

What are the possible future research directions for bank's credit risk assessment research? A systematic review of literature

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Published online: 11 March 2018
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Abstract Banking prudence and efficiency to manage their risks in different business cycle and environment would help to alleviate crises and losses. Hence, the effective assessment of credit risk is an essential component of a comprehensive technique to credit risk assessment and critical to the long-run of not only banking institutions but also the economy as a whole. Therefore, it has received a great interest from scholars across finance and economics to investigate such assessments by banks in different countries using diverse theoretical underpinnings and methodologies. Hence, this paper is developed to review analytical conceptualisations of credit risks assessments that have been developed in the academic literature. By means of a systematic review, it provides a comprehensive analysis that encompasses approaches used in research papers. There has been no prior review on analytical conceptualisations in this area. Moreover, this review is done in a systematic manner, i.e. categorising journal articles into different categories such as purposes, perspectives and methodologies through a transparent and thorough process. Thus, it will be able to provide an objective review. Finally, the paper will outline the evolution of methodologies and theoretical underpinnings in credit risk management research and a landscape for possible future research directions.

Keywords Credit risk · Literature review · Credit allocation · Banks' lending

1 Introduction

'Over the past two decades, the financial world has evolved from [a] return driven to a genuine risk management industry. The term risk management certainly is not confined to what is best denoted with risk control: Measuring

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risks, setting limits and ensuring adherence to these limits. This is necessarily part of the whole process of risk-return optimisation Risk management ... also compromises the decision making process of considering risk-return trade-offs and optimising stakeholders' targets ... (Kocken 2006)

- The basic risk factors relevant to financial institutions can be broadly classified into market risk, credit risk, liquidity risk, underwriting risk, and operational risk. Therefore, the definition for 'risk management' is broad. Banks are exposed to credit risks more than any other risks mentioned above. Hence, this paper will only focus on Credit Risk Management (CRM) and Credit Risk Assessments (CRA).

Credit risk can simply be defined as the prospective that a bank borrower or counterparty will fail to meet its obligations in accordance with agreed terms and conditions. The failure to manage credit risks properly could result in more than direct accounting loss. It encompasses opportunity costs, transaction costs and expenses associated with non-performing asset over and above the accounting loss. It can affect banks' portfolio, thereby attracting liquidity risk and in the worst cases, it can have negative effects on both financial industries and economies. Hence, CRM is understood as a process that starts from regulatory level, second, from banks' strategic levels, then continues to the operational levels. By referring back to Horneff's (2006) statement as provided above, this indicates that every level comprises of decision making process, considering risk-return trade-offs and optimising stakeholders' targets.

In addition, with the repeated banking crises over the years due to poor CRM by banks and other financial institutions, this area has received a lot of attention from academics and many research papers have been published in this area. However, the conceptions of risk by these researchers can differ significantly. The bulk of investment-banking oriented body of literature on risk management usually defines risk in an objective way not differentiating according to the needs of different investors or stakeholders. On the other hand, there are researchers who consider it to be 'relative' rather than an absolute concept (Balzer 1994). This has caused two main concerns. Firstly, due to such differences, there are inconsistencies in conceptualisations of CRA. This led to an impediment of a precise academic debate in the field, thereby; hindering discovery of possible solutions for CRM. Secondly, the extent of such conceptualisations fails to incorporate the current needs to accommodate the perspectives of a wide range of actors (e.g. decision making at different institutional levels). More importantly, a lack of a review on conceptualisations of CRA provides the fact that there is a scope of development in this field of research.

Therefore, the purpose of this paper is to illustrate, to compare, and to review analytical conceptualisations of CRA along with scope of study, analytical domains and methodologies that have been developed in the academic literature. As my aim is to provide a comprehensive and systematic review, the analysis encompasses published research papers from journals. In summary, this study will contribute to banking literature, especially CRA research. As this is a systematic review conducted according to the guidelines by Tranfield et al. (2003), the review follows a transparent and thorough process aimed at enhancing scientific rigor and at developing a reliable stock of knowledge.

The remainder of this paper is organised as follows: Section 2 discusses the concept of 'rationality' in CRM literature. The research design is outlined in Section 3, followed by the results of our exploratory study. In section 5, analysis and evaluation of analytical conceptualisations of CRA will be provided.

2 Rationality assumptions in CRM literature

The term rationality is defined by Bazerman and Messick (1998, p. 478) as.

'...the decision-making process that is logically expected to deal to the optimal result given an accurate assessment of the decision-makers' values and risk preferences'.

In other words, decision makers who are rational will arrive at objective and logical judgements. In fact, the costs associated with gathering complete information is high or impossible, making rational decision is implausible. Moreover, rational decisions tend to be made based on unrealistic assumptions (Robbins and Coulter 2011):

- the problem is clear and unambiguous where decision makers have complete information;
- the decision is single, well-defined goal that the decision maker is trying to achieve and there is no conflict over the goal;
- the decision maker can identify relevant criteria, lists all the viable alternatives, and is aware of all possible consequences of each alternative;
- the decision maker can obtain full information about the criteria and alternatives because it is assumed to that there are no time or cost constraints; and
- the rational decision maker always chooses the alternative that will yield the maximum payoff

In CRA, it is not about solving a problem but contemplating whether to take an opportunity for return to realise in the future from investment. These opportunities come with uncertainties and it is impossible for banks to have complete information. Similarly, the full information about the consequences, in this case, borrowers engaging in risky activities cannot be obtained. Herne (2011) finds some evidence showing that individual choices disappear when individuals have an opportunity to learn and correct their choices to be more in line with the standard utility model depending on the situation where decision making takes place, thereby concluding that different institutional structure affect such differing preferences. Similarly, the studies also find that the standard utility model works well in certain types of competitive markets but not in other institutional environments. These are the results of individuals' limited cognitive capabilities, information processing capacity, time and cost constraints on decision makers to obtain complete information. In other words, optimal 'risk perception' is not attainable. Thus, the term 'bounded rationality' is created by Simon (1976, p.82) stating that

'The human being striving for rationality and restricted within the limits of his knowledge has developed some working procedures that partially overcome these difficulties. These procedures consist in assuming that he can isolate from the rest of the world a closed system containing a limited number of variables and a limited range of consequences'

- He further asserts that due to these limitations, individuals construct simplified models of the real world in order to deal with it. He refers to it as picking a course of action that is satisfactory, ‘satisficing’ or ‘good enough’ under circumstances. Applying his views on banks’ CRA context, collaterals, interest rates, for example, are used by banks to simplify complicated issues of deciding whether to approve or reject loan applications. In developed countries, the over reliance on credit rating agencies is also the result of banks’ attempts to simplify complex processes. Similar to Herne (2011), Simon (1976) also states that it is impossible for individuals to analyse logically and dispassionately to make the best possible decision as they are constrained within the realm of cultural, organisational or their own values.

Banking is one of the most regulated industries in the world, among various regulatory measures, the regulation of bank capital is crucial due to the important roles it plays in banks’ soundness and risk taking behaviour and its influence on the competitiveness of banks (Zhu 2008). Therefore, different types of regulatory frameworks have been introduced for internationally active banks to follow. For instance, at the international level, in 1988, Basel Committee on Banking Supervision (BCBS) formed Basel Accord I. According to this, bank loans of different risk have same weight which allows banks to swap low risk assets with high risk ones. In other words, this Basel Accord allows regulatory arbitrage (Zhu 2008). Then, in 2004, Basel II which is a revised version of the former one was released. It allows banks to compute the capital requirements for managing credit risks, standardised approach, Foundation Internal Ratings-Based approach (FIRB) and Internal Ratings-Based approach (IRB). In order to use the latter approaches, it needs approvals from regulatory authorities (regulatory level) and is costly; therefore, banks opt to use the former approach which relies on external rating agencies. In this case, the effects of institutions and environments on credit risk measurements come from two directions, one from external rating agencies and another from the banks themselves. During the times of economic and financial crises, these rating agencies downgrade credit risks including sovereign debts. At the same time, banks become more cautious in lending which creates two directional influences in changing banks’ credit risks perceptions.

In addition, the effects of those institutional constraints cannot be ignored if we take into account of countries that have implemented Basel Accords and those that have not. Even those countries that have implemented the same Basel Accord also tend to have different approaches in their lending practices, for instance UK and Germany (Lane and Quack 2001). If the decision makings was rational, we would not have financial crises and banks would not be accused of irresponsible lending. Therefore, the statement which states that rationality exists becomes questionable.

Similar to other decision making research papers, researchers of banking and finance communities are interested in understanding why people make the choices and judgments that they do, for example, the reasons for inflicting higher interest rates on one group of borrowers and lower interest on the another, and why banks refuse to lend to small businesses. Though banks’

CRA process has been discussed in the previous section, the question of whether decision makers are rational, that is what makes to choose one alternative over another still remains unanswered. Many researchers have different opinions on whether to conduct research based on 'rationality' assumptions. Hence, an exploratory study of previous literature is conducted to learn about analytical conceptualisations of CRA in banking literature.

3 Research design

Due to the origins of credit risk, I focused primarily on banking academics and literature in order to contribute to the field by systematically reviewing the relevant literature. Three primary sources that I used to collect journal articles are EBSCO/Business Source Complete, PROQUEST and Emerald. This review followed the guidelines proposed by Tranfield et al. (2003). Prior to conducting the review, a protocol was composed.

Review Protocol

Review Motivation	In the recent years, due to the banking crises and other financial sector collapses, the field of banks' credit risk management and assessments has experienced a new dynamics in terms of proposing various new analytical conceptualisations of such assessments. Different attempts have been made to improve and to overcome existing inconsistencies in this field of research. The fact that the literature has not yet provided a review of past research demonstrates that there has been a lack of collaborations among the researchers to improve analytical conceptualisations of credit risk assessments. Thus, the purpose of this paper is to illustrate and to evaluate analytical conceptualisations of credit risk assessments that have been developed in the academic literature.
Research Questions	What are the analytical foundations used in CRA research and their assumptions in terms of rationality? What are analytical domains found in CRA research? What are the prominent methodologies used in the area of research? What are the gaps and future research directions?
Sample	The sample consists on published papers focusing on CRA in banks aimed at making a contribution to the conceptualisations of CRA.
Search Strategy	<ul style="list-style-type: none"> • Journals are identified through ABS journal ranking guide • Keywords such as 'Credit Risk Assessment', 'Credit Risk Management', 'Banks' Lending Behaviour' and 'Banks' Lending Practices' were used to identify the papers on EBSCO/Business Source Premier, Emerald and Proquest

4 Results

Due to the vast amount of literature in this area and based on the theoretical underpinnings, literature gaps are divided into two, one based on the perspectives used by the researchers to study risk perceptions and banks' lending, i.e. where CRA is viewed as either rationalised or institutionalised; and analytical

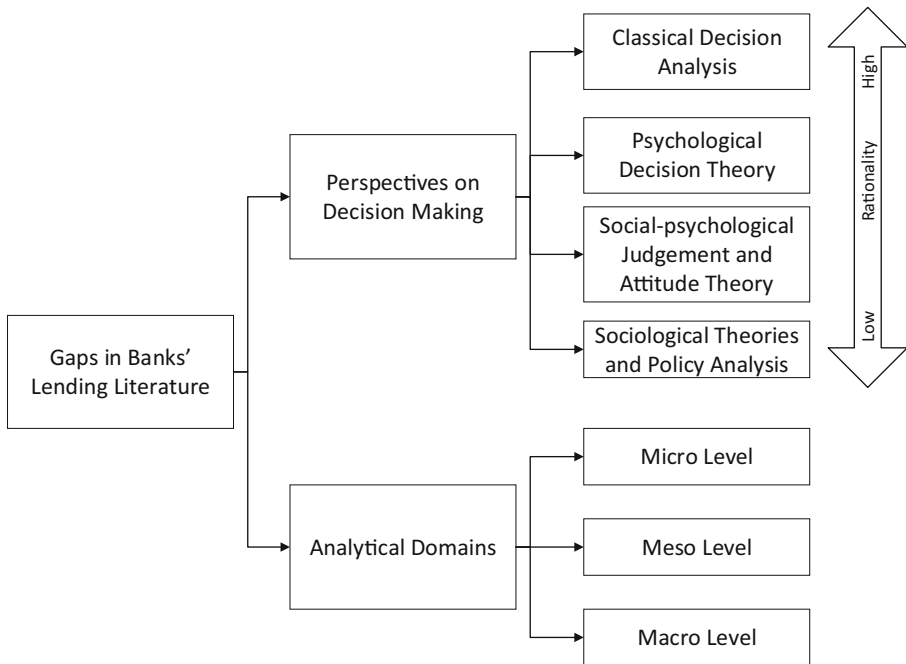


Fig. 1 Graphical presentation of literature gaps

domains, where different levels of factors affecting lending decisions are researched upon. The summary can be presented as in Fig. 1.

4.1 Perspectives

Research on risk in decision making has been dominated by statistical estimations which are often inadequate to alleviate people's attitudes toward risks (Renn and Swaton 1984). Such methodologies are designed to be objective. However, they lack interpretability of results as they do not take into account of public perceptions and social effects. Since risk is not an "objective" fact in the business environment (Luhmann 1993), studying risk perceptions by banks using probability calculus will not allow us to understand the factors influencing banks' lending behaviour (Lane and Quack 2001). In general, this type of methodology fails to include bounded rationality and subjective rationality in various estimations process. Thompson (1967) supports this fact by stating that uncertainties and risk pose major challenges to rationality which is manifested itself in an individual's perception. To bridge this gap, many researchers have taken different perspectives such as sociological and psychological to study risk in different areas of research such as in foreign direct investment (Francis et al. 2009), information systems (Tsohou et al. 1993), organisational communication (Lammers and Barbour 2006) and so on. According to Renn and Swaton (1984), these perspectives of risk in decision making are divided into four categories:

- 1) Classical Decision Analysis – focuses on rationality of decision making process and what motivational and cognitive biases are incorporated to optimise our own judgement.
- 2) Psychological Decision Theory – emphasises individuals' processes of information about risk and logical structure in arriving at an overall judgement.
- 3) Social-psychological Judgement and Attitude Theory – concentrates on the interaction between social values and personal judgement.
- 4) Sociological Theories and Policy Analysis – investigates the social goals, values, or motives that drive persons and social groups to come to final judgement.

4.1.1 Classical decision theory

Classical decision theory assumes that individuals are rational decision makers and optimise their judgements through formal axioms. Grandori (1984) asserts that classical decision theory incorporates an optimising model. In other words, these theories match the decision processes with a normative model of rational reasoning thereby maximising utility of individuals or groups (Renn and Swaton 1984). Oliveira (2007) used the term 'normative' or 'rational' decision theories to describe this process. In rational decision making models, a number of possible alternatives from different scenarios are analysed by decision makers before making a final choice which would have the highest probability of outcome in the best expected scenario (Oliveira 2007). Therefore, most of the research papers using classical decision or normative theories seek to understand how decision makers solve problems through identifying different alternatives. Banks' decision making processes have been studied by economists emphasising 'markets with imperfect information', 'bounded rationality of decision-makers', 'moral hazard' and 'adverse selection' (Stiglitz and Weiss 1981). Some of the economic theories that are used to employ rational decision making models are expected utility theory and game theory.

Economic theory, for example, limits its attention to goods, bonds and money as long as the institutionalisation of saving and investment is confined to the monetary system (Gurley and Shaw 1955). Its methodology involves rational decision making models that follow three steps process of (1) analysing the feasibility of the alternative, (2) pondering the desirability of alternative, and (3) choosing the best alternative by combining both desirability and feasibility (Rubinstein 1998). Grandori (1984) states that in the economic theory of competitive decision, the payoff structure is considered as 'known' until a system of information, the price system is there to reflect the influence of all the relevant factors. In reality, competitive equilibrium cannot be achieved as said in economic theory at least in banks' lending because of the use of non-interest item, for instance, collateral is used to offset asymmetry of information existing between the lender and borrower. Moreover, the lenders are unaware of the default probabilities of the borrowers, therefore, are unable to rank and choose the feasible and desirable alternatives. If the lenders were able to rank default probabilities of borrowers using their credit ratings and collaterals, nonetheless, the information is ex-ante and cannot determine the occurrence of moral hazard.

Economic theory has been used to study banks' lending by Stiglitz and Weiss (1981). Their study has been the most influential in banks' lending studies (Wette 1983; Besankor and Thakor 1987; De Meza and Webb 1987; Arnold and Rile 2009; Su

2010). Their main idea is that in a competitive equilibrium, a loan market is characterised by credit rationing. In their model, banks categorise borrowers according to the expected return of projects. It shows that if a bank increases its interest rates charged on borrowers, it will suffer from adverse selection as only risky borrowers are willing to borrow at such high rate and cause moral hazard as they would choose riskier projects. Therefore, interest rate being charged on the borrower is sensitive to banks' risk ranking of them according to the repayment probabilities. They also examined the role of collaterals but only for risk-averse borrowers. This argument has been further extended by Wette (1983), however, only for risk-neutral borrowers and focuses on collateral requirement while interest rate is held fixed. Thus, in these types of models of studying banks' lending behaviour, borrowers' risk classes are first sorted. These assumptions and results led to conclude that lower quality borrowers could only be attracted at higher interest rates and collateral requirements. In these types of study, different decision makers would arrive at the same conclusion which in reality is not the case, because their experiences, intuitions and the institutional environments that they operate in also have significant influences on how they make judgments.

It is true that classical decision theory and rational decision making models are the most reliable and robust for describing and predicting aggregate-level outcomes that are the result of individual level decisions especially with the case in situations where monetary markets, where information regarding preferences are readily available (Cook et al. 1990). North (1990, p.11) also argues that classical theories are compatible with and have made major contributions to market analyses in developed countries but fail to characterise underdeveloped markets.

Other limitations also exist. Firstly, they assume that a clear distinction can be made between high and low risk borrowers. Secondly, almost all the research papers using classical decision theory to study decision making lack empirical testing of the underlying assumptions. Most importantly, the simplifying approach of classical decision theory does not capture the complexities of national and organisational environmental effects on the variations in risk assessments. Thus, classical decision theories with over emphasis on an individual level of analysis should be avoided.

4.1.2 Psychological decision theory

While economic literature on loan officers assumes that they are fully rational people, making decisions on the base of real, although information concerning the quality of applicants and their investment projects are not verifiable, psychological decision theory recognises the role of individuals in arriving judgements. Their personalities and perceptions, roles and organisations including their values and emotions can affect their decision making styles. Psychological decision theory gives emphasis on individual process of reasoning while incorporating the social desirability of perceived consequences and specific motivational factors in processing risk and uncertainties leading to the formation of an overall judgement (Renn and Swaton 1984; Mcnamara and Bromiley 1997). Thus, embodiment of 'bounded rationality' concept into economic organisations has revolutionised economists from a fully rational model of decision making (Rakow 2010). Game theory, prospect theory, attribution theory and theory of choice are the most common theoretical assumptions used in psychological decision-making models (Oliveira 2007). In addition, researchers have also integrated psychological-based theories

to study investors' behaviour in financial decision making process. In these types of behavioural finance models, traditional assumptions of individual rationality hypothesis are relaxed and agents' cognitive psychology is examined.

With the introduction of game theory in classical decision making models, psychological aspect of decision making can be seen. For instance, [Barboza \(2009\)](#) uses game theory approach to study micro lending with no physical collateral but social cost that acts as a quasi-collateral. In that study, the interplay of trust between lender, borrower and consignor is examined. In a regular market setting, using collateral to overcome asymmetry of information would be the dominant strategy and if the borrower is unable to provide such collaterals, the bank would refuse granting the loan. However, in microcredit setting, group-based individual lending contracts where if a person defaults, the other group members would need to pay off the balance owing to the lender, preventing moral hazard by the borrowers. Under this condition, joint liability among borrowers are created, therefore, only those borrowers which the group could trust would get loans, thereby decreasing asymmetry of information. In this study, strategic interaction among uncollateralised borrowers has been introduced into rational decision making model. However, it does not describe the complexity of different levels of political, social and cultural relationships. Another limitation in this study is that though it incorporates psychological thinking, it does not omit the assumptions of rational choice theory. Rational decision making models and economic applications of banks' lending studies can also be seen using game theory which introduces strategic behaviour into rational decision theories. It focuses on interdependent decision making process ([Shubik et al. 2002](#)). The underlying assumption is that decision makers take into account of other people's solutions before choosing an alternative. [Jeong and Joh \(2010\)](#) study banks' risk taking behaviour using a game theory framework. They study Korean commercial banks using quarterly data on bank lending compiled by the Bank of Korea from 1993 to 2008. Their results show that big banks tend to take more risks by lending to high risk borrowers as they receive government protections through bail-outs and deposit insurances.

Researchers studying decision making from psychological perspectives are interested in the role of intuitions and emotions in arriving a judgement ([Agor 1984](#); [Klein 2003](#)). Intuition is regarded as "vague feeling of knowing something without knowing exactly how or why" ([Hayashi 2001](#); [Lipshitz and Shulimovitz 2007](#)). Emotion, on the other hand, is defined as the feelings of impending decision might be wrong, or that particular decision is inappropriate ([Lipshitz and Shulimovitz 2007](#)). The effects of intuition and emotion, in other words, behavioural factors, on banks' lending decisions are widely studied ([Jankowicz and HISRICH 1987](#); [Lipshitz and Shulimovitz 2007](#); [Bellucci et al. 2010](#); [Hensman and Sadler-Smith 2011](#)). [Jankowicz and Hisrich \(1987\)](#) use personal construct theory to explore intuitive factors of banks' loan officers in small business loan decisions. Their sample includes 20 commercial loan officers from four banks in Tulsa, Oklahom, and Las Cruces, New Mexico. Their results indicate that intuition of loan officers plays more important role in business lending than collateral and other financial aspects of a prospective loan.

Prospect theory, for example, is first introduced by [Kahneman and Tversky \(1979\)](#), then, it is advanced into cumulative prospect theory by [Tversky and Kahneman \(1992\)](#). It insists that risk attitude is determined by the outcome's relation to subjective judgement and not the level of outcome. According to prospect theory, individuals tend to be risk averse in a domain of gains or when the circumstances are in favour of

them, and risk seeking in a domain of losses or when they are in the midst of crisis. It has been used by Godlewski (2007) to study risk-taking behaviour by banks in emerging markets. The author has used accounting data of 894 South-East Asian and South and Latin American banks for the period of 1996–2001 from *Bankscope* database. The results support prospect theory's assumptions. Johnson (1993) has also found similar results using 142 banks' data from Bank Compustat for the period of 1979–1989. These types of study over emphasise individuals' cognitive processes. It fails to take into account of the institutional constraints such as regulatory requirements on the banks. When these types of constraints exist, even if the loan officers have all the information they need to validate the credibility of the borrower, loan applications might be rejected as to institutional limitations.

Psychological studies are oriented towards individual decision making and more or less assumed that people are rational when making economic decisions. This approach has been further improved by not only focusing on individual (micro) level but also on how societal (macro) level affects individual choice in social-psychological judgement theory. This is discussed in detail in the next section.

4.1.3 Social-psychological judgement and attitude theory (Sociocognitive)

Social-psychological study of risk perception is interested in the issues of risk communications and also termed as 'empiricist psychometric' approach (Taylor-Gooby and Zinn 2006). The studies of risk perceptions using social-psychological judgement theory assumes that risk is defined subjectively and influenced by psychological, social, institutional and cultural factors (Solvic 2001). In other words, psychological based studies focused only on intuition, personalities, emotions and perceptions, however, in social psychology, it is interested in knowing how social factors influence those psychological aspects and final judgements are arrived. McNamara and Bromiley (1997) studied influences on risk assessment in commercial lending using behaviour decision theories by recognising organisational and cognitive factors.

Bellucci et al. (2010) provide a review of literature and examined the theoretical arguments and empirical evidence on how genders of loan officers have effects on banks' lending practices. They have summarised that male and female loan officers' exhibit different risk tolerance levels. This can be the results of other factors such as differences in response to incentives (Agarwal and Wang 2008; Beck et al. 2009) and career concerns (Agarwal and Wang 2008).

Risk studies based on psychometric perspective use quantitative measures including questionnaire studies, magnitude estimation, numerical scaling, and attitude surveys (Taylor-Gooby and Zinn 2006). Other associated methodologies include Logit Model (Agarwal and Wang 2008; Barasinska 2009), Probit Model (Ravina 2008; Bellucci et al. 2009), Tobit Model (Ravina 2008) and qualitative methodologies such as interviews, are also used in association with quantitative measures (Buttner and Rosen 1988).

4.1.4 Sociological theories and policy analysis

By only depending on the behavioural data alone limits the importance of social context of choice (Cook et al. 1990). In other words, rational decision makers in a particular social context will not be able to make rational decisions as collection

preferences cannot be obtained due to the constraints imposed from the contextual environment. Sociological perspective gives a distinctive contribution to risk analysis as its emphasis is on the role of shared ideas and normative frameworks which are formed by cultural and social factors (Taylor-Gooby and Zinn 2006). Douglas and Wildvasky (1982) have studied risk from sociocultural perspective. They have found a wide range of cultural bases for risk perception and the process of dealing with it. Thus, sociological perspective gives a significant contribution to classical risk studies whose assumptions are that individuals are rational actors.

However, sociological theories have not been incorporated extensively in studying banks' lending behaviour, except for Lane and Quack (2002) who applied sociological institutionalist approach to understand how banks construct and manage risk in SME lending. The authors analysed banks financing in Britain and Germany and found different approach towards risk assessments despite banks are within EU regulations and internationalisation. This is because banks are deeply embedded in their own institutional framework.

Moreover, Lane and Quack (2002) investigate countries in which economic sanctions do not exist, therefore, with no barriers to internationalisation. By looking at this study, differences in banks' lending practices can be seen across two different countries. If the banks are considered to be rational, no difference will be seen. Hence, banks' operations and activities are affected by the institutional environment where they operate in (Hernández-Cánovas and Kočter-Kant 2010). Therefore, there requires the need to take into account of the context. By referring back to the theoretical studies of perception of risks, sociological theory would be the only one that addresses power, institutional constraints, social values and pressure groups on risk perception (Otway and Vonwinterfeldt 1982).

Thus, in order to understand banks' risk assessment procedures and policies, it is necessary to consider the institutional environment in which the banks are embedded in. This includes regulative effects of state policy, legislation and intermediary organisations on banks' lending behaviour which have been highlighted by some of the comparative studies of economic organisation in different societies (Lane and Quack 2002; Klein 2003; Whitley 2003) and other normative and cognitive effects as suggested by new institutional theory (Dimaggio and Powell 1983; Scott and Meyer 1994).

4.2 Analytical domains

Previous studies' analytical domains are divided into three different levels of practice in sociology, micro, meso and macro levels.

4.2.1 *Micro level*

The studies in which individual interactions between and within organisations, thus having direct effects on decision making processes will be classified under micro level studies. For instance, Deyoung et al. (1999) study the effects of age, number of branches and size of the bank on banks' lending using US commercial bank data and find that there are negative relationships between age and size of the banks on lending to small businesses. They have also found that banks with higher concentration of banks' branches in urban market have positive effect on small business lending. Similar

results are also found by Berger et al. (2001) and Zhong and Ying (2009) stating that large banks are less likely to engage in small business lending and this is also true for distressed and foreign owned banks in Argentina and China respectively.

Panagopoulos and Spiliotis (1998) and Degryse and Van Cayseele (2000) study the customer relationships and their effects on pledging collaterals and interest rates. The former uses bank level data set from Greek banks whereas the latter from Belgian banks. However, they have got the same results suggesting that the longer the customers have relationships with a bank, the lower the interest rates and probability of pledging collaterals. Sapienza (2004) and Micco and Panizz (2006) study the impact of bank ownership on banks' lending. They have found that government-owned banks charge lower interest rates than private banks. Similarly, higher risk takings can be found in shareholder owned banks as they attempt to increase shareholders' wealth (Seabright et al. 2002). These studies have used data from European transition countries. There is also another study of the relationships between internal credit ratings which is derived from Basel Accord II and interest premiums (Machauer and Weber 1998). This study focuses on German banks and finds that loan interest premiums are related to borrower credit ratings and show no relation to collaterals.

In summary, these micro level studies focus on the organisational factors such as customers, collaterals, bank size, ownership, age and number of branches and their effects on banks' lending behaviour.

4.2.2 Meso level

Meso level studies are broader than micro level studies in the sense that they provide more focus on industrial effects on banks' lending practices. One of the most studied meso level factors and its effects on banks' lending is competition. There are significance number of studies stating that competition not only decreases cost of borrowing but also increases banks to have longer relationships with borrowers (Petersen and Rajan 1995; Ruckes 2004; Hauswald and Marquez 2006; Zhong and Ying 2009), thereby creating less incentives for banks to acquire information. Liu et al. (2012) study competition and risk taking in regard to South East Asian banking. They have found that concentration of banks lead to reduce risk taking. The major flaw of the study is that they have studied only four countries, namely, Indonesia, Malaysia, Philippines and Vietnam, which are listed under top six economies according to GDP data from IMF database. They have generalised the findings based on these four countries and concluded that competition decreases banks' risk taking behaviour. Collateral laws and creditor protection rights are also found to have effects on banks' lending, for instance, Haselmann and Wachtel (2006) study 423 banks in 20 transition countries in Europe and found that banks in good legal environment is associated with banks acceptance of different types of assets as collaterals and these banks are more willing to lend to information opaque borrowers.

Ely and Robinson (2001) also study the improved in credit scoring models in banking industry and its effects on banking industry using US banking data. They have discovered that technological change in credit scoring increases large banks' share of small business lending and decreases average loan size to small businesses. The impacts of capital regulations on banks' lending are also studied quite extensively by many researchers (Ben Naceur and Kandil 2009; Shrieves and Dahl 1995; Honda 2004;

Yilmaz 2009). They have found that regulatory practices, capital regulation and bank penalties have significant effects on banks' lending.

In summary, meso level studies focus on the relationships between competitions, collateral laws, and technological developments in banking sector, capital regulations and banks' lending behaviour.

4.2.3 Macro level

Macro level studies are the broadest of all as it takes into account of all the factors that not only affect banking industry as such but the economy as a whole. These studies include macroeconomic uncertainties, socio-cultural environment, and so on. For instance, Baum et al. (2002) and Ruckes (2004) study of macroeconomic uncertainties such as uncertainty in future economic conditions, inflation, and volatility of interest rates on banks' lending and found that banks become collectively more conservative in lending when there are a lot of pressures of macroeconomic uncertainties using bank level data from US. Similar results are found in Italian (Gambacorta and Mistrulli 2003) and.

Chilean banks (Micco and Panizz 2006). On the other hand, Maznevski et al. (2001) have taken a different perspective by studying banks' lending behaviour from social-cultural environmental perspective. They have used comparative data on cultural orientations from Canada, Mexico, Netherlands, Taiwan and USA integrating behavioural finance approach to understand how the differences in social cultural environment can have an effect on banks' lending practices. Their results indicate that loans are best rated when hierarchical information about the borrowers is given and worst when collective information is given.

It can be concluded that all of these papers study banks' lending by either isolating analytical domains or considering decision making as being rational or at least within bounded rational by using quantitative methodologies. In other words, many of the research papers in this area usually isolate the factors by studying only one directional approach rather than the interconnectedness and reflective actions on influences. In addition, none of these studies undertake research on how banks respond to institutional environment and how they interact with each other in order to attain efficiency while achieving legitimacy. Different levels of studies provide different factors affecting banks' lending behaviour. In reality, not only banks' lending but also their other activities operate by interacting with the elements from both task and institutional environments.

Moreover, it is unrealistic to study risk perceptions only at an individual level and also, it is inappropriate to assume that individuals are rational. The studies with rationality assumption are weak in the sense it will not give complete picture of the phenomenon in how banks' lending practices are shaped if the events or state of affairs that materialises them are excluded (Elster 1990). In order to choose one of the risks in decision making studies for this research, there is the need to understand the type of environments that banks operate in. In a country, banking sector receives more policy attention than any other sectors. This is because they play a dominant role in the financial system by leveraging their balance sheet structure to allocate financial resources for businesses. This high leverage implies substantial degree of exposure of capital to liquidity, credit and other risks, which can lead to possible bank runs and failures. If these happen, there can be disruptive consequences for the economy. As a result, quantitative (capital adequacy requirements for risk diversification) and

qualitative (protection rules for stakeholders) prudential regulations are imposed on banks (Rocha et al. 1999), therefore, banks become highly institutionalised (Soon and Cummings 1997). In any organisations, in this case, banks operating in the industry mean they have claimed memberships to related institutions in this industry. Banks as members need to follow rules and norms in the environment along with the industry to become legitimate for their existence and survival. Thus, the type of study which integrates ‘sociological theories and policy analysis’ is more suitable for this research. To this date, sociological theories have yet to be widely applied in banking research, except for Lane and Quack (2002) and Riaz (2009). The former studies banks’ lending behaviour in the UK and Germany while the latter applied sociological approach to study the global financial crisis. As the research using sociological approach is limited, there is no prior framework or model to be followed. Therefore, the following chapter will provide the process by which sociological theories or approaches can be applied in banking studies.

5 Conclusions

In summary, the literature studying banks’ lending behaviour used statistical probability models based on bank level data which are only realised in the future and has ignored the fact that these future results are formed by the banks’ perceptions and risk attitudes towards businesses during their lending decisions. In other words, these financial studies focus on market-based judgements of financial risks and the ex-post calibration of different factors and bank lending. In contrast, bank lending decisions are strategic decision processes (ex-ante) and made depending on their perceptions of borrower’s credibility and repayment ability.

Secondly, these studies are limited in the sense that they only identified the significances of the relationships between different factors and banks’ lending, and failed to explore other factors constraining banks from externalising and internalising risks. By identifying the significances of the relationships, these studies isolate the factors in macro, meso and micro analyses and fail in one important respect, that is, how these factors influence one another, in other words, they fail to provide theoretical links in which these factors interact. More importantly, these analyses are based on the countries where transparency exists and large amount of data can be gathered through different sources.

Thirdly, most of these studies have ‘rationality’ assumptions in studying decision making approach. This causes limitations as it usually simplifies complexities of relationships between political and social relationships. Individual level decision making is very complex, hence, require an expanded set of concepts about how different institutional arrangements affect and are affected by individual decision making (Cook et al. 1990). Rationality is more concerned with micro level than macro level studies. Miller (1990, p. 343) also makes distinctions between economics and sociology by stating that

“Economics is about how individuals make choices, and sociology is about how individuals have no choices to make. The gap between economics and sociology has certainly shrunk dramatically as economists have learned to accept the possibility that individual choices in coordination games are rationally

constrained by social conventions and norms. However, individuals in social settings constrained by social norms still have important choices to make”

- He suggests that there is still a gap in studying banks' lending behaviour in two main streams, economic and sociology. Much of the research in banking is dominated by economists who integrate their rationality models into them. Despite sociological approach being recognised to improve banking studies, none of the sociologists have taken the steps to integrate their disciplinary assumptions and theories into this area. It is needed as banks are similar to individuals living in a community or a society, where they have to adapt to the environments that they live in and follow the requirements that their societies expected them to. These gaps in literature give a scope for interdisciplinary approach to study CRA.

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