

Exploring the Impact of the Cash Cards on Taiwan's Dual-Card Crisis under the Information Asymmetry

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Abstract

The purpose of the article was to explore the impact of the cash cards on Taiwan's dual-card crisis under the information asymmetry. Accordingly, the article was based on the quality analysis primarily combined with the method of the document analysis and constructed the information asymmetry model, including the two criteria of the adverse selections and the moral hazards. The results of the article showed that the impact of the cash cards on Taiwan's dual-card crisis was no less than that of the credit cards even if the issuing scale of the cash cards was much smaller. The findings revealed the significant management implication for the financial authorities that the cash cards shouldn't be ignored if the dual-card crisis needed to be solved.

JEL classification: G01, G21, G28.

Keywords: Cash card, Information asymmetry, Adverse selections, Moral hazards, Dual-card crisis.

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1 Introduction

The first credit card had been issued in Taiwan since 1974. However, the regulations stipulated that the amount swiped by the cards could not exceed the existing deposit in the bank, so the credit card was downgraded to a "charge card." The authorities had also established a "Joint Debit Card Processing Center" to monopolize the issuance of cards so that they were strictly controlled and people would not consume excessively. Till 1989, the issuing-card institutes in Taiwan were allowed to create the revolving credit and open up the cash advances of the credit card in 1992. In 1993, the monopoly controls of the issuing-card institutes were lifted, allowing the banks to directly issue the credit cards. Therefore, even if the banks in Taiwan went all out to promote the credit cards in the 1990s, the number of cards issued did not exceed 10 million until 1996. What's more, most people had a deep-rooted concept of frugality and paid more attention on using the credit cards. Because people were not used to borrowing with the credit cards, the issuing-card banks were still unable to make the huge profits by the consumer financial instruments.

Furthermore, since it was true that Taiwan was not significantly impacted by the Asian financial crisis, why did Taiwan derive a more serious dual-card crisis? The reason was that the new banks were opened up in the 1990s, so the competition among the banks became more fierce and resulted in the quality of the assets declining and the overdue loans increasing in the banking industry. Coupled with the transformation of the economic structure, the domestic enterprises had increasingly diversified the financing channels, and the need for the bank financing had been relatively reduced. As the corporate financial business shrank, the banks shifted their focus on the consumer finance business in order to seek the profit growth. Therefore, in order to expand the number of the card issuances, the banks had relaxed the original review procedures and made the test of the personal financial resources a mere formality.

In addition, Wantai Bank issued Taiwan's first cash card "George & Mary" in July 1999, which further worsened the financial situation. According to the information from the Financial Supervisory Commission, the number of the credit cards in circulation surged from about 18.3 million to about 45.8 million, and about 3.8 million cash cards were used during five years from 2000 to 2005. Astonishingly, Wantai Bank's cash cards once reached a record number of 1.2 million. Since the cash cards had low loan approval thresholds with the high interest rates, they became the high-profit and high-risk financial instruments. Even worse, most of those who used the cash cards belonged to a high-risk group for the credit defaults and were concentrated at the bottom of the society. As a result, the banks' bad debts were accumulated rapidly. Eventually, Taiwan's card-debt crisis broke out in 2005 and the bad debt rate reached 4.98% in May 2006. Seven hundred thousand people became "card slaves", with an average debt of more than one million per person. Some people had bankrupted their credit and even committed suicide. The credit cards or cash cards were even described as the plastic opium. Different from South Korea or Hong Kong, Taiwan's card-debt crisis was a dual-card crisis involving the credit cards and cash cards. It could be seen that in order to uncover Taiwan's dual-card crisis, it was necessary to explore the role of the cash cards in addition to the credit cards. In other words, the cash card was definitely a significant factor that couldn't be ignored. This article intended to conduct a literature review, collect documents, information and data related to the cash cards and credit cards, and attempted to establish the theoretical model and hypothesis of Taiwan's dual-card crisis. Through the empirical testing, the purpose of the article would aim to explore the role of the cash cards in Taiwan's dual-card crisis.

2 Literature Review

2.1 Card debts

Gautam et al. (2024) argued that the credit cards had emerged as a prominent instrument in facilitating the credit access, witnessing the widespread issuance and usage, thereby altering the traditional debit card-centric narrative. However, while the credit card usage has surged, the security concerns persist, necessitating cautious usage to avoid the debt traps. Thiyagarajan et al. (2024) also recognized that the credit cards may be quite advantageous, offering discounts, benefits, and offers that are unmatched by other financial products when used responsibly. If used carelessly or overspent when it comes to paying the bill,

the credit cards could turn into a source of the spiraling debt. Similarly, Gopinath and Kannappan (2024) proposed that the credit cards provided the consumer protection, convenience, and occasionally rewards, but might result in the debts, interest fees, and credit ruin if used improperly.

Furthermore, Alam et al. (2014) studied the credit card usage affecting the consumption patterns of people, sometimes leading to the excessive purchase with the impractical confidence, and found the impact from both the unrealistic optimism and compulsive purchasing on debt stress. George and Leszczyszyn (2021) investigated the credit card debt puzzle and revealed a new explanation for the credit card debt puzzle: consumers' overconfidence of their financial knowledge. Besides, Aydin (2021) had the similar findings and revealed that the optimism, intuitiveness, and materialism had a significant effect on handling the credit card debt responsibly.

On the other hand, Pugliese et al. (2021) argued that the high levels of the credit card debt were attributable in part to rising the economic vulnerabilities, combined with a thinning public safety net. Thus, the individuals and households did not rely on their credit cards only to mitigate their own financial hardships, but also those experienced by their non-coresidential kin members. Thompson (2020) reviewed a reappraisal of the relationship between the consumer behavior and credit card debt and showed that the influential factors contributing to the credit debt could be attributed to the redlining and predatory lending by the financial institutions. However, Khan et al. (2024) studied the cryptic relationships between the credit cards, debt dynamics and the impact of the interest on the individuals and argued these credit cards had not only become pervasive, but also subject to unceasing innovation, molding the ways in which an individual interacted with and perceived these financial instruments. Hence, when consumer revolving credit outstanding more than doubled between 1991 and 1997, from \$247 billion to \$514 billion, Yoo (1998) updated a previous study that separated the growth of credit card debt into its two main components: increases in the number of households with the credit cards and increases in the average credit card balances.

Who were the heavy users of the card debts? It was showed that the economically disadvantaged or young people tended to be the most vulnerable to the card debts. Xu et al. (2022) explained why the small and micro enterprises turned to the credit card debt as a substitute when they failed to obtain the bank loans. In addition, the households with the informal businesses were more likely to use the credit cards when their businesses were financially constrained. Eze et al. (2012) investigated the factors that affected the credit card debts among the young adults in Malaysia and shed light on the reasons why young Malaysians fell into the credit card debt trap, and provided the strategies for helping them to use the credit cards appropriately. Similarly, Rodrigo and Aldolase (2021) examined empirically antecedents of the credit card debts in the young consumers in Malaysia and explored whether the easy access to the credit card, credit card related knowledge, aggressive promotion by the credit card industry, low minimum payment requirement and attitude towards the credit cards influence on the credit card debts in the younger generation.

Even though Brown et al. (2018) surveyed the individuals on their credit card usage and claimed that most credit card holders used their credit cards in a responsible manner, Ekici and Dunn (2010) found a negative relationship between the debt and consumption growth. Besides, Chen et al. (2024) investigated the relationship between the financial knowledge and responsible credit card behavior and bridged the low consumer financial knowledge and accumulated credit card liabilities. Lee and Lee (2021) examined the relationship between the consumer credit attitude and credit card debt behaviors and identified two credit attitude indices (wants and needs) which had a positive influence on the payment behaviors. Therefore, Talib et al. (2015) indicated that the knowledge of the credit card usage, perceptions or attitudes of the credit card usage, and credit card debt management had contributed as key determinants of the credit card practices and financial decisions among the post-graduate students. Also, Agarwal et al. (2023) studied the impact of a unique credit card policy that increased the minimum payment on the consumption and debt repayment and showed that an increase in minimum payment had a stronger effect than did a decrease of a similar magnitude. Specifically, Zhang (2024) suggested to employ a variety of machine learning algorithms to decrease the credit card fraud which might cause the huge financial losses for banks and individuals.

2.2 Information asymmetry

The information asymmetry existed in people's lives in various forms, and it also brought different negative impacts to the society. Therefore, Huang and Kuo (2014) examined the impact of the information asymmetry and client credit on the lending performance and asserted that the banks without huge losses from the bad debts or credit card lending were categorized as the banks with the high lending performance. Silova and Kovina (2023) studied the problems of overcoming the information asymmetry in decision-making of any enterprise form of ownership and found that the information asymmetry carried additional costs of decision-making which negatively affected the competitiveness of the company. Furthermore, Fadhilah and Febrianto (2024) analyzed the relationship between the company life cycle and the comparability of the financial reports, which was moderated by the information asymmetry, and suggested that the information asymmetry weakened the relationship between the firm life cycle stage and the financial report comparability. Meanwhile, Robichaud et al. (2024) addressed the information asymmetry issue in e-commerce, particularly prevalent in the clothing industry which might lead to the high product returns and environmental harm. In addition, Dey et al. (2024) claimed that the climate change performance was negatively associated with the information asymmetry, suggesting that the firms with the higher climate change performance tended to have the lower information asymmetry. Simultaneously, Ikhsan et al. (2024) examined how the customer behaviors responded to the information about the green products and showed that the information asymmetry positively affected the online review quality, review adoption, and green product purchasing behavior, which confirmed that the information asymmetry highlighted the importance of the consumer reviews in the green product purchasing behavior. As a result, Zhao et al. (2024) suggested that in the presence of the information asymmetry, the manufacturers with the high green advertising (GAR) for remanufacturing effectiveness (H-type manufacturers) were inclined to masquerade as the manufacturers with the low GAR effectiveness (L-type manufacturers), though the manufacturers invested in the green advertising for remanufacturing to attract consumers by promoting the eco-friendly benefits of their remanufacturing.

Furthermore, Wang (2024) demonstrated that the agency problem stemmed from the information asymmetry between the shareholders and the professional managers due to the fact that the shareholders couldn't have expertise in every aspect. The two parties with the asymmetric information had different ways of income. To minimize the agency cost, it might be suggested to change the remuneration method of the professional managers to the equity incentive value. Meanwhile, due to the increasingly developing process of the digitalization, the economic relations were also moving into a new format, namely, the interaction of the agents in the market takes the form of the multilateral trade. Strelchenko (2024) highlighted the importance of the information asymmetry factor affecting the price differentiation in trading on an electronic commercial platform, as well as presented a mechanism to reduce the negative effects of the information asymmetry.

To reduce the information asymmetry in the dyadic manager-external stakeholder relationships in a complex and evolving environment, Kulkarni et al. (2024) proposed "evolutionary sensemaking" as the managerial metacognitive dynamic capability that helped the managers hone their understanding based on the evolutionary changes in the stakeholder's interpretations of the information quality preferences. Abdullah and Ibrahim (2024) clarified the impact of adopting International Financial Reporting Standards (IFRS) on the asymmetry of accounting information, which explained why most countries in the world moved towards adopting IFRS because they had searched for the financial sources located outside the borders of their country in search of the better investment opportunities and benefited from the developments witnessed in the financial markets. More specifically, Matos and Mergulhao (2018) provided the evidence that the well-connected bankers on the boards of directors in the nonfinancial firms reduced the information asymmetry between the credit markets and firms and asserted that the connectedness of the bankers played a key role in reducing the information asymmetry. The higher the information asymmetry, the greater the impact of the banker's connectedness.

2.3 Adverse selections

It was not easy to separate the information asymmetry from the adverse selections or the moral hazards. For instance, Tiniç et al. (2022) investigated the influence that the information asymmetry might possess upon the future volatility, liquidity, market toxicity and returns within cryptocurrency market and used the adverse selection component of the effective spread as a proxy for the overall information asymmetry. Yan and Lee (2023) researched the asymmetric information problem and built a principal-agent model to examine the optimal contracts in a competitive insurance market facing the adverse selection and moral hazard simultaneously. Meanwhile, Bar-Isaac et al. (2021) explored how the structure of the asymmetric information impacted the economic outcomes in Akerlof's Lemons model applied to the labor market and extended to admit a matching component between the workers and the firms, which characterized the nature of the equilibrium and define the measures of the adverse selection and efficiency. In addition, Li and Qiu (2020) also recognized that the adverse selection existed largely in the multiagent market due to the information asymmetry and revealed that whether a principal provided the high-type contract or a separating equilibrium contract depended on the probability of existence of the low-type agents in the market because the information asymmetry would cause the utility of the high-type agents to be less than that of the case in full information.

As for the occurrence of the adverse selection, Majamaa and Lehtinen (2022) revealed that the instant loans and distance-selling indebtedness caused the debt problems especially among the low-income young adults and the adverse selection seemingly would be one factor behind the instant-loan-related debts. Mahamood et al. (2023) argued that a social landlord might occasionally be subjected to the adverse selection situations when the applicants withhold the certain information during the social housing application and the adverse selection might result from the belief that humans tended to act opportunistically by putting their self-interest first above others' interest. Besides, Mayock and Shi (2022) studied the transfer activity in the U.S. market for the mortgage servicing rights and asserted that the incumbent servicers were at an informational advantage relative to the potential buyers of these servicing rights, introducing the possibility of the adverse selection. Chen et al. (2023) analyzed the online mutual aid (MA) which was a novel form of the ex-post risk sharing empowered by Insur-Tech to provide the critical illness coverage without involving an insurer and confirmed the existence of the adverse selection because the mutual aid plans lacked the consideration of the actuarial fairness as they differentiated members only by the gender and age group of the large bandwidths.

On the other hand, Lichtig and Weksler (2022) claimed that the severity of the adverse selection depended, to a great extent, on the underlying distribution of the asset. Though this distribution was commonly modeled as exogenous, in many real-world applications, it was determined endogenously. Hence, Caramp (2024) explored the interaction between the ex-ante production of assets and the ex-post adverse selection in the financial markets and revealed that the interest rate and the liquidity premium were endogenous and depended on the functioning of the financial markets as well as the total supply of assets. The positive shocks that increased the market prices might exacerbate the production of the low-quality assets and increased the likelihood of a financial market collapse.

As for the impact of the adverse selection, Foley-Fisher et al. (2024) studied the privately produced safe debt which was designed so that there was no adverse selection in trade. But in some macro states—especially the onset of the pandemic, it became profitable for some agents to produce the private information, and then the agents needed to face the adverse selection when they traded the debt. Also, Helgaker et al. (2022) tested the rise of the instant buyer (iBuyer) businesses and showed that the large actors within the segment had reported the dissatisfying profits over time because the business was subject to the adverse selection as the homeowners, based on their superior knowledge of their home, were more likely to accept the overpriced bids than the underpriced bids, making the iBuyer purchase more overpriced dwellings.

In order to overcome the impact stemmed from the adverse selection, Zweifel and Hofmann (2024) suggested that a multi-peril policy could be associated with a reduced selection effort on the part of the insurer because the difference in the insurer's selection effort directed at the high-risk and low-risk types

was indeed shown to be lower, resulting in a mitigation of the adverse selection. Ma and Jian (2024) aimed at the adverse selection problem in the BI (business interruption) insurance market under the asymmetric information and designed a hybrid BI insurance contract with the interruption compensation, reward, and penalty based on the principal-agent theory. Similarly, Yang et al. (2024) also examined the potential of digitalization to mitigate insurers' vulnerability to cream skimming the adverse selection and showed that the digitalized insurers were able to collect a wider variety of customer information, make the pricing more effective and therefore achieve the lower loss ratios in contrast to their less digitalized rivals.

2.4 Moral hazards

Just like the adverse selection, it was also not easy to distinguish the moral hazard from the information asymmetry. For example, Mohd et al. (2024) argued that the major sources of the moral hazard behavior included the lack of the incentives, information asymmetry, legal and regulations, high market power, temporary ownership, and cultural behavior. In order to mitigate the moral hazard behavior, the strategies also consisted of designing the appropriate incentives, implementing the effective monitoring mechanisms, improving the information disclosure and transparency, identifying and managing risks associated with the specific activities, introducing the third parties to provide independent insight and accountability, and imposing the appropriate enforcement. Simultaneously, Lou (2024) analyzed the discharge of production sewage into rivers by the production sewage enterprises or the third-party treatment enterprises to treat the discharge of production sewage enterprises and found that in the case of the information asymmetry between two kinds of enterprises or between the two kinds of enterprises and the government, the moral hazard did exist and the enterprises would harm the social benefits for their own interests. To improve the information asymmetry, restrain the moral hazard of the pollutant discharge and third-party enterprises, and achieve the sustainable development, the government needed to strengthen its own role. Besides, Brady et al. (2024) also asserted that the moral hazard involved a context where the decision-makers engaged in behaviors that prioritized self-interest while allowing the associated risk to be primarily borne by others. Such decision making even led to the catastrophic consequences, as seen in the 2008 global financial crisis. That is, the dominant decision-makers engaged in the moral hazard behaviors which just focused on the final outcomes rather than the procession.

Furthermore, Claveria-Mayol (2024) examined a moral hazard problem between a principal and multiple agents who experienced the positive peer effects represented by a (weighted) network. Under the optimal linear contract, the analysis revealed a novel measure of network centrality that captured the rich channels of the direct and indirect incentive spillovers and characterized the optimal contract and its induced equilibrium efforts. Liu et al. (2023) claimed that the corporate governance could mitigate managers' moral hazard problems which influenced the firms' operational efficiency and the allocation of the funds between the investment in internal projects and the financial investments. On the contrary, Cowden et al. (2020) introduced the concept of the agreeable moral hazard and its use in the unicorn setting, explored the agency theory and argued that if principals and agents agreed on the goal of disruption, then perhaps the agency problem that did occur in unicorns was beneficial, not a cost.

On the other hand, though the geoengineering was sometimes touted as a partial solution to climate change, it created a potential for the moral hazard. That is, if people thought the geoengineering alone would mitigate the climate change, they might become overly optimistic and reduce the support for other necessary mitigation efforts (Andrews et al., 2022). Simultaneously, Jebari et al. (2021) also argued that the solar geoengineering was considered as a potential tool to offset warming. Despite this, there had been a reluctance to embrace the carbon removal and solar geoengineering, partly due to the perception that these technologies represented what was widely termed the moral hazard. In other words, the geoengineering would prevent people from developing the will to change their personal consumption and push for changes in infrastructure or otherwise stimulated the increasing carbon emissions. Similarly, although Lean (2024) demonstrated that the synthetic biology had the immense potential to ameliorate the widespread environmental damage, however, such technology could be argued to potentially risk the public, industry,

or governments . This risk was often couched as an objection to the new technologies, coming with the moral hazard.

Similarly, although Wu et al. (2024) agreed that the equilibrium pricing of the credit default swaps (CDS) might promote the efficient identification of the credit risk in the market, the moral hazard incentives of the CDS buyers increased with the CDS transactions. Bosch-Rosa et al. (2024) investigated whether the limited liability and moral hazard affected the risk taking through the motivated beliefs and showed that the limited liability encouraged investors to take the excessive risks which made it hard for the investors to maintain a positive self-image when the moral hazard was present.

3 Methodology

3.1 Document analysis

The article primarily employed the document analysis which was cataloged in the qualitative research. Morgan (2022) asserted that the document analysis was a valuable approach to the qualitative research though it had been underused. Chandra (2021) also recognized that many things needed to be put into consideration if a researcher planned to carry out the research efficiently, one of which was definitely the document analysis. Similarly, Le Van (2024) claimed that the document analysis was of great importance and the good application of the document analysis not only saved time and understood exactly the content of the document, but also could ensure the highest efficiency in the research process.

However, the document analysis had its own limitations, such as the issue of the bias and the unwitting” evidence, or latent content, of the document (O’Leary, 2014). Therefore, while Bowen (2009) mentioned that the document analysis was an important research tool and an invaluable part of most schemes of triangulation, he also stressed that the document analysis was the combination of methodologies in the study of the same phenomenon. In order to seek the convergence and corroboration, the document analysis usually needed to use at least two resources through using different data sources and methods which could reduce the impact of the potential bias. Combining qualitative and quantitative included in document analysis could be called the mixed-methods studies. Hence, the document analysis can be used in many different research fields, such as either a primary method of data collection or as a compliment to other methods because the documents could provide supplementary research data, making the document analysis a useful and beneficial method for most researches.

Based on the studies above, the article collected the relevant documents, literature and data to construct the research model and designed the hypotheses, which were combined with the qualitative and quantitative researches. It was expected for the results that could be examined and interpreted in order to elicit meaning, gain understanding, and develop empirical knowledge to the topic of the study.

3.2 Proposed model

Whether the qualitative research or quantitative research, few studies used the information asymmetry model to analyze the impact of the cash cards on Taiwan’s dual-card crisis. Based on the above literature review and related documents and data, this article attempted to construct an information asymmetry model that was combined with the adverse selection and the moral hazard to verify the effect of the cash cards on Taiwan’s dual-card crisis around 2005 (see Figure 1). Based on the literature review, the adverse selection referred to the existence of the ex ante information asymmetry. On the other hand, the moral hazard referred to the ex post information asymmetry. Those who lacked the information made choices harming themselves and then acted to the detriment of the other party. Nonetheless, the adverse selection and the moral hazard in the information asymmetry model were not independent variables. They not only affected the information asymmetry individually, but also interacted with each other and had a causal relationship between them. Therefore, to explore the impact of the cash cards on Taiwan’s dual-card crisis, it was necessary to examine whether the conditions for the existence of the adverse selection and the moral hazard were simultaneously met based on the information asymmetry model ,in order to uncover the role of the cash cards during Taiwan’s dual-card crisis.

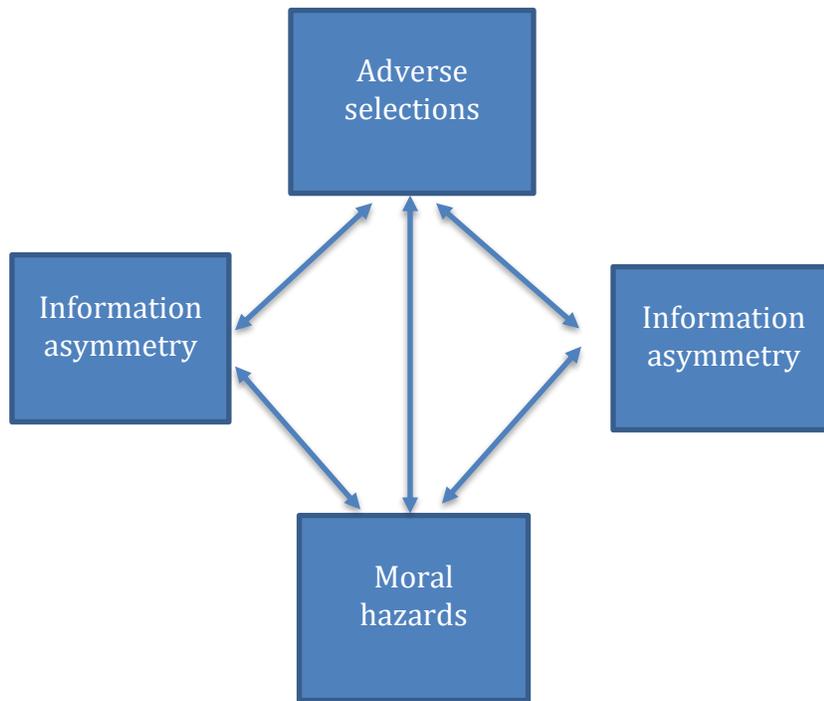


Figure 1: International asymmetry

3.3 Hypotheses

To achieve the goal, the article was based on the information asymmetry model combined with the adverse selections and the moral hazards to design the research hypotheses as follows:

Hypotheses of the Adverse Selections

- H 1: The loan interest rate of the cash cards was higher than the consumer loan interest rate.
- H 2: The number of cards with the used credit balance of the cash cards was increasing.
- H 3: The loan balance of the cash cards was increasing.

Hypotheses of the Moral Hazards

- H 4: The amount of the bad debts written off by the cash cards was increasing.
- H 5: The overdue ratio of the cash cards was increasing.
- H 6: The number of the criminal cases was increasing.
- H 7: The number of the suicide cases was increasing.

4 Results and Discussions

4.1 Adverse selections

4.1.1 The levels of the interest rates

To construct the information asymmetry model or test if the adverse selection existed in the financial market, the interest rate was definitely the most important indicator. The interest rate was determined by both the supply and demand sides and represented the equilibrium price of the funds. As for the supply side, the interests represented the cost of obtaining funds for those in need. As for the demand side, the interests represented the risk premium of the capital providers who provided the funds. Therefore, the higher the interest rate, the higher the probability where the information asymmetry or the adverse selection existed.

What was the actual situation in the financial market during the dual-card crisis? It had to be emphasized that both the credit cards and cash cards were also the consumer financial instruments with the higher risks. Therefore, the corresponding high interest rates would be also reasonable. However, the truth was that both the revolving credit interest rates of the credit cards and the loan interest rates of the cash cards had been much higher than the consumer loan interest rates of the five major banks since 2000 to now when the consumer loan interest rates of the five major banks in Taiwan had decreased significantly from 7.963% in 2000 to 3.568% in 2005. Even more amazingly, all the maximum revolving interest rates were almost set up to 20% which was stipulated in the civil law and were even more obvious in the loan interest rates of the cash card (see Table 1). The fact of the high dual-card interest rate had created the favorable conditions for the adverse selection and moral hazard during the dual-card crisis. Therefore, H 1 was supported.

Table 1: The maximum revolving credit interest rates of the credit cards and the loan interest rates of the cash cards in 2005

Card-issuing banks	Maximum revolving credit interest rates of the credit cards	Loan interest rates of the cash cards
CTBC Bank	20%	20%
Yuanta Commercial Bank	19.71%	
Mega International Commercial Bank	19.71%	
Risheng International Commercial Bank	19.99%	
Taipei Fubon Commercial Bank	19.98%	20%
Taishin International Commercial Bank	20%	20%
Shin Kong Commercial Bank	19.71%	20%
E.Sun Commercial Bank	19.71%	
Bank Sinopac Company Limited	19.97%	20%
Antai Commercial Bank	19.71%	
Citi Commercial Bank	19.97%	
Cathay Pacific Bank	19.7%	
KGI Bank	19.89%	20%
Far East Commercial Bank	19.97%	
Union Bank of Taiwan	19.99%	20%
HSBC	19.929%	20%
ANZ Bank	19.99%	20%
DBS Bank	19.71%	20%
COTA Commercial Bank	19.90%	20%

4.1.2 The number of cards with the used credit balance of the cash cards

Based on the market price mechanism, the card-issuing banks would have to raise the interest rates for the precautionary reasons to cope with the risk premium caused by the adverse selection. Unless the market return on investment increased, the high interest rates raised by the card-issuing banks from the supply side to compensate for the risk premium would inhibit the number of the used cash cards. However, according to the Figure (2), it could be found that although the loan interest rates of the cash cards were much higher than the consumer loan interest rates, the number of the cash cards in circulations showed a sharp upward trend during the dual-card crisis. While the number of the credit cards in circulations had been rising all the way, reaching a peak of 45.49 million in 2005, the number of the cash cards with the used credit balance also reached a peak of 3.745 million as early as 2004. Even in 2005, it only dropped slowly to 3.486 million. In other words, even though the issuing scale of the cash card was much smaller than that of the credit cards, its ability to explain the adverse selections in the market during the dual-card crisis was no less than

that of the credit cards. That is, the number of the cash cards in circulations had also risen against the trend under the premise of relatively high interest rates, creating the adverse selections that violated the market prices. Hence, H 2 was supported.

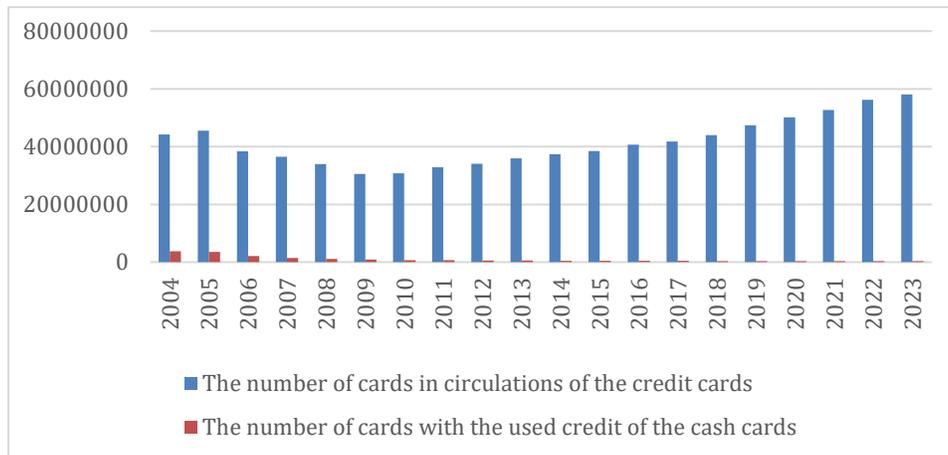


Figure 2: The numbers of cards in circulations of the dual cards

4.1.3 The loan balance of the cash cards

Just like the number of the cash cards in circulations, the loan balance of the cash cards could also be the important indicator to show whether there was adverse selection under the information asymmetry and especially under the dual-card crisis. According to Figure (3), it could be found that the loan balance of the cash cards reached their highest point in 2005. It was proven that the cardholders continued to choose the cash cards as the consumer credit tools even if the interest rates of the cash cards maintained higher than the consumer loan interest rates, which was against the market price mechanism and proved the existence of the adverse selections. Furthermore, while the revolving credit balance of the credit cards reached NT\$494.71 billion in 2005, it was worth noting that the loan balance of the cash cards also reached NT\$298.46 billion at the same year. Although the scale of the cash card issuance was less than one-tenth that of credit cards, the loan balance of the cash cards was one-half the revolving credit balance of the credit cards. It could be seen that during the dual-card crisis, the cash cards had a greater impact on the adverse selections under the information asymmetry than the credit cards. Hence, H 3 was supported.

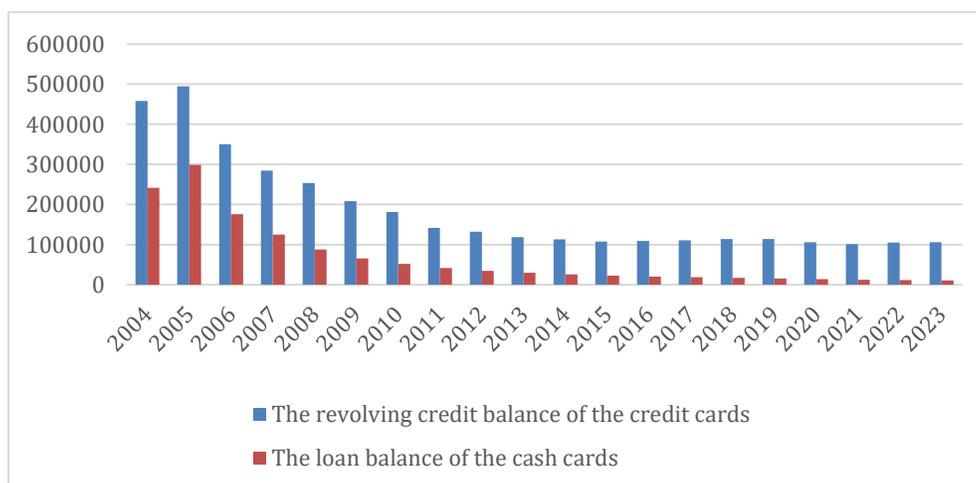


Figure 3: The revolving credit balance of the credit cards and the loan balance of the cash cards

4.2 Moral hazards

4.2.1 The bad debts

Obviously, the bad debt was an important indicator to show whether the adverse selections caused the moral hazard. In reality, the rise in the interest rates might not be entirely caused by the increase in the cost of funds due to the risk premiums from the card-issuing banks. If it was due to the increase in demand for funds from the cardholders based on the increase in return on the investment, the interest rate would rise sequentially. However, should the former result in an increase in the cardholder's debt burden and the inability to repay the card debt, or even more seriously turned the cardholder into a card slave, the card-issuing banks needed to respond to the adverse selection with the high interest rates. The fact was proven that the attempt of the card-issuing banks trying to avoid risks and obtain high profits not only failed, but also led to the rising bad debts (see Figure 4). While the bad debts of the credit cards hit an astonishing NT\$115,178 million in 2006, the bad debts of the cash cards had also doubled every year during the dual-card crisis from 2004 to 2006, reaching a peak of NT\$47,677 million in 2006. The bad debts were not reduced due to the risk premium of the high interest rates from the issuing issuing-card banks, which implied that the market price mechanism had failed and the results of the moral hazard caused by the adverse selection had been confirmed. Hence, H 4 was supported.

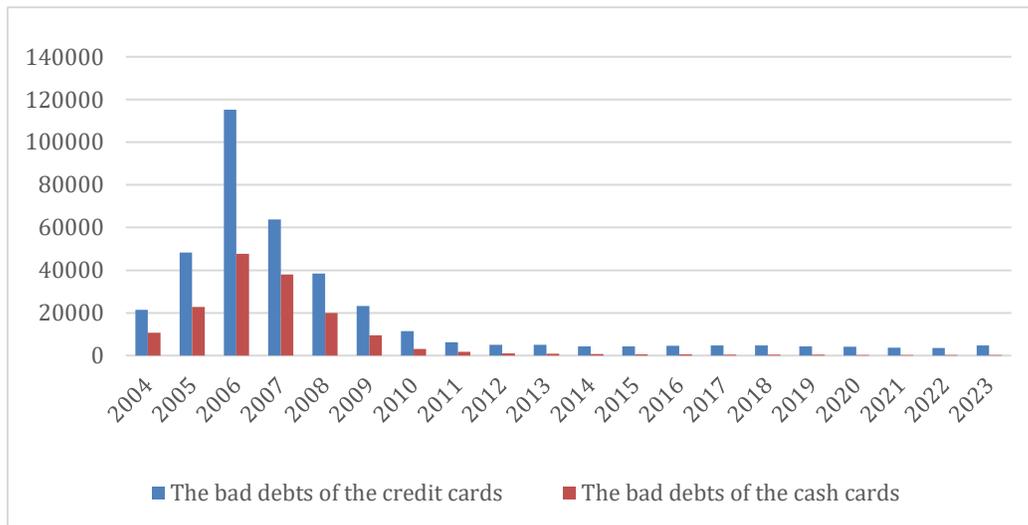


Figure 4: The bad debts of the dual cards

4.2.2 The overdue ratios

The overdue ratio was another important indicator to present the moral hazards following the bad debts. The rising overdue ratios year by year were directly proven that the high interest rates of the card-issuing banks were simply to arbitrarily issue cards for their own original motivation of chasing the huge profits. As for the risk premium based on the precautionary motives, it just was an excuse for the card-issuing banks to pursue the profits or ignore the corporate social responsibilities. Therefore, the empirical result showed that although the interest rates stayed higher, the overdue ratios of the cash cards not only did not decrease during the dual-card crisis, but instead continued to rise. Especially, the overdue ratios of the cash cards had been always higher than those of the credit cards since 2006 (see Figure 5). There was no doubt that when the high interest rates coupled with the high overdue ratios, it clearly indicated that the market price mechanism in the cash card market had failed. In other words, the moral hazard derived from the adverse selection with the high interest rates did exist in the cash card market during Taiwan's dual-card crisis. Therefore, H 5 was supported.

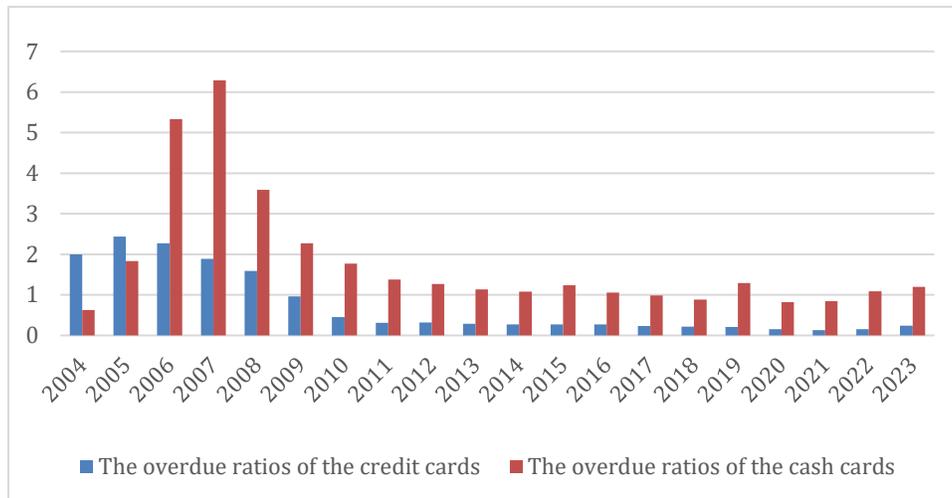


Figure 5: The overdue ratios of the dual cards

4.2.3 The number of the criminal cases

The increase in the number of the criminal cases caused by the card debts might come from the card-issuing banks and the card users who were unable to repay their card debts. With the permission of the financial authorities, the card-issuing banks adopted the outsourcing business model as a means of collecting the card debts. Since the card debt collection was often unscrupulous or even illegal, the card-issuing banks had become one of the sources that contributed to the increase in the criminal cases during the dual-card crisis. In addition, the cardholders who became the card slaves were hit by the card debts and also became homeless and unemployed. Therefore, in order to survive, the card slaves took risks and even robbed people at gunpoint which made the cardholders another important source that contributed to the increase in criminal cases during the dual-card crisis. According to Figure (6), the number of the criminal cases had continued to rise since 2003, reaching an unprecedentedly high point in 2005, which was also the most serious moment of the card debts during the dual-card crisis. Meanwhile, more evidence was needed to link the occurrence of the card debts to the number of the criminal cases. However, it was true that the number of the criminal cases reached an unprecedentedly high point during the dual-card crisis. Hence, H6 was supported.

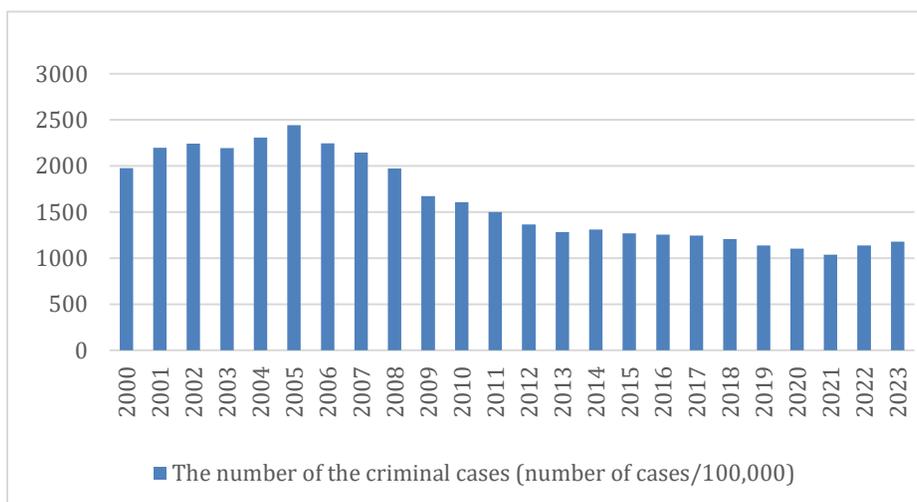


Figure 6: The number of the criminal cases

4.2.4 The number of the suicide cases

In addition to the number of the criminal cases, another indicator that could show the impact of the dual-card crisis extending from the financial crisis to the social problems was the number of the suicide cases. Unlike the number of the criminal cases, the only source that explained the rise in the number of the suicide cases was the cardholders who were unable to repay their card debts even though the issuing banks had suffered the heavy losses due to the high bad debts and the overdue ratios. According to Figure (7), the number of the suicide cases, which had been rising slowly, suddenly rose in 2005 and reached an unprecedentedly high point in 2006. This was the period when the dual-card crisis had the most serious impact on the society. Likewise, the card debts needed more evidence to link the number of the suicide cases. However, it was a fact that the number of the suicide cases surged during the dual-card crisis and left the society to bear an unaffordable price. Hence, H 7 was supported.

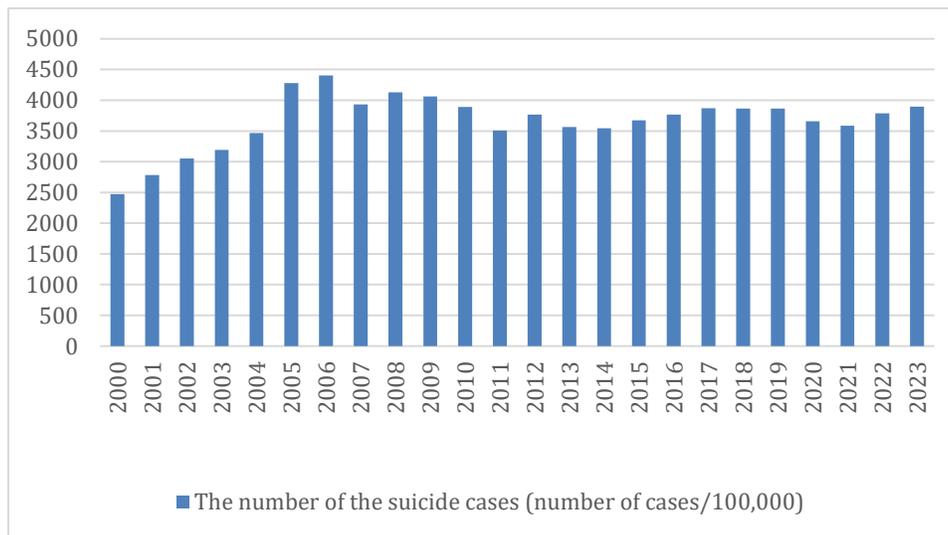


Figure 7: The number of the suicide cases

5 Conclusions and Recommendations

5.1 Conclusions

Based on the above results and discussions, all the hypotheses were supported, which verified the existence of the information asymmetry combined with the adverse selections and the moral hazards in Taiwan's cash card market during the dual-card crisis. While the loan interest rates of the cash cards were higher than those of the consumer credit loan, the number of cards with the used credit balance and the loan balance of the cash cards didn't decrease, but instead increased significantly during the dual-card crisis, which confirmed that the adverse selections did exist in Taiwan's cash card market. Accordingly, while the bad debts or the overdue ratios resulting from the cash cards increased with the high interest rates, the card-issuing banks not only failed to make profits, but also needed to afford the heavy operational loss derived from the adverse selections. Even worse, while the numbers of the criminal cases and the suicide cases were increasing at the same time, the impact of the information asymmetry had extended from the financial crisis to the social problems. Obviously, the result confirmed that the moral hazards were following the adverse selections, combined to construct the information asymmetry. It was further concluded that the effect of the cash cards on Taiwan's dual-card crisis was no less than that of the credit cards even if the issuing scale of the cash cards was smaller than that of the credit cards. Therefore, the article revealed the significant management implication for the financial authorities that the cash cards shouldn't be ignored if the dual-card crisis needed to be solved.

5.2 Recommendations

Since the Asian financial crisis in 1997, Taiwan had faced challenges that had never ceased, such as the dual-card crisis in 2005, the financial tsunami in 2008, and even the Covid-19 in 2019. Did the financial authorities learn the lesson from the past painful experiences? What is more, even if Taiwan was relatively less affected by the 1997 Asian financial crisis, did the financial authorities succeed in making use of this advantage to prevent the dual-card crisis earlier? Unfortunately, both of the answers were negative. Despite that South Korea's and Hong Kong's card debts stemmed from the credit cards only, Taiwan's card debts were derived from both the credit cards and the cash cards and resulted in the dual-card crisis.

Furthermore, when the impact of the dual-card crisis extended from the financial crisis to the social problems debts, the financial authorities were still stuck in the dilemma of respecting the market price mechanism or intervening in the market. Even if the debt negotiation mechanism was launched or the debt liquidation regulations were passed through the legislation, the opportunity of solving the problems had been missed, which not only worsened the financial situation, but also paid a heavy price to the country and society.

In order to prevent the future crises, the financial authorities needed to assess the situation, discern opportunities, avoid delaying opportunities and repeating the same mistakes, and make the full preparation for the future crises.

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