Non-price competition in credit card markets through bundling and bank level benefits

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Abstract

The attempts to explain the high and sticky credit card rates have given rise to a vast literature on credit card markets. This paper endeavors to explain the rates in the Turkish market using measures of non-price competition. In this market, issuers compete monopolistically by differentiating their credit card products. The fact that credit cards and all other banking services are perceived as a bundle by consumers allows banks to deploy also bank level characteristics to differentiate their credit cards. Thus, credit card rates are expected to be affected by the features and service quality of banks. Panel data estimations also control for various costs associated with credit card lending. The results show significant and robust effects of the non-price competition variables on credit card rates.

Keywords: Credit Cards, Monopolistic Competition, Product Differentiation, Bundling, Bank Pricing Behavior, Regulation
JEL classification: G21, G28, O16

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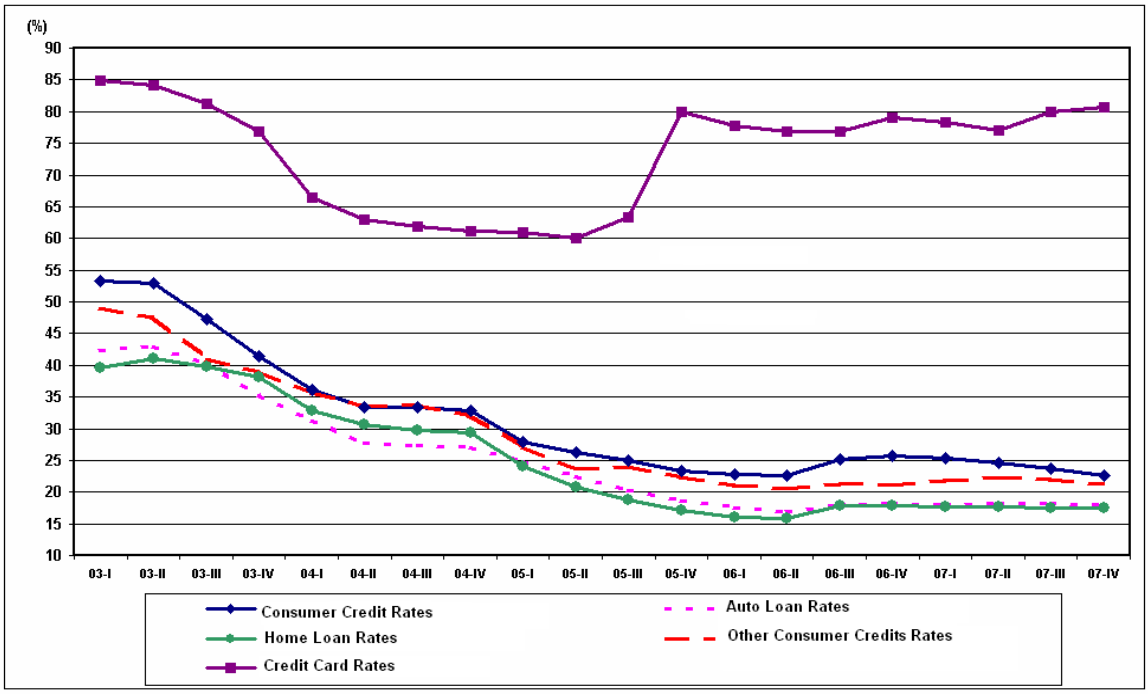
1. Introduction

High and sticky credit card rates that respond asymmetrically to the changes in the cost of funds have been frequently cited in the literature.[1] During the 2000-2001 financial crises in Turkey, as a response to soaring short term interest rates, banks immediately raised their credit card rates from 107 percent in the last quarter of 2000 to 181 percent in the first quarter of 2001. However, in the following recovery and stabilization period, although other credit rates smoothly responded to falling short term interest rates, credit card rates persistently remained high.

Graph 1: Credit Card Rates vs. Other Credit Rates in Turkey



Source: Central Bank of Turkey

There are 22 credit card issuer banks in Turkey. Even though this number should normally suffice to obtain a competitive outcome in a market for relatively

[1] Ausubel (1991), Nash and Sinkey (1997), Aysan and Muslim (2006))

homogeneous products, the mounting profitability of the credit card business and persistently high credit card rates make the matter of a considerable concern to both policymakers and researchers. Our objective, in this regard, is to pinpoint the underlying reasons of this apparent lack of competition in the credit card market and to propose coherent regulatory policies.

Explanations abound for the high and sticky spreads between credit card rates and funding costs. The primary justification is that the uncollateralized nature of credit card loans leads to higher default risk, and consequently to higher interest rates. Another is the non-interest bearing grace period between the day of purchase and the payment due date. Banks incur a cost in order to finance a customer's purchases during this time. Furthermore, operating a credit card system entails huge investments in technology and other infrastructure. Small average balances, on the other hand, preclude the cost-effective collection process. Liquidity risk management, which is necessitated by the banks' obligation to be ready to lend up to the full amount of the issued credit cards' limits at any time, also requires costly measures. On top of these inherent reasons, banks may also increase their costs by trying to differentiate their products through the distribution of benefits such as money points and other rewards. By and large, the fact that banks consistently preserve their high profitability of their credit card operations despite the fluctuations in the above mentioned costs suggests that the inherent costs of the credit card business can only partially account for the high and sticky credit card rates (Ausubel 1991).

There also exist some more sophisticated explanations. Chakravarti (2003) relates credit card rates to the proportion of convenience users to revolvers. As banks subsidize convenience users and earn their interest incomes only from revolvers, the

higher the ratio of convenience users, the higher the banks' costs are. Ausubel (1991) classifies cardholders according to their rationality and the way they use their credit cards. He then postulates that when banks cannot observe the types of cardholders they will be reluctant to unilaterally lower their card rates as they will attract only the adverse types. Calem and Mester (1995) and Stango (2000, 2002) emphasize cardholders' cost of switching to other banks with lower rates. Mester (1994) and Park (2004) argue that sticky rates might be an equilibrium response to banks' asymmetric information about cardholders' future incomes. Using the Panzar-Rosse technique, Shaffer and Thomas (2007) demonstrate that banks have been engaged in monopolistic competition in credit card markets and thus obtained monopoly power by differentiating their credit cards.

Shaffer and Thomas' story certainly holds for the Turkish market. Credit cards are by no means homogeneous products. Although there exists no price competition in the market (Akin et al. 2009a), banks are actively engaged in fierce non-price competition. To acquire market power they differentiate their cards by providing an array of card level benefits like travel miles, bonus points, rewards, shopping discounts, possibility of paying in installments, and travel and accident insurances.

Our premise is that banks differentiate their cards not only by these card level benefits but also by some bank level benefits. Consumers have much more elastic demands for vehicle or housing credits, which are quite homogenous products. Thus they are more likely to get these loans from banks with lower interest rates. However, survey studies[2] suggest that consumers inelastically prefer to use the credit cards of their primary banks. This may be due to a variety of reasons. Since the amounts

[2] A Nationwide Survey on Credit Card Usage (Akin et al. 2009b), Card Monitor (The Interbank Card Center 2008).

borrowed through credit cards are generally much smaller and of shorter term, consumers might not be very sensitive to credit card rates. Another explanation is that sometimes banks subtly or overtly bundle credit cards with other bank services. For example, they may choose not to facilitate their customers' payments of credit card balances at other banks. They may even intentionally render such monthly payments an encumbrance, especially for people who like to use automated payment services[3]. Such behavior may lead consumers to view credit cards and other bank services as a bundle, consequently allowing banks to differentiate their cards with the features of other banking services and making the quality of a bank's services in general a determinant of credit card rates.

To test the effect of bank level characteristics on credit card rates, we utilize a recently compiled quarterly panel data set for all 22 issuers in the credit card market in Turkey which spans the period from the last quarter of 2001 to the second quarter of 2006. When developing the empirical model, we benefit from the bank pricing models proposed by Neubergen and Zimmerman (1990) and Hannan (1991). Three groups of explanatory variables are used to explain credit card rates. The first group encompasses cost variables: the cost of funds, default risk and liquidity risk. In the second group, we use the number of bank branches, capital ratio, and average salaries to account for the quality of general banking services. We thus capture the effect of customers' perceiving credit cards and other bank services as a bundle. The third category includes the credit card market shares of banks, which may affect prices due to product differentiation through card level benefits. Fixed effect regressions yield significant and robust positive effects of bank characteristics and market share on prices in the credit card market in Turkey, confirming that through non-price

[3] Taking a vehicle or housing loan from another bank does not pose the same problems. The fixed amount of payments for such loans can be more easily followed and made by placing an order for automatic periodic payment from an existing bank account.

competition, banks are able to charge higher credit card rates. Our results also support the hypothesis that credit card rates adjust to the changes in the cost of funds sluggishly even after controlling for the non-price features. These results are robust to econometric specification and methodology.

Credit card markets in developed countries have been extensively explored. However, very little research has been conducted for developing countries in spite of the recent surge in credit card markets in these economies. Among the very few, Aysan and Muslim (2006), Aysan and Yildiz (2007) and Akin et al. (2009a) show the failure of price competition in the rapidly growing Turkish credit card market. These studies reveal that the response of credit card rates to the decline in the cost funds is economically insignificant. The current paper is the first to analyze the nature of non-price competition in credit cards for an emerging market. Analyzing non-price competition is important and necessary in order to design and implement effective regulations for credit card markets. The Central Bank of Turkey has been applying a cap on credit card rates since June 2006 in accordance with the recently enacted credit card law. However, the rates still remain exceedingly high compared to other loan rates. Tightening of the cap is on the agenda of the government. Any incorrectly designed regulation may have economy-wide adverse effects since increasing credit card numbers and transaction volumes made credit cards crucial for the functioning of the economy in recent years.

The organization of the paper is as follows. In the next section, the basic features of the Turkish credit card market are described. Empirical and theoretical background for the estimations is laid down in Section 3. Section 4 explains the data, variables and the empirical model. Results and robustness tests are presented in Section 4. Finally, Section 5 concludes.

2. The Turkish Credit Card Market

All issuer banks in Turkey provide credit cards at the national level and compete in a large market where the total number of credit cards was 37.3 million as of December 2007. The growth performance of the Turkish credit card market in 2000s is outstanding. The number of credit cards increased almost threefold between 2000 and 2008. The average growth rate of total outstanding balances between 2003 and 2007 was 59 percent, whereas the average growth rate of the total transaction volume in the same period was 43 percent[4].

A number of factors led credit cards to substitute for traditional payment instruments to a considerable extent. In addition to the usual benefits of credit cards[5], Turkish consumers, who have been living with high inflation for 30 years, especially enjoy the non-interest bearing "grace period" between shopping time and payment due date. They also benefit from being able to pay in installments without any surcharge over the cash prices of goods. Additionally, customers can collect money points to be spent like cash, earn travel miles and receive discounts when they use their credit cards. Competition among issuers in Turkey has intensified on non-price measures in the market. Banks stress the numbers of installments, money points, travel miles and similar rewards, but do not emphasize interest rates in their advertisements. Co-branding and affinity cards are among the recent popular tools for credit card differentiation in Turkey. Co-branded cards with airline companies or sea transportation companies that provide frequent traveler miles, and affinity cards with soccer clubs are the most common ones. Some smaller issuers also compete by

[4] For details, see the periodically published financial stability reports of Central Bank of Republic of Turkey (CBRT) and the Banking Regulation and Supervision Agency (BRSA).
[5] Like not having to carry cash, being able to barrow at any time, enjoying the benefits of online shopping, etc.

offering lower annual fees, teaser rates and switching checks to other issuers' customers, though competition on these features is not fierce in general.

An important dimension of the non-price competition through these card level benefits in Turkey is the number of the point of sales (POS). Banks are not able to offer such benefits if transactions are made through the POS's of other issuers. Thus consumers prefer to have the credit cards of the issuers with large POS networks. The market leaders of credit card issuers also have the largest POS networks. This puts the smaller banks with smaller POS networks at a considerable disadvantage in non-price competition.

The Turkish credit card market is highly concentrated. The market share of the six largest issuers[6] is 87 percent in total outstanding balances and 80 percent in the number of customers. All issuers in the market provide general banking services. Credit cards are only one of their various products. The six largest issuers are also among the main players in the deposit and consumer credit markets together with three large public banks. They have high numbers of branches, and large ATM and POS networks. They compete on these attributes to increase their market shares in individual banking.

3. Background

Different from the previous literature which highlighted the inherent costs of credit card operations, search costs, switch costs, irrationality and asymmetric information to account for the high and sticky credit card rates, we bring bundling and product differentiation through bank level characteristics to the fore. More explicitly, our hypothesis is that to obtain market power in the credit card business, banks bundle their credit cards with other bank services and differentiate them

[6] The six largest issuers are Yapi Kredi, Garanti, Akbank, Isbank, Finansbank and HSBC.

through bank level characteristics. The recent nationwide survey on credit card usage (Akin et al. 2009b) bears strong evidence for this hypothesis. The most important criterion for credit card choice turned out to be the card being issued by the consumer's primary bank, and the most important reason for having switched to another card was found to be switching to another bank. Consumers may perceive credit cards and other bank services as a bundle for different reasons. One possible explanation is the ease of getting a credit card from a bank at which one already has an account. Making one application to a bank for all bank services including credit cards rather than making two separate applications for an account and for a credit card reduces costs[7]. Banks may even offer credit cards to their deposit account customers. Another justification is that Turkish banks make it more convenient for their customers to pay for their own credit cards rather than for cards issued by other banks. Making monthly credit card payments from one's account for the credit card of the same bank is easy and can be done on an automated basis for the minimum or entire amount due. On the other hand, payments of another bank's card cannot be made on an automated basis from one's deposit account. Some banks even charge fees for money transfers made to pay other banks' credit card balances. The bundling of credit cards and other services are sometimes done explicitly. For example, consumer loans are sometimes offered along with a certain amount of credit card money points, or with the opportunity of earning more money points in shopping. These reasons and others may imply that issuers compete on bundles of products rather than just credit cards, making a bank's services and characteristics an important explanatory factor of its credit card rates. Since credit cards are a means of either convenient payment or borrowing small amounts of money, the bank's

[7] More precisely, as the credit card revolving balances are generaly of small amounts and short term, the intentionally escalated cost of switching to another bank's credit card outweigh the perceived expected benefit of switching (Akin et al 2009a).

characteristics must be influential in describing the bundle. Thus consumers may choose credit cards for the same reasons that they choose banks.

In developing the empirical model we benefit from theoretical and empirical studies that examine bank price setting behavior. Hannan (1991) proposes a model to examine the pricing of bank loans and deposits in which costs and bank characteristics are control variables. Berger and Hannan (1989) and Neubergen and Zimmerman (1990) also empirically analyze bank pricing behavior. Neubergen and Zimmerman (1990) investigate the reasons of the lower bank deposit rates in California and conclude that depositors care not only for prices but also for the quality of general banking services, which are proxied by the number of branches, average salaries and overhead expenses.

We assess the effects of non-price competition strategies on credit card rates while controlling for the costs of the issuers. We propose that the average credit card rate set by an issuer is a function of three types of variables: (i) variables reflecting the costs of the issuer, (ii) variables related to the general characteristics of the issuer bank, capturing the effects of bundling and product differentiation through card level benefits, and (iii) market share, controlling for the level of differentiation through card level benefits.

In the first group, the variables are the cost of funds, the cost of default risk, and the cost of liquidity management. We proxy the cost of funds with overnight interest rates. Credit cards provide short term loans which are financed through expensive short term funds. In that sense, the overnight interest rate is a good measure of the cost of funds for credit card issuers. Ausubel (1991) states that the cost of funds is the most frequently changing part of the marginal cost for issuers and that credit card rates are expected to move together with the changes in the cost of

funds. Therefore we expect a positive correlation between credit card rates and overnight rates.

The cost of default is proxied with the delinquency rates measured by the ratio of delinquent credit card balances to total outstanding credit card balances. However, delinquent loans are given as stock values and include delinquent loans from previous periods. What is more important for current credit card rates is the flow of delinquent loans, which can be measured by the first difference of delinquency rates. Delinquency rates affect prices through two different channels: by increasing issuer specific costs and by increasing switching costs. Firstly, since banks have to keep provision for delinquent loans, higher delinquency rates are associated with higher costs and hence higher prices. In that sense, Stango (2000) includes defaults per outstanding balances as a control variable in the credit card interest margin equations. In addition, higher delinquency rates increase the captivity of customers since delinquencies worsen the credit history of consumers and decrease their chances of getting lower rate cards. Both of these channels affect the prices in the same direction; hence, we predict a positive coefficient on this variable. However, an endogeneity issue arises if we include delinquency rates on the right hand side. An increase in credit card rates increases the expected future interest burden for credit card borrowers and hence increases the probability of default. We use the lag of the first difference of delinquency rates to alleviate the potential endogeneity problem, as Stango (2000) suggests.

The liquidity risk issue in the credit card markets was first raised by Shaffer and Thomas (2007). Unlike other loans, banks commit to lend up to a certain amount when issuing credit cards. The full utilization of this amount is solely at the discretion of cardholders. Therefore, banks have to be prepared to lend the amount

equal to the difference between total credit card limits and outstanding balances. This additional amount necessitates holding excess cash reserves and/or liquid securities, or borrowing short term loans. The opportunity costs arising from keeping low-yield short term reserves or the direct cost of relying on expensive short term borrowing comprise an important component of the total cost of credit card issuing. We capture the cost of liquidity management with the ratio of credit card limits to total assets and expect a positive coefficient on this variable.

In the second group, we include explanatory variables to capture general bank characteristics. A variable commonly included in bank pricing equations is the number of bank branches. Banks strategically invest in branches to expand their network and to reach more customers. The convenience of an extended branch network may compensate for higher credit card rates for consumers. Hence we predict a positive coefficient for this variable. As argued by Neubergen and Zimmerman (1990), the number of branches may not fully capture the services provided to the customers of a bank. Banks differentiate themselves by providing free or underpriced services and better service quality. For example, some banks offer higher security in online banking and POS payment systems to their customers and provide conveniences for paying credit card debts. It is difficult to measure all these different aspects of services; however, an extra service is expected to increase operating costs. Thus, the cost of services may be used as a measure of the number and quality of services. Average salaries paid by banks are used to capture the cost of services. The average salary variable is included both by Berger and Hannan (1989) and Neubergen and Zimmerman (1990). Average salary is a proxy for the quality of general bank services. If a competitive bank pays higher than average salaries, its

employees are expected to provide better services in general, including better customer relations. Hence, we expect positive coefficients for these variables.

The soundness of a bank also matters for bank choice. Especially in Turkey we expect the strength of a bank to be crucial in bank choice because of the experience of bank failures in recent history during which tens of thousands of depositors lost their savings in whole or in part. As a proxy for the general health of the bank the ratio of owners' equity to total assets (capital ratio) is used and a positive effect of this variable on credit card rates is expected.

In the third group, we include a proxy for the banks' market power owing to their product differentiation efforts through card level benefits. Since there is very limited data on such measures as advertisement or promotional expenditures, we use market share, which is highly correlated with these, as a proxy. As in the previous theoretical and empirical studies on monopolistic competition, we predict a positive coefficient for the market share variable in our estimations[8]. Endogeneity is obviously a concern with this specification, as market shares will be affected by interest rates. However endogeneity will bias the relation in the opposite direction, i.e., higher credit card rates will imply lower market shares. To mitigate the potential endogeneity problem between current rates and current market shares, we follow Stango (2002) and use the lag of the market share variable.

4. The Empirical Model and Data

Our benchmark model capturing the effects of a number of variables on the equilibrium distribution of credit card rates is:

[8] Switching cost literature (Stango 2000, 2002) also suggests the same result. Firms with larger captive customer bases may lean toward keeping their prices high in order to exploit them, foregoing gaining new customers with low prices.

$$ratebp_{it} = \beta_1 L.\cos tbp_t + + \beta_2 l.d.delqrate_{it} + \beta_3 cc\lim itsA_{it} + \beta_4 branch_{it} + \beta_5 avgsal_{it} + \beta_6 capitalr_{it} + \beta_7 l.marketshare_{it} + quarter + \eta_i + \varepsilon_{it}$$

A quarterly data set covering of all 22 credit card issuers in Turkey is used to estimate this equation. We cover the post-crisis period from the last quarter of 2001 to the second quarter of 2006 after which the Central Bank started to set a cap on credit card rates. Due to some missing data points, some observations are dropped to keep the number of observations constant across various specifications. Table A1 in the Appendix presents the descriptive statistics for the variables used in the estimations[9]. Table A2 in the Appendix presents the correlations between these variables.

The dependent variable in the empirical model is the credit card rates of issuers *(ratebp)*.[10] The explanatory variables in the model are the lag of opportunity cost of funds (*costbp.L1*), the lagged and differenced credit card delinquency rates (*delqrate.LD*), credit card limits as a ratio of total assets (*cclimitsA*), the number of a bank's branches (*branch*), average quarterly cost per employee (*avgsal*), owners' equity as a ratio of total assets (*capitalr*), and the market shares of issuers in the credit card market lagged by one period (*marketshare.L1*). We also include a trend variable (*trend*) and bank dummies in the regressions.

The overnight borrowing rate of the previous quarter is used as a proxy for the cost of funds. Credit card delinquency rate is the ratio of the average quarterly delinquent loans to the average quarterly outstanding credit card balances. Average salary is calculated by dividing the total quarterly personnel expenses to the average number of employees in that quarter. Outstanding credit card balances are used as a

[9] Credit card rates and the cost of funds are expressed as basis points, which are the average monthly rates for each quarter.

[10] Banks charge different interest rates on their different cards. Credit card rates in our study are weighted averages of all these different interest rates charged by an issuer. These rates are collected by the BRSA.

proxy for the market shares of the issuers. Credit card balances and delinquent credit card loans data are obtained from the Central Bank of Turkey. Other balance sheet items of the issuer banks and the numbers of bank branches and employees are collected from the database of the Banks Association of Turkey.

We estimate our model using fixed effects panel data regression in which the individual effects are likely to be correlated with the explanatory variables. The Hausman test provides support for using this specification.[11]

5. Estimation Results

Table 1 presents the results of the fixed effects regressions. Our benchmark specification is given in the first column. All explanatory variables in this specification except for the delinquency rate are significant at 5% level with the expected signs. The highly significant and negative coefficient of the trend variable indicates a prominent downward trend in credit card rates during the recent years. The coefficient on the cost of funds is 0.48 and indicates that a 10 percent decrease in the cost of funds leads to a 4.8 percent decrease in the average credit card rates even after controlling for the other variables pertaining to the credit card market. The estimated coefficient indicates that the impact of the changes in the cost of funds on credit card rates is not substantial. Under the assumption of perfect competition, Ausubel expects this coefficient to be close to one. The sluggish adjustment of credit card rates to the cost of funds indicates the lack of price competition in the market.

The delinquency rate variable, another cost measure, turns out to be insignificant. This result is not surprising for the Turkish credit card market. Given the extremely high credit card interest margins, changes in the default risk did not constitute an essential factor in banks' pricing decisions. Until the regulation in 2006,

[11] See Table A.3 in the Appendix.

banks in Turkey extended their credit card customer bases heedless of the default risks. They acquired high risk customers by distributing credit cards on the streets or at universities without asking for guarantors or examining consumers' income status while they were more prudent in giving other consumer credits.

Table 1: Estimation Results (Fixed Effects)

Dependent Variable: ratebp	Benchmark Specification Model I	Model II	Model III	Model IV	Model V
costbp.L1	0.48***	0.49***	0.49***	0.49***	0.53***
	(4.16)	(4.31)	(4.26)	(4.36)	(4.53)
delqrate.LD	0.04	0.03	-0.01	-0.01	0.00
	(0.08)	(0.06)	(-0.01)	(-0.01)	(0.01)
cclimitsA	1.53***	1.55***	1.55***	1.56***	1.41**
	(2.75)	(2.74)	(2.75)	(2.75)	(2.56)
branch	0.38**	0.36**	0.37**	0.36**	0.36**
	(2.22)	(2.13)	(2.19)	(2.11)	(2.40)
avgsal	15.55***	16.17***	15.68***	16.22***	15.30***
	(3.13)	(3.46)	(3.16)	(3.46)	(3.33)
capitalr	3.16***	3.10***	3.29***	3.21***	
	(3.35)	(3.36)	(3.54)	(3.47)	
marketshare.L1	6.24**	6.45**	6.22**	6.41**	8.76***
	(2.04)	(2.11)	(2.03)	(2.09)	(2.94)
trend	-16.20***	-16.43***	-16.05***	-16.28***	-15.83***
	(-5.00)	(-5.03)	(-4.97)	(-4.98)	(-4.94)
offbsA		0.02		0.02	
		(0.46)		(0.41)	
netprofitA			0.86	0.72	
			(0.43)	(0.36)	
overheadA					8.61***
					(3.27)
constant	358.19***	352.13***	352.05***	347.63***	372.38***
	(5.07)	(5.19)	(5.04)	(5.12)	(5.67)
Number of obs.	328	328	328	328	302
R-squared	0.8456	0.8457	0.8457	0.8457	0.8420

Notes: 1. (***), (**) and (*) indicate significance at 1%, 5% and 10% levels, respectively.

2. t statistics are provided in parentheses.

3. Credit card rates and the cost of funds are expressed as basis points.

Estimation results indicate that liquidity management costs have a positive and significant effect on credit card rates. However, the effect of this variable on credit card rates is not as large as suggested by Shaffer and Thomas (2007) in

Turkey. A one percentage point increase in the liquidity risk measure increases the average credit card interest rate by 1.5 basis points.

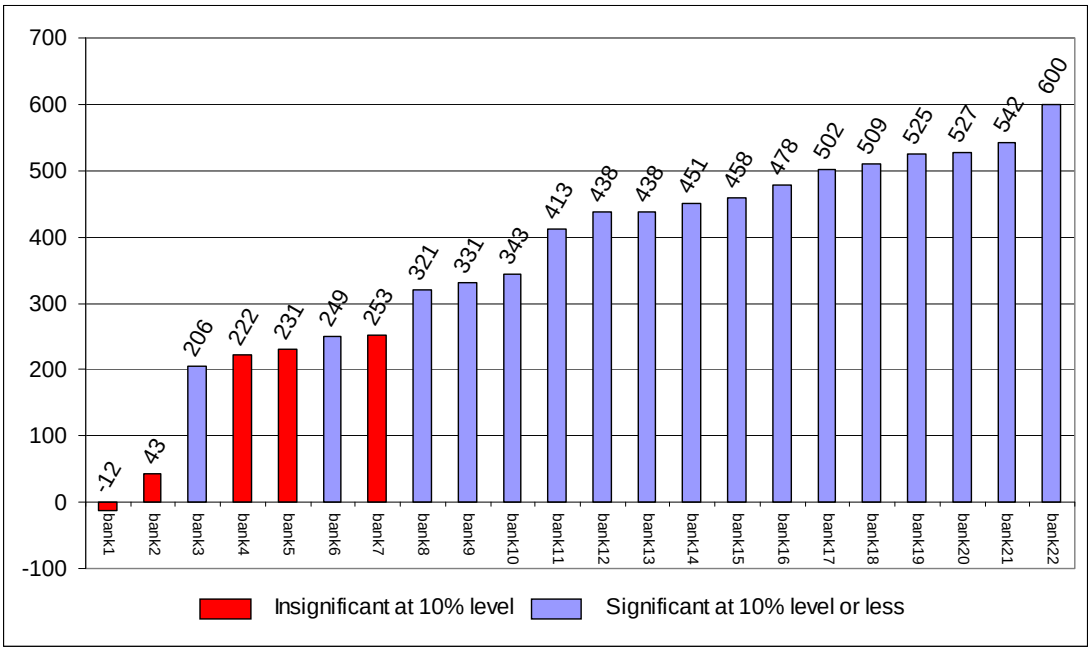
The next three variables capture the effect of bundling on credit card rates. The coefficient of the number of bank branches variable is significant at 5% level and it indicates that if a bank has 100 more branches, consumers accept 38 basis points higher interest rates. This effect is substantial considering the large differences in the number of branches between big and small banks in Turkey. In our data set, one of the banks has over 1000 branches, three banks have between 500 and 1000 branches, eleven banks have between 100 and 499 branches, and seven banks have less than 100 branches. The significant and positive coefficient of the average salary variable also reflects the importance of general banking services in credit card choice. This variable takes the highest coefficient among the explanatory variables. Results indicate that if the average quarterly salary increases by TL 1,000, the bank charges a 16 basis points higher credit card interest rate. Capital ratio enters the benchmark equation with a highly significant and positive coefficient, indicating the importance of the soundness of a bank. The coefficient of this variable shows that consumers are willing to pay a 3.16 basis points higher interest rate on average when a bank has a one percentage point higher capital ratio. The results for these three variables show that bank characteristics are important determinants of credit card rates.

The positive and significant (at 5% level) coefficient of the lagged market share variable reveals that the negative endogeneity bias actually reinforces our hypothesis, and thus should not be a serious concern. The result implies that a one percentage point increase in market share enables the issuer to charge a 6 basis points higher credit card rate. Given the differences of market shares of large and small

issuers, the effect of market share on credit card rates can be quite high. The largest firm in the market is about 11,150 times larger than the smallest firm in terms of outstanding balances. This finding also confirms the expectations of the switching cost models, indicating that banks with larger market shares exploit their captive customers by applying higher credit card rates.

The pricing strategies of public banks, on the other hand, may differ from those of private banks due to the differences in their priorities. Public banks may price more in favor of consumers because of their social welfare concerns. Graph 2 gives the distribution of issuer-specific fixed effects for 22 banks in the benchmark model. The bank with the lowest fixed effect coefficient is a public bank. The second lowest coefficient belongs to a private bank which is run like a public bank due to its ownership structure. Two other public banks have the sixth and eighth lowest fixed effect coefficients. These findings indicate that after controlling for costs and product differentiation, public banks price more in favor of consumers compared to private banks.

Graph 2: Distribution of Fixed Effect Coefficients for Model I



In order to check the robustness of our results, other related explanatory variables are added to the benchmark specification (Model I). First, the ratio of off-balance sheet items to total assets *(offbsA)* is included in Model II in Table 1. Off-balance sheet items basically contain credit commitments and derivative instruments. This variable reflects the technology level and product diversity of a bank. In that sense, it may affect credit card rates positively through the bundling effect. However, the coefficient of this variable turns out to be insignificant. Signs and significances of the other explanatory variables are not altered much when we add the *offbsA* variable to the estimations.

Secondly, in Model III, the ratio of net profits to total assets *(netprofitA)* is added to the benchmark specification. This ratio can be considered as an additional measure of the soundness of a bank like capital ratio. Therefore a positive coefficient is expected for this variable. In Model IV, both *offbsA* and *netprofitA* are used. Again, signs and significances of other explanatory variables do not change. However, the coefficient of *netprofitA* variable is not significantly different from zero.

Another control variable used to check the robustness of the estimations is the ratio of overhead expenses to total assets *(overheadA)*. This variable is used by Neubergen and Zimmerman (1991) in addition to the average salary variable to proxy the quality of banking services. A significant positive coefficient is found for this variable as expected in Model V. The signs and significances of the variables in the benchmark specification do not change.[12] These experiments confirm that the results are robust to different specifications.

[12] We drop the capital ratio variable in this regression due to the high correlation of this variable with *overheadA*.

We also checked the appropriateness of the econometric model used in the estimations. The Hausman test reveals that the fixed effects estimation is consistent and efficient while the random effects estimation is not. Hence, the choice of the fixed effects regression specification is justified.

6. Conclusion

In this study, the sources of the apparent lack of competition in the Turkish credit card market, or equivalently of the card issuer banks' market powers are analyzed. It is concluded that to acquire market power banks bundle their cards with other banking services and differentiate them by providing a number of non-price benefits to their credit card customers. The general quality of banking services and bank characteristics are important for card choice since many cardholders use other services of the issuer bank as well, causing them to view all of these services as a product bundle. Some other ways of differentiating credit cards are distributing money points, travel miles and similar benefits, enabling consumers to pay shopping bills in installments and offering discounts to cardholders.

An empirical model is estimated to examine the effect of measures of non-price competition on credit card rates. A quarterly panel data set for all 22 issuers in the credit card market in Turkey, spanning the period from the last quarter of 2001 to the second quarter of 2006, is used. We benefit from the bank pricing models in the literature to build the empirical model. We control for the costs of funds, default risk and liquidity risk management in credit card operations. The number of bank branches, average salaries and capital ratio are used as proxies for the quality of general banking services. The effect of differentiation through card level benefits is captured with the market shares of the issuers. Fixed regressions show that non-price competition has an important effect on credit card rates in Turkey.

This paper is the first to study the role of non-price competition in the credit card market of an emerging market economy. The results indicate that efforts concentrated on non-price competition by financial market regulators will help enhance competition in credit card markets. Market power obtained by product differentiation does not generally warrant regulation and can even be welfare-improving. However, bundling is to the detriment of consumers, and regulators should devise policies to refrain banks from this kind of competition. Such regulations can be softer and less problematic than interest rate regulations. For example, consumers can simply be allowed to place orders for automatic payments of their credit card balances at other banks from their accounts. This will certainly make it easier for consumers to adopt the credit cards of other banks with better conditions and lower interest rates, without being obliged to change their banks. Moreover, to improve the competition a la product differentiation through card level benefits, large banks can be forced to share their POS networks in such a way that small issuers can also offer such benefits to their customers.

7. Appendix

Table A1: Descriptive Statistics

Observations for each variable					
N (overall)		328			
N (between)		22			
T –bar (within)		14.91			
Variable		Mean	Std. Dev.	Min. value	Max. value
ratebp	overall	626.61	141.86	275	995
	between		82.71	504.69	841.94
	within		116.57	320.67	955.43
costbp.L1	overall	226.85	109.92	112.50	479.90
	between		35.17	155.70	264.15
	within		105.24	81.86	460.29
delqrate.LD	overall	0.15	10.13	-163.65	44.48
	between		3.38	-12.05	8.88
	within		9.71	-151.44	49.51
cclimitsA	overall	12.66	15.66	0.43	83.99
	between		15.23	1.13	59.56
	within		6.21	-16.73	38.77
branch	overall	290.55	303.53	8	1176
	between		298.74	9	1151.94
	within		22.44	225.14	432.49
avgsal	overall	9.54	2.34	4.73	16.43
	between		1.98	7.11	14.88
	within		1.35	6.63	14.76
capitalr	overall	13.01	5.33	2.38	59.35
	between		3.95	7.69	20.43
	within		3.83	-2.19	51.92
marketshare.L1	overall	5.10	6.93	0	28.29
	between		6.72	0.01	24.17
	within		0.94	1.84	9.22
offbsA	overall	196.54	144.78	7.29	809.77
	between		111.21	44.95	527.51
	within		90.03	-226.85	525.65
netprofitA	overall	0.81	2.14	-17.61	5.85
	between		1.43	-4.91	2.10
	within		1.69	-11.89	7.77

Table A2: Pairwise Correlations

	ratebp	costbp.L1	delqrate.LD	cclimitsA	branch	avgsal	capitalr	markshare.L1	trend	offbsA	netprofitA
ratebp	1										
costbp.L1	0.75*	1									
delqrate.LD	-0.04	-0.08	1								
cclimitsA	0.23*	-0.07	0.03	1							
branch	-0.14*	0.08	0	-0.15*	1						
avgsal	-0.26*	-0.50*	-0.01	0.41*	-0.20*	1					
capitalr	0.09*	-0.04	-0.09*	0.33*	-0.11*	0.31*	1				
marketshare.L1	0.13*	0.10*	-0.01	0.22*	0.38*	0.03	0	1			
trend	-0.75*	-0.96*	0.09*	0.04	-0.06	0.52*	-0.01	-0.09	1		
offbsA	-0.07	-0.38	0.04	0.43*	-0.26*	0.46*	0.15*	0.07	0.38*	1	
netprofitA	0.03	0	0.36*	0.12*	0.13*	-0.20*	-0.29*	-0.03	0	0.10*	1

(*) Indicates significance at 10% level

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