

A STUDY ON THE DETERMINANTS OF BUSINESS STABILITY IN CREDIT CARD FIRMS: EVIDENCE FROM KOREA

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ABSTRACT

This study empirically analyses several factors that affect financial stability such as the profitability of Korean credit card firms, capital adequacy, loan soundness, and liquidity. In particular, internal and external factors found in previous studies were applied to the analysis in order to investigate whether or not those factors had a significant effect on the business stability of Korean credit card firms. The major research findings are as follows. First, the determinant factors for profitability were found to be the degree of enlargement, foreign credibility, and the level of risk management. Second, the determinant factors for capital adequacy were found to be the degree of enlargement, diversification, foreign credibility, the level of management, and the interest rate. Third, the determinant factors for loan soundness were found to be the degree of enlargement and foreign credibility. Lastly, the determinant factors for liquidity were found to be the degree of diversification, foreign credibility, the level of risk management, the degree of competition, economic conditions, and the interest rate. In conclusion, with the recent reduction in the card affiliates' fees, the leverage regulation, and the credit card debt suppression policy, financial authorities will likely refer to this study as they carefully examine the various influences on the business stability of domestic credit card firms and come up with relevant countermeasures for the continuous growth of those firms.

Keywords: credit card firms, profitability, capital adequacy, loan soundness, liquidity, business stability

INTRODUCTION

As a way to resolve household debts, the Korean Financial Supervisory Authorities recently increased the strength of the regulations for national credit card firms. The financial authorities halted the expansion of asset sizes of credit card firms by restricting the criteria for credit card issuance to a credit rating level of 7 or greater by 2012 and by setting the upper limit of leverage for credit card firms to a maximum of six times by 2015. According to reports by the Korean Financial Supervisory Authorities, their card loan suppression policy and reduced (remittance) fees decreased the volume of credit card debt in the months of

January until April by 35% compared with the volume of credit card debt in the same period of the previous year. Considering that domestic credit card firms usually procure the funds necessary for card loans and card sales through the issuance of credit card debt, the financing mechanisms of credit card firms seemed to be in poor condition.

According to a press release by the Credit Finance Association, the total domestic credit card approval history as of August 2012 was KRW41.7 trillion (about USD36.8 billion), indicating an 8% increase of the total at the same month a year ago. It was also the first time that the increase rate has stayed in the single digits since the October 2009 rate of 9.4%. In addition to the current global economic uncertainty due to the Eurozone crisis, the tightened regulations by the financial authorities curbed the business stability of domestic credit card firms.

Thus, the present study examines the factors needed for domestic credit card firms to maintain stable management activities and offers important suggestions to the credit card firms and financial authorities in setting up managerial goals and policies, respectively. In the next section, previous relevant studies are presented followed by an explanation of the data and the data analysis model used in the empirical analysis. Finally, the empirical analysis and the conclusion are presented.

PREVIOUS STUDIES

In this part, the factors affecting the business stability of financial institutions and stability itself are considered to select the main variables to be used in this study.

Financial institutions have a revenue structure in which profit is gained through fund management. Demircuc-Kunt and Huizinga (2010) identified the profitability of financial institutions through an analysis of funding procurement structures. However, as also argued by Pasiouras and Kosmidou (2007), the profitability of financial institutions is significantly affected by the structure of the financial market or macro-economic conditions. Therefore, the possibility of vicissitudes for financial institutions is relatively large in comparison with that of the manufacturers. Blejer, Feldman and Feltenstein (2002) claimed that the structural changes of the financial market resulting from a rise in the policy interest rate can hamper profitability with irrecoverable debt from insolvent loans and an increase in allowance. Thus, the key to the sustainable management of financial institutions is revenue generation through effective fund management. As a recent study regarding the profitability of credit card firms suggests, this is a pivotal factor in the survival of credit card firms. Singh, Murthi and Steffes (2013)

analysed risk-adjusted revenue (RAR) to find the relationship between revenue and risk and suggested that the relationship is significantly positive.

On the other hand, Crockett (1997) defined business stability as the condition in which financial institutions and the financial market function soundly. This implies that the reduced stability of an individual financial institution can influence the financial system as a whole. For this reason, Borio (2003) argued that oversight by financial authorities is absolutely essential for the stability of financial institutions. Compliance with financial regulations, such as the maintenance of capital adequacy, is also crucial for a financial institution to engage in business activities. As a result of Korea's financial crisis in 1997, it is presumed that a considerable level of capital expansion should be required of financial institutions so that they are able to endure credit risks. However, Chatterji and Seamans (2012) argued that the deregulation of the credit market helps small firms to finance their funds, thus increasing the probability of their entrepreneurial entry.

In the case of financial institutions, the risk of fund operations is continuously monitored by the investors who provide the funds, the supervisory institution, and the credit rating agencies. Thus, risk management regarding major insolvent loans is considered to be one of the key requirements for management stability. The view that continuous monitoring by investors and other concerned persons provides an incentive to manage risk was previously proposed by Goodfriend and King (1988), Calomiris (1999), Dinger and von Hagen (2009), Huang and Ratnovski (2010), and Archarya, Gale and Yorulmazer (2011). To support the above view, business stability evaluation factors can collectively be termed as "loan soundness meaning financial soundness on debt."

Financial institutions need to maintain a certain level of liquidity to be able to adequately respond to depositors' unexpected withdrawals. As Song and Thakor (2007) noted, the fact that depositors possess core deposits for liquidity purposes shows the importance of liquidity management in maintaining business stability. In particular, because the increase in liquidity risk of a certain financial institution can spread to the whole group of financial institutions, as argued by Acharya et al. (2011), liquidity is recognised as a major factor in determining the business stability of financial institutions.

As suggested by the aforementioned studies, the business stability of financial institutions should be considered in terms of profitability, capital adequacy, loan soundness, and liquidity. In other words, ensuring the stability of a financial institution means having the ability to generate sufficient revenue as well as maintaining sufficient assets to provide against losses. Furthermore, business

stability can be maintained when a financial institution has assets with a low risk of insolvency and is able to smoothly procure emergency funding.

Previous studies need to be further examined to determine the factors affecting business stability. Those factors can be categorised as internal factors, representing the management status of financial institutions, and external factors, such as the structural changes of financial markets and the macro-economy as well as the degree of competition in the financing industry. However, the main variable influencing financial assets and the value of liabilities is the interest rate. Kassim and Manap (2008) previously conducted an analysis on the impact of interest rates on each category of household loans and determined that card loans and auto loans were the most heavily impacted. This is because high card fees and high card loan interest rates from the credit card firms induce relatively large differences in a borrower's reaction, which are interpreted as reacting sensitively to interest rate fluctuations.

Another external factor is the surrogate variable of the economy's structural change, the (level of) economy. Chen (2010), based on the negative relationship between credit spread and economy, implied that change in the credit spread can serve as a leading indicator of the economic condition. Similar studies on the economic condition as the surrogate variable of economic structural change were also done by Jokipii and Milne (2008), and Salas and Saurina (2002).

Previous studies report that the degree of competition between financial sectors is another significant factor affecting the business stability of financial institutions. A major study by Demircuc-Kunt, Laeven and Lebine (2004) through an analysis of the relationship between the structure of the financial market and the loan-deposit margin, determined that heightened competition in the market was related to a reduction in the loan-deposit margin. A recent study by Akin, Aysan, Borici, and Yildiran (2013) analysed the market power of banks in the Turkish credit card market to determine whether competition was a major factor in the credit card business. From the perspectives of the aforementioned studies, competition may indeed affect the market status of financial institutions involved in the credit card business. Another interesting study considering competition as a factor in managing the credit card business, written by Demirel, Arzova, Ardic and Bas (2013), argued that the competitive credit card market environment of Turkey forces financial institutions to enter into new businesses by using credit card brand value and a wide point of sale (POS) network to survive in the market.

On the other hand, internal factors include asset size and diversification. Kashyap and Stein (1995) claimed that the smaller the asset size of the financial institution, the more active it is with regard to loan soundness, indicating that there is a

significant relationship between asset size and loan soundness. Carter and McNulty (2005) also argued that smaller-scale financial institutions perform excellently in the field of small business loans, indicating the negative relationship between asset size and profitability.

Another study conducted by Stever (2007) reported that the level of diversification is an important factor affecting the business stability of financial institutions. The study showed that smaller financial institutions exhibited lower levels of diversification, and this acted as a risk factor that harmed business stability.

In the current study, additional variables, including foreign credibility and the level of financial institutions' risk management, were considered as factors that have a significant influence on the business stability of financial institutions, as reported by the previous studies. This acknowledges that compared with banks, Korean credit card firms are characteristically weak in their ability to procure funding. Bond issuance and overdue debts for more than six months, as weights of the total debt, were used as surrogate variables for foreign credibility and the level of risk management, respectively. In particular, Shefrin and Nicols (2014) argued that credit market consumers tend to depend on a credit card firm's reliability for high confidence in spending and borrowing. Therefore, the reputation factor is a pivotal factor in managing the stability of credit card firms that do not have a deposit function.

Meanwhile, Archarya et al. (2011) argued that monitoring bad debts plays an important role from a risk management perspective. Thus, this study adopts the weight of six-month overdue loans as the proxy variable of the level of risk management of credit card firms.

DATA AND METHODOLOGY

Data

The current study used operating margins, non-performing loan (NPL) ratio, adjusted capital ratio, liquidity ratio, asset size, economy growth rate, market interest rate, and interest rate for extending and receiving credit as variables representing the internal and external factors impacting credit card firms. The definitions of the variables and calculating formula are presented in Table 1. The period of analysis was from the first quarter of 2000 to the fourth quarter of 2011, and the data were obtained from the financial statistics information of the Korean Financial Supervisory Service and from the financial database; FnGuide. In

Table 1, the hypotheses are presented, including the expected coefficient parameters' signs to each independent variable based on previous studies.

Table 1
Definitions and explanations of variables

Factors	Hypotheses	Definitions	Contents
Operating margins		Dependent variable representing profitability by Pasiouras and Komidou (2007), Demirguc-Kunt and Huizinga (2010), Singh, Murthi and Steffes (2013)	(operating revenue-interest expense) ÷ (operating cost-interest expense)
Non-performing loan ratio		Dependent variable representing loan soundness referred by Goodfriend and King (1988), Calomiris (1999), Dinger and von Hagen (2009), Huang and Ratnovski (2010)	non-performing loans ÷ total loans
Adjusted capital ratio		Dependent variable representing capital adequacy by Crockett (1997), Borio (2003), Chatterji and Seamans (2012)	adjusted capital ÷ adjusted assets
Liquidity ratio		Dependent variable representing liquidity by Song and Thaker (2007)	current assets ÷ current liabilities
Asset size	P(+), S(+), C(+), L(+)	Independent variable representing size of credit card firms by Carter and McNulty (2005), Pasiouras and Kosmidou (2007)	standardised asset size by adding natural logarithm
Weight of non-interest revenue	P(+), S(+), C(+), L(+)	Independent variable representing level of diversification of credit card firms referred by Stever (2007)	weight of non-interest revenue = non-interest revenue ÷ operating revenue
Weight of bond issue	P(+), S(+), C(+), L(+)	Independent variable representing level of reputation of credit card firms referred by Shefrin and Nicols (2014)	weight of bond issue = bond ÷ total liabilities

(continue on next page)

Table 1 (continued)

Factors	Hypotheses	Definitions	Contents
Weight of 6-month overdue loan	P(-), S(-), C(-), L(-)	Independent variable representing level of risk management of credit card firms referred by Archarya et al. (2011)	6-month overdue loan ÷ total overdue loan
Net interest margin	P(+), S(+), C(+), L(+)	Independent variable representing level of competitiveness among credit card firms by Demirguc-Kunt et al. (2004)	net interest margin = non-banking weighted average lending rate – non-banking weighted average deposit rate
Business cycle	P(+), S(+), C(+), L(+)	Independent variable representing economic condition by Jokipii and Milne (2008)	gross domestic product rate
Market interest rate	P(+), S(-), C(-), L(-)	Independent variable representing level of policy interest rate by Blejer et al. (2002)	call rate

Note: In the hypotheses column, P, S, C, L mean profitability, financial soundness, capital adequacy, and liquidity, respectively, and the expected sign indicates the coefficient parameters' signs to independent variables

Methodology

The analysis model is as follows. *Stability_t* is the dependent variable indicating business stability, and each variable on the right hand side of the equation shows profitability, capital adequacy, loan soundness, and liquidity. *size_{t-1}*, *noni_{t-1}*, *bond_{t-1}*, and *risky_{t-1}* each represents, considering lag, the asset size, weight of non-interest revenue, weight of bond issue, and weight of overdue debts for six months or more, respectively. They are independent variables representing the degree of enlargement, diversification, foreign credibility, and level of risk management. Not considering lag, *sp_t*, *gdp_t*, and *call_t* each represents the degree of competition, economic condition, and interest rate, respectively.

Stability_t =

$$\beta_0 + \beta_1 size_{t-1} + \beta_2 noni_{t-1} + \beta_3 bond_{t-1} + \beta_4 risky_{t-1} + \beta_5 sp_t + \beta_6 gdp_t + \beta_7 call_t + \varepsilon_t$$

Table 2 shows the descriptive statistics of the variables used for analysis. The average NPL ratio, adjusted capital ratio, and liquidity ratio are shown as 4.47%, 15.67%, and 241.87%, respectively.

Table 2
Summary statistics of variables

	Mean	Median	Std.	Skewness	Kurtosis	Max	Min
Operating margins	1.1165	1.2019	0.6544	0.4676	5.7892	3.4381	-0.6888
Non-performing loan ratio (%)	4.4719	3.7000	3.1054	1.0743	3.5811	13.3900	1.0000
Adjusted capital ratio (%)	15.6711	22.3600	8.8376	-0.4715	2.2452	30.1500	-5.4900
Liquidity ratio (%)	241.8653	221.7600	73.6940	0.6378	2.6480	426.6100	130.3300
Asset size	17.5618	17.5161	0.3204	0.5053	2.2192	18.2201	17.0985
Weight of non-interest revenue (%)	96.5030	97.3800	3.6647	0.1265	6.7661	110.2500	87.8300
Weight of bond issue (%)	53.4492	57.0990	13.2593	-0.1962	1.8869	74.1646	28.2420
Net interest margin(%)	6.2585	6.2500	-1.2768	-1.4735	7.5811	8.2800	0.9000
Weight of 6-month overdue loan (%)	0.8022	0.5561	0.6037	1.3905	4.1244	2.7335	0.2401
GDP rate (%)	0.9894	1.0000	1.2788	-2.0162	12.5959	3.8000	-5.1000
Call rate (%)	3.8051	4.0000	1.0187	-0.4464	2.2040	5.3500	1.8800

RESULTS ANALYSIS

Table 3 shows the analysis results of the determinant factors for the profitability of credit card firms. Numbers (1)–(7) show the analysis results of the relationship between individual factors, such as the enlargement factor, diversification, foreign credibility, degree of competition, level of risk management, economic condition, and interest rate, and the profitability of credit card firms. Number (8) shows the results when all the factors were considered at once. In (1) and (8), asset size was found to have a negative effect on profitability, but there was a 5% level of statistical significance only in (8). Thus, it was found that the smaller the

asset size of the financial institution, the better the profitability, as suggested by Carter and McNulty (2005). This also means that the expansion policies of the credit card firms do not help profitability.

Weight of non-interest revenue, which represents diversification, was not shown to have a significant effect on profitability. Credit card firms, in general, have a relatively high weight of non-interest revenue in comparison with banks, which generate profit through loans because they have high weights of monthly installed payment and card affiliate fees. Therefore, card loans requiring high fees and loan interest and interest revenue through cash services are predicted to contribute to the profitability of credit card firms.

Looking at the relationship between the weight of bond issue, representing foreign credibility, and profitability, a significant estimation parameter is indicated. The values are shown as 0.0017 and 0.0157 in (3) and (8), respectively, and the statistical significance levels are 1% and 5%, respectively. As expected, as foreign credibility increased, profitability also increased greatly. As suggested from the previous foreign study by Demirguc-Kunt and Huizinga (2010), a smooth funding procurement structure seems to have a significant impact on profitability.

The relationship between the level of risk management in Korean financial institutions and their profitability was found to have a statistically significant negative relationship. In other words, profitability decreased as weight of long-term overdue debt increased. This relationship is also shown in (4) and (8), as the estimated parameters are at a 1% significance level. A high weight of long-term overdue debt means reduced profitability through increased allowance for irrecoverable debts and the occurrence of irrecoverable debts.

The aforementioned four factors were internal factors of credit card firms. From here on, the three factors representing financial markets and macro-economic conditions will be explained. The difference between the lending rate and deposit rate, representing the degree of competition, was found to not have a significant effect on profitability. The level of market interest rates or the economic condition also did not have a significant effect on profitability.

Table 4 shows the analysis results of the determinant factors of the capital adequacy of financial institutions. Regarding the degree of enlargement, there is no statistical significance shown in (1) but a 1% level of statistical significance is shown in (8), negatively affecting capital adequacy. Capital adequacy is found to be better in smaller-scale credit card firms.

Table 3
Results on the determinants of the profitability of credit card firms

Model: Profitability_{*t*} = $\beta_0 + \beta_1 size_{t-1} + \beta_2 noni_{t-1} + \beta_3 bond_{t-1} + \beta_4 risky_{t-1} + \beta_5 sp_t + \beta_6 gdp_t + \beta_7 call_t + \varepsilon_t$

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat
β_0	0.004	0.73	0.001	0.40	0.003	0.75	0.001***	3.00	0.015***	11.54	0.012***	10.94	0.013***	6.21	0.200**	2.67
β_1	-0.002	-0.51													-0.010**	-2.32
β_2			-0.000	-0.03											-0.000	-0.79
β_3					0.002***	2.79									0.016**	2.20
β_4							-0.004***	-3.52							-0.006***	-2.79
β_5									-0.000	-0.19					0.001	0.78
β_6											-0.001	-0.92			-0.001	-1.03
β_7													-0.001	-0.67	0.001	1.04
R ²	0.005		0.000		0.114		0.001		0.147		0.016		0.006		0.569	
DW	1.099		1.097		1.202		1.049		1.284		1.024		1.055		1.779	

Notes: ** and *** represent significance at the 5% and 1% level, respectively.
 DW refers to the Durbin Watson test statistic which shows whether correlation exists, and when $0 < DW < 4$, DW indicates that there is no correlation.

Table 4
Results on the determinants of the capital adequacy of credit card firms

Model: $Capital_t = \beta_0 + \beta_1 size_{t-1} + \beta_2 noni_{t-1} + \beta_3 bond_{t-1} + \beta_4 risky_{t-1} + \beta_5 sp_t + \beta_6 gdp_t + \beta_7 call_t + \varepsilon_t$

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat
β_0	0.115	0.18	-0.748	-1.18	-0.066**	-2.09	0.162**	2.45	0.267***	15.51	0.189***	13.58	0.327***	10.25	1.892***	8.29
β_1	0.004	0.11													-0.116***	-7.24
β_2			0.097	1.47											0.028***	2.75
β_3					0.480***	8.84									0.338**	14.15
β_4							-0.096***	-6.16							-0.108***	-10.45
β_5									0.004	0.37					-0.001	-0.13
β_6											-0.003	-0.28			0.003	0.77
β_7													-0.037***	-4.05	-0.007*	-1.82
R^2	0.000		0.168		0.521		0.003		0.436		0.001		0.182		0.933	
DW	0.145		0.316		0.414		0.147		0.369		0.142		0.194		1.806	

Notes: *, **, and *** represent significance at the 10%, 5%, and 1% level, respectively.
 DW refers to the Durbin Watson test statistic which shows whether correlation exists, and when $0 < DW < 4$, DW indicates that there is no correlation.

Diversification is found to have a positive effect on capital adequacy. In (2) and (8), the amounts of estimation parameters are shown and the parameter in (8) is shown to be significant at a 1% level. As the ratio of the cash loan business increases, risk-weighted assets categorised as loan portfolios increase, which in turn decreases the equity capital ratio. Therefore, a higher ratio of non-cash loan business, such as card affiliates, monthly instalment payments, or lump sum payment sales, improves capital adequacy.

Foreign credibility also seems to have a positive influence on capital adequacy. The estimated parameters are shown as 0.4800 and 0.3380 from (3) and (8), respectively, with relatively high statistical significance. As expected, capital adequacy improves as the weight of bond issue, similar to the subordinated debt helpful for capital expansion, increases.

The level of risk management represented by an increased share of the long-term overdue debt was found to have a negative effect on capital adequacy. It is shown in (4) and (8) that the statistical significance level is approximately 1%. The increased risk-weighted assets through distressed debt lowers the equity capital ratio.

Next, in examining the relationship between capital adequacy and external factors such as the degree of competition, economic condition, and market interest rates, the factor with the most significance was market interest rates. As the interest rates increased, funding procurement costs increased, which hindered the expansion of capital and negatively affected capital adequacy.

Table 5 shows the results of the determinant factor analysis for loan soundness. smaller the firm, the more active it is in procuring funds – to be true. Furthermore, loan soundness is better maintained when the foreign credibility level is high.

Table 6 shows the analysis results of the liquidity determinant factors. A higher diversification and foreign credibility level contributed to the increase in liquidity. In the case of diversification, the estimated parameters exhibited significant values at the 10% and 1% level as shown in (2) and (8), respectively. Hence, it is understood that securing liquidity is significantly influenced by a diversified cash flow generation source during diversification.

As for foreign credibility, a statistically significant 1% level is exhibited in (3) and (8), which implies that funding procurement through bond issue positively affects the securing of liquidity.

Table 5
Results on the determinants of the loan soundness of credit card firms

Model: $Soundness_t = \beta_0 + \beta_1 size_{t-1} + \beta_2 nomi_{t-1} + \beta_3 bond_{t-1} + \beta_4 risky_{t-1} + \beta_5 sp_t + \beta_6 gdp_t + \beta_7 call_t + \varepsilon_t$

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat
β_0	0.916***	3.70	0.155	0.95	0.1111***	5.00	0.085***	2.90	0.031***	5.11	0.043***	10.89	0.003***	2.04	1.024***	3.16
β_1	-0.050***	-3.52													-0.051***	-2.77
β_2			-0.012	-0.68											0.014	0.11
β_3					-0.125***	-3.51									-0.134**	-4.01
β_4							0.017**	2.46							-0.002	-0.29
β_5									-0.006	-1.42					-0.006	-0.16
β_6											0.002	0.74			-0.001	-0.13
β_7													0.004	1.48	-0.004	-1.44
R^2	0.238		0.018		0.275		0.070		0.101		0.007		0.021		0.513	
DW	0.443		0.310		0.467		0.460		0.358		0.315		0.324		0.790	

Notes: ** and *** represent significance at the 5% and 1% level, respectively.
DW refers to the Durbin Watson test statistic which shows whether correlation exists, and when $0 < DW < 4$, DW indicates that there is no correlation.

Table 6
Results on the determinants of the liquidity of credit card firms

Model: $Liquidity_t = \beta_0 + \beta_1 size_{t-1} + \beta_2 noni_{t-1} + \beta_3 bond_{t-1} + \beta_4 risky_{t-1} + \beta_5 sp_t + \beta_6 gdp_t + \beta_7 call_t + \varepsilon_t$

	(1)		(2)		(3)		(4)		(5)		(6)		(7)		(8)	
	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat	Coef	t-stat
β_0	-8.871	-1.26	-6.616	-1.40	-0.028	-0.12	1.937***	3.58	2.974***	15.55	2.450***	20.05	3.549**	11.14	-7.776*	-1.88
β_1	0.644	1.59													0.333	1.41
β_2			0.937*	1.89											0.342***	3.35
β_3					0.046***	9.79									0.038***	10.27
β_4							-0.671***	-3.83							-0.429***	-4.77
β_5								0.077	0.85						-0.079*	-1.81
β_6											-0.032	-0.56			0.078**	2.04
β_7													-0.297***	-4.12	-0.046	-1.05
R ²	0.072		0.219		0.676		0.018		0.298		0.003		0.169		0.860	
DW	0.294		0.626		1.026		0.304		0.419		0.259		0.361		1.960	

Notes: *, **, and *** represent significance at the 10%, 5%, and 1% level, respectively.
 DW refers to the Durbin Watson test statistic which shows whether correlation exists, and when $0 < DW < 4$, DW indicates that there is no correlation.

In the case of level of risk management, the estimated parameters of (4) and (8) show statistically significant negative values. This also means that as the weight of the long-term overdue debt increases, the liquidity of a credit card firm decreases. The decreasing interest revenue on bonds negatively influenced liquidity and accordingly led to an increase in the credit risk of certain financial institutions as well as an increase in liquidity risk. Considering that the distressed debt of the U.S. financial institutions from the last global financial crisis precipitated the global liquidity crisis, the claims of Archarya et al. (2011) seem to be persuasive.

Let us now look into the external factors. The degree of competition was found to have a negative effect on liquidity in (8). However, in (5), the estimated parameter did not show statistical significance. This shows that the degree of competition alone does not have a significant effect on the level of liquidity, although the competition factor could have a negative effect on the liquidity of credit card firms when internal and external factors are enacted at the same time. Since liquidity is maintained for precautionary purposes by financial institutions, when the funding situation is not good, credit card firms will focus more on securing liquidity for preventive purposes.

Economic condition was shown to have a positive influence on the liquidity of credit card firms in (8). In a state of economic expansion, the liquidity of credit card firms also increases significantly. However, in (6), the estimated parameter did not exhibit any level of significance. In addition, the level of interest rate was shown to have a statistically significant negative effect on liquidity in (7), whereas the estimated parameter exhibited a negative value but no significance in (8) when the internal and external factors were considered altogether. Therefore, an increase in the interest rate contributes to a decrease in liquidity as an increase in the interest rate increases the funding procurement costs of credit card firms.

CONCLUDING REMARKS

The current study empirically examined factors that have a significant influence on profitability, capital adequacy, loan soundness, and liquidity. In other words, internal factors, such as the degree of enlargement, diversification, foreign credibility, and level of risk management, and external factors, such as the degree of competition, economic condition, and interest rate, were examined to determine whether these factors had any significant influence on the business stability of domestic credit card firms. The analysis results are summarised as follows.

First of all, the significant determinant factors influencing profitability were found to be the degree of enlargement, foreign credibility, and the level of risk management. Therefore, when asset size is smaller, foreign credibility is higher, and risk management is successful, the profitability of a domestic credit card firm improves. As far as the relationship between firm size and profitability is concerned, this result is in line with Carter and McNulty (2005), and Chatterji and Seamans (2012). External factors such as the degree of competition, the economic condition, and the interest rates did not significantly affect profitability.

Second, the determinant factors of capital adequacy were the degree of enlargement, diversification, foreign credibility, level of risk management, and interest rate. In other words, when the firm is smaller, business is more diversified, foreign credibility is higher, and risk management is successful, capital adequacy is enhanced. In addition, as the interest rate increased, capital adequacy decreased. This result does not support the argument of Stever (2007) that smaller financial institutions have limitations to staying in business due to the risk factor of a lower level of diversification.

Third, the determinant factors of loan soundness were found to be the degree of enlargement and foreign credibility. The bigger the asset size of the firm and the higher its foreign credibility, the higher its loan soundness. This result is inconsistent with the result of Kashyap and Stein (1995).

Fourth, the determinant factors of liquidity were diversification, foreign credibility, level of risk management, degree of competition, economic condition, and interest rate. Liquidity improved with higher levels of diversification, foreign credibility, and risk management. Additionally, when competition in the market was more heated, liquidity increased for preventive purposes and economic expansion occurred. However, an increased interest rate lowered liquidity because funding procurement costs increased. As Demircuc-Kunt et al. (2004) have argued, this result shows that competition is a significant factor in determining the liquidity level of credit card firms.

For further study, using a probabilistic approach, I will analyse the probability of improvement in terms of sustainability with regard to the management of credit card firms depending on the level of four factors: profitability, capital adequacy, financial soundness, and liquidity. Thus, I will ascertain the optimal level of each of the four factors affecting the management stability of credit card firms in terms of sustainability based on the results of this study, which focused on finding the determining factors on the management stability of credit card firms.

In conclusion, by systematically analysing the business stabilities of the Korean credit card firms and proposing important suggestions, this study offered useful academic contributions to the field. Based on the current study, credit card firms will be able to identify the influence of the Financial Supervisory Authorities' tightened regulations on business stability and prepare relevant countermeasures. In addition, the Korean Financial Supervisory Authorities will be able to establish policies that can positively influence business stability and the continuous growth of credit card firms.

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