



universität
wien

DIPLOMARBEIT

Titel der Diplomarbeit

„Bank Runs and the Financial Crisis of 2008“

Verfasser

Adrian Weygandt

Angestrebter akademischer Grad

Magister der Sozial- und Wirtschaftswissenschaften
(Mag. rer. soc. oec.)

Wien, 2009

Studienkennzahl lt. Studienblatt:

A 157

Studienrichtung lt. Studienblatt:

Internationale Betriebswirtschaft

Betreuer:

em. Prof. Dr. Erich W. Streißler

Abstract

The unprecedented economic turbulence of 2008 has raised questions about the efficacy of the oversight of banks and other financial institutions around the world. While the crisis of 2008 is unprecedented, the interrelationship between psychology and regulatory changes is similar in bank runs to what was seen in the recent financial crisis. This paper looks at some historical examples of runs on banks and other financial crises to cast light on the weaknesses, but also the strengths of the current systems. The paper gives an overview of some theoretical analyses of bank runs but also looks at several historical examples which show some of the contrast between theory and practical experience. Bank runs may in some instances appear to be isolated events, but they have often been harbingers of broader international problems as in 1873 or in the early 1930's. Historical examples have shown that governments and regulators are capable of solving problems that have already occurred, for example the Savings and Loan Crisis in the late '80's, but have been less successful at anticipating the results of regulatory and technological change, i.e., the growth of derivatives and mortgage-backed securities. Consequently it would appear to be useful to spend more time looking at recent bank panics to get a better understanding of how financial markets and financial intermediaries can affect one another.

Table of Contents

Introduction.....	1
Historical Overview	2
Economic Role of Banks	3
Differences between the Role of American and European Banks	7
Bank Runs	10
What is a bank run?	11
The effects of minimum capital requirements.....	15
The effects of deposit insurance.....	16
Intervention in a crisis	17
Demand Deposit Contracts – the root of all evil.....	18
Preventing Bank runs	22
Suspension of convertibility	23
Deposit insurance	24
Bank runs in politics (1830).....	26
Bank runs of old.....	27
The Free Banking Period.....	27
Panic of 1884.....	29
Panic of 1907.....	30
The Great Depression.....	32
The establishment of the Federal Deposit Insurance Corporation	34
Contemporary Bank Runs.....	35
MBf Finance Berhad (1999)	35
Corralito (2001).....	35
BAWAG (2006)	37
Northern Rock (2007)	39
Countrywide Financial Corporation (2007)	43
IndyMac Bank (2008)	44
Washington Mutual (2008)	46

Crisis of 2007-2009.....	48
Conclusion	51
Bibliography	53

Table of Figures

Figure 1 Financial structure in the US and the Euro area in % of GDP (1999).....	7
Figure 2 The structure of European financial systems.....	9
Figure 3 Bank Failures 1934-2009	10
Figure 4 Dow Jones Industrial Average 1907-1909	32
Figure 5 Evolution of Deposits and Reserves in Argentina.....	37
Figure 6 Asset-backed Commercial Paper Outstanding	39
Figure 7 Aftermath of Run: Composition of Liabilities (million pounds).....	41
Figure 8 Four Bad Bear Markets	49

Glossary

BAWAG - Bank for Employment and Commerce

FDIC – Federal Deposit Insurance Corporation

ÖGB - Austrian Trades Union Federation

REFCO – Originally founded as Ray E. Friedman and Co.

ROI - Return on Investment

Introduction

The phenomenon of bank runs is as old as banking. This paper looks at the problem against the backdrop of the collapse of financial markets in 2008 with an eye to see if bank runs can shed some light on why markets reacted as they did, since the mass psychology of a bank run has certain similarities with a market panic. While there can be no direct parallel between bank runs and certain similarities do suggest that the potential for panics are inherent in all financial markets and that - as with bank runs – panics can be exacerbated by exogenous, often politically driven factors. Hence, knowing more about bank runs should help in the consideration of the implications of the present financial crisis.

The ever present threat of bank runs has been an issue that has influenced economies since the advent of modern banking. Due to the nature of banking, the depositor's funds are not in the bank vaults at the free disposal of the depositors, but rather invested in the money market, out on loan or as was the case more recently, in mortgage-backed securities. Only a fraction of the deposits are held as bank reserves, thus most modern banks are able to accommodate withdrawals from a minority of the depositors. To date no bank has been able to cover the withdrawals of the majority of its depositors, thus making bank runs a dangerous situation for banks to be in.

Particularly the earliest banking houses had to plan for the potential damage that such events could cause and strive to prevent them from occurring. History is awash with bank runs that devastated economies and close calls that were narrowly averted thanks to a number of countermeasures meant to reestablish confidence and stop or prevent runs. Bank runs had been widespread up until the establishment of central banks and deposit insurance.

With the establishment of such regulatory/government organizations, whose objective it is to stabilize the banking sector and to prevent the negative fallout that results from banking panics, the threat of bank runs had been largely diminished. For more than half a century, bank runs were something modern economics dealt with in economic theory, but rarely faced in practice.

The last decade has seen a resurgence of bank runs and loss of consumer confidence in developed economies, giving economists a chance to study the effects of, and policies against bank runs in an empirical way. With economics becoming increasingly global, negative shocks that trigger loss of confidence in the banking sectors have become more prevalent and difficult to avoid, increasing the importance of preventative measures in economic policy. This shift has led to a number of high profile government interventions in banking crises over the last few years.

New media, such as the internet, have led to a number of new possibilities to combat misinformation and panic in the banking sector. It has, however, opened up a number of new channels that can be affected by and lead to bank runs.

The recent 2007-2009 crisis has given rise to a new crisis that shows many similarities to old-fashioned bank runs in the sense that investors began a run on the stock markets, fueled, in the same way as in conventional bank runs, by panic, incomplete and sometimes incorrect information, spreading contagion and causing otherwise healthy companies to face financial ruin. The current crisis is at the same time similar to the Great Depression in scope, but simultaneously entirely different in the sense that during the Great Depression bank runs caused stock crashes, now the stock market crisis and the sub-prime mortgage crisis caused bank runs.

Analyzing the causes of bank runs and the mass psychology involved could prove a useful tool for policy makers in determining how to react and how to prevent further crises of the type we are experiencing now.

Historical Overview

The following section gives a brief overview of the role banks have traditionally filled in the economy and how that role has changed over the centuries, with special attention given to the differences between European and American banking.

Economic Role of Banks

To understand the cause and effects of bank runs on the economy one must first understand the role banks play in our modern economy. The term “bank” is used to refer to a number of different financial institutions, ranging from the traditional savings banks to trust companies, depository institutions or savings and loan associations.

Generally banks accept deposits and make loans, making them financial intermediaries. Deposits are the funds customers leave in the bank with the condition that they can take back the funds deposited at a later date and loans are the funds banks lend to borrowers that are to be paid back at a later date with interest. Banks acquire funds by issuing liabilities (for example deposits) and those funds are generally used to acquire income-earning assets.

There are a number of different liabilities issued by banks, ranging from checkable deposits, which are depositor assets that the bank is obliged to pay when withdrawn by the depositors. Generally checkable deposits are the lowest-cost source of bank funds for banks, as depositors are willing to accept lesser interest rates in return for liquidity. Such deposits result in costs for the bank in the form of interest and service costs such as providing tellers, and processing monthly statements. The next form of bank liabilities is the non-transaction deposit which makes up the largest portion of bank funds. Non-transaction deposits such as savings accounts generate higher interest for depositors as they are not as liquid as checkable deposits. The next form of liabilities that banks have access to are the borrowings from the Federal Reserve or other banks and corporations. The importance of borrowings has increased over the last decades becoming an important source of bank funds. Bank capital is the last category of liabilities open to banks. Bank capital can be accessed by selling new stock from retained earnings.

The funds a bank earns by issuing liabilities are used to acquire income-earning assets. A part of the funds is held in the form of reserves due to reserve requirements set forth by the central banks. The reserve requirements state a required reserve ratio which dictates what percentage of demand deposit liabilities must be held in reserve by a bank to cover deposits. Additionally many banks hold excess reserves to help meet any further obligations that require liquid assets. Reserves do not earn interest for banks and thus they are only as large as absolutely necessary

(which becomes especially relevant when discussing bank runs). One way for banks to earn interest on their assets is to hold securities. Depending on what type of securities a bank holds, they have a varying degree of liquidity. Government securities tend to be very liquid, as they can be sold with only minor transaction costs and thus they are often referred to as secondary reserves. The dominant method of making profit for banks is by issuing loans. While loans do provide income for banks, they are rather illiquid as the loans cannot be converted to cash until the loan matures. This also goes hand in hand with an increased risk and thus banks charge high interest on loans, making them the highest interest earning assets that banks generally possess.

It is difficult to determine the beginnings of banking. As early as ancient Babylon there was a form of banking that was regulated by the Code of Hammurabi. The roots of present-day banking can be assumed to begin with the trading families of the medieval Italian city-states of Genoa, Florence and Venice.¹ The trading families set up early banks to complement their general activities and loaned money to royalty to help them fund wars and other cost intensive ventures.² Such banks fulfilled the role of facilitating trade more than making a profit from loans, as by papal decree, charging interest (usury) was prohibited. The early banks allowed merchants to be able to travel without large sums of money that required substantial expenditure on protection from brigands, as they could redeem notes of credit at banking houses at their destination, thus facilitating trade. Larger, more established, trading families circumvented the decree by using different currencies and varying exchange rates to earn a form of interest on loans.³

In our modern economy, banks have gone beyond the basic actions of accepting deposits and offering loans. Most banks allow customers to pay bills using their bank accounts, process payments via internet banking. Banks also issue checks and bank drafts and lend money via overdraft. They also provide letters of credit, guarantees, and securities underwriting commitments, as well as safekeeping of documents and other valuables in safe deposit boxes. A majority of banks offers currency exchange and offer a broad variety of financial products.

¹ (Ferguson, 2008)

² (Davies, 1994)

³ (Goldthwaite, 1995)

These activities give banks a central role in the modern payment system. Contributing to banking sector's central role in the global economy is the fact that banks are one of the primary sources of consumer loans as well as business financiers, which also makes them key instruments of the government's monetary policy.⁴

By allowing customers to pay via their bank accounts and by giving out loans, banks contribute to money movement and the velocity of money. The velocity of money is influenced by the way individuals conduct transactions. By using credit cards and charge accounts, less money is needed when making purchases or transactions thus increasing the velocity of money which is the average number of times per year that a dollar is spent in buying the total amount of goods and services produced in the economy.⁵ They also have the ability to create money using their excess reserves.

Banks are required by law to keep reserves that are used to cover any withdrawals made by depositors. These reserves are divided into three categories. The first two categories, the primary and secondary reserves, are mandated. The primary reserves required by the central bank (in the U.S. the Federal Reserve) are kept in the form of cash and deposits due from other banks.⁶ The secondary reserves are slightly less liquid assets held to cover short-term cash needs. These reserves are typically held in the form of government bonds.⁷

The level of reserves a bank must keep is regulated by national law and varies from country to country. In the U.S. the reserve ratio is set by the Federal Reserve and is currently around 10% for larger banks.⁸ In the European Union the required amount to be held by each institution is determined as a function of the institution's reserve base. The reserve base is defined as liability items on the institution's balance sheet, including deposits and debt securities issued. As of 2009 this reserve ratio is at 2 per cent. The percentage of reserves that must be kept at the central bank or in the bank's own vault and any funds beyond the mandated reserves are known as the excess

⁴ (Department of Banking, 2009)

⁵ (Mishkin, 2007) p.494

⁶ (Department of Banking, 2009)

⁷ (Department of Banking, 2009)

⁸ (Federal Reserve Board, 2008)

reserves. These excess reserves are how banks increase money supply. Due to the multiplier effect these reserves can increase the money supply. As the multiplier effect depends on the amount of excess reserves a bank holds, the central bank can expand or contract the money supply by changing the minimum reserve requirements.⁹ A threat of sudden cash demands as created during bank runs or possible loan losses can cause a bank to increase their reserves, which in turn lowers the multiplier effect and thus the money supply. Should such an increase in reserves not be confined to one bank but to a large part of the financial market, it can lead to the drying up of liquidity, also known as a “credit crunch”, due to the reduction in money banks have to lend.

The money multiplier and credit is how banks boost the economy and both aspects are affected by the banks’ capital structure.¹⁰ Banks in the OECD, however, are mostly privately owned institutions that operate on a for-profit basis and as such need to make profit themselves. This is done through a number of different methods. Conventionally, banks have made their profit off of the difference between the interest they pay depositors and the interest they charge on loans. This is referred to as “the spread” which has recently been responsible for around two thirds of bank revenue.¹¹ A further method of making money is off of the securities banks hold as reserves. Lastly, modern banks earn fees for customer services ranging from the sales of financial products, such as mutual funds, to services such as financial counseling. The profit banks make in the U.S. is slightly over 1% of their asset value¹² yearly, which is referred to as their “return on assets” (ROA).

In our modern economy, a number of different financial institutions, such as credit unions and investment banks, have started to offer elements of more traditional banking. This increases the competition and leads banks to offer depositors and lenders more competitive interest rates.

⁹ (Department of Banking, 2009)

¹⁰ (Diamond & Rajan, 2000) p.2431

¹¹ (Mishkin, 2007) p.223

¹² (Department of Banking, 2009)

Differences between the Role of American and European Banks

When speaking of banking, it is important to remember that the banking systems and the importance of banks varies widely. There are large differences between the roles of banks in the U.S. and the Euro area, and even within the Euro area itself. Figure 1 indicates that countries in the Euro area are much more reliant on bank financing than the U.S., whereas the U.S. relies much more heavily on stock market capitalization and uses more debt securities issued by the corporate sector than Europe does. The amount of bank assets also suggests that in the traditional role of banks, as financiers of the corporate sector, banks are more important in Europe than in the United States.¹³ In the context of banking it is however important to note that the concept of a European or a U.S. bank is outdated as most large banks operate multi-nationally.

This fact may seem counter-intuitive given the impact of the 2008 crash, which started with the sub-prime mortgage crisis in the U.S., but in fact the impact of banking problems in European economies confirms the importance of banks to the economic activity in Europe.

Figure 1 Financial structure in the US and the Euro area in % of GDP (1999)¹⁴

	Euro Area	France	Germany	Italy	Spain	U.S.
Total Bank Assets	181	180	195	122	144	99
Bank Loans to Corporate Sectors	45.2	37.2	39.8	49.8	43.1	12.6
Debt Securities Issued by Corporate Sector	3.6	7.6	0.7	1.0	4.4	25.7
Stock Market Capitalization	90	111	72	66	77	193

¹³ (Ehrmann, Gambacorta, Martinez-Pages, Sevestre, & Worms, 2001) p.7

¹⁴ (Ehrmann, Gambacorta, Martinez-Pages, Sevestre, & Worms, 2001) p.7

While Figure 1 provides some statistics governing the banking in Europe and the U.S., one can assume that within Europe, there are a number of large differences in the importance and function of the banking system. Figure 2 gives us a clearer picture of the differences in the banking sectors, focusing on a number of factors such as the tenor of the loans given out by banks or the flexibility of their rates. In Italy, for example, the maturity of bank loans is comparatively short, increasing the importance of deposits for Italian banks in contrast to other European counterparts. At the same time, Italian firms use only a tenth of the debt finance that French companies do, which is most likely a result of the shorter period to maturity discussed above.¹⁵ Additionally, according to the Herfindahl index, the national market concentration in Germany is much lower than in France, while at the same time the five largest banks of both countries have similar market shares. This implies that the German banking system has many small banks that are largely affiliated in a network.¹⁶

What is particularly important when discussing bank runs is the deposit insurance and state influence on the banking system. While countries such as Ireland have a weak state influence on the banking system, the majority (excluding Spain) of larger European nations have a relatively strong influence on the banking system in the form of public ownership of banks. This is different from the United States where state influence has traditionally been much less pronounced.

Figure 2 also suggests some European countries' system of deposit insurance, which is particularly relevant in preventing bank runs. The higher the insurance, the less likely a run is, as depositors can be assured that they will receive their money. Higher insurance, however, does have the negative consequence of increasing moral hazard, as the insurer, not the bank carries the risk of financial mismanagement. If highly insured the banks have an incentive to invest in risky assets that offer higher returns as they would profit from the higher returns and the negative consequences that such risky investments may carry fall upon the insurer via deposit insurance. Of course this effect only works as long as the country itself is solvent and the depositors believe that the deposits can be covered.

¹⁵ (Ehrmann, Gambacorta, Martinez-Pages, Sevestre, & Worms, 2001) p.7

¹⁶ (Ehrmann, Gambacorta, Martinez-Pages, Sevestre, & Worms, 2001) p.8

Figure 2 The structure of European financial systems¹⁷

	Germany	France	Italy	Austria	Britain
Importance of banks for firms' financing	Very important	Important	Very important	Very Important	Very important
Fraction of short-term loans	Low	Low	High	Average	High
Fraction of loans at variable interest rates	Low	Average	High	Low	High
Relationship lending	Very important (house banks)	Not important except for small firms	Very important	Very important (house banks)	Not important any more
Market concentration	Low	Medium	Low	Medium	High
State influence	Strong (public Guarantees savings banks. sector)	Medium	Strong, but declining	Strong (public Guarantees most savings banks)	Strong
Deposit insurance	Practically complete	High (76,000 Euros since 1999)	High (103,000 Euros)	Average (20,000 in 1998)	Average (20,000 Euros, Complete with Postal Savings bank)

With this information in mind, one can look at the number of bank failures in recent history. In the U.S., bank failures occur much more frequently than in the Euro area with the Federal Deposit Insurance Corporation (FDIC) reporting over 1500 bank failures in the period between 1980 and 1994. In contrast there have been only around 50 bank failures in Germany since 1966.¹⁸

¹⁷ (Ehrmann, Gambacorta, Martinez-Pages, Sevestre, & Worms, 2001) p.14

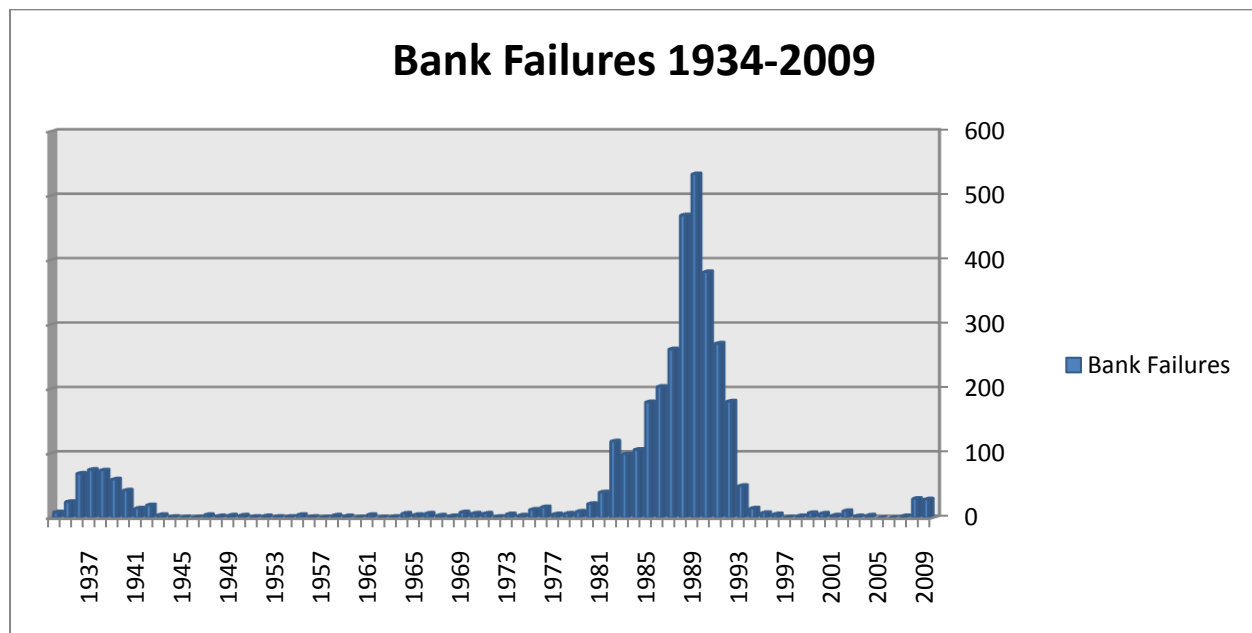
¹⁸ (Ehrmann, Gambacorta, Martinez-Pages, Sevestre, & Worms, 2001) p. 16

Bank Runs

Bank regulation is largely based on solving a particular set of problems, rather than being an abstract theory. In other words, regulations develop based on what went wrong previously, as in the U.S. Savings and Loans (S&L) crisis of the 80's and 90's, during which a large number of S&L associations failed. Or, as is frequently said of generals, they are always ready to fight the last war, rather than the one they are fighting.

While regulatory policy in the U.S. had seen the end of bank runs after the Great Depression due to the introduction of the Federal Deposit Insurance Corporation, recent events have seen a resurgence of bank runs in the U.S. and other OECD countries due in large part to the crisis of 2007-2009. The following figure shows the number of bank failures in the U.S. since 1934 up until early 2009. One can clearly see the S&L crisis in the 80's and 90's. Remarkably there were no bank runs during that time. Only as recently as 2007 has the U.S. seen bank runs return. One can assume that this is due to the uncertain environment with the backdrop of the current financial crisis. To further examine the reasons behind the resurgence of banks runs the following sections will deal with the theory behind bank runs.

Figure 3 Bank Failures 1934-2009¹⁹



¹⁹ (Federal Deposit Insurance Corporation, 2009)

What is a bank run?

According to the theory set up by the academics Diamond and Dybvig, a bank run is a “common feature of the extreme crises that have played a prominent role in monetary history”²⁰, which is defined by depositors rushing to withdraw their deposits due to an expected bank failure. The more depositors rush to withdraw their deposits, fearing that the bank will not be able to cover the deposits, the higher the likelihood of a bank default becomes and this, in turn, encourages more depositors to run on the bank demanding withdrawal. This scenario can destabilize an otherwise healthy bank to the point where it faces bankruptcy.²¹ Such a large scale and sudden withdrawal of capital can force banks to liquidate assets. This is in direct reaction to the large depositor demand and generally happens over a very brief time period. Due to a large part of bank assets being not easily liquefiable, the sale of such assets generally is made at a loss and causes the bank to fail.²² To explain what leads to bank runs and their effects, Diamond and Dybvig created a model describing banking transactions.

The model set forth by Diamond and Dybvig adds banks to an economy that consists of a number of agents that have set funds at $t=0$ (let us assume US\$1 per agent), who try and maximize their utility over two periods (t_1 and t_2).²³ The agents have the opportunity to invest their funds in a project that leads to returns of over \$1 at period 2 or only \$1 if it is liquidated early, in t_1 , resulting in no gains. As the gains are zero if liquidated early, one can refer to the investment being illiquid, as is assumed by Diamond and Dybvig.²⁴ The agents can be divided into two differing types. On the one hand there are the patient agents who gain utility from consuming in time period 2, and on the other hand there are the impatient agents who gain utility from consuming in period 1. What type of utility an agent derives from consuming, is unknown to the agents until t_1 at which point the agents become aware of their utility functions they are. The impatient agents would then naturally liquidate their investment and regain their dollar. The patient agents on the other hand would wait until the investment reached maturity to earn the full

²⁰ (Diamond & Dybvig, 1983) p.401

²¹ (Diamond D. W., Banks and liquidity creation: a simple exposition of the Diamond-Dybvig model, 2007)

²² (Diamond & Dybvig, Bank Runs, Deposit Insurance, and Liquidity, 2000) p.15

²³ (Diamond & Dybvig, 1983) p.405

²⁴ (Diamond & Dybvig, 1983) p.405

payoff of the project in t_2 . This means that it is advantageous to be a patient agent as the project needs time to reach maturity. The impatient agents suffer from unexpected liquidity needs thus necessitating them turning their illiquid assets into liquid assets and thus, forfeiture of higher returns. This leads agents in such a market to have an incentive to find a form of “liquidity insurance” to protect them from the negative effect of having unexpected liquidity needs.²⁵

At this point Diamond and Dybvig introduce banking contracts as such a means of insuring the agents from unexpected liquidity needs. This takes the form of bank deposits (liquid bank liabilities) in which agents can invest their money at $t=0$. At this point the funds are then invested in the project by the bank. In period one, as in the example without banking contracts, the agents are informed of their liquidity needs, i.e. become aware of the fact whether they are patient or impatient agents, gaining utility from consuming in period one or two, respectively. The impatient agents then promptly head to the bank to withdraw their money, with each agent withdrawing gaining their initial investment (\$1) plus interest. Due to the fact that there should, in theory, always be patient agents among the depositors, not all the initial funds need to be paid out and the deposits made by the agents that do not withdraw at t_1 can be held until they reach maturity. At t_2 the investment reaches maturity and the returns of the mature investment can be paid out to the patient agents. In this case however, the patient agents don't receive the full period two return they would have achieved had they not deposited their money in the bank but directly invested in the project, as the bank funds the interest paid out to the impatient agents with the returns made in period two. The patient agents do receive higher returns than the impatient agents and have an incentive to deposit their money in the bank at t_0 , as they do not become aware of their preference until t_1 and can thus “insure” themselves at the cost of slightly diminished returns in t_2 via the bank.²⁶

A number of aspects complicate the model. The information as to the liquidity needs of the agents is not only determined in t_1 , but also private information that the banks have no access to. This means that information is asymmetric. Additionally, the bank serves agents sequentially.²⁷

²⁵ (Diamond & Dybvig, 1983) p.407

²⁶ (Diamond & Dybvig, 1983) p.408

²⁷ (Diamond & Dybvig, 1983) p.408

Sequentially implies that the bank serves on a first come, first serve basis, and the bank cannot determine the type of agent withdrawing. Agents withdrawing in t_1 can be impatient or only pretending to be patient agents. This asymmetry of information can lead to the problem of bank runs. A bank in the Diamond Dybvig model will have a general idea of the relationship of patient to impatient agents and will determine the interest paid in t_1 and t_2 in such a way as to give patient agents an incentive to wait until t_2 .²⁸

The bank can become endangered when a larger amount of agents than expected decides to withdraw early, as the bank pays interest on the t_1 withdrawals before the investment project has generated actual returns. Such interest is financed via the return in period 2. Should too many agents withdraw early the t_2 returns may not be sufficient.²⁹

Agents that derive utility from consuming in period two are aware of such a possibility and are able to withdraw at t_1 and hold the money until t_2 to consume. Thus patient agents may watch the bank and the number of early withdrawals in period 1 to determine their actions. There are two possible outcomes, both of which are equilibrium outcomes.³⁰

The first possibility is the positive equilibrium in which the patient agents have confidence in the bank and believe the bank will have enough funds to pay them when the investment project reaches maturity in t_2 .³¹

The second possibility is the negative equilibrium, in which the patient agents notice a large number of agents withdrawing in t_1 , leading them to believe, that other patient agents are pretending to be impatient agents to withdraw in t_1 . This would lead the patient observer to worry that too many funds are being withdrawn and would lead him to run to the bank to withdraw his assets. This again increases the number of agents withdrawing in t_1 and thus other patient agents have an incentive to run on the bank. In this case all patient agents have the

²⁸ (Diamond & Dybvig, 1983) p.408

²⁹ (Diamond & Dybvig, 1983) p.409

³⁰ (Diamond & Dybvig, 1983) p.409

³¹ (Diamond & Dybvig, 1983) p.409

incentive to run, thus leading to a run-equilibrium. The run on the bank becomes self fulfilling as patient agents only run on the bank because they suspect other agents of doing the same, thus resulting in the bank failing due to too many funds being withdrawn early.³²

To prevent such a negative equilibrium Diamond and Dybvig suggest deposit insurance. This will be discussed in greater detail later in this paper.

The Diamond Dybvig model is an influential model of bank runs and resulting financial crises, it does however have some flaws. While the model sees banking crises as being an inherent feature of banking, it makes some unrealistic assumptions about banking in general. First it assumes, that banks only serve one function, that of an intermediary issuing only one type of liability, one which can result either in debt or equity, depending on the period in which it is redeemed. Another weakness is the fact that the model relies on there being no outside capital. Banks are only able to invest that which was deposited by the agents in the model. The lack of bank capital exposes the banks to the possibility of a run. The model assumes a bank's assets to be less liquid than its liabilities.

Additionally bank runs take place due to the sequential nature of the service by the banks in the Diamond Dybvig model. Other triggers for a bank run are not taken into account. The asset that the bank invests into is not assumed to be risky in any way, thus the threat of a run due to depositors fearing risky behavior on the side of the bank is nonexistent. The recent crisis however has shown that risk has a huge impact on bank runs and bank failures.

The model does do a good job of demonstrating the basic risk sharing function of the bank in the sense that a bank can take over the liquidity risk, assuming that not all the depositors will withdraw at the same time due to the law of large numbers. The model also shows the basic effects of a bank run and its possible outcomes, as well as the fact that a run on an otherwise healthy bank can cause it to fail if enough patient depositors join in on the run on the bank.

³² (Diamond & Dybvig, 1983) p.409

During a panic, which arises when a large number of depositors lose trust in their banks simultaneously; that causes many such bank failures, a disruption of the monetary system is caused. The disruption of the monetary system in turn leads to a reduction in production, as banks reduce loans and financing dries up. To meet demand banks may call in its loans early which can cause the lender severe financial difficulties again hemming or disrupting production. In the case of non business borrowers it may lead to the borrowers having to sell their cars or homes to repay the loans thus causing even greater harm to the economy.

A bank run can be triggered by a number of different situations and events. One can differentiate between information based and panic based bank runs. In panic based bank runs, the run is a psychological phenomenon where depositors lose trust in their banks and fear for their deposits. Such a fear can be triggered by anything ranging from bad bank fundamentals, to rumors over the fundamentals of a bank or even seeing an unusually long line in front of one's bank. A frightening aspect of panic based bank runs, is that even if the run is started by a rumor and the depositor knows it to be false, he still has an incentive to run on the bank if he fears that other depositors may withdraw.

This problem has long been recognized, and as will be described later, for much of the post-war period, bank runs were regarded as belonging to the past. However, an increase in bank runs in the 1990's indicates that with changes in the regulatory environment, unanticipated risks can re-emerge; making the phenomenon of bank runs a recurring one which justifies regular re-appraisal.

The effects of minimum capital requirements

National as well as international law (Basel II) dictates a level of capital to assets required by a bank to operate. This protects the bank to a degree, but at the same time the same regulation reduces the maximum a bank can lend and thus reduces the level of money generated by the bank and also increases the bank's effective cost of capital.³³

By varying the capital requirements for banks, market liquidity can be affected. Higher capital requirements can reduce market liquidity, leading to a form of "credit crunch" as banks reduce

³³ (Diamond & Rajan, 2000) p.2455

their lending. In theory, the higher level of capital would make the bank more resilient. An abrupt change in capital requirements can, however, produce the opposite result, as the loans a bank can offer may cause a run on the banks as “maturing deposits may exceed what the banks can pledge.”³⁴

The effects of deposit insurance

Deposit insurance can be either explicit or implicit. Generally deposits up to a certain amount are explicitly covered by insurance (US\$100.000 by the FDIC in the U.S., or up until recently E20.000 in Austria). Larger deposits may be implicitly covered in the event that the corresponding bank is too large for it to be allowed to fail.³⁵

Depending on how the deposits are insured, explicitly or implicitly, it has a different effect on banks and depositors. On the one hand, if all deposits are covered completely by deposit insurance and the time between the need for coverage and the coverage itself is relatively short, then the deposits have little to no “disciplinary effect”³⁶ on the bank or its depositors. In short, the bank is protected and the deposits act as a type of capital the bank can draw on. When however, the deposits are not all entirely covered by insurance or are implicitly covered, then the banks may be prone to a limited run, which would have a disciplinary effect on the banks.³⁷

The reaction time of the insurer also plays a large role in the prevention of bank runs. If the insurer reacts immediately, then there is no incentive to run on the bank as business will continue as usual. Should the insurer however take his time there is a slight incentive to run on the insured bank as a need for short-term finance may force depositors to try and withdraw funds as they may not be able to wait for the insurer to act. Depending on the number of depositors in such a position, or depending on the preference structure of the depositors a bank run may or may not occur, depending on the liquidity level of the bank in question.

³⁴ (Diamond & Rajan, 2000) p.2455

³⁵ (Diamond & Rajan, 2000) p.2455

³⁶ (Diamond & Rajan, 2000) p.2455

³⁷ (Diamond & Rajan, 2000) pp.2455

The perceived need for quick action on the part of state insurers has likely been a major influence on U.S. government response to the crash of 2008.

Intervention in a crisis

One of the first actions seen in the financial crisis that started in 2007, was an infusion of cash into the market. Generally it is assumed that an infusion of capital into the banking sector or the industry would leave both sectors better off.³⁸ Diamond and Rajan (2000) argue that that is not the case. Through the infusion of capital into one of the sectors it increases said sector's bargaining power over the other.

Were the banking industry to receive enough capital to prevent runs on banks, it could lead to the industrial sector being pressured even more by the banking sector. Were the infusion not to take place, "banks would have to sell off their loans to stave off a run"³⁹ which would allow the industrial companies to renegotiate their loans with new creditors. Thus the infusion of capital would allow the banks to survive without the need to sell loans and in turn they would have to be tougher on their borrowers, leading to liquidations and mortgaging of futures by the industrial companies. Thus the infusion would worsen the situation for the industrial sector rather than improving their situation.⁴⁰

If, on the other hand, the industrial sector were to receive the infusion of capital, a number of companies would be able to repay their loans and avoid liquidation. Other companies would be capable of paying the banks more in the long run. Both of those results would not help the banking sector in the short run, as the banks would have gotten the money from the industrial companies that would have been liquidated due to insolvency, and the higher repayments in the long term do next to nothing to help the short term position of the banks. The assistance to the industrial sector could even lead to the industrial companies being able to reduce repayment by offering to renegotiate the repayment sum in return for immediate payment, which could damage

³⁸ (Diamond & Rajan, 2000) p.2456

³⁹ (Diamond & Rajan, 2000) p.2457

⁴⁰ (Diamond & Rajan, 2000) p.2457

the banking sector in the long run.⁴¹ Overall the effects are similar to the investment in the banking sector. One sector (industry) is strengthened at the cost of the other, either in the long or in the short term.

Though Diamond and Rajan (2000) argue that the infusion of capital into markets can be detrimental, the infusion can however be beneficial if it is large enough to cover the entire market, and not only choice elements of it, restoring the balance of power between the different sectors.

This shows us how bank capitalization influences a number of key aspects of banking. The higher the bank capitalization, the safer the banks are from bank runs. Additionally, the capitalization influences how willing the banks are to liquidate borrowers or the leverage they possess to extract repayment.⁴²

Demand Deposit Contracts – the root of all evil

As explained in the segment about the role of banks in the economy, one of the primary roles of banks is to create liquidity out of illiquid assets. The most common method of doing so is by offering demand deposit contracts.

Demand deposit is “a contract that requires an initial investment at $T = 0$ for the right to withdraw per unit of investment (at the discretion of the depositor and conditional on the bank’s solvency) either x_1 in period 1 and x_2 in period 2 or y_1 in period 1 and y_2 in period 2.”⁴³ The amount withdrawn varies in period 2 depending on the return on the investment the bank made. It may or may not be able to fully make its promised payments. This makes demand deposits more fitting for financing low-risk assets as the probability of lower returns due to failure decreases.

⁴¹ (Diamond & Rajan, 2000) p.2457

⁴² (Diamond & Rajan, 2000) p.2460

⁴³ (Jacklin & Bhattacharya, 1988) p.575

Demand deposit contracts allow depositors to join in on long term investments that are generally more profitable than short term investments, but at the same time allow the depositors to withdraw their deposits should they suffer early liquidity needs.⁴⁴ This means that banks can offer a type of liquidity insurance to the depositors, as the banks deal with large amounts of customers with varying liquidity needs.

On the down-side, demand deposit contracts make banks vulnerable to panic based bank runs. Such bank runs happen when depositors fear that all other depositors are going to rush to withdraw their funds from the bank causing it to fail and thus rush to withdraw their funds too. The wish to withdraw funds stems from the fact that depositors can be assumed to be, like most individuals, risk averse. Were depositors not risk averse, they would not be worried about the bank's ability to pay at maturity and thus panic based bank runs would be nonexistent.⁴⁵

Bank runs can happen when the fundamentals of a bank are extremely bad and thus the risk of default is extremely high. This leads to a change in the expected utility of waiting for the deposit to mature. The utility of withdrawing early becomes higher than the utility of waiting. Thus, even the patient depositors have an incentive to run on the bank. This massive increase in demand for liquidity forces the banks to sell off their long term assets at a loss to cover the withdrawals, thus damaging the bank.

These effects of demand deposit contracts make demand deposits both valuable to the economy and an element that allows bank runs. With the effect bank runs can have on the banking industry, bank runs are “a major factor in [...] banking regulation all over the world.”⁴⁶

To explain demand deposits, Diamond and Dybvig (1983)⁴⁷ developed a model with two equilibria, one a positive one and one a negative one. The positive equilibrium is one in which only the impatient depositors withdraw their deposits early, receiving more from their deposits

⁴⁴ (Goldstein & Pauzner, 2005) p.1293

⁴⁵ (Jacklin & Bhattacharya, 1988) p.587

⁴⁶ (Goldstein & Pauzner, 2005) p.1294

⁴⁷ (Diamond & Dybvig, 1983)

than the liquidation value the long term asset would have. This is done at the expense of the patient investors, who gain less than the entire return of the long term asset when they withdraw. In this case, in the positive equilibrium, the demand deposits have a positive effect on welfare by improving risk sharing.⁴⁸

The negative equilibrium is the bank run. In the second equilibrium the investors collectively run on the bank, demanding their deposits and as a result the bank fails. This reduces overall welfare below that which could have been achieved without banks (the autarkic allocation).⁴⁹ The failure is caused primarily due to the fact that the early liquidation of long term assets has lower payoffs than the returns on strictly short lived assets.⁵⁰ At the same time, if the long term assets were sufficiently liquid then the short term liquidation wouldn't result in large losses, or if the depositors were not very risk averse, bank runs would not present a significant problem.

The likelihood of the occurrence of the different equilibria depends on a number of factors, and is not easily discernible. As difficult as it may be to determine the likelihood of either of the situations occurring, it is an important determination. One result lowers overall welfare and the other increases it.

To determine when banks increase overall welfare, one must look at why depositors run on banks in this model. Runs take place because depositors panic in response to bad expectations. Different theories exist on how the panic ensues; empirical precedents show that not all depositors have the same information, but are rather guided by noisy signals⁵¹ originating from other investors. Some may have special information allowing them to judge the banks' fundamentals. Others may misinterpret the fundamentals and panic. In both cases, the investors want to do what everyone else does. They run on the bank demanding their deposits for fear that all the other depositors will too. In one case we speak of the information based bank run. This is the case when the bank run is triggered by 'real' information regarding the fundamentals of the

⁴⁸ (Goldstein & Pauzner, 2005) p.1294

⁴⁹ (Goldstein & Pauzner, 2005) p.1294

⁵⁰ (Jacklin & Bhattacharya, 1988) p.570

⁵¹ (Goldstein & Pauzner, 2005) p.1294

bank. In the second case we have an irrational bank run triggered by a misinterpretation or false information. The information-based bank run primarily occurs following negative real shocks⁵², whereas the irrational bank run results from coordination failure in the sense that a bank run would not have taken place were it not for the actions of other depositors (running on the bank).⁵³

Some literature argues that bank runs may not always be triggered by real shocks. If one looks at banks as representing the banking system as a whole, and not just as individual banks, should signals be significantly negative, depositors may choose to reverse hedge. This means that risk adverse depositors may consume less in the short run, to invest more in the relatively uncertain future. This scenario is obviously only relevant if there are no alternative forms of investment. If the negative signals only referred to one bank, depositors would have an incentive to run on the bank and redeposit in another bank as was the case with Countrywide Financial in 2007. The same would be the case if the signals were directed at banks as a whole, in which case there would be other investment options such as government bonds. The depositors again would rush the banks and redeposit. This analysis is consistent with historical accounts of the Great Depression era and its system wide bank runs.⁵⁴

The incentive to run on banks is an interesting concept, as it does not increase monotonically as one would expect with the number of depositors running on the bank; the incentive to run on the bank is highest when the amount of depositors withdrawing their money reaches the point at which it forces the bank into bankruptcy.⁵⁵ One does, however, have a monotonically increasing incentive to run as long as the number of depositors has not hit the critical point that causes bankruptcy. This special situation makes for an interesting, but difficult to calculate equilibrium.

The equilibrium implies that the vulnerability of a bank to runs increases proportionately to the size of the short-term payments a bank offers. If the short term payment equals the value that

⁵² (Goldstein & Pauzner, 2005) p.1295

⁵³ (Goldstein & Pauzner, 2005) p.1295

⁵⁴ (Jacklin & Bhattacharya, 1988) p.588

⁵⁵ (Goldstein & Pauzner, 2005) p.1295

can be attained by liquidating the long term asset, only efficient bank runs can occur. This has two implications: First, the damage done to banks by depositors running on the bank is greatly reduced. Second, bank runs would be caused by the value of the long term asset being low enough that it would be financially sound for the depositor to withdraw early.⁵⁶ If the short term payments are above the long term asset liquidation value, bank runs will lead to inefficient bank runs, whereby the bank will be forced to liquidate assets that would result in high returns, were they liquidated come maturity.⁵⁷

These two realizations are important when trying to determine the optimal level of short term payments for banks. To gain the welfare bonus, one must increase the short term payments above the autarkic level to generate risk sharing.⁵⁸ At the same time this bonus is offset by the cost created by the increased probability of bank runs and the associated costs of liquidating long term assets prematurely.

In the first case, the increased cost due to an increased chance of bank runs, the cost varies depending on the difference between the short term payment offered by the bank and the liquidation value of the long term asset in the short term. The smaller the difference, the worse a bank's fundamentals must be to cause a bank run and the lower the damage that would be done to the bank in the case of a bank run.

Preventing Bank runs

To prevent bank runs from occurring, there are a number of different policies measures that can be implemented. The two most common policy measures found in literature discussing bank runs are the suspension of convertibility and deposit insurance.

While both of these measures have been implemented, they are not without cost and the benefits of the measures need to be evaluated in relation to the costs they cause.

⁵⁶ (Goldstein & Pauzner, 2005) p.1295

⁵⁷ (Goldstein & Pauzner, 2005) p.1295

⁵⁸ (Goldstein & Pauzner, 2005) p.1295

Suspension of convertibility

Suspension of convertibility has been used successfully a number of times as in the case of “Corralito”, outlined in the section contemporary bank runs. It can prevent the premature liquidation of long term assets and thus reduce the damage caused to a bank in the case of a run.

By suspending convertibility a bank gives itself time to secure more liquidity. This can be done by asking the central bank or competitors for loans or by liquidating less liquid assets. The time can also be taken to prepare for the coming storm on the branch offices by increasing the staff on duty to prevent lines or resupplying the branches with cash to be able to meet depositor demand. During this time steps can be made to try and regain depositor confidence through a number of media channels. This can in some cases help clear up depositor misunderstandings in the case of runs triggered by rumors or false information.

While there are a number of things a bank can do on its own during the suspension of convertibility, sometimes the situation may have progressed so far, that the bank may not be able to sustain itself without external help. The time available during suspensions can be used to negotiate takeovers by competitors or the government to reduce the ultimate cost of the bank runs by limiting the amounts of illiquid assets that need to be liquidated to cover depositor demand.

Suspension of convertibility does however have its own inherent cost. The suspension of conversion can prevent depositors who have early liquidity needs from being able to satisfy those needs by not being able to withdraw their deposits. It also can reduce confidence in the bank even further as the move to suspend convertibility implies that the bank is too weak to be able to sustain “business as usual”.

The advantages and disadvantages of suspension of convertibility must be weighed when deciding on implementing this method of preventing or slowing a bank run and can be combined with other options under the correct circumstances.

Deposit insurance

Deposit insurance is probably the most common policy used to prevent bank runs. Since the Great Depression there have been practically no bank runs in the U.S. thanks to deposit insurance. By pledging to cover deposits lost in the case of a bank failure, the risk that causes depositors to run on a bank to withdraw one's deposits early is greatly diminished. Deposit insurance does however only change the outcome and not prevent the panic.

Similarly to the suspension of convertibility, deposit insurance has its own inherent drawbacks. Insurance creates the problem of moral hazard. Due to the way that insurance is set up, a single bank does not carry the full cost of a bank run on its establishment. This means that banks can offer above optimal short term payments, which not only increases the likelihood of bank runs (which is offset to a degree by the calming effect of deposit insurance), but also leads competing banks to increase their short term payments in order to remain competitive, raising the overall incentive to run on banks. The moral hazard also leads managers of banks to “take on more risk to maximize the option value of the deposit insurance”⁵⁹, while at the same time the same moral hazard affects the depositors. Without the risk of losing one's deposits, the depositors have no incentive to monitor the banks.

While moral hazard can be a negative side effect of deposit insurance, the concept of deposit insurance is a solid one. By setting higher capital requirements for banks one can counteract the moral hazard to a degree and restore the welfare aiding aspect of deposit insurance.

The introduction of capital requirements helps reduce the moral hazard that banks face in the presence of deposit insurance. With capital requirements, banks need a percentage of their total liabilities in liquid assets to be allowed to go about its normal operations. This shifts the entire risk away from the insurer and leaves an element of the risk with the bank, as it is also gambling with its own assets and not purely the insurers. If the incentive to invest in risky assets is high, policy should ideally increase capital requirements to the point where the bank decides against investing in overly risky assets.

⁵⁹ (Jacklin & Bhattacharya, 1988) p.589

The savings and loan crisis (S&L) in the United States was a prime example of the negative effects deposit insurance can have on the behavior of depositors and banks. Deposit insurance allowed large amounts of bad debt (estimated at around US\$130 billion)⁶⁰ to be transferred from the savings and loans banks to taxpayers. The insurance did prevent runs; however it also encouraged the banks to take excessive risk. Much of the current literature on bank runs does not cover the moral hazard induced by the use of deposit insurance. Through the policy of deposit insurance, the interests of the banks and the depositors converge. The depositors want the bank to invest in higher risk assets to increase the returns and the banks can use foreign funds (the insurers) to gamble on the risky assets.⁶¹ The lack of monitoring created by such a policy needs to be factored into the benefits that deposit insurance brings by reducing bank run incentives.

It can be hard to determine the correct level of capital requirement for banks. Recently risk-based premia have been implemented, with the challenge of achieving the correct timing. If one can pay the premium and then readjust the portfolio one can circumvent the policy. To prevent the circumventing of the risk-based premiums, there is a cost of monitoring involved and as such the results are again questionable.

A further method to reduce the effects of moral hazard of deposit insurance would be to offer a limited deposit insurance which would then still create an incentive for depositors to monitor their bank. Such systems were used in a number of countries, but often don't do enough to prevent bank runs for example in the case of Northern Rock, where the government pledged to insure all deposits. Despite such a pledge the depositors continued to run on the bank, ultimately resulting in government intervention to save the ailing bank.

One possible way to prevent bank runs is the introduction of newer, more complex contracts. This possibility was analyzed more recently by Green and Lin (2003)⁶² and Peck and Schell (2003)⁶³. The authors conclude that flexible contracts that would allow banks to alter the

⁶⁰ (Cooper & Ross, 2002) p.55

⁶¹ (Cooper & Ross, 2002) p.57

⁶² (Green & Lin, 2003)

⁶³ (Peck & Shell, 2003)

payment made to depositors could reduce the threat of bank runs. In the case of a flexible contract, the amount that the bank would pay depositors that wished to withdraw their deposits early would depend on the amount of deposits withdrawn prior to the last depositor.⁶⁴ The papers do point out that such complex contracts are not implemented in the modern financial systems. The reasons for this may lie with the inherent risk of moral hazard such contracts result in, or in the high costs associated with such complex contracts and the monitoring that would be necessary. Banks would be able to lie about the number of depositors that withdrew early, thus reducing the amount they would have to pay. It is of note that the standard Austrian savings account is a three month account which is “normally” paid out on demand, but in the case of a run could be held until the end of the three month duration.

One factor that, while not able to prevent bank runs, mitigates the negative effects of the run is the use of a large external agent to buy up the affected bank and pay off the liabilities. Such a scenario could be viable in the case that the long term return on the bank’s assets is high and that the takeover would be profitable. This would be realistic in the case of a singular bank run on one institution and not an industry wide run. In most cases such an external agent would be a government; it could however also be a private agent of sufficient size.⁶⁵

Bank runs in politics (1830)

While the government can use a number of precautions and measures to prevent or stop bank runs, bank runs can also have a strong impact on politics or be used as a weapon in politics.

In the early 1830’s, Great Britain was in a state of unrest with clamor for reform. The country party (Whigs) tried to pass a reform bill, which was rejected by the House of Lords. The rejection led to widespread rioting and threatened to drown the nation in chaos. As a desperate measure, the King of England invited the Duke of Wellington to form a government. To push through their bill the reform leaders threatened to instill a bank run to bring the country to a halt. This was to be done by having their supporters withdraw their funds from the banks under the

⁶⁴ (Postelwaite & Vives, 1987) p.490

⁶⁵ (Goldstein & Pauzner, 2005) p.1302

slogan: “To stop the Duke, go for Gold”.⁶⁶ The threat of a run on the nations gold deposits and the resulting financial turmoil the nation would face caused the House of Lords to reconsider.

The Lords backed down and the bill was passed. The threat of a run on the banks and civil unrest were enough to force the House of Lords into submission and show the possible consequences of bank runs on the political stability of nations.

Bank runs of old

This segment of the paper discusses banking panics that led to or were related to bank runs in the period prior to the establishment of the Federal Deposit Insurance Corporation, a government owned insurer for deposits. This period is interesting in the context of bank runs, as up until the establishment of the FDIC there was no large trustworthy insurer of deposits in the United States. This left the banking sector much more susceptible to bank runs as depositors had to fear for their deposits in the case that a bank failed.

The Free Banking Period

In the mid 1830's many American states adopted free banking which allowed banks to be opened without legislative or regulatory approval. During this time any group or individual could open a bank, also known as a free bank.⁶⁷ The opening of such a bank required a minimum amount of capital and such free banks were required to deposit mortgages and government bonds with the local state banking authority. The banks then earned interest on their deposits.

The free banks were allowed to hand out bank notes, which were traded on the market at varying prices. The state banking authority would periodically issue statements on the status of a bank and newspapers provided information on the value of bank notes and provided information regarding fake bank notes.⁶⁸ Banks were obliged to redeem their notes at face value on demand and faced fines (were charged interest) by the local government banking authority if they did not redeem the notes in time.

⁶⁶ (Evans, 2002)

⁶⁷ (Hasan & Dwyer, 1994) p.272

⁶⁸ (Hasan & Dwyer, 1994) p.272

The free banking period saw a number of years with a high number of banks closures. In 1854 for example the banks in Indiana saw a particularly large number of banks close (34), which were attributed to a contraction of the banking system. This contraction created problems for the newer banks, which could not honor all of their obligations. This failure to honor their obligations triggered a run on all banks state-wide resulting in even the more stable, well-established banks being discredited and often times failing.⁶⁹

These events also showed some of the critical aspects of bank runs for the first time. A large part of the runs was panic driven and based on incomplete or incorrect information which resulted in healthy banks being stormed. The exogenous events of banks not redeeming their notes led the note holders, with their incomplete information, to interpret the situation in such a way as to imply that other banks might also be in a similar situation. This started a contagion with note holders doubting their banks and opting to go with the safe action, withdrawals.

The ensuing contagion gives banks, which have an information advantage over the note holders, the incentive to provide information to reduce the asymmetrical information between the banks and the customers. There are a number of methods banks can use to share information. They can for example use joint certification, or cover each other's liabilities to improve confidence.⁷⁰

In the case of the banking problems Indiana faced in 1854, representatives of a number of banks met to issue statements on the financial conditions of the banks and stockholders to restore confidence. The statements contributed to the relaxation of the situation and the situation calmed down in Indiana.

The events of the free banking period show that at the time the bankers were aware of the effects of panic and contagion and tried their best to mitigate their effects. In the long run, evidence indicates that the bank runs only had a low impact on the number of banks that closed

⁶⁹ (Hasan & Dwyer, 1994) p.276

⁷⁰ (Hasan & Dwyer, 1994) p.275

permanently, thanks in part to the reactions of the bankers to jointly mitigate the effects of the runs.⁷¹

Panic of 1884

The panic of 1884 is a prime example of a large scale banking crisis in the era of the National Banking System. While it happened during the time of the Long Depression that lasted from the early 1870's to around 1893, focus on the panic of 1884 is helpful in discussing general bank runs. The panic appeared towards the end of the 1879-1885 business cycle and gave way to bank runs on a number of establishments.

The panic began in New York, caused in part due to the failure of the brokerage firm Grant and Ward on May 8th of 1884. The failure of the bank caused ripples in the financial sector, resulting in the closure of the Marine National Bank due to the fact that it had over certified a Grant and Ward check amounting to US\$ 750,000. Within a week the next bank failed, the Second National Bank had become the victim of theft as the manager made off with three million US\$.⁷²

Fueled by the bad news in the banking sector, depositors ran on the Metropolitan Bank forcing it to close the day after the Second National Bank closed. The ensuing panic caused a general drop in stock prices, as loans were called in and banks tried to raise funds. Fels (1952) recounts that the interest rates at the time peaked at “four percent for twenty-four hours”. Banks were calling in loans and many banks were failing or closing.⁷³

The Bank failures did not only happen at a time of business depression, which led to the banking panic. The panic was fueled by the government's silver policy, which led to fears that the gold standard could not be maintained, further weakening confidence in the system, thus fueling the runs and the ensuing panic.

⁷¹ (Hasan & Dwyer, 1994) p.284

⁷² (Fels, 1952) p.71

⁷³ (Fels, 1952) p.71

While the panic was widespread and forced a lot of banks into submission it was not a lengthy panic, as steps were rapidly taken to restore confidence in the system. “The defalcation of the Second National was made good, and both it and the Metropolitan reopened at once.”⁷⁴ By mid 1885 the economy was recovering and began a weak revival.⁷⁵

Panic of 1907

The economic backdrop of 1907 was one of instability. At the time, the U.S. did not have a central bank and money supply fluctuated according to industrial and agricultural cycles. Rising interest rates abroad led to less capital being invested in the U.S. reducing expected money supply.⁷⁶

The Panic of 1907 had its roots in an elaborate scheme to earn money by manipulating the stock market. The goal was to acquire a large enough amount of stock in the United Copper Company, belonging to Augustus Heinze, to be able to manipulate the price of the stock.⁷⁷ Together with his brother and an associate, the banker Charles Morse, Heinze wanted to buy up United Copper Company shares from short sellers, and then buy up outstanding stock to be able to sell the shares back to the short sellers at a significant markup, in effect squeezing the short sellers for money. To do this they needed a significant amount of capital and the Knickerbocker Trust Company was consulted, as the president of the trust had helped finance Morse a number of times. Knickerbocker however was not willing to finance the scheme and the Heinzes attempted the scheme without further support.⁷⁸ The scheme failed on October 17th, resulting in the collapse of the United Copper Company and the ruination of the Heinze family. The companies tied to the family went bankrupt, including the brokerage house Gross and Kleeberg and the State Savings Bank of Butte Montana.

⁷⁴ (Fels, 1952) p.71

⁷⁵ (Economist, 1886) p.51

⁷⁶ (Tallman & Moen, 1990) p.4

⁷⁷ (Bruner & Carr, 2007) p.43

⁷⁸ (Bruner & Carr, 2007) p.45

At the time, Heinze and Morse were serving on a number of national and state banks as well as on trust companies and insurance firms.⁷⁹ When news of their financial ruin hit the streets, panicked depositors began a run on any related establishment. The runs became systemic when the Knickerbocker Trust Company suffered a run due to its association with Morse and Heinze. On October 22nd, 1907, over US\$ 8 million were withdrawn from Knickerbocker in the course of a few hours and it was forced to suspend operations.⁸⁰

The panic then spread to other trusts and banks and within a few days a number of banks had failed due to runs.⁸¹ To stop the systemic panic a number of prominent figures, including J.P. Morgan and John D. Rockefeller, coordinated a number of meetings to help recapitalize the market and end the panic.⁸² Over US\$ 40 million were pumped into the banks and trusts on the 24th of October 1907.⁸³

The capital infusion helped the banks survive the following days, but at the same time the stock markets were suffering from a lack of funds, due to the reluctance of the banks to lend money. Again, large funds were necessary to keep the stock market going.

With funds running low, new approaches were taken to restore confidence in the banking system. Committees were formed to explain the situation to newspapers and clergy to have them help calm the populace. The communication resulted in calm being restored in New York City by the 2nd of November 1907.⁸⁴ The 1907 panic was just one of many economic problems faced during the period of economic contraction lasting from early 1907 to mid 1908, as Figure 4 shows, with the lowest point being recorded on November 15th 1907.

During the panic, new methods were used to try and restore consumer confidence. At the same time the U.S. came to the realization that the lack of a central bank resulted in a lack of money

⁷⁹ (Bruner & Carr, 2007) p. 38-40

⁸⁰ (Tallman & Moen, 1990) p.7

⁸¹ (Bruner & Carr, 2007) p.101

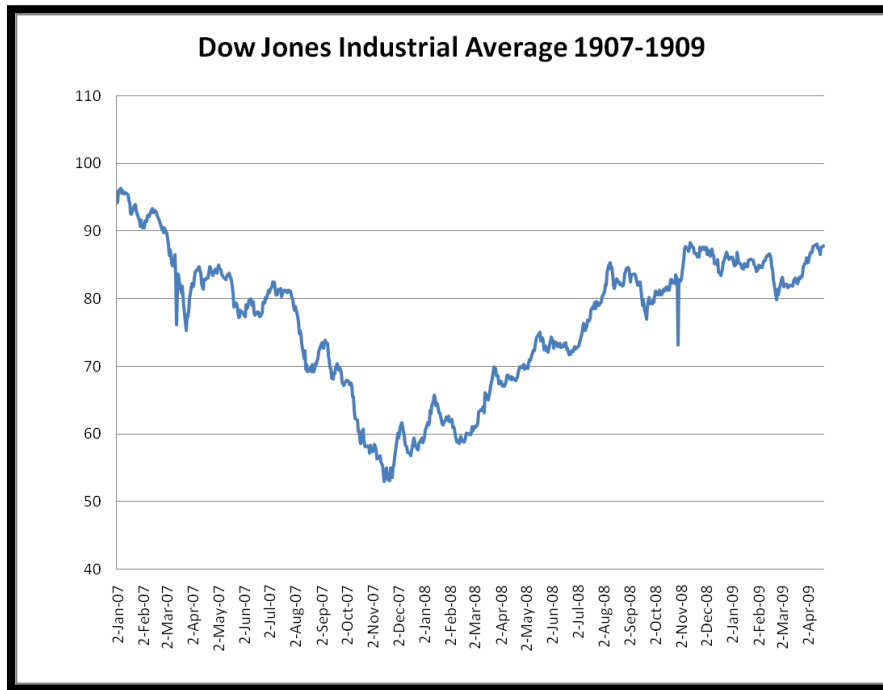
⁸² (Bruner & Carr, 2007) p.93; (Tallman & Moen, 1990) p.8

⁸³ (Tallman & Moen, 1990) p.8

⁸⁴ (Bruner & Carr, 2007) p.111

supply during periods of low cash reserves. This led to the eventual creation of the Federal Reserve System which was supposed to help prevent future panics by creating an additional source of capital for financial institutions.

Figure 4 Dow Jones Industrial Average 1907-1909⁸⁵



The Great Depression

Due to an improvement in economic conditions towards the end of the 19th Century and through to 1921, the number of banks in the United States increased rapidly. This increase was aided in no small part by the statutory changes in the capital requirements needed to form a new bank. The Currency Act of 1900 halved the necessary capital required to start a national bank from \$50,000 to \$25,000⁸⁶ which, according to Mengle (1990), led to approximately two-thirds of all new banks being small, often times just barely having the required minimum capital of \$25,000. An additional reason why the number of banks increased was that many rural communities

⁸⁵ (Inc., 1999)

⁸⁶ (Mengle, 1990) p.6

required loans to cover ever increasing costs (commodity prices, real estate), while at the same time strong economic growth increased the attractiveness of rural banking.⁸⁷

Beginning with the early 1920s, agricultural problems such as crop failures and falling farm real estate values, led to an increased amount of bank failures, largely in rural areas. The banks that had been created to service rural communities were hit by the difficulties faced by the farmers who had taken out loans with the banks. These initial closures launched a period of massive bank failures, beginning with 505 closures in 1921⁸⁸, followed by 500 and 1000 bank failures per year until the 1930's, when bank failures shot into the thousands.⁸⁹ In that decade, nearly half of all small banks in agricultural regions had failed.

The situation for small banks was further compounded when the Comptroller of the Currency, the agency responsible for regulating national banks, discarded the branching restrictions,⁹⁰ as up until that point, many states prohibited branching or restricted it to geographic areas, thus preventing banks from diversifying their lending.

This led to a large increase in the number of bank branches (from 1,400 in 1921 to 3,500 in 1930).⁹¹ The competitive advantages that branches had over smaller banks undoubtedly led to an increase in competition and a reduction in profits for the smaller banks, weakening their already-strained fundamentals.

The stage was set for large scale bank runs in the beginning of the 1930s. With the onset of the Great Depression, the number of failed banks exploded. In the first three years of the 1930s the average number of annual bank failures was around 1,700. In 1933 the number of bank failures exceeded 4,000.⁹²

⁸⁷ (Walter, 2005) p.4

⁸⁸ (Walter, 2005) p.6

⁸⁹ (Walter, 2005) p.6

⁹⁰ (Mengle, 1990) p.6

⁹¹ (Calomiris, 2000) p.170

⁹² (Walter, 2005) p. 7

In 1930 the Bank of the United States suffered a run which was blamed by many for having started the collapse of banking during the Great Depression.⁹³ According to the *New York Times*, the run was due to a false rumor that originated from a holder of stock who claimed that the Bank of the United States was unwilling to sell his stock. This rumor led to a large crowd of customers besieging the bank branch in the Bronx in New York, wanting to withdraw their money. Over the course of one day, customers had withdrawn \$2 million from the branch in New York. The news of the run spread, leading to smaller runs in the area. Fearing a further run, the directors had the bank closed to business, which led to a massive drop of their stock price, as well as to the stock price of other banks. The reputation of the bank was further tarnished by the opening of legal inquiries and legal action. The early closing during business hours and the legal proceedings led to the closing of the Bank of the United States, which was a shock to the banking industry. Americans hurried to withdraw their deposits from other banks, leading the affected banks to sell assets and call in outstanding loans in order to maintain liquidity. In December 1930 alone, over 300 banks had failed.

The establishment of the Federal Deposit Insurance Corporation

While bank runs are generally acknowledged to be a strong reason for the large amount of bank failures during the Great Depression, some argue against bank runs being the main reason for bank failures, believing other factors to have been the more dominant reasons. However the effects of the creation of the Federal Deposit Insurance Company, support the theory that the bank runs were responsible for the bank failures, as the bank failures, for the most part, came to a halt with its creation in 1933. This leads one to believe that the reduction in uncertainty due to the insurance was responsible for reducing the threat of bank runs.

With the establishment of the FDIC in 1933, the backdrop of the banking sector changed. The FDIC was created in response to the numerous bank failures occurring at the beginning of the 20th Century, to “preserve and promote public confidence in the U.S. financial system by insuring deposits in banks and thrift institutions.”⁹⁴ The FDIC prides itself on its accomplishments in reducing the threat of bank runs, stating that “since the introduction of the

⁹³ (Friedman, 1963)

⁹⁴ (FDIC, FDIC: Who is the FDIC, 2008)

FDIC on January 1st, 1934 no depositor has lost a single cent of insured funds as a result of failure.”⁹⁵

More recently events that can be likened to bank runs have become more prevalent and will be discussed in the following section.

Contemporary Bank Runs

MBf Finance Berhad (1999)

On September 25th 1997, rumors about the health of the chairman of MBF Finance in Malaysia, prompted depositors of MBF Finance to run on the bank.⁹⁶ The bank was Malaysia’s largest finance company and the collapse of said institution would have plunged Malaysia’s banking sector into chaos. The Malaysian national bank, Bank Negara, pledged support for the ailing bank assuring the depositors that “there is no cause for alarm.”⁹⁷ Despite the assurances of the national bank, the run on 120 branches of MBF Finance saw deposits totaling around US\$4.49 billion being withdrawn, forcing the national bank to take control of the stricken bank.⁹⁸

While bank runs were virtually non-existent in OECD countries after the Great Depression, other, less developed countries, still saw a number of bank runs. The case of MBf Finance Berhad shows that even a national bank may not be sufficient to stave off a bank run if the environment is too uncertain and the trust in the national bank is not sufficient.

Corralito (2001)

From January 2001 to November 2001, the Argentinean banking system suffered a loss of reserves and deposits triggered by a currency run, which led to a general bank run. The reserve losses totaled US\$ 10.9 billion over the following eleven month period, with losses in deposits totaling around US\$ 11.5 billion.⁹⁹

⁹⁵ (FDIC, FDIC: Who is the FDIC, 2008)

⁹⁶ (London, 1999) p.3

⁹⁷ (London, 1999) p.3

⁹⁸ (Tribune, 1999)

⁹⁹ (Yeyati, Schmukler, & Van Horen, 2004) p.8

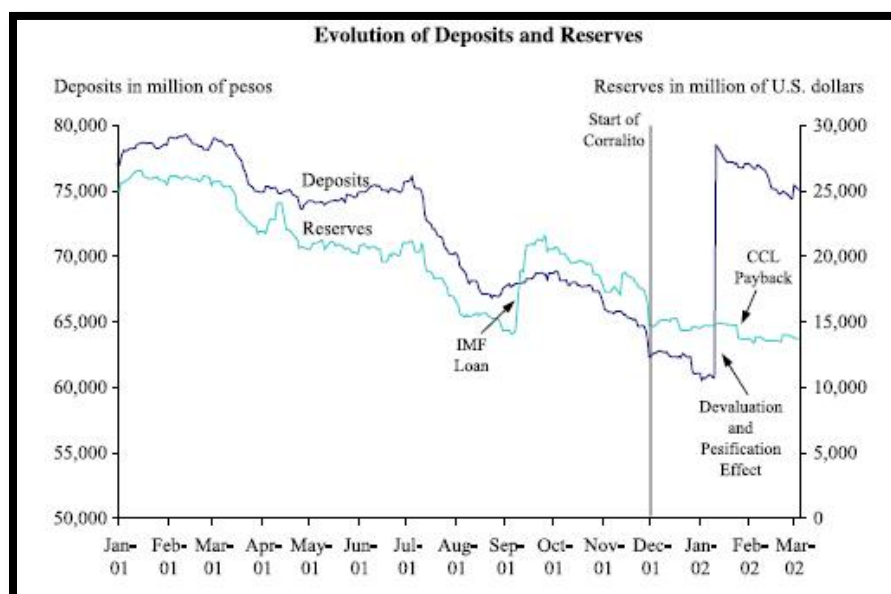
This bank run is remarkable for the fact that Argentina had deposit insurance in place at the time, which did little to prevent the bank run. A number of factors contributed to the bank run. Argentina faced liquidity problems as it had accrued a large amount of short-term debt which had to be repaid.¹⁰⁰ The financial system used relied on the dollar lending, while borrowers relied on peso-denominated cash flows, resulting in a currency mismatch. This discrepancy fueled by a fear of a nominal devaluation led depositors to withdraw their money and exchange it for dollars¹⁰¹, leading to a currency run and thus to a general bank run. As a result, the banking crisis was, to an extent, expected, and larger, better informed depositors had enough time to withdraw their money. The bank run hit its highest point on the 30th of November with deposits falling by US\$1.4 billion and reserves falling by US\$1.7 billion (see Figure 5 Evolution of Deposits and Reserves in Argentina).

The following figure shows the development of the banking crisis in Argentina, showing the deposits and reserves as well as significant events such as an IMF Loan and the devaluation of the peso and its effect on the banking system.

¹⁰⁰ (Samartin, Cardone, & Bustamante, 2007) p.446

¹⁰¹ (Samartin, Cardone, & Bustamante, 2007) p.452

Figure 5 Evolution of Deposits and Reserves in Argentina¹⁰²



The Argentine bank run led to a suspension of convertibility of bank deposits on December 3rd of 2001. This suspension was termed the “corralito” (“little fence”), as deposits were still transferrable within the national financial system, but deposits were not allowed to leave the system or be redeemed in cash.¹⁰³ The “corralito” managed to slow the decline in deposits and reserves and with the additional measures implemented on the 7th of January 2002 (the devaluation of the peso) and the 3rd of February (the “pesification” of bank deposits), order was restored to the national banking system,¹⁰⁴ although at significant cost to consumers, whose savings had been significantly reduced in value.

BAWAG (2006)

The BAWAG (Bank for Employment and Commerce) was an Austrian bank owned by the ÖGB (Austrian Trades Union Federation), founded in 1922 by the Socialist Chancellor Karl Renner. The bank’s original mission was to provide inexpensive credit to those in need. More recently,

¹⁰² (Yeyatia, Schmuklerb, & Van Horen, 2004) p. 9

¹⁰³ (Yeyatia, Schmuklerb, & Van Horen, 2004) p.7

¹⁰⁴ (Yeyatia, Schmuklerb, & Van Horen, 2004) p.7

BAWAG was known for being a modern bank which was involved in private investment in the Public Equity sector via REFCO.

In October of 2005 REFCO filed for bankruptcy and in doing so, exposed massive loans made by the BAWAG to REFCO (US\$410 million), on a Sunday, hours before REFCO went bankrupt on Monday. These loans were made in return for REFCO shares that became valueless with the bankruptcy. Only a few months later, in March of 2006, news of massive losses made in Caribbean business deals was also made public and consumer trust melted away, with depositors fearing for the solvency of the bank.

On April 28th 2006, depositors started pulling their deposits from the BAWAG, starting a run on the bank. To help restore order, the leader of the ÖGB, Rudolf Hundstorfer, signed an unlimited guarantee for the BAWAG on the first of May. The following day, further guarantees were made by the government (900 million Euros), and competitors (450 million Euros in deposits to ensure liquidity) to help restore confidence in the solvency of the BAWAG. As a symbolic gesture, prominent political figures opened accounts with the bank to show their confidence in the future of the bank. While this did not stem the tide of depositors attempting to withdraw their deposits, it did send a signal that the government was going to support the bank.¹⁰⁵

Over the next few weeks the government pledged more support to the BAWAG and additional competitors invested in the BAWAG to help restore liquidity. The actions taken by the government and the banking sector ended the small bank run on the BAWAG and prevented any larger banking panic. The crisis ended with the BAWAG being sold to US-based Cerberus Capital Management for the price of €3.2 billion, with the Austrian Trade Union Federation, the former sole owner of BAWAG, just managing to remain solvent.

The BAWAG bank run shows that bank runs need not always be systemic but can be limited to one bank if the financial environment is sound and the events triggering the run do not involve other banks in the industry.

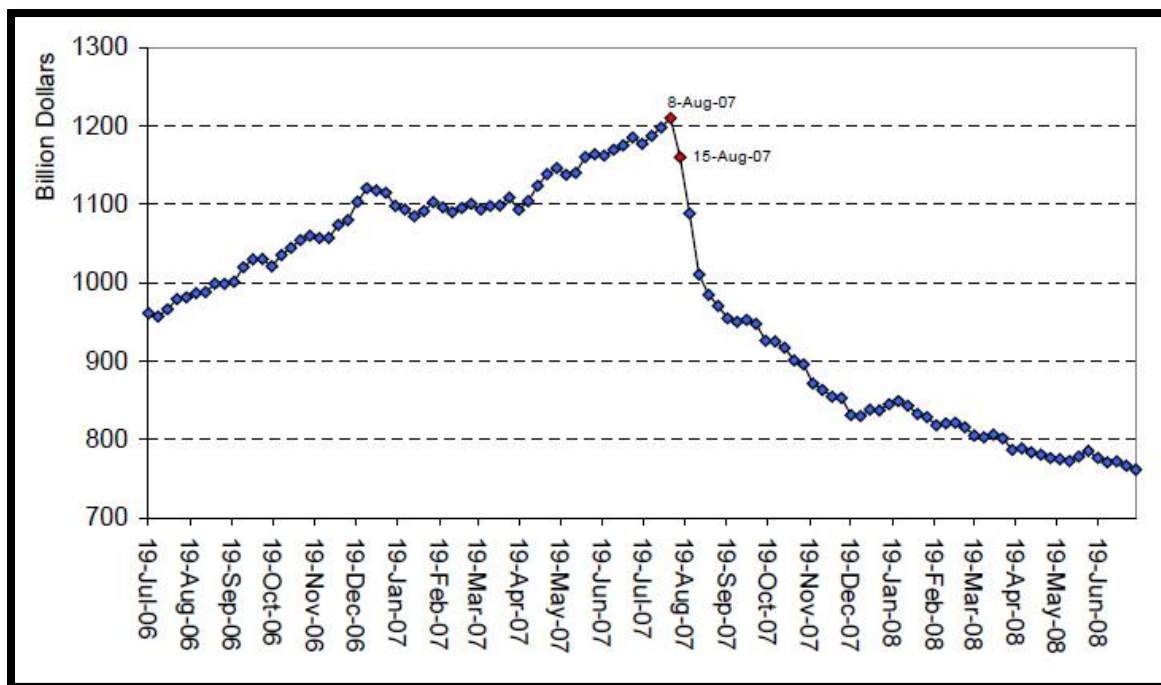
¹⁰⁵ (Wien, 2006)

Northern Rock (2007)

Northern Rock was one of the five largest mortgage lenders in the United Kingdom. The bank followed the business model of not relying solely on deposits, but rather borrowing money from financial institutions and banks at market rates to allow it to offer competitive loans to customers. This reliance on money markets is what ultimately led to a liquidity shortage, as the U.S. mortgage crisis led to a slow down of lending. This slowdown caused the London interbank offering rate (LIBOR) to surge, further reducing lending. Thus Northern Rock's liquidity became jeopardized by the sub-prime real estate crisis.

To determine the beginning of the credit crisis one can analyze the outstanding amounts of ABCPs (asset backed commercial papers, which were used to fund "holdings of long-dated mortgage-related assets.")¹⁰⁶ The ABCPs can be used to determine the demand for "short-term lending against mortgage assets."¹⁰⁷ Using the data from the Federal Reserve one can see a sharp decline early August.

Figure 6 Asset-backed Commercial Paper Outstanding¹⁰⁸



¹⁰⁶ (Shin, 2008) p.3

¹⁰⁷ (Shin, 2008) p.3

¹⁰⁸ (Shin, 2008) p.3 (Federal Reserve)

As a consequence of the U.S. mortgage crisis, on September 14th 2007¹⁰⁹, even though the bank was still solvent, having only half the number of delinquent mortgages on its books than other banks, Northern Rock applied for financial support from the Bank of England to bolster its liquidity. This is of particular importance, as it implies that Northern Rock had liquidity problems prior to and not due to a bank run, making the bank run different than the classical bank run. Northern Rock became a victim of a bank run with creditors freezing funds in contrast to the traditional depositor run.

When news of the financial assistance became public many customers became worried about the stability of the bank and began large scale withdrawals, starting a run on the bank, which was the first bank-run in the United Kingdoms since 1866.¹¹⁰ The image presented by the numerous customers queuing up in front of Northern Rock branches only contributed to the feeling of unease that was present in Northern Rock depositors fueling the run.

No amount of deposit insurance was enough to deter the bank run, even though the Bank of England agreed to an unlimited loan to Northern Rock to help restore liquidity. With public symbols such as the loans to the bank not restoring customer confidence, the future of Northern Rock looked grim. After two unsuccessful attempts to sell the bank, Northern Rock, it was nationalized on February 22nd 2008, becoming one of the most high-profile victims of the 2007 credit crisis. The rescue of Northern Rock was not undertaken to rescue the bank per se, but rather to prevent any further damage to the economy that could result from the loss of confidence in the banking sector.

As a result of the nationalization, customers regained confidence in Northern Rock, with a large amount of new deposits in the bank. This may have been due to the notion that the bank, being nationalized, could not fail, and thus was a safe place to keep one's money.¹¹¹

The following figure shows the composition of liabilities of Northern Rock in millions of pounds and shows that securitized notes and covered bonds remained constant prior to and after the run

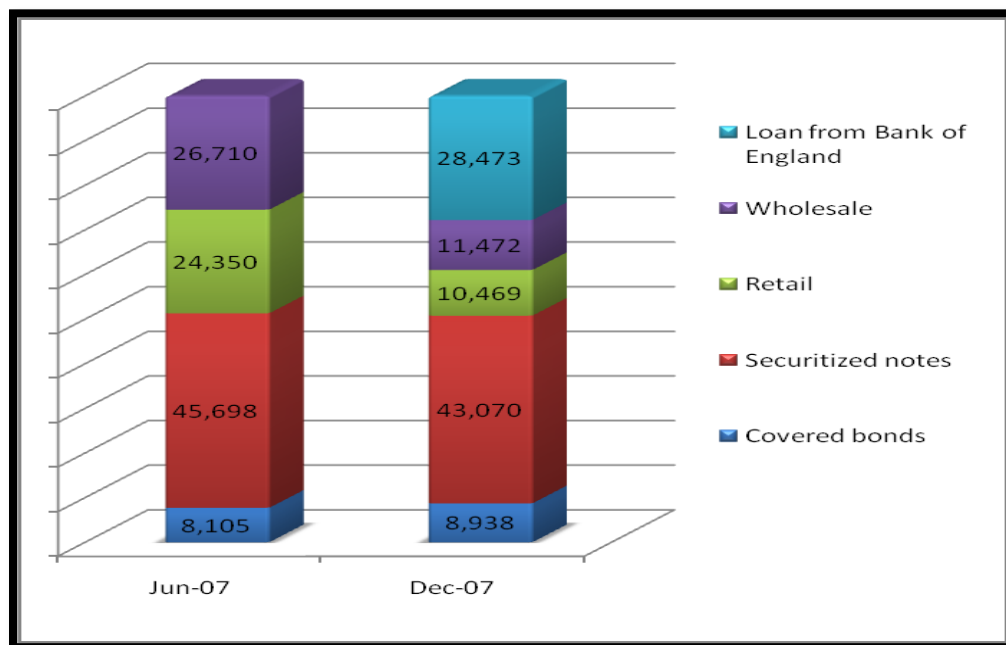
¹⁰⁹ (Shin, 2008) p.2

¹¹⁰ (Shin, 2008) p.2

¹¹¹ (Rock, 2008)

on the bank, showing Northern Rock's weakness having been in the wholesale and retail liabilities.

Figure 7 Aftermath of Run: Composition of Liabilities (million pounds)¹¹²



The run on Northern Rock showed a number of different things. It was similar to old fashioned bank runs in that the customers lining up in front of the different branches trying to withdraw their deposits. At the same time, however, there was a second type of run on the bank, an online run where depositors attempted to withdraw their money via the online interface of the bank. The resulting traffic was too much for the bank's servers to handle and led to a number of customers not being able to access the site at all, fueling the fears over the state of the bank.

The example of Northern Rock is an opportunity to apply the economic theory of bank runs to a real life example. Northern Rock showed the “futility of public statements of reassurance, the mutually-reinforcing anxiety of depositors, as well as the power of the media in galvanizing and channeling that anxiety through the power of television images.”¹¹³ At the same time subtle

¹¹² (Shin, 2008) p.10

¹¹³ (Shin, 2008) p.2

differences to conventional bank run theory become apparent. In the case of Northern Rock it was not the depositors who brought about the liquidity crises, but rather the short- to medium term creditors who retreated from the market.

Shin (2008) argues that that one should look to the classic coordination failure method as described by Bryant (1980)¹¹⁴ and Diamond and Dybvig (1983)¹¹⁵, to describe the situation. The theory expects an individual depositor to run on the bank, fearing other depositors will do the same, leaving nothing left for the depositors who don't run.

While the liquidity problems arose before the depositor run, one can see a creditor run in Figure 6. This run however did not only target Northern Rock or the banking industry in the United Kingdom, but rather the entire market. Thus, according to Shin (2008), “if there was a run driven by a coordination failure, then it was a run [on] all the institutions that relied on short-term funding of this type, rather than [a run on] Northern Rock in particular.”¹¹⁶

Another aspect that needs to be considered is the difference between the creditors involved in the run and the depositors of the coordination failure model of bank runs. In the model, creditors are depositors that decide rationally whether to run or not, depending on their beliefs of what other depositors will do, unconstrained by other considerations.¹¹⁷ In the case of the creditors involved in the run on Northern Rock and the market as a whole, there were “sophisticated investors”, or creditors that face constraints on their decisions defined by market developments. As such, the run on Northern Rock could be seen as a “tightening of constraints on the creditors of Northern Rock, rather than as a coordination failure”¹¹⁸ as defined by Diamond and Dybvig (1983). The

¹¹⁴ (Bryant, 1980)

¹¹⁵ (Dybvig, 1983)

¹¹⁶ (Shin, 2008) p.12

¹¹⁷ (Shin, 2008) p.13

¹¹⁸ (Shin, 2008) p.13

conclusion we can draw from the run on Northern Rock is, that “modern banking cannot be viewed separately from capital market developments.”¹¹⁹

Countrywide Financial Corporation (2007)

In spite of the existence of the FDIC, which guarantees up to US\$100,000 per bank account and US\$ 250,000 per retirement account, the Countrywide Financial bank run demonstrates that bank runs can occur in systems with deposit insurance. The British government on the other hand only fully guaranteed deposits up to US\$4,000 and 90% of deposits up to US\$ 70,000 but nothing beyond that limit. Additionally one can expect even US accounts over such limits to be protected as the FDIC has enough measures in place to keep larger banks solvent. Additionally, Ben Bernanke, the chairman of the Federal Reserve stated his willingness to rescue the banking system, whereas Mervyn King, the governor of the Bank of England had, originally, been less supportive in the case of Northern Rock.

Despite FDIC protection, Countrywide Financial Corporation, the largest home loan company in the United States, suffered an old fashioned bank run on August 17th of 2007. The run was triggered by fears that Countrywide Financial Corporation might file for bankruptcy protection due to a worsening credit crunch resulting from the sub-prime mortgage crisis. The firm had borrowed US\$11.5 billion, using up its credit line to help meet funding needs and to encourage growth. The announcement resulted in the stocks of Countrywide Financial taking a hit (11%) and sent depositors running to withdraw their funds. The situation was compounded by a breakdown of the bank's website and toll free service number which fueled fears about the bank.¹²⁰

Some depositors admitted to being “spooked”, and were motivated by the desire to “be on the safe side.” Others argued that it could take time until the FDIC would cover the deposits and were worried about short term liquidity. Many customers withdrew their deposits to re-deposit

¹¹⁹ (Shin, 2008) p.1

¹²⁰ (Reckard & Haddad, 2007)

them with rival banks such as Bank of America, showing that the run was isolated to a single institution and was triggered by bad fundamentals of the target bank.

The run on Countrywide Financial ultimately resulted in its sale to Bank of America for US\$ 4 billion and one of the first bank runs in the U.S. since the Great Depression. The run showed some of the psychology behind bank runs and the different factors that arose that were not taken into account when planning for possible bank runs, such as the depositor's need for short term liquidity and the effects prior incidents may have on depositor psychology, such as the mistrust caused by the S&L crisis in the U.S.

IndyMac Bank (2008)

The Indy Mortgage Company (IndyMac) was a combined savings and loans association and mortgage bank in the U.S. It provided lending for the development, purchase and improvements of single-family housing, as well as secondary mortgages.

Prior to its collapse on July 11th 2008, “the bank relied heavily on higher cost, less stable, brokered deposits, as well as secured borrowings, to fund its operations and focused on stated income and other aggressively underwritten loans in areas with rapidly escalating home prices”.¹²¹ The failure was widely expected and in the last quarterly report before its collapse, made on May 12th 2008, IndyMac reported its third consecutive quarterly loss with massive increases in nonperforming loans. Additionally IndyMac was close to falling from the capital position of “well capitalized”, to “adequately capitalized”. For IndyMac such a classification would have meant that it would have to reduce its assets and curtail its lending activity.¹²²

IndyMac was a victim of the economic crisis and its risky business strategy. Most of all however, it fell victim to a bank run. The impetus of the bank run was a member of the Senate Banking Committee, the chairman of Congress' Joint Economic Committee and the third-ranking Democrat in Senate, Charles Schumer. On the 26th of June, 2008, Charles Schumer released a number of letters warning of “The possible collapse of big mortgage lender IndyMac Bancorp

¹²¹ (FDIC, FDIC Board Approves Letter of Intent to Sell IndyMac Federa, 2009)

¹²² (SEC, 2008)

Inc.”¹²³ and that it “poses significant financial risks to its borrowers and depositors and regulators may not be ready to intervene to protect them”.¹²⁴

These comments should be seen in the context of growing unease about sub-prime mortgage lender, which caused politicians to seek public attention in an election year.

These statements triggered a bank run with depositors, fearing for their money, scrambling to withdraw their capital from IndyMac. The open letters were quickly publicly criticized for destabilizing the bank. During the eleven days following the open letters, depositors of IndyMac withdrew close to \$1.4 billion (7.4%) of the reported \$18.9 billion in deposits. Due to the massive run on deposits, the main branch was shut three hours early on the 11th of July by regulators only to be reopened again the following Monday.

On July 8th, the impact of the loss of trust in IndyMac let the bank’s shares close at \$0.44 on the New York Stock Exchange, equating to a loss of over 99% from its 2006 high of \$50.¹²⁵ Only three days later, on July 11th, the IndyMac Bank was placed into conservatorship by the FDIC. To administer the deposits and liabilities of IndyMac, IndyMac Federal Bank was established. The bank was then to be reopened the following Monday.

Even though the FDIC guaranteed the funds of all insured accounts up to \$100,000, an estimated 10,000 uninsured depositors lost over \$270 million.¹²⁶ With over \$32 billion in assets, IndyMac Bank was the third largest bank failure in American history. On August 1st, 2008 IndyMac Bancorp filed for Chapter 7 bankruptcy.¹²⁷

The failure of IndyMac taxed the FDIC. The cost to the FDIC has not yet been fully determined, with primary estimates stating between \$4 billion and \$8 billion.¹²⁸ More recent estimates placed

¹²³ (Press, 2008)

¹²⁴ (Press, 2008)

¹²⁵ (Dash, 2008)

¹²⁶ (FDIC, Information for IndyMac Bank, F.S.B., Pasadena, CA, 2009)

¹²⁷ (Kristof & Chang, 2008)

¹²⁸ (Kristof & Chang, 2008)

the cost closer to \$8.9 billion.¹²⁹ The run on IndyMac was another prime example of how an uncertain environment can turn any negative statement into a reason to distrust a bank and initiate a run. Even deposit insurance was insufficient to stave off the run on IndyMac.

Washington Mutual (2008)

Washington Mutual, the largest savings and loans bank in the United States was one of the strongest performers of Wall Street, earning large profits as it took over banks on the east- as well as the west-coast, while at the same time increasing mortgage lending. Washington Mutual's success built on the strategy of focusing on lower- to middle-class consumers deemed too risky by competitors. Offering complex mortgages and credit cards with terms allowing even the least creditworthy customers to get financing, Washington Mutual expanded into large cities such as Los Angeles, New York and Chicago.¹³⁰

The success achieved by Washington Mutual came to a grinding halt with the bursting of the housing bubble. Losses began to increase due to the mortgage loans and the interest-only and pay-option amortization products that had attracted the low-grade borrowers. These losses were compounded by the credit card loan portfolio as larger mortgage payments and higher food and gas bills caused losses to increase. All of this did not go unnoticed on Wall Street, which led to a steadily declining share price. To stave off the impending collapse, Washington Mutual turned to banks and private equity firms such as Carlyle Group and the Blackstone Group in search of aid.¹³¹

In March of 2008, JPMorgan Chase replied, offering Washington Mutual \$8 per share, primarily in stock. However the offer was rejected by Washington Mutual. A month later, Texas Pacific Group, a private equity firm in cooperation with institutional investors gave Washington Mutual

¹²⁹ (Wutkowski, 2008)

¹³⁰ (Dash & Sorkin, Government Seizes WaMu and Sells Some Assets, 2008) A1

¹³¹ (Dash & Sorkin, Government Seizes WaMu and Sells Some Assets, 2008) A1

an infusion of capital amounting to seven billion U.S. dollars which helped keep the company going for a few more months.¹³²

The collapse of Lehman Brothers on the 16th of September led to a panic in the financial markets and led to a surge in withdrawals by Washington Mutual customers. To prevent an all out run and the burden such a run would have on the FDIC the government “stepped up its efforts, at points going behind [Washington Mutual’s] back to work privately with four potential bidders on a deal.”¹³³

Analysts predicted a cost of up to \$30 billion to the FDIC should Washington Mutual fail, which would have been a huge burden to the already cash strapped FDIC which had been severely burdened by the collapse of the IndyMac bank. At the same time potential buyers were worried those same losses could make it hard to absorb Washington Mutual. Additionally, the fact that a \$700 billion emergency bailout package for the financial sector was being discussed by congress, led many potential buyers to wait with their decisions pending the results of the congressional debate.¹³⁴

On September 25th, 2008 Washington Mutual, the “giant lender that came to symbolize the excesses of the mortgage boom, was seized by federal regulators [...], in what is by far the largest bank failure in American history.”¹³⁵ Washington Mutual agreed to sell branches and assets to JPMorgan Chase for \$1.9 billion, as part of a government-brokered rescue deal, ending Washington Mutual’s 119-year life as an independent company and averting a huge burden for the U.S. taxpayers.¹³⁶ JPMorgan Chase took on at least \$31 billion in losses that could have fallen to the FDIC had the takeover not taken place.

“Washington Mutual, with \$307 billion in assets, is by far the biggest bank failure in history, eclipsing the 1984 failure of Continental Illinois National Bank and Trust in Chicago, an event

¹³² (Dash & Sorkin, Government Seizes WaMu and Sells Some Assets, 2008) A1

¹³³ (Dash & Sorkin, Government Seizes WaMu and Sells Some Assets, 2008) A1

¹³⁴ (Dash & Sorkin, Regulators broker deal on Washington Mutual, 2008)

¹³⁵ (Dash & Sorkin, Government Seizes WaMu and Sells Some Assets, 2008) A1

¹³⁶ (Dash & Sorkin, Regulators broker deal on Washington Mutual, 2008)

that presaged the savings and loan crisis. IndyMac, which was seized by regulators in July, was one-tenth the size of [Washington Mutual].”¹³⁷

The failure of Washington Mutual left customers largely unaffected. Shareholders and some bondholders however were wiped out. To prevent a further threat of a bank run, Washington Mutual account holders’ deposits were guaranteed by the FDIC up to \$100,000 and were additionally backed by JPMorgan Chase.

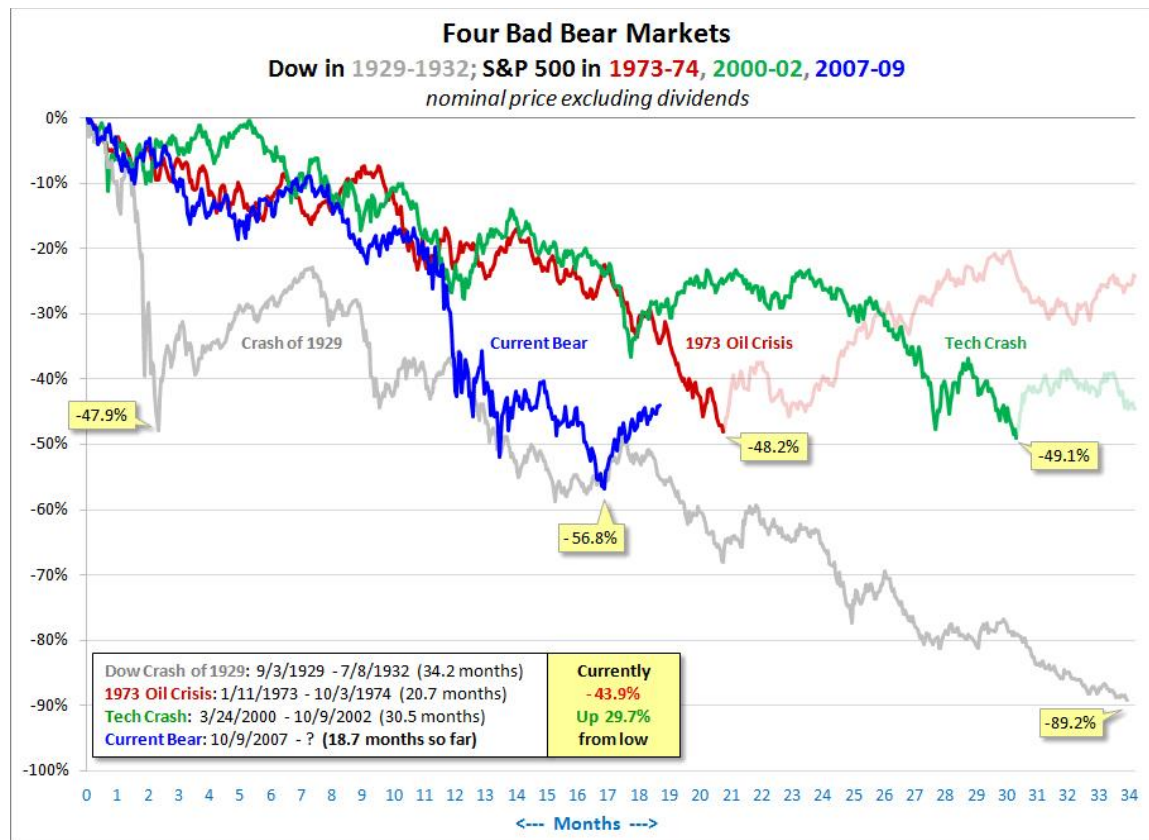
Washington Mutual fell victim to a general panic caused by the collapse of another bank (Lehman Brothers) and showed that bad fundamentals don’t always result in bank runs, but rather can act as a signal in the case of broader panic as to what bank might be unstable, which in turn may trigger bank runs, showing how panic can spread throughout the industry.

Crisis of 2007-2009

The collapse of the U.S. real estate market in 2006 and the bursting of the housing bubble in 2007 were the initiators of the great financial crisis that was to follow in the years 2008-2009. The crash of summer 2008 has been one of the most important events of our lifetimes, being the largest crash since the Great Depression, with the market recently having fallen farther and more rapidly than it did at the time of the Great Crash of 1929-1932, as can be seen in Figure 8. The crash of 2008 is also of particular significance as it is during times of economic uncertainty that most bank runs take place.

¹³⁷ (Dash & Sorkin, Government Seizes WaMu and Sells Some Assets, 2008) A1

Figure 8 Four Bad Bear Markets¹³⁸



The year 2008 was a year of extreme uncertainty as it began with the scandal of Société Générale, a French financial services company, in which a junior trader engaged in unauthorized trading in sums (49.9 billion Euros) in excess of the bank's total market capitalization that resulted in spectacular losses, totaling approximately 4.9 billion Euros. The losses caused by unauthorized trading sowed doubt about the safety measures in place to prevent such actions and showed a weakness in the modern financial system that was a beneficiary of the most sophisticated technological advances, with Société Générale having been the recipient of an award for best system of risk management.

The bursting of the sub-prime mortgage bubble and the resulting losses accrued by banks and companies heavily involved in sub-prime mortgages further increased uncertainty as shareholders waited for resulting markdowns. It was the impact of the elimination of the Glass-

¹³⁸ (Short, 2009)

Steagall act, which allowed brokerages to become banks, as was the case with J.P. Morgan and Merrill Lynch. With the result, that anxiety about bank holdings of subprime mortgages, and fears of declining profitability in stock market created mutually negative reinforcing effects in the financial sector.

2008 was also an election year in the world's largest economy, the U.S., which increased general uncertainty. The resulting democratic campaigns painted a dire picture of the U.S. economy with the goal of discrediting the republican president, leading to further anxiety over the economy.

This uncertainty and the economic crisis reintroduced bank runs to the nations of the OECD with a number of high profile victims. While there has been much debate on the origins of the crisis, there has been little consensus on the matter. One argument was that the extremely low Federal funds rate of only 1% may have accounted for the financial crash, as it helped create an unsustainable economic boom.¹³⁹ The low Federal Funds Rate may have been implemented due to the dot-com crisis, as a means to prevent a large economic crisis. If that were the case however, the current crisis would be a direct result of the dot-com crisis, implying that the crisis was not averted, but rather postponed and amplified.

The crisis of 2007-2009 is also of note, due to the fact that the stock market crash was reminiscent of the traditional bank runs, in the sense that mass psychology, triggered by an uncertain economic environment, led to a run on the stock markets with investors attempting to move their funds from the stock markets to other, 'safer', investment opportunities, creating something akin to a "stock run". The similarities open up the possibility of looking at bank runs to help policy makers decide when to step in and to what extent when trying to prevent stock market crashes.

While the 2007-2009 financial crisis has shown shortcomings of the modern financial regulatory system, as with theory on preventing bank runs, the new financial system that could be put in place in 2010 might fix the problems of 2008, but will not rule out the inevitable disruptions to the system in the future.

¹³⁹ (Polleit, 2007)

Conclusion

Back in the bad old days, negative expectations on the future of a bank led to what economists term: “bank runs”, that would see a large number of depositors run to the bank, demanding to withdraw their money, resulting in huge losses, and often times the bankruptcy of the affected bank.

Due to the introduction of the FDIC, such events should be a thing of the past, as the depositors are no longer in any risk of losing their deposits. Depositors can, however, still incur losses due to later payments by the FDIC. Recent events have however shown that bank runs are still possible and the consumer confidence can still be shaken. This is due to the banking industry being an industry that is built on credibility, trust and confidence. With a crisis large enough to dispute credibility, end trust and erode confidence the possibility of bank runs again becomes a real and possible danger to modern banks.

Early examples of bank runs suggest that bank runs start due to panics, incomplete or incorrect information. Modern communication media both help combat the problem by being able to spread information quickly to the masses, and compound the problem by allowing for more incomplete and incorrect information to be spread and thus the modern financial systems must still grapple with the roots of panic based bank runs, which can still cause ripples in other industries by the nature of the role banks possess in modern economies.

Modern forms of banking, such as online banking have opened up banks to a new form of bank run, that takes place silently via the web pages of a bank and can lead to new forms of panic due to bandwidth problems when too many customers log on to the web site simultaneously causing the site to become inaccessible. While many banks are aware of the danger, Northern Rock experienced such a “silent run” on its bank shortly before it failed.

As the bank runs on Washington Mutual and Countrywide Financial showed even deposit insurers as large as the FDIC are not always capable of preventing bank runs if the depositors feel they have sufficient reason to fear the failure of a bank and thus other methods of preventing bank runs need to be devised.

This begs the question, are banking failures a byproduct of a sophisticated financial system? This does not necessarily need to be the case. Lax financial regulation and oversight however have let confidence in the industry slide and a number of large scandals have shown that the current system does have serious weaknesses. To overcome the problems the current financial system faces it would be prudent to analyze the similarities between the current crisis and the underlying mass psychology and compare it to the mass psychology involved in bank runs of old. The example of Northern Rock has shown that depositors and investors see a degree of safety in state takeovers of troubled institutions. Tougher regulation would most certainly be a step in the direction of restoring confidence in the financial system, but at what cost?

Bank runs are a recurring problem for banks due to fractional reserve banking and the flexibility involved in demand deposits. The current crisis came about due to the ever increasing competition of banks, leading to more and more complex derivatives and more risky loans and investments to increase returns. Tougher regulation would not only boost confidence, but also lessen the growth of the banking industry and as a result general growth.

How policy takes the current crisis and the reemergence of bank runs into account has yet to be seen and one can only hope that the lessons of past crisis, their roots and the solutions will be taken into consideration when making future decisions.

Bibliography

- Bruner, R. F., & Carr, S. D. (2007). *The Panic of 1907: Lessons Learned from the Market's Perfect Storm*. Hoboken, New Jersey: John Wiley & Sons.
- Bryant, J. (1980). A Model of Reserves, Bank Runs and Deposit Insurance. *Journal of Banking and Finance*, 4 , 335-344.
- Calomiris, C. E. (2000). *U.S. Bank Deregulation in Historical Perspective*. Cambridge: Cambridge University Press.
- Cooper, R., & Ross, T. W. (2002). Bank Runs: Deposit Insurance and Capital Requirements. *International Economic Review* 43 , 55-72.
- Dash, E. (2008, July 9). Mortgage Lender Faces Rush to Withdraw. *New York Times* . New York.
- Dash, E., & Sorkin, A. R. (2008, September 26th). Government Seizes WaMu and Sells Some Assets. *New York Times* . New York, New York, New York: New York Times.
- Dash, E., & Sorkin, A. R. (2008 , September 25th). Regulators broker deal on Washington Mutual. *International Herald Tribune* . International Herald Tribune.
- Davies, G. (1994). *A History of Money from Ancient Times to the Present Day*. Cardiff: University of Wales Press.
- Department of Banking, S. o. (2009, January 12th). ABC's of Banking. Connecticut, USA.
- Diamond, D. W. (2007). Banks and liquidity creation: a simple exposition of the Diamond-Dybvig model. *Federal Reserve Bank Richmond Econ Q* 93 2 , (pp. 189-200).
- Diamond, D. W., & Dybvig, P. H. (2000, Volume 24 No. 1). Bank Runs, Deposit Insurance, and Liquidity. *Federal Reserve Bank of Minneapolis Quarterly Review* , pp. 14-23.
- Diamond, D. W., & Rajan, R. G. (2000). A Theory of Bank Capital. *The Journal of Finance Vol. 55 No. 6* , 2431-2465.
- Diamond, D., & Dybvig, P. (1983). Bank Runs, Deposit Insurance, and Liquidity. *Journal of Political Economy*, 91 , 401-419.

Economist, L. (1886, February 20). Supplement. *London Economist* , p. 51.

Ehrmann, M., Gambacorta, L., Martinez-Pages, J., Sevestre, P., & Worms, A. (2001). *Financial Systems and the Role of Banks in Monetary Policy Transmission in the Euro Area*. European Central Bank.

Evans, E. (2002, May 21st). *A British Revolution in the 19th Century?* Retrieved August 12th, 2008, from BBC History:
http://www.bbc.co.uk/history/british/empire_seapower/revolution_01.shtml

FDIC. (2009, January 2nd). FDIC Board Approves Letter of Intent to Sell IndyMac Federa. *FDIC Press Releases* . FDIC.

FDIC. (2008, October 27th). *FDIC: Who is the FDIC*. Retrieved November 8th, 2008, from FDIC: <http://www.fdic.gov/about/learn/symbol/index.html>

FDIC. (2009, January 12th). *Information for IndyMac Bank, F.S.B., Pasadena, CA*. Retrieved January 12th, 2009, from Failed Bank Information:
<http://www.fdic.gov/bank/individual/failed/IndyMac.html>

Federal Deposit Insurance Corporation. (2009, 05 04). *Federal Deposit Insurance Corporation Failures and Assistance Transactions*. Retrieved 05 04, 2009, from Federal Deposit Insurance Corporation:
<http://www2.fdic.gov/hsob/HSOBSummaryRpt.asp?BegYear=2009&EndYear=1934&State=1>

Federal Reserve Board. (2008, March 13th). *Reserve Requirements of Depository Institutions in February 2008 Statistical Supplement to the Federal Reserve Bulletin, Table 1.15*. Retrieved December 19, 2008, from Federal Reserve Board:
http://www.federalreserve.gov/pubs/supplement/2008/02/table1_15.htm

Fels, R. (1952). The American Business Cycle of 1879-85. *The Journal of Political Economy* Vol. 60 No. 1 , 60-75.

Ferguson, N. (2008). *The Ascent of Money: A Financial History of the World*. The Penguin Press HC.

Friedman, M. a. (1963). *A Monetary History of the United States, 1867–1960*. Princeton: Princeton University Press.

Goldstein, I., & Pauzner, A. (2005). Demand-Deposit Contracts and the probability of Bank Runs. *The Journal of Finance* Vol 60 No 3 , 1293-1327.

Goldthwaite, R. A. (1995). *Banks, Places and Entrepreneurs in Renaissance Florence*. Aldershot: Variorum.

Green, E. J., & Lin, P. (2003). Implementing efficient allocations in a model of financial intermediation. *Journal of Economic Theory* 109 , 1-23.

Hasan, I., & Dwyer, G. P. (1994). Bank Runs in the Free Banking Period. *Journal of Money, Credit and Banking* Vol. 26 No. 2 , 271-288.

Inc., S. C. (1999). *Dow Jones History*. Retrieved 02 07, 2009, from Analyze Indices: <http://www.analyzeindices.com/dowhistory/djia-100.txt>

Jacklin, C. J., & Bhattacharya, S. (1988). Distinguishing Panics and Information-based Bank Runs: Welfare and Policy Implications. *The Journal of Political Economy* Vol. 96 No. 3 , 568-592.

Kristof, K. M., & Chang, A. (2008, July 12th). IndyMac Bank seized by federal regulators. *Los Angeles Times* . Los Angeles: Los Angeles Times.

London, F. T. (1999, September). Depositors flee Malaysian finance group. *Financial Times: London* . Financial Times: London.

Markham, J. W. (2002). *A Financial History of the United States*. M.E. Sharpe.

Mengle, D. L. (1990). The Case for Interstate Branch Banking. *Federal Reserve Bank of Richmond Economic Review* 76 (November/December) , 3-17.

Mishkin, F. S. (2007). *The Economics of Money, Banking and Financial Markets, Eighth Edition*.

Peck, J., & Shell, K. (2003). Equilibrium bank runs. *Journal of Political Economy* 111 , 103-123.

Polleit, T. (2007, 12 13). Manipulating the Interest Rate: a Recipe for Disaster. Mises Institute.

Postelwaite, A., & Vives, X. (1987). Bank Runs as an Equilibrium Phenomenon. *The Journal of Political Economy* Vol. 95 No 3 , 485-491.

Press, A. (2008, 07 11). Schumer: concern over IndyMac stability.

Reckard, E. S., & Haddad, A. (2007, August 17). *The Mortgage Meltdown*. Retrieved November 8th, 2008, from Los Angeles Times: <http://www.latimes.com/business/printedition/la-fi-countrywide17aug17,0,5944637.story?coll=la-headlines-pe-business>

Rock, N. (2008, 10 02). *Commitment to Competitive Framework - Savings Product Changes*. Retrieved 10 10, 2008, from Northern Rock: <http://companyinfo.northernrock.co.uk/corporateRelations/news/article.asp?newsID=204>

Samartin, M., Cardone, C., & Bustamante, R. (2007). Was the Argentine corralito an efficient measure?: A note. *International Review of Economics and Finance* 16 , 444-453.

SEC. (2008). *Indymac Bancorp Inc · 10-Q · For 3/31/08*. SEC.

Shin, H. S. (2008, August). Reflections on Modern Bank Runs: A Case Study of Northern Rock. Princeton University.

Short, D. (2009, 05 01). *Bear turns to bull*. Retrieved 05 01, 2009, from dshort.com: <http://dshort.com/articles/2009/bear-turns-to-bull.html>

Tallman, E. W., & Moen, J. (1990). Lessons from the Panic of 1907. *Federal Reserve Bank of Atlanta Economic Review* 75 , 2-13.

Tribune, I. H. (1999, January 5). *Preemptive Action Puts Central Bank in Control : Malaysia Takes Over MBf Finance*. Retrieved January 5th, 1999, from Herald Tribune International: <http://www.iht.com/articles/1999/01/05/klbank.t.php> (unavailable)

Walter, J. R. (2005). Depression-era bank failures: the great contagion or the great shakeout? *Economic Quarterly* , 1-16.

Washington Post. (2008, 10 15). *"What Went Wrong"*. Retrieved 03 10, 2009, from Washington Post: http://www.washingtonpost.com/wp-dyn/content/article/2008/10/14/AR2008101403343_5.html?hpid=topnews&sid=ST2008101403344&s_pos=

White, E. N. (1984). A Reinterpretation of the Banking Crisis of 1930. *Journal of Economic History* 44 (March) , 119-138.

Wicker, E. (1996). *The Banking Panics of the Great Depression*. New York: Cambridge University Press.

Wien, K. (2006, August). *Chronologie der BAWAG PSK Krise*. Retrieved December 13th, 2008, from Wien Konkret: <http://www.wien-konkret.at/wirtschaft/banken-sparkassen/chronologie-der-bawag-psk-krise/>

Wutkowski, K. (2008). *FDIC says IndyMac failure costlier than expected*. Retrieved December 12th, 2008, from Reuters: <http://www.reuters.com/article/americasMergersNews/idUSN2637860820080826?sp=true>

Yeyati, E. L., Schmukler, S. L., & Van Horen, N. (2004). The price of inconvertible deposits: the stock market boom during the Argentine crisis. *Economics Letters* 83 , 7–13.

Appendix

Abstrakt

Das beispiellos turbulente Jahr 2008 hat die Effizienz der Bankenaufsicht und die Aufsicht über andere Finanzinstitute in Frage gestellt. Obwohl die Krise neue Probleme mit sich brachte, sind die Interdependenzen zwischen Psychologie und Veränderungen von Finanzbestimmungen bei „bank runs“ ähnlich der momentanen wirtschaftlichen Krise. Diese Arbeit untersucht historische Beispiele von „bank runs“ sowie einige historische Beispiele, die die Diskrepanz zwischen der Theorie und den praktischen Erfahrungen darstellen. „Bank runs“ können gelegentlich isolierte Ereignisse sein, sind jedoch oft die Vorboten grösserer internationaler Probleme, wie in 1873 oder in den frühen 1930ern. Historische Beispiele haben gezeigt, dass Regierungen und Aufsichtsbehörden in der Lage sind, Probleme zu lösen, die schon mal vorgekommen sind, wie z.B. die „Savings and Loan Crisis“ in den späten 80ern, sie jedoch weniger erfolgreich waren bei der Antizipation der Resultate der Veränderung von Bestimmungen und technologischer Veränderung, wie z.B. das Zunehmen der Kreditderivate und der hypothekarisch gesicherten Wertpapiere. Folglich wäre es sicher sinnvoll, sich genauer mit modernen Bankpaniken auseinander zu setzen, um ein besseres Verständnis über das Zusammenwirken von Finanzmärkten und Finanzintermediären zu erlangen.

Lebenslauf

Adrian Weygandt

Neulerchenfelderstr. 65/10, 1160 Wien

Tel: +43 (0) 664 -132 15 26

E-Mail: awaygandt@hotmail.com

Geburtstag: 05.11.1981

Staatsbürgerschaft: USA, Deutschland

Ausbildung

2005 – 2009

Universität Wien

Internationale Betriebswirtschaftslehre

Schwerpunkt: Internationale Unternehmensführung (IM)
und Innovations- und Technologiemanagement (ITM)

2001 – 2004

Technische Universität Wien

Architektur, 6 Semester

2000 – 2001

Moscow State Linguistic University (MGLU)

Dolmetscher Studium

Russisch – Englisch – Deutsch

1998 – 2000

Deutsche Schule Moskau (Gymnasium)

Abitur: Notendurchschnitt: 2.1

Besondere Auszeichnungen

09.2009

Universität Wien “Special Distinction”

für die Diplomarbeit “Bank Runs and the Crisis of 2008”

02.2008

Universität Wien “Special Distinction”

in International Economics – Dr. Prof. Streissler

07.2001

Moscow State Linguistic University

Zertifikat der russischen Sprache

Arbeitserfahrung

02.2006 – 02.2007

Berlitz International

Sprachlehrer Business English

Schwerpunkt auf Wirtschaftsendglish mit Übersetzungen
von Vorträgen (Kunde: Ernst & Young Wien)

05.2005 – 08.2005

“Vienna Initiative for Central Asia”

04.2004 – 08.2004

Projekt der Diplomatische Akademie Wien und der U.S.

04.2003 – 08.2003

Botschaft Wien; Position: Programmkoordinator für zentralasiatische Angelegenheiten. Tätigkeit: Das koordinieren (Sprachliche Betreuung, „Problemsolving“, Beaufsichtigung und „Quality Assessment“) und planen (Tagesablauf, Finanzierung, und An- und Abreise) der Besuche hochrangiger zentralasiatischer Delegierten.

08.2003 – 09.2003

06.2002 – 09.2002

U.S. Botschaft Wien – IPC

IT Spezialist für IT Hardware und Software für drei Botschaftsstellen. Tätigkeit: Technischer „Support“ Dienst für Botschaftsangestellte, Softwareinstallation, Netzwerküberwachung, Netzwerksicherheit, Computerzusammenbau, Hardwareentsorgung.

06.2001 – 09.2001

U.S. Botschaft Wien - Community Liaison

Programmassistenz. Tätigkeit: Kontaktaufnahme mit neuen Botschaftsmitarbeitern und externen Stellen. Und Berichterstattung für die Botschaftszeitung.

Sprachen

Englisch, Deutsch – Muttersprachen

Russisch – sehr gute Kenntnisse in Wort und Schrift

Französisch – Grundkenntnisse

Software Erfahrungen

Microsoft Office (XP, 2003, 2007) - Anwenderkenntnisse

Open Office - Anwenderkenntnisse

Adobe Dreamweaver CS4 - Kenntnisse in Design und Programmierung

Adobe Photoshop CS4 – Anwenderkenntnisse

Microsoft Windows (2000, XP, Vista) -

Anwenderkenntnisse