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Risks in Financial Markets

Abstract

Risks in financial markets became one of the most debated topics worldwide especially after the US financial crisis in 2008. The first section of this paper will discuss these risks in detail and identify the different theories about the causes of these risks which arise from uncertainty and volatility in the market and how to identify these risks. Then, the paper will move to show how to measure this risk and what indicators are best used to quantify this risk. After that, it will show the major types of risk before discussing the effects these risks have on the monetary policy of the central banks and hence on the financial market. The second section of the paper will be a critique review of the paper “Systemic risk, financial markets, and performance of financial institution” that will discuss in detail every different assumption, model, or conclusion discussed by the author. The reason this was the paper chosen due to its importance to the topic that I would like to choose which is discussing the increase in systemic risk caused by the recent mergers and acquisitions of different financial institutions. There is a research gap there as this topic has not been discussed at all and has just recently started to appear with the number of financial institutions reduced by almost half over the past ten years.

Keywords: Risk, Financial Markets, Systemic risk, financial institutions

Introduction

Before the financial crisis of 2008, the rapid development of the financial market brought a lot of benefits to the community. However, these benefits also came with a lot of risks. This is called the risk return trade-off, which means the higher the risk the higher the returns. In 2008, the global financial crisis was a severe worldwide economic crisis considered to be the worst since The Great Depression in 1930. It started in 2007 with subprime mortgages before blowing off with the collapse of the investment bank of Lehman Brothers on September 15, 2008. This event created the domino effect that resulted in a partial collapse of the world financial system and almost pushed the world to another Great Recession if it weren't for the massive bailouts of financial institutions. Hence, risk in the financial markets became one of the major concerns across the financial field nowadays. How to manage that risk is the million-dollar question.

This research will be divided into two different sections. In the first section, a literature review on the topic of risks in financial markets will be conducted. This section will follow a certain diagram from causes of risk to types of risks, measures of risks, and the effects of these risks. First it is necessary to identify the causes of risks. As many studies have shown, uncertainty is the most important factor in determining risk along with the volatility it causes in the market. Moreover, investor sentiment is also a big determinant of risk. After that, it is empirical to identify the types of risks that vary from interest rate risk, exchange rate risk, equity market risk, and systemic risk. Systemic risk is currently becoming one of the most dangerous while not attracting the appropriate interest yet. After that, to be able to manage the risk, it is necessary to quantify it through different measures that have evolved with time from standard deviation to value at risk (VaR), expected shortfall (ES) to finally get to the Shortfall Deviation Risk (SDR). All that needs to be done before identifying the effects it has on monetary policies of central banks and hence the economy. With all that in mind, it is a necessity to shed more light on the systemic risk which is arising at a rapid pace in the market due to the fact of the consolidation of the banking, brokerage and financial institutions sector with many companies being acquired or merger or even shutting down.

The second section of this research will focus more on one article that discusses the issue of systemic risk in the financial markets, and how the financial institutions are contributing to this systemic risk. This paper will discuss how to measure the systemic risk and identify which financial institutions contribute more than the others and what are the reasons for that. It will also show the importance of studying the aggregate systemic risk as it is usually an early signal of distress to the economy and can help alert to try and avoid any financial crisis. This paper was chosen due to the recent increase importance in the topic of systemic risk. Systemic risk has been increasing at a rapid pace in the

market recently owing to the fact of the consolidation that has been happening in the financial industry. That consolidation, if it continues at this pace, might lead to another financial crisis that is not far away from us.

Review of Literature

Risk in the financial markets is one of the most debated topics. This study will follow a certain pattern and workflow that starts with the causes of the risk, then moves to identify the types of risks, before moving to quantify that risk with different measures, and at last showing the effects of this risk on the monetary policy of central banks. The collection of literature consists of around 15 papers with the focus mostly based on the following papers:

- Extreme Risks in Financial Markets and Monetary Policies of the Euro-Candidates by Hubert Gabrisch & Lucjan T Orlowski, 2011
- Systemic risk, financial markets, and performance of financial institutions by Edward M. H. Lin, Edward W. Sun & Min-Teh Yu, 2016
- Measuring Risk and Uncertainty in Financial Markets by Najrin Khanom, 2016
- The Relationship between Sentiment and Risk in Financial Markets by Anna Luiza Paraboni, Marcelo Brutti Righi, Kelmara Mendes Vieira & Vinicius Girardi da Silveira, 2018
- Should Monetary policy Monitor Risk Premiums in Financial Markets by Taeyoung Doh, Guangye Cao, and Daniel Molling, 2014

The review of literature has helped with identifying the important definitions and being able to derive the most important research questions.

- What are the causes of the Risk?
- How to identify Risk?
- What are the types of Risk?
- What is Systemic Risk?
- How to measure Risk?
- What are the effects of Risk on Global Economy and Monetary Policy?

This review has developed a framework that is going to be followed throughout the study. It starts by the causes of risk, then to identify the types of risks that were caused, and then how to quantify these

risks, and what are the effects of these risks on the monetary policy of central banks and the financial markets. The figure below will better demonstrate the framework that will be followed:



It was also important as to identify what research has not studied extensively which is the research gap. The missing thing was studying the increase in the systemic risk due to the fact of the consolidation happening in the market, and how the new entities are having a much bigger contribution to the overall systemic risk in the market.

For the purpose of this review, the reviewer deployed applicable methods. Throughout this review, the basic methods used include comparing, abstracting, summary, analyses, synthesis, and inference. More than fifteen papers were included in this review according to the criteria: empirical studies, published in peer reviewed journals in the past ten years (including older references), and relevance to the topic area.

Causes of Risk

Globalization has made every single move in the market related to any small minor detail or decision taken by a board of a company. The stakes in the financial markets now affect everyone in the world and not just the investors. Usually, the change in prices in financial markets is due to the sentiment of the investor which is based on the information provided to him. However, not all price changes relate to these information and fundamental factors. There is uncertainty in the market which affects the pricing of any instrument. We will study that through an uncertainty index that measure the risk and panic in the US stock market.

Reasons for uncertainty are many. They vary from geopolitical tension to negative outlooks on the economy (Pasto and Veronesi, 2012, 2013). It is important now to value the investor's sentiment towards the market (Barberis, et al., 1998) to be able to explain sudden market movements (Daniel & Subrahmanyam, 1998). This contradicts how previous asset pricing models that were based upon fundamental that consider the price of the stock depends on the business cycle (Hamilton & Lin, 1996). Usually when there are good economic fundamental releases, the stock market rallies (Cutler

et al., 1989). However, when there is uncertainty in the market caused by geopolitical factors, stock market prices will not move in accordance with good fundamentals variables. Hence, we will study the impact of uncertainty on the prices of stock market fluctuations that can't be explained by the fundamental variables such as monetary policy (Errunza & Hogan, 1998), fiscal policy (Croce et al., 2012) or overall government policy (Baker et al., 2015).

The willingness to study uncertainty and how it is affecting investor sentiment have increased rapidly lately. There were a lot of different variables and methodologies used to study the uncertainty that varied from stock options volatility (Bloom, 2009), equity market variables (Baker & Wurgler, 2006) and dispersion in economic. In this study, three different factors will be considered to base the model upon which are the media releases connotations, holdings in safe-haven assets, and volatility index. There are a lot of factors that can affect the price movements in the stocks market, but it is very hard to catch them and assign a different variable for each factor. For the first variables, there are a lot of researches who use different sources of articles such as Tetlock (2007) who uses the column "Abreast of the market" from the Wall Street Journal. However, in this article, the top 10 equity market related newspapers will be considered to check the tone of the articles. As for the second factor, Beber et. Al. (2009) consider that when there is uncertainty in the market, all investors will move away from the equity market and to more liquid assets and safe havens such as T-bills. Therefore, the asset allocation of investors is a very good indicator to study the uncertainty in the market. At last, regarding the factor of the fear, the Volatility Index (VIX) is used which shows the level of volatility in the market, and hence the level of uncertainty.

The methodology to identify these causes compared two set of variables, with the first set focusing on the effect of the uncertainty in the stock market and the economy in general, while the second set focusing on the effects of the fundamental news and actual cycle of the economy.

The Expected Utility Theory developed in 1979 by Kahneman and Tversky is known nowadays as Behavioral Finance. Behavioral finance considers that people are risk averse and take rational decisions to maximize utility. It also considers that dissatisfactions and regrets arising from losses are higher than satisfaction arising from the equivalent amount of profits, and it is important to study situations when normal approach is not working as Bradley & Dharm (2008) explain, which leads us to market sentiment which is a major contributor in the financial system. Baker and Wurgler (2006), Kuo and Chen (2012), Fond and Toh (2013), and Liu (2015) all consider market sentiment as one of the major factors in making decisions in the financial markets.

There have been many researches to study market sentiment, but there is not one singular agreed upon formula for it. Some approaches used investor confidence as an index (Schmeling, 2009), while others

used expected changes and variations in future prices (Sturm, 2014) and Walker and Lin (2007) considers number of shares of the initial public offering.

Hence, we can conclude that there is a relationship between market sentiment and risks in the financial markets. Yazdipour and Neace (2013) and Fong (2013) consider that the pessimism or optimism of the investor play a major role in his decision making with usually optimistic investors having a higher risk appetite than pessimistic ones. However, with that being said, the best way of risk management is having a proper measure for risk to avoid missing out on opportunities if overestimating risk or having a major catastrophe is risk is underestimated. Dias (2013) used liquidity as measure of risk in the market. Wachter and Mazzoni (2013) and Robert and Therond (2014) are just a few who used expected utility as a measure of risk without taking into consideration the behavioral aspect. Moreover, stochastic dominance and preferences was another measure of risk used by Kaas and Laeven (2006) and Ben-Tal and Tabouille (2007) among others. However, there is still a gap to cover as the behavioral aspect should be considered in studying the relationship between market sentiment and risk.

To measure the market sentiment, a study has used the Psych Signal technology which is aligned with the approaches of Qiu and Welch (2006) and Sturm (2014) which shows the sentiment in terms of investors future expectations of the market and use 3 variables that are the Intensity, Bearish Intensity, and the Bull-Bear which is the difference between the first two variables. Add to that, the study will take into consideration the most famous indices from three biggest countries which are US NASDAQ, the German DAX, and the Chinese SSEC markets as another measure of market sentiment. These three indices were taken due to their market capitalization size and their volume traded.

Types of Risks

There are different types of risks associated with the financial markets. To start with, interest rate risk is the risk arising from fluctuation in interest rates. A lot of theories have connected interest rate risk with financial market returns such as Elyasiani, Mansur & Pogano (2007). Moreover, a study done in 2014 by Akhtaruzzaman, Shamsuddin, & Easton showed that US interest rates have a direct effect of the volatility of the Australian stock market returns, which show how interest rate risk is a major player in the worldwide financial markets. However, recently studies have shown that a study done by Korkeamaki (2011) emphasized that the impact of interest rate fluctuations on the financial market and stock market returns have been decreasing with time due to the fact that there are now more models to cope with and hedge interest rate risk.

Another type of risk is the exchange rate risk. Exchange rate risk is the risk arising from a financial transaction denominated in a different currency than the domestic one and the fluctuation of the

foreign exchange prices. To better study the effect of the exchange rate risk, Chkilia, Aloui, & Nguyen (2012) used multivariate GARCH-type models and found that there is a high correlation between FX and stock market returns especially in France and Germany. There has not been much evidence to show a causal relationship between exchange rates and the stock prices. However, a lot of studies have theoretically confirmed that like Aciklain and Seyfettin Unal (2008) in their study on the Istanbul Stock Exchange and Pan, Fok, and Liu's (2007) study on Hong Kong, Malaysia, Japan, and Thailand.

The third type of risk is the equity market risk. Equity market risk refers to the risk arising from the extreme asset price movements and usually is a big factor of the economy's financial stability and monetary policies. John Cotter & Kevin Dowd (2014) discussed the topic of equity market risk extensively and mentioned the notion of equity market risk premium which is the average return that investors require above risk free rate for accepting higher variation in returns which means higher risk. Moreover, they have mentioned methodologies to calculate the equity market risk premium with the most important assumptions being based firstly on the selection on income proxies such as dividends or cash flow, secondly on the basis of expected growth with macroeconomic forecasts, and finally on the trade-off between current outcome stabilities and certain historical inputs.

At last, after the financial crisis in 2008, the systemic risk became one of the most debated topics in the world. Systemic risk comes from the failure of a few large financial institutions which would have a domino effect (Huang et. Al, 2009) with similar definitions given by Bartram et al. (2007), Nier et al. (2007) and Schwarcz (2008). Billio et. Al (2012) considered that systemic risk as a big threat to the stability of the financial system and public's trust in it. Their study focused on the systemically important financial institutions and how the default of one would have negative effects on others and the economy in general. This study focuses on three main factors of systemic risk which are contagion, universality, and negative externality. Contagion is when the default of one financial institution affects other financial institutions because they are interrelated to each other. Universality occurs because that default affects the whole financial markets and the economy.

Measures of Risks

Many studies have been conducted to try and measure the systemic risk by using different variables. These studies analyzed the assets of the financial institutions to try and find the inter-relationship between the different financial institutions. Acharya et al. (2010) used an index of Systemic Expected Shortfall (SES) that measures the weight of each financial institution on systemic risk. SES shows how much each financial institution is undercapitalized which contributes to the systemic risk. SES measures the weight of that contribution during a crisis. To add to that, Brownlees and Engle (2012) argued that once there is a financial crisis, financial institutions are automatically related to each other and they won't be able to function normally. However, they developed a Marginal Expected Shortfall

(MES) and added another indicator which is Systemic Risk Index (SRISK) to show the systemic risk. They measure the capital shortage through finding the relationship between each institution's equity returns versus the market index returns while the SRISK shows the losses caused by exposure to bad liabilities or bad investments in assets. On another hand, Banulescu and Dumitrescu (2015) used an empirical study of MES which measures the weight of each financial institution in the financial market and identifies the systemically most important financial institutions.

Another popular study uses the CoVaR model which measures the Value at risk as first introduced by Adrian and Brunnermeier (2011). They measure the value at risk of the whole financial system when one of the financial institutions is in distress and identify the change in Covar is by the difference of the weight of one financial institution on the systemic risk in normal circumstances and when in distress. MES and CoVaR have been heavily studies by Girardi and Tolga Ergn (2013), Castro and Ferrari (2014) ... etc. Kritzman et al. (2011) used different statistical procedures called principal component analysis (PCA) to analyze explicit linkage to financial institutions while Huang et al. (2009) used insurance premiums to measure the systemic risk of a financial institution or a group of financial institutions.

Hence, we can conclude that the four major indicators used to measure the risk are as follows. The first measure is the standard deviation which measure the variability of the financial positions as firstly discussed by Markowitz (1952). The second risk measure is the VAR (value at risk) that was examine by Duffie and Pan (1997) and Jorion (2007) among many others. Then, the third measure of risk is the Expected Shortfall (ES), which is the amount of losses that exceeds the VAR and was developed Pflug (2000) and Acerbi and Tasche (2002). At last, the Shortfall Deviation Risk (SDR) which is very similar to ES but takes into consideration the dispersion of results and was developed by Righi and Ceratta (2016).

Effects on Monetary Policy of Central Banks

Volatility is one of the most important factors in the financial markets. Volatility is the rapid change of prices and erratic movements in the market. Per Orlowski (2010b), This volatility is what causes extreme risks in the financial markets. Volatility leads to a leptokurtic distribution which means that the observations are more dispersed away from the mean which means towards the tails and lead to fatter tails than in a normal distribution. A lot of financial variables such as interest rates become unstable and severely affected by big volatility moves in the market (Orlowski, 201b). Hence, in extreme volatility periods, the monetary policy of central banks will get affected and the normal interest rates will become inefficient (Curdia and Woodford, 2010).

Literature does not show whether monetary policies can mitigate these risks that arise from sudden volatility changes as evidently shown by several financial crisis such the 2008 US crisis, the Great Depression... etc. Mishkin (2009) and Jobs (2009) debated that central banks have a role to play in surviving a crisis and stabilizing the system. Curdia and Woodford (2010) considered that without the quantitative easing monetary policy adopted by the FED after the financial crisis, the cost of credit would have stayed high and hence also kept the systemic risk very high. Central banks have become lenders to other banks, as these banks have lost their trust in each other. After the crisis though, there is no study that shows whether monetary policy should go back to normal after easing even though the normal policy worked during the “Great Moderation” per Ahrend (2008) and Taylor (2009). It is hard to answer this question especially as the risk of these financial variables is contained during normal market conditions, however it increases rapidly during sudden volatility changes (Mishkin, 2009; Orlowski, 2010b). To find the origin of these tail risks is very hard. It is connected to rapid decrease in prices of assets that can’t be liquidated. Borio and Drehnam (2009a, b) correlates positively money supply with increase in market prices. As the balance sheet gets bigger, the appetite gets bigger, and the willingness to lend and spend increases exponentially. However, when money supply stops and the credit market freezes, the exact opposite happens with depreciation in prices that lead to deflation later which then lead to an increase in volatility and hence increase and the risk of these financial variables. This was evidently explained by Minsky’s financial fragility hypothesis (1982) and Kindelberger’s (2005) history of “manias and crashes”.

These extreme tail risks cause challenges for central banks. The first challenge is the loss of judgement and functions about the economic situation, assuming that it is due to a business cycle. The functions of these judgements then result in a huge asset price movement which in turn results in leptokurtosis (which is extreme tail risks). Minsky (1982, a) considered the financial industry always find innovative ways to break the monetary constraints, with monetary constraints being effective only if it leads to much lower asset prices. The second challenge refers to how central banks react to different periods of the economy with usually short-term interest rates the major tool that they use per Taylor (1993). However, in financial crisis, quick active reactions are needed to address the crisis which renders Taylor’s assumption invalid. The third challenge is the questioning of the independence of the central banks due to the government’s interference especially during financial crisis. Wolfson (2002) considers that monetary policy and interest rates are affected by international markets. If other markets lower interest rates, then locals tend to loan money in foreign currencies, which leads to a less demand of the local currency, which in turns lead to central banks lowering rates on local currency. This means that they don’t control the interest rates anymore but are subject to foreign interest rate policies.

Research Gap

As we have seen, the topic of risk in the financial markets have been heavily studied through a long period of time, whether by identifying the causes, types, measures, and effects of risks. However, recently and after the financial crisis in the US of 2008, a lot of unexpected events in the market have been occurring and being classified as force major in the market whether it is the SNB debacle in January 2015, Brexit, or Trump winning the US elections along with all the quantitative easing policy adopted by all central banks. These events have led to many financial institutions, brokers and banks to shut down or being acquired by others. Hence, the number of market participants have been reduced by almost half. This has created a more concentrated market, which in fact leads to a much higher systemic risk. This sharp increase in systemic risk has been ignored, and not enough studies have identified the real size of this risk in case of any unexpected event. This will be discussed in the final thesis to be presented which will try to make a contribution to the market by identifying the size of this risk and providing awareness to the industry about it. This will also explain why the chosen article was decided upon in the next section.

Conclusion

As explained above, risk in the financial markets is one of major determinants of the world economy and one of the most dangerous factors that should never be neglected. This was the main reason of a global financial crisis. Therefore, it is important to be able identify different elements of risks to be able to know how to mitigate it. One of the most prominent types of risks nowadays is systemic risk, which should be handled with care and studied more in detail to help mitigate it.

Chosen Article

Description

The article “Systemic risk, financial markets, and performance of financial institutions” by Edward M.H. Lin, Edward W. Sun, and Min-The Yu was important to better understand the concept of systemic risk and where it arises from, and how the financial institutions are the biggest factor in creating this systemic risk and how it is controlled. This article was chosen as it paves the way for the research question which evolves about the rise of this systemic risk in the market due to the consolidation of the financial institutions and the market becoming more concentrated around these big financial institutions.

This paper will focus on the systemic risk in the Taiwanese financial system by using three different measures mentioned above which are as follows: SRISK (systemic risk) index, MES (marginal expected shortfall), and CoVaR (Conditional value at risk). The first two are used to measure the weight and contribution per each financial institution while the CoVaR is used to determine the extent

of the systemic risk. These methods will be applied to 31 Taiwanese financial institutions that will be divided into 3 categories: insurance companies, banks, and financial institutions.

Critical Review

Title and Abstract

The title was well defined and appropriate. It contains the three key phrases of the research paper which are systemic risks, financial institutions and financial markets. The title had a clearly defined context for developing the research question. Hence, this renders the title to be very suitable for the research paper.

The abstract discusses the research question of the paper and the methodology used including what sample was chosen. It also indicated the results of the study which concluded that the three measures used are important in identifying systemically important financial institutions and then verified results by doing a Granger causality test that proves systemic risk measure is a good indicator of distress in the economy.

Introduction

In an unconventional way, the author combined both the traditional introduction and literature review. The author started by introducing the background about the issue of systemic risk. It started by showing the importance of systemic risk especially in the financial crisis of 2008 and how different committees started addressing this topic. After that, the author mentioned different literature review from several authors about the definition of systemic risk and how it is viewed. Moreover, the author moved to narrow down the discussion about systemic risk and mentioned literature review about different measures of risk indicating how different studies measured systemic risk through different variables and used different approaches and measures. The author didn't mention a research gap directly. However, he identified the three measures that he is going to use based on previous literature which are the SRISK, MES, and CoVaR to determine if they are good measures of systemic risk. He then identifies the sample of which he is going to do his empirical study which is 31 Taiwanese financial institutions. The author showed his theoretical framework by moving from definitions of systemic risk to different measures of systemic risk, and then showed how to use these measures in quantifying this risk. He then discusses how his study identifies that measures of systemic risk contribute in identifying distress times in the markets early on to try and help avoid any new financial crisis.

Three Systemic Measures

In the second section, the author identifies the three systemic measures that he will use to perform his empirical study and identified the literature he used to back his choice of measures. He then describes

how each different measure is derived and calculated based on different assumptions and variables. Below is an example of some assumptions taken by the author:

- there is a panel of financial institutions indexed by $I = 1, \dots, n$ at times $t = 1, \dots, T$, and respectively denote R_{it} and R_{mt} to be the i th firm's and the market log return on day t .
- threshold value C is defined as a drop in the market return like in Brownlees and Engle (2012) who set a daily loss to be -2% .
- MES on a market loss of 20% , $R_{mt} < -20\%$.
- prudential ratio k to be 8% .

Empirical Study

The third section moved to the study and methodology used. The author conducted an empirical study which was divided into 4 different parts. The author used observations from the sample he chose which is 31 Taiwanese financial institutions with a sample size of 2277 for each firm.

In the first part, the author used the returns of these financial institutions and used the TEJ financial market index as the benchmark or market rate to study the volatility and correlation during three different periods of time : pre financial crisis, during the financial crisis, and post the financial crisis. He did that using a GARCH model. He then plotted all these findings over a time series analysis to show the difference. In the second part, the author wanted to study the individual contribution of each financial institution to the systemic risk and also uses regression analysis to estimate different measures. He then moves forward to find the aggregate systemic risk which is the summation of each financial institution's risk. Moreover, he continues the third part by comparing the value of the aggregate risk with industrial production index and the unemployment rate through a causality test to be able to identify if the aggregate systemic risk is a good indicator of detecting early signals of a crisis. For the fourth part, the author intends to study the determinants of the risk and the contribution of risk in comparison with different types of financial institutions and then between government owned and public owned companies.

The author did not mention any limitations to his study, and he followed the ethical practices in conducting his analysis. There was no mention of response rate as he picked the data for all 31 financial institutions which would render the response rate 100%.

Findings

After conducting his study, the author came up with several findings. In his first part of the study, the author concludes that volatility is much higher during the crisis than pre and post crisis times for all asset classes, while the highest correlation with volatility is for financial holding companies which

are considered to be the riskiest especially during crisis times. In the second part of the study, the author implies that whatever risk measure used, they always tend to identify the same risky financial institutions and the ones who contribute the most to the systemic risk. He also confirms that the financial holding companies are the riskiest of all and have the highest systemic risk. Thus, this confirms the fact that the systemic risk measures MES, SRISK, and change in CoVar are appropriate measures to be able to identify the riskiest financial institutions who carry the highest systemic risk. Moreover, during the third part of the empirical study, the author finds the aggregate risk of all the different combined types of financial companies, and again it was mostly affected by the financial holdings companies that have the highest leverage, and identified that the aggregate systemic risk is usually a good early signal for the economy to identify a possible crisis or threat looming around. The author shows there a big correlation between the aggregate systemic risk and the industrial production index even higher than that with the unemployment rate. He also did a causality test and showed that high aggregate systemic risk will lead to a lower industrial production index which will eventually lead to a higher unemployment rate. Hence, this shows that aggregate systemic risk indirectly affects the unemployment rate. In the fourth part of the study, the author determines that the size of each firm and the leverage of each firm directly impacts the SRISK, MES, and CoVar measures. He also concludes that non-government-owned financial institutions have higher systemic risk than government-owned financial institutions.

After the author finished his empirical study, he went on to verify his results with panel regression of systemic risk for the financial institutions and their contribution to the overall systemic risk. That verification model confirmed the fact that an institutions' size, leverage, and market to book value are major determinants of the systemic risk of a financial institution and quantify its contribution to the overall systemic risk of the market.

Comments on the Findings

On the findings, we can say that as the empirical study was conducted on real time numbers at times of pre-crisis, during the crisis, and post-crisis, the author had no limitations on his study. Moreover, his findings comply with normal knowledge and did not show abnormalities. It is a known fact that volatility is associated with uncertainty, and when there is a crisis, uncertainty prevails in the market. Hence, it is normal to have higher volatility during crisis times than in normal times. Moreover, it is also a known fact that financial holdings companies are riskier than banks and insurance companies, and thus have a higher systemic risk than the others. Add to that, over recent studies, it has been concluded that MES, SRISK, and CoVar are good and indicative measures of risk in the market. In addition, it is also known that government-owned institutions are less risky than private financial institutions as they have the backing of the government who is always there to interfere to back them

up. Next, one of the most know factors of risk is leverage; the higher the leverage, the higher the risk and in turn the higher the systemic risk. At last, the size of the company and the market capitalization of the company are definitely positively related with risk; the bigger the company, the higher systemic risk it causes to the market. To conclude the findings, the author confirmed what was already known in the market about the causes of risk. However, he was able to relate all these factors into systemic risk as well. He was able to also identify how these risks are associated with the Taiwanese market, a market not many have wanted to study over time. One thing the author was able to add to previous findings was that the aggregate systemic risk is a good early signal for the economy to be able to identify distress times before they actually happen.

To conclude, we can say that the findings did not surprise but, on the contrary, confirmed the factors that play an important role in determining systemic risk such as company size, leverage, and market capitalization while also confirming the contribution of each financial institutions to the overall systemic risk. It was also important to confirm that the three different measures of risk are also applicable to systemic risk. The study was conducted and properly and sends a very confident tone in the readers' minds as the findings can be trusted and were confirmed by a verification test. One thing that could be added was a study about the increased systemic risk in the market, due to the fact of the recent consolidation (mergers and acquisitions) in the financial industry. A case could have been taken where a recent merger or acquisition has taken place. A comparative analysis could have been done to study the difference between the sum of the systemic risk of both companies with systemic risk of the new company formed after the merger or acquisition, which should normally show a higher systemic risk of the new company and hence a higher contribution to the overall systemic risk in the market. This will support the theory of the increased systemic risk in the market resulting from the consolidation that has been happening over the past few years.

References

The author used Harvard referencing format. He cited journals and articles in alphabetical order of author's surname and the initials, then year of publication, article title in single inverted commas, journal title in italics, volume of journal, issue number of journals, and at last page range of article.

Conclusion

As a conclusion on the paper, we can say that it was well organized. IT was very coherent and the flow in ideas was smooth. The writer followed a proper chronological order and started by stating the research question and the reason for the research, and then moved to conduct his empirical study. In his study, he started by identifying the assumptions taken, and the moved to conduct his study before showing the findings later on. He then went on to verify his findings by different models and concluded by reasserting the reason for this research and his findings.

Conclusion

As we have seen, the topic of risks in financial market has been heavily studied from different angles, whether the causes of this risk, the types of this risk, how to measure this risk, and what are the effects on monetary policy of central banks. It has been concluded that the major causes of these risks are the uncertainty mainly measure through stock options volatility (Bloom, 2009) or equity market variables (Baker & Wurgler, 2006) and market sentiment mainly measure through investor confidence (Schmeling, 2009), number of shares in initial public offering (Walker & Lin, 2007), expected changes in future prices (Sturm, 2014) or Psych Signal Technology (Qiu & Welch, 2006). As of for the major types of risks in the financial markets, exchange rate risk was discussed by Orlowski (2005), while interest rate risk was discussed by Monika Piazzesi & Martin Schneider (2010), and systemic risk by Bartram et al. (2007) and equity market risk by John Cotter & Kevin Dowd in 20014. How to measure risk was firstly studied long time ago in 1952 when Markowitz introduced the concept of standard deviation. This concept was later developed by Duffie & Pan (1997) and Jorion (2007) to become the VaR, which is the value at risk to better capture risk. Other theory was developed by Pflug (2000) and Acerbi & Tasche (2002) who introduced the notion of expected shortfall, which was after that developed more by Righi and Ceratta in 2006 to become the shortfall deviation risk. The risks identified above influence the monetary policy of central banks which in turn affect the financial markets. Minsky (1982) discussed the topic of huge asset price movements caused by this whole uncertainty and decreased prices in the market, while Taylor pointed out to how short term interest rates are affected by that in 1993, while Wolfson (2002) took it one step further and considered that due to high risk in the financial markets, the central banks lose their independence and their policy starts following other external policies. An important aspect that still needs to be studied extensively is the gap in studies of systemic risk and contribution of each financial institution to the systemic previously, and the increase in its effect and weight on the market recently.

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University of Wales Trinity Saint David

DBA

Module: SBPD 7001

Approaches to Research and Academic Communication

Assignment: Research Portfolio 20%

A Literature Review on Risks in Financial Markets

Submitted to Dr Millissa Cheung

SALEM KATTOURA

AUGUST 18, 2019



Table of Contents

- I. Introduction
- II. Literature review
- III. Discussion on the chosen article
- IV. References

Introduction

- Topic: Risks in financial Markets
- Risk in financial markets is the level of uncertainty and panic.
- Systemic risk related to financial institutions
- Literature Review:
 - Causes of Risk
 - Measures of Risk
 - Effects of Risk on Monetary Policy
- Discussion Topic: “Systemic risk, financial markets, and performance of financial institutions”

Introduction

- 5 different articles:

- Extreme Risks in Financial Markets and Monetary Policies of the Euro-Candidates by Hubert Gabrisch & Lucjan T Orlowski, 2011
- Systemic risk, financial markets, and performance of financial institutions by Edward M. H. Lin, Edward W. Sun & Min-Teh Yu, 2016
- Measuring Risk and Uncertainty in Financial Markets by Najrin Khanom, 2016
- The Relationship between Sentiment and Risk in Financial Markets by Anna Luiza Paraboni, Marcelo Brutti Righi, Kelmara Mendes Vieira & Vinicius Girardi da Silveira , 2018
- Should Monetary policy Monitor Risk Premiums in Financial Markets by Taeyoung Doh, Guangye Cao, and Daniel Molling, 2014

Introduction

- Research Questions:

- What are the causes of the Risk?
- How to identify Risk ?
- What are the types of Risk?
- What is Systemic Risk?
- How to measure Risk?
- What are the effects of Risk on Global Economy and Monetary Policy?

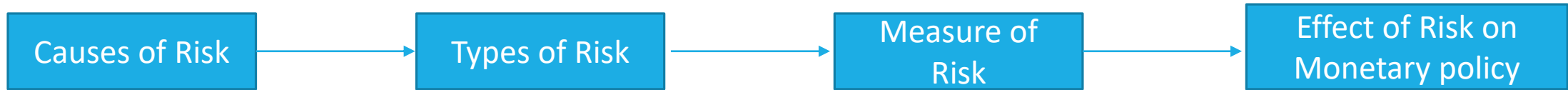
- Research Gap:

- Consolidation of financial institutions
- Increase in Systemic Risk

Introduction

- Methodology:
- Empirical studies of risks in European Markets
- Time Series Analysis of Systemic Risk in Taiwanese financial Institutions
- Market Sentiment Estimation in 4 major markets

Literature Review



Literature Review

- *Causes of Risk:*

- Market Sentiment

- Investor Confidence as index – Schmeling (2009)
- Number of shares in IPO – Walker & Lin (2007)
- Expected changes in future prices – Sturm (2014)
- Psych Signal Technology – Qiu & Welch (2006)

Literature Review

- *Causes of Risk:*

- Uncertainty

- Stock Options Volatility – Bloom (2009)
- Equity Market Variables – Baker & Wurgler (2006)

Literature Review

■ *Types of Risks*

- Exchange Rate Risk – Orlowski (2005)
- Interest Rate Risk – Monika Piazzesi & Martin Schneider (2010)
- Sytemic Risk – Bartram et al. (2007)
- Equity Market Risk - John Cotter & Kevin Dowd (2014)

Literature Review

■ Measures of Risk:

- Standard Deviation – Markowitz (1952)
- VAR, value at risk – Duffie & Pan (1997) and Jorion (2007)
- Expected Shortfall – Pflug (2000) and Acerbi & Tasche (2002)
- Shortfall Deviation Risk – Righi and Ceratta (2016)

Literature Review

■ *Effects on Monetary Policy*

- Loss of judgement
- Huge asset price movements – Minsky (1982)
- Change Short Term Interest Rate – Taylor (1993)
- Independence of Central banks – Wolfson (2002)

Discussion- Chosen Article

- **Title of the Article:**
- “Systemic risk, financial markets, and performance of financial institutions”
- Authors Edward M.H. Lin, Edward W. Sun, & Min-The Yu
- Published online: 9 February 2016
- Springer Science + Business Media New York 2016

Discussion- Chosen Article

■ **Abstract of the Article:**

- This paper studies the exposure and contribution of financial institutions to systemic risks in financial markets. We employ three popular indicators of a financial institution's exposure to systemic risks: the systemic risk index (SRISK) and marginal expected shortfall (MES) of Brownlees and Engle (Volatility, correlation and tails for systemic risk measurement, Social Science Research Network, Rochester, NY, 2012) and the conditional Value-at-Risk (CoVaR) of Adrian and Brunnermeier (2011). We use a primary database of Taiwan financial institutions for our empirical study. A panel contains data of stock market returns and balance sheets of 31 Taiwan financial institutions for 2005–2014. We focus on systemic risk analysis so as to understand the dynamics of volatility, interdependency, and risk during the recent financial crisis. We then report the time series dynamics and cross sectional rankings of these systemic risk measures. The main results indicate that although these three measures differ in their definition of the contributions to systemic risk, all are quite similar in identifying systemically important financial institutions (SIFIs). Moreover, we find empirical evidence that systemic risk contributions are closely related to certain institution characteristic factors. The results of the Granger causality tests prove that a systemic risk measure is a great alternative tool for monitoring early warning signals of distress in the real economy.

Discussion- Chosen Article

- **Title & Abstract:**
- Title appropriate as it contains the 3 key phrases
- Abstract states:
 - Research question
 - Methodology
 - Results
 - Conclusions

Discussion- Chosen Article

■ Introduction

- Introducing the topic
- Why it became so popular
- Defined Financial Markets
- Theories about the importance of Financial Markets
- Defined Systemic Risk
- Discussed Theories about systemic risk

Discussion- Chosen Article

■ Introduction

- Defined the role of financial institutions
- Discussed Previous studies done on systemic Risk
- Identified the Research Gap
- Ask the Research question (determinants of systemic risk)
- Mentioned the methodology of study (31 financial institutions in Taiwan)
- Combined Literature Review with the introduction

Discussion- Chosen Article

- **Methodology:**

- Identified 3 different models that will be used to measure systemic risk
- Mentioned different theories about each
- Sample size 31 financial institutions
- 2277 data for each institution
- Garch Model
- Time Series Analysis
- Very detailed oriented
- No mentioning of any limitations

Discussion- Chosen Article

- **Findings:**

- Backed up by Graphs, Numbers, Tables
- A lot of comparison between pre and post crisis to show the difference
- Used another model to verify the findings

- **Conclusion:**

- Restatement of the purpose of study, methodology, and findings

- **References:**

- Harvard Style reference format followed properly

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