The Failure of Competition in the Credit Card Market in Turkey: The New Empirical Evidence

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Abstract

The high credit card interest rates in Turkey attracted considerable attention in recent years to regulate the Turkish credit card industry. Before any regulation decision taken, there needs to be better conceptualization and analysis of the Turkish credit card market. First, we highlight the most striking aspects of the Turkish credit card market. After exposing the problem, we benefit from the existing theoretical and empirical studies on the structure of competition in the credit card industry. Potential reasons for the lack of competitions are denoted. Having the existing studies in mind, we finally, construct an empirical model to estimate the market structure in the Turkish credit card industry. Newly disseminated data on the Turkish credit card industry is first introduced in this paper. Our empirical results are based on the panel data set of 22 banks from the second quarter of 2001 to the third quarter of 2005. In addition to random and fixed effects regressions, instrumental variable fixed effect regressions are run on this sample. Our results robustly conclude that the credit cards interest rates in Turkey are economically insensitive to the changes in the cost of fund. This result shows lack of strong competition Turkish credit card market.

Keywords: Credit Cards, Regulation, Supervision, Financial Markets, Banking, Competition Market Structure.

JEL classification: F21, G21, O19

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1. Introduction

The credit cards have increasingly adopted as plastic currencies in the last decades all over the world. In this respect, Turkey is not an exception. Turkish market has reached 30 million cards issued as the third biggest market in Europe after England and Spain. According to consumption volumes done through the credit cards, Turkey is ranked the tenth in Europe, still revealing a great potential for growth in consumption volumes[1]. According to December 2005 statistics, compounded interest rates for the credit cards were about % 87 on weighted average in Turkish credit cards market. Whereas the risk free interest rate of treasury bills was just % 14. Moreover, the current inflation has been reduced to % 7.7 in Turkey.

Currently, Turkish Credit card market is comprised of 22 players[2] which seem to be enough for competition especially for this relatively homogenous product. The main networks are Visa and Master with equal market shares of ten percent of overall consumption. Given these considerations, the price competition in Turkish credit cards market is expected to take place between the 22 issuers. However, the rates are floating around the fourfold of the funding costs. For some, these high rates resemble "usury" rather than "interest". The regulatory solutions for these high rates are on the agenda of

1 This is taken from the announcement of the chairman of Banking Regulation and Supervision Agency (BRSA). BRSA is the public authority responsible for the regulation of banking system: http://www.sabah.com.tr/ozel/bddk874/dosya_876.html

[2] Five more issuers operate in the market but they offer interest free credit card services with small volumes. Hence, we do not include them in our interest rate competitiveness calculations. For all card issuers in Turkey, see http://www.bkm.com.tr

the government. Even the price ceiling option is discussed in the public debates. The legal framework and regulation of the credit cards market have not been established yet. However, the government has announced the draft of a legislation to bring concrete solutions for the growing dissent of all parties in Turkish credit card market. Since the default rate of card holders reached 7.4 percent of the total card holders[3], the regulatory concerns focus on decreasing the risk of the card holders by decreasing the credit card limits. On the other hand, Turkish Central Bank does not want to set a price cap[4].

The candidateship to EU also increased the significance of Turkish credit card market. The foreign banks took an increasing share in this flourishing market by mergers and acquisitions. This trend is expected to accelerate even more in the foreseeable future. According to 2004 statistics the growth of the credit card usage was 14 percent in Euro zone, while 34 percent in Turkish credit card market[5]. The default volume of Europe was also higher than Turkish market with 4.5 percent to 1.67 percent[6]. The high interest rate spread together with low default rates provides substantial profit opportunities for the issuers in the Turkish credit card market. This situation is one of the reasons for the increasing appetite of the international banks to acquire the Turkish banks in recent years. HSBC quickly bought a credit card network (Advantage Card) after entering into the Turkish financial markets. Another international financial giant (General Electric) became the equal partner of the second largest issuer in the Turkish credit card market.

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[3] Visa Europe Vice President Steve Perry announces the default rate of card holders 7.4 percent. However, the volume is only 1.67 percent with no payments for last 120 days. This volume is very low with small risk for issuers. http://hurarsiv.hurriyet.com.tr/goster/haber.aspx?id=3681216&tarih=2005-12-21

[4] See: http://www.finansalforum.com.tr/haber.aspx?HBR_KOD=34215.

[5] The nominal growth rate of 16 vs. 43 percent is purified from the inflation rates. See Visa Turkey, http://www.visa.com.tr/medya/istatis/istatis04.html.

[6] See Visa Europe, http://hurarsiv.hurriyet.com.tr/goster/haber.aspx?id=3681216&tarih=2005-12-21

Credit card market as modern payment system is a network good that requires an appropriate infrastructure to run smoothly. The frequent crises and high inflation episodes of Turkish economy have delayed the adoption and wide spread usage of the credit cards till the recent years. Credit card market has been established much later than the developed countries due to the inflationary period of 25 years which resulted in indeterminable and high funding costs with high default risks for the customers. The uncertainty in the market has led to extremely high rates especially for the default interest rates before 2003[7]. Later, a regulation has limited the default interest rate up to 30 percent more than the regular card rate.

After the recent crises and deregulation of the banking sector[8], the political stability has been achieved by the single party government. Concurrently, the credit cards issuers have witnessed sharp declines in the cost of funds after November-2000 and February-2001 crises[9]. However, while the cost of funds has been declining, their limited response has persistently increased the ratio of credit card interest rates over T-bill rates and overnight interest rates. The credit card interest rates have exceeded the fourfold of the risk free interest rates (see Figure 1). Conversely, in the crisis period when the costs of funds were rising, the credit cards issuers responded immediately to increase the credit cards rates. The average credit card interest rate of fourth quarter in 2000 was 107 percent and reached 181 percent in the second quarter of 2001 (Figure 1). In addition to upward interest rate adjustments, during the crisis period, most of the banks have stopped the

[7] A public bank announced 1000 percent as a default interest for late credit card payments in 2001 crisis period. http://www.dunyagazetesi.com.tr/news_display.asp?upsale_id=28199&dept_id=770

[8] The deregulation in the consumer protection law has cleared the credit histories of the bankrupt credit card consumers.

[9] For more information about the liquidity crisis of 2000, see Alper (2000).

cash in advance services and decreased the lines of credit cards[10]. The system returned to operate regularly within the next quarter. However, the interest rate spread has not yet declined considerably during the last five years. The ratio of credit card to overnight interest rate even increases from 1.50 to 4.40.

Contrary to the credit card market, other credit markets like consumer credit, home & auto credits converge to competitive rates within a year after the 2001 crisis (see Figure 1). Other credit markets in Turkey appear to have performed more efficiently in recent years, and moved together with the cost of funds. However, same conclusion does not apply to Turkish credit card market. Hence, this study attempts to analyze the reasons behind these extremely high credit card interest rates in Turkey.

There has not been much research done to diagnose the interest rate behavior of the Turkish credit card market. The lack of research partly stems from the frequent crises and the lack of reliable data. However, in recent years, there have been some improvements in several grounds. The legal infrastructure has been partially established in 2003. Moreover, Banking Regulation and Supervision Agency (BRSA) in Turkey has started to announce the credit cards rates in January 2005 to enable credit card users to compare interest rates of all the credit issuers in Turkey[11].

The first draft of new regulations package for the credit card market has been announced in the beginning of 2005. As experienced in other countries, the credit card markets have some difficulties to reach lower interest rate equilibrium with the self

[10] See: http://www.dunyagazetesi.com.tr/news_display.asp?upsale_id=28444&dept_id=770.
[11] BRSA announces the rates of all banks and Central Bank announces the number of late payment and nonpayment customers, monthly since January 2005. The national media publishes these rates following the announcements. Hence, the search costs of card holders appears to be declining after these periodic announcements. In the empirical part, BRSA has provided us some additional data on credit card interest rates starting from the second quarter of 2001.

dynamics of the market. For example, it is documented that the effect of a regulatory threat in USA had played a significant role in converging the credit card interest rates to the competitive levels after 1991 (Stango, 2002). Up to 1991, credit card issuers received abnormal profits in USA where top ten card issuers accounted 30 percent of card numbers and 43.4 percent of market volume (Ausubel, 1991). The Turkish market has essentially two leader and two follower issuers. These issuers constitute 70 percent of all transaction volume and 55 percent of all cards in Turkish credit card market (see Table 1).

The credit card interest rates for the leading two issuers were 7.47 and 7.39 percent on monthly average respectively. The credit card issuers in Turkey prefer non-price competition through their loyalty programs[12]. Profitability of the banks has been also positively affected from these high interest rates. The second largest issuer received 60 percent of non-interest banking profits from its credit card branch in 2004. According to the Interbank Card Centre (ICC) survey, these high rates also reduced the revolving credit card debt stock given that 78 percent of the card holders paid their debt fully in 2005[13]. The remaining 22 percent of the 63 billion dollar outstanding balances result in around 15 billion dollar interest bearing funds with 87 percent APR. However, in USA, 90 percent of the issuers' outstanding balances accrue interest[14]. As compared to USA, the share of the revolving card holders in Turkey is low. This low share is likely to stem from the high credit card interest rate. The Turkish credit card market has some major differences from other countries. For instance, the issuers announce their rates in monthly

[12] The loyalty program of the second issuer, Garanti Bank, has rebated 222 million YTL bonus and 172 million YTL has been used in free purchases. http://www.capital.com.tr/haber.aspx?HBR_KOD=2954
[13] See http://www.bkm.com.tr/images/basinodasi/06082005_dunya.jpg
[14] See Ausubel (1991) to compare the Turkish case with uncompetitive years of US credit card industry.

basis but apply compounded interest rate for the accumulated debt stock[15]. The competition among the issuers focused on non-price competition through increasing grace period with interest free equal payments up to 18 months, instead of lowering the credit card rates.

Are all these characteristics enough to identify the Turkish credit card market as operating under monopolistic market structure? In this paper, we examined the competitive behavior of the Turkish credit card market. The results for Turkish case between 2001- 2005 exhibit similar trends with the US market in 1980s. Ausubel (1991) shows the characteristics of interest rate competition and the barriers for the market to reach competitive outcome in the US credit card market between 1983 and 1987. Similarly, this paper analyzes the characteristics of Turkish credit card market from 2001 to present. Our empirical results employ newly disseminated data on the Turkish credit card market. The fixed effect panel data regressions reveal that the cost of funds in the Turkish credit card market is less relevant for the credit card issuers. Similar to Ausubel, we diagnose an uncompetitive market structure in the Turkish market. The Turkish credit card issuers appear to be responding less to the declines in the cost of funds than the cost increases. Our research period does not include any period of rising funding costs. Hence, we can not prove the asymmetry empirically. However, the pre-crisis average credit card rate of 107 percent and post crisis rates of 183 percent help us illustrate the asymmetric behavior of the credit card rates.

The paper is organized as follows. In the next section, we explore the previous studies on the interest rate characteristics of credit card markets. The Section 3 portrays the

[15] The average monthly rates were about 8 % between 2001 and 2005. The issuers` calculation for the revolving debt is about 151 % annually for this rate; whereas the cardholder's basic calculation might be 96 %.

Turkish credit card market. The proceeding sections introduce the data, empirical model and specifications. Section 4 summarizes the features of the data set used in the regressions. In section 5, the paper employs panel data regression for quarterly interest rate data of all credit card issuers in Turkey for the last five years. After the robustness tests, the last section is relegated for the conclusions.

2. **Literature Review**

Existing studies on the failure of competition and asymmetric behavior[16] of the credit card rates were mostly based on the evidence in US credit card market (Ausubel, 1991; Calem and Mester, 1995). Frequent crises and the lack of reliable data resulted in no systematic research on the credit card interest rate competition in Turkey. The previous research on this issue relies on the surveys conducted in 1995 and 2001[17]. Credit card usage was very limited and the interest rate fluctuations were high throughout 1990s. The composition of cardholders mostly consisted of high income earners and educated individuals with professional type of jobs (Kaynak and Harcar, 2001; Kaynak, Kucukemiroglu and Ozmen, 1995). The banks in Turkey preferred to lend money through lower risk instruments like Treasury Bills due to high real interest returns with low risk premiums. However the interest rates have started to decline after 2001 crisis. The treasury bonds have lost their profitability and thereby the banks have channeled their operations more on the consumer credit markets.

The main players in the credit card market are cardholders, issuers, merchants, acquirers and network associates. Among the network associates, Visa and MasterCard

[16] The asymmetric behavior refer to the case that the credit card rates incraese with the rise in the funding costs but do not move in the same direction for the declining funding costs.
[17] These 1995 and 2001 surveys are based on 263 and 673 questionnaires respectively.

dominate the market. The competition among network associates results in equal shares in Turkish market resembling the ratios in the world (Table 2). Visa and MasterCard are open networks and serve as intermediators for member banks either issuers or acquirers. The other players like American Express are proprietary networks and their usage is very limited in Turkish market given that they simultaneously serve as an issuer, acquirer and the network operator (Chakravorti, 2003).

The competitiveness of the credit card market differs for each level. The network level competition has regulated with antitrust laws[18]. The acquirers compete by offering lower commission rates to sellers and by setting up more prevalent point of sale machines. Otherwise, the acquirers pay an interchange fee to card issuer for each transaction[19]. On the other hand, the actual policy debate and major research concentrate on issuer's level competition. This paper also focuses on the issuers' level competition in Turkish credit card market.

In this section, the nature of credit card industry is explained to account for the high interest rates in credit card markets in general. Then, we explore the nature of price competition to explain the downward stickiness of the rates. Finally, the evolution of US credit card market towards more competition is provided as an example to motivate our analysis in the Turkish case. The general idea in this section is to provide all the possible reasons for why the competition may not be reached with the market's own dynamics.

2.1. The Nature of Credit Card Industry

[18] See Visa USA vs. United States Supreme court decision (2001).
[19] This rate is set at the network level. Visa, MasterCard (international) and ICC (domestic) set this rate around 2.5 percent.

Credit cards are non-secured means of credit with an interest free grace period as a free short-term loan. Moreover the payment time is not explicitly stated by a regular credit card contract. Hence, the funding of the industry needs to be made by shorter period options with higher interest rates[20]. Because of this nature, it is not surprising that the rates of the credit cards are higher than the regular credits. For example, the funding cost of mortgage loans requires lower rates as compared to a credit card loan due to its less ambiguous maturity structure.

In addition to optional credit feature, credit cards offer cardholders secure and convenient consumption instrument. Chakravorti (2003) categorizes the consumers under two groups according to their usage of credit cards. The convenience users pay the credit card bill on due date and the revolvers use the credit feature of the cards. The convenience users are not as profitable as the revolvers for the issuers given that they just use the credit cards as the payment instruments. Hence, the interest free grace period of the convenience users were also financed by the revolvers. Since 30 to 40 percent of the U.S. market is convenience users[21], there are two revolvers for a convenience user. However, in Turkish credit card market, 76 percent of the cardholders pay their bill on due date[22]. Hence, a revolver subsidizes the cost of three convenience users. Extremely high interest rates in Turkish credit card market are likely to stem from these consumer characteristics. Since this low share of the revolving customers are also separated as illiquid and higher risk customers, the interest rate charged to the customers appear to be an increasing function of risk. Indeed, this mechanism generates a vicious circle. High

[20] Some researcher took 90 day T-Bill rate for cost of funds (Ausubel, 1991; Ayadi, 1997).
[21] The estimates of the industry are about 30 to 40 percent for 2003 (Chakravorti 2003).
[22] See: http://www.bkm.com.tr/images/basinodasi/06082005_dunya.jpg

interest rates lead to fewer revolvers and more convenience users. High share of convenience users in turn increases costs and thereby leads to high card rates.

Another classification of credit card consumer is done by Chakravorti and Emmons (2001). They distinguish two types of consumers with respect to their risk levels as liquid consumers and illiquid consumers. A seller may offer lower price in selling with cash than selling with credit card due to commissions and extra charges (Chakravorti and Ted, 1997). The liquid consumers have an option to select the lower price but the illiquid ones have no alternative and choose to use the credit cards. Hence, a separating equilibrium suggests that all cardholders are the risky consumers. Definitely, card rates would be high if only riskier consumers prefer cards. However when bonus points or frequent-use awards are offered to liquid consumer, the market may reach a pooling equilibrium with all type of consumers using credit cards. Hence, the loyalty programs are crucial for the existence of the market and play an important role in the penetration of the card usage (Chandran, Matthews and Tripe, 2003). Loyalty programs also emerge as an additional cost to the credit card industry. Spain, Australia and US cases provide a rather nice example for the cost of loyalty programs. In Spain and Australia, the network level commission rates of credit card interchange fees have been reduced by a regulation. Subsequently, the loyalty programs have become less generous and the annual fees of credit cards have been increased. On the other hand, in US market when the credit card interchange fees have been increased, the annual fees have declined and the loyalty programs have become more generous (Weiner and Wright, 2005).

2.2. The Nature of Price Competition in Credit Card Industry

Ausubel (1991) explores the 1980s` US credit card market. Ausubel estimates 13.2 percent interest rate for zero profit feature of the perfectly competitive market. However, for the same period, the credit card rates were about 19.8 percent. Moreover, Treasury bill rates and other credit markets rates were about 5 percent. As mentioned above the credit card industry is a costly business. Hence, the zero profit rates were higher than twofold of the T-bill rates. There were about 4000 issuers for the $203 billion revolving credit[23] market but the rates were about fourfold of the funding costs. Ausubel categorizes existing explanations for this failure of competition under three clusters: consumer irrationality, search costs and switch costs. In addition to these explanations, Ausubel provides his own explanation as well.

Consumers who are not willing to borrow at the beginning are insensitive to changes in the interest rates. However, the consumers who plan to borrow are very sensitive to the changes in the credit card interest rates. Hence, when an issuer decreases the credit card rates, the issuer can only attract these risky consumers. Moreover, the consumers searching for a lower rate would also be the ones who carry out more interest payment. The low risk customers pay the bill on due date. Hence, the return from searching a lower rate would be higher than the search cost. Since the benefit from searching is higher for consumers with high balances, a credit card issuer by offering a lower rate will again only attract high risk consumer (Ausubel, 1991). Ausubel suggest that the price competition in the credit card industry is likely to increase the default risk.

[23] The revolving credit card loan was $203 billion at year end of 1982. source: Federal Reserve Bulletin, April 1990, (Ausubel, 1991).

Since the collective action of the market is not permitted by antitrust laws[24] the issuers would not announce any price cut collectively.

Existing empirical studies provide ample evidence for the search costs, switch costs and adverse selection effects and downward stickiness of the rates. Calem and Mester (1995) employ 1989 survey of Consumer Finances and estimate that probability of applying and being rejected is higher for consumers with high credit card balances. They find that since the probability of rejection is high, the high balance consumers search less and any price cut attract low balance consumers with low profits. The study conducted based on 1989 survey empirically shows that the search and switch costs affect the price competition in US credit card market in 1980s (Calem and Mester, 1995). The later research based on the 1998 Survey of Consumer Finances unravels a change in the US market. Their results show that the high rejection probability does not affect search probability. Consumers with high balances search more for lower rates in spite of their high probability of rejection (Kerr and Dunn, 2002). The US credit card market emerges to be more competitive in 1990s. The informational innovations such as widespread access to internet also help reducing the search costs of the consumers (Calem, Gordy and Mester, 2005).

2.3. The evolution of US credit card market

US credit card market experienced high and sticky interest rates in 1980s (Ausubel, 1991). In this section, the evolution of US credit card market towards more competitive structure is illustrated to better conceptualize the nature of competition in credit card industry in general.

[24] Sherman Act bans setting prices in cooperation with competitors.

Credit cards emerged in the US market and reached significant volumes in 1980s. Before 1978, credit card rates were restricted by the usury laws by each state where the transaction is made. Later, US Supreme Court decision[25] altered the rule with respect to the issuer's location. The rules and regulations of the home state where the credit card was issued became solely applicable for the card. After this development, the banks moved their credit card operations to other states without usury laws (Ayadi, 1997). Deregulation of interstate banking in 1982 further allowed the credit card issuers to move their operations to the ceiling-free states like Delaware and South Dakota (Stango, 2003). In spite of these deregulations, the credit card rates failed to achieve a lower level equilibrium and they tended to float independently from the funding costs.

Ausubel (1991) makes use of the quarterly data set of Federal Reserve and his own dataset collected from 17 banks between the years 1983-1987. The number of the issuers in US rose from 4000 in 1980s to 6000 in early 1990s. Moreover, the revolving credit card debt stock reached $ 203 billion dollar[26]. However, Ausubel notes that all these improvements were not enough to initiate more aggressive competition among thousands of issuers. The main determinant of the credit card interest rates needs to be the cost of funds in a competitive credit card market. Hence, Ausubel in analyzing the US credit card market over the 1983 to 1987 period employs the cost of fund as a control variable to measure the influence of funding costs on the credit card interest rates charged by the leading 17 credit card issuers. Ausubel concludes that pricing in the credit card market throughout the 1980s was insensitive to the changes in the cost of funds.

[25] Marquette National Benk vs. First of Omaha Service Corporation (1978)
[26] Revolving credit card accounts at year bend 1989, Ausubel (1991), Federal Reserve Bulletin April 1990.

The credit card issuers attribute the high credit card interest rates to the high default rates. However, Ausubel claims that the default risk is a control variable that issuers can determine through the lines and acceptance of the customer base. Park (2004) explores the impact of the credit lines as an explanation for the high credit card rates. He shows that when the funding costs declines, card issuers prefer extending the customer base to incorporate less creditworthy customers instead of lowering the card rates. Since the rates of these unsecured credits never compete with closed-end loans, the issuers tend to make product differentiation with rebates on purchases or loyalty programs (Park, 2004; Chakravorti and To, 1999).

Given that the default risk explanation is not satisfactory to explain high credit card interest rates, adverse selection and moral hazard theories (Stiglitz and Weiss, 1981; Ausubel, 1991, 1995) provide some alternative explanations. Ausubel proposes a new adverse selection theory to elucidate the asymmetric behavior in the credit card industry when interest rates increase in respond to rise in the cost of fund while stay intact to the declines in the cost of funds. According to Ausubel's explanation, high risk customers are more likely to switch credit cards in response to incentives provided by the credit card issuers. When a credit card issuer announces a price cut, the low risk customers do not respond because they pay their credit card debt within grace period. However the high risk customers tend switch to the low interest rate issuer, thereby the risk concurrently increases for the issuer. Hence, the price cuts generate an unintended consequence by reducing the net returns for the banks deviating from the high interest rate equilibrium. The adverse selection theory of Stiglitz (1981) is the reverse of the previous one. When a bank announces an increase in the interest rate, the liquid (low risk) consumers do not

respond but the ones who do not plan to repay respond to the offer. Hence this scenario leads to increase in default risk for the credit card issuer with lower card rate. Ausubel proposes that Stiglitz`s well-known theory is applicable only to the secured credits markets, whereas Ausubel's adverse selection theory fits better for the credit card market.

Search costs and switch costs for the consumers are also likely to impair competition in the credit card markets (Calem and Mester, 1995, Ausubel, 1991). Moreover, the existing issuer of a consumer has more information about the payment history of its customer. This informational advantage enables the issuer to offer extra benefits to the customer like higher credit lines. Consumers can also be reluctant to respond to the lower interest rate offers simply due to the high switch costs. The credit card holders with unfavorable credit card records confront with the same switch cost. However, their returns are more likely to exceed the switch costs. On the other hand, the price cutting issuers do not intend to target these customers.

Ausubel (1991) in estimating the profitability of the credit card issuers uncovers abnormal returns and asymmetric power in the credit card market. The return from the regular banking operations was around 20 percent per annum. However, the credit card branches of the banks accrued 60-100 percent profits. Ausubel's article published in "American Economic Review" in 1991 contributed to mounting attention in the national media by the help of existing movements in favor of price ceilings. The rates were about fourfold of the Treasury bill rates after the series of rate cuts by the Federal Reserve Bank. President Bush declared in a dinner that he would like to see credit card rates down. Immediately after this speech, the regulatory threat initiated the price cuts in the market. The issuers with low balances responded immediately but the larger ones

announced their price cuts later[27]. The threat was credible given that the price cap regulation of 14 percent was in front of the Senate. The regulatory threat ended by an article on American Bankers[28] after Citibank made the price cuts in the sixth month of the threat (Stango, 2003). Currently, US credit card market is characterized with a much more competitive structure (Calem, Gordy and Mester, 2005).

3. Turkish Case

In this section, the Turkish credit card market is analyzed with the help of existing studies covered above. The credit cards were first introduced in Turkey 50 years later than US[29]. The Diners Club card entered the Turkish market in 1968. However, the usage was very limited. The widespread usage was only achieved towards the end of 1990s[30]. The Turkish credit card market at the end of 1990s very much resembles the US credit card market of 1980s.

The pricing of the credit cards was tough to detect before 2001. The inflation rate was always high. The economic crises of 1994, 1999 and 2001 were very frequent and drastic. However, especially after 2001 crisis, the inflation rate and regular credit rates considerably declined whereas the credit card rates did not respond to this fall. The inflation rate in 2005 was reduced to single digits. However, average APR for the credit cards was still over 100 percent per annum. The Turkish credit card market has 22 issuer

[27] The biggest of the market, Citibank, responded rather sluggishly in 6 months to the regulatory threat. But AT&T and First Bank of Chicago announced price cut just after the President's speech.
[28] Threat of Credit Card Cap Legislation Easing, American Banker, April 27, 1992.
[29] US card history started with Western Union, 1914 (Kaynak and Harcar 2001).
[30] Existing competition falls short of bringing lower credit card interest rates. The expansionary growth of the cards is still in progress. One million cards of 1992 reached ten million in 1999 and twenty million cards of 2003 rose to 30 million cards by the end of 2005.

banks[31] competing with 30 million cards and approximately 16 million consumers[32]. The volume of the credit cards reached 20 percent of all transactions, equivalent to $ 63 billion in 2005.

Operational costs and funding costs of the banking industry are the usual suspects for the high rates in Turkish credit card market. However, the interest rate in the consumer, home and auto credit markets in Turkey move in concert with overnight rates. Interest rates of consumer credits are slightly higher than of home and auto loans. Moreover, the spread with the overnight rates is very low for each market (Figure 2). Securitized credits[33] and their maturities also give us clues about the expectations of the banks. The home loans reached 25 years maturity. Hence, one can notice that the expectations of the banks and the default risk associated with the country declined[34]. In Figure 2, the credit card interest rates decline over time together with T-Bills and overnight rates. However, the high spread remains for the credit card interest rates. Even worse, the ratio of credit card rates over overnight rates was 1.8 in 2001. This ratio reached fourfold of funding costs in 2005.

Our research period does not contain any example of increasing credit card interest rates. Nonetheless, we may compare the credit card interest rates of the preceding and proceeding quarters of the crisis in the first quarter of 2001. Average credit card interest rate increased from 108 percent to 181 percent (Table 3). On the other hand, a sharp increase in funding costs increased the T-bill rates from 37 percent to 137 percent

[31] There are 4 more financial institutions offering interest free credit cards. We do not take them into account because we only focus on the interest rate competition. Moreover, their market shares are insignificant.

[32] Interbank Card Center (ICC) estimated 1.8 cards per each consumer.

33 Secured credits assign legal rights to take back that specific asset in case of default such as home or auto loans.

[34] Before 2003 the maturities could be at most 3 years, and the rates were drastically increasing with the maturity.

in the crisis quarter. The persistent fall for the T-bill rates started from 97 percent on the next quarter. However, it took four years for the credit card rates to go back to levels of 100 percent. Credit card rates exhibits downward stickiness while the price adjustments to higher levels are done rather quickly.

The credit card market in Turkey has not been consolidated with the rules and regulations for years. Some regulatory aspects stated later in consumer protection law of 2003. This law confines the default credit card interest rate up to the % 30 more of the initial credit card rate. One of the reasons of the high credit card interest rates is the linkage of default APR and actual APR. The banks charge higher rates for the default consumers given that their risk levels are higher than regular consumers. Banks set their actual rates by taking this regulation into account. Nearly all banks set their default APR at the upper limit of the regulation. Currently, average APR is 10 percent in US but the default APR is about 30 percent. The Turkish Central Bank has the right to impose lower credit card rates to the banks[35]. However, the Turkish Central Bank gives this regulation as an excuse for the inaction. When Central Bank lowers the rates, the default APR automatically falls as well. The Turkish Central Bank presumes that the banks would not continue to operate in Turkey anymore. As an example, some banks in US moved their credit card branches to other states when their states have price cap regulation. Since the Visa and MasterCard infrastructure serves all over the world, the overpressures on the issuers may induce them to relocate their operations abroad.

The consumer protection law of 2003 requires no-surcharge rule in Turkish credit card market. The extra payment in the case of credit card usage is banned by the law.

[35] http://www.finansalforum.com.tr/haber.aspx?HBR_KOD=34215

However, the law allows price discounts for the cash payments[36]. According to the volumes and card numbers, the market leader sustains the advantage of being the first issuer in Turkey. Yapı Kredi Bank (YKB) reintroduced the credit cards in 1988, and so far continued its leadership.

As mentioned above high switch cost explanation is one alternative to explain the high credit card interest rates in the Turkish market. The intensity of switch costs in the market can be detected through analyzing the market shares along with card rates. The leader charged the highest rates in the three consecutive years' average (Table 5). This observation heuristically supports the switch cost scenario.

The competition in the Turkish credit card industry mainly concentrates on the loyalty programs. The reward bonuses of the second player reached 160 million dollars in 2005[37]. Other than the top four credit card issuers, the remaining 18 banks capture only less than half of the aggregate market (Table 5). Since the issuers offer the identical products (payment card either Visa or MasterCard), they prefer differentiating their services instead of indulging in price competition. Even a few banks are sufficient for competition in the credit card market. For example, the concentration ratio in the Irish market reaches 90.8 percent with four issuers (Kelly and Reilly, 2005).

Simple illustration of the credit card interest rates is not adequate to measure the degree of competition in Turkey. For example, Bank Europa offers one of the lowest interest rates. However, Bank Europa does not issue regular credit cards. It only provides gold and platinum cards with high annual fees and with lower default risk of the customers.

[36] See Weiner and Julien (2005) for the US case.
[37] See: Capital, July 2005

Delinquency rates increased considerably in 2005 and reached 7.5 percent of all card holders. Nonetheless, the default volume is around 1.67 percent in Turkey. The default volume is about 4.5 percent in Europe[38]. The corresponding debt amounts of average consumer with repayment difficulties are low. Hence, any debt consolidation is not likely to affect the default risk position of the industry[39].

The maturity of home loans exceeds twenty years and the interest rates for home loans decline under one percent monthly. The card issuing banks can foresee the upcoming years better. European Union candidateship also contributes to this optimistic behavior of the interest rates. Moreover, the credit card histories of the consumers started to be collected by central system[40]. Hence, the issuers have better tools to assess their customers and to plan their future for a longer horizon.

The competition in the Turkish credit card market concentrates on the loyalty programs. Four largest card issuing banks are also the main players of acquirers` market. Most sellers have lots of POS machines of each bank to offer benefits of the corresponding loyalty program. More POS machines and inefficiency result extra costs in the credit card operations (Table 6). Currently, Interbank Card Center works on improving the infrastructure to serve to all issuers with the same POS machine. The success of this project is expected to have a positive effect on the competition by diminishing the entry costs. Otherwise, a small issuer bank needs to put its own pos machines to all sellers for a loyalty program.

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[38] Steve Perry, Visa Europe Co-president, December 2005 (http://hurarsiv.hurriyet.com.tr/goster/haber.aspx?id=3681216&tarih=2005-12-21)

[39] Recently, a banking law has accepted with debt consolidation, by decreasing the default APR from over hundred percent to eighteen per cent while paying the debt within up to 18 dividends.

[40] The records of Credit histories are available to the issuers at the Credit Bureau of Turkey (www.kkb.com.tr)

4. Data and Methodology

The cost of funds needs to be the main determinant of the credit card interest rate (Ausubel, 1991). For the closed-end loans, namely the ordinary credit types, banks have opportunity to finance these loans through lower costs and longer maturities. However, for the credit cards the T-bill and overnight interest rates better capture the cost of funds for the credit cards. Hence, Ausubel (1991) employs T-bill interest rate in US to account for the cost of funds. In this study for Turkey, since the volume of T-bill auctions varies significantly over time, we mainly use overnight interest rate for the cost of funds.

Following Ausubel (1991), since the default risk of the card holder is an endogenous variable under the control of the issuers through adjustment of the credit lines; we do not focus on the default rate in our empirical research. Ausubel (1991) and Park (2004) reject the high default rate explanation of banks for high interest rates by the adjustable credit lines approach as mentioned above. Similarly, we also neglect the market shares because all issuers in Turkish market serve nationwide and sell a relatively homogenous product of either Visa or MasterCard.

Our data set consists of quarterly credit card interest rates of all issuers in the Turkish market. The credit card rates for 2005 are available monthly. However, the previous data recorded quarterly by the Regulatory and Supervisory Authority of Turkish Banking System. The data on overnight interest rate is derived from the Turkish Central bank. Among 22 banks issuing credit cards, three of them are public banks and 3 of them are foreign Banks. The volume of the government banks and foreign banks are close to each other. Our time period spans from the second quarter of 2001 to third quarter of

2005. In the first quarter of 2001, Turkish economy experienced a liquidity crisis. Hence, we decided to concentrate on the post-crisis episode to isolate a major structural change from our sample. Ausubel (1991) conducts a similar regression analysis for US between 1983 and 1987 using quarterly data. Moreover, similar to Ausubel (1991) our study includes five year period which is enough to reflect degree of competition in the market. Since the credit card interest rate announcements are made at the beginning of each period, we take the lagged value of the funding costs.

We employ random effect and fixed effect panel data regressions with dummy variables for each bank in our regression estimations. Moreover, we instrument the cost of fund control variable with its lag value to account for the endogeneity problem. Hence, the following empirical model is estimated:

$$rate_{i,j} = const + \alpha \cos toffunds_{i,j-1} + \beta rate_{i,j-1} + \varepsilon_{i,j} \quad (1)$$

The rate stands for the average monthly credit card interest rate for each quarter. The cost of funds is represented with the overnight interest rate. $\varepsilon_{i,j}$ is the white noise error. The changes in the interest rates are expected to move together with the cost of funds in more competitive markets. Hence, the estimated coefficient α of cost of funds needs to be close to unity for more competitive markets. The estimated coefficient for the lagged values of interest rates is expected to be positive given that the expectations and discount values of consumers do not change much from one quarter to another.

Moreover, the highest interest rates have been always exerted by Citibank for most of the quarters of our research. We expect a positive sign for the Citibank dummy to confirm the robustness of estimations.

5. Empirical Results

In Table 8, the estimation results are presented. The first column displays the random effect regressions with the assumptions that dummy variables are uncorrelated with the other control variables. The second column displays the fixed effect regression without assuming this restrictive assumption. We also run the Hausman specification test to compare the coefficients of the random effect and fixed effect model. The null hypothesis of no systematic difference in the coefficients of the fixed versus random effect model can not be rejected. In the last column, fixed effect instrumental variable regression is estimated to account for potential endogeneity problem. One lag value of cost of funds is used as an instrument for the cost of fund variable. In the first stage regression, the instrument enters into the equations significantly.

Turkish credit card market reflects inertia in the credit card interest rate adjustments. The market with slow adjustments leads to higher value for the coefficient of the lag value of credit card interest rate than the value of coefficient for the cost of the funds. The fixed effect regression in Column 2 of Table 8 gives 0.6698 for the coefficient of the lag of credit card interest rates whereas the coefficient of cost of funds is 0.2642. This provides an evidence for the sluggish adjustment in the Turkish credit card market. Our more important result is related to the coefficient of cost of funds. Even though the cost of funds is statistically significant, it is quantitatively insignificant in determining

credit card interest rate (Table 8). To illustrate this point better, a 10 percent decline in the overnight interest rate only reduces the credit cards rate by 2.6 percent. When we account for endogeneity problem, the coefficient of the cost of funds slightly increases to 0.2975. This sight increase also confirms the robustness of our results. The quarterly adjustment of the credit card rates is about 18 percent in the Turkish credit card market between 2001 and 2005. The convergence coefficient is bigger than the US market in 1980. However, it still takes years to reach a competitive outcome. Hence, our first set of results shows that Turkish credit card market is characterized with poor competition.

Given that the new Turkish Consumer Law brought certain regulations to the credit card industry, we divide our sample into two periods before and after the first quarter of 2003. The period after 2003 also helps us differentiate the influence of the 2001 crisis on the credit cards market. The results are pretty interesting. Our main conclusion does not change. However, the credit card industry tends to respond more to the declines in the cost of funds after 2003:1. The coefficients of cost of funds for different estimations are consistently lower than their corresponding values after 2003:1. The coefficient of cost of the funds rises to 0.544 in the instrumental variable regression in Table 10. However, this increasing coefficient does not alter our result at all considering the lack of economic significance of the magnitude of this coefficient. Table 9 and 10 provide the detailed regressions results for two sup-samples.

6. Conclusion

This paper attempts to fill an important gap in the Turkish financial market literature. High interest rates in Turkish credit card market display a secular trend for

years. These high interest rates attracted considerable attention in recent years to regulate the credit card industry in Turkey. Before any regulation decision taken, there needs to be better conceptualization and analysis of the Turkish credit card market. This paper sheds some light in this direction. First, we highlight the most striking aspects of the Turkish credit card market. After exposing the problem, we benefit from the existing theoretical and empirical studies on the structure of competition in the credit card industry. Potential reasons for the lack of competition are denoted. We also provide evidence from US credit card market to show the likely path of Turkish credit card industry.

Having the existing studies in mind, we finally, construct an empirical model to estimate the market structure in the Turkish credit card industry. Newly disseminated data on the credit card industry is first introduced in this paper. Our empirical results are based on the panel data set of 22 banks from the second quarter of 2001 to the third quarter of 2005. In addition to random and fixed effects regressions, instrumental variable fixed effect regressions are run on this sample. Our results robustly conclude that the credit cards interest rates in Turkey are economically insensitive to the changes in the cost of fund. This result indicates that Turkish credit card markets is characterized with lack of strong competition and hence suggests some regulatory measures.

7. Figures

Figure 1: Average Credit Card Rates vs. Cost of Funds

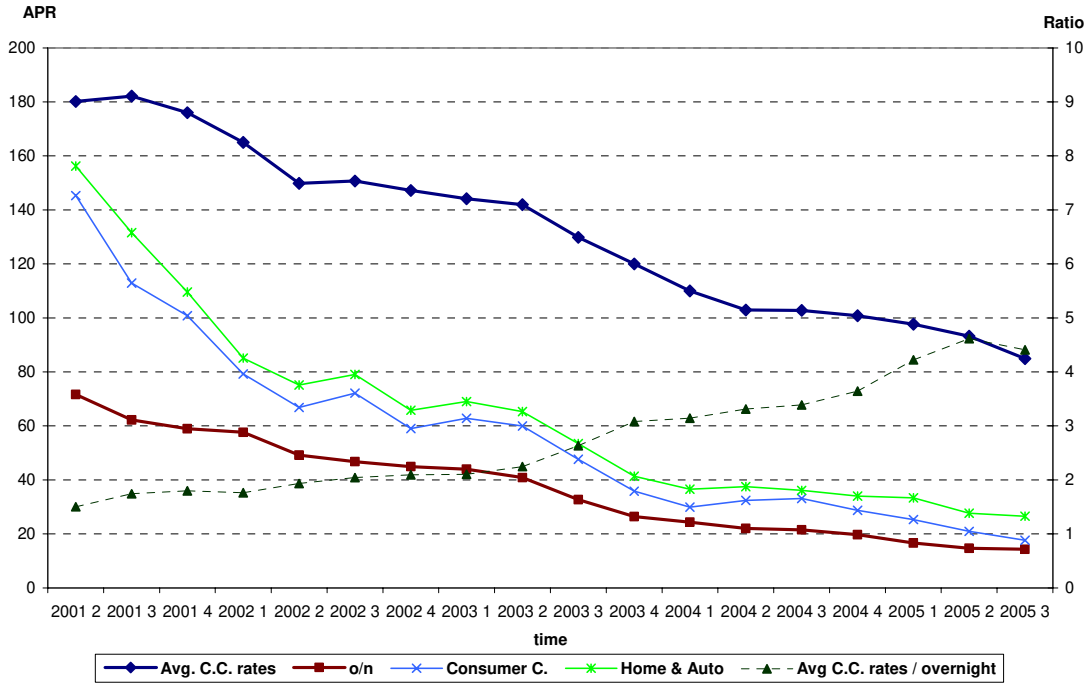
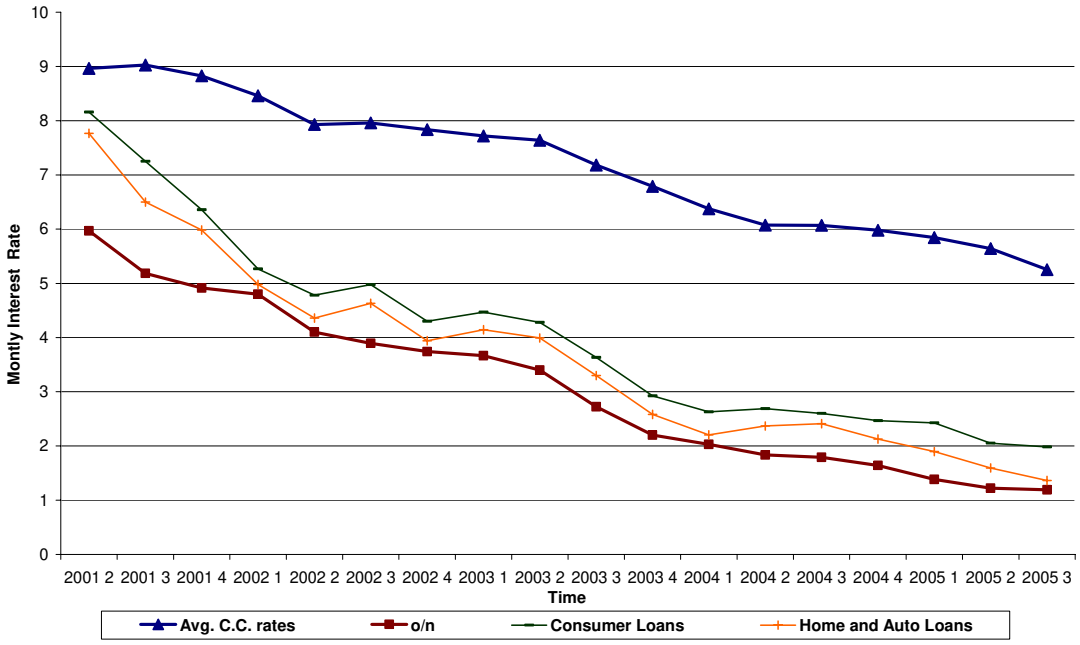


Figure 2:Average Credit Card Rates vs. Cost of Funds



8. Tables

Table 1 : Top Four Issuers of Turkish Credit Card Market, 2004

Bank	Number of Cards	Percentage market share (Card Numbers)	Transaction Volume (million YTL)	Percentage market share (Card Volume)
YKB	4,575,225	17.1	16,080	24.9
Garanti	4,152,188	15.6	12,189	19.1
Isbank	3,142,747	11.8	8,619	13.3
Akbank	2,811,060	10.5	8,122	12.6
Top Four	14,681,220	55.0	45,010	69.9
Total	**26,681,128**	**100.0**	**63,271**	**100.0**

Source: Total number of cards and market volume are taken from ICC (Interbank Card Centre). Individual issuer's data are collected by the authors from each bank's own announcements on the percentage shares and volumes.

Table 2 : Volumes of Credit Card Associates ,2004

	Percentage Market Share (World)	Turkish Credit Card Market
Visa	43	49.5
MasterCard	41	50.4
AMEX,Dinners, JCB	16	0.1

Source: Visa Europe and MasterCard web Statistics.

Table 3 : Monthly Card Rates		
Issuers	**2000-4. quarter**	**2001-2 quarter**
Akbank	5.95	9.95
Alternatifbank	5.5	9.95
Demirbank	5.5	7.95
Finansbank	5.5	8.45
Garanti	6.95	9.95
Isbank	6.95	8.5
Kocbank	6.25	6.95
Pamukbank	5.9	9.5
Sekerbank	5.5	8.5
TEB	5.4	8.5
Tekstilbank	6.75	9.95
Toprakbank	7.84	9.9
Turkbank	6.5	9.5
Vakifbank	6.5	8.5
Yapikredi	6.95	8.95
Ziraat	6.45	9
Average	**6.27**	**9**
APR	**107.56**	**181.27**

Source: Card rates are taken from BRSA

Table 4 : Shares of Top Four Credit Card Banks in 2004

	2002	**2003**	**2004**	**Average Monthly Card Rate (APR)**
Yapi Kredi Bank	28.7	28.3	24.9	7.47% (**137%**)
Garanti	17.0	19.2	19.1	7.39% (**135%**)
Isbank	13.2	13.1	13.3	6.99% (**125%**)
Akbank	8.1	9.6	12.6	6.90% (**123%**)
Top Four	67.0	70.2	69.9	

Source: Authors' own calculations, each bank's web site and Interbank Card Center.

Table 5 : The Number of Credit Cards and the Issuers` Share in Turkish Credit Card Market

	2002		2003		2004	
Yapi Kredi Bank	18.6%	2,916,166	17.0%	3,389,424	17.1%	4,575,225
Garanti	14.8%	2,315,275	15.1%	3,018,986	15.6%	4,152,188
Isbank	12.3%	1,934,078	12.3%	2,446,031	11.8%	3,142,747
Akbank	11.0%	1,738,588	9.4%	1,863,038	10.5%	2,811,060
Top Four	**57.0%**		**53.8%**		**55.0%**	

Source: Each bank's web sites and Interbank Card Center for the total number of the cards.

Table 6 : Shares of Top Four Credit Card Acquirers (# of Pos Machines)

	2001	2005
Akbank	75,809	192,410
Isbank	63,000	190,000
Yapi Kredi Bank	67,400	134,041
Garanti	39,719	122,000

Source: http://www.capital.com.tr/haber.aspx?HBR_KOD=2954

Table 7 : Bank`s Credit Card Lines (1000 YTL)		
	5-Jun-2005	5-Dec-2005
Yapı Kredi	6,915,685	5,789,312
Akbank	4,700,893	6,833,068
Garanti	4,109,751	5,377,917
Isbank	3,749,121	4,604,581
HSBC **	3,345,089	2,979,925
Vakıfbank *	1,987,294	1,656,487
Finansbank	1,812,257	1,932,596
Disbank(Fortis)	1,781,304	2,214,632
Denizbank	1,478,577	1,250,397
Halkbank *	886,860	901,496
Kocbank	864,704	855,454
Citibank **	800,515	740,383
Ziraat *	729,019	757,098
Oyakbank	650,258	646,019
Şekerbank	259,392	235,973
TEB	142,034	123,660
Tekstilbank	116,808	102,410
Anadolu	96,790	74,423
Tekfenbank	14,890	15,971
BankEuropa **	4,356	3,625
MNG Bank	2,823	3,452
Turkishbank	0	9,357
TOTAL	34,448,420	37,108,236

* Stands for public banks and ** stands for foreign banks.

Table 8 : Regression of Credit Card Interest Rate on Cost of Funds and Lagged Credit Card Interest Rate(Quarterly, 2001:2 – 2005:3)

Variable	Random Effect o/n	Fixed Effect o/n	Instrumental Variable (o/n 2 lag)
Cost of Funds (lag)	.1459 (4.75)	.2642 (7.38)	.2975 (5.48)
Credit Card Interest Rates (lag)	.8314 (26.29)	.6698 (16.46)	.6371 (11.15)
Constant	.5483 (3.31)	1.3507 (6.49)	1.1278 (4.35)
Bank 1		.1938 (1.16)	.2066 (1.22)
Bank 2		.1984 (1.19)	.2043 (1.22)
Bank 3		.4214 (2.49)	.4425 (2.58)
Bank 4		.3499 (2.07)	.3706 (2.17)
Bank 5		.3544 (2.11)	.3688 (2.18)
Bank 6		.3785 (2.22)	.4075 (2.33)
Bank 7		.2722 (1.62)	.2855 (1.69)
Bank 8		.4558 (2.67)	.4841 (2.78)
Bank 9		.3949 (2.34)	.4160 (2.43)
Bank 10		1.0431 (5.34)	1.1245 (5.12)
Bank 11		.3678 (2.20)	.3757 (2.24)
Bank 12		-.0057 (-0.03)	-.0018 (-0.01)
Bank 13		.0182 (0.10)	.0126 (0.07)
Bank 14		.2607 (1.54)	.2831 (1.65)
Bank 15		.1372 (0.82)	.1516 (0.90)
Bank 16		.4722 (2.75)	.5050 (2.86)
Bank 17		.4585 (2.71)	.4812 (2.80)
Bank 18		.1948 (1.17)	.1958 (1.17)
Bank 19		.4898 (2.89)	.5130 (2.98)
Bank 20		.5392 (3.10)	.5787 (3.20)
Bank 21		.2215 (1.32)	.2315 (1.38)
Number of Observation	365	365	365
R square	.8743	.8890	.8887

Table 9 : Regression of Credit Card Interest Rate on Cost of Funds and Lagged Credit Card Interest Rate (Quarterly, 2001:2 – 2003:1)

Variable	Random Effect o/n	Fixed Effect o/n	Instrumental Variable o/n 2 lag
Cost of Funds (lag)	.1633 (2.59)	.2994 (4.36)	.4396 (4.48)
Credit Card Interest Rates (lag)	.7174 (13.03)	.4793 (6.33)	.4395 (5.51)
Constant	1.4481 (3.64)	2.7324 (5.22)	2.5588 (5.08)
Bank 1		.4145 (1.63)	.4495 (1.81)
Bank 2		.0402 (0.16)	.0350 (0.15)
Bank 3		-.0319 (-0.13)	-.0452 (-0.19)
Bank 4		-.1714 (-0.70)	-.1714 (-0.72)
Bank 5		-.1085 (-0.44)	-.1250 (-0.52)
Bank 6		.2841 (1.14)	.3085 (1.27)
Bank 7		.0238 (0.10)	.0147 (0.06)
Bank 8		.3344 (1.36)	.3458 (1.44)
Bank 9		-.0554 (-0.23)	-.0591 (-0.25)
Bank 10		.7557 (2.95)	.7944 (3.17)
Bank 11		-.1831 (-0.72)	-.2195 (-0.88)
Bank 12		.0519 (0.11)	.0324 (0.07)
Bank 13		-.2145 (-0.74)	-.1954 (-0.69)
Bank 14		.4450 (1.76)	.4769 (1.93)
Bank 15		-.5429 (-2.17)	-.5707 (-2.33)
Bank 16		.0721 (0.29)	.0803 (0.34)
Bank 17		.1202 (0.49)	.1179 (0.49)
Bank 18		-.0326 (-0.13)	-.0542 (-0.22)
Bank 19		.1830 (0.75)	.1779 (0.75)
Bank 20		.3046 (1.22)	.3273 (1.35)
Bank 21		.0851 (0.35)	.0839 (0.35)
Number of Observation	145	145	145
R square	.6754	.7415	.7550

Table 10 : Regression of Credit Card Interest Rates on the Cost of Funds and Lagged Credit Card Interest Rate
(Quarterly, 2003:2 – 2005:3)

Variable	Random Effect o/n	Fixed Effect o/n	Instrumental Variable o/n 2 lag
Cost of Funds (lag)	.0782 (1.38)	.4622 (6.44)	.5440 (6.50)
Credit Card Interest Rates (lag)	.8788 (22.46)	.4536 (6.91)	.4697 (7.45)
Constant	.3734 (1.81)	1.5851 (5.44)	1.4514 (5.19)
Bank 1		.1673 (0.80)	.1665 (0.80)
Bank 2		.3785 (1.79)	.3721 (1.77)
Bank 3		.9816 (4.31)	.9602 (4.27)
Bank 4		.9473 (4.27)	.9300 (4.24)
Bank 5		.8482 (3.84)	.8314 (3.81)
Bank 6		.7600 (3.43)	.7426 (3.39)
Bank 7		.5994 (2.76)	.5857 (2.72)
Bank 8		.8533 (3.78)	.8329 (3.73)
Bank 9		.9487 (4.25)	.9301 (4.21)
Bank 10		2.1416 (6.83)	2.0844 (6.82)
Bank 11		.8586 (3.88)	.8417 (3.85)
Bank 12		.1965 (0.63)	.1925 (0.92)
Bank 13		.1266 (0.60)	.1274 (0.61)
Bank 14		.3690 (1.73)	.3592 (1.70)
Bank 15		.7885 (3.50)	.7685 (3.45)
Bank 16		1.1173 (4.78)	1.0922 (4.74)
Bank 17		.9515 (4.23)	.9319 (4.20)
Bank 18		.3750 (1.77)	.3680 (1.75)
Bank 19		.9675 (4.27)	.9466 (4.23)
Bank 20		1.1365 (4.81)	1.1099 (4.77)
Bank 21		.4300 (2.02)	.4213 (2.00)
Number of Observation	220	220	220
R square	.8039	.8533	.8557

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