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The financial crisis in an operational risk management context—A review of causes and influencing factors

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ABSTRACT

Global macroeconomic imbalance combined with deregulation of US banks and increasing US real estate prices formed the basis for aggressive growth in worldwide trading of so called Collateralized Debt Obligations (CDO), i.e. similar loans pooled to create a financial derivative that can be bought or sold. The CDOs consisted mainly of prime and subprime housing loans, where the latter type is characterized by a high probability for default. Due to the growing market demand for this derivative and the subsequent shortage of prime loans, the subprime share in the CDOs increased from 43% to 71% from 2003 to 2007. Surprisingly the credit rating agencies did not change the top level (AAA) credit rating of the CDOs in the same period of time. How was this possible? And how could the tremendously resourceful firms that insured the derivatives by selling so called Credit Default Swaps to CDO owners avoid understanding the enormous risk they took on? What later was to be called the financial crisis emerges in the spring of 2008 in line with the fall in US real estate prices and subsequent evaporation of the CDO market. The chain of events that led to numerous bankruptcies and threw the world into a recession not seen since the early 1930s has been labeled a system crisis, liquidity crisis, and a crisis of confidence (in the financial markets) among others. In this paper we survey how, and to what extent, operational risk exposure in the organizations of mortgage brokers and banks, insurance companies, credit rating agencies, and investment banks contributed to the financial crisis. Bayesian Network analysis of causes and influencing factors in these four types of organizations indicates that operational risk exposure played a crucial role in triggering the financial crisis. Our findings suggest that the financial crisis for a large part was the result of an industry wide failure to manage risk in general, and operational risk in particular.

1. Introduction

The current financial crisis emerging in the spring of 2008 has been labeled a system crisis, liquidity crisis, crisis of confidence (in the financial markets) and "credit crunch". The variety of labels emerges from the different stages of development observed as financial unrest evolved into global recession. System crisis refers to the fact that the crisis manifested itself as a collapse of the global financial system, brought about by lack of confidence amongst financial institutions and investors concerning their financial stability. The crisis of confidence caused a credit crisis, colloquially known as the "credit crunch", as investors withdrew their funds from the markets, and credit institutions drastically decreased lending to limit losses, producing a shortage of capital and effectively halting economic growth. The event that prompted investors and banks to exercise caution was the losses inflicted on the entire financial industry as real estate values in the USA plummeted, causing a devaluation of mortgage backed securities such as Collateralized Debt Obligations (CDO).

A CDO is created by bundling a pool of similar loans, e.g. mortgages into a single investment (securitization) that can be bought or sold. The CDO owner is entitled to a part of the pool's interest income and principal. Securitization of mortgages provided means of distributing the credit risk of lending activities amongst actors within the financial system, supposedly to investors best equipped to bear it [1]. An idea that, in principle seemed sound, failed catastrophically. Since their inception in the 1970 s mortgage backed securities had been a product of prime credit engagements [2]. Hence it would not seem unreasonable that such securitized assets initially would receive a high credit rating. However, the increasing rate of securitization driven by a growing demand for mortgage backed securities such as CDOs experienced at the turn of the century resulted in reduced availability of prime loans. As a result the fraction of subprime loans (nonconforming

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mortgages loans) included in the CDOs increased. For reasons that will be discussed later in the paper the credit rating agencies, given the task of assessing the riskiness of the credit based securities, assigned the same rating to derivatives compiled partly of subprime loans as those containing mainly prime loans. The rating became even more of a conundrum as subprime loans usually were under-documented making it near impossible to make any informed assessment of future default rates, and hence the riskiness of the securitized products. This led to a misrepresentation of risk affecting the behavior and decisions of investment banks, banks and insurance companies. For instance, both insurance companies and banks issued credit default swaps, which meant that following a default on a loan the devaluated loan would be taken back into the balance sheet of the issuer of the swap at full value [1]. Still, there are circumstances that lead us to believe that placing sole blame with the credit rating agencies will not ensure avoidance of future crises. For instance, banks and mortgage brokers were all too eager to supply anyone with credit, which investment banks and other investors readily bought for the purpose of securitization. How could an entire industry with vast resources at its disposal fail to recognize the risk involved in their activities?

In this paper we provide some insight as to what brought about the financial crisis from an operational risk perspective, and discuss what role this risk category played in triggering the current crisis. Based on our findings one additional label of the financial crisis could be introduced: the risk management crisis.

We also discuss the avenue of mitigating actions, either implemented or suggested in the wake of the financial crisis, reviewing the background for implemented measures and whether chosen measures are likely to ensure the future stability of our financial system.

In Section 2 of the paper we provide a brief overview of the structure and key characteristics of the financial system as it stood at the emergence of the crisis. Section 3 contains a review of central market actors, such as credit rating agencies and investment banks, and the state of their operational risk exposure prior to the crisis. Identified causal factors are systemized using Bayesian network analysis, visualizing the operational risk related mechanisms that contributed to the crisis. In Section 4 we, based on the identified causes of the crisis, discuss to what extent the emerging risk mitigation strategies are likely to prevent similar crises from occurring in the future. In Section 5 we provide some conclusive remarks.

2. Pre-crisis financial system

Deregulation and financial innovation have over the past decades affected the structure and characteristics of our financial system [1,3,4]. As a result of these changes the financial system at the time of the crisis is not directly comparable to that of previous crises. The deregulation allowed investment banks to assume far greater risk than previously by expanding the limit of lending from 12 to 40 times the banks equity capital. Such a regulatory change meant that the leverage ratio was increased such that for each dollar of equity, the bank could hold $40 of assets. Exploiting this leeway left banks highly vulnerable to variations (drops in particular) in asset values [5]. However, it turned out that even more hazardous deregulation was introduced affecting the process by which the industry assessed credit risk. In traditional banking the institution that originates a loan intends to hold it to maturity (i.e. until the loan is repaid in full). Assessing the credit risk involved in each lending transaction has thus been an essential risk management activity in banking. Furthermore, the primary source of income under such a lending regime is interest payments on the loans held. A growing market for securitized debt products changed the practice of the lending organizations by allowing banks and mortgage brokers to move assets off their balance sheets by selling loans to other institutions for the purpose of securitization.

This gave rise to a system today known as "originate and distribute" (or "shadow banking system"), where credit is given for the purpose of distributing it rather than holding it until maturity. The modern "originate and distribute" structure had two main influences on how banks started doing business and generate revenues. First of all, incentives to complete thorough assessments of the borrower's credit worthiness quickly evaporated since the originator sold off the loan and was no longer exposed to the credit risk should the loan default. Second, a large part of banks income was now generated from fees related to processing loan inquiries and distributing (selling) the loan [4]. This resulted in creative attempts to increase the rate of loan inquiry processing (e.g. by use of various scoring models). Volume often substituted quality in these efficiency ventures to maximize shareholder value [6,7]. Moving assets off the bank's balance sheet also freed capital that could be used in various other ways to further increase profits.

Institutional investors such as insurers and pension funds are by law restricted only to hold investment grade papers, i.e. securities with a credit rating above a certain threshold. Thus, assessment of the risk involved in holding a security is required. The task of risk assessing, or rating, credit based financial products is within the financial industry bestowed upon credit rating agencies such as Standards and Poor and Moody's. To enable trading these firms are paid by the issuer of a security to provide a rating, i.e. a score reflecting the inherent risk of the developed product. Hence, under the "originate and distribute" system the credit rating process performed by rating agencies by far replaced the credit evaluation previously undertaken by bank loan officers and credit committees.

The changes to the US financial system following from the "originate and distribute" practice are key elements in the emergence of the financial crisis. However, these circumstances alone cannot be blamed for the financial unrest that followed in the wake of the collapse of the US housing market. To understand how and why we need to examine how the different actors conducted their business and approached the opportunities and risks inherent in the growing securitization market. Specifically we will examine whether central actors took proper action to ensure sound and sustainable operations when embarking on the quest to realize the full economic potential of the growing market for securitized credit products.

3. Financial crisis—overall causal mechanisms

A common understanding of the origin of the financial crisis is that volatility in the US mortgage market spilled over into stock, commodity, and derivatives markets worldwide (causing a crisis of systemic proportions) [8]. Thus, the collapse of the US housing market with subsequent devaluation of mortgage backed securities constitutes a reasonably well understood causal mechanism to the financial crisis. But why were loans granted to individuals with limited ability to service these loans without proper documentation of income, wealth or employment status? And how come investment banks readily bought such loans for securitization and further distribution? Why did the constructed securities receive investment grade ratings even when significant portions of (underdocumented) subprime loans were included in the underlying asset? How could insurance companies issue billions worth of credit default swaps without setting aside capital to cover potential claims?