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Abstract

This paper uses a multinomial probit model to analyze individuals' choice of banks based on the types of banking services they use, their own characteristics, and their own perceptions about important factors in banking. Previous studies on this topic, which are limited in number, concentrate on the U.S. where financial markets are deep. This analysis uses a unique individual level data set from a nation-wide survey implemented after the 2001 crisis in Turkey, of which one major component was bank failures. Hence, it provides the first set of evidence on the topic in an emerging market context. The study groups banks into three categories: public banks, large private banks and small private banks, among which the latter is perceived to be the potentially risky group. Investigating individuals' choice among these three types, the paper uncovers that while individuals tend to prefer small private banks on the basis of high interest rates, they tend to avoid them on the basis of trust. However, higher branch density and closeness negatively affect the choice of small private banks. Additionally, individual's choice of public banks as opposed to large private banks seems to have been positively influenced mostly by being older, being retired, receiving salary/pension, and valuing special services for farmers and craftsmen while it seems to have been negatively influenced by the use of certain services, valuing friendliness of the staff, and living in more developed regions where there is variety in terms of the financial institutions.

Key Words: Multinomial probit; banking sector; bank choice; household survey; Turkey
JEL No: C25, D12, G21

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1 Introduction

Turkey experienced a number of financial crises since the 1980s when the attempts of financial liberalization started. Although liberalization was underway, a sound financial system was never in place until after the 2001 crisis when severe measures were taken to regulate the financial sector. While a number of bank failures due to bad banking practices occurred during the period, what is perhaps the most striking is that many individuals nonetheless chose to work with banks that have potential risks, partly thanks to full deposit insurance which was in effect prior to 2001.

The aim of this paper is to analyze the factors that contribute to individuals' choice of banks by using a unique data set based on a nation-wide survey implemented after the 2001 crisis in Turkey.[1] The analysis builds up on a multinomial probit model where banks are categorized into three: public banks, large private banks and small private banks, based on ownership type and asset holdings of the banks. State involvement in the banking sector in Turkey initially was in terms of establishing banks for specific purposes: agricultural credits, housing credits, credits for tradesmen and craftsmen, etc. Later the operations of those banks exceeded the original intention. In addition, most state employees receive salaries and all retirees receive pensions from state banks. In light of the developments in the Turkish banking sector–of which a brief overview is below–small private banks category can be perceived as including banks that carry potential risks. The paper thus investigates the effects of various individual level characteristics, including the usage of different banking services, on individual choice of banks.[2]

As Alper and Onis (2004) point out, the 2001 crisis in Turkey, in which both public and private banks played an active role, is an example of a combination of a weakly supervised and under-regulated banking system and a sudden macroeconomic crisis.[3] They state that in Turkey, similar to other emerging market economies like Mexico or Argentina, a transitional financial system is observed, the key feature of which is the lack of sound regulations and institutions. Thus, crises generated by bank failures may have harmful consequences for the real sector. Specifically, Alper and Onis stress the importance of three issues that outline the developments

[1] The banks in Turkey are universal banks: they provide both commercial and investment banking services.

[2] Note that as the data set of this paper is at individual level, the choice of banks by businesses is left out, and hence the paper provides a partial analysis of the demand side of the banking sector.

[3] For a detailed account of the 2001 crisis in Turkey see, for example, Alper (2001), Alper and Onis (2004), and Gencay and Selcuk (2005). For a detailed account of the developments in the Turkish economy from different perspectives, see Ertugrul and Selcuk (2002), Metin-Ozcan *et al.* (2001), Ismihan *et al.* (2005), Onis and Rubin (2003) and references therein. A series of articles in Kibritcioglu *et al.* (2002) provides a detailed analysis of inflation dynamics and disinflation efforts in Turkey. More recent studies on Turkey include Celasun *et al.* (2003), Selcuk and Ardic (2006), and Ardic and Selcuk (2006).

in the Turkish banking sector in the 1990s. First, the considerable degree of the presence of public banks in the system had negative consequences for the economy. Second, new entry in the sector was almost entirely based on political factors. Third, foreign presence in the Turkish banking sector was negligible. It is therefore possible to note that the banking system was indeed in a vulnerable position by the end of the 1990s.[4]

In the context of these developments, it is important to note that a large number of individuals nonetheless continued to work with smaller banks that carried potential risks. Specifically, as of June 2001, 10% of total deposits in Turkey were held by failed banks whose controls were handed over to the Saving Deposit Insurance Fund (SDIF hereafter).[5] The SDIF was established after the 1994 crisis and was entitled full deposit insurance. The presence of full deposit insurance created an obvious moral hazard problem: individuals went on with entrusting potentially risky banks with their life-time savings in the hopes of getting higher interest rates. In an environment with persistent high inflation however, this strategy was not without drawbacks. More specifically, in the case of a bank failure, depositors in some instances had to wait for a long time before they could get the full amount back, which meant an erosion of the real value of the savings deposits.

It is, therefore, interesting to investigate the reasons underlying the way in which individuals choose the banks they work with, especially when they have been exposed to incidents of bank failures for some time. Understanding these reasons could be useful in two directions. First, from a policymaker's perspective, it may help developing a new deposit insurance scheme and other banking sector regulations that are in line with individual choice. Second, from a bank's perspective, it may help developing a new marketing plan, new services, etc. Hence, the analyses of the demand side of the banking sector, i.e. how consumers make their decisions on bank choice, are of significance to policymakers and regulators as well as to bank decision makers who need to identify their customer base so that they can design specific programs and services, and direct their marketing effort accordingly.

Although there exists a vast literature on the supply side of the banking sector, i.e. how the sector should be regulated, the structure of the market, costs, etc., the studies on the demand side are limited in number. In an early descriptive study, Fry *et al.* (1973), using data from a survey implemented on the 1961-1969 graduates of the University of Western Ontario and a linear probability model for loyalty, find past patronage, patronage of parents, mobility, and

[4]For further details on the state of the Turkish banking system in the post 1980 era, see, for example, Alper *et al.* (2001), Alper and Onis (2004), Damar (2004), and Denizer *et al.* (2000).

[5]Source: Bank Association of Turkey. http://www.tbb.org.tr

gender, among other variables, significant for customers' loyalty to their banks. In a similar vein, Anderson *et al.* (1976) analyze the major factors that influence the choice of banks by individuals using data from a survey that they designed and implemented in a southwestern city in the U.S. Their analysis is based on individuals' rankings of 15 bank selection criteria. A cluster analysis is then performed to uncover customer typologies. The authors find that friends' recommendations, reputation, availability of credit, friendliness, and service charges on checking accounts are the primary selection criteria. They conclude that convenience emerges as the most important issue in this decision making process. Differentiating between banks and finance companies, Bozcar (1978) uses data from a nation-wide survey in the U.S. in 1970 on the socioeconomic characteristics of credit users and estimates a probit model to show that the borrower profiles of these two types on institutions differ in terms of home ownership, credit card ownership, age, education and race while the number of dependents, marital status, income and gender do not seem to matter.

Employing more recent data and techniques, Dick (2002) and Adams *et al.* (2007) investigate the demand for commercial bank deposits, and the willingness of consumers to substitute banks for thrifts, respectively. Dick (2002) develops a demand model derived from consumer's utility maximization based on discrete choice analysis and also incorporates a model of the supply side to account for the welfare effects of competition and policy. She uses data for the U.S. commercial banks for the period 1993-1999, and finds that consumers respond to deposit rates and account fees in choosing a depository institution. Customers also respond favorably to branch staffing, geographic density, the age of the bank, the size of the bank, and geographic diversification. Adams *et al.* (2007) use a panel data set that includes almost all banks and thrifts in the U.S. for the period 1990-2001, and construct a discrete choice random utility model of consumer's choice of a depository institution. Their specification is different from that of Dick (2002) as they estimate a non-hierarchical model as opposed to the nested model by Dick. Using the estimates of choice parameters to calculate elasticities, they investigate the degree of substitutability of thrifts for banks.

The present study is therefore an addition to the limited literature on the demand side of the banking sector by specifically focusing on a developing country context. Moreover, it displays a picture of how individuals choose banks in an economy which recently experienced a banking crisis. A developing country context merits attention because it provides us with an environment characterized by macroeconomic instability, persistent inflation and volatile exchange rates while the banking sector is weakly supervised and under-regulated.

The methodology used in this paper is similar to that of Bozcar (1978) due to data limitations. Specifically, lack of price data and other variables defining the characteristics of banks prevents us from using a methodology similar in spirit to Dick (2002) or Adams *et al.* (2007). However, this issue is remedied by using individual level data on people's perceptions about important characteristics that banks should have. For example, our data set allows us to control for factors that influence individual's bank choice such as "the availability of friendly staff," "the availability of highest deposit rates," etc. via dummy variables. Thus, we use a multinomial probit model to differentiate among the likelihood of the choice of public banks, large private banks and small private banks.

The paper uncovers that while individuals tend to choose small private banks on the basis of high interest rates, they tend to avoid them on the basis of trust. The choice of public banks as opposed to large private banks seems to have been positively influenced mostly by being older, being retired, receiving salary/pension, and valuing special services for farmers and craftsmen while it seems to have been negatively influenced by the use of certain services (i.e. saving services such as deposit accounts or investment accounts, technology services such as internet banking, and standard services such as bank cards or ATMs), valuing friendliness of the staff, and living in more developed regions where there is variety in terms of the financial institutions. Thus, it is possible to conclude that the choice of public versus large private banks mainly depends on structural factors.

The rest of this paper is organized as follows. The next section describes the data set. The empirical framework and the results of the empirical analysis are presented in Section 3. Section 4 concludes.

2 The Data Set

The data used in this study were gathered by SAM Research and Consulting Inc. (Istanbul, Turkey) in 2002. To ensure the representation of the target population at national level, stratified multistage random sampling method is used. Target population is defined as the population older than 18 years old, having an account in one bank, and living in an area where at least one bank branch exists. The population living in places where no bank exists is left out for operational reasons. Region and number of banks in the residential area are used as stratification criteria. The questionnaires are implemented in nine regions, 84 districts of 23 cities. Accordingly, a total of 1829 interviews are done. Fieldwork is accomplished during February 9-28, 2002. The

variables used in this study are presented below.

2.1 The Dependent Variable

In the analysis that follows, banks are categorized into three groups: public banks, large private banks, and small private banks.[6] The divide between large private banks and small private banks is based on the share of bank assets in the industry total. Those banks with a share of assets in the industry total of 6% and higher are classified as large private banks. The average of the share of assets in the industry total for the banks in the small private bank category is around 1.3%. Public banks constitute about 40% of the sector in terms of assets.

Large private banks are kept separately from small private banks because they hold stronger capital and are expected to be less risky. Such a categorization allows us to concentrate on the differences in choices between public and private banks as well as large private banks versus small private banks. See Table 1 for the distribution of bank choice across the sample.

[Insert Table 1 about here.]

2.2 Potential Explanatory Variables

2.2.1 Demographics

Demographic characteristics include gender, age, education, income level, and occupation.

Education level is comprised of four dummy variables, namely no education (illiterate, literate without degree), primary school (5-8 years), high school (11-13 years), and university (15 years or more).

Seven dummies of income level refer to total monthly household income corresponding to less than 175 YTL, 175 - 300 YTL, 301 - 500 YTL, 501 - 750 YTL, 751 - 1,000 YTL, 1,000 - 1,500 YTL, and more than 1,500 YTL. Note that the YTL/USD exchange rate at the time was around 1.52 YTL/USD, which implies, for example, that 175 YTL approximately corresponds to 115 USD, and 1,500 YTL is about 990 USD.

There are nine occupation categories.

- Manager/specialist: Manager / specialist in public or private sector / professor at university; big trader, industry owner; professional with private practice; research assistant at university

[6] Public banks include *Halk Bank*, *Vakif Bank* and *Ziraat Bank* while *Is Bank*, *Akbank*, *Yapi Kredi* and *Garanti* are in large private banks. Small private banks category include all other private banks.

- Civil servant (except directors/specialists/professors)
- Blue collar worker in public sector
- Blue collar worker in private sector
- Small trader: Craftsmen/small trader; farmer
- Retired
- Student
- Unemployed
- Other: Irregular work at home, irregular work outside the home, house wife, only living on interest/rent income

2.2.2 Culture

Six questions addressing the frequency of participation in cultural activities are asked. These include reading newspaper, going to cinema, going to theater, going to concerts, traveling and reading books. Answers are taken on a Likert scale of four, such that "1-never", "2-very seldom", "3-sometimes", "4-regularly."

These six questions are analyzed with Principle Components Analysis (PCA) in order to characterize customers' level of cultural consumption. As a result of the analysis a normalized index is obtained. Although the variable is treated as a continuous variable in the estimations, the range of the variable [-1.65, 2.74] is divided into four equal sub-ranges for descriptive purposes.

Table 2 provides summary statistics related to the demographics in the sample.

[Insert Table 2 about here.]

2.2.3 Banking services

Four variables that quantify service usage are as follows:

- Standard banking services: Bank card, ATM, credit card
- Saving services: Deposit account, investment account
- Credit services: Credit deposit account, commercial credit, consumer loan, housing loan
- Technology services: Automatic bill payment, telephone banking, internet banking, banking via TV, banking via WAP, POS machine

These four variables indicate whether customers use these services or not.

Customers' level of knowledge about banking services is also questioned. Individuals are asked about ATM, credit card, bank card, teller machine (included separately for the ones who are not familiar with the ATM abbreviation), telephone banking, internet banking, banking via TV, banking via WAP, POS machine. Their knowledge is rated on a scale of 1 to 5 such that "1" means "no idea," and "5" means "know."

These nine questions are used to obtain a general information level (index) on banking services. This is accomplished by PCA. This variable is also treated as a continuous variable in the estimations as in the case of culture. However, the range of the variable [-1.54, 3.22] is divided into five equal sub-ranges for descriptive purposes.

Table 3 provides the distribution of culture and information variables across the sample. Table 4 presents descriptive statistics on the usage of services and information level of customers.

[Insert Table 3 about here.]

2.2.4 Important factors in banking

Respondents are also asked directly about the factors that influence their bank choice. These factors are:

1. past patronage of other family members
2. the availability of full range of services that are needed
3. the best telephone banking service
4. the best internet banking service
5. the availability of special services for craftsmen and farmers
6. being the bank where salary/pension is deposited
7. being a state bank
8. the availability of close branches to home / work place / school
9. the most appropriate terms of credit
10. the highest interest rates on deposits
11. being the most trustworthy bank
12. friendly staff
13. one-to-one relationship with bank manager/customer representative

The summary of these variables across the whole sample is presented in Table 4.

[Insert Table 4 about here.]

Based on the sample means reported in Table 4, the most important factors that influence bank choice appear to be the bank where salary or pension is deposited, being trustworthy, closeness of bank's branches and having full range of services.

The respondents are also asked about their level of trust to the banking system in general. A Likert scale of one to five is used, where 1 means "I do not trust at all" and 5 means "I trust a lot." This variable is also used as an explanatory variable for bank choice.

2.2.5 Region and branch density

Nine dummy variables are constructed to account for possible regional differences. These are Mediterranean, Aegean, Southeast Anatolia, Black Sea, Northeast Anatolia, Marmara, Central Eastern Anatolia, Central South Anatolia, and Central North Eastern Anatolia regions.

Moreover, there are five dummy variables which show the branch density: having 1-2, 3-5, 6-9, more than ten branches (excluding metropolitan areas), and metropolitan areas.

Table 5 provides summary statistics for location and density variables.

[Insert Table 5 about here.]

3 Econometric Analysis

3.1 Econometric Framework

A standard multinomial probit model is constructed using bank choice as the dependent variable. As described in Section 2.1, individual's choice of banks are categorized into three types: public banks, large private banks and small private banks. Thus, the multinomial probit model enables one to express the probability of choosing each of these three types as a function of individual characteristics such as demographics, banking services used, individual's perception of important factors in banking, location and branch density.

As mentioned earlier, the lack of price data and data on the characteristics of banks prevents us from constructing a random utility model in a discrete choice framework and estimating demand. However, our data set includes variables on individual's perceptions of the important characteristics of banks that influence their bank choice. Hence, we construct a multinomial

probit model as where there are three alternatives, $j = 1, 2, 3$. Suppose that we label the alternatives such that $j = 1$ corresponds to public banks, $j = 2$ and $j = 3$ correspond to large private banks and small private banks, respectively. Then, the probability that individual i chooses public banks is given by:

$$p_{i1} = P(x_i\beta, \epsilon_i) \tag{1}$$

p_{i2} and p_{i3} can also be obtained in a similar way. In equation (1), x_i corresponds to the individual characteristics, i.e. demographics, banking services used, individual's perception of important factors in banking, location and branch density. β is the vector of coefficients to be estimated, and ϵ_i is a 3×1 vector of error terms which are assumed to have a multivariate Normal distribution in the multinomial probit model. Hence, $P(\cdot)$ is the multivariate normal distribution function.

As mentioned above, x_i corresponds to individual characteristics. Potential variables that could be included in x_i are described earlier in Section 2. Next, we will discuss how the variables in x_i are expected to affect the individual's bank choice in the context of such an econometric framework.

We do not have any *a priori* expectations as to how gender, age, education, income level, culture level and whether the individual trusts in the entire banking sector influence the choice of banks by individuals. Occupation, however, may have an influence. Specifically, almost all state employees and all retirees receive their salaries and pensions from public banks. In addition, certain public banks have specific services–usually in the form of extending a line of credit in favorable terms–tailored to craftsmen, tradesmen or farmers. Thus, individuals that belong to such occupations may choose to work with public banks.

In terms of the usage of banking services, it is expected that individuals would prefer private banks when they are mostly using standard services or high-tech services. This is basically due to the inability of public banks to deliver high quality in terms of standard services, e.g. the wait lines might be too long, etc., because of their burden of the pension and salary payments of a large number of state employees and retirees. In addition, again due to the same reason and other inefficiencies, public banks might not be good at offering high-tech services. There are, however, no *a priori* expectations about the effects of the usage of saving services or credit services, and also of the level of knowledge about banking services on the choice of banks.

In this framework, it is also possible to form some expectations about how individuals' perceptions of important factors in banking might influence their choice. Although one cannot

say much about the direction of the effects of past patronage of family members, the availability of full range of services, the best phone banking and internet banking services, and having the most appropriate terms of credit on the choice of banks, valuing being a state bank– obviously–increases the likelihood of choosing public banks. In addition, the state uses the public banks to pay the salaries and pensions of its employees. If working with the bank from which salary/pension is received is important for an individual, then the individual would be more likely to be working with a public bank rather than a small private bank, which, in general, may not indeed have widespread agreements with firms in terms of salary payments. Moreover, *Ziraat Bank*, the largest among public banks, was specifically established to provide services for farmers. Hence it is expected that if the availability of special services for craftsmen and farmers is important, then the likelihood of choosing a public bank would be higher.

If individuals value closeness of the branches, they are expected to be less likely to choose small private banks since these banks may have fewer branches. Conversely, for individuals who value friendly staff and one-to-one relationship with bank manager/customer representative, small private banks seem to be the likely choice as these banks try to form and maintain more personal and informal relations with their customers. Moreover, individuals are expected to have a tendency towards small private banks if they value having the highest interest rates on deposits as these banks used to compete on the basis of interest rates only. But one may also anticipate that the choice of small private banks decline with valuing the bank's trustworthiness, as such banks were perceived to be quite risky at the time.

In terms of the regional dummies, one can form expectations such that the Mediterranean, Aegean, and Marmara regions would have a positive impact on the likelihood of private banks, large or small. As these regional economies are relatively more developed than the rest of the country, banking sector in these parts is also more developed. Hence private banks, which may not even be serving in the other regions may have an important presence in the more developed regions. In addition, it has been the policy of the state to open up a branch of *Ziraat Bank*, the largest of public banks, in almost all townships. Hence, public banks have more widespread branch networks than the private banks, and they are present even in those regions which lag behind the rest of the country in terms of economic development. This increases their likelihood of being chosen by individuals living in these regions.

Since this last point allows us to state that those regions that are more developed economically, banking sector in these regions is well developed as well, and thus, branch density is higher in these regions. This implies that wherever there is higher branch density, the presence of pri-

vate banks are more likely. Hence, higher branch density is expected to increase the likelihood of private banks being chosen.

3.2 Results

As the meaning of the estimated coefficients of a probit model is hard to interpret in general, marginal effects that show the effect of an infinitesimal increase on the probability of a choice are reported in practice. Hence, Table 6 displays the marginal effects, which are calculated at the sample averages for continuous variables and at 0 for dummy variables as a result of the multinomial probit estimation.[7] Thus, the coefficients in this table show how a small change in one independent variable affects the probability of choosing each alternative. Column [1] in the table corresponds to public banks, columns [2] and [3] correspond to large private banks and small private banks, respectively.

[Insert Table 6 about here.]

The results indicate that gender, income level, education and culture level are not factors that distinguish individuals with respect to their bank choice. However, it seems that older people tend to choose public banks. Specifically, an increase in age by one year increases the likelihood of choosing public banks by 0.6%.

Relative to managers and specialists, civil servants, blue collar workers in both the public and the private sector, craftsmen and traders are more likely to choose public banks whereas the retired and students are less likely to choose large private banks. Being retired raises the probability of choosing public banks by almost 38% and lowers the probability of choosing large private banks by 51%.[8] Therefore, it is possible to conclude that certain types of occupations indeed matter for bank choice. These results confirm our *a priori* expectations.

The usage of certain services seem to matter in bank choice. For example, individuals who use saving services, technology services and standard services have more tendency to pick large private banks and less tendency to pick public banks while the use of credit services raises the likelihood of public banks and reduces the likelihood of large private banks, in line with our expectations. These variables about the usage of services do not distinguish the choice of small private banks from others. What is perhaps striking is that whether the individual trusts the

[7] The estimated probit coefficients are tabulated at the Appendix.

[8] Note that these effects are after controlling for whether an individual chooses a certain bank because he/she receives salary/pension payments at that bank and whether the bank has special services for farmers and craftsmen.

entire banking sector or not and the individual's information level about the banking services are statistically insignificant in distinguishing between different alternatives.

The empirical evidence regarding the individuals' perception of important factors in banking can be summarized as follows:

- Family patronage seems to lower the probability of choosing small private banks.
- If the individual emphasizes the importance of having full range of services needed, the likelihood of large private banks increases and reduces the likelihood of public banks. This might probably be due to large private banks providing full range of services.
- Emphasis on salary/pension receipts and on having special services for farmers and craftsmen increases the likelihood of public banks being chosen and reduces the likelihood of large private banks.
- The importance of being a state bank seems to be a major factor in influencing bank choice. If an individual values the state ownership of banks as important for his/her choice, his/her probability of choosing a state bank by almost 49% after controlling for other independent variables.
- Individuals do not base their bank choice decisions on the availability of phone banking and internet banking.
- Emphasis on having the most appropriate terms of credit is not statistically significant. However, this finding might be due to the presence of only a small number of customers using credit services in the sample. Note that the market for household credits in Turkey is quite underdeveloped and shallow; the household-credit-to-GDP ratio was around 9% in 2006 even after new regulations to encourage credit use were in place.[9] Hence, individual's bank choice in Turkey is more likely to be based on the usage of saving services.
- Individuals who value having the highest interest rates are almost 12% more likely to choose small private banks. This is an important result, especially because individuals who consider trusting the bank being important are about 4% less likely to choose small private banks. Hence, although people tend to avoid small private banks due to trust related issues, they are also tempted to choose small private banks due to high interest rates.

[9]For comparative purposes, note that household-credit-to-GDP ratio is around 17%, 18%, and 50% on average in Central and Eastern European countries, emerging markets, and key European economies, respectively.

- Trusting the bank also reduces the likelihood of public banks by almost 13% and increases the likelihood of large private banks by almost 18%. This last result on trust and public banks seems to be counter-intuitive because as public banks are "backed" by the state it is natural to expect people who value trust to pick public banks. However, the results indicate that public banks are only favored because of salary/pension receipts and special services for craftsmen and farmers instead.

- Individuals who value the friendliness of the staff are more likely to choose large private banks and less likely to choose public banks.

- Valuing closeness seems to be a factor reducing the likelihood of small private banks being chosen, probably due to those banks having fewer branches.

- One-to-one relationships with the manager/customer representative seems to be a factor that increases the likelihood of small private banks.

The results for the regional dummies indicate that people living in the more developed regions such as Marmara, the Mediterranean, and the Aegean regions, are less likely to prefer public banks, as expected. Moreover, the results related to the branch density dummies also confirm these deductions. Compared to the metropolitan areas, people who live in areas where branch density is lower are less likely to pick small private banks, probably due to those bank having no branches in their area. Those people tend to be more likely to pick public banks, which almost definitely have a branch in their neighborhood.

To sum up, the likelihood of choosing public banks seems to have been positively influenced mostly by being older, being retired, receiving salary/pension, and valuing special services for farmers and craftsmen while it seems to have been negatively influenced by the use of certain services, valuing friendliness of the staff, and more developed regions where there is variety in terms of the financial institutions. It is possible to say quite the opposite for large private banks. The choice of small private banks is differentiated by branch density and closeness, and while individuals tend to prefer small private banks on the basis of high interest rates, they tend to avoid them on the basis of trust. It appears that small private banks managed to compensate for their disadvantage in terms of low branch density and low level of trust by offering high interest rates, and more personal relationships with the branch manager and staff.

4 Conclusion

The Turkish banking sector during the period 1980-2001 was weakly supervised and under-regulated, and financial liberalization attempts were still underway. The period was characterized by a number of banking failures. Although full deposit insurance was in effect, in an inflationary environment the value of money erodes during the time it takes for a depositor of a failed bank to get his/her money back. Despite of this fact, during the time, a large number of individuals nonetheless continued to work with smaller banks that carried potential risks. Hence, the reasons underlying the way in which individuals choose the banks they work with are interesting to investigate.

This paper analyzes the factors that influence individuals' bank choice using a unique individual level data set from a nation-wide survey implemented in 2002. Due to lack of price data and data on characteristics of banks, demand estimations derived from discrete choice random utility models could not be not utilized, but rather a multinomial probit model for the choice among three types of banks, namely public banks, large private banks, and small private banks, is employed. The paper uncovers that while individuals tend to prefer small private banks on the basis of high interest rates, they tend to avoid them on the basis of trust. The choice of small private banks is adversely affected by branch density and closeness. In addition, the likelihood of choosing public banks as opposed to large private banks seems to have been positively influenced mostly by being older, being retired, receiving salary/pension, and valuing special services for farmers and craftsmen while it seems to have been negatively influenced by the use of certain services, valuing friendliness of the staff, and more developed regions where there is variety in terms of the financial institutions. Thus, it is possible to conclude that the choice of public versus large private banks mainly depends on structural factors. For instance, state involvement in the banking sector in Turkey initially was in terms of establishing banks for specific purposes: agricultural credits, housing credits, credits for tradesmen and craftsmen, etc. Later the operations of those banks exceeded the original intention. In addition, most state employees receive salaries and all retirees receive pensions from state banks.

These results could be useful in two directions. First, policymakers and regulators could develop new regulations that are in accordance with individual choice. Specifically, deposit insurance schemes induce moral hazard on the part of those customers who are unwilling to undertake a meticulous search for the reliability of banks. Hence, it might be possible to formulate policies that regulate banks to disclose more information about themselves to customers in order

to somewhat force the customers to compare and contrast on the basis of trust, etc., i.e. to have them make a well-informed decision. Second, making it possible for the bank decision makers to identify their customer base, the results could help banks design specific programs and services. For example, it appears that the divide between public banks and large private banks from the viewpoint of the customers is more of a structural issue, as mentioned above. In this respect, engaging in deals with firms for salary payments or offering specific terms of credit for certain types of individuals could be beneficial. In addition, more personalized relationships with the branch manager and staff seem to be another factor that can be emphasized in this respect.

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Bank choice	Frequency	Percent
Public	700	38.27
Large	973	53.2
Small	156	8.53
Total	1829	100

Table 1: Distribution of bank choice in the sample.

Variable	Range	Obs	Mean	Std.Dev.
Gender	1=Female, 2=Male	1829	1.748	0.434
Age	18+	1829	37.063	12.942
Income (<175)	1=Yes, 0=No	1829	0.086	0.280
Income (175 - 300)	1=Yes, 0=No	1829	0.250	0.433
Income (301 - 500)	1=Yes, 0=No	1829	0.285	0.451
Income (501 - 750)	1=Yes, 0=No	1829	0.179	0.383
Income (751 - 1000)	1=Yes, 0=No	1829	0.095	0.293
Income (1000 - 1500)	1=Yes, 0=No	1829	0.045	0.207
Income (>1500)	1=Yes, 0=No	1829	0.027	0.163
No education	1=Yes, 0=No	1829	0.024	0.153
Primary school	1=Yes, 0=No	1829	0.393	0.489
High school	1=Yes, 0=No	1829	0.284	0.451
University	1=Yes, 0=No	1829	0.299	0.458
Manager/specialist	1=Yes, 0=No	1829	0.036	0.187
Civil servant	1=Yes, 0=No	1829	0.117	0.322
Blue collar - public	1=Yes, 0=No	1829	0.041	0.198
Blue collar - private	1=Yes, 0=No	1829	0.169	0.375
Craftsmen/trader	1=Yes, 0=No	1829	0.197	0.398
Retired	1=Yes, 0=No	1829	0.169	0.375
Student	1=Yes, 0=No	1829	0.095	0.293
Unemployed	1=Yes, 0=No	1829	0.062	0.242
Employment - other	1=Yes, 0=No	1829	0.113	0.317
Culture/social participation	[-1.65,2.74]	1820	0.000	1.000

Table 2: Summary statistics. Demographic indicators.

Culture	Frequency	Percent
Lowest	640	35.16
Low	604	33.2
High	470	25.82
Highest	106	5.82
Total	1820	100

Information	Frequency	Percent
Nothing	538	30.28
Little	708	39.84
Somewhat	335	18.85
Well	148	8.33
Very well	48	2.7
Total	1777	100

Table 3: Distribution of culture/social participation and information level about banking services in the sample.

Variable	Range	Obs	Mean	Std.Dev.
Trust banking sector	1=Yes, 0=No	1651	2.462	1.083
Information level about services	[-1.54,3.22]	1777	0.000	1.000
Use of saving services	1=Use, 0=Not use	1829	0.426	0.495
Use of credit services	1=Use, 0=Not use	1829	0.126	0.332
Use of technology services	1=Use, 0=Not use	1829	0.128	0.334
Use of standard services	1=Use, 0=Not use	1829	0.846	0.361
Family patronage	1=Yes, 0=No	1829	0.176	0.381
Full range of services	1=Yes, 0=No	1829	0.201	0.401
Telephone banking	1=Yes, 0=No	1829	0.037	0.189
Internet banking	1=Yes, 0=No	1829	0.036	0.187
Salary/pension receipts	1=Yes, 0=No	1829	0.320	0.467
Services for farmers and craftsmen	1=Yes, 0=No	1829	0.066	0.249
Terms of credit	1=Yes, 0=No	1829	0.060	0.237
State	1=Yes, 0=No	1829	0.172	0.377
Closeness	1=Yes, 0=No	1829	0.221	0.415
Interest rates	1=Yes, 0=No	1829	0.047	0.212
Trust the bank	1=Yes, 0=No	1829	0.231	0.421
Staff	1=Yes, 0=No	1829	0.186	0.389
Manager	1=Yes, 0=No	1829	0.087	0.282

Table 4: Summary statistics. Important factors in banking.

Variable	Range	Obs	Mean	Std.Dev.
Mediterranean	1=Yes, 0=No	1829	0.125	0.331
Aegean	1=Yes, 0=No	1829	0.148	0.355
Southeastern	1=Yes, 0=No	1829	0.056	0.230
Black Sea	1=Yes, 0=No	1829	0.063	0.244
Northeastern	1=Yes, 0=No	1829	0.025	0.155
Marmara	1=Yes, 0=No	1829	0.323	0.468
Central eastern	1=Yes, 0=No	1829	0.048	0.213
Central south	1=Yes, 0=No	1829	0.064	0.245
Central north	1=Yes, 0=No	1829	0.148	0.355
Branch density 1-2 branches	1=Yes, 0=No	1829	0.100	0.299
Branch density 3-5 branches	1=Yes, 0=No	1829	0.099	0.299
Branch density 6-9 branches	1=Yes, 0=No	1829	0.092	0.289
Branch density >10 branches (excl. metropolitan)	1=Yes, 0=No	1829	0.347	0.476
Branch density — metropolitan	1=Yes, 0=No	1829	0.362	0.481

Table 5: Summary statistics. Location and branch density.

Variable	[1]		[2]		[3]	
Gender	0.006	(0.040)	-0.030	(0.040)	0.024	(0.019)
Age	0.006***	(0.002)	-0.005***	(0.002)	-0.001*	(0.001)
Income (175 - 300)	0.057	(0.051)	-0.043	(0.052)	-0.014	(0.022)
Income (301 - 500)	0.039	(0.049)	-0.023	(0.049)	-0.016	(0.021)
Income (501 - 750)	-0.015	(0.056)	0.054	(0.056)	-0.038**	(0.019)
Income (751 - 1000)	-0.025	(0.068)	0.046	(0.068)	-0.021	(0.024)
Income (1000 - 1500)	0.014	(0.087)	-0.026	(0.085)	0.013	(0.039)
Income (>1500)	-0.075	(0.092)	0.093	(0.093)	-0.018	(0.035)
Primary school	-0.046	(0.104)	-0.043	(0.121)	0.090	(0.073)
High school	-0.089	(0.104)	-0.011	(0.127)	0.100	(0.087)
University	0.006	(0.117)	-0.066	(0.130)	0.060	(0.078)
Civil servant	-0.123	(0.098)	-0.167	(0.113)	0.290**	(0.142)
Blue collar - public	-0.164	(0.102)	-0.143	(0.139)	0.306*	(0.171)
Blue collar - private	-0.115	(0.098)	-0.088	(0.110)	0.203*	(0.119)
Craftsmen/trader	0.034	(0.111)	-0.239**	(0.100)	0.205*	(0.113)
Retired	0.382***	(0.116)	-0.511***	(0.072)	0.128	(0.109)
Student	0.196	(0.125)	-0.305***	(0.100)	0.109	(0.109)
Unemployed	-0.057	(0.118)	-0.172	(0.120)	0.229	(0.148)
Employment - other	0.043	(0.134)	-0.397***	(0.092)	0.354**	(0.158)
Culture/social participation	-0.021	(0.021)	0.025	(0.020)	-0.004	(0.008)
Trust banking sector	-0.015	(0.014)	0.012	(0.014)	0.003	(0.006)
Information level about services	0.024	(0.021)	-0.030	(0.020)	0.006	(0.009)
Use of saving services	-0.073**	(0.033)	0.069**	(0.033)	0.005	(0.015)
Use of credit services	0.079*	(0.048)	-0.099**	(0.047)	0.020	(0.023)
Use of technology services	-0.219***	(0.045)	0.199***	(0.047)	0.020	(0.024)
Use of standard services	-0.114**	(0.047)	0.124***	(0.046)	-0.010	(0.021)
Family patronage	-0.039	(0.040)	0.065	(0.040)	-0.025*	(0.015)
Full range of services	-0.159***	(0.039)	0.146***	(0.040)	0.013	(0.019)
Telephone banking	0.109	(0.118)	-0.074	(0.113)	-0.036	(0.025)
Internet banking	-0.157	(0.107)	0.120	(0.104)	0.037	(0.054)
Salary/pension receipts	0.208***	(0.042)	-0.176***	(0.041)	-0.031*	(0.017)
Services for farmers and craftsmen	0.231***	(0.064)	-0.270***	(0.059)	0.039	(0.035)
Terms of credit	-0.111	(0.069)	0.101	(0.068)	0.010	(0.030)
State	0.488***	(0.038)	-0.409***	(0.038)	-0.080***	(0.010)
Closeness	-0.008	(0.039)	0.038	(0.039)	-0.031**	(0.014)
Interest rates	-0.028	(0.082)	-0.096	(0.080)	0.124**	(0.053)
Trust the bank	-0.134***	(0.038)	0.177***	(0.037)	-0.042***	(0.014)
Staff	-0.090**	(0.044)	0.086**	(0.044)	0.004	(0.017)
Manager	-0.033	(0.057)	-0.064	(0.058)	0.096**	(0.038)
Mediterranean	-0.177***	(0.051)	0.050	(0.062)	0.126**	(0.054)
Aegean	-0.146***	(0.050)	0.135**	(0.054)	0.011	(0.030)
Southeastern	-0.013	(0.081)	-0.095	(0.084)	0.107	(0.074)
Black Sea	-0.079	(0.059)	0.079	(0.064)	0.000	(0.036)
Northeastern	-0.010	(0.115)	-0.036	(0.116)	0.046	(0.078)
Marmara	-0.229***	(0.041)	0.173***	(0.045)	0.056**	(0.028)
Central eastern	-0.039	(0.079)	-0.026	(0.085)	0.065	(0.064)
Central south	-0.136**	(0.056)	0.022	(0.070)	0.114*	(0.062)
Branch density 1-2 branches	0.365***	(0.058)	-0.325***	(0.055)	-0.040**	(0.016)
Branch density 3-5 branches	0.086	(0.065)	-0.047	(0.063)	-0.039*	(0.020)
Branch density 6-9 branches	0.136**	(0.066)	-0.061	(0.066)	-0.076***	(0.010)
Branch density >10 branches (excl. metropolitan)	0.038	(0.043)	0.003	(0.043)	-0.041**	(0.018)
Log pseudolikelihood -982.61	No. Obs.	1602	Wald χ^2_{102}	624.45		

Table 6: Marginal effects (computed at sample averages for continuous variables, at 0 for dummy variables). [1], [2], and [3] denote public, large private, and small private banks, respectively. Standard errors in parentheses. *,**, and *** denote significance at 10%, 5%, and 1%, respectively.

A Appendix

Variable	[2/1] Large private banks		[3/1] Small private banks	
Gender	-0.062	(0.152)	0.199	(0.204)
Age	-0.022***	(0.007)	-0.026***	(0.009)
Income (175 - 300)	-0.197	(0.192)	-0.248	(0.252)
Income (301 - 500)	-0.123	(0.183)	-0.234	(0.241)
Income (501 - 750)	0.121	(0.216)	-0.364	(0.295)
Income (751 - 1000)	0.132	(0.264)	-0.152	(0.330)
Income (1000 - 1500)	-0.074	(0.324)	0.074	(0.393)
Income (>1500)	0.331	(0.382)	0.004	(0.499)
Primary school	0.036	(0.420)	0.796	(0.562)
High school	0.194	(0.437)	0.906	(0.581)
University	-0.122	(0.458)	0.440	(0.615)
Civil servant	0.028	(0.379)	1.588***	(0.617)
Blue collar - public	0.213	(0.456)	1.677**	(0.688)
Blue collar - private	0.145	(0.389)	1.352**	(0.613)
Craftsmen/trader	-0.507	(0.378)	1.021*	(0.594)
Retired	-1.885***	(0.389)	0.067	(0.645)
Student	-0.980**	(0.410)	0.265	(0.640)
Unemployed	-0.167	(0.428)	1.180*	(0.652)
Employment - other	-0.940**	(0.410)	1.322**	(0.637)
Culture/social participation	0.089	(0.078)	0.018	(0.096)
Trust sector	0.054	(0.052)	0.061	(0.069)
Information level about services	-0.103	(0.079)	-0.001	(0.098)
Use of saving services	0.279**	(0.126)	0.207	(0.161)
Use of credit services	-0.335*	(0.176)	-0.011	(0.218)
Use of technology services	0.935***	(0.237)	0.787***	(0.269)
Use of standard services	0.452***	(0.169)	0.156	(0.215)
Family patronage	0.195	(0.158)	-0.152	(0.200)
Full range of services	0.638***	(0.174)	0.515**	(0.210)
Telephone banking	-0.350	(0.419)	-0.629	(0.488)
Internet banking	0.621	(0.517)	0.704	(0.575)
Salary/pension receipts	-0.740***	(0.157)	-0.741***	(0.209)
Services for farmers and craftsmen	-0.959***	(0.235)	-0.159	(0.277)
Terms of credit	0.441	(0.302)	0.366	(0.346)
State	-1.750***	(0.172)	-2.110***	(0.289)
Closeness	0.079	(0.148)	-0.280	(0.184)
Interest rates	-0.097	(0.323)	0.754**	(0.335)
Trust the bank	0.612***	(0.159)	-0.096	(0.216)
Staff	0.356**	(0.179)	0.251	(0.205)
Manager	-0.029	(0.223)	0.667***	(0.257)
Mediterranean	0.561**	(0.236)	1.227***	(0.326)
Aegean	0.591***	(0.225)	0.469	(0.303)
Southeastern	-0.131	(0.303)	0.656	(0.415)
Black Sea	0.319	(0.247)	0.192	(0.378)
Northeastern	-0.038	(0.436)	0.343	(0.594)
Marmara	0.867***	(0.184)	1.029***	(0.259)
Central eastern	0.050	(0.309)	0.519	(0.436)
Central south	0.396	(0.254)	1.022***	(0.358)
Branch density 1-2 branches	-1.311***	(0.230)	-1.134***	(0.289)
Branch density 3-5 branches	-0.261	(0.233)	-0.615*	(0.339)
Branch density 6-9 branches	-0.382	(0.237)	-1.538***	(0.417)
Branch density >10 branches (excl. metropolitan)	-0.081	(0.162)	-0.474**	(0.220)
Constant	1.155	(0.752)	-2.140**	(1.069)

Table 7: Probit coefficients. Base category: Public banks. Standard errors in parentheses. *,**, and *** denote significance at 10%, 5%, and 1%, respectively.