJECTIVES OF THIS STUDY

The objectives of this research were to study the reasons behind fraud in general and specifically in banking sector in State of Qatar by concentrating on the areas that the fraud had taken place. Another objective was to evaluate the current internal processes that had been utilized to detect fraud, reaching to a stage of designing a framework or solution to minimize fraud in the banking sector in the State of Qatar.

LITERATURE REVIEW

Many authors mentioned that there are unlimited types of fraud. As a matter of fact, it depends on how people are creating it and think about it. The most important types of fraud are divided in four categories. All these types of fraud can occur through employees who are working inside the organization or from illegal organization outside the firm.

Asset Misappropriations

This is the most commonly occurring fraud by occupational fraudsters and it is the easiest to detect. Asset misappropriation relates to the company assets which mean "using the company assets for sole purpose of capitalizing unfairly on goodwill and reputation of property owner." Joseph T. Wells, (1997), in other words using the companies' assets for the personal benefit. Asset misappropriation includes revenue skimming, inventory and receivable theft, and payroll fraud.

Bribery and Corruption

This is the second frequently occurring type of fraud. Bribery may be defined as "the offering, giving, receiving, or soliciting any thing of value to influence an official act." (Joseph T. Wells, 1997) Bribery may be classified into two categories which are: *Kickbacks* and *Bid Rigging Schemes*. A kickback involves, according to Wells (1997), "a vendor submitting a fraudulent or inflated invoice to the victim company an employee of that company helps to make sure that the payment is made on the false invoice. For his assistance the employee fraudsters receive some form of payment from the vendor. This payment is the kickback." The other type which is bid rigging scheme occurs when an employee supports the supplier to prevail the deal at the bidding process. The other aspect which is the corruption may be defined as "spoiled, trained, vitiated, depraved, debased, and morally degenerate. As used as a verb, to change one's morals and principles from good to bad" Joseph T.Wells, (1997).

Financial Statements Fraud

This is the least type of fraud occurring, it involves the manipulation of the financial statements to create financial change for entity. Financial statements fraud arises when the top management wants to show earnings in the statements, by changing the nature element in the financial statements which means changing the debt to assets or report the credit as an equity to show an increase in the earning of the company to increase year- end bonus, or show favorable loan terms.

Internet Fraud

This is related to the use of any component of the internet such as email, web sites, financial transactions, to perform fraudulent transactions, to present deceptive picture to catch victims, or to convey the proceeds of fraud to cheat financial institutions or any other related organizations. Justice, http://www.usdoj.gov/criminal/fraud/internet/, accessed on 30, May 2008

The government and central banks pay close attention to the banking fraud and continue to issue the necessary rules and regulation to minimize fraud in financial institutions. In addition, many studies had been published in this field prepared by specialists and consultants who analyze the causes of fraud and ways to minimize the occurrence of fraud. The most important previously published studies covering this topic including its importance, losses, causes, and ways to minimize will be discussed in this section.

PriceWaterhouseCoopers (2003, 2005, 2007) indicated that fraud was one of the major problems that companies were facing regardless of the size of the firm or the industry. This study surveyed 5,428 companies from 40 countries to examine the impact of fraud. The result of this

study showed that 43% of these companies reported fraud which they faced in the last two years. Table 2 below summarizes the companies reporting actual incidents of fraud.

Table 2: Companies Reporting Actual Incidents of Fraud (2003, 2005, 2007)			
Types of Fraud	Percentage of Companies Reported Fraud		
Year	2003	2005	2007
Asset Misappropriation	26%	29%	30%
Intellectual Property Infringement	11%	12%	15%
Corruption & Bribery	6%	11%	13%
Accounting Fraud	4%	11%	12%
Money Laundering	1%	3%	4%
Source: PriceWaterhouseCoopers (2007)			

According to table 2 above, there is an increase in all types of economic crimes starting from 2003 and ending with 2007. Clearly, growth can be noticed in the year 2005 followed by insignificant increase in fraud in 2007 which signaled that companies had taken preventive strategies to control the potential fraudsters' action. Additionally, regulators established necessary rules and policies emphasizing internal control and developed corporate governance principles.

Table 3: Losses Reported by Industry Sectors (2007)				
Industry Sector	Average Direct Loss (US$)	Fraud Average Management Costs (US$)	Total Average Cost to Business (US$)	Percentage of Companies Reporting Fraud
Insurance	4,476,717	1,018,114	5,494,831	46%
Industrial Manufacturing	4,837,975	758,651	5,096,826	42%
Technology	3,462,819	554,895	4,017,714	39%
Entertainment & Media	3,118,516	300,862	3,419,378	42%
Engineering & Construction	2,819,975	360,313	3,280,288	25%
Retail & Consumer	2,801,719	481,224	3,086,873	24%
Global	2,420,700	550,350	2,971,056	-
Pharmaceuticals	2,479,047	357,251	2,836,298	27%
Source: PriceWaterhouseCoopers (2007)				

Table 3 above indicates that the industry reporting fraud the most was Insurance (46%), the average direct losses was US$ 4.5 million while they spent approximately US$ 1 million to manage

issues resulting from fraud. Forty-two percent of industrial manufacturing firms were victims and 39% of technology companies faced fraud mostly in intellectual property infringement.

The other major important part which the study discussed was the key elements of effective controls. It stated that for effective implementation of the internal controls, one must understand the nature of fraud and ways fraudsters use. So companies have to understand their system and environment and to keep space for any change that may rise to update this system according to the new methods of fraud.

Finally, the study concentrated on possible methods to detect fraud by trying to identify how company discovers fraud. Table 4 below list different method of detecting fraud in 2007.

Table 4: Methods of discover fraud

Methods to discover fraud	Percentage
Internal audit	19%
Whistle blowing	8%
By accident	6%
Fraud risk management	4%
Suspicious transaction reporting	4%
By law enforcement	3%
Source: PriceWaterhouseCoopers (2007)	

As shown, fraud mostly discovered by internal control, whistle blowing, followed by Accidently discovered, the reason was, the firms' failure to update the internal controls which negatively affect the proper operation process and subsequently reflect on illegal transaction. Enhancement of internal control system, as well as the high attention paid to protecting the financial assets will create the necessary detective mechanism inside the organization.

Internal Control Components

James A. Hall (2004) stated that internal control in its concepts contain "procedures, policies and practices to protect the organization assets, support the firm efficiency in its operation, ensure the accuracy in the accounting records and information, and assess management compliance with the policies and procedures." Accordingly, internal control consists of five components which are: (1) control Environment, (2) risk assessment, (3) information and communication, (4) monitoring, and (5) control activities. Each component is described in the following section.

The Control Environment

This type of control is considered the basic of all other components. It sets the manner for the firms in which it must be understood by management and employees of the organization, including the structure of the firm, the participation of the board of directors or the audit committee, management method of operating and assessing performance, and the policies and procedures to manage human resources. So, auditors require understanding of the structure of the organization towards management, board of directors, and the responsibility of the internal control. They have to report any irregular conditions that may occur for fraud. Also, they have to understand the industry and set the conditions that may increase the risks which are related to the business risk. The board of directors should implement basic rules in the organization to avoid any conflict of interest such as separating the CEO and Chair person, set ethical standards to direct the management and the staff of the organization, and establish an audit committee to ensure that annual audit is conducted independently by being involved in selecting independent auditors.

Risk Assessment

Risk assessment must be utilized in firms to analyze, identify and manage risks related to financial reporting. (James A. Hall, 2004) These risks may be caused by change the way of operating environment in the organization, new joiners that understand internal controls in different way, reengineered the information system or implement new technologies that may affect the transaction while being processed, introduce new technology without having adequate knowledge about it, and implement new accounting principle that may affect the preparation of the financial statements.

Information and Communication

Accounting information systems consist of methods used to classify, analyze, identify and record transactions that occur in the organization. However, this will help the company to recognize assets and liabilities in making decisions concerning the firm operations and preparation of the financial statements. (James A. Hall, 2004)

Monitoring

James A. Hall (2004) stated that monitoring is a process to design internal controls and to assess the operation of the organization. So, auditors monitor the organization activity by using separate procedures to test internal controls and report its strengths and weaknesses to management.

Control Activities

It is related to policies and procedures to identify the risks of the organization. Control activities can be classified into two groups: computer controls and physical controls. Computer controls are related to the IT environment and auditing which is classified into (1) general group related to entity wide concerns like control of data centers and firm database, and (2) application controls which are related to specific systems like sales processing order and accounts payable. Physical Controls are related to human activities employed in accounting systems; it can be manual such as physical custody of assets or may be used by computers to register the transactions. (James A. Hall, 2004).

Edward Fokuoh Ampratwum (2008) noted that one of the major types of fraud is corruption. Ampratwum (2008) concentrated his research on corruption and its implications for development in developing and transition economies. The methodology used in this study included a review of published theoretical and practical research to understand the causes, effects, measurement, aid and international efforts to eliminate corruption.

Ampratwum (2008) defined corruption as "the abuse of public roles or resources for private benefit". Corruption was a major issue in the mid 1990s from the political and economic sides in many countries. Robinson (2004) defined the political corruption as "the violation of the formal rules governing the allocation of public resources by public officials in response to offers of financial gains or political support".

The study illustrated several reasons behind the corruption including low government wages and high taxes. The researcher studied the effects of the corruption on the economy and investment culture. He summarized these effects into five major parts which were misallocation of resources on the level of macroeconomics, the unfair distribution of wealth which affect negatively the social community, minimize the required budget for significant sectors such as health and education because of difficulty to manipulate these projects for bribe purposes, harmful effect on economic growth and investment, including reducing the opportunity to encourage investment, and reducing the value of the government regulation and policies which will allow the companies to work in illegal economic environment (i.e. violation of tax and regulatory laws).

The developing governments had issued several policies and procedures to measure and control the corruption in order to eliminate the effect of these factors. In addition, aid donors recently developed rules and laws on these matters to minimize the misuse of the funds to invest in illegal transactions.

The conclusion of this study was that governmental and non governmental agencies had concentrated on finding policies to minimize the fraud by understanding its nature and identifying the most dangerous type that affect the macroeconomic indicators (such as the rate of growth, local and foreign investment levels, and unemployment rate).

Another study about corruption was conducted by Gjeneza Budima (2006) entitled: "Can Corruption and Economic Crime be Controlled in Developing Economies, and if so, is the Cost Worth it?" The purpose of this study was to examine the effect of corruption on developing countries and to identify the reasons why economic crimes were more frequent in developing countries. The study indicated that it is difficult to evaluate the losses resulting from fraud in developing countries. Additionally, the study concluded that fraudsters commit illegal transactions in developing countries due to lack of government regulation to fight fraud.

The study illustrated the difference between economic crimes and corruption. It was stated that economic crimes included corruption and other types such as corporate fraud, false accounting, cheating, and lying. Moreover, the study defined corruption as a personal benefit on behalf of the public that will affect the government budget.

Although corruption may not be eliminated, it may be controlled by amending the policies, motivating professional bureaucracy, and by establishing relation between developing countries and international organization to benefit from their professional expertise to legislate laws to combat economic crimes.

The conclusion of this study was that theft corruption had positive and negative impacts in developing countries. From the positive side, dealing with corruption will allow foreigners to invest and this will lead to accumulation of capital. From the negative side, corruption will destroy the government budget (spending in unrelated issues), and allow the accumulation of capital to be transferred outside the country.

Another study done by Wesley Kenneth Wilhelm (2004) entitled " Fraud Management Lifecycle Theory: A Holistic Approach to Fraud Management". This study developed a lifecycle framework and evaluated six industries which faced economic crimes in the United States including (1) telecommunications, (2) banking and finance, (3) insurance, (4) health care, (5) internet merchants, (6) brokerage and securities. This lifecycle contained eight stages which will be discussed later in this study.

The methodology used in this study was based on previous literature reviews as well as interviews, questionnaire and case study responses about fraud management lifecycle. Statistics showed that telecommunication is the industry suffering the most from fraud. Losses reported by telecommunication industry were US$ 150 billion while insurance reported US$ 67 billion annually (see table 5). According to the study, FBI received 207,051 suspicion activities fraud related to different areas in banking such as cheque fraud, counterfeit checks, and counterfeit negotiable instruments amounting to US$ 1.2 billion.

Table 5: Industries Annual Fraud Losses	
Industry	Annual Losses in US$
Telecommunications fraud	150 billion
Insurance fraud	67 billion
Money laundering	40 billion
Internet fraud	5.7 billion
Bank fraud	1.2 billion
Credit card fraud (excluding debit card)	1.0 billion
Total	264.9 billion
Source: Wesley Kenneth Wilhelm, "The fraud management life cycle theory", Journal of economic crime management, 2004.	

The second important part of the study was fraud management lifecycle which contained eight stages. These stages are interrelated and need to be implemented together.

Table 6: Fraud Management Lifecycle	
Stages	Definition
Stage one: Deterrence	Activities used to prevent fraud before occurring.
Stage two: Prevention	Activities to prevent or stop fraudsters from doing fraudulent activities. Usually prevention stage is coming after deterrence failed in stopping fraud.
Stage three: Detection	Activities used to find fraud and to reveal the presence of the fraud.
Stage four: Mitigation	Stopping the fraudsters from continuing criminal crimes by taking an action such as blocking accounts.
Stage five: Analysis	Losses discovered from the previous stages must be identified and factors causing fraud should be understood.
Stage six: Policy	Activities and policies are created, evaluated and communicated to reduce the occurrence of fraud.
Stage seven: Investigation	Conducting research to obtain evidence and information to stop fraudsters from committing illegal activities.
Stage eight: Prosecution	Communication with legal firms to punish the fraudsters and to maintain a business reputation to prevent and minimize the occurrence of fraud.
Source: Wesley Kenneth Wilhelm, "The Fraud Management Life Cycle Theory", *Journal of economic crime management,* 2004.	

The conclusion reached by the researcher was that efficiency of the fraud management requires balancing the activity for each stage in the management lifecycle. The importance of this cycle is not only to prevent fraud but also to identify solutions and improvements in the existing activities to prevent fraud. In other words, successful implementation of fraud management lifecycle will reduce the amount of fraud loss and will adopt a new technique to minimize fraud occurrence in the future.

BANKING FRAUD

The banking sector is playing a major role in the economy. Therefore, proper rules and regulations are needed to regulate the banking activities, policies and procedures. On the other hand, weak regulation may lead to financial problems and significant losses which finally affect the macroeconomics indicators.

One of the main activities of the central banks is to regulate, supervise and control financial institutions in order to maintain the stability of the banking system and minimize the losses caused by fraud which will lead to protect the shareholders and depositors' funds and maintain a good image of banking industry in the country.

Also another important activity performed by the banking sector is the payment system which includes the international and local payments for goods and services. Accordingly, central banks will not allow money to be transferred if it is more than specific amount unless the purposes and the destination are known. However, there are several tools of payments such as cheque, debit and credit cards; electronic funds transfer (EFT), point of sale (POS) and real time gross settlement system (RTGS). (Bank of Uganda, 2005). This study stated that there are various kinds of fraud that can be done through check and / or use of electronic channels, credit & debit cards and misuse of customers' accounts.

QATAR CENTRAL BANK RULES AND REGULATIONS

Qatar Central Bank plays an important role to support and strengthen the banking system by eliminating fraud through its policies and procedures. Currently, there is no specific data and information about the amount of losses caused by fraud in Qatari banking system. Qatar Central Bank approaches the best practices, standards and principles in supervising financial institutions. It addresses, among others aspects, corporate governance, anti- money laundry regulations, and prompt corrective actions against problems. The following is Qatar Central Bank framework to minimize banking fraud.

Corporate Governance

One of the corporate governance objectives is to control the conflict of interest between shareholders, depositors, borrowers, executive management, internal audit, and risk management. QCB, by implementing the rules of corporate governance, emphasis is on separating the responsibilities between different parties by deciding the roles and the authorities for each party to avoid any conflict of interest. Qatar Central Bank defined the rules and responsibilities of directors which could be summarized in eight topics as follows:

- Setting strategies, objectives and policies;
- Forming the organizational structure;
- Constituting committees and delegating powers and authorities;
- Monitoring the implementation and evaluating the performance and risks;
- Appointing and monitoring internal auditing staff;
- Appointing an independent external auditor;
- Assuming responsibilities towards shareholders and other parties; and,
- Assuming responsibilities towards QCB.

Also QCB define rules and responsibilities of executive management who should support the board in setting and developing the strategies, objectives, structure and policies which will be set by the board of directors. Executive management must set programs to evaluate the effectiveness of the internal control implementation and they should cooperate with the internal and external auditors to provide them with the necessary information and support they need.

Instructions of Combating Money Laundering and Terrorism Financing

Money laundry and terrorism finance is one of the major fraud types in banking industry; central bank issued its own rules and regulation to prevent such fraud. The main framework of these rules was as follows.

1. Bank employees have to check customers' representative by checking their identification cards, purpose of opening account, customer's good reputation and any other necessary information that the bank feel it must be checked along with customers' records must be kept for a minimum of 15 years;
2. In case of institutions, banks should check customer name and legal status with the company article of association;
3. Bank should know the source of any amount exceed QR 100,000/-, or has any doubt about banking transaction by getting the complete documentation and information

about the transaction. In case the bank has doubt about money laundering transaction or terrorism, banks should freeze the account and report the suspicious transaction as well; and,

4. Control procedures and training programs for the staff must be maintained to prevent and detect money laundering and terrorism.

Accordingly, all banks should implement strategies to eliminate money laundering and terrorism which must comply with the regulation set by QCB to minimize economic crimes.

QCB Regulation Towards Crime, Cash, and Banking Electronic System

QCB had written policies to minimize fraud by setting procedure which must be followed by all banks. So, banks must notify QCB in case of any crime or fraud by providing the names of accused persons. Banks have to check regularly the efficiency of their electronic systems by setting measures to avoid any fraud that may occur in the future.

Know Your Customer (KYC)

The purpose of know your customer concept is to identify banks clients whether they are individuals or entities by checking the legal documentation before opening an account. The documentation should contain the minimum required information such as: contacts numbers, address, place of work and confirmation letter from their employers. Know your customer concept becomes one of the most significant tools to minimize fraud in financial institutions.

Know Your Employee (KYE)

Organizations have to know their employees before hiring them and should have a positive record from their previous employment or from legal entities. Also, they should keep track records about their employees. Institution and employees should comply with personnel laws and regulations, and code of conduct/ethics.

RESEARCH METHODOLOGY

The aim of this research was to investigate the reasons and critical factors behind economic crimes in banking sectors generally, and especially in the State of Qatar. The objectives of this research were to investigate and identify the most types of fraud occurrence, to examine the amount of losses resulting from fraud, to review the awareness of banking sector in State of Qatar toward

economic crimes, and to suggest recommendation and framework to be implemented to eliminate or minimize the fraud in banking sector in State of Qatar.

This research utilized one major tool, namely questionnaire which was used to facilitate the gathering of information from respondents. The questionnaire contained 24 questions in three different sections including, background information of respondents (e.g. age, education and work experience), general information about fraud, and fraud detection which is only answered by auditors, finance and risk management professionals. The survey was limited to the banking sector that operates in the State of Qatar. Table 7 lists banks utilized in this study. Two hundred questionnaires were distributed to the first line, middle, and senior management levels of these banks. One hundred ninety eight were completed for a response rate of 99 percent.

Table 7: Banks Operating in State of Qatar

Bank Name	Capital (December 31, 2007) in 000 QR	Total Assets (Dec. 31, 2007) in 000 QR
Qatar National Bank	1824975	114360668
Commercial Bank of Qatar	1,401,579	45397279
Doha Bank	1,248,175	30088112
Qatar Islamic Bank	1,193,400	21335768
Al-Ahli Bank	507,812	15576381
International Bank of Qatar	321,430	10770637
Masraf Al Rayan	3,749,685	10191470
Qatar International Islamic Bank	700,782	9951209
Arab Bank	20,000	4347000
Qatar Industrial Development Bank	1,500,000	1692499
QR 3.65 = $ 1		

DATA ANALYSIS

Table 8 shows the demographics characteristics relating to the respondents of this study. The survey was completed by 198 participants of which 12 percent were less than 30 years old, 39 percent were between the ages of 30- 40 years old, 33 percent were between the ages of 41-50, and 16 percent in the range of 51-60 years old. It was noticed that more males were working in banking sector than females (78 percent males vs. 22 percent females). Respondents included 64 percent of non-Qatari compared to 36 percent of Qatari workers. Forty-four percent of participants were holding a senior management position, while 38 percent were in the middle management level. Forty-six percent of respondents had experience between11 and 15 years and 27 percent had more

than 15 years of experience in the banking sector in Qatar. While analyzing education level of respondents, it was noticed that the lowest percentage (5 percent) were employees with high school degrees and the highest percentage was 48 percent for employees holding bachelor degrees. Most of the respondents were working in retail (15 percent) and operation (15 percent) departments. The remaining respondents were allocated almost equally among different departments.

Table 8: Demographics of Respondents

Variable	No. of respondents (n=198)	Percent of Respondents
Age:		
Less than 30 years	23	12
30 – 40 years	78	39
41 – 50 years	66	33
51 – 60 years	31	16
Above 61	0	0
TOTAL	198	100
Gender:		
Male	155	78
Female	43	22
TOTAL	198	100
Nationality:		
Non-Qatari	126	64
Qatari national	72	36
TOTAL	198	100
Title:		
Senior management	88	44
Middle management	75	38
First line managers	33	17
Other	2	1
TOTAL	198	100
Working Experience:		
Less than 5 years	8	4
5 – 10 years	45	23
11 – 15 years	92	46
More than 15 years	53	27
TOTAL	198	100

Table 8: Demographics of Respondents		
Variable	No. of respondents (n=198)	Percent of Respondents
Education:		
High school degree	11	5
Bachelor degree	95	48
Diploma degree	40	20
Master degree or equivalent	38	19
Doctoral degree	14	7
TOTAL	198	100
Department:		
Operation	30	15
Retail	29	15
Corporate	23	12
Credit	22	11
Audit	19	10
Risk Management	17	8
Finance	16	8
Investment	14	7
Trade Finance	14	7
Other	14	7
TOTAL	198	100

Respondents from different departments were asked several questions related to fraud to capture their perception about employees' awareness about fraud. Table 9 shows that most respondents (95 percent) agreed that they had information about banking fraud in general and 86 percent agreed that they were familiar with internal control systems in their banks. When respondents were asked about reporting fraud committed by their employees, 44 percent answered positively. Of those respondents positively, 31 percent indicated fraud occurred in credit card while 22 percent selected asset misappropriation. Twenty- two percent reported the amount of fraud was between less than hundred thousand and up to five hundred thousand. Eighteen percent of respondents reported that there were no cash losses resulting from fraud.

Most of the respondents (84 percent) stated that they reported fraud directly to their line managers while 11 percent report directly to the auditors.

Most respondents (64 percent) reported receiving awareness session or information from their banks, 75 percent indicated their banks had anti-fraud policies, and 66 percent of their staff were aware of these anit-fraud policies. Finally, 82 percent indicated their banks had written policies and procedures concerning asset usage.

Table 9: General information about fraud

Variable	Frequency	Percent
General knowledge about banking fraud:		
Yes	188	95
No	10	5
Familiarity of internal control system:		
Yes	170	86
No	28	14
Reporting of fraud:		
Yes	88	44
No	110	56
Areas where fraud have been reported:		
Credit Cards	17	31
Bank assets (asset misappropriation)	15	22
Bribery	13	19
Theft	12	18
ATM fraud	9	13
Financial statements	9	13
Corruption	9	17
Other	4	6
Amount discovered as fraud:		
Less than 100	15	22
101-500	15	22
501-1000	13	19
More than 1000	12	18
No cash losses	12	18
Report of fraud:		
Line manager	167	84
Auditors	22	11
Other	9	4

Table 9: General information about fraud		
Variable	Frequency	Percent
Fraud awareness session/ information:		
Yes	126	64
No	72	36
Anti fraud policy:		
Yes	148	75
No	50	25
Staff awareness of anti fraud policy:		
Yes	130	66
No	68	34
Written policy & procedures for using bank assets:		
Yes	164	83
No	34	17

The third part of the questionnaire was specified to auditors, finance and risk managers to measure their important role to implement a strong system to detect fraud. Respondents were asked to indicate whether their banks encourage whistle blowing. Results indicated that the majority of respondents (82 percent) had encouraged the technique, while the rest (18) percent did not encourage whistle blowing as a mechanism in detecting fraud.

There were a variety of responses from participants toward which type of fraud occurs most frequently in the banking sector. The highest percentage was in credit card (51 percent) followed with ATM fraud (45 percent) and the least percentage was in theft (7 percent). When asked about which departments' fraud occurs the most, respondents reported the highest percentage in retail (52 percent) followed by investment (31 percent). When asked about the procedure most effective in discovering fraud, respondents indicated internal control, (66 percent), internal audit reviews (28 percent), and government agency notification (19 percent).

When respondents were asked about controls utilized in their banks 77 percent indicated preventive, 62 percent reported detective, and 57 percent mandated corrective controls. The most widely used internal control components were control environment (72 percent) and risk assessments (67 percent). It is worth noting that the least utilized internal control components were control activities (48 percent) and information and communication (39 percent).

The last question asked respondents how they dealt with fraud. Sixty- five percent reported fraud directly to audit committee and 9 percent reported to the board of directors.

Table 10: Fraud detection		
Variable	Frequency	Percent
Encourage of whistle blowing:		
Yes	40	82
No	9	18
Types of fraud occur most frequently:		
Credit card fraud	27	51
ATM fraud	24	45
Financial statement	18	34
Asset misappropriation	15	28
Bribery	7	13
Theft	4	7
Other	0	0
Department that fraud occur most frequently:		
Retail	28	52
Investment	17	31
Corporate	14	26
Operation	12	22
Trade finance	8	15
Other	4	7
Risk management	3	5
Finance	2	4
Audit	0	0
Credit		
Effective procedure in discovering fraud:		
Internal control	35	66
Internal audit review	15	28
Government agency notification (QCB)	10	19
Specific investigation by management	6	11
Customer notification	4	7
Specific investigation by employee	4	7
Other	2	4
Policy notification	2	4
Accidental discovery	1	2

Table 10: Fraud detection		
Variable	Frequency	Percent
Control utilize in bank:		
Preventive	41	77
Detective	33	62
Corrective	30	57
Internal control components*:*		
Control environment	39	72
Risk assessments	36	67
Monitoring	32	59
Control activities	26	48
Information & communication	21	39
Deal with fraud:		
Report to audit committee	35	65
Other	12	22
Report to board of director	5	9
Immediate dismissal	2	4
Keep it quite	0	0

The chi-square non-parametric test was used to determine whether various relationships were statistically significant. Table 10 shows a summary of calculated values for various chi-square tests involving age, gender, nationality, title and education in one hand and awareness about fraud, areas of fraud, reporting and losses resulting from fraud, most frequently occurring fraud types, procedures to discover fraud, and types of controls available on the other hand. Many of the indicators did not show any statistical significant between the dependent and independent variables. The first variable tested was age. There was statistically relationship between age and familiarity with internal control systems, reporting fraud, receiving awareness session about fraud, the availability of written policy and procedures about asset usage, types of fraud, departments were fraud frequently occurs, effective procedures in discovering fraud, types of control, and how to deal with fraud. As employees became older, they were more familiar with internal control systems, tended to report fraud more frequently, received fraud awareness session, their banks had written policies and procedures of how to utilize assets, perceived fraud to occur most frequently in financial statements. Employees with age group between 30-40 were twice more likely to identify internal controls as the procedures most effective in discovering fraud than the employees between 41-50.

The second variable was gender. There was a significant relation between gender and familiarity with the policies and procedures in their banks, reporting of fraud, department were fraud

most frequently occurs particularly in investment, awareness of QCB regulations and rules as most effective procedure in discovering fraud and finally the importance of information and communication as the most internal control components utilized in banks.

Male were more aware of the internal control system in their banks, identified credit cards as the area were fraud most occur, more likely to recognize that information and communication as the proper tool of internal control system.

However, females think that investment is the department in which fraud was reported, also they were three times more likely to believe that QCB rules and regulations are the most effective way to discover fraud. Both genders agreed on reporting fraud to line managers rather than auditors.

Nationality was divided into two groups namely Qatari and Non-Qatari. Results showed statistically significant relation between the nationality and employees general information, internal control system, reporting of fraud, receive fraud awareness session, existence of anti-fraud policy, encouraging of whistle blowing as a mechanism to report fraud, perceived fraud to occur most frequently in financial statements and finally investigation by employees as a most effective method in discovering fraud.

Non-Qatari more familiar with the general information about the fraud, internal control system and more likely receive awareness session about fraud. Qatari nationals reported ten times more likely than non-Qatari in relation to Investigation by employees as the most effective procedure in discovering fraud.

The other variable used in this research was education. There was statistically relationship between education and general information about fraud, familiarity with internal control systems, and effective procedures in discovering fraud. As employees became more educated, they were more familiar with internal control systems. Results show masters degree holders were more likely aware of internal control than bachelor and diploma degree holders.

Last important variable is the employees' seniority. As employees become more seniority, they were more familiar with the policies and procedures in their banks, reporting fraud, losses figures as a result of fraud, awareness of the anti-fraud policy, the availability of written policy and procedures about asset usage, encouragement of the whistle blowing as a mechanism to report fraud, types of fraud, departments were fraud frequently occurs, effective procedures in discovering fraud, types of control, internal control components utilized in banks and how to deal with fraud. As employees became more seniority, they were more familiar with internal control systems, tended to report fraud more frequently, believed that the corrective action is the kind of control to minimize fraud, and monitoring as one of the internal control components which their banks utilized.

SUMMARY AND CONCLUSION

This study discussed the nature of fraud in general and it focused in banking sector especially in State of Qatar. The study showed several factors that must be used to minimize fraud. Some of

these factors must be followed and applied in banks which are regulations addressed from Qatar Central Bank and others are optional depending on the system and the management style in implement efficient internal control system and other internal policies. This study tried to minimize the banking fraud to enhance the effectiveness of the banking operations. A survey was utilized to gather the data required and the SAS statistical software was used to analyze the data. A total of 200 questionnaires were distributed and 198 had been collected.

This study found that the majority of management levels in all banks had information about policies and procedures. However there is still room for training of all staff in different areas in banking sector. Additionally, the study found that banks are not utilizing the three methodologies (detective, corrective, preventive) in the same manner. According to study, senior management emphasis on corrective control while it is suppose to build the set up of preventive control rather than the corrective action. Majority of banks reported the use of the different component of internal control including control environment (72 percent), risk assessment (67 percent), and monitoring (59 percent). Bankers report fraud to audit committee (65 percent) followed by reporting to board of directors (9 percent). Finally, education had a major effect on the internal control awareness which mean that the lower educated staff need more focus on training and continuous session about fraud.

Based on our findings, the study recommends the following to minimize fraud occurrence:

1. Regular sessions and courses must be available to all levels of staff, provided by professional trainers, to update employee with the latest techniques of fraud and how to protect their organization;
2. Local anti-fraud organization must be established to implement the full policies and procedures related to fraud in cooperation with an international fraud organization such as Association of Certified Fraud Examiners;
3. Strengthening the control system by updating and ensuring the system can handle the new challenges and threats;
4. Activate the internal audit function in banks to equip with appropriate defense techniques against possible fraud; and,
5. Establish compliance culture by assigning teams to monitor the employees to ensure that regulations and rules of the bank are followed and to avoid conflict of interest.

The limitations of this study were as follow:

1. No clear statistics of fraud losses in the Middle East;
2. Annual reports or regular banks financial statements do not show any official effect of fraud on banks performance; and,
3. Difficulty to calculate losses in relation to each type of fraud in State of Qatar.

REFERENCES

ACL, 2005, "Fraud detection & prevention: transaction analysis for effective fraud detection, http://www.pentana.com/ACL/fraud%20white%20paper/wp_fraud.pdf accessed on 30, May 2008

ADVFN PLC USA, http://www.advfn.com/money-words_term_2081_fraud.html, accessed On 30 May 2008

Ampratwum, Edward Fokuoh, 2008, "the fight against corruption and its implications for development in developing and transition economies", *Journal of money laundering control,* Vol.11, No.1

Bank of Uganda, 2005, "bank fraud- a challenge to Uganda's banking industry" http://www.bou.or.ug/BANKFRAUD.pdf, accessed on 30, May 2008

BMF, "Fighting money laundry and terrorism funding" http://english.bmf.gv.at/FinancialMarket/ Fightingmoneylaundr_85/_start.htm, accessed on 30, May 2008

Budima, Gjeneza, 2006, "can corruption and economic crime be controlled in developing economies, and if so, is the cost worth it?" *Journal of financial crime*, Vol. 13 No. 4

Blanque, Pascal, 2002," Crisis and Fruad", *Journal of financial regulation and compliance.*

Bussmann, Kai-D, 2005, "Global economic crime survey 2005", economy and crime research centre, Martin Luther-University.

Bussmann, Kai-D., 2007," Economic and crime: people, culture and controls", economy and crime research centre, Martin Luther- University.

Coenen, Tracy, 2008, "Three basic fraud types", All business A D&B Company, http://www.allbusiness.com/crime-law-enforcement-corrections/criminal-offenses/6635361-1.html, accessed on 30, May 2008

Ernest & Young, 2004, "Common fraud types", http://www.tecbrand.com/eyrisk/newsletter1004/fraud_warning.htm, accessed on 30, May 2008

Fraud Advisory Panel, http://www.fraudadvisorypanel.org/newsite/PDFs/advice/Fighting%20Fraud.pdf, accessed on 30, May 2008

Hall, James A., 2004, *Accounting information system*, fourth edition.

Internal Controls,"they key to good business practices", http://www.cafm.vt.edu/dbmg/ internal_controls.php#typescontrols, accessed on 30, May 2008

Justice, "What is the internet fraud?" http://www.usdoj.gov/criminal/fraud/internet/, accessed on 30, May 2008

Lloyd, Clem and Paul Walton, 1999," Reporting corporate crime", volume 4, number 1.

Louw, John & Petrus Marais, 2002, "Southern Africa fraud survey", KPMG

Mercer University," Internal control" http://www2.mercer.edu/Audit/Internal+Control.htm, accessed on 30, May 2008

PCAOB, 2007, "Observations on auditor's implementation of PCAOB standards relating to audit responsibilities with respect to fraud", http://www.pcaobus.org/Inspections/Other/2007/01-22_Release_2007-001.pdf, accessed on 30,May 2008

QCB, 2006, eighth edition, http://www.qcb.gov.qa/Instruction_To_banks_March_2006/Part%20Seven/page117-124.pdf, accessed on 30, May 2008

QCB, 2006, eighth edition,http://www.qcb.gov.qa/Instruction_To_banks_March_2006/Part%20Seven/page117-124.pdf, accessed on 30, May 2008

QCB, 2006, eighth edition, http://www.qcb.gov.qa/Instruction_To_banks_March_2006/Part%20Six/page58-62.pdf, accessed on 30, May 2008

Sandrei, Igor, 2005. "Credit fraud in retail banking", Narodna Banka Slovensea, volume xIII

Spam laws, http://www.spamlaws.com/fraud.html, accessed on 23,June 2008

Wells, Joseph T., 1997, *Occupational fraud and abuse*,

Wells, Joseph T., 2000," So that's why it's called a pyramid scheme", *Journal of accountancy*, Association of Certified Fraud Examiners.

Wilhelm, Wesley Kenneth, 2004, "The fraud management lifecycle theory: A holistic approach to fraud management", *Journal of economic crime management,* Volume, issue 2.

Wikipedia the free encyclopaedia, http://en.wikipedia.org/wiki/Bank_fraud, Accessed on 30, May, 2008

Wilmer,.Cluter and Pickering, 2003,"Economic crime survey", Pricewaterhousecoopers.

Zikmund, Paul, 2008," 4 steps to a successful fraud risk assessment: internal auditing is an excellent position to identify fraud schemes and scenarios and evaluate the controls in place to prevent them".

CONCENTRATION IN LENDING: COMMERCIAL VS FINANCIAL CREDITS

Lucia Gibilaro, University of Bergamo
Gianluca Mattarocci, University of Rome

ABSTRACT

The concentration risk measuring approaches differ based on the attention paid to the individual counterparts (single name approach) and/or the role attributed to the sectoral/geographic portfolio distribution.

The specific characteristics of a financing contract may affect the level of effectiveness of the two approaches for assessing the portfolio concentration risk. In fact, the differences between commercial credit and financial credit are deemed relevant in the literature in order to justify the presence of structural differences in the customer portfolio of intermediaries specialized in one or the other credit typologies. All of those differences could influence significantly the estimates of risk exposure and the choice of the correct methodology could influence the amount of capital necessary to offer credit.

The analysis of one of the most relevant markets for factoring lending (Italy) highlights significant differences in the portfolio of intermediaries specialized in the traditional credit offer with respect to factoring companies. In fact, the credit portfolio of the latter appears to be structurally more concentrated, particularly when using the single name assessment approach. With respect to bank credit in commercial lending, the greater concentration of the customer portfolio has no repercussions on the risk of the transaction and the behavior of major creditworthy customers seems to be not so relevant.

INTRODUCTION

The availability of credit for an enterprise is affected by the amount of risk weighing on the moneylender. If, for example, the amount of the loan is significant, the performance of the financial intermediary could be significantly impacted by the trend of the largest counterparties' creditworthiness.

The literature identifies two major approaches to the measurement of the concentration risk: the single name approach with regard to the individual perspective, and the sectoral / geographic approach encompassed in the portfolio perspective.

The effectiveness of the two approaches for measuring the concentration risk in risk control may be affected by the financial or commercial nature of the liability underlying the financial contract.

Indeed, with a view to safeguarding the stability of a financial intermediary, the prudential regulations currently in force require the financial intermediaries to comply with capital adequacy guidelines in the face of the concentration of risk. The computation of the regulatory requirement is realized according to the single name perspective and, at present, it does not take into account the financial or commercial nature of large exposures.

This paper deals with the effectiveness of the tools which check concentration risk according to the single name approach and the sectoral / geographic approach with respect to the portfolio financing of the exposures represented by financing liability or current liabilities for the enterprise. Based on a review of both the literature and the current prudential regulations, this paper proposes an empirical verification of the degree of concentration of financial and commercial credit portfolios using these two main approaches. Initially, the paper refers to the most authoritative academic literature on the single name and sectoral / geographical concentration risk (paragraph 2) looking at the implications of the approaches with respect to exposures having a financial and a commercial nature (paragraph 2.1) and at the regulatory context for the Italian market (paragraph 2.2). With a view to ascertaining the hypotheses being formulated, the paper proposes an empirical analysis of the Italian credit system based on a comparison of the concentration and risk exposure between portfolios of financial and commercial exposures according to the two approaches referred to above (paragraph 3). The last paragraph is devoted to a few concise conclusions (paragraph 4).

LITERATURE REVIEW

The riskiness of a financial intermediary's credit portfolio depends on both a systemic risk which may not be ameliorated by diversification and a non-systemic risk linked to the specific characteristics of specific trustworthy customers. By increasing the number of customers and applying the classical principles for diversifying a portfolio of financial activities, the relevance of the specific risk tends to decrease (Santomero, 1997) in a way that is more than merely proportional to the decrease in the performance that may be connected with such a diversification strategy (Elyasiani & Deng, 2004).

The exposure to a specific credit portfolio risk is estimated by taking into account the level of concentration of the portfolio and adopting either the single name measurement approach or the approach based on sectoral/geographical characteristics (Kamp, Pfingsten & Porath, 2005). The first approach assumes that the characteristics of the customers of a financial intermediary are so heterogeneous that the concentration risk may only be assessed by taking into consideration the exposure toward each customer. The importance of the analysis of the level of concentration is justified in literature in the face of:

- ❑ the collusion risk between major customers and financial intermediaries; and
- ❑ the risk of illiquidity of the assets.

High levels of exposure toward individual customers may be a sign of a lower ability of the financial intermediary to impose its contractual conditions and to manage the credit process in an efficient manner. In fact, a financial intermediary is more likely to offer favorable loan terms to its most important customers just to keep the relationship going and, should difficulties arise, is stimulated to grant extensions or further loans in order to avoid the full loss of any previously granted loan (Boot, 2000).

The loans being granted are characterized by a low level of asset liquidity that is likely to determine the inability to comply with a repayment request, if any, by the intermediary's financial backers. A low level of concentration of the customer portfolio and the definition of different expiries/durations for the lending relationships with the various customers allow reducing the liquidity risk connected with the credit activity (Cerasi & Daltung, 2000).

The hypothesis of establishing a unequivocal relationship between the business cycle and the performance of the enterprises, attributing every likely anomaly to specific characteristics of the enterprise, limits to a significant extent the models to assess customers (Gordy, 2003). In fact, it does not stand to reason to assume that the impact of macroeconomic changes is independent of the characteristics of the context where the enterprise works (Bonti, Kalkbreber, Lotz & Stahl, 2005) and it proves possible to identify the relationships between the economic sector and/or the geographic area to which it belongs (Hanson, Pesaran & Shuerman, 2005).

In fact, the approach based on sectoral/geographical profiles singles out within a credit portfolio those individuals who are homogeneous with respect to a few characteristics deemed relevant, which appear to feature the same level of exposure upon the occurrence of a few significant external events (Altman & Saunders, 1998). A high level of homogeneity of the creditworthy customers determines for the intermediary an excessive exposure to the risk of significant losses in consequence of the propagation of generalized crises affecting enterprises belonging to special sectors and/or geographical areas (Giesecke & Weber, 2006).

The presence of a level of structural concentration in a few sectors of economic activity may affect the financial intermediaries who, over time, have gained distinctive expertise in working with selected typologies of counterparties (Stomper, 2006). In fact, empirical analyses have shown that the excessive diversification of bank portfolios fails to be an efficient solution (Pfingsten & Rudolph, 2002), particularly when the customers' reference markets are keenly competitive (Acharya, Hasan & Saunders, 2006) and the costs to screen and monitor the counterparties are high (Winton, 2000).

Economic factors belonging to special geographic areas are affected to a different extent by the evolution of the business cycle (FroLov, 2006), and a diversification by geographic locations may give rise to a decrease in the total risk assumption and an increase in the intermediary's level

of efficiency (D'Souza & Lai, 2004). However, the effectiveness of the procedures to screen and monitor customers does not prove to be independent of the closeness/distance with respect to the financial intermediary and, therefore, the credit portfolio may feature a level of a structural geographic concentration (Carling & Lundberg, 2002).

The following paragraphs describe the specific characteristics of the commercial and financial credits which could affect the level of single name or sectoral/geographical concentration (paragraph 2.1) and detail, with reference to Italian law, limits and opportunities offered to financial intermediaries in selecting concentration measures (paragraph 2.2)

The Concentration Risk Measurement Approaches and the Nature of the Financial Instruments

The literature on the concentration risk measurement approaches seems to focus essentially on the creditor's exposures resulting from the debtor's financial liabilities. A review of the literature highlights the relationship between the type of approach to such a risk measurement and the nature of the debtor's financial or commercial liability. However, this closer examination is especially important in the light of the dimensions taken on by commercial credit that, based on empirical verifications relating to the domestic context, by the end of the 1990s has outdistanced short-term bank lending by 10% (Cannari, Chiri & Omiccioli, 2005).

Within the context of the single name approach, the concentration of the financial intermediary's assets towards counterparty may result in significant losses when the exposure is financial in nature. In that case, even the presence of various technical forms which contribute to determining the relevance of the exposure, the cause of the relationship is the debtor's financial needs, and repayment depends exclusively on the debtor's ability to generate cash flows.

According to the single name approach, the assessment of the concentration risk in financial transactions based on commercial credits - such as, invoices discounting subject to collection (Munari, 2006), factoring (Ruozi & Rossignoli, 1985), and securitization operations (Giannotti, 2004) – requires a prior investigation into the basic reason for granting a commercial credit. In fact, the literature singles out two types of reasoning which underlie the granting of a commercial credit (Omiccioli, 2004):

- ❑ the real determinants – such as guarantee of the product quality (Lee & Stow, 1993), price discrimination tool (Schwartz & Whitcomb, 1978) and / or enhancement of the customers' loyalty (Emery, 1987);
- ❑ the financial determinants (Schwartz, 1974).

If the financial reasons prevail, the analogies with respect to the operations with a financial nature predominate. In that case, the transferor takes on the role of an intermediary between the

lender and the debtor (Direr, 2001). Should the real determinants prevail, the use of the single name approach presents analogies and divergences with respect to exposures having a definite financial nature. From the former point of view, the financial intermediary who carries on transactions based on commercial credits may report large exposures towards the supplier who transfers the credit or the debtor who purchases the product/service. Unlike the financial exposures based on the bilateral relationship between lender and debtor, in the financial operations based on the purchase of commercial credits, the relationship is based on a pre-existing commercial relationship and, therefore, the financial relationship has a trilateral and self-settling nature[2]. Contrary to empirical evidence based on the concentration of exposures that represent credit liabilities for a debtor (Heitfield, Burton & Chomsisengphet, 2005), the concentration of assets in such transactions toward the counterparty does not entail the exposure to the risk of greater losses with respect to a portfolio diversified on the front of the supplier-transferor and/or debtor-purchaser. In fact, even though the financial intermediary has a large exposure towards the transferor, the repayment of the loan depends primarily on the fulfillment on the part of commercial debtors. If the large exposure is towards the debtor-purchaser, it is generally determined by the existence of commercial relationships with more than one supplier, as well as by motivations determined by the optimization of the financial structure of the enterprise. Analogously to what happens with respect to the concentration towards the transferor, there are a number of independent repayment sources: if the extensions of payment from which a debtor benefits are on average longer than those admitted in its markets for re-placing the purchased goods and/or services (Dallocchio & Salvi, 2004), they should allow the repayment of debts. Besides, it turns out that the modest effectiveness of the concentration risk control through the single name approach is determined by the short maturity of the commercial credits, which is structurally lower than 90 days[3]. Based on the specificities of the financial transactions founded on commercial credits, the single name concentration risk control may represent an effective tool for limiting losses if measured within the portfolio of commercial credits that may be referred to each supplier: a debtor's significant relevance could imply an economic link between the transferor and the supplier.

Looking to sectoral / geographic concentration risk in financial exposures, the intermediary checks the systemic risk weighing on his portfolio: the effectiveness of such a tool is related to the influence exerted by the stratification variables with respect to the trend of the credit worthiness of the financed counterparties and the relevance of such profiles within the customer portfolio of the intermediary, as shown by the empiric analysis available in the literature[4]. As a result, the use of the sectoral / geographic approach must be backed up by tools based on the single name approach in contexts characterized by a considerable relevance of the specific risk.

Within the context of the commercial lending transactions, the assessment of the concentration risk through the approach based on sectoral / geographic characteristics seems suitable to allow the prevention of losses, leaving aside the motivation underlying the commercial credit application. In the perspective of the assessment of both the transferor and the debtor, and assuming

a situation of competitiveness of the markets, the repayment of the debt is related to the placement of one's goods and/or services with end-purchasers. In that case, the repayment of the exposure would seem to be prevailingly affected by the trend of systemic variables such as, for instance, those related to the trend of the sectoral markets, rather than by the specific risk of the counterparty. In the domestic context, recent empiric evidence shows that commercial credit has an anti-cyclical nature, being used for the most part as a demand-supporting tool (Malgarini, 2006). The significance of the systemic variables is positively affected by the concentration of debtors in a sector and / or a region and by the network effect among enterprises created within them by the extension of the commercial credit (Cardoso Locourtois, 2004).

The Regulations Governing Concentration in the Domestic Context

The control of the implications of the concentration risk on the stability of financial intermediaries represents one of the fundamental principles recognized at an international level for a safe and sound management of the intermediation activity (Basel Committee on Banking Supervision, 1997). Concentration may affect the performance of the financial intermediary and, should the exposure towards the relevant creditworthy party prove significant with respect to the lender's capital, the forfeiture of the creditworthiness of the counterparty may compromise the stability of the very intermediary (Cicardo, Laviola, Losavio & Renzi, 1995). The domestic regulations, in keeping with those of the European Community, are exclusively inspired by the single name logic: the individual perspective of the risk analysis within the context of the credit portfolio is impervious to the influence of macroeconomic factors on the variability of the creditworthiness of all the counterparties with whom the intermediary entertains a relationship characterizing the sectoral / geographic approach (Cicardo, Laviola, Losavio & Renzi, 1995).

The prudential regulations on concentration, introduced within the Community through Directive 92/121/EEC, aim to limit the maximum risk of losses with respect to any single client or group of connected clients (Rossignoli, 1993). In the domestic context, the Bank of Italy extended these regulations in 1993 to banking groups and banks and, in 1998, also to supervised non-bank financial intermediaries.

In order to assure the financial intermediaries' stability, the Supervisory Authority has identified a few instruments that are likely to limit the practice of the credit activity at both a global and a specific level. From the former point of view, the credit activity in favor of counterparties that entail positions of considerable risks, that is to say exposures weighted by pre-established coefficients that exceed 10% of the regulatory capital, must be kept within the limit of eight times the regulatory capital; at an individual level, the risk position - obtained weighing the book value by pre-established coefficients - must not exceed 25% of the regulatory capital (Bank of Italy, 1999). Notwithstanding the differences referred to in this paper between concentrated exposures resulting from financial and commercial liabilities, the instruments provided for by the prudential regulations

are the same: non-bank financial intermediaries that carry out factoring transactions - that, according to statistics of the Bank of Italy[5], account for nearly one half of the financial operations based on the purchase of commercial credits carried out within the domestic context – are only allowed by the regulations to operate with higher concentrations levels in relation to their regulatory capital and, in *pro solvendo* (with recourse) exposures, allows the possibility of attributing the exposure to the transferor[6]. The regulations currently in force in the matter of concentration provide for an ad hoc treatment with respect to financial intermediaries who work prevailingly with the industrial group they belong to. In that case, the concentration toward the transferred debtor, that is to say the parent company or the companies belonging to one's own industrial group, represents the institutional goal of the intermediary[7].

EMPIRICAL ANALYSIS

The different characteristics of the financial and commercial relationships have repercussions on the characteristics of the exposures of financial intermediaries and may cause a higher or lower effectiveness of one of the other concentration measurement approach. Analyses presented in literature have disclosed a few peculiarities of the commercial credits that set them apart with respect to other financial operations and determine the presence of a high level of structural concentration that may not be done away with (Summers & Wilson, 2000).

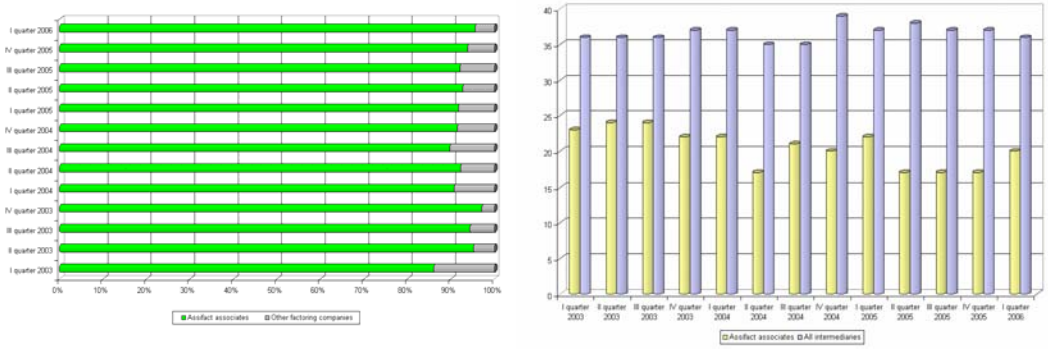
This study considers the possibility that the differences reported in literature influence the effectiveness of the two approaches used for measuring the concentration in the financial and commercial operations looking at one of the most developed world market for factoring.

The Sample

The analysis of the financial credit portfolio has been carried out taking into consideration data relative to the entire Italian financial system registered by the Bank of Italy and available in the Public Data Base. In order to make a comparison between comparable magnitudes, the analysis was restricted to the short-term financing transactions represented by cash credits.

On the other hand, in view of the non-availability of system data having the same level of detail as those offered in respect of financial credits, the study of the characteristics of a portfolio of commercial credits called for the selection of a sample of specialized intermediaries - factoring companies - deemed to be representative of the system. The companies were selected based on the availability of supervisory reports and data relative to statistical reports collected by the Italian factoring association (Assifact). The sample may be considered to be representative of the Italian situation because, although the reporting members do not represent all the qualified entities, the volume of the acquired credits represents on average nearly 90% of the total national amount. (Graph 1)

Graph 1. The significance of the sample in the overall italian market



Source: Bank of Italy and Assifact data processed by authors

Data collected are inherent to the amount of exposure, characteristics of debtor and contract of all credits still available at the end of the quarter and of the defaults occurred in the quarter. The typology of data selected to carry out the empiric verification on commercial credits proved binding in the selection of the reference time interval and the frequency of usable data. Therefore, the analysis considered the system data and the statistics relative to the Assifact associates starting from 2003 and ending in the first quarter of the 2006 with a quarterly frequency[8].

The Methodology

The analysis of the Italian market is realized comparing estimates of concentration between commercial and financial credits and trying to point out if differences in concentrations affect the risk of lending.

Estimates of the two types of concentration for financial and commercial credits has been carried out based on indicators that allowed keeping into account the characteristics of the intermediaries' credit portfolios.

The study of sectoral / geographic concentration has been carried out taking into consideration the standard classification by regions and by sectors of economic activity used by the Bank of Italy for the financial intermediaries. In the light of the available literature, the decision was taken to analyze the sectoral / geographic concentration risk having recourse to the indexes that are most extensively used to assess the degree of concentration / entropy of customer portfolios (Heitfield, Burton & Chomsisengphet, 2005). More in detail, the analysis has taken into consideration the indexes outlined below:

- ❑ Gini index (Gini, 1936);
- ❑ entropy indexes (Shannon, 1948);
- ❑ distance indexes (Kamp, Pfingsten & Porath, 2005).

The measure proposed by Gini represents an estimate of the dispersion of the observations with respect to a theoretical distribution that ensures a fair distribution of the credit portfolio. In formulas:

$$G_t = [2/(n-1)] * \sum_i [Exp_i - E(Exp_i)] \quad (1)$$

where the concentration depends on the difference between the real distribution of *n* observations (Exp_i) with respect to the theoretical distribution that represents the equitable distribution of the assets ($E(Exp_i)$). In the presence of distributions characterized by a limited number of observations and a non-negligible degree of asymmetry and / or kurtosis, the indications provided by such an index may prove misleading (Hart, 1971).

The entropy indexes, instead, are not based on a comparison with an optimum theoretical distribution, as they merely measure the lack of homogeneity in the distribution, attributing different weights in relation to the extent of the deviations. The most widespread formulation provides for the calculation of a weighted average of the relative exposures:

$$H_t = (1/\log(n)) * \sum_i [(Exp_i / Exp_{TOT}) * \log(Exp_i / Exp_{TOT})] \quad (2)$$

where the value of the index increases as the concentration of the investments increases (Exp_i / Exp_{TOT}) according to a weighting factor derived from the logarithmic function ($\log(Exp_i / Exp_{TOT})$).

On the other hand, the distance indexes applied for assessing a credit portfolio provide direct information about the differences existing between the situation under consideration and the reference *benchmark* that was identified. The formulation relative to the first order differences is:

$$D_t = (1/n) * \sum_i \{ [|(Exp_i / Exp_{TOT}) - E(Exp_i) / E(Exp_{TOT})|] * [(Exp_i / Exp_{TOT}) - E(Exp_i) / E(Exp_{TOT})] \} \quad (3)$$

Estimate of this measure using the commercial credits as survey population (Exp_i / Exp_{TOT}) and the financial credit portfolio as reference benchmark ($E(Exp_i) / E(Exp_{TOT})$) allows obtaining direct information about the degree of homogeneity / diversity between the types of activity. The analysis of such measure by individual geo-sectoral clusters permits to single out the main regions or sectors that contribute to determining differences in the concentration level measured through the indexes referred to above.

The significance of the concentration risk estimated through the single name approach in the financial and commercial operations has been analyzed taking into consideration the exposure towards the major client counterparties with respect to the total credit portfolio. Such a risk profile has been assessed by building a concentration relationship relative to the best customers and

comparing the results obtained in respect of the financial and commercial credit operations (Norden & Szerencses, 2006). In formulas:

$$H_t = \sum_i [(Exp_i / Exp_{TOT}) \quad (4)$$

In the light of the data available for the factoring and financial credit market, the analysis has been restricted to the ten top-ranking counterparties of every financial intermediary ($n = 10$)[9].

The linkage between concentration and risk exposure is realized looking at data about default registered for commercial credits and financial one. More in detail the analysis proposed study if there if an high degree of concentration (sectoral / geographical or single name) implies an high frequency / amount of losses for financial intermediaries specialized in one type of lending.

Results

A detailed analysis of data provided by the Bank of Italy on the exposures of the financial system as a whole and on those relative exclusively to the factoring operations points out differences in the distribution of credits by regions and by sectors of economic activity.

The analysis of the region where the counterparty in the financial and commercial credits is located highlights different exposures with respect to the two typologies of operations, particularly in a few regions such as Molise and, depending on the credit purchase arrangements, in Lazio, Toscana and Lombardia. Such differences do not stand out merely in absolute terms with respect to a few Regions, as they have also repercussions on the credit concentration / dispersion. In fact, the study of the Gini index for individual quarters allows noticing a concentration that is a few percentage points higher for commercial operations, with the exception of pro-solvendo transfers, throughout the period under consideration, and a greater variability, measured by the entropy index, for the operations having a financial nature and the pro-soluto transfers of commercial credits[10]. A direct comparison through the relative distance indexes shows that the greater concentration differences in the two portfolio typologies are connected with the different exposure toward regions in southern Italy, with special regard to Molise. (Table 1)

The study of debtors, classified in relation to the sector they belong to, points to differences between the two types of operations that are even more significant, with structurally larger exposures for a few sectors in the factoring activity. The exposure concentration index for commercial credits proves always higher than that for financial credits (on average, less than 8 percentage points) and the difference in the values reported in the individual quarters ranges from a minimum of 0% to a maximum of nearly 11%. The analysis of the degree of entropy shows that the concentration proves much more variable in financial operations and pro-solvendo transfers than in the other commercial operations. The differences between commercial and banking credits prove more marked in such sectors as Accommodation and public services and, depending on the credit

purchase arrangement under consideration, the sectors of Metals and minerals (with the exclusion of fixed and fertile materials), Chemical manufacturing, and the residual category of the other industrial products. (Table 2)

Table 1: Differences on concentration in financial and commercial credits on the basis of geographical characteristics

		Gini Index			Entropy index		
		Mean	Max	Min	Mean	Max	Min
Financial credits		68.18%	69.41%	66.51%	74.62%	76.03%	73.56%
Commercial credits	Overall	71.04%	71.91%	70.36%	72.55%	81.07%	41.41%
	Pro-solvendo	66.01%	66.90%	64.78%	72.59%	79.64%	43.70%
	Pro-soluto	77.33%	78.90%	76.15%	76.96%	87.58%	71.48%
Relative distance index	Commercial credit	Mean	Value	Region			
	Overall	Max	37.26%	-			
		Min	22.13%	Molise			
	Commercial credit	Mean	0.05%	Lazio			
	Pro-soluto	Max	24.05%	-			
		Min	96.84%	Molise			
	Commercial credit	Mean	0.10%	Toscana			
	Pro-solvendo	Max	24.62%	-			
		Min	95.21%	Molise			
			0.04%	Lombardia			

Source: Bank of Italy data processed by authors

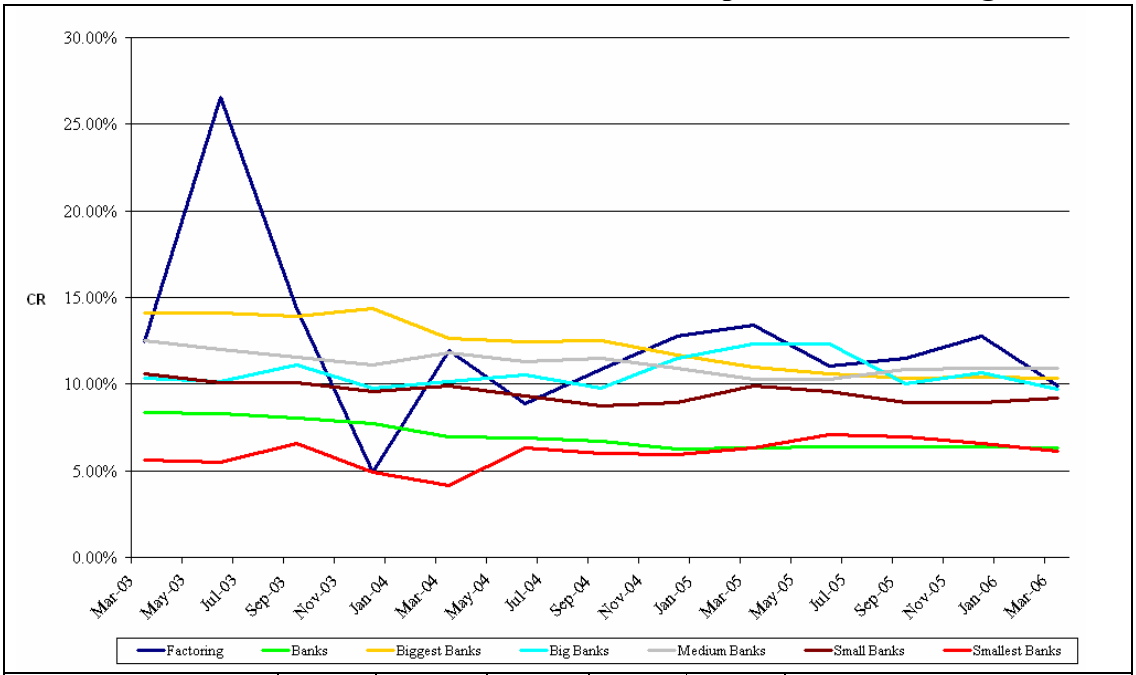
The divergences highlighted in the analysis of the entire population may be connected with the different relevance taken on by the exposures towards the best customers out of the total credits granted for the operations having a financial and a commercial nature. The study of the exposure towards the top ten counterparties of the intermediaries in the factoring and financial operations permits to highlight a few peculiarities of commercial credit. (Graph 2)

Table 2. Concentration differences for financial and commercial credits on the basis of sector							
		Gini index			Entropy index		
		Mean	Max	Min	Mean	Max	Min
Financial credits		45.91%	50.15%	41.89%	86.36%	89.37%	82.73%
Commercial credits	Overall	53.22%	59.04%	46.98%	68.36%	69.09%	67.10%
	Pro-solvendo	53.64%	57.87%	47.70%	72.89%	73.82%	72.15%
	Pro-soluto	56.43%	63.24%	49.73%	61.69%	63.08%	59.75%
Relative distance index				Value	Sector		
		Commercial credits	Mean	44.55%	-		
		Overall	Max	99.48%	Accomodation and public services		
			Min	0.18%	Metals and minerals		
		Commercial credits	Mean	43.11%	-		
		Pro-soluto	Max	98.03%	Accomodation and public services		
			Min	0.32%	Chemical manufacturing		
		Commercial credits	Mean	42.21%	-		
		Pro-solvendo	Max	99.84%	Accomodation and public services		
			Min	0.09%	Other industrial products		
Source: Bank of Italy data processed by authors							

In fact, the average relevance of the top ten counterparties in the factoring operations proves higher than the average relevance for loans granted in the various technical forms by banks. Besides, a much more significant variability of the phenomenon may be noted with respect to the banking reality. Furthermore, the analysis of the individual quarters stresses that, with reference to financial credit, the relevance of the major counterparties out of the total is nearly always lower that in commercial credit (92.31% of cases), particularly when considering smaller banks[10].

A detailed analysis of the defaults that affected the factoring companies in the three-year period being examined points to the marginal role played by defaults determined by clients characterized by large exposures in terms of both frequency of occurrence of the events and amount of the exposure. (Graph 3)

Graph 2
The role of ten more relevant debtors on the overall exposure for factoring and lending



	Mean	*Median*	*Max*	*Min*	*σ*	*% periods when the role of top 10 customers is lower respect the value observed for factoring*
Factoring companies	12.40%	11.94%	26.57%	4,89%	4.88%	-
Banks	7.01%	6.72%	8.33%	6.25%	0.81%	92.31%
Biggest banks	12.19%	12.48%	14.37%	10.31%	1.58%	53.85%
Big banks	10.65%	10.36%	12.33%	9.71%	0.91%	76.92%
Medium banks	11.22%	11.11%	12.52%	10.25%	0.65%	61.54%
Small banks	9.52%	9.59%	10.56%	8.75%	0.56%	84.62%
Smallest banks	6.01%	6.16%	7.12%	4.13%	0.82%	92.31%

Source: Bank of Italy and Italian public credit register data processed by authors

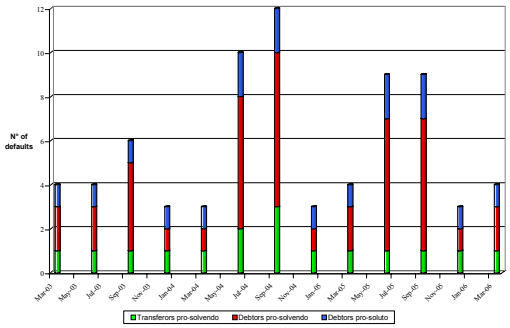
In fact, the occurrence of conditions leading to a default classification is rare among the largest counterparties (a maximum of twelve entities reported as defaulters by the factoring companies as a whole during a quarter). As a rule, the reporting of such counterparties as defaulters coincides with a more generalized crisis of the sector giving rise to a nearly marginal incidence of such defaults out of the total, particularly with respect to pro-soluto operations.

On the other hand, the analysis of the relevance of the geographic location of the counterparties and of the sector the latter belong to permits to highlight more evident relationships with defaults than the analysis based on the single name approach. In fact, using these measures of

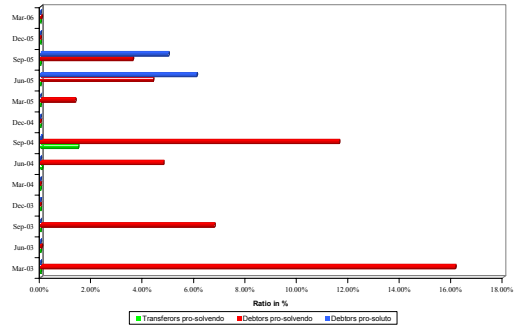
concentration the comparison of the ranking of concentration exposure at period t with the default incidence ranking at time t+1 points out some interesting results (Table 3).

Graph 3. Defaults related to more relevant customers for factoring

Number of defaults for big exposures



Defaults related to big exposures respect to overall defaults



	Statistics	*Counterpart evaluated*			
		Overall	*Transferor Pro-solvendo*	*Transferor Pro-solvendo*	*Debtor Pro-soluto*
Number of defaults for big exposures	*Mean*	2.34%	0.12%	3.75%	0.86%
	Min	0.00%	0.00%	0.01%	0.00%
	Max	15.67%	1.47%	16.14%	6.07%
	St. Dev.	4.65%	0.40%	5.12%	2.08%
Defaults related to big exposures respect to overall defaults	*Mean*	3.69	1.23	3.15	1.31
	Min	1.00	1.00	1.00	1.00
	Max	10.00	3.00	7.00	2.00
	St. Dev	3.17	0.60	2.30	0.48

Source: Italian public credit register data processed by authors

In just a few cases a comparison between the defaults and the portfolio composition during the preceding quarter permits to point to an accurate correspondence between the more relevant regions / sectors and characteristics of counterparts that are affected the most by phenomena of defaults (on average, in 13% and 9% of cases)[11].

Keeping into consideration that the geo-sectoral factors do not represent the only cause of the default events (De Laurentis, 2001), considerably different results may be obtained if, instead of the accurate correspondence, one considers the presence of a relationship between a higher (lower) than average concentration and the occurrence (non-occurrence) of insolvency phenomena. Such a relationship has been investigated by taking into consideration four subgroups for each quarter: sectors / regions that in the preceding quarter witnessed concentration levels higher than the median value and sectors / regions that during the quarter reported a number of defaults higher or lower than the median value. The comparison of the four groups made up by sectors and regions

allowed singling out a clearer relationship: in nearly 50% of cases, the branches where the credit portfolio is more concentrated are the same branches that, *ex post,* prove riskier, while a correspondence in excess of 92% of cases may be reported when considering the geographic profiles.

Table 3. Defaults and sectoral/geographical exposure for factoring

Coherence between starting exposure and defaults for each category *			
	Mean	Max	Min
Sectoral Classification	13.16%	26.32%	5.26%
Geographical classification	9.21%	21.05%	0.00%
Coherence between starting exposure and defaults for group of categories **			
	Mean	Max	Min
Sectoral Classification	92.54%	94.74%	78.95%
Geographical classification	50.00%	63.16%	36.84%

Note: * The coherence is studied comparing quarter by quarter regional and sectoral rankings for defaults at current quarter and starting exposure of previous quarter

** The comparison for groups is released considering only two subgroups (best and worst) for defaults at current quarter and starting exposure of previous quarter

Source: Italian public credit register data processed by authors

The low incidence of defaults in commercial credit notwithstanding the high degree of portfolio concentration as shown above may only be deemed justifiable if the financial intermediary succeeds in assessing and monitoring the credit risk correctly (Basel Committee on Banking Supervision, 2006). The result obtained could be explained considering that o in this type of operations there are two categories of entities that are likely to honor their commitments (Carretta, 1996).

Turning to the operative implications of the discussed findings, the use of single name measures would lead financial intermediaries involved in working capital financing to biased capital allocation, especially on the pro soluto purchase agreement side, without considering the impact of the trilaterally stemming from the nature of the credits. On the other side, the use of such measures would underestimate the exposure at risk due to the sectoral and geographical concentration. Moreover, the assumption of single name measures would determine inadequate risk adjusted policies that would not discriminate prices in respect to financial credits.

Considering the development of financial intermediaries' portfolios, the use of single name measures could incentive toward counterparties that are already clients in the financial system, not satisfying financial needs coming from counterparties whose risk, under commercial credits based transactions, would be mitigated. In particular, this is the case of small debtors not having access

to financial credits satisfying their financial needs trough payment delays negotiated with the commercial providers, that is commercial credits based financial intermediaries' client.

CONCLUSIONS

The selection of the approach to measure the concentration risk does not appear neutral with respect to the nature of the credit that originated the intermediary's financial exposure. In particular, the motivations of the demand would seem to be characterizing within the commercial credit context. In the face of such peculiarities, the current prudential regulations are exclusively inspired by the single name approach and, besides, do not allow discriminating the nature of the credit.

The empiric analysis carried out in respect of the domestic financial system has shown that the intermediaries' assets resulting from the purchase of commercial credits is more concentrated than those resulting prevailingly from financial credits. Specifically, this evidence is particularly significant for the single name concentration that, therefore, would seem to be a structural aspect for portfolios of commercial credits. Nonetheless, unlike the empiric evidence reported in the international literature on the portfolios of financial credits, the single name concentration of the exposure is not associated with the reported occurrence of greater losses for the financial intermediaries whose portfolios have a prevailingly commercial nature. The result may be explained in relation to the greater attention paid by financial intermediaries in monitoring the risk of such counterparties, as well as the limited effectiveness of the control tools based on the single name concentration for portfolios of financial credits. In fact, the empiric evidence shows a significant improvement in the risk control effectiveness through the recourse to tools inspired by the sectoral / geographical logic.

With reference to the measurement, control and management of the concentration risk, the adoption of ad hoc control instruments for financial exposures characterized by a high specificity has been proposed on the occasion of the recent consultation made by the Committee that joins together the supervisory authorities of European bank (Commission of European Banking Supervisors, 2006). Within the context of the financial operations based on commercial credits, the proposal would seem to be in line with the indications provided by this paper. In fact, the control instruments should take into account the relevance of the counterparty in the commercial portfolio of the supplier rather and in the portfolio of the financial intermediary, as well as the sectoral /geographic logic.

ENDNOTES

[1] The paper is originated from author's continuous cooperation. Introduction, paragraph 2 and conclusion can be attributed to Lucia Gibilaro and paragraph 3 to Gianluca Mattarocci. Authors are grateful to Nicoletta Burini, Assifact assistant general secretary, for her willingness and all useful suggestions given.

Lucia Gibilaro is lecturer of Economics and Management of Financial Intermediaries at the University of Bergamo and Ph.D. in Banking and Finance at the University of Rome "Tor Vergata".

Gianluca Mattarocci is lecturer of Economics and Management of Financial Intermediaries at the University of Rome "Tor Vergata" and Ph.D. in Banking and Finance at the University of Rome "Tor Vergata".

[2] The third party relationship of the relationship is submitted to the hypothesis of no economic / juridical connection between transferor and debtors.

[3] Associazione Italiana per il Factoring, Statistiche Trimestrali, different quarters.

[4] On the empirical analysis about the concentration measures for sectoral /geographical diversification in lending, see paragraph 2.

[5] For further details, see Bank of Italy (different years), "Tassi attivi sui finanziamenti per cassa al settore produttivo- Distribuzione per durata originaria, tasso, tipologia operazione e localizzazione geografica della clientela", Base Informativa Pubblica.

[6] For a more detailed analysis of law about concentration risk for factoring companies, see Bank of Italy (1996). In June 2006, Bank of Italy proposed to make rules about concentration coherent with ordinary laws. For further details, see Bank of Italy (2006). For pro-solvendo exposures without notification financial intermediaries are obliged to identify the transferor as the counterparty risk. For further details, see Bank of Italy (2005).

[7] Recently the Central Bank has cancelled the exception made for individual exposure for factoring pluricaptive companies, financial intermediaries hat offers services to their shareholders. For further details, see Bank of Italy (2005).

[8] The selection of the time period is constrained by the availability of comparable data. Even if there are data available data for the overall Italian system for all the 2006, it is impossible, until now, to collect data from all Assifact associates for the same period.

[9] The choice to consider only the first ten counterparts is coherent with approaches proposed in literature for the estimation of concentration risk in commercial lending in Italy. See Assifact (1997).

[10] For empirical results on the low concentration for specific sectors/regions, see Acharya, Hasan and Sauders (2006).

[11] Results obtained are coherent with other studies presented in literature on the Italian credit market that demonstrate a lower mean concentration level for small banks. For further details, see Rossignoli (1994).

[12] The choice of the time horizon is coherent with Basel Committee's prescriptions. See Basel Committee on Banking Supervision (2006), par. 452.

REFERENCES

Acharya, V.V., I. Hasan & A. Saunders (2006). Should banks be diversified? Evidence from individual bank loans portfolios, *Journal of Business*, 79 (3), 1355-1412.

Altman, E.J. & A. Saunders (1998). Credit risk measurement: developments over the last 20 years, *Journal of Banking and Finance*, 21(11-12), 1721-1742.

Associazione Italiana per il Factoring (1997). *La domanda di factoring*. Milan, Italy: Reserved documentation.

Associazione Italiana per il Factoring. *Statistiche trimestrali* retrieved December, 15 2007 from *http://www.assifact.it*.

Bank of Italy (2005). Bollettino di vigilanza, May.

Bank of Italy (2006). Disciplina della concentrazione dei rischi. Modifica delle disposizioni transitorie, May.

Bank of Italy (1996). Istruzioni di vigilanza per gli intermediari finanziari iscritti nell'elenco speciale, Circolare 216 del 16 agosto del 1996 and next updates.

Bank of Italy (1999). Istruzioni di vigilanza per le banche, Circolare n.229 del 21 aprile 1999 and next updates.

Bank of Italy. Annual report, different years.

Basel Committee on Banking Supervision (1997). core principles for effective banking Supervision, April and next updates, Basel.

Basel Committee on Banking Supervision (2006). International convergence of capital measurements and capital standards, June, Basel.

Bonti, G., M. Kalkbreber, C. Lotz & G. Stahl (2005). Credit risk concentration under stress, presented to Journal of Credit Risk conference on *Concentration risk in credit portfolios*, Basel, Switzerland.

Boot, A.W.A. (2000). Relationship banking: what we know?, *Journal of Financial Intermediation*, 9 (1): 7-25.

Cannari L., S. Chiri & M. Omiccioli (2005). *Imprese o intermediari?*. Bologna, Italy: Prismi - Il Mulino.

Cardoso Locourtois, M. (2004). Chain reactions, trade credit and the business cycle, presented to *2004 North America Summer Meeting of the Econometric Society*, Providence, USA.

Carling, K. & S. Lundberg (2002). Bank lending, geographical distance and credit risk: an empirical assessment of the church tower principle, Sveriges Riksbank working paper n. 144.

Carretta, A. (1996). Il mercato del factoring e la centralizzazione dei rischi di credito, *Bancaria*, 52 (10), 68-73.

Cerasi, V. & S. Daltung (2000). The optimal size of bank: costs and benefits of diversification, *European Economic Review*, 44 (9), 1701-1726.

Cicardo, G., S. Laviola, M. Losavio & A. Renzi (1995). *Rischi di mercato e grandi fidi: le nuove regole per la banca*. Rome, Italy: Bancaria Editrice.

Committee of European Banking Supervisors (2006). *Questionnaire on the Survey on the market practices*, March.

Dallocchio, M. & A. Salvi (2004). *Finanza d'azienda*. Milan, Italy: EGEA.

De Laurentis, G. (2001). *Rating interni e credit risk management*. Rome, Italy: Bancaria Editrice.

D'Souza, C. & A. Lai (2004). Does diversification improve bank efficiency?, presented to the Bank of Canada conference on *The Evolving Financial System and Public Policy*, Ottawa, Canada.

Direr, A. (2001). Trade credit and systematic risk, Ecole Normale Superieure Sepremap working paper.

Elyasiani, E. & S. Deng (2004). Diversification effect on the performance of financial services firms, presented to the *Financial Management Association conference 2004*, Orlando, Florida.

Emery, G.W. (1987). An optimal financial response to variable demand, *Journal of Financial and Quantitative Analysis*, 22 (2), 209-225.

FroLov, M. (2006). Do banks purposely diversify loan portfolios?, Keio University market quality research project discussion paper n. 2006-11.

Giannotti, G. (2004). *La cartolarizzazione dei crediti: rischi e regolamentazione*. Milan, Italy: Franco Angeli.

Giesecke, K. & S. Weber (2006). Credit contagion and aggregate losses, *Journal of Economic Dynamics and Control*, 30 (5), 741-767.

Gini, C. (1936). On the measure of concentration with special reference to income and wealth in AA.VV., *Abstracts of papers presented at the Cowles Commission Research Conference on Economics and Statistics*, Colorado Spring, Florida: Colorado College Press.

Gordy, M.B. (2003). A risk factor model foundation for ratings-based bank capital rules, *Journal of Financial Intermediation*, 12 (3), 199-232.

Hanson, S., N.H. Pesaran & T. Shuerman (2005). Scope of credit risk diversification, IEPR working paper n. 05-18.

Hart, P.E. (1971). Entropy and other measures of concentration, *Journal of the Royal Statistic Society Series A*, 134 (1), 73-85.

Heitfield, E., B. Burton & S. Chomsisengphet (2005). The effect of single name and sector concentrations on the distribution of losses for large wholesale credit exposures, presented to *Concentration risk in credit portfolio work*shop, Eltville, Germany.

Kamp A., A. Pfingsten & D. Porath (2005). Do banks diversify loan portfolios? A tentative answer based on individual bank loan portfolios, Deutsche Bundesbank discussion paper series 2: Banking and financial studies n. 2005-03.

Lee, Y.W. & J.D. Stow (1993). Product risk, asymmetric information and trade credit, *Journal of Financial and Quantitative Analysis*, 28 (2), 88-96.

Malgarini, M. (2006). New ISAE questions on trade credit, presented to *OECD Workshop on Business and Consumer Tendency Surveys*, Rome, Italy.

Munari, L. (ed.) (2006), Strumenti finanziari e creditizi, Milan, Italy: McGraw-Hill.

Norden, L. & M. Szerencses (2006). Migration and concentration risk in bank lending: new evidence from credit portfolio data, presented to *University of Mannheim Credit Risk Workshop*, Riezlern, Germany.

Omiccioli, M. (2004). Il credito commerciale: problemi e teorie, Bank of Italy temi di discussione (economic working paper) n. 494.

Pfingsten, A. & K. Rudolph (2002). German banks' loan portfolio composition: market orientation vs specialization, presented to the *V Swiss Society for Financial Market Research conference*, Basel, Switzerland.

Rossignoli, B. (1993). La vigilanza e il controllo dei grandi fidi, *Rivista Milanese di Economia*, 46, 72-81.

Rossignoli, B. (1994). Grandi rischi e concentrazione dei prestiti bancari. Alcune evidenze analitiche, *Rivista Milanese di Economia*, 52, 62-71.

Ruozi, R. & B. Rossignoli (1985). *Manuale del factoring*. Milan, Italy: Giuffrè Editore.

Santomero, A.N. (1997). Commercial banking risk management: an analysis of the process, *Journal of Financial Service Research*, 12 (2-3), 83-115.

Schwartz, R.A. (1974). An economic model of trade credit, *Journal of Financial and Quantitative Analysis*, 9 (4): 643-657.

Schwartz, R.A. & D.K. Whitcomb (1978). Implicit transfers in the extension of trade credit. In K.E. Boulding & Wilson T.F. (eds.), *Channels of redistribution through the financial system: The grants economics of money and credit* (pp. 191-208) New York, USA: Praeger.

Shannon, C.E. (1948). A mathematical theory of communication, *Bell System Technical Journal*, 27, 379 -423.

Stomper, A. (2006). A theory of banks' industry expertise, market power and credit risk, Management Science, 52(10), 1618-1633.

Summer, B. & N. Wilson (2000). Trade credit management and the decision to use factoring: an empirical study, *Journal of Business, Finance and Accounting*, 27 (1-2), 37-68.

Winton, A. (2000). Don't put all your eggs in one basket? Diversification and specialization in lending, Wharton School Center for Financial Institutions - Center for Financial Institutions Working Papers n. 00-16.

APPENDIX

Table A.1 Relative distances indexes classified for region

Region	*Relative distance indexes respect to financial credits*								
	Commercial credits overall			*Commercial credits pro-solvendo*			*Commercial credits pro-solvuto*		
	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min
Piemonte	39.97%	51.02%	28.29%	20.03%	32.19%	5.18%	51.58%	61.65%	40.18%
Valle d'Aosta	13.57%	21.46%	2.40%	36.35%	48.54%	22.58%	56.01%	84.39%	25.84%
Liguria	13.52%	24.39%	5.19%	24.72%	28.04%	19.92%	8.35%	21.22%	0.84%
Lombardia	5.24%	12.37%	0.04%	8.12%	13.28%	3.47%	6.09%	12.83%	1.67%
Trentino Alto Adige	66.96%	71.66%	61.50%	71.56%	78.57%	59.74%	62.81%	71.04%	56.34%
Veneto	27.50%	33.48%	20.80%	21.34%	26.65%	16.40%	34.13%	46.98%	25.51%
Friuli Venezia Giulia	29.47%	36.50%	23.91%	17.72%	23.94%	11.21%	43.56%	53.56%	32.92%
Emilia Romagna	18.83%	27.25%	12.97%	11.94%	23.53%	4.17%	26.51%	35.06%	18.83%
Marche	44.57%	48.92%	39.30%	29.82%	33.60%	20.14%	62.59%	73.05%	54.31%
Toscana	4.35%	13.18%	0.52%	2.42%	6.49%	0.10%	7.07%	21.26%	0.49%
Umbria	24.53%	31.21%	15.06%	7.88%	16.55%	2.28%	35.50%	45.21%	23.50%
Lazio	3.81%	11.29%	0.14%	3.15%	10.76%	0.30%	6.04%	11.92%	0.05%
Campania	38.79%	61.48%	26.17%	42.91%	52.97%	31.10%	33.54%	84.98%	2.26%
Abruzzo	29.53%	76.45%	0.54%	30.56%	66.21%	8.88%	53.67%	89.45%	16.35%
Molise	47.55%	95.21%	3.13%	52.18%	96.84%	9.29%	47.84%	92.13%	9.19%
Puglia	12.41%	21.99%	2.37%	15.24%	21.25%	9.63%	64.33%	81.24%	46.10%
Basilicata	21.50%	30.19%	12.04%	16.30%	29.35%	7.18%	25.33%	42.08%	13.48%
Calabria	14.83%	24.96%	4.71%	36.31%	44.94%	26.51%	26.57%	45.90%	14.29%
Sicilia	9.95%	23.92%	0.44%	15.51%	25.27%	2.81%	54.73%	68.62%	34.23%
Sardegna	25.57%	39.71%	2.21%	16.90%	23.32%	9.14%	38.86%	70.92%	6.26%

Source: Bank of Italy data processed by authors

Table A.2 Relative distances indexes classified for sector									
Sector	*Relative distance indexes respect to financial credits*								
	Commercial credits overall			*Commercial credits Overall*			*Commercial credits Overall*		
	Mean	Max	Min	Mean	Max	Min	Mean	Max	Min
Agriculture, forestry & fishing	85.01%	88.19%	80.92%	75.28%	78.63%	67.47%	95.40%	97.30%	92.58%
Metals and Minerals	30.18%	71.68%	16.30%	36.91%	52.94%	22.53%	16.96%	54.73%	0.18%
Minino	36.69%	69.83%	17.59%	39.68%	79.04%	24.62%	28.83%	44.18%	11.58%
Chemicals	11.08%	47.16%	0.39%	16.48%	28.05%	5.72%	11.45%	48.79%	0.60%
Metal product manufactoring	40.45%	47.79%	10.13%	49.51%	58.76%	18.98%	33.58%	44.12%	26.20%
Machinery manufacturing	17.86%	30.93%	4.45%	10.61%	36.16%	0.47%	23.42%	33.47%	2.73%
Office/ high precision machinery mfg	47.09%	68.62%	25.08%	45.74%	57.47%	9.04%	35.64%	47.89%	11.27%
Electrics	82.20%	87.45%	66.33%	80.20%	85.74%	71.36%	86.49%	89.14%	80.35%
Transports	60.84%	70.31%	45.73%	44.72%	55.65%	29.07%	70.15%	79.86%	56.08%
Food and drugs	29.49%	38.39%	9.16%	36.37%	45.10%	6.53%	31.42%	85.72%	16.48%
Texitile products	26.83%	42.33%	14.31%	18.96%	55.68%	7.43%	33.80%	56.65%	8.77%
Paper manufacturing	44.48%	51.70%	35.08%	45.13%	75.93%	30.71%	42.52%	57.70%	2.99%
Chemical manufacturing	14.31%	58.77%	0.32%	7.33%	23.87%	0.09%	15.17%	27.11%	4.07%
Other industrial products	22.11%	44.79%	1.13%	22.84%	60.18%	0.09%	26.97%	53.77%	2.80%
Construction	26.11%	37.81%	8.54%	56.34%	80.80%	47.96%	38.09%	61.45%	7.99%
Retail services	36.65%	43.67%	26.20%	31.52%	40.17%	16.82%	36.99%	46.44%	16.24%
Accommodation & public services	95.93%	98.03%	94.39%	93.78%	99.84%	90.87%	83.53%	99.48%	0.31%
Transport service – national	62.13%	84.18%	42.40%	53.51%	95.04%	20.26%	76.97%	88.79%	50.53%
Transport services - air and sea	68.74%	89.90%	19.39%	59.52%	79.82%	35.20%	66.93%	87.78%	4.93%
Transport services	15.96%	52.24%	2.30%	13.99%	69.70%	0.69%	26.03%	46.05%	7.66%
Communication	28.50%	71.14%	0.71%	22.63%	40.28%	7.88%	34.41%	59.30%	1.82%
Other services	65.71%	82.35%	18.66%	67.59%	82.05%	14.68%	65.26%	83.44%	32.56%
Source: Bank of Italy data processed by authors									

This is a combined edition containing both Volume 8, Number 1, and Volume 8, Number 2

Articles for Volume 8, Number 2

AN EXAMINATION OF THE "TEXAS RATIO" AS A BANK FAILURE MODEL

Kurt R. Jesswein, Sam Houston State University

ABSTRACT

This paper examines the use of the "Texas ratio", a measure of potential bank failure that has become almost a cause célèbre among many trying to assess the financial health of individual financial institutions in the current volatile banking environment. Its simplicity is contrasted with more sophisticated models. It appears that such a measure offers important insights but may not be sufficient as a general, all-purpose tool. Given the rapidly increasing level of bank failures, one can presume that there will be a renewed amount of interest placed in this area, both in academia and among the general population.

INTRODUCTION AND BACKGROUND

So long as there have been banking institutions, there have been banking failures. Whether by fraud and deceit or more commonly by poor decision-making and risk management strategies, the banking industry has periodically experienced severe downturns and suffered through the failure and/or suspension of multiple institutions within very short periods of time.

Although numerous at times, bank suspensions and failures prior to 1920 tended to be small in comparison to the ever-increasing number of banks (Board of Governors, 1943). However, this all changed with the coming of the *roaring 20s* and subsequent *Great Depression* years which saw the number of banks across the country cut in half from over 30,000 in 1921 to around 15,000 at the time of the creation of the Federal Deposit Insurance Corporation (FDIC) in 1934; over 9,000 banks suspended operations from 1930 to 1933 alone (Board of Governors, 1943).

The introduction of the FDIC saw a marked change in this pattern as the U.S. Department of the Treasury now had a mechanism in place to assist banks that were experiencing difficulties. Although bank suspensions continued at a pace of some fifty per year from 1934 to 1940, the FDIC was also assisting twenty-five to thirty banks per year with the acquisition of failing institutions. This lead to a long period of stabilization which saw double-digit bank failures only three times in the ensuing four decades with most of the failures resulting in purchase-and-assumption (P&A) transactions in which the FDIC helped healthier institutions acquire most if not all of the failing bank's assets and liabilities.

This all changed in the 1980s as deregulation of the banking markets and increased volatility in the financial markets combined to cause a significant increase in the number of troubled financial

institutions. As seen in Table 1, of the approximately 3,600 bank failures that have been overseen by the FDIC since its creation, more than 2,900 occurred between 1980 and 1993. Most of these transactions involved purchase-and-acquisition transactions but the FDIC also became involved with assisted acquisitions (AA), transactions in which it provided direct financial assistance to institutions agreeing to acquire failing institutions. There were over 500 of such AA transactions in this time period with almost half of them occurring in 1988 during the height (or perhaps better *depth*) of the fury of bank failures.

Passage of the Financial Institutions Reform, Recovery and Enforcement Act of 1989 and subsequent Federal Deposit Insurance Corporate Improvement Act of 1991 marked the next changes in the handling of bank failures by the FDIC. There was a noted shift away from assisted acquisitions to various purchase-and-acquisition transactions as well as to direct payouts (PO), in which the FDIC simply paid off the insured deposits and allowed to institution to fail.

Table 1: Summary of FDIC-Assisted Bank Failures (1933 - 2009)

	P&A	PO	AA	Other	Total
before 1980	251	307	4	0	562
1980	7	3	12	0	22
1981	5	3	31	1	40
1982	25	8	85	1	119
1983	35	7	49	8	99
1984	62	5	23	16	106
1985	87	26	41	26	180
1986	98	25	42	39	204
1987	133	15	45	69	262
1988	165	7	238	60	470
1989	319	71	3	141	534
1990	291	44	1	46	382
1991	241	9	3	18	271
1992	153	12	2	14	181
1993	42	8	0	0	50
1994-2007	65	5	0	3	73
since 2008	52	2	5	3	62
Total	2031	557	584	445	3617

P&A = purchase-and-assumptions, PO = payouts, AA = assisted acquisitions

As the 1990s progressed and the new millennium dawned, the banking markets stabilized with relatively few financial institutions failing - in fact there were NO failures in either 2005 or 2006 - but this would change. Significant upheavals in the financial markets towards the end of 2007 and into 2008 and beyond have once again introduced an increases amount of bank failures. This has created a situation in which many bank customers and other interested parties are becoming increasingly concerned about the health of their own financial institutions. Sixty-two institutions have failed from the beginning of 2008 into early 2009. With such failures appearing to come with increasing frequency, it is not unusual to find regular headlines such as "If it's Friday, there must be a bank failing somewhere across the country" (Ellis, 2009). Thus, there has been a renewed interest in looking for ways to discover which financial institutions were on the verge of financial failure.

REVIEW OF BANK FAILURE MODELS

Given the importance placed on banking institutions in the operations of smoothly running economies, there have been varied attempts to develop models to assist in finding those financial institutions more likely to suffer financing hardships or worse. As early as the 1930s we find examinations of the causes of bank failures given the chaotic situation and widespread failures among financial institutions during the late 1920s and early 1930s (Spahr, 1932).

Such studies all but disappeared until new groundbreaking work focusing on the financial difficulties of industrial firms began to appear in the late 1960s (Beaver, 1966; Altman, 1968). These studies began to look to financial and accounting ratios as indicators of financial distress through either univariate (Beaver) or multivariate (Altman) models. Meyer and Pifer (1970) and Sinkey (1975) subsequently developed models that examined financial difficulties of banks using accounting and financial ratios more commonly associated with banking institutions. For example, Sinkey incorporated such ratios as cash plus U.S. Treasury securities to total assets, total loans to total assets, provision for loan losses to total operating expenses, total loans to sum of total capital and reserves, total operating expenses to operating income, loan revenue to total revenue, U.S. government securities' revenue to total revenue, municipal securities revenue to total revenue, interest paid on deposits to total revenue, and other expenses to total revenue in his study.

Subsequent studies tended to focus on the development and testing of computer-based early warning systems (EWS) that might be used to prevent bank failure or reduce the costs of failure. Such studies tended to expand the quantitative analysis of the models (Kolari, Glennon, Shin & Caputo, 2002; Wheelock & Wilson, 2000) or incorporate efficient-market variables to examine stock price and interest rate effects on the financial condition of financial institutions (Curry, Elmer & Fissel, 2007; Purnanandam, 2007).

The primary bank regulatory institutions have also expanded their efforts into refining and improving EWS models in the face of a constantly-changing financial landscape. Examples of current systems in use include the Federal Reserve's *System to Estimate Examination Ratings* and

Economic Value Model and the FDIC's *Statistical CAMELS Off-site Rating* system and *Real Estate Stress Test*. (Cole & Gunther, 1998; King, Nuxoll & Yeager, 2006). Although differing in scale, scope and purpose, these models continued to focus on the use of financial variables to predict problem banks. One can simply contrast the variables used by Sinkey with those used in the FDIC's SCOR model: total equity, loan-loss reserves, loans past due 30-89 days, loans past due 90+ days, nonaccrual loans, other real estate, charge-offs, provisions for loan losses, income before taxes, volatile liabilities, liquid assets, and loans and long-term securities, each as a percentage of total assets (Collier, et. al., 2005).

On the other hand, a remarkably distinct yet extremely simplistic tool has recently caught the fancy of many analysts in their attempts to make sense of the turmoil that exists in the latter part of the first decade of the 21st century. This tool, generally referred to as the *Texas ratio*, focuses solely on only a couple specific accounting variables that concisely summarize many of the credit troubles being experienced by banks. The *Texas ratio* was first developed by Gerard Cassidy and others at RBC Capital Markets in their analysis of Texas banks experiencing difficulties during the troublesome 1980s (Barr, 2008). The ratio is calculated by dividing the bank's non-performing assets (non-performing loans plus other real estate owned) by the sum of its tangible equity capital and loan loss reserves. Cassidy noted that the Texas ratio was a good indicator of banks likely to fail whenever the ratio reached 100%. It has gained quite a bit of notoriety in both the public media and in various areas of the *blogosphere*, in part due to its simplicity and in part due to its apparent success rate.

For example, one website, bankimplode.com, has attained a great deal of notoriety since it began publishing its *watch list* of troubled banks. This listing, based on publicly available bank call report data, highlights all banks with *Texas ratios* greater than forty percent. The website actually ranks the institutions using a separate measure, the *effective Tier 1 leverage ratio*, but uses the Texas ratio as the limiting variable. This effective Tier 1 leverage ratio will be discussed later in the summary and conclusions part of the paper.

The FDIC itself maintains a watch list of troubled institutions. However, its listing is not publicly available so speculation on which institutions are on the list has led many to look towards measures such as the Texas ratio to derive their own lists.

Based on the bankimplode.com watch list published after the third quarter of 2008 we find that twenty-five of the fifty banks with the highest Texas ratios had failed within the subsequent six months. In fact, thirty-four of the forty-six institutions failing since the end of the third quarter of 2008 were found somewhere on the bankimplode.com watch list. Of the twelve banks not found on the watch list, one failed without ever having submitted a third quarter call report, four had Texas ratios just short of the artificial forty percent cut-off for inclusion on the list, three were savings associations that submitted financial reports to the Office of Thrift Supervision instead of the FDIC, and one bank failed despite having a Texas ratio of *only* twelve percent. The remaining three

institutions not yet accounted for appear to have had Texas ratios above forty percent but for some reason were not included in the watch list.

Thus, it appears that there may be something behind this simple measure for quickly assessing those financial institutions in serious danger of failing. We are therefore left with examining the apparent usefulness of the ratio and assess this usefulness relative to other more *sophisticated* measures.

DATA AND METHODOLOGY

All data for the study were gathered from quarterly FDIC call reports available through the Federal Reserve Bank of Chicago's website at www.chicagofed.org. Our analysis focused on banks with total assets between $20 million and $5 billion as the entire population of banks failing since 2001 fall into this range. Note however that some of the more newsworthy failures over the past two years were savings institutions (IndyMac, Washington Mutual) and as such, were not included in the study because their data are not included the data files available from the Fed Chicago. For those interested, data on such savings institutions are available through the FFIEC (Federal Financial Institutions Examination Council) website at cdr.ffiec.gov/public; data on commercial banks are also available at this website. And financial data of credit unions can be found at the website of the National Credit Union Association at www.ncua.gov.

Our study focuses on the time period encompassing all of 2008 and in to the first four months of 2009 as there were only a handful of failures in the years before 2008. The rapid deterioration of the soundness and stability of so many financial institutions beginning in 2008 called for an examination of the most current data available.

We examine the situation surrounding bank failures occurring during this time period by comparing data of failed institutions to the much larger set of institutions that did not fail. We review how well the Texas ratio has worked in terms of isolating those institutions more likely to fail. We then attempt to discern any significant differences between failing institutions and those that have not (as yet) failed. Finally, we look to see if an expansion or modification of the Texas ratio might be necessary to improve upon the basic model in terms of providing more specific early warnings of bank problems.

RESULTS

As described earlier, the published *watch list* of banks with Texas ratios greater than forty percent correctly identified seventy-three percent (thirty-two of forty-eight) of the failing banks. And none of the non-identified institutions had a Texas ratio less than twelve percent. Based on this anecdotal evidence, the Texas ratio appears to provide some much important insights.

Further examination shows that for the four quarterly periods leading to the third quarter of 2008, the average Texas ratio increased for failed and nonfailed banks alike. The average ratio for the small group of banks that have failed in the past six months was 45 percent, 79 percent, 108 percent, and 181 percent, respectively. For the larger group of over 7,000 banks that did not fail, the ratios were 9 percent, 11 percent, 12 percent, and 15 percent, respectively.

This leads us to examine in greater detail what the Texas ratio may be measuring and whether that measure could be improved upon. The size of the Texas ratio is essentially driven by the proportion of nonperforming assets in a bank's portfolio and the bank's concerns over future problem loans. The numerator of the ratio is comprised of items that specifically represent assets that have gone bad (nonperforming and/or foreclosed upon loans) and the denominator is in large part affected by current and historical problems associated with such assets (past credit losses that directly reduce the value of the bank's equity and current credit problems that affect bank profitability and the bank's ability to increase equity), and of potential credit problems affecting the loss reserve account.

Because all credits are not created equal, a review of bank loan portfolios may shed some light on specific items affecting the increases in the Texas ratios of failed and nonfailed banks alike. For example, banks are required to report results for a variety of different types of credit including real estate construction and development, farmland, residential mortgages (first and junior liens), home equity lines of credit (HELOCs), multifamily residential properties, commercial real estate, loans to depository institutions, to foreign governments and official institutions, and to municipalities, loans to finance agricultural production, commercial and industrial (i.e., business) loans, various types of consumer loans, and lease financing. Few banks have significant amounts of activity in all of the various sectors and most only concentrate on small subsets.

As documented in Table 2, we find that there is a marked difference in the lending portfolios of banks that have failed and those that have not. For example, failed banks have a significantly higher percentage of assets invested in real estate financing. However, this does not carry over to all types of real estate financing. Failed banks have much higher concentrations in construction and development loans. On the other hand they have much lower amounts of secured lending such as for first and second mortgages as well as for farmland and direct consumer lending. And quite surprisingly based on recent media coverage, there is very little difference between failed and nonfailed institutions in terms of their exposures to either home equity lines of credit or to commercial real estate. Thus, it would appear that rather focusing solely on a single measure that captures all of the credit risks to which banks are exposed, greater insights might be gained by expanding or at least supplementing the Texas ratio with an examination of the specific portfolio composition of a bank's risk exposure.

Table 2: Differences in Credit Patterns: Failed vs. Nonfailed Banks				
	Failed Banks	Nonfailed Banks	Satterthwaite	Wilcoxon
Type of lending	Means	Means	t-statistic	Z-score
(Percentage of total loans)	N=37	N=7075	(Means)	(Medians)
Real estate	0.8119	0.6995	4.16**	4.03**
Construction & Development	0.3694	0.1111	7.51**	8.02**
Farmland	0.0289	0.0615	-2.94*	-3.97**
HELOC	0.0316	0.0286	0.33	0.27
First Home Mortgage	0.1100	0.2195	-5.78**	-4.83**
Second Home Mortgage	0.0097	0.0178	-4.88**	-1.95*
Multifamily	0.0328	0.0212	1.30	1.61
Commercial	0.2295	0.2397	-0.48	-0.29
Business	0.1168	0.1460	-1.60	-2.66*
Consumer	0.0215	0.0666	-7.08**	-5.95**

* denotes significance at 5% level
** denotes significance at 1% level
Note: Folded-F tests provide evidence that the variances for the two groups are different. Therefore, the Satterthwaite t-test is indicated. It provides a t statistic that asymptotically approaches a t distribution. Wilcoxon z-scores are provided due to the potential of having non-normal distributions, particularly in the small sample of failed banks, and confirm the parametric results.

Additional insights might also be gained by examining credit problems within each asset sector, particularly if specific sectors are deemed to be more volatile or more likely to cause difficulties. Such details (e.g., past due and nonaccruing amounts by asset sector) are available from the data sources mentioned earlier and subsequent studies of these data could provide important insights in future assessments of the phenomenon of failing banks.

Another potential benefit associated with measuring the Texas ratio is its ability to timely measure the potential for bank failures. Although the Texas ratio appears to be a good indicator of bank problems in the short term, one could argue that for such problems to arise to such an extent as to cause the ratio to become excessive there would likely be early warning signs. This in large part is the rationale behind the Early Warning Systems used by the FDIC and Federal Reserve System described earlier.

In Table 3, we examine the historical results of the key drivers of the Texas ratio (nonaccruing loans, other real estate owned, and allowance for loan losses). We find a significant demarcation between failing and nonfailing banks in these measures, as well as the Texas ratio itself, beginning at least three quarters earlier. Thus, even as an early warning device, the Texas ratio appears to have some validity.

Table 3: Historical Components of Texas Ratio: Failed vs. Nonfailed Banks				
	Failed Banks	Nonfailed Banks	Satterthwaite	Wilcoxon
Loan Statistic	Means	Means	t-statistic	Z-score
(Percent of total assets)	N=37	N=7075	(Means)	(Medians)
Nonaccruing	0.1202	0.0148	8.29	9.31
Nonaccruing (-1 qtr)	0.0941	0.0126	7.01	8.42
Nonaccruing (-2 qtr)	0.0734	0.0108	6.73	8.33
Nonaccruing (-3 qtr)	0.0405	0.0088	6.00	7.73
Other real estate owned	0.0404	0.0051	4.37	6.81
Other real estate owned (-1 qtr)	0.0310	0.0041	4.42	6.77
Other real estate owned (-2 qtr)	0.0191	0.0034	3.99	5.67
Other real estate owned (-3 qtr)	0.0116	0.0028	3.55	5.29
Allowance for loan losses	0.0339	0.0138	6.35	8.4
Allowance for loan losses (-1 qtr)	0.0285	0.0135	6.06	7.68
Allowance for loan losses (-2 qtr)	0.0235	0.0134	4.38	6.58
Allowance for loan losses (-3 qtr)	0.0171	0.0130	2.94	4.06
Texas ratio	1.7951	0.1499	6.65	9.88
Texas ratio (-1 qtr)	1.0803	0.1257	7.89	9.28
Texas ratio (-2 qtr)	0.7926	0.1055	7.45	9.52
Texas ratio (-3 qtr)	0.4547	0.0885	6.63	8.75
All variables significant at the 1% level				

SUMMARY AND CONCLUSIONS

The Texas ratio has become a much publicized measure associated with those banking institutions that are most likely to fail. But is it truly a useful indicator? We have shown that it does appear to have some merit. The intuition behind the ratio itself is solid and it can be calculated with only minimum effort with readily available data.

However, that does not necessarily mean that it is a panacea for all who may be looking for such a measure. For example, there can be marked differences between types of loans and an individual bank's exposure to specific types of lending. The Texas ratio includes only institutional totals (total amounts of loans, nonaccruals, etc.) and does not specifically examine loan portfolios. Certain types of loans tend to have higher likelihoods of going into nonaccrual or default status so banks making a higher proportion of those types of loans will have higher Texas ratios and hence

will be more prone to failure. However, the Texas ratio, as currently defined, does not take into account these differences in loan portfolios.

Furthermore, categorizing a loan as being in nonaccrual or default status says little about the value of any collateral associated with the loan and hence the actual amount of the loss given such a default. Defaults on some types of loans may result in higher levels of loss, but only in cases in which borrowers actually default. And the loans themselves might have been quite profitable prior to any default, allowing the bank to build up reserves against potential defaults to help mitigate the seriousness of the loss.

One could also consider the opposite situation in which specific forms of lending are not particularly profitable but also not considered particularly risky. If no reserves are built up due to a previous lack of profitability, only a modicum of credits going into could cause significant problems.

One potential solution to this problem would be the development of a companion or expanded measure. In fact, as mentioned earlier, a major promoter of the Texas ratio measure, the analysts publishing through the implode.com website, have themselves developed such a measure. In fact, they use their complementary measure, the *effective Tier 1 leverage ratio*, as their primary tool in ranking institutions most in danger of failing, and use the Texas ratio itself as only a limiting variable in comprising their watch list. The effective Tier 1 leverage ratio attempts to estimate the impact on the capital of the bank (and hence likelihood of bank failure) of *actual* losses expected on different types of loans.

Although currently applied on a very ad-hoc basis, a measure such as the effective Tier 1 leverage ratio measure could be made stronger with greater availability of publicly-available data on the amounts of loss given default experienced by different loan classes. By weighting individual components of a bank's lending portfolio by those types of assets more likely to cause actual losses and hence endanger the bank's financial health, it can provide a more direct measure rather than the one size fits all measure of the Texas ratio itself.

In conclusion, the rapid acceptance of using the Texas ratio to examine the potential failure of banks has become a very interesting phenomenon. The ratio is based on data that is readily available for any and all types of financial institutions, involves only simple calculations, and provides very straightforward output. This simplicity is a key distinction from more rigorous models, including those found elsewhere on the internet such as those provided by thestreet.com (Weiss, 2009).

Although there is always a potential downside to providing *simple* people with *simple* tools to assess very complex situations such as bank failures, the use of a simple tool like the Texas Ratio can provide individuals with a starting point from which more in-depth analyses of the financial situation of banks can begin. To offer an analogy from the books of Douglas Adams, it may not be the answer to "life, the universe, and everything" (the answer to which is "42"), but it brings us closer to understanding the types of questions that need to be raised by those truly concerned with

the financial health of financial institutions. Given the rapidly increasing level of bank failures, one can only presume that there will be a greater amount of interest placed in this area, both in academia and among the general population.

REFERENCES

Altman, E. (1968). Financial ratios, discriminant analysis and the prediction of corporate bankruptcy. *Journal of Finance*, 23(4), 589-609.

Barr, A. (2008). Bank failures to surge in coming years. Retrieved from MarketWatch, January 3, 2009 from http://www.marketwatch.com/news/story/bank-failures-surge-credit-crunch/story.aspx?Guid= {2FCA4A0C-227D-48FE-B42C-8DDF75D838DA}.

Beaver, W. (1966). Financial ratios as predictors of failure. *Journal of Accounting Research* 5, 71-111.

Board of Governors of the Federal Reserve System. (1943). *Banking and Monetary Statistics 1914-1941*. Retrieved February 3, 2009 from FRASER (Federal Reserve Archival System for Economic Research) at http://fraser.stlouisfed.org/publications/bms/issue/61.

Cole, R.A. & J.W. Gunther. (1998). Predicting bank failures: a comparison of on- and off-site monitoring systems. *Journal of Financial Services Research* 13(2), 103-117.

Collier, C., S. Forbush, D. Nuxoll, & J. O'Keefe. (2005). The SCOR system of off-site monitoring: its objectives, functioning, and performance. *FDIC Banking Review* 15(3), 17-32.

Curry, T.J., P.J. Elmer & G.S. Fissel (2007). Equity market data, bank failures and market efficiency. *Journal of Economics and Business* 59(6), 536–559.

Ellis, D. (2009). Get ready for a wave of bank failures. Retrieved February 21, 2009 from http://money.cnn.com/2009/02/20/news/companies/bank_failures/index.htm?postversion=200902201.

King, T.B., D.A. Nuxoll & T.J. Yeager (2006). Are the Causes of Bank Distress Changing? Can Researchers Keep Up? Federal Reserve Bank of St. Louis *Review* 88(1), January-February, 57-80.

Kolari, J., D. Glennon, H. Shin & M. Caputo (2002). Predicting large US commercial bank failures. *Journal of Economics and Business* 54(4), 361–387.

Meyer, P.A. & H.W. Pifer. (1970). Prediction of bank failures. *Journal of Finance* 25(4), 853-68.

Purnanandam, A. (2007). Interest rate derivatives at commercial banks: An empirical investigation. *Journal of Monetary Economics* 54(6), 1769-1808.

Sinkey, J.F. (1975). A multivariate statistical analysis of the characteristics of problem banks. *Journal of Finance* 30(1), 21-36.

Spahr, W.E. (1932). Bank failures in the United States. *American Economic Review* 22 (March supplement), 208-246.

Weiss, M. (2009). Dangerous unintended consequences: How banking bailouts, buyouts and nationalization can only prolong America's second great depression and weaken any subsequent recovery. Retrieved April 16, 2009 from http://www.moneyandmarkets.com/files/documents/banking-white-paper.pdf.

Wheelock, D.C. & P.W. Wilson. (2000). Why do banks disappear? The determinants of U.S. bank failures and acquisitions. *Review of Economics and Statistics* 82(1), 127-138.

CHARACTERISTICS OF THE RECOVERY PROCESS FOR SMALL FINANCIAL INTERMEDIARIES: THE CASE OF ITALIAN COOPERATIVE BANKS

Lucia Gibilaro, University of Bergamo
Gianluca Mattarocci, University of Rome "Tor Vergata"

ABSTRACT

Studies available on credit risk modeling for local banks primarily takes into account the probability of default of borrowers (PD) and exposure at default (EAD), while there are very few studies on debt recovery in connection with loss given default (LGD).

The characteristics of the customers and the peculiarities of the relationship between customers and local banks make these intermediaries out of the ordinary respect to the overall financial system. These differences could be identified not only in the better customer-monitoring capability, but also in their debt-recovery capacity: in fact, due to their close relationship with the local market and the area in which their borrowers work or live, they have higher strength in controlling debtors.

This paper takes into account Italian Cooperative Banks, hereinafter BCC, and compares the effectiveness of their debt recovery process and the system-wide average between 2000 and 2006. The data has been collected by banks' financial statements and Bank of Italy data. After highlighting the greater capacity of BCC to implement effective recovery processes, the paper focuses on the link between their characteristics and the LGD, identifying the distinctive profiles of the BCCs capable of implementing more efficient recovery processes.

INTRODUCTION[1]

The perspective of the Basel 2 implementation has encouraged banks to conduct a number of studies on the impact that new rules will have on credit management, according to the specific characteristics of the lender (Carretta & Gibilaro, 2005). With regard to Italian Cooperative Banks (hereinafter BCCs), studies tend to highlight the opportunities related to the use of complex credit management tools for internal management purposes (Cesarini & Trillo, 2004), as well as the limitations related to the assessment of the value of the relationship between customer and bank (Comana, 2003).

Available studies on credit management for BCCs focus on the characteristics of this type of bank, such as size, type of customer base and field of activity, showing how its specificity can affect the riskiness of its loan portfolio (Ferri & Di Salvo, 1994). In detail, the evidence provided

attempts to prove the greater capacity of these banks to select and monitor their borrowers, compared to the banking system as a whole.

This paper focuses on the phase subsequent to borrower default, with the aim of assessing whether the special nature of these banks is also reflected in the effectiveness of the debt recovery process. Therefore, the analysis is aimed at assessing the significance of the characteristics of the BCCs, with respect to another driver of the expected credit loss, with a view to highlighting if the differences proposed in the relevant literature - in terms of the probability of insolvency - are consistent with the differences reported in terms of the effectiveness of the recovery process, or if the two risk factors offset each other.

By examining the Italian market, the paper underscores the considerable differences featured by these banks, in respect of loss given default (hereinafter LGD), compared to the national average, and shortlists several common characteristics shared by the BCCs, which, in the time horizon considered, implement more effective recovery processes.

The first section of the paper features a review of the relevant literature, aimed at highlighting the factors affecting the effectiveness of the recovery process (paragraph 2.1), and the distinctive characteristics of BCCs capable of influencing insolvency management (paragraph 2.2). Section 2 is dedicated to an empirical analysis of the Italian market in order to identify the differences between the recovery processes put into place by the BCCs and the average of the banking system as a whole (paragraph 3.1) and to highlight the characteristics of the banks determining their greater or lesser success in the recovery process itself (paragraph 3.2). The last paragraph features some brief conclusions (paragraph 4)

LITERATURE REVIEW

Variables Relevant For Assessing The Effectiveness Of The Recovery Process

The study of the debt recovery processes resulting from borrower default, even in the more developed financial markets, usually highlights a success rate below the amount of initial exposure and, therefore, the role played by the LGD in determining the overall credit risk should not be ignored (Covitz & Han, 2004).

The portfolio characteristics capable of affecting the LGD can be either specific, with respect to the characteristics of the individual credit exposures, or general (Resti & Sironi, 2005). The former primarily comprise factors such as the characteristics of the borrower, various aspects of the loan relationship and the distinctive features of the loan contract (Grunert & Weber, 2005), while the latter comprise the (actual or financial) macroeconomic variables approximating the economic cycle (Träuck, Harpainter & Rachev, 2005).

The significance of these factors with respect to credit default and, consequently, recovery rates, ultimately depends on the characteristics of the lender implementing the debt recovery process (Salas & Saurina, 2002).

The following sub-paragraphs present a detailed overview of the characteristics of the loan relationship (paragraph 2.1.1) and the systemic and semi-specific factors (paragraph 2.1.2) that may influence the success of the recovery process, besides the key empirical evidence supporting the assumption that the lender's characteristics can affect the value of the LGD (paragraph 2.1.3)

The Characteristics of The Loan Relationship

The LGD is affected by the characteristics of the borrower and the most significant aspects affecting overall recovery are the legal form of the company concerned, as well as its size, the type and the residence of customers supplied.

The literature on the influence of a company's legal form on the debt recovery rates is rather limited at present; in the case of limited partnerships or listed companies, the lender is able to assert rights only on the firm by releasing a judicial trial: this specificity is very important if one assumes that the recovery rate of an individual exposure is a function of the aggregate recovery rate of the company as a whole (Carey & Gordy, 2004). Moreover, the higher the leverage, the lower the probability that, in the event of the company filing for bankruptcy, its available assets will be sufficient to ensure the recovery for all creditors: the recovery rates for subordinate credit are lower than those for privileged credit (Carty et al., 1998), and the difference increases proportionally to the debt cushion (Van de Castle & Keisman, 1999) and the degree of complexity of the borrower's financial organization (Hamilton & Carthy, 1999).

Furthermore, larger companies may become marginally riskier - ex post - because banks usually prefer not to immediately undertake recovery proceedings and tend to grant extensions and/or offer to renegotiate the loan (Asarnow & Edwards, 1995): apparently, however, these conclusions are not confirmed if we consider the amount of exposure instead of the size of the company, also with respect to smaller enterprises (Davydenko & Franks, 2008).

There is a negative relationship between the LGD and, (i) the degree of interrelation between bank and borrower, and (ii) the length of their relationship. The greater the economic importance and the longer the relationship, in fact, the higher the likelihood that the borrower will honour its commitments, because otherwise it would be very difficult to find other lenders on the market willing to offer credit at the same conditions (Berger & Undell, 1995). Customer loyalty, therefore, is a factor of mitigation of the LGD, because the greater the availability of information, the lower the risk of misjudging the borrower (Longhofer & Santos, 1999); this aspect is particularly important in the case of small firms, due to less information available, which shortcoming, however, can be remedied by relationship lending, in cases when the usual hard information is unavailable (Allen, DeLong & Saunders, 2004). Further information on the implications of relationship lending on the

credit risk and, ultimately, the recovery rates can be obtained through the analysis of the institutional relationship between lender and borrower. When the borrower controls the lender its interest is to direct its cash flows from the bank to the enterprise, even financing very risky projects, for as long as the profits made by the enterprise are higher than those made by the bank. This aspect entails the interpretation of relationship lending according to the looting view, as well as the information view: the predominance of the former - which can lead to delays in classifying the borrower's default - determines 30% lower recovery rates, on average, with respect to the credits receivable from the party controlling the bank, compared to other credits (La Porta et al., 2003).

The recovery rate also depends on the characteristics of the defaulting relationship, such as the amount of exposure, the manner of repayment and any guarantees provided. Setting aside the institutional and operating characteristics of the bank, the more recent literature highlights a positive relationship between the amount of exposure and the recovery rate, due to the greater focus on the assessment of the borrower's solvency, in connection with both the decision to grant the loan and the subsequent monitoring phase (Grunert & Weber, 2005), and the greater effectiveness and efficiency of the recovery process (Couwenberg & De Jong, 2007). The proper definition of the terms and conditions of contract, regardless of the degree of complexity of the customer's borrowing structure, may limit the bank's exposure and/or speed up the recovery process (Singh, 2003). Instead, the debt repayment procedure is the key factor that can affect the EAD, with respect to a loan transaction, and non-progressive repayment arrangements are those that feature the highest likelihood of low recovery rates. Lastly, the success and length of the recovery process is affected by the availability of guarantees (Altman & Krishore, 1996) and by the possibility of identifying and enforcing the insolvent borrower's guarantees, in accordance with the hierarchy of the various creditors (Eberhart et al., 1990).

The Systemic And Semi-Specific Factors

Recent developments in the literature about the LGD (Frye, 2000) and the capital adequacy regulations (Basel Committee on Banking Supervision, 2005), have placed the focus on the systemic properties of the recovery risk. The recovered amounts, in fact, depend on the winding up of the defaulting borrower, on the sale of any guarantees or security provided and on the enforcement of any bonds (Querci, 2007). During a period of economic recession, increased insolvency, above the average long-term levels, entails an excess supply on the markets of the assets disposed of by the banks to reduce the LGD, which causes prices to drop and reduces the overall value of the recoveries. Moreover, an excessive number of insolvencies may also affect the length of the recovery process, due to the increased activity of both the courts involved and the units responsible for the debt recovery operations (Grunert & Weber, 2005). The empirical evidence, relating to the significance of the role played by the economic cycle, differs according to the type of facility taken into account: assessments regarding bonds and negotiated loans generally highlight the importance

of the economic cycle or of other proxies (Truck et al. 2005), while those regarding non-negotiated loans highlight the marginal or insignificant role of these factors (Altman, 2006), due to their lack of influence, which prevent the insolvency from manifesting itself and the recovery process from being completed under the same conditions as the economic cycle.

Alongside the economic cycle, it is also necessary to further investigate several semi-specific factors that may affect recovery rates, depending on the composition of the lender's loan portfolio, such as the borrowers' line of business and geographical area of operation.

The borrower's line of business may affect the characteristics of its balance sheet, determining a greater or smaller presence of intangible or tangible assets, different borrowing levels and a different degree of liquidability of its assets (Izvorsky, 1997). In particular, it may affect the lender's potential to recover the loan or, in the case of bankruptcy, to sell the firm's assets to obtain the necessary cash flows to meet the commitments undertaken with the lenders[2]. Studies carried out on the international markets highlight a negative relationship between the LGD trends and the economic and sectoral cycle (Hu & Perraudin, 2002), in terms of both the recovered amounts and the average duration of the recovery process: the influence of the economic sector on the LGD is higher the lower the assets belonging to the wound-up company that can be employed by other industries, and the lower the number and liquidity features of the companies operating in the same business field as the wound-up company (Acharya, Bharath & Srinivasan, 2007).

The geographical location of the company's headquarters is important not only in the case of borrowers whose Headquarters are located outside the country, and the company is therefore subject to different bankruptcy laws (Davidenko & Franks, 2008), but also in the case of portfolios with a predominantly national component. Empirical evidence, in fact, has shown that, within a certain country, the competence of a particular court and/or location, in a particular geographical area, may determine different timeframes and/or success rates with respect to the recovery process (Banca d'Italia, 2001), also with respect to exposures with a low risk profile, as in the case of leasing transactions (De Laurentis & Riani, 2005) .

The Bank's Specific Characteristics

The influence of the specific and systemic variables discussed with respect to the recovery rates should ultimately be assessed in the light of the operating and institutional characteristics of the bank.

With regard to its operating characteristics, the LGD is negatively related to the effectiveness and efficiency of the debt recovery process (ABI, 2002): the economic value of the recovery rates is negatively affected by the costs incurred by the bank and, through the discount rate applicable to the financial flows, the length of the recovery process (Gibilaro & Mattarocci, 2006). As regards the costs associated with the recovery activities, international empirical evidence shows that they differ according to the responsible unit and, in particular, the direct internal costs incurred by specialized

units are lower - by several percentage points - than those incurred by general units (Dermine & Neto de Carvalho, 2006). These results are confirmed by the data collected in Italy, where local banks, on average, incur higher costs than medium-to-large banks; all other conditions being equal, debt recovery efficiency tends to change on the basis of the geographical area (Banca d'Italia, 2001). A closer look at the Italian empirical evidence shows that there is a positive relationship between the recovery costs and the length of the process which, in turn, is affected by the geographical area, namely, the competent court for the recovery proceedings (Banca d'Italia, 2001). In the same geographical area, and similarly to the international empirical evidence (Davydenko & Franks, 2008), the recovery procedure can be broken down further into a lower average recovery timeframe, in the case of arrangements made under so-called 'private agreements', and a higher average timeframe in the case of bankruptcy proceedings.

Moving on to the institutional aspects, these comprise the specific factors of each bank, defining its attitude to risk: the moral hazard determined by the presence of an deposit assurance system, the agency costs between owners and managers, the proprietary structure and governance, supervision (Kwan & Eisenbeis, 1997). The bank's attitude to risk affects the volume of loan losses and, therefore, the recovery rates as well, with respect to retail credit markets (Salas & Saurina, 2002). Banks that feature a local operating range and a widespread ownership, characterized by high agency costs, are affected by the risk-taking variables more than the trade banks. Local banks featuring a widespread ownership are, moreover, less affected by the macroeconomic variables, compared to trade banks, due to the geographical concentration of their customer base and the dimensional increment negatively affects the volume of problematic loans, if geographically diversified, while local growth can entail losses due to concentrated exposure.

BCCs' Characteristics And The Impact On The Recovery Process

BCCs, within the general financial system, are small concerns characterized by a special focus on relations with customers and monitoring loans, as a result of the fact that there are less loans to monitor compared to the larger banks (Nakamura, 1994). The strong relations built up by the bank with its customers is significant with respect both to borrower selection and insolvency management, because it enables the restructuring of the debt before the default sets in and/or the more effective management of the recovery process following insolvency (Cosci & Mattesini, 1997).

Several studies in the literature highlight how these strong and lasting relations between the lending bank and the borrower - typical of certain banks with a local vocation - might, however, eventually lead to misjudgments in the assessment of the customer's credit rating. The empirical evidence from the Italian market shows how the behavior of BCCs is consistent with the rest of the financial system and the discrepancies, with respect to a limited number of cases/periods, are mainly the result of their greater propensity to promptly set off bad debt recovery following the appearance of signs of default (Cannari & Signorini, 1996).

Under the applicable provisions, BCCs are required to pay out a percentage of the total loans granted to their partners (De Gregorio, 1997), but the high degree of fragmentation of the banks' capital among the partners makes it practically impossible for the individual partners to significantly influence the bank's credit policies. The presence of borrower-partners, therefore, only determines the enhanced self-control of the borrowers, whose interest is to make sure that the new loans granted by the bank do not determine the increased probability of insolvency of the bank itself and, consequently, a loss of value of the stake held by each partner (Banerjee, Besley & Guinnane, 1994). The analysis of the characteristics of the BCC has highlighted how certain factors - identified in the literature as significant for the purpose of determining the effectiveness of the recovery process - affect these banks as well. In particular, the factors in question are the geographical location, line of business and size of its customers and whether or not they belong to a banking group.

BCCs usually feature a high concentration of their loan portfolios and branches in the province in which they are registered (Guinnane, 2001). This characteristic was initially related to the existence of statutory requirements, but even after these requirements have been abolished, these banks have adopted development strategies preferring the local dimension, rather than going nationwide (Andreozzi & Di Salvo, 1996). The credit management analyses carried out in various geographical areas have shown how in the northern Italy the close ties these banks have with the local communities translates into an enhanced capacity to process the information they need to assess loan applications, while in the south of the country this local rooting generally determines loan allocation inefficiencies (Messori, 1998)

The analysis of the borrowers highlights significant differences between the national average of banks and BCCs. The latters' customer portfolio, in fact, is characterized by a low amount of credit institutions (Mazzillis & Schena, 2001) and the clear predominance of assets invested in loans to businesses (Lopez & Mazzillis, 2002).

BCCs are usually smaller than other banks in the system, but there are also significant differences between the BCCs themselves. The study of the relative dimension compared to the average BCC is useful because empirical evidence has shown that there is a relationship between this characteristic and the bank's level of efficiency (Marco Gual & Moya Clemente, 1999).

EMPIRICAL ANALYSIS

The proposed empirical analysis is aimed at investigating the specificity of the recovery process for the BCCs and the factors that affect the capacity to reduce losses in the event of insolvency.

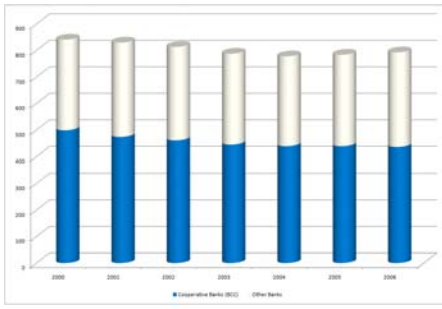
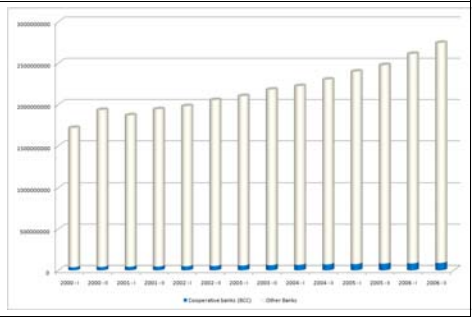
The study of the effectiveness of the recovery process was carried out considering both the differences between the BCCs and the system (paragraph 3.1) and the relations between the characteristics of the individual BCC and the estimated LGD (paragraph 3.2).

A Comparison Of Loss Given Default Estimates For BCC And Overall System

The analysis of distinctive characteristics of the BCCs, compared to the other banks operating in Italy, was carried out based on a broad sample including all financial intermediaries in the period between 2000 and 2006. The sample was then broken down according to the type of bank or lender, distinguishing between BCCs and the rest of the system and then collecting, for each group, the data relating to both the loan exposures and the exposures at default in the single semesters of the period in question[3].

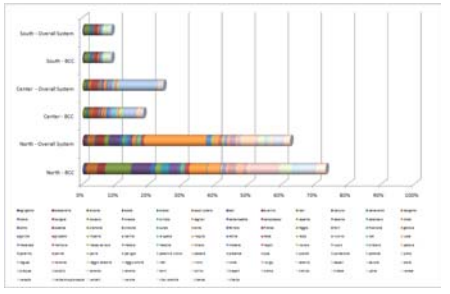
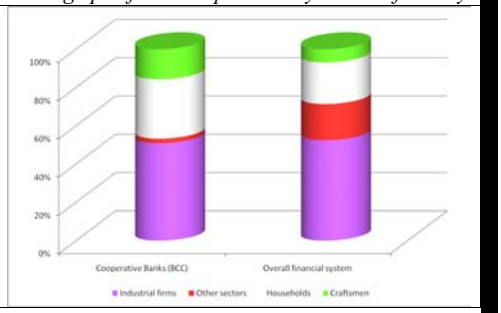
The data required for these analyses was collected using the aggregate return flows created by the supervisory authority for the Istituto Centrale del Credito Cooperativo (hereinafter ICCREA) (Graph 1).

Graph 1. The relevance of BCCs in the Italian credit market

Number of BCCs compared to total banks	*Loans granted by BCCs compared to total credit offered*
	

Source: Bank of Italy data processed by the authors

Graph 2. The characteristics of the debtors for BCCs respect to the overall system

Average portfolio composition by province	*Average portfolio composition by sector of actvity*
	

Source: Bank of Italy data processed by the authors

The two compared samples differ significantly, not only with respect to the overall number of banks (in the period considered, the BCCs accounted for between 55 and 60% of the entire sample), but also for the total loans granted, which, in the case of the BCCs, accounts for a small amount of the total loans granted (only 2%-3%, on average).

The detailed analysis of the composition of the customer portfolio highlights, in line with the other studies in the relevant literature (Di Salvo, 1994), significant differences between the financial system and the BCCs: the latter, in fact, feature a greater number of consumer and producer families and a concentration of their customer portfolios in different provinces compared to the more significant banks at national level (Graph 2).

In order to assess the differences in terms of the effectiveness of the recovery process by the different types of banks, an LGD proxy was constructed on the basis on the supervisory statistical return flow (Sironi & Zazzara, 2008). The characteristics of the data collected and processed by the Bank of Italy[4] have enabled the estimate of the LGD as the ratio of the number of bad debts that become worthless (the LGD entailed by the occurrence of a default) to the number of loans that become distressed in the previous period[5]. In formula:

$$LGD_t = (PP_t / SF_{t-1}) \times 100$$

where:

LGD_t = Estimated value of the LGD;
PP_t = Amount of distressed debts written off;
SF_t = Amount of distressed loans.

The LGD estimated for the financial system as a whole and for the BCC group highlights significant differences in terms of the effectiveness of the debt recovery process (Graph 3).

The analysis of the data thus collected highlights how the BCCs feature a structurally greater recovery capacity, compared to the system, which in the considered time horizon is about 6 percentage points higher. This difference may be attributed to specific and semi-specific factors that affect the two types of lenders in different ways. In particular, the different customer base presented above determines a different level of exposure to the economic cycles and the varying importance of the problems, if any, resulting from the greater or lesser efficiency of the local courts. Alongside these semi-specific factors, moreover, the difference in terms of LGD can be attributed to specific factors relating to the lender and/or the loan relationship established with the customers.

This differential, however, is not stable over time and we can view a significant variability of the phenomenon, with periods in which the deviation is practically null, to semesters in which it exceeds 20%. The analysis of the system-wide aggregate data, therefore, should be supported by a

detailed study of the individual BCCs, in order to discover whether the individual discrepancies can be put down to the presence of atypical lenders.

Graph 3. The estimated LGD for the Italian system as a whole and the BCC group

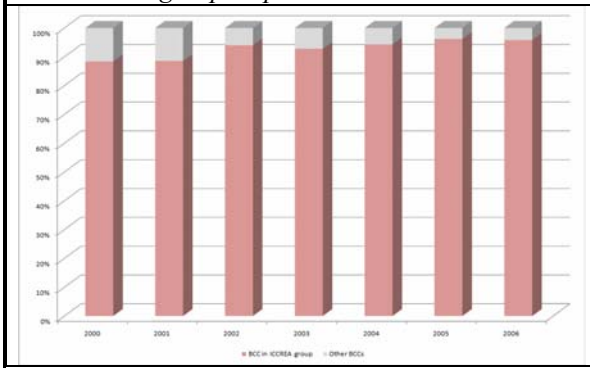
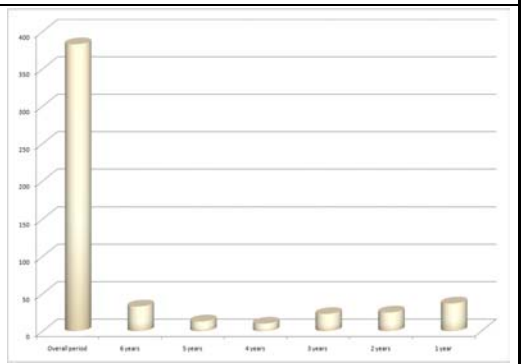
Note: The data about the last semester of 2006 are currently not available

Source: Bank of Italy data processed by the authors

The Relationship Between The BCCs' Characteristics And The Loss Given Default

The analysis of the relationship between the characteristics of the BCCs and the effectiveness of the debt recovery process has been carried out by estimating the annual LGD value for each BCC, based on the financial statements and collecting information about the characteristics of the individual banks, which, on the basis of a review of the relevant prior literature, can affect the outcome of the recovery process. The sample considered here comprises BCCs member of the ICCREA group in the 2000-2006 time horizon (Graph 4)[6].

Graph 4. The characteristics of the sample

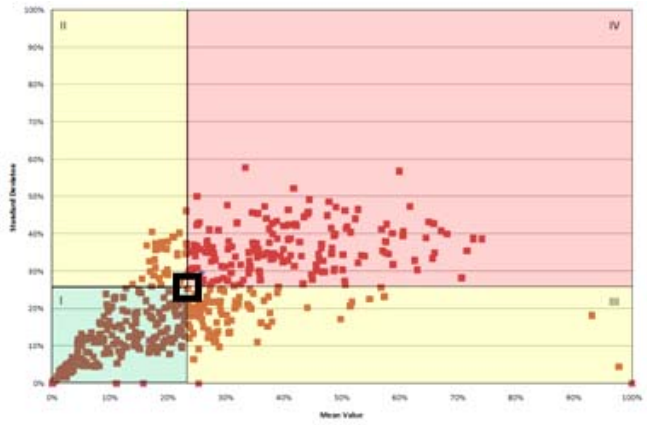
Comparison of number of BCCs belonging to the ICCREA group respect to the overall market	*Number of balance sheets submitted by each BCC*
	

Source: Bank of Italy data processed by the authors

The sample accounts for a very significant percentage of the Italian BCC market (about 93% of the total) and the balance sheets are available for a large number of lenders over the entire time horizon (about 73% of the sample).

The analysis of the effectiveness of the debt recovery process, for the lenders included in the sample, was carried out by estimating (for each BCC) the annual LGD value and then summarizing the values thus obtained using the average and standard deviation indicators[7]. The empirical differences show that, within the sample, there are noteworthy variances between the lenders, which can determine significantly different period-related average and standard deviation values, compared to the average values calculated for the sample (Graph 5)[8].

Graph 5. The estimated LGD for each BCCs compared to the average of the ICCREA-member banks in the 2000-2006 time horizon



	Significance in the sample	*Mean deviation from the quadrant average*
Square I	14.95%	10.37%
Square II	53.34%	7.50%
Square III	24.67%	7.54%
Square IV	8.04%	7.69%

LGD average value for all BCC in the sample
Intermediaries with lower LGD average and standard deviation compared to the average of the sample
Intermediaries with only LGD average or standard deviation compared to the average of the sample
Intermediaries with higher LGD average and standard deviation compared to the average of the sample

Source: ICCREA data processed by the authors

The study of the relationship between the average LGD value and the standard deviation reported in the time horizon highlight how the virtuous scenarios, with respect to the lenders, account for only a small proportion of all intermediaries considered (14.95%) and inside this quadrant the variableness of the phenomenon is much higher than the other scenarios.

In order to identify the determinants of the sample's heterogeneity, a panel-type regression was carried out to investigate which BCC's characteristics can justify the LGD value in the examined period. In particular, the relation is as follows:

$$LGD_{it} = \alpha_{0i} + \alpha_{1i}Dimension_{it} + \alpha_{2i}Vintage_{it} + \alpha_{3i}Sphere\ of\ Activities_{it} + \sum_j \alpha_{ji}Geographical\ Area_{it} + \sum_m \alpha_{mi}Sector_{it} + \varepsilon_{it}$$

where:

$Dimension_{it}$ = measures the size of the lender, alternatively based on the total amount of loans granted, the number of branches or employees;

$Vintage_{it}$ = represents the date on which the lender started operating;

$Sphere\ of\ Activities_{it}$ = identifies the market served by the lender (the variable is encoded as follows: 1=local, 2=provincial and 3= inter-provincial);

$Geographical\ Area_{it}$ = dummies identifying the geographical area (North-east, North-west, Centre or South and Islands) in which the headquarters of the financial intermediaries are placed;

$Sector_{it}$ = identifies the lender's exposure to the State, public authorities, financial intermediaries, non-financial businesses, families and others, with respect to total loans.

The decision to focus only on the characteristics of the BCC in estimating the model, excluding other profiles such as the specificity of the single loan contracts, prevents us from viewing the model as wholly explicative of the phenomenon surveyed in this paper, therefore, in order to avoid any further assumptions as to the nature of the variables excluded from the survey, fixed and variable-effects panel analysis models were built (in the former case, the assumption is of the invariance in time of the excluded variables for each BCC taken into account, while in the latter case, the invariance in time or space is of the error term).

According to the choice of different possible specifications for the dimensional variable - when estimating the fixed and variable-effects model - six possible LGD estimate models were assessed, as follows (Table 1).

Table 1: The LGD determinants for BCCs

Profile analysed	Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Dimension	Total loans	0	-7.38e-09	-	-	-	-
		0	0				
	Branches	-	-	-0.001	-0.0032	-	-
				-0.002	-0.0024		
	Number of employees	-	-	-	-	0.00482	0.0003**
						-2	0
Vintage		0.0004*	0.0001	0.0004*	0.0001	0.0001	0.0004
		0	0	0	0	0	0
Sphere of activities		-0.0198**	-0.0240**	-0.0190**	-0.0201*	-0.0201*	-0.0316**
		-0.0082	-0.1064	-0.0085	-0.0111	-0.1106	-0.011
Geographical area	North-East	-0.05853	-0.0586	-0.5931**	-0.1095	-1.0584**	-0.6076
		-0.4604	-0.5943	-0.4609	-0.5973	-0.4723	-0.6096
	North-West	-0.5171	-0.0067	-0.5241**	-0.0541	-0.9863**	-0.5526
		-0.4625	-0.5972	-0.4618	-0.6	-0.4723	-0.6123
	Center	-0.5409	-0.1969	-0.5491**	-0.0726	-1.0172**	-0.5739
		-0.4613	-0.5955	-0.4618	-0.5986	-0.4732	-0.6108
	South and Islands	-0.4894	0.2138	-0.4975**	-0.0311	-0.9613**	-0.5255
		-0.465	-0.6003	-0.4655	-0.6034	-0.4769	-0.6157

Table 1: The LGD determinants for BCCs

Profile analysed	Variable	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Sector	Government	0.0001	0	0	0	0.0002	0
		0	0	0	0	0	0
	Other public authorities	0	0	0	0	0	0
		0	0	0	0	0	0
	Non-financial firms	0	7.96e-07*	6.47e-07**	0	6.28e-07**	6.42e-07**
		0	0	0	0	0	0
	Financial intermediaries	-4.30e-06**	-4.17e-06**	-4.32e-06**	0	-4.35e-06**	-4.25e-06**
		0	0	0	0	0	0
	Families	0	1.13e-06*	0	0	0	0
		0	0	0	0	0	0
	Other	0	0	0	0	-1.58e-07**	0
		0	(4.25e.07)	0	0	-0.4723	0
No. of observations		3047	3047	3047	3047	2940	2940
No. of groups		533	533	533	533	498	498
Type of correlation		Fixed	Variable	Fixed	Variable	Fixed	Variable
Distribution		Gaussian	Gaussian	Gaussian	Gaussian	Gaussian	Gaussian
No. of iterations		1	8	1	9	1	9
c^2		2442	1423.31	252.36	1409.41	2378.15	1481.72
Prob (c^2)		0	0	0.0828	0	0	0
Hausman test		0.8926		0.8504		0.1118	
Within correlation	Max	0	0.4338	0	0.4386	0	0.4298
	Min	0	-0.0228	0	-0.0521	0	-0.0713

Note: The figures between brackets represent the standard deviations of the estimated coefficients
* 90% significant coefficient ** 95% significant coefficient

Source: ICCREA data processed by the authors

Based on the value of 2 for each of the examined models, it can be stated that the trend of the LGD is not independent from the trend of the variables selected as the causal variables in the panel analysis, although, based on the estimated coefficients and the related significance, it is possible to identify more or less significant factors for the purpose of explaining the effectiveness of the recovery process. Hausman's test makes it possible to determine that, except in the case of the models constructed using the number of employees as the dimensional proxy, the variables excluded from the model feature an invariant trend in time and characterizing for the individual BCCs included in the sample.

The dimension, regardless of the specification of the variable used (total loans, employees or branches), rarely features a significant statistical relationship with the effectiveness of the recovery process and the management of any cases of insolvency, therefore, is not at all affected by the size of the BCC in question.

The analysis of the relationship between the BCC and the geographical area highlights how, on average, all the lenders taken into account are strongly rooted locally, considering that, on average, they have been operating within the communities for over forty years, and the higher the vintage of the lender, the lower (on average) its capacity to effectively achieve recovery. This relationship, however, is valid only with respect to certain peculiar specifications of the model in question.

The operating differences of BCCs represent a discriminant factor, with respect to their debt recovery capacity, and it appears that there is a negative relation between the two aspects. Among BCCs, the choice to extend their field of operation, therefore, positively affects the outcome of their debt recovery processes.

It may be highlighted, therefore, that among BCCs the larger the geographical area served and the longer the bank's rooting in the local area, the greater its debt recovery efficiency. The empirical evidence, however, shows that there are other specific factors, which do not appear in the model and which can significantly affect the LGD.

The analysis of the geographical location of BCCs yields no hard evidence as to whether this factor determines greater or smaller losses in the case of insolvency. The estimated coefficients, in fact, feature a limited statistical significance of geography, in the case of most models and, where geography does appear significant, it is nevertheless impossible to determine an internal hierarchy, with respect to the different areas, based on their weight in the determination of the LGD.

The composition of the loan portfolio, in terms of the borrower's line of business, highlights that, regardless of the type of model taken into account, there is a negative and statistically significant relationship between exposure to financial intermediaries and the LGD.

In most of the models taken into account the effectiveness of the recovery process drops as the exposure to industrial enterprises rises, while no conclusions may be made with respect to the impact of other loan allocation decisions on the LGD.

CONCLUSIONS

BCCs are local banks that differ from all other types of lenders because they are smaller, strongly rooted in their local communities and have a different customer base.

These characteristics affect the quality of the loan granting process, in terms not just of their enhanced capacity to select the best borrowers to which to lend money, but also of the greater effectiveness of their debt recovery record. The survey conducted on the Italian market, in fact,

shows that there is a structural difference between the system-wide and the BCCs' LGD, which is partially due to the closer relations these lenders can establish with their borrowers.

The analysis of the effectiveness of the recovery process by the BCCs, however, highlights the fact that there are significant differences within this lender group, which requires an investigation into the explicative variables that determine the sample's heterogeneity. The study of the relationship between the characteristics of the BCCs, on the one hand, and the LGD, on the other hand, has demonstrated that factors such as the lender's field of operation and its vintage are good factors capable of distinguishing the lenders based on the effectiveness of their debt recovery processes. In the light of this evidence, it ensures that a longstanding rooting in the community and the decision to operate outside the bank's local area usually determine a greater effectiveness of the lender's debt recovery process.

The study of the peculiarities of BCCs, compared to the other financial intermediaries, could be completed by investigating the specific characteristics not just of the lender, but also of the loan contracts entered into. The availability of information on the single contracts, in fact, would make it possible to assess whether the differential surveyed in terms of LGD is also due to the enhanced capacity, by BCCs, to actively manage litigation phases or define more binding contracts for borrowers (Sharma et al., 2001).

ENDNOTES

[1] This paper is the result of a joint effort by the two authors, as follows: paragraph 2.1, the introduction and the conclusions are the work of Lucia Gibilaro, while Gianluca Mattarocci wrote paragraphs 2.2 and 3. The authors wish to thank Dr. Juan Sebastian Lopez and Dr. Anna Di Trapano of the Research Department of ICCREA Holding for the support provided in database construction. A special acknowledgement is also due to Dr. Carlo Amenta, Lecturer of Economics and Management of Enterprises at the University of Palermo, for the useful suggestions provided during the 2008 AIDEA giovani annual conference in Palermo.

[2] For an estimate of the contribution provided by the servicing activities alone for ensuring the success of a financial operation, see the literature on securitization procedures, including Palmieri (2004).

[3] The choice of the time horizon and of the frequency of the survey were subject to the availability of the data needed to estimate the Loss Given Default, which were not available for longer time horizons and/or higher frequencies.

[4] For more information on the nature and the characteristics of the data reference should be made to the Bank of Italy (1991).

[5] For more detailed information, see Bank of Italy (2000).

[6] It was decided to exclude the Rome-based BCC from the sample due to the fact that its characteristics and the values reported in its financial statements were not comparable with the other BCCs included in the sample, being as it is much larger than of the local banks.

[7] For more details on the implications of the average and of the standard deviation of the LGD in the assessment of the borrower risk, see Gibilaro & Mattarocci (2007).

[8] The estimates calculated for the sub-sample taken into account in part 2 of this paper feature lower LGD values for the single years, compared to the estimates relating to the BCC system as a whole (in the sample the average is 25.80%, while the average value of the entire system is 52.87%), but the trend recorded over the years is consistent with the above presentation.

REFERENCES

Allen L., G. DeLong & A. Saunders (2004). "Issues in the credit risk modeling of retail markets", *Journal of Banking and Finance*, 28 (4), 727-752

Altman E.I. (2006), Default recovery rates and LGD in credit risk modeling and practice: an updated review of the literature and empirical evidence, working paper, New York

Altman E.I. & V.M. Kishore (1996). "Almost everything you wanted to know about recoveries on defaulted bonds", *Financial Analyst Journal*, 52 (6), 57-64

Associazione Bancaria Italiana (2002), "Loss Given Default. Aspetti metodologici e proposta di una struttura dati per la stima" in AA.VV., I lavori delle Commissioni tecniche ABI, Bancaria Editrice, Rome

Acharya V.V., S.T. Bharath & A. Srinivasan (2007). "Does industry-wide distress affect defaulted firms? Evidence from creditor recoveries", *Journal of Financial Economics,* 85 (3), 787-821

Andreozzi P. & R. Di Salvo (1996). "Struttura del territorio ed equilibri concorrenziali delle banche. Problemi di riassetto del credito cooperativo", *Cooperazione di Credito*, 48 (151), 31-51

Asarnow E. & D. Edwards (1995). "Measuring loss on defaulted bank loans: a 24-year study", *Journal of Commercial Lending,* 77 (7), 11-23

Banca d'Italia (1991). "Centrale dei Rischi. Istruzioni per gli intermediari creditizi", Circolare n. 139 dell'11 febbraio 1991 e successivi aggiornamenti, Rome

Banca d'Italia (2000). Modelli per la gestione del rischio di credito. I rating interni, Tematiche istituzionali, April, Rome

Banca d'Italia (2001). Bollettino di vigilanza, n.12, dicembre, Roma

Banca d'Italia (2001). "Questionario sul recupero crediti: principali risultati", Bollettino di vigilanza, n.12, December, Rome

Banerjee A.V., T. Besley & T.W. Guinnane (1994). "The neighbour's keeper the design of a credit cooperative with theory and test", *Quarterly Journal of Economics,* 109 (2), 443-464

Basel Committee on Banking Supervision (2005). International convergence of capital measurement and standards, November, Basel

Berger A.N. & G.F. Undell (1995). "Relationship lending and line of credit in small firm finance", *Journal of Business*, 61 (3), 351-381

Cannari L. & F. Signorini (1996). "Rischiosità e razionamento: un'analisi dell'efficienza allocativa delle Banche di Credito Cooperativo", *Cooperazione di Credito*, 43 (152-153), 403-442

Carey M. & M. Gordy (2004). Measuring systematic risk in recoveries on defaulted debt in firm-level ultimate LGDs, Federal Deposit Insurance Corporation working paper, Washington

Carretta A. & L. Gibilaro (2005). "I fabbisogni informativi nel processo di rating interno per il portafoglio corporate delle banche: il caso della Loss Given Default", in AA.VV., La riconfigurazione dei processi decisionali nel quadro evolutivo della competizione, 27° Convegno AIDEA, Giappichelli, Turin

Carty L.V., D.T. Hamilton, S.C. Keenan, A. Moss, M. Mulvaney, T. Marshella & M.G. Subhas (1998). "Bankrupt Bank Loan Recoveries", Special Comments, Moody's Investors Service, New York

Cesarini F. & M. Trillo (2004). "La gestione del capitale nella prospettiva delle banche regionali", in M. Comana (eds), Le banche regionali tra credito e gestione del risparmio, Bancaria Editrice, Rome

Comana M. (2003). "Basilea 2: le BCC di fronte alla riforma della vigilanza", *Cooperazione di Credito*, 19 (181), 273-304

Cosci S. & Mattesini F. (1997). "Il ruolo della banca locale", in F. Cesarini, G. Ferri & M. Giardino (eds), *Credito e sviluppo,* Il Mulino, Bologna

Couwenberg O. & A. De Jong (2007). "Costs and recovery rates in the Dutch liquidation-based bankruptcy system", ERIM Report series research in management, Rotterdam

Covitz D. & S. Han (2004). An empirical analysis of bond recovery rates: exploring the structural view of default, Federal Reserve Board working paper, Washington

Davydenko A.S. & J.R. Franks (2008). "Do bankruptcy codes matter? A study of defaults in France, Germany, and the UK", *Journal of Finance*, 63 (2), 565-608

De Gregorio J. (1997). "Il ruolo della banca locale", in F. Cesarini, G. Ferri & M. Giardino (eds), *Credito e sviluppo*, Il Mulino, Bologna

De Laurentis G. & M. Riani (2005). "Estimating LGD in the leasing industry: empirical evidence from a multivariate model", in E. Altman, A. Resti & A. Sironi (eds), *Recovery risk: the next challenge in credit risk management*, Risk Books, London

Dermine J. & C. Neto de Carvalho (2006). "Bank loan Loss Given Default: a case study", *Journal of Banking and Finance,* 30 (4), 1219-1243

Di Salvo A. (1994). Deregolamentazione ed economie di scala in banca: il caso delle banche di credito cooperativo, Il Mulino, Bologna

Eberhart A. C., W.T. Moore & R.L. Roenfeldt (1990). "Security pricing and deviations from the absolute priority rule in bankruptcy proceedings", *Journal of Finance*, 45 (5), 1457-1469

Ferri G. & A. Di Salvo (1994). "Credito cooperativo, finanziamento alle piccole imprese e sviluppo economico decentrato: valutazioni teoriche e primi riscontri empirici", *Cooperazione di Credito*, 55 (4), 309-369

Frye J. (2000). "Depressing recoveries", *Risk*, 13 (11), 108-111

Gibilaro L. & G. Mattarocci (2006), La selezione del tasso di attualizzazione nella stima della Loss Given Default, Newfin working 6/2006, Milan

Gibilaro L. & G. Mattarocci (2007). "The selection of the discount rate in estimating the Loss Given Default", *Global Journal of Business Research*, 1 (2), 15-35

Grunert J. & M. Weber (2005). Recovery rates of bank loans: empirical evidence from Germany, University of Mannheim working paper, Finanzwirtschaft, Bankbetriebslehre

Guinnane T.W. (2001). "Cooperatives as information machines: German rural credit cooperatives", *Journal of Economic History*, 61 (2), 366-389

Hamilton D.T. e L.V. Carthy (1999). Debt recoveries for corporate bankruptcies, Moody's Investors Service Special Comment, New York

Hu Y.T. & Perraudin W. (2002). The dependence of recovery rates and defaults, Birkbeck College working paper, London

Izvorski I. (1997). Recovery ratios and survival times for corporate bonds, International Monetary Fund working paper, Washington

Kwan S. & R. Eisenbeis (1997). "Bank risk, capitalization, and operating efficiency", *Journal of Financial Services Research,* 12 (2-3), 117-131

La Porta R., F.L. De Silanes & G. Zamarpina (2003). "Related Lending", *Quarterly Journal of Economics,* 118 (1), 231-268

Longhofer S.D. & J.A.C.Santos (1999). The importance of bank seniority for relationship lending, Federal Reserve Bank of Cleveland working paper, Cleveland

Lopez J.S. & M.C. Mazzillis (2002). "Analisi di redditività delle Banche di Credito Cooperativo nel biennio 2000-2001", *Cooperazione di Credito*, 54 (176-177), 221-246

Marco Gual M. & I. Moya Clemente (1999). "Inefficiency in the Spanish cooperative banking sector", *Annals of Public and Cooperative Economics*, 70 (4), 621-637

Mazzillis M.C. & C. Schena (2001). "Una lettura dell'evoluzione strutturale ed operativa delle Banche di Credito Cooperativo nel periodo 1983-1999", *Cooperazione di Credito*, 53 (171), 29-57

Messori M. (1998). "Redditività ed efficienza delle banche locali: le differenze territoriali", *Cooperazione di credito*, 50 (160-161), 275-311

Nakamura J.L. (1994). "Small borrowers and the survival of the small bank: is mouse bank mighty or mickey?", *Federal Reserve Bank of Philadelphia Business Review*, 5 (6), 3-26

Palmieri A. (2004). Italian NPL transactions performance review. March-August 2004, Moody's Investors Service Special Report, New York

Querci F. (2007). Rischio di credito e valutazione della Loss Given Default, Bancaria Editrice, Rome

Resti A. & A. Sironi (2007). "Defining LGD: the Basel II perspective", in E. Altman, A. Resti & A. Sironi (eds), *Recovery risk: the next challenge in credit risk management,* Risk Books, London

Salas V. & J. Saurina (2002). "Credit risk in two institutional regimes: Spanish commercial and savings banks", *Journal of Financial Services Research*, 22 (3), 203-224

Schwizer P. & G. Mattarocci (2006). "La rilevanza dell'assetto istituzionale e del modello organizzativo nel factoring", in Munari L. (eds), *Attualità e prospettive negli studi di Economia dei Mercati e degli Intermediari Finanziari*, MUP, Parma

Sharma K.C., P. Josh, J.C. Mishra, S. Kumar, R. Amalorpavanathan & R. Bhaskaran (2001). Recovery management in rural credit, National Bank for Agriculture and Rural Development occasional papers n.21, Mumbay

Singh M. (2003). Recovery rates from distressed debt- empirical evidence from chapter 11filings, international litigation, and recent sovereign debt restructurings, IMF working paper, Washington

Sironi A. & C. Zazzara (2003). "The Basel Committee proposals for a new capital accord: implication for italian banks", *Review of Financial Economics*, 12 (1), 99-126

Träuck S., S. Harpainter & S.T. Rachev (2005). A note on forecasting aggregate recovery rates with macroeconomic variables, University of Karlsruhe working paper, Karlsruhe

Van de Castle K. & D. Keisman (1999). "Recovering your money: insights into losses from defaults", *Standard & Poor's Credit Week*, June, New York

DOUBLE JEOPARDY IN KUWAIT BANKS: A FOCUS ON MUTUAL FUNDS

Larry P. Pleshko, Kuwait University
Adel Al-Wugayan, Kuwait University

ABSTRACT

The authors investigate the "double jeopardy" (DJ) concept in the domain of financial services, focusing on the mutual funds sector of the market. Based on more than three hundred responding investors of mutual fund services, the authors provide evidence that a DJ effect does exist for banks offering mutual funds in Kuwait. Smaller banks in terms of market share, which offer mutual funds, may face problems in the long run with gaining and maintaining market share without extreme efforts aimed at increasing consumer loyalty to overcome the DJ effect.

INTRODUCTION

A company needs to focus at least a proportion of marketing efforts on the development, maintenance, or enhancement of customer loyalty (Dick and Basu, 1994). This emphasis is important because a company with a large number of brand loyal buyers will be more secure in its markets and should have a higher market share than other firms without this vital customer asset (Raj, 1985; Robinson, 1979; Smith and Basu, 2002). Competitors are at a disadvantage when some firms have a larger number of brand loyal buyers than they have. The many advantages of relatively higher numbers of brand loyal buyers include: a greater response to advertising (Raj, 1982), larger purchase quantities per occasion (Tellis, 1988), and reduced marketing costs (Rosenberg and Czepial, 1983). The advantages garnered from loyalty are especially important since, as markets become more mature, increases in share become more expensive and improvements in the loyalty base might be a viable means of increasing and maintaining share (Gounaris and Stathakopoulos, 2004).

The fact that competitive markets oftentimes exhibit similar market structure characteristics (market share), which in turn was found to be correlated with the number of brand loyal buyers, was first noticed by McPhee (1963). This observance that brands with large market shares usually had the most brand loyal buyers (and vice versa) was termed "*double jeopardy*" (DJ) because it seemed unfair for smaller brands to suffer in both ways. Previous research related to DJ suggests its' applicability to a variety of consumer brands and setting. Additionally, other consumer-specific variables exhibit a similar relationship to market share as does consumer loyalty (Ehrenberg et al, 1990).

This study applies the aspects of DJ to the area of mutual fund services in Kuwait. The setting is relevant because few have investigated the DJ phenomenon in Asia (Yang et al, 2005). Plus, only one investigation to this point has studied double jeopardy in the Kuwait market (Pleshko and Al-Wugayan, 2008). Nor have there been many studies in the retail services industries. Most research has focused on brand-level relationships rather than service-level or store-level relationships, as would be necessary in retailing or banking (Meyer-Waarden and Benavent, 2006, Rafiq and Fulford, 2005).

Additionally, the DJ topic is extremely relevant to the banking sector in the Middle East, where markets are opening to global competition as a result of the Arabian Gulf coast country (GCC) members joining the WTO. The presence or absence of the DJ phenomenon in financial services may be critical to companies' decision making, since it would be difficult for small-share firms to grow and show long term success with evidence of a strong DJ effect. Additionally, it may be difficult for foreign or other new firms to enter a geographical market with strong DJ effects. The authors attempt to identify whether the DJ phenomenon is evident through a survey of investors in Kuwait by analyzing the relationship of loyalty to market share as they pertain to mutual funds.

THE DOUBLE JEOPARDY PHENOMENON

A firm's long-term success depends on both its ability to attract customers and its capability to retain these customers (McDowell and Dick, 2001). Jones (1990) points to this fact by stating that manufacturers should regard sales volume and market share as keys to the future, given that both involve sources of repeat business and scale economies. McDowell and Dick (2001) rightfully remind us that a brand's market performance is driven by both the number of individuals buying a particular brand and the frequency of repeat purchases from these customers. The ability to manage these two factors determines the extent to which a firm maintains and sustains its customer base, as well as its market share. Indeed, Robinson (1979) and Raj (1985) state that the larger the number of loyal customers, the more secure will be the brand's market share. Therefore, as a priority, all companies must both find ways to attract new customers to an existing user base and to retain these buyers over the long term. So, it must be that firms constantly battle with competitors to maintain or increase both the number of buyers and the loyalty of these customers. When a firm fails to hold a strong relative competitive position, it runs the risk of a widespread phenomenon called "*double jeopardy*" (DJ).

Double jeopardy is broadly characterized as a phenomenon whereby small-share brands attract somewhat fewer loyal consumers, who tend to buy the brand in smaller quantities, while larger-share brands are purchased more often by customers who exhibit more loyalty (Ehrenberg and Goodhardt, 2002; Badinger and Robinson, 1997, Donthu, 1994; Martin, 1973; Michael and Smith, 1999). Thus, less popular brands are punished twice: (i) they have fewer buyers who show (ii) less loyalty to the brands they buy. McPhee (1963) explained that DJ occurs when consumers select

between two brands of equal merit, one having a larger market share and the other having a smaller market share. This does not necessarily signify a weak small brand or a strong large brand. Rather, it reveals that the smaller share brand is less popular than the larger share brand for some reason (Pleshko and Souiden, 2007, Ehrenberg and Goodhardt, 2002, Ehrenberg et al, 1990).

Although long established, the DJ phenomenon has a variety of issues as yet unsettled (Ehrenberg and Goodhardt, 2002). For instance, though previous research has found an obvious relationship between brand share and loyalty in many instances, whether loyalty is a cause or a result of high share remains unclear (McDowell and Dick, 2001). Likewise, previous research has focused mainly on the issue of DJ for the product brand while the relevancy for the company brand, the retail brand, or the service brand is rarely discussed. Thus, the main issue – 'why two equally regarded brands or products differ in their relative shares of the market?' - is still not truly defined in most settings. Three possibilities may be drawn from the literature as explanations for double jeopardy: (i) a familiarity effect, where buyers are loyal to popular brands (c.f. Ehrenberg et al, 1990; McPhee, 1963), (ii) an experience effect, where satisfied customers develop loyalty (c.f. Tellis, 1988; Raj, 1982; Brown and Wildt, 1992; Johnson and Lehman, 1997; Narayana and Markin, 1975; Nedungadi, 1990; Pleshko and Souiden, 2007), and (iii) a design effect, where the better product wins (c.f. Ehrenberg et al, 1990; Keith, 1960). Of these three, which are most relevant will depend on the industry and circumstances.

DATA COLLECTION AND SAMPLE

The data for the current study are gathered from a group of consumers who are mutual fund investors at banks in the state of Kuwait. It was important to select a type of service that would add to the study of double jeopardy, as we would expect to find differences based on product-classes (Chaudhuri and Holbrook, 2002). In most cases, financial services may be considered a shopping product because consumers make decisions about these services using extended decision-making to choose between many similar offerings (c.f. Murphy and Enis, 1986).

The sample, comprised of bank customers in the State of Kuwait, is derived from a sampling frame provided by the Ministry of Planning. The data are from self-administered questionnaires collected from visits to households of both local citizens and foreign residents. This process results in a total of seven hundred and seventy respondents, of which three hundred and thirty are mutual fund investors and thus included in the study. Note that the sampling methods employed a multi-stage approach in order to ensure the sample proportions closely matched the actual proportions of bank users in Kuwait. The sample also reflects the distribution of residence over the six districts of Kuwait. Non-Response was lower than ten percent, a seemingly acceptable number given the sensitive nature of the information gathered. The quality of data was ensured by the field data collectors who disqualified respondents unwilling to share information about their banking activities.

Additionally, all questionnaires in Kuwait must be approved by a government ministry, thus lending credibility to the research and enhancing response rates.

Many financial services companies exist in Kuwait in a variety of categories; however, only those companies offering mutual funds are investigated in this study. At the time of this study, foreign banks were not permitted to operate in the market and are therefore not included in the study. Currently there are thirty-six companies offering mutual fund services, with most of the activity handled through the ten major banks of Kuwait. Thus, the ten banks are each included in the study as individual entities, while the remaining twenty-six providers are grouped together into an 'other' category due to the small market shares. Therefore, there are eleven 'banks' that will be included in the analyses regarding mutual fund investors; the ten major banks by market share, along with an 'other' category which includes the averages of twenty-six banks and financial services companies. Table 1 summarizes the banks and investors data derived from the respondents.

Table 1: Bank and Investor Account Information

Bank#*	#investors	#investors**	#mutual fund	total Kd
		w/ most Kd	accounts	in MF
33	74	45	99	3083503
17	94	46	140	3905120
27	45	40	50	1269456
20	45	20	63	1677000
3	30	20	41	700000
12	20	16	24	692667
32	22	16	26	633000
28	26	15	39	448000
15	24	14	34	504500
34	42	14	71	995000
Others (avg)	4.2	3.0	5.6	101151
Others (tot)	108	80	145	2629933

* 36 total banks: 10 shown + 26 'Others'
** referred to as LOYF

From Table 1 many items are noted regarding the sample: (i) the banks are identified in the first column, (ii) the number of investors for each bank from the sample are shown in the second column, (iii) the number of investors from the sample pertaining to the banks where the investors have the largest proportion of money invested is shown in column three, (iv) the total number of mutual fund accounts held by the investors in the sample is shown in column four, and finally (v)

the total mutual funds investments in Kuwaiti dinars (Kd) is revealed in column five. It is noteworthy to see that investors may have more than one mutual fund investment account. Additionally, the investors may have mutual fund investments at more than one bank. Thus, the numbers will show that there are more investors (column two) and accounts (column four) than total investors. However, column three shows the bank where the customer has the majority of their investment money and those numbers will add approximately to the number of respondents (330): two hundred forty seven (three not grouped) associated with the ten major banks and eighty with the other banks.

When one considers investments with multiple banks, the three hundred thirty respondents in the study count as five hundred and thirty investors across the thirty six banks (see Table 1, column two). Additionally, these investors have a total of seven hundred and thirty-two mutual fund investments in Kuwait (see Table 1, column four). These mutual fund investments total approximately Kd16,538,179. Eighty-four percent are associated with the ten major banks and the remaining sixteen percent invested in the other twenty-six banks.

MEASUREMENT

The study includes a variety of constructs pertaining to market share and consumer loyalty. The overall numbers for the three market share indicators and the single loyalty indicator are derived by summing across the respondents to arrive at aggregate sample totals for each bank. These overall measures are percentages for the market shares and a frequency for loyalty. The indicators are described below and are derived from research in other industries where similar measures are shown to be reliable and valid for aggregate measures within services retailers (Pleshko, 2006). The aggregate market share and loyalty indictors are revealed in Table 2 for each of the banks. Note that these are the data used in the DJ analyses to be described later. Note that to gather the data, the respondents were asked to write the bank, investment amount, and year initiated for each mutual fund investment.

The first market-share indicator (MSFI) refers to the share of investors that each bank holds. As previously noted, there are more investors than sample respondents due to multiple accounts held by each investor (see column two, Table 1); the total investors are actually five hundred and thirty. Thus, MSFI is calculated as follows: $MSFI_i = S_i/530$, where 'S' refers to the data from column two in Table 1 and 'i' refers to the specific bank. So, regarding Bank 33 for example: $MSFI_{33} = 74/530 = 13.96\%$. From Table 2, it is noted that the range of MSFI is from a low of 0.78% for 'other' banks to a high of 17.74% for Bank 17.

Table 2: Aggregate Bank Loyalty and Market Share Statistics and Ranks				
Bank# [i]	MSFI	MSFA	MSVA	LOYF
33	.1396 (10) [ii]	.1352 (10)	.1864 (10)	45 (10)
17	.1774 (11)	.1913 (11)	.2361 (11)	46 (11)
27	.0849 (8.5)	.0683 (7)	.0768 (8)	40 (9)
20	.0849 (8.5)	.0861 (8)	.1014 (9)	20 (7.5)
3	.0566 (6)	.0560 (6)	.0423 (6)	20 (7.5)
12	.0377 (2)	.0328 (2)	.0419 (5)	16 (5.5)
32	.0415 (3)	.0355 (3)	.0383 (4)	16 (5.5)
28	.0491 (5)	.0533 (5)	.0271 (2)	15 (4)
15	.0453 (4)	.0464 (4)	.0305 (3)	14 (2.5)
34	.0792 (7)	.0970 (9)	.0602 (7)	14 (2.5)
Others (avg)	.0078 (1)	.0076 (1)	.0061 (1)	3 (1)
Others (tot)	.2038	.1976	.1586	80

Notes: i - 36 total banks: 10 shown + 26 'Others'
ii - ranks are in parentheses

The second market-share indicator (MSFA) refers to the share of mutual fund accounts/investments that each bank holds. As noted previously, there are more accounts than respondents (see column four, Table 1); the total accounts are seven hundred thirty-two. Thus, MSFA is calculated as follows: $MSFA_i = T_i/732$, where 'T' refers to the data from column four in Table 1 and 'i' refers to the specific bank. So, regarding Bank 33 for example: $MSFA_{33} = 99/732 = 13.52\%$. From Table 2, it is noted that the range of MSFA is from a low of 0.76% for 'other' banks to a high of 19.13% for Bank 17.

The third market-share indicator (MSVA) refers to the share of money invested that each bank holds. Recall from the previous paragraphs that the total value of the respondents' investments in mutual funds is Kd16,538,179. Thus, MSVA is calculated as follows: $MSVA_i = Z_i/16,538,179$, where 'Z' refers to the data from column five in Table 1 and 'i' refers to the specific bank. So, regarding Bank 33 for example: $MSVA_{33} = 3,083,503/16,538,179 = 18.64\%$. From Table 2, it is noted that the range of MSVA is from a low of 0.61% for 'other' banks to a high of 23.61% for Bank 17.

The three market share indicators appear to be reliable equivalent forms of the same concept, as they are significantly and positively related as analyzed by the Spearman rank-order test. The relationships are as follows: MSFI-MSFA *(rho*=0.97, $p<.01$), MSFI-MSVA *(rho*=0.90, $p<.01$), and MSFA-MSVA *(rho*=0.88, $p<.01$).

The loyalty indicator (LOYF) refers to the number of mutual fund investors at each bank. Specifically, LOYF is defined as the number of investors at each bank, where the investors are assigned to a specific bank only when they have the largest investment from their total mutual fund monies at that bank. You may recall from previous paragraphs that the total number of classified respondents is three hundred and twenty-seven. So, regarding Bank 33 for example: $LOYF_{33} = 45$, which are 13.76% (45/327). From Table 2, it is noted that the range of LOYF is from a low of three (0.91%) for 'other' banks to a high of forty-six (14.06%) for Bank 17.

ANALYSIS/RESULTS

The Spearman (1904) rank correlation coefficient is used to analyze the association between market share and the variables under investigation. Spearman's test statistic, *rho* or "*r*", is calculated with data taken from 'n' pairs (*Xi, Yi*) of observations from the respondents on the same objects, the retail brand outlets. In this study, market share makes up one of the observational items in the pair, while loyalty is the other item. The observations within each pair of variables is then ordered from smallest to largest and assigned the respective ranks from one to n, where n refers to the number of banks: eleven in this case. The construct values, rankings, test statistics, and '*p*'-values are shown for each construct of interest in Table 2 and Table 3. Ties are assigned the average ranking value. These "rankings pairs" are then used to calculate the test statistic, "*rho*", which is also represented in this study as "*r*".

To calculate the "*r*", the "rankings pairs" are compared: this would include each of the market share indicators being compared separately to customer loyalty (LOYF). The test statistic, *rho*, is calculated as follows: $r=1–6[Sum(d^2)/n(n^2-1)]$. In the equation, '*n*' equals the number of paired rankings (in this case, eleven) and '*d*' equals the absolute differences between the rankings for each bank. The test statistic ranges between +1 (perfect positive association) and -1 (perfect negative association).

In this study, two-tailed tests are performed, giving the general hypotheses for the paired variables: *Ho***:** independently ranked pairs (*no* relationship between the rankings of loyalty and share) or *Ha***:** related ranked pairs (relationship between the rankings of loyalty and share. Table 3 reveals the results of the analysis.

Table 3: Spearman Rho Statistics

		MSFI	MSFA	MSVA
LOYF	rho=	+.7932	+.6795	+.8523
	p=	<.01	<.05	<.01

As noted in Table 3, the rank ordering of the loyalty indicator is significantly related to the rank orders of all three market share indicators. The test of LOYF-MSFI (*rho*=+.7932, $p<.01$) shows a significant positive relationship. The test of LOYF-MSFA (*rho*=+.6795, $p<.05$) shows a significant positive relationship. Also, the test of LOYF-MSVA (*rho*=+.8523, $p<.01$) shows a significant positive relationship. Thus, three out of three statistical tests support the existence of double jeopardy in Kuwait banks' mutual fund investment services, as tested across banks.

DISCUSSION/LIMITATIONS

The findings of this study reveal that the concept of double jeopardy (DJ) does apply to banks which are mutual fund providers in the state of Kuwait for the given sample. The rank orders of market share and loyalty are significantly and positively related in all three statistical tests, revealing a strong DJ effect. The use of multiple indicators (and thus the multiple tests) allows greater confidence in the conclusions of the study than would be possible without multiple equivalent measures. Thus, we can conclude that banks with larger shares in mutual fund services also have larger percentages of loyal buyers and vice versa.

This finding adds additional support to the relevance of Double Jeopardy in retailing and/or service providers, which are distinct from the brand names which they market. Regarding other retail categories, research using similar methods has shown DJ to be strongly evident in other banking services (consumer loans) and fast-food outlets (Pleshko and Al-Wugayan, 2008; Pleshko et al, 2006). Thus, it appears that double jeopardy is an important strategic issue for managers not only dealing with FMCG products, but also for service and retail providers.

The presence of DJ in banking services may be related to the generally well-recognized brand names that are evident in the banking industry. Or the DJ effect might be a result of the high involvement levels associated with these types of services. In other words, maybe DJ is more prevalent with shopping or specialty products than with convenience or preference goods (Murphy and Enis, 1986). This would be contrary to the findings of Lin and Chang (2003), who suggest the DJ relationship to be stronger in low involvement products.

The readers must wonder if the current findings are indicative of general tendencies or simply a characteristic of this limited study in the Kuwaiti market. More and varied studies taken over time are probably needed to truly identify the scope of the double jeopardy phenomenon in banking. Additionally, this study only addressed mutual fund investments: no evidence is provided that these findings apply to other banking services, such as business loans or money transfers. Future research might also include both different target respondents (commercial banking) as well as different product-markets, both in the banking sector and elsewhere.

IMPLICATIONS

As double jeopardy is shown to be evident in this part of the banking sector, there are definite implications for the competitors within the industry. As the DJ name implies, this may reveal a future problem for the smaller Kuwaiti banks which offer investment services. Smaller Kuwaiti banks are faced with, not only lower market shares, but with smaller numbers of brand loyal buyers. The result of having fewer loyal buyers is that the smaller-share banks will (theoretically) gradually lose market share to the larger banks as time progresses. This digression in share occurs as buyers switch among the banks from small-share to large-share and vice versa (c.f. Bandyopadhyay et al, 2005). But with fewer buyers switching to the smaller share banks, in the long run these small banks may end up with even smaller shares. This long-term digression may be prevented with an active marketing program aimed at increasing loyalty within the users of the smaller banks. In this way, even though the banks have smaller shares, they will be able to rely on an equally strong loyalty base for future business.

The prognosis for larger banks is the opposite. Larger share banks, assuming continued high-quality managerial decision making, should end up growing even larger in the long-term. The large-share banks are facing a much better situation. Due to the advantages of having a large share to begin with (familiarity, stronger brand names, better performance, etc.), these larger banks do not face the digression in market share expected with the smaller banks. On the contrary, the large-share banks should ideally increase market share, due to gaining switchers from the small banks and a larger share of newcomers, as long as loyalty levels remain high relative to the smaller banks. Thus, large banks can focus, as might normally be expected, on expanding the market size. This focus on market size for larger-share banks should lead to a larger percentage of growth than smaller-share banks would expect.

But this gradual movement within the industry to fewer and larger banks might take longer than expected in other industries due to the peculiarities of this type of service. Investment services generally have a longer purchase cycle. Considering this purchase cycle, it might be years before a second or third investment decision is made again and a switching decision might occur. Thus, the medium to long terms inherent with fund investments helps ensure that business remains with the originally selected bank, unless a problem occurs within the market or a specific bank. Again, these low levels of switching, once a bank service is selected, makes it more difficult for the smaller-share banks to gain share.

Finally, this study and the findings are particularly relevant for the Kuwait bank sector as the market opens up to foreign competition in line with WTO requirements. It may be that the local banks feel confident with their current shares, due to the existence of loyal buyers for each bank. This confidence may be folly. As the new multinational banks enter, and upon seeing difficulty in gaining share from the existing customer groups in current service areas, they may well focus on expanding the market size by targeting current nonusers or new segments of the industry. Even

though DJ applies to mutual fund services in the existing markets of Kuwait, this will most likely not be evident in new segments of the market. Any carryover effect of DJ from one service to another for each bank has no support at the current time as no one is studying this issue. Therefore, local banks in the current segments should have advantages over new-entrant foreign banks within the current buying market. However, this DJ advantage may not be evident within new segments. The results of large global foreign banks entering new segments could be disastrous in the long run for not only the smaller-share banks, but maybe even for some of the larger-share banks as well. Therefore, while Double Jeopardy may be a viable barrier to entry or competitive tool for current markets, there are no guarantees that this phenomenon will protect large-share banks during future endeavors into new markets or new service areas.

REFERENCES

Badinger, A.L. & Robinson, J. (1997), "The jeopardy in double jeopardy", *Journal of Advertising Research,* 37 (6), 37-50

Bandyopadhyay, S., Gupta, K., & Dube, L. (2005), "Does brand loyalty influence double jeopardy? A theoretical and empirical study", *The Journal of Product and Brand Management*, 14 (7), 414-423

Brown J.J. & Wildt, A.R. (1992), "Consideration set measurement", *Journal of the Academy of Marketing Science*, 20, 235-243

Chaudhuri, A. & Holbrook, M.B. (2002), "Product-class effects on brand commitment and brand outcomes: The role of brand trust and brand affect", *Journal of Brand Management*, 10 (1), 33-59

Dick, A. & Basu, K. (1994), "Customer loyalty: Toward an Integrated framework", *Journal of the Academy of Marketing Science*, 22 (Spring), 99-113

Donthu, N. (1994), "Double jeopardy in television program choice", *Journal of the Academy of Marketing Science*, 22 (2), 180-186

Ehrenberg, A. & Goodhardt, G.J. (2002), "Double jeopardy revisited, again", *Marketing Research*, 14 (1), 40-42

Ehrenberg, A., Goodhardt, G.J., & Barwise, T.P. (1990), "Double jeopardy revisited", *Journal of Marketing*, 54 (3), 82-91

Gounaris, S. & Stathakopoulos, V. (2004), "Antecedents and consequences of brand loyalty: An empirical study", *Journal of Brand Management*, 11 (4), 283-307

Johnson, M.D. & Lehmann, D.R. (1997), "Consumer experience and consideration sets for brands and product categories", *Advances in Consumer Research*, 24, ed. Brucks and MacInnis, Provo, Utah, Association for Consumer Research, 295-300

Jones, J.P. (1990), "The double jeopardy of sales promotions", *Harvard Business Review*, 68 (5), 145-152

Keith, R.J. (1960), "The marketing revolution", *Journal of Marketing*, 37.

Lin, M.Y. & Chang, L.H. (2003), "Determinants of habitual behavior for national and leading brands in China", *Journal of Product and Brand Management*, 12 (2/3), 94-108

Martin Jr, C.R. (1973), "The theory of double jeopardy", *Journal of the Academy of Marketing Science*, 1 (2), 148-153

McDowell, W.S. &. Dick, S.J. (2001), "Using TV daypart 'double jeopardy effects' to boost advertising efficiency", *Journal of Advertising Research*, 41 (6), 43-51

McPhee, W.N. (1963), *Formal Theories of Mass Behavior*, New York: The Free Press

Meyer-Waarden, L. & Benavent, C. (2006), "The impact of loyalty programs on repeat purchase behavior", *Journal of Marketing Management*, 22 (2), 61

Michael, J.H. & Smith, P.M. (1999), "The theory of double jeopardy: An example from a forest products industry", *Forest Products Journal*, 49 (3), 21-26

Murphy, P.E. & Enis, B.M. (1986), "Classifying products strategically", *Journal of Marketing*, 50, 24-42

Narayana, C.L. & Markin, R.J. (1975), "Consumer behavior and product performance: An alternative conceptualization", *Journal of Marketing*, 39 (October), 1-6.

Nedungadi, P. (1990), "Recall and consumer consideration sets: Influencing choice without altering brand evaluations", *Journal of Consumer Research*, 17, 263-276.

Pleshko, L.P. (2006), "Multiple measures of loyalty: Validity and Reliability tests in two retail settings", *Academy of Marketing Studies Journal*, 10 (1), 77-88

Pleshko, L.P. & Al-Wugayan, A. (2008), "Double jeopardy in Kuwait bank services: An investigation of loan services", *Arab Journal of Administrative Sciences*, 15 (1), 113-127

Pleshko, L.P., Souiden, N., Heiens, R.A., & Fekula, M.J. (2006), "The operation of double jeopardy in the fast-food services market", *Proceedings of the American Society of Business and Behavioral Science*, 13 (1), 1626-1637

Pleshko, L.P. & Souiden, N. (2007), "A preliminary study of double jeopardy in selected retailers", *Academy of Marketing Studies Journal*, 11 (2), 87-106

Rafiq, M. & Fulford, H. (2005), "Loyalty transfer from offline to online stores in the UK grocery industry", *International Journal of Retail & Distribution Management*, 33 (6), 444-461

Raj, S.P. (1985), "Striking a balance between brand popularity and brand loyalty", *Journal of Marketing*, 49 (winter), 53-59.

Raj, S.P. (1982), "The effects of advertising on high and low loyalty consumer segments", *Journal of Consumer Research*, 9 (June), 77-89

Robinson, J. (1979), "Brand strength means more than market share", *Journal of Advertising Research*, 19, 83-87.

Rosenberg, L. & Czepial, J. (1983), "A marketing approach to customer retention", *Journal of Consumer Marketing*, 2, 45-51

Smith, T. & Basu, K. (2002), "A view from the top: The impact of market share dominance on competitive position", *Journal of Brand Management*, 10 (1), 19-33.

Spearman, C.E. (1904), "The proof and measure of association between two things", *American Journal of Psychology*, 15, 72-101

Tellis, G. (1988), "Advertising exposure, loyalty, and brand purchase: A two-stage model of choice", *Journal of Marketing Research*, 25 (May), 134-144.

Yang, Z., Bil, Z., & Zhou, N. (2005), "The double jeopardy phenomenon and the mediating effect of brand penetration between advertising and brand loyalty", *Journal of Advertising Research*, 45 (2), 211

AUTHORS' NOTES

Dr. Pleshko received his Ph.D. from Florida State University. He specializes in marketing strategy research related to firm performance and consumer behavior as it relates to marketing strategy. He has taught at universities in Australia, Saudi Arabia, the USA, the United Arab Emirates, Kuwait, and Jamaica. His previous work experience includes managerial and consulting positions both in the USA and abroad.

Dr. Al-Wugayan received his Ph.D. from the University of Rhode Island. He specializes in Cross Cultural Consumer Behavior research and in Business Ethics. He is currently on leave from Kuwait University and is serving the State of Kuwait as the Secretary-General of the Supreme Council for Planning and Development.

SOURCES OF BANK RISKS: IMPACTS AND EXPLANATIONS

Kevin Bracker, Pittsburg State University
Michael Imhof, University of Missouri-Columbia
Justin Lallemand, University of Arkansas

ABSTRACT

First, we examine the sensitivity of bank holding company stocks to risk factors from 1987-2004. Specifically, we identify six risk factors for returns on bank holding company stocks – market returns, percentage change in 10-year Treasury Note yields, percentage change in the Federal Funds rate, percentage change in the value of the US Dollar, change in the default risk premium, and change in the yield spread. Second, we examine underlying influences (maturity gap, size, capital, derivatives, foreign assets, and risk assets) which may lead to differences across bank holding company stocks with respect to their sensitivity to the six risk factors.

JEL Codes: G12, G21, G32
Keywords: Bank Holding Companies, Risk Factors, Derivatives

INTRODUCTION

The sensitivity of commercial bank stock returns to interest rate risk has generated a substantial amount of attention, both within the academic arena and in the business world. Although this paper studies a multitude of risks to commercial banks, interest rate risk came to the forefront in the 1980's, in particular, with the massive number of Savings and Loan failures spurred on in large part by maturity mismatches between longer-term assets (loans) and shorter-term liabilities (deposits). In addition to the S&L failures, between 1985 and 1992, there were 1316 commercial bank failures in the U.S. involving over $170 billion in bank assets (FDIC). The magnitude of these failures and the instability they lent to the U.S. banking sector compounded many of the problems generated by the S&L failures.

In addition, through much of the 1980's and 1990's, bank regulatory bodies continued to chip away at many of the Glass-Steagal provisions by allowing banks to indirectly participate in other nonbank financial activities. Finally, in 1999, the Gramm-Leach-Bliley Act removed many of the remaining barriers between financial companies (Carow and Heron, 2002). As many larger banks

began to expand their business lines, they may have also expanded the set of risks to which they are exposed.

Ultimately, as a result of the changes in legislation, banks began to diversify into areas such as investments and insurance, leading to industry consolidation and competitive restructuring (Purnanandam, 2005). These substantial changes renewed interest in the impact of interest rate risk on bank stock returns.

While the majority of studies examining the relationship between interest rate changes and bank stock returns indicate a predominantly negative relationship, there have been some exceptions. Booth and Officer (1985), Kwan (1991), Fraser, Madura and Weigand (2002), and others find that the relation between interest rates changes and bank stock returns is negative. Alternatively, earlier studies by Chance and Lane (1980) and Lloyd and Schick (1977) find no significant relationship. Fissel, Goldberg and Hanweck (2005) examine 10 large banks and find a positive and significant relationship in 6 of the 10 banks and a significant negative relationship in only 1 of the 10 banks (the other 3 exhibiting negative, but not significant relationships). Saporoschenko (2002) examines Japanese bank stock returns and finds that the relationship varies from bank to bank. Madura and Zarruk (1995) investigate the issue on a global basis. They examine the sensitivity of bank stock returns to changes in interest rates for 29 money center banks across the U.S., Canada, the U.K., Japan and Germany. Their findings indicate a negative relationship in all countries but the U.S. Chen and Chan (1989) find that the sensitivity between interest rates changes and bank stock returns fluctuates depending on other characteristics of the interest rate environment.

In addition to bank stock returns being impacted by changes in overall interest rate levels, they can also be impacted by changes in the structure of the yield curve, or more specifically, the difference between long-term and short-term interest rates (yield spread). Interest rate spreads between high-risk and low-risk securities (default risk premium) may also impact bank stock returns. Since many banks (especially larger banks) make loans and receive deposits in currencies other than the U.S. Dollar, it is reasonable that fluctuations in the value of the U.S. Dollar (exchange rate risk) could also have an impact on the returns. Grammatikos, Saunders, and Swary (1986), Choi, Elyasiani, and Kopecky (1992), Chamberlain, Howe, and Popper (1996), Chow, Lee and Solt (1997), Tai (2000), and Reichert and Shyu (2003), all examine the impact of foreign exchange rates on bank stock returns with mixed results.

As mentioned above, the yield spread (also referred to as the slope of the yield curve), may impact bank stock returns positively or negatively. Because banks tend to borrow a significant portion of their capital through deposits on a short-term basis and lend on a longer-term basis, a maturity mismatch may arise between bank assets and liabilities. When the slope of the yield curve declines, these banks may experience a drop in their profit margins which can impact their equity. Lopez (2004) argues that the yield curve is a key factor in explaining interest rate risk exposure for banks. Demsetz and Strahan (1997) include the yield curve in a return generating model exploring bank diversification while Fissel, Goldberg, and Hanweck (2005) find that the yield curve is not

important in explaining returns. Based on these studies, the influence of the yield curve risk in returns for bank holding companies is not clear.

Also as previously indicated, banks that engage in riskier loans may be impacted by the default risk premium. During periods when the risk premium is high, banks have the potential to generate higher profits from these loans. Alternatively, risk premiums increase when investors anticipate greater chance for defaults, so the risk exposure to banks increases when the premium increases. While the directional impact of changes to the default risk premium is unclear, it is apparent that such changes have the potential to significantly impact bank returns. Demsetz and Strahan (1997) include default risk in their diversification analysis but provide no evidence of its directional impact.

Based on the above discussion, we have extended the traditional two-factor (interest rates and market returns) model of bank returns to include the impact of foreign exchange rates, yield spreads and default risk premiums. Our paper is unique in that it is the only one (to our knowledge) that considers the wide range of risk factors discussed. Although other papers may have considered certain subsets of our risk factors, a more complete picture results through the combination of all of the proposed risk factors and the analytical framework utilized.

The literature examining the risk factors for banks and other financial institutions typically takes two approaches. One approach examines the impact of a particular risk factor (predominately interest rates) on returns for the industry. The second examines the risk factor on the firm level, allowing each financial institution to respond differently to the risk factor. Our analysis combines these approaches. First, we examine the impact of the risk factors on our sample of bank holding company stocks as a whole. Second, we estimate the sensitivity of each bank holding company to the risk factors in our model. Third, we attempt to explain differences in the sensitivity to each risk factor across firms based on characteristics of each firm.

DATA

Monthly returns for bank holding company stocks are generated from *CRSP* from 1987 to 2004. To analyze the issue of whether or not the coefficients of the risk factors change over time, we not only examine the sample in full, but we also split the 18-year period into three 6-year subperiods (1987-1992, 1993-1998, and 1999-2004). This approach gives us 404 bank holding companies in subperiod 1, 605 bank holding companies in subperiod 2, and 564 bank holding companies in subperiod 3. In estimating the coefficients for each risk factor, only bank holding companies with returns over the entire subperiod are examined. This reduces the number of bank holding companies in each subperiod to 245, 222, and 298 respectively. There are 97 bank holding companies whose returns span the full sample period. Although this selection criterion can result in survivorship bias, this issue is not nearly as pronounced in banking during the full sample period. During the full sample period, the actual number of liquidated bank holding companies was

extremely small, with most distressed banks acquired by larger, healthier firms. In addition to the returns on bank holding company stocks, we use proxy variables for each of the risk factors that we estimate. The data for these variables are generated from *CRSP* and the Federal Reserve Economic Data (FRED®) database. See Table 1 for a description of each variable.

Table 1: Description of Variables used to Estimate Risk Sensitivities

Variable	Description	Source
RET	Monthly Return (including dividends) for Bank Stock	CRSP
VWRET	Monthly Return (including dividends) for the Value Weighted Index	CRSP
PCTNOTE	Percentage Change in the 10-year Treasury Note	FRED®
PCFF	Percentage Change in the Federal Funds Rate	FRED®
PCFX	Percentage Change in the Foreign Exchange Rate (Trade Weighted Exchange Index for Major Currencies)	FRED®
DRP	Change in the Default Risk Premium (Baa Corporate Bond Yield – Aaa Corporate Bond Yield)	FRED®
YSP	Change in the Yield Spread (10-year Treasury Note Yield minus 3-month Treasury Bill Yield)	FRED®

Once the individual bank holding company betas are estimated, we attempt to explain differences in the risk coefficients through a series of models – one model for each risk factor being analyzed. To do this, we obtain information on each bank holding company from their quarterly Y-9C reports, available through the FDIC. Table 2 lists these data points. The data points in Table 2 are then combined to create specific variables (See Table 3) that are anticipated to influence a bank holding company's level of exposure to the risk factors introduced in Table 1.

Table 2: Data Fields from Y-9C Call Reports

The variables below are taken from the Y-9C Call Reports provided by our bank holding companies. The Y-9C variables are then used to prepare additional variables (see Table 3) for our analysis.

Y-9C Variable Code	Variable Description
BHCK2170	Total assets
BHCK3210	Total equity
BHCK3197	Earning assets that reprice/mature within one year
BHCK3296	Interest bearing deposit liabilities that reprice/mature within one year
BHCK3298	Long-term debt that reprices within one year
BHCK3408	Variable rate preferred stock
BHCK3409	Long-term debt that matures within one year
BHCK1296	Loans to foreign banks

Table 2: Data Fields from Y-9C Call Reports	
The variables below are taken from the Y-9C Call Reports provided by our bank holding companies. The Y-9C variables are then used to prepare additional variables (see Table 3) for our analysis.	
Y-9C Variable Code	Variable Description
BHCK1764	Commercial loans to non-US addressees
BHCK2081	Loans to foreign governments
BHCK3542	Trading assets in foreign offices
BHCKB837	Real estate loans to non-US addressees
BHCK1742	Foreign debt securities
BHCK1590	Agricultural loans
BHCK1763	Commercial loans to US addressees
BHCKB538	Credit card loans
BHCKB539	Other revolving credit
BHCK2011	Other consumer loans
BHCK8693	Futures contracts (interest rates)
BHCK8697	Forward contracts (interest rates)
BHCK8701	Exchange traded option contracts – written (interest rates)
BHCK8705	Exchange traded options contracts – purchased (interest rates)
BHCK8709	Over-the-counter option contracts – written (interest rates)
BHCK8713	Over-the-counter options contracts – purchased (interest rates)
BHCK3450	Swaps (interest rates)
BHCKA126	Total interest rate derivatives held for trading
BHCK8725	Total interest rate derivatives held for purposes other than trading
BHCK8694	Futures contracts (foreign exchange)
BHCK8698	Forward contracts (foreign exchange)
BHCK8702	Exchange traded option contracts – written (foreign exchange)
BHCK8706	Exchange traded options contracts – purchased (foreign exchange)
BHCK8710	Over-the-counter option contracts – written (foreign exchange)
BHCK8714	Over-the-counter options contracts – purchased (foreign exchange)
BHCK3826	Swaps (foreign exchange)
BHCKA127	Total foreign exchange derivatives held for trading
BHCK8726	Total foreign exchange derivatives held for purposes other than trading

Table 3: Description of Variables Explaining Differences in Risk Sensitivity Across Bank Holding Companies	
Variable	Description
GAP	The average of the assets expected to reprice/mature within a year less liabilities expected to reprice/mature within a year dvided by total assets [(BHCK3197 – BHCK3296 – BHCK3298 – BHCK3408 – BHCK3409)/BHCK2170] over the 24 quarters in each subperiod
ASSETS	The natural log of the average value for total assets (BHCK2170) over the 24 quarters in each subperiod
EQUITY	The average equity divided by total assets (BHCK3210/BHCK2170) over the 24 quarters in each subperiod
INTDER	A dummy variable equal to 1 if the firm used any interest rate derivatives (BHCK8693, BHCK8797, BHCK8701, BHCK8705, BHCK8709, BHCK8713, BHCK3450, BHCKA126, BHCK8725) during the subperiod and 0 otherwise
FXDER	A dummy variable equal to 1 if the firm used any foreign exchange derivatives (BHCK8694, BHCK8698, BHCK8702, BHCK8706, BHCK8710, BHCK8714, BHCK3826, BHCKA127, BHCK8726) during the subperiod and 0 otherwise
RSKAST	The average risky assets divided by total assets [(BHCK1590 + BHCK1763 + BHCKB538 + BHCKB539 + BHCK2011)/BHCK2170] over the 24 quarters in each subperiod
FORACT	The average level of foreign activity divided by total assets [(BHCK1296 + BHCK1764 + BHCK2081 + BHCK3542 + BHCKB837 + BHCK1742)/BHCK2170] over the 24 quarters in each subperiod

METHODOLOGY AND RESULTS

Estimating Risk Sensitivities for Bank Holding Companies as a Whole

Stage one of our analysis is to estimate the sensitivity of bank holding company stock returnss as a whole to various risk factors. Specifically, we hypothesize that bank holding company returns are a function of market returns, changes in long-term interest rates, changes in short-term interest rates, changes in foreign exchange rates, changes in the yield spread and changes in the default risk premium (see Table 1 for variable descriptions). We estimate the sensitivity of bank holding company stock returns to these factors using the following OLS regression model

$$RET = \alpha + \beta_1 VWRET + \beta_2 PCTNOTE + \beta_3 PCFF + \beta_4 PCFX + \beta_5 DRP + \beta_6 YSP + \varepsilon \qquad (1)$$

This model is estimated four times (once for each subperiod and once for the entire sample period) with the risk betas being held constant across each bank holding company (a measure of the risk betas for bank holding companies as a whole).

The rationale for examining subperiods along with the entire sample period is to examine how the impact of these risk factors changes over time. According to Chen and Chan (1989), the

sensitivity of interest rate risk is partially dependent on the interest rate cycle. In addition, the banking crisis of the late-80s to early-90's likely saw banks change the way they managed risk which could lead to changes in the estimated coefficients. Finally, the economic/regulatory conditions during each of the subperiods varied significantly, possibly indicating varying "regimes" from one subperiod to the next. Our first subperiod (1987-92) is in the heart of the banking crisis and saw the October 1987 stock market crash. The second subperiod (1993-98) was characterized by a period of declining interest rates (the 10-year Treasury note fell from a yield of 6.60% at the start of this period to 4.72% at the end) and saw the financial markets affected by both the Asian Crisis of 1997 and the Long-Term Capital Management situation in 1998. The third subperiod (1999-04) is associated with an extremely volatile equity market and the 9/11 attacks on the World Trade Center. All periods experienced significant deregulation which not only increased the scope of bank activities, but also motivated significant consolidation in the banking sector (Mamun, Hassan, and Lai, 2004).

Chow Tests on the subperiods (Table 4) show that the regression models are statistically different to a high degree over each of the subperiods. While we feel that the analysis done by subperiods is important due to the issues mentioned above, we have also estimated the model over the entire time period for comparison and completeness. Variance Inflation Factor (VIF) analysis was performed to check for multicollinearity problems among the dependent variables. All VIF estimates were well under 2.0 indicating that multicollinearity is not a concern. The results of these four regressions are presented in Table 5.

Table 4: Chow Test for Subperiods

Our sample period covers 18 years (1987-2004) and is subdivided into three 6-year periods. The primary model estimates risk factors for bank holding company stocks using monthly data. We find that the model experiences significant changes over the 3 subperiods.

$$RET = \alpha + \beta_1 VWRET + \beta_2 PCTNOTE + \beta_3 PCFF + \beta_4 PCFX + \beta_5 DRP + \beta_6 YSP + \varepsilon$$

	Subperiods 1-2	Subperiods 2-3
Sum of Squared Errors (Full Model)	117.31633	118.19212
Sum of Squared Errors (Period 1)	69.12416	50.37357
Sum of Squared Errors (Period 2)	47.4953	64.91128
K	7	7
n1	10438	10655
n2	10439	10656
F-Value	17.80981715	76.72440319
Probability	0.00000%	0.00000%

Table 5 : Estimation of Bank Holding Company Risk Factors

The following regression equation is estimated for our sample of bank holding company stocks over the 1987-2004 time period. The model uses monthly data and examines three 6-year subperiods separately as well as the full 18-year period. Only firms that were publicly traded over the sample subperiod reported are included in the analysis. The 97 firms that were publicly traded during the entire sample period were also analyzed separately over each of the three subperiods. The results were consistent with the results presented here.

$$RET = \alpha + \beta_1 VWRET + \beta_2 PCTNOTE + \beta_3 PCFF + \beta_4 PCFX + \beta_5 DRP + \beta_6 YSP + \varepsilon$$

	1987-1992	1993-1998	1999-2004	1987-2004
Intercept	0.00323 (4.29)***	0.00918 (13.88)***	0.01119 (20.34)***	0.00842 (15.82)***
Market Return	0.63766 (38.71)***	0.72166 (45.12)***	0.21770 (18.69)***	0.59482 (51.04)***
10-Year TNote	0.13219 (5.09)***	-0.03469 (-2.01)**	-0.05919 (-5.30)***	-0.10127 (-7.81)***
Fed Funds Rate	-0.13138 (-6.08)***	-0.05614 (-2.95)***	-0.01390 (-1.67)*	-0.01886 (-1.81)*
Foreign Exchange Rate	0.58032 (14.46)***	0.34155 (8.07)***	-0.39011 (-11.15)***	0.26657 (8.35)***
Default Risk Premium	-0.12793 (-11.26)***	-0.18856 (-13.24)***	0.00419 (0.79)	-0.01950 (-2.42)**
Yield Spread	-0.01954 (-5.85)***	-0.00723 (-2.17)**	0.01326 (6.22)***	-0.01126 (-4.91)***
F-Value	542.71***	428.45***	108.95***	500.85***
Number of Firms	245	222	298	97

***Indicates statistical significance at the 0.01 level
**Indicates statistical significance at the 0.05 level
*Indicates statistical significance at the 0.10 level

In looking at the results, the first item that stands out is the positive and statistically significant coefficient for the 10-year Treasury Note variable capturing changes in long-term interest rates during the first subperiod. This is a surprising result for two reasons. First, most prior research shows that bank stock returns are inversely related to changes in interest rates. Second, the coefficient on this variable is negative and significant in each of the other subperiods as well as over the entire sample period. It is interesting to note that this period is associated with an exceptionally high period of bank failures. According to the FDIC, there were 2100 financial institution failures with over $700 billion in assets from 1987-1992. Included in these numbers were 1054 commercial banks with assets of approximately $160 billion. By comparison, the rest of the sample period (1993-2004) saw only 120 failures (99 banks) impacting approximately $21 ($11) billion in assets.

Not only does the coefficient on the 10-year Treasury note variable change signs during subperiods, but we also see this pattern with virtually every other risk factor. The foreign exchange

risk factor is positive and significant during the first two subperiods while being negative and significant over the last subperiod. The default risk premium is significant and negative during the first two subperiods and positive (although insignificant) during the third subperiod. Finally, the yield spread is significant and negative during the first two subperiods before switching to significant and positive during the third subperiod.

There are three possible explanations of the tendency for these variables to exhibit different signs in different subperiods. One, bank holding companies do not operate in a static environment. Changing conditions in the economy, regulatory environment, and financial markets along with implementation of new strategies and risk-management tools by management result in changes to the influence risk factors have on equity returns. O'Brien and Berkowitz (2005) examine trading revenue for six large banks and find that bank dealers tend to vary their risk exposure in both size and direction and the variation is heterogeneous across banks. While this looks only at trading revenue for a small sample of large banks, it supports the notion that bank risks may vary over time. Two, we are looking at stock returns and not measures of bank profitability. To the extent that investors anticipate changes in the variables, there might be a differing response. For instance, if interest rates rise but that rise was fully anticipated by investors, we would expect no meaningful impact on stock returns even if the change in interest rates did impact the value of the bank holding company's assets or its profitability. Three, the combination of bank failures and bank mergers between 1987 and 2004 meant that the firms in our sample varied significantly from subperiod to subperiod. For example, while there were 245 firms in subperiod 1 and 222 firms in subperiod 2, there were only 145 firms that were in both subperiods (and only 97 that were in all three). This indicates that the specific characteristics of firms in each subperiod likely exhibited substantial differences.

While we have seen that the risk coefficients do change over time, when looking at regressions over the entire time period, some clearer tendencies emerge. First, we see that the relationship between interest rates changes and bank holding company returns is negative and significant, consistent with most previous research. This is true for both long-term interest rates (as measured by the 10-year Treasury note) and, to a lesser extent, short-term interest rates (as measured by the Federal Funds rate.) A second relationship that we see is a positive relationship with the value of the US Dollar. This tells us that a stronger US Dollar tends to benefit bank holding company stocks. The third important relationship is the default risk premium. The significant negative coefficient tells us that as investors become more sensitive to default risk (demanding relatively higher returns for risky bonds), there is a negative impact on bank holding company stock returns. Finally, we see a significant negative coefficient for the yield spread variable. This indicates that a wider yield spread is associated with lower returns for bank holding company stocks. While this may be counterintuitive at first glance (as it should lead to higher profits on long-term loans), it makes more sense when we look at it from the perspective of the bank holding company's assets and liabilities. Assuming the bank holding company has not entirely hedged its interest rate

risk, an increase in the yield spread is likely to result in the market value of the firm's assets (loans and other long-term securities) declining at a faster rate then its liabilities (short-term deposits). Note that the exception (when the yield spread variable had a positive relationship with bank holding company stock returns) was during period three. During this period, the decline in the yield spread was predominantly caused by a decline in short-term rates. This would likely have a bigger (positive) impact on profitability without causing a drop in the bank holding company's asset values. The negative coefficient associated with the default risk premium could also be explained by the relative impact on assets vs. liabilities as an increase in the default risk premium is likely to have a greater (negative) impact on the assets of the bank holding company than it will on its liabilities.

Explaining Differences in Risk Sensitivities Across Individual Bank Holding Companies

The second stage of our analysis is focused on explaining the differences across bank holding companies in their sensitivity to the above risk factors. While the results discussed above focused on bank holding company stocks as a group, there is significant variation in the risk betas from firm to firm. See Table 6 for an overview. The coefficients from Model (1) represent the sensitivity of bank stock returns to each type of risk. We develop five separate models to explain the firm-level variation in these sensitivities. Model (2) attempts to explain the variation across firms in β_2, which is the sensitivity of bank stock returns to percent changes in long-term interest rates. Model (3) attempts to explain the variation across firms in β_3, which is the sensitivity of bank stock returns to percent changes in short-term interest rates. Model (4) attempts to explain the variation across firms in β_4, which is the sensitivity of bank stock returns to percent changes in exchange rates. Model (5) attempts to explain the variation across firms in β_5, which is the sensitivity of bank stock returns to changes in the default risk premium, and Model (6) does the same with β_6 and changes in the yield spread.

$$TNOTE = \alpha + \lambda_1 GAP + \lambda_2 ASSETS + \lambda_3 EQUITY + \lambda_4 INTDER + \epsilon \quad (2)$$

$$FFUNDS = \alpha + \lambda_1 GAP + \lambda_2 ASSETS + \lambda_3 EQUITY + \lambda_4 INTDER + \epsilon \quad (3)$$

$$FOREXC = \alpha + \lambda_1 ASSETS + \lambda_2 EQUITY + \lambda_3 FXDER + \lambda_4 FORACT + \epsilon \quad (4)$$

$$DEFRISK = \alpha + \lambda_1 ASSETS + \lambda_2 EQUITY + \lambda_3 RSKAST + \epsilon \quad (5)$$

$$YLDSPR = \alpha + \lambda_1 GAP + \lambda_2 ASSETS + \lambda_3 EQUITY + \epsilon \quad (6)$$

Where:

TNOTE = β_2 from Equation 1 for that particular Bank Holding Company
FFUNDS = β_3 from Equation 1 for that particular Bank Holding Company

FOREXC = β_4 from Equation 1 for that particular Bank Holding Company
DEFRISK = β_5 from Equation 1 for that particular Bank Holding Company
YLDSPR = β_6 from Equation 1 for that particular Bank Holding Company

Table 3 provides a detailed description of each of the independent variables used in equations 2-6. Each of the equations includes ASSETS and EQUITY as independent variables to control for size and bank holding company capital. All else equal, we would expect large bank holding companies to be able to better manage their risk exposure. Also, we would expect bank holding companies with high degrees of equity capital to be less sensitive to risk factors. The GAP variable is designed to measure the maturity gap between the bank holding company's assets and liabilities. The larger this gap in maturity, the more sensitive the bank should be to interest rate changes. Therefore, we use the GAP variable in equations 2, 3, and 6 which are all measuring risk factors related to interest rates. In addition, we introduce the interest rate related derivative dummy variable in equations 2 and 3 to see if the use of interest rate derivatives has a measurable impact on the sensitivity of the bank holding company's stock returns to interest rate changes. Equation 4 introduces a dummy variable for firms that use foreign exchange related derivatives and a variable to measure the extent of their activity with respect to foreign assets. We would bank holding companies that have more foreign activity would be more sensitive to foreign exchange risk. It is less clear for bank holding companies using foreign exchange derivatives as they could using these derivatives to hedge their risk or for speculative trading. Finally, we introduce a variable to measure the amount of risky assets (such as credit card loans) to our model explaining the sensitivity of the bank holding company's stock returns to the default risk premium.

The Seemingly Unrelated Regression (SUR) method[1] developed by Zellner (1962) is used to estimate the models over the entire 1987-2004 time period in order to capture additional efficiency in estimates resulting from correlated error terms across equations. Each of the dependent variables represents the corresponding risk coefficients estimated for each firm using Model (1). The independent variables are taken from the Y-9C Call Reports and explained in Tables 2 and 3. These data were not available for our entire sample of firms. After eliminating those firms that did not have sufficient data, there were 189 firms in subperiod 1, 174 firms in subperiod 2, and 220 firms in subperiod 3. This provided a total of 583 firms available for this stage of analysis. Table 6 provides the results.

Table 6: Summary of Risk Factor Estimation for Each Bank Holding Company

Below are the summary results from estimating the risk factors for each bank holding company separately. The number of positive outcomes provides another way to examine the significance of the risk factors by evaluating whether the number of positive coefficients for that variable are significantly more (less) than half the firms in that period. The individual coefficients for each bank holding company are then used to examine what unique characteristics impact the banks sensitivity to each risk factor (see Table 7).

$$RET = \alpha + \beta_1 VWRET + \beta_2 PCTNOTE + \beta_3 PCFF + \beta_4 PCFX + \beta_5 DRP + \beta_6 YSP + \varepsilon$$

Subperiod 1 (1987-1992) – 245 Firms						
	VWRET	PCTNOTE	PCFF	PCFX	DRP	YSP
Average	0.637	0.132	-0.131	0.581	-0.128	-0.02
Standard Deviation	0.383	0.45	0.343	0.704	0.175	0.045
Minimum	-0.188	-1.326	-1.126	-1.093	-0.969	-0.188
Maximum	1.854	2.605	1.527	4.381	0.286	0.153
Number of Positive Coefficients	238***	154***	72***	197***	51***	83***
Subperiod 2 (1993-1998) – 222 Firms						
	VWRET	PCTNOTE	PCFF	PCFX	DRP	YSP
Average	0.722	-0.035	-0.056	0.341	-0.189	-0.007
Standard Deviation	0.391	0.256	0.264	0.496	0.261	0.044
Minimum	-0.204	-1.043	-1.26	-1.521	-2.015	-0.156
Maximum	2.003	0.997	0.846	1.564	0.904	0.341
Number of Positive Coefficients	218***	95**	95**	171***	44***	88***
Subperiod 3 (1999-2004) – 298 Firms						
	VWRET	PCTNOTE	PCFF	PCFX	DRP	YSP
Average	0.22	-0.058	-0.012	-0.388	0.011	0.013
Standard Deviation	0.333	0.169	0.107	0.54	0.097	0.036
Minimum	-0.493	-0.563	-0.327	-1.825	-0.257	-0.166
Maximum	2.961	0.547	0.432	2.311	0.401	0.184
Number of Positive Coefficients	239***	109***	125***	62***	165*	192***
Full Period (1987-2004) – 97 Firms						
	VWRET	PCTNOTE	PCFF	PCFX	DRP	YSP
Average	0.595	-0.101	-0.019	0.267	-0.02	-0.011
Standard Deviation	0.274	0.139	0.082	0.328	0.083	0.02
Minimum	0.124	-0.466	-0.285	-0.558	-0.215	-0.093
Maximum	1.444	0.277	0.274	1.15	0.228	0.051
Number of Positive Coefficients	97***	24***	34***	78***	41	24***

***Indicates statistical significance at the 0.01 level
**Indicates statistical significance at the 0.05 level
*Indicates statistical significance at the 0.10 level

One difficulty with this stage of analysis is in interpreting the results. For instance, assume that we find that λ_1 in equation 2 is negative. The meaning of this depends on whether or not the risk beta for Treasury Notes (β_2 in equation one) is positive or negative. If the risk beta is positive, then the implication of a negative λ_1 in equation 2 is that bank holding companies with higher maturity gaps are less sensitive to changes in the interest rate. On the other hand, if the risk beta is negative then the implication changes. Now, a negative λ_1 in equation 2 implies that bank holding companies with higher maturity gaps are more sensitive to changes in the interest rate as they will see a larger negative response. In order to deal with this issue, we split the data into two segments based on the sign of the risk beta. All bank holding companies with positive risk betas were assigned to one group while all bank holding companies with negative risk betas were assigned to the other group. This was done for each of the risk betas (except for market risk) in equation one. After segmenting the bank holding companies, we estimated the set of equations (equations two-six) a total of ten times. The results are presented in Panel A and Panel B of Table 7.

In looking at how individual bank holding companies respond to changes in long-term interest rates, we see that there are three primary factors impacting this response – the maturity gap, size of the bank holding company and equity/asset ratio of the bank. First, the greater the maturity gap, the more sensitive bank holding company stock returns are to changes in the 10-year Treasury Note. For bank holding companies that are inversely related to long-term interest rates, we see that the Gap coefficient is negative indicating a stronger negative relationship. For bank holding companies that are positively related to long-term interest rates, we see a positive coefficient, indicating a stronger positive relationship. Regardless of whether or not the relationship is positive or negative, a larger gap tends to strengthen the relationship between long-term interest rates and stock prices for bank holding companies. Second, large bank holding companies tend be less sensitive to interest rate changes. However, this relationship is more one-sided. For bank holding companies with an inverse relationship to long-term interest rates, the role of bank holding company size is not relevant. However, for firms that are positively related to interest rates, we see that larger bank holding companies are less sensitive to interest rate changes. Third, the equity level of the bank holding company also appears to act as a buffer against interest rate risk. Regardless of whether the bank holding company has a positive or negative relationship to the change in the 10-year Treasury note, higher levels of equity reduce the impact.

When looking at short-term interest rate risk, we see a similar story. While the Gap variable is no longer significant for bank holding companies exhibiting a negative relationship to interest rates, there is still a negative coefficient (indicating a stronger relationship). For bank holding companies with a positive relationship, we again see a positive and significant coefficient. Thus, it appears that regardless of whether long-term or short-term interest rates are being analyzed, bank holding companies with larger maturity gaps are more sensitive to changes in interest rates. In addition, relationships between bank holding company size and equity level are very similar to the relationships we saw with long-term interest rates. Regardless of whether we are looking at long-

term or short-term interest rates, both bank holding company size and equity levels appear to have a dampening effect on the impact of interest rate changes.

The third model attempts to explain the level of foreign exchange risk across bank holding companies. Here we see a noticeable impact in how bank-related factors impact foreign exchange risk depending on whether or not there is a direct or inverse relationship between exchange rates and stock prices. For firms that are inversely related to exchange rates, there are no significant explanatory factors. However, when bank holding companies show a positive relationship to exchange rates, we see several factors as being important. Both firm size and equity again act as a dampening agent to the risk level, reducing the role of foreign exchange fluctuations on bank stock returns. Meanwhile, the greater the bank holding companies involvement in foreign activity (through international loans and trading of international assets) the greater the sensitivity of stock returns to foreign exchange rates.

Table 7: Determinants of Risk Betas Across Bank Holding Companies

The following regression equations were estimated using Seemingly Unrelated Regression to examine the characteristics that impact differences in risk sensitivity across bank holding company stocks. Companies were split into two segments based on whether their risk beta was positive or negative in order to increase the ability to interpret the results. The sample covers the entire 1987-2004 period and is not split into subperiods.

$TNOTE = \alpha + \lambda_1 GAP + \lambda_2 ASSETS + \lambda_3 EQUITY + \lambda_4 INTDER + \epsilon$
$FFUNDS = \alpha + \lambda_1 GAP + \lambda_2 ASSETS + \lambda_3 EQUITY + \lambda_4 INTDER + \epsilon$
$FOREXC = \alpha + \lambda_1 ASSETS + \lambda_2 EQUITY + \lambda_3 FXDER + \lambda_4 FORACT + \epsilon$
$DEFRISK = \alpha + \lambda_1 ASSETS + \lambda_2 EQUITY + \lambda_3 RSKAST + \epsilon$
$YLDSPR = \alpha + \lambda_1 GAP + \lambda_2 ASSETS + \lambda_3 EQUITY + \epsilon$

Panel A: Results for Bank Holding Companies with Negative Risk Betas

	TNOTE	FFUNDS	FOREXC	DEFRISK	YLDSPR
Intercept	-0.34756 (-3.16)***	-0.44475 (-3.58)***	-0.90056 (-2.41)**	-0.42112 (-2.81)***	-0.09324 (-5.22)***
Gap	-0.30785 (-4.70)***	-0.0989 (-1.49)			-0.03061 (-3.08)***
Assets	0.002359 (0.34)	0.001347 (0.18)	0.032888 (1.33)	0.001592 (0.28)	0.002948 (2.98)***
Equity	1.983514 (3.57)***	2.804294 (5.18)***	-0.70903 (-0.49)	1.029426 (2.28)**	0.277403 (3.34)***
Interest Rate Derivatives	0.007742 (0.32)	0.036386 (1.97)**			
Foreign Exchange Derivatives			-0.04148 (-0.51)		
Foreign Assets			0.110775 (0.79)		
Risk Assets				0.165921 (0.96)	
F-Value	9.49***	12.63***	1.80	1.85	8.56***
Number of Firms	315	364	249	383	311

Table 7: Determinants of Risk Betas Across Bank Holding Companies					
Panel B: Results for Bank Holding Companies with Positive Risk Betas					
	TNOTE	FFUNDS	FOREXC	DEFRISK	YLDSPR
Intercept	1.268776 (4.98)***	0.590155 (4.51)***	2.251636 (5.35)***	-0.09662 (-0.68)	0.043572 (2.86)***
Gap	0.212076 (1.80)*	0.395275 (5.26)***			0.000221 (0.02)
Assets	-0.04522 (-2.97)***	-0.02350 (-2.77)***	-0.07605 (-2.80)***	-0.00044 (-0.11)	-0.00107 (-1.23)
Equity	-4.70231 (-5.04)***	-1.74114 (-2.75)***	-7.97302 (-5.01)***	0.232586 (0.71)	0.009576 (0.12)
Interest Rate Derivatives	-0.03858 (-1.12)	-0.01613 (-0.52)			
Foreign Exchange Derivatives			0.090935 (1.10)		
Foreign Assets			0.474744 (3.43)***		
Risk Assets				0.187973 (1.08)	
F-Value	9.58***	11.78***	11.03***	0.27	0.58
Number of Firms	268	219	334	200	272
***Indicates statistical significance at the 0.01 level **Indicates statistical significance at the 0.05 level *Indicates statistical significance at the 0.10 level					

Our fourth model examines the sensitivity to changes in the default risk premium. Here we see that our models fail to do a good job of explaining differences in the level of sensitivity to default risk across the bank holding companies in our sample. Neither model is statistically significant. However, there is one significant variable. The equity level appears to reduce the impact of changes in default risk for bank holding companies with a negative relationship.

The fifth and final model examines the sensitivity to changes in the yield spread. While we see a significant model when looking at bank holding companies that have a negative relationship with the yield curve, the model does not appear to be reliable in analyzing firms with a positive relationship. For bank holding companies that exhibit an inverse relationship to the yield curve, our results are consistent with what we saw in the long-term and short-term interest rate models. Both the bank holding company size and equity level of the bank holding company act to reduce the impact of changes in the yield curve while the maturity gap acts to magnify the impact.

A brief review of the results of our investigation into determinants of the sensitivity illustrates a couple of consistent patterns. First, bank holding company size and equity levels appear to act as forces reducing the level of interest rate and foreign exchange risk faced by banks. This makes sense as larger bank holding companies have the ability to employ more sophisticated risk

management techniques and have a broader base of assets which they can use to diversify their risk. Higher levels of equity also create a cushion for the banks to absorb these risks easier. A second pattern is the role of the maturity gap. As expected, higher gaps make bank holding companies more sensitive to interest rate risk. Third, derivative exposure does not appear to be a major factor in impacting risk. This does not mean that derivatives are not an effective risk management tool. Instead it is likely that data limitations leading to our inability to precisely capture to derivative strategies employed prevent us from more accurately seeing the full implications of derivative use within bank holding companies.

SUMMARY AND CONCLUSIONS

The investigation into interest rate risk and bank holding companies is an area that has seen significant research. We are attempting to expand on this research by looking at more levels of risk exposure beyond just changes in the interest rate and to examine why individual bank holding companies may be more or less sensitive to these risk factors. What we find is that for the industry as a whole, the sensitivity of stock returns to most risk factors evolves over time. This is likely due to a host of factors including economic conditions, regulatory environments, management tools and strategies, and financial crises. In looking at explanations for how risk sensitivities vary across firms, we find that the maturity gap, bank size and equity levels are often primary factors in explaining why some banks are more sensitive to specific risk factors than others.

ENDNOTE

[1] The seemingly unrelated regression (SUR) model developed by Zellner (1962) allows us to adjust for correlation across our model errors. These correlations may arise because the independent variables in Model (1) are constant across the sample of firms. Only the dependent variables, bank stock returns, vary. Correlation among model errors is a violation of the Guass Markov assumption that the errors are independently and identically distributed with mean zero and constant variance. The SUR technique uses generalized least squares (GLS) to adjust for this correlation. This improves the efficiency of our estimated risk coefficients.

REFERENCES

Booth, J. R. and D. T. Officer (1985). Expectations, interest rates, and commercial bank stocks. *Journal of Financial Research*, 8(1), 51-58.

Carow, K. and R. Heron (2002). Capital Market Reactions to the Passage of the Financial Services Modernization Act of 1999. *The Quarterly Review of Economics and Finance*, 42(3), 465-485.

Chamberlain, S., J. S. Howe, and H. Popper (1996). The exchange rate exposure of US and Japanese banking institutions. *Journal of Banking and Finance*, 21(6), 871-893.

Chance, D. and W. R. Lane (1980). A re-examination of interest rate sensitivity and common stock of financial institutions. *Journal of Financial Research*, 3(1), 49-55.

Chen, C. R. and A. Chan, (1989). Interest rate sensitivity, asymmetry, and the stock returns of financial institutions. *The Financial Review*, 24(3), 457-473.

Choi, J. J., E. Elyasiani and K. J. Kopecky (1992). The sensitivity of bank stock returns to market, interest and exchange rate risks. *Journal of Banking and Finance*, 16(5), 983-1004.

Chow, E. H., W. Y. Lee and M. E. Solt (1997). The exchange-rate risk exposure of asset returns. *The Journal of Business*, 70(1), 105-123.

Demsetz, R. S. and P. E. Strahan (1997). Diversification, size and risk at bank holding companies. *Journal of Money, Credit and Banking*, 29(3), 300-313.

Fissel, G. S., L. Goldberg and G. Hanweck (2005). Bank portfolio exposure to emerging markets and its effects on bank market value. *Journal of Banking and Finance*, 30(4), 1-24.

Fraser, D. R., J. Madura and R. A. Weigand (2002). Sources of bank interest rate risk. *The Financial Review*, 37(3), 351-367.

Grammatikos, T., A. Saunders and I. Swary (1986). Returns and risks of U.S. bank foreign currency. *Journal of Finance*, 41(3), 671-682.

Kwan, S. (1991). Re-examination of interest rate sensitivity of commercial bank stock returns using a random coefficient model. *Journal of Financial Services Research*, 5(1),61-76.

Lloyd, W. P. and R. A. Shick (1977). A test of Stone's two index model of returns. *Journal of Financial and Quantitative Analysis*, 12(3), 363-376.

Lopez, J. A. (2004). Supervising interest rate risk management. *FRBSF Economic Letter*, 2004-26.

Madura, J. and E. R. Zarruk (1995). Bank exposure to interest rate risk: a global perspective. *The Journal of Financial Research*, 18(1), 1-13.

Mamun, A. M. K. Hassan, and V. S. Lai (2004). The impact of the Gramm-Leach-Bliley Act on the financial services industry. *Journal of Economics and Finance*, 28(1), 333-347.

O'Brien, J. and J. Berkowitz (2005). Estimating bank trading risk: a factor model approach. *NBER Working Paper Series*.

Purnanandam, A. (2006). Interest rate risk management at commercial banks: an empirical investigation. *FDIC Center for Financial Research Working Paper No. 2006-02*.

Reichert, A. and Y. Shyu (2003). Derivatives activities and the risk of international banks: a market index and VaR approach. *International Review of Financial Analysis*,12(5), 489-511.

Saporoschenko, A. (2002). The sensitivity of Japanese bank stock returns to economic factors: an examination of asset/liability differences and main bank status. *Global Finance Journal*, 13(2), 253-270.

Tai, C. (2000). Time-varying market, interest rate, and exchange rate risk premia in the US commercial bank stock returns. *Journal of Multinational Financial Management*, 10(3-4), 397-420.

Zellner, A. (1962). An efficient method of estimating seemingly unrelated regressions and tests for aggregation bias. *Journal of the American Statistical Association*, 57(298), 348-368.