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The key factors of outstanding credit balances among revolvers: a case study of a bank in China

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Abstract

The purpose of this study is to find the key factors of the amount of outstanding balances among revolving credit card users in Chinese credit card market. A Heckman procedure is used to analyze a dataset of a bank in China. The small amount of revolver coursing imbalanced problem, and we try to use the rebalanced method in machine learning domain to deal with the problem. Results show there are differences in the determinants of being a revolver and the amount of the outstanding balance. Age, housing condition, industry, and average cash advance amount per time, etc. are significant related to the outstanding credit card balance.

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Keywords: Credit card; revolver; outstanding balance; Heckman procedure

1. Introduction

A credit card is both a payment tool and a convenient source of credit (Garman & Fogue, 1997). All major credit card issuers, to a greater or lesser extent, are holding a portfolio consisting of three types of credit card holder: (i) non-active card holders; (ii) non-interest paying active card holders ; and (iii) interest paying active card holders (Hamilton & Khan, 2001). When credit card holders have an outstanding credit card balance after the last monthly payment, they are known as revolving credit card users, namely revolvers (Bird, Hagstrom & Wild, 1997). According to the Survey of Consumer Finances (SCF), in 1998 more than two-thirds of U.S. households had a bank-type credit card, compared to only 43 percent in the 1983 Survey (Bertaut & Haliassos, 2002). Credit card holding has increased steadily over the past 20 years. Over time, the number of credit card revolvers and the amount of outstanding credit card debt has increased (Kim & DeVaney, 2001). Chinese banks have recognized that credit card is profitable and with brilliant prospect, and many resources had injected since 2002. Up to the end of November 2011, the financial institutions had issued 285 millions credit cards (Jiang,

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2012). However, Chinese credit card market is still in its infancy and Chinese are restricted by their consumption conception. As a McKinsey's survey report, most Chinese people use credit cards as a convenient way to make purchases (or accumulate points toward a small gift), not as a credit facility (Atsmon et al., 2011). Unlike US mature credit card market, their revolving interests account for about 70% of card revenue in 2001 (Zhao et al, 2009), there are only about 14% revolving credit card users in Chinese credit card market (Cui, 2009) and they contribute about 47% profits (Wang, 2010). Fewer revolvers are one of the characteristics of Chinese infancy credit card market.

Thus, to study the problem of revolvers in Chinese credit card market makes sense to card issuers. Much of the previous research addressing the determinants of credit card use examines revolving behavior by dividing the sample between those holding a balance and those with no balance on their credit cards (Bei, 1993; Canner, 1988; Steidle, 1994). However, credit card balances vary from \$1 to more than \$100,000, so it is more appropriate to estimate the amount of outstanding balances on credit cards (Kim & DeVaney, 2001).

However, little research has been conducted in China, where the traditional consumption value is "save first and spend later". Based on Bryant's exposition of consumption and borrowing (1990, pp. 78-114) and the life cycle theory (Ando & Modigliani, 1963), then consider the characteristics of Chinese infancy credit card market. Using the data set obtained from a bank in China, we attempt to find the results of the two problems proposed by (Kim & DeVaney, 2001): 1) to examine the patterns of Chinese credit card use (transactors versus revolver), and 2) to identify the factors affecting the amount of the outstanding credit card balance among Chinese revolvers, and do comparison between the two markets. We find there is imbalance problem in dataset which courses bad results. Thus, we use undersampling to solve the problem. The results should contribute to our understanding of Chinese credit card use and provide educators with information to assist Chinese consumers. Further, policy makers can use the information to evaluate current regulations in the Chinese credit card market.

2. Credit card in China

Since 1985 China issued the first credit card, the Chinese credit card industry has experienced arduous development. At the end of 2011, people only hold 0.21 cards on average in China, even Beijing, Shanghai are less than 2 cards (Jiang, 2012). However, Americans hold 4.39 cards on average in 2009 (Lin, 2010). It appears that Chinese credit card market is in its infancy. According to MasterCard, they expect that the total number of credit cards in circulation in China in the next 15 years would increase at an average annual rate of 11%, with the total number of cards reaching 1.1 billion in 2025 (i.e. 0.75 cards a person) and the total amount of credit card spending to increase at an average annual rate of 14% reaching US\$2.5 trillion by 2025 (MasterCard 2010 Forum). Thus China has great market potential. Central bank statistics show there are more than 30% overall retail sales of social consumption products are paid by card, Beijing and Shanghai, moreover, are 50% (Cui, 2009).

Table 1. Comparison between Chinese credit card market and mature markets

Indicators	Chinese market	Mature markets
The rate of credit card consumption	3%	30%~50%
Merchant rate	4%	100%(US), 87%(Korea)
The per capita rate (bank card)	0.615	4.8
Charge times in very three months	1.72	28.5(US), 10.8(Korea)

However, Chinese have an ingrained cultural reluctance to borrow, even for large expenses such as cars, property, and education (Atsmon et al., 2011). The card consumption amount is far less than Unite Stated. The

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