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### Internet Banking and the question of Bank Run: lesson from the Northern Rock Bank case

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#### **Abstract**

The subprime crisis triggered a series of bankruptcies and bank runs at a level never experienced since the Great Depression. The banking environment radically changed since the 1930's, in particular the development of information technology decreases considerably the cost of information. Furthermore internet banking increases severely the speed at which the demand for withdrawals are addressed to troubled banks. In the past demand for withdrawals could be slow down by fact that depositors had to physically « queue » and by the existence of opening hours of banks branches. Given these new circumstances a liquidity shortage may have an even more severe consequence on a bank since the delay between the « bad news » and the bank run can shorten dramatically. Indeed the Northern Rock Bank case in Great Britain illustrates that situation where a bank unable to borrow from its peers in the interbank market is within few hours ran by its depositors. The aim of the paper is to analyze the consequences of the major instability introduced by internet banking on the bank's ability to manage a liquidity crisis and an opportunity to discuss further the so-called "endemic instability" of the fractional reserve banking system.

**Keywords: bank run – bank stability – government-sponsored insurance scheme – internet banking**

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## INTRODUCTION

The subprimes crisis triggered a series of bankruptcies and bank runs at a level never experienced since the Great Depression. The banking environment radically changed since the 1930's, in particular the development of information technology decreases considerably the cost of information. As a result, not only information spreads must faster but information that were previously almost reserved to « informed » investors is now quickly made available to the public. This is not neutral on the probability of occurrence of a bank run despite the existence of government-sponsored insurance scheme and the implicit safety net existing for commercial banks in almost every developed country. As a matter of fact as soon as depositors find out about the fragile state of their bank, they can be tempted to transfer electronically their accounts to sound banks rather than queuing. Therefore the development of internet banking increases severely the speed at which the demand for withdrawals are addressed to troubled banks. In the past demand for withdrawals could be slow down by fact that depositors had to physically « queue » and by the existence of opening hours of banks' branches. Given these new circumstances a liquidity shortage may have an even more severe consequence on a bank since the delay between the « bad news » and the bank run can shorten dramatically. Indeed the Northern Rock Bank case in Great Britain illustrates that situation where a bank unable to borrow from its peers in the interbank market is within few hours ran by its depositors. Depositors learned about the extent of the Northern Rock bank troubles thanks to a leak by the BBC. They decided to run their bank despite the government-sponsored insurance scheme. This shows that the sequential constraint "first come – first served" is increasingly binding with the use of internet banking. It means that a "temporary" liquidity shortage can become "permanent" as the "worst case scenario" is more likely to occur. These changes call for greater prudence in managing reserves since the very existence of government-sponsored insurance scheme does not seem to prevent depositors from transferring their accounts to more stable banks.

The aim of the paper is to analyze the consequences of the major instability introduced by internet banking on the bank's liquidity management and on the so-called "endemic instability" of the fractional reserve banking system. The Northern Rock Bank case illustrates the concept of electronic bank run and this represents an opportunity to understand the issues at stake in terms of liquidity management and of behavior of the central bank as a lender of last resort. The first section will relate the story of the Northern Rock bank. In light of those facts, the second section will discuss the impact of the changes introduced by internet banking in managing a liquidity crisis.

## THE NORTHERN ROCK BANK CASE<sup>1</sup>

Northern Rock bank run came as a surprise since there had not been any run on a retail bank in England since 1878. Northern Rock bank was the fifth largest mortgage lender in the UK in 2006. Compare to its competitors NRB opted for a very aggressive lending strategy. In 2006 there was an increase of 33% in gross lending, mainly residential mortgages accounting of which 40% represented remortgaging. In 2007 NRB also

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<sup>1</sup> Information on the account of the NRB fall comes mainly from O'Connor and Santos-Arteaga (2008) and Congdon (2009).

intended to originate mortgages for the near prime and subprime markets for Lehman Brothers. It needs to be said that Northern Rock bank like its competitors as mortgage banks and ex-building societies were heavy issuers of assets back securities and certificate of deposits in 2005 and 2006. It is worth underlining that the bank had a distinctive strategy: it founded its assets' growth mainly on short-term wholesale markets (lines of credit in the interbank market), its retail deposits base representing only 20% of its capital and liabilities. This proportion was much lower than its peers in the sector like Alliance and Leicester and Bradford and Bingley where retail deposits still represented more than 40% of their funding in 2006. It is important to remind that building societies like Northern Rock Bank have been able to demutualize in 1987 under the Building Societies Act. That demutualization process changed their business model at least for NRB it seems that the management endorsed a more risky strategy relying more on short-term markets for funding an aggressive lending policy maximizing that way the leverage effect. Unfortunately when the interbank markets dislocated in September 2007 once the first signs of crisis were confirmed in the US, Northern Rock bank had no longer access to the line of credit previously available in the interbank market for funding its activity. Moreover its mortgages portfolio saw its quality decreasing. Even before the situation dramatically precipitated in September 2007 the market was aware of the risk involved in the business strategy embraced by Northern Rock bank. Indeed its share price declined 30% between January and mid-july 2007. The imbalances were further confirmed by a profit warning in June. The bank like the market was aware that the situation was no longer sustainable and that Northern Rock bank had to take some action. Despite the decline of the shares' price during the first part of the year, there had not been any sign of depositors' massive withdrawals before September. This is a further proof that despite the existence of public information available in the stock market, uninformed depositors are not interested in exploiting it.

The market's decline further accelerated during summer 2007 as problems in valuing securitized products in particular those related to subprimes led several funds to suspend their quotes. This meant for banks like Northern Rock the incapacity to issue new assets back securities and certificates of deposits. As a consequence Northern Rock Bank like its competitors involved in mortgages approached the Bank of England to get its support, in other words to get financing. It is worth noting that commercial banks in England like in many other countries where money markets are largely developed relied heavily on secondary reserves to manage their liquidity position. It means that instead of holding reserves in central bank money they rather hold short-term securities instead, their return being higher. As money markets developed, money markets instruments like treasury bills or gilts in UK became as good as cash as commercial paper or certificate of deposits to some extent. But as liquidity in the money markets froze with the first signs of the crisis, the only alternative left to those banks was to borrow from the Bank of England. Surprisingly the first reaction of the Bank of England has been from being prompt. On the contrary it let know that the requests were to be studied before approval and that the loans were subject to eligible collateral mainly gilts. It is important to remind that the collateral mainly accepted by the Bank of England for refinancing operations is the gilt like in the US the T-bill. Unfortunately short-term gilts have seen their volume of issue seriously reduced with the decrease of the budget deficit in the UK. This means that banks held a limited amount of eligible assets in their portfolio.

In any case the next securitization scheduled by Northern Rock Bank in September could no longer go ahead given the market conditions and since the Bank of England was not ready to extend its loans, its assets were left unfunded. The banking authorities<sup>2</sup> were aware of the fragile position of the bank and acknowledged at the time the suggestion made by Northern Rock board to mandate Merrill Lynch to find a potential buyer, potential buyer that it have been found in Lloyds TBS. The bank made an offer early September with a condition: to get from the Bank of England a back-up loan facility of an amount of £30 billion, Lloyds TSB being concerned by the financing on the 2009 assets' growth. Surprisingly the Bank of England decided on September, 11<sup>th</sup> 2007 to deny such back-up loan facility to Lloyds based on the ground that the deal would not get the approval of the European commission for fair competition sake. At that point, the ultimate resort for Northern Rock was to ask the Bank of England an emergency loan. At the same time, the bank's top management decided to make a public statement on September, 14<sup>th</sup> 2007. Unfortunately there has been a leak from the BBC informing the public on September 13<sup>th</sup> 2007 that NRB had requested an emergency loan to the Bank of England which terms would be revealed the day after. This ultimate information led to an instant run on the bank via the bank website, depositors trying as soon as possible to transfer their deposits to another bank. The following day, long queues at the different Northern Rock Bank branches formed, the length of the queue being aggravated by the break down of the bank website and its call center. The reason for the initial panic has to be found in the type of deposit insurance scheme existing in the UK. The scheme relies on an unfunded co-insurance system where retail individual depositors are insured up to £35,000, 100% for the first £2,000 and 90% of the remaining £33,000<sup>3</sup>. The severity of the run has been further aggravated by the radio announcement exaggerating the difficulties of the bank and by the uncoordinated actions of the tripartite banking authorities that delayed prompt action. The run stopped when the Chancellor of the Exchequer announced full coverage of the £35,000 deposits.

## **Does the Northern Rock bank electronic run challenge how to handle bank run?**

To begin with the Northern Rock bank run is clearly a case of an information-based run since individual depositors run their bank once they have been informed about its financial distress. Therefore the following discussion will focus essentially on information-based bank run and won't allow the possibility of having self-fulfilling panics<sup>4</sup>. The Northern Rock Bank run is just an emblematic illustration of how internet can accelerate the speed at which a bank run can occur since depositors in a uncoordinated manner can decide to transfer instantly their account to another bank<sup>5</sup>. This case raises questions regarding the impact of internet banking on the way banks and banking

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<sup>2</sup> The banking authorities in the UK are tripartite: the FSA, Bank of England and the Treasury.

<sup>3</sup> There is a co-insurance percentage of 10% for which depositors are responsible. This is the reason why they are entitled to receive only 90% of £33,000. The deposit insurance scheme excludes interbank deposits.

<sup>4</sup> In the bank run literature that started with the seminal work of Diamond and Dybvig (1983), there are two views that are not necessary mutually exclusive about the nature of bank run. Bank run can be information-based and related to fundamentals or self-fulfilling as the consequence of coordination failures between depositors.

<sup>5</sup> In the US where the use of internet banking is widely spread, the same kind of behavior has been observed but since the Fed takes prompt action, uncoordinated actions of depositors have been less visible.

authorities need to handle liquidity crisis:

- 1- The easy access to individual accounts created by internet banking makes depositors more tempted to test whether or not their bank is bank-run proof. These uncoordinated actions may ultimately lead to an illiquidity problem that a bank can hardly predict. This situation has greater chance to occur take place under “troubled” times since depositors can reasonably doubt about the “true” state of their bank.
- 2- As the information confirming the ailing state of the bank is released, the run takes place instantly. Network breaks down can still slow down the process as it has been the case for Northern Rock but it is reasonable to assume that this will improve in the near future.
- 3- The run has been limited to Northern Rock and started only when the leak from the BBC alarmed the public about the state of the bank. This shows despite the easiness of transferring accounts to another bank by internet banking depositors use that opportunity only when they have been directly informed about the fragile state of their bank. Moreover there has not been any contagion to other banks. This proves that internet banking does not aggravate spillover effect despite the unfavorable banking context<sup>6</sup>.

There are two related issues at stake here:

- 1- The uncoordinated “bank run” can jeopardize the state of a solvent bank. Indeed in order to meet the withdrawals the targeted bank need to borrow quickly. The problem is that under troubled times, the conditions in the interbank market get tougher and the bank can end up not being able to borrow despite its solvent state because the other market participants prefer hoarding liquidity as a buffer. At that point the only alternative for the bank is to turn to the central bank in order to get the liquidity unavailable in the market. In that context the action of the central bank has to be prompt in order to stop the run on the targeted bank and its potential extension to other banks because about a general suspicion about the state of banks<sup>7</sup>. The difficult part for the central bank is to make sure the bank is truly illiquid but still solvent.
- 2- When the bank run concerns an ailing bank that financial troubles have finally been confirmed to the public, the action taken by the central bank as the lender of last resort in agreement with the banking authorities must be prompt. In particular, this requires from the central bank to have a consistent view of its role as a lender of last resort. It needs to avoid the kind of confused behavior the Bank of England demonstrated with Northern Rock. To begin with, if the targeted bank is retained to be truly solvent but just illiquid, the central bank needs to give its unconditional support to the bank in order to stop the run. Unconditional support means that it should accept any good collateral in exchange of the emergency loan priced at a fair rate even if it includes a penalty. On that occasion the central bank can temporarily broaden the range of eligible assets.

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<sup>6</sup> Another explanation could be that contagion effect did not happen because after the run on Northern Rock, the Chancellor of the Exchequer announced full coverage of deposits (limited to £35,000 and later £50,000).

<sup>7</sup> This is what happened in the US in the midst of banking failures in 2008. The Fed intervened on different occasion to stop what could be seen as bank run.

This unconditional support sends a reassuring signal to the interbank market, allows the bank to face the massive withdrawals and maximizes its chance to go back to normal business. In this case the prompt intervention of the central bank just confirms that the bank's problem was just a liquidity problem. On the contrary, if the targeted bank is retained to face solvency issues like Northern Rock because of a deteriorated portfolio, the extent of the central bank action depends on whether or not it supports a policy of "too big too fail" and the risk of contagion that the bank represents. In any case if the central bank retains that the bank cannot fail, it needs to take prompt action as well in order to stop the bank run that would otherwise precipitate the bankruptcy of the targeted bank.

- 3- There is another alternative to prevent instant bank run because of internet banking: the banking authorities could decide to offer full coverage of all retail deposits without any limit. Indeed the case of Northern Rock shows that if retail individual depositors had been insured on a full coverage basis, they would not had ran the bank in the first place. The main drawback with full coverage is that it may undermine the incentive for "big" retail depositors to monitor their bank.

## CONCLUSION

The case of the Northern Rock Bank shows that the inconsistency of the Bank of England policy led to the initial bank run and that because it persisted in that direction it further led to the bank's bankruptcy. Internet banking did not cause the failure of the bank but it certainly accelerated the fall of the bank. This calls for a greater consistency of the central bank role as a lender of last resort since internet banking drastically reduces not only the lag between "the bad news" and the effective bank run but makes it easier for depositors to check if their bank is run proof during troubled times. There have been controversies recently about the need for a lender of last resort as underlined Rochet and Vives (2004). Indeed the creation of the lender of last resort facility and the deposit insurance in most of the countries since the last century eliminated traditional panics. To that respect the Northern Rock bank case has been a dramatic episode that reminded the old times with people queuing at the bank's branches even though the run started electronically. What the Northern Rock bank's failure taught us is that despite the existence of lender of last resort and deposit insurance scheme, markets participants and individual depositors in particular do not like confusing messages during uncertain times. With the access to internet banking services, confusion can have a devastating impact since the reaction of the public is instantaneous and leaves more room for uncoordinated action. Therefore initial temporary liquidity shortage may become quickly major and permanent liquidity shock since interbank markets participants may hoard liquidity for precautionary reason. At that point the prompt corrective action of the monetary authorities is crucial if their objective is to avoid major failures due to liquidity shortage. Under these circumstances the lender of last resort should lend unconditionally against good collateral to the banks facing liquidity shortage even at a penalty rate in order to stop short the bank run and avoid its extension to other banks. Then if it turns out that some illiquid banks happen to be insolvent as well and do not hold good collateral in their portfolio, the monetary authorities in agreement with the banking authorities need to decide whether or not they are ready to endorse the consequences of a "too big to fail" policy if they retain the banks "too big to fail". To that regard the Northern Rock bank case and generally speaking the crisis offers a unique

opportunity to the authorities to give a clear understanding of the role they intend to play in the future.

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