

# **New Empirical Evidence on the Credit Card Puzzles**

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## *Abstract*

In this paper we try to give some empirical evidence as to why people borrow on credit cards and not through commercial loans that bear a lower interest rate cost and why people simultaneously borrow on credit cards and save in liquid assets. We find that certain behavioral aspects of economic agents help to explain this irrational economic behavior portrayed by them, in the above puzzles, by adequately addressing and capturing the self control problem faced by them. Our findings are in line with other theoretical and empirical studies, i.e. Brito and Hartley (1995), Bertaut and Haliassos (2001, 2005) etc. and may provide further evidence for the development of theoretical models.

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## **1. Introduction**

The literature on the economic behavior of households using credit cards has identified certain puzzles that basically challenge the rationality of consumer behavior. This paper provides new empirical evidence with respect to the following two credit card puzzles. The first puzzle refers to the fact that the majority of households choose to borrow through high interest rate bearing credit card loans instead of lower cost commercial loans. The second puzzle involves the simultaneous borrowing through credit cards and accumulation of liquid assets. This poses an enigma because one would expect to use part of the liquid assets which yield a lower interest to pay off the higher interest bearing credit card loan (debt revolvers).

Using a panel dataset of six years of survey data on Dutch households we present empirical evidence that the household credit card debts can be explained not only by financial and demographic variables (e.g. liquidity constraints, income, education, employment) as suggested by standard economic theory models, but also by a set of behavioral variables associated with the difficulty in controlling spending, the attitudes towards saving versus spending and the ability to manage income. These results provide not only new empirical evidence but also empirical support for theoretical models according to which the self-control behavior of economic agents determines credit card debts (Bertaut and Haliassos, 2001, 2005).

## **2. Theoretical Models and Empirical Results on Credit Card Puzzles**

The literature on the economic behavior of households using credit cards has identified three puzzles. These three puzzles basically challenge the rationality of consumer behavior. The first puzzle regards the fact that the majority of households choose to borrow through high interest rate bearing credit card loans instead of lower cost commercial loans. The second puzzle involves the simultaneous borrowing through credit cards and accumulation of liquid assets. This is a puzzle in the literature because one would expect to use part of the liquid assets which yield a lower interest to pay off the higher interest bearing credit card loan (debt revolvers). The third puzzle looks at why

households borrow through credit cards and at the same time save for retirement. This puzzle is known in the literature as the Debt Puzzle.

Regarding the first puzzle, Brito and Hartley argue that the reason households borrow through credit cards instead of borrowing through lower cost commercial loans is the bureaucracy involved and the collateral needed to obtain such commercial loans. As a result, the authors argue that credit card borrowing constitutes an easy form of borrowing such that it makes people willing to accept the higher cost on credit card loans simply to avoid the extra time and effort needed to borrow through lower bearing interest rate loans (Brito-Hartley, 1995). Moreover, it may be the case that households use credit cards because they believe they will be able to repay the balance at the end of the month, thus they will not borrow through them, but at the end of the month they do not manage to repay back the balance on the credit cards and hence they borrow through them (Ausubel, 1991).

As far as the credit card debt revolvers puzzle is concerned, Bertaut and Haliassos have shown that it is not optimal for a household to revolve debt on a credit card and at the same time possess liquid assets. Rational behavior would indicate that as long as the interest rate on the credit card loan is higher than the interest rate received by the household through the possession of the liquid asset, the household should liquify liquid assets to pay off the debt on the credit card.

A potential explanation to the aforementioned puzzle given by Lehnert and Maki (2001) has to do with some law in the US where households are allowed to declare bankruptcy and when they do so their creditors are obliged to allow them to retain part of their wealth. More precisely, they have found in their study that in US states that the minimum level of liquid assets that the households are allowed to maintain once they declare bankruptcy is quite high, the probability of observing such behaviors of “strategic bankruptcy” is about 4.5 times higher than in US states where the minimum amount of liquid assets the households are allowed to maintain after bankruptcy is quite low. So the

potential explanation to the puzzle put forward by the aforementioned authors is that households that hold liquid assets and at the same time revolve credit card debt are in the process of what they call “strategic bankruptcy” and so it is optimal for such households not to pay off their debt using their liquid assets because once they declare bankruptcy they will be left with no liquid assets. Of course such an argument, based on “strategic bankruptcy”, may give a good explanation as to why households in states that are allowed to maintain a relatively high minimum of liquid assets after declaring bankruptcy compared to other states, may choose, with a higher probability, to revolve credit card debt if they are in the process of declaring bankruptcy. This explanation however cannot answer in general why households simultaneously revolve debt and hold liquid assets because different countries may have totally different laws regarding bankruptcy and yet this phenomenon of debt revolving is universal, at least across the developed economies.

Over the last few years, quite a lot of researchers and economists have tried to explain credit card puzzles by studying the issue of self control problem of households. This is because it may be the case that this irrational behavior of households regarding their usage of credit cards may be captured by the notion of a self control problem. Usually, self control problems arise when there is a time lag between the consumption of a commodity and the payment for consuming it (Hoch and Loewenstein, 1991). Empirical studies have shown that when someone feels that he/she has liquidity, then this increases the probability of someone purchasing something and given that he/she is determined to purchase something, then the existence of liquidity increases the amount the person is willing to spend<sup>1</sup>.

Within this framework, Bertaut and Haliassos (2001) analyze a theoretical model by which they try to tackle this issue of self control problem in economic agents. In their model there are two selves. The first one is the so called “accountant” or rational

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<sup>1</sup> Gross and Souleles (2001) have shown empirically that the marginal rate of consumption in accounts which allow their holders to have credit limits above 90 percent is of the order of 50 percent, whereas the respective percentage for accounts with much lower utilization rates of their credit limit is much lower.

economic agent of the household that basically monitors the credit card balance and decides the amount of money to be repaid on the balance at the end of the month. The second self is the so called “shopper” of the household that basically uses the credit card to purchase goods on credit. The “shopper” may act impatiently regarding his/her future consumption because he/she is carried away by the liquidity available through the credit card balance and thus behaves irrationally. The accountant at the end of each month chooses not to repay off the whole outstanding balance on the credit card because he/she knows that by doing so all that will be achieved is to lose the interest that would be receivable on the liquid assets that were used to repay the debt without achieving the ultimate goal of reducing the credit card debt. The debt would not have been reduced because the shopper, who does not think in an economically rational way but instead is carried away by the liquidity that may be available on the card, will spend all the available balance and thus bring the debt to its prepaid level. As a result in this type of model it is optimal for the accountant to constraint the shopper from spending all the time by revolving a certain amount of debt each month so that the shopper will not be able to exploit the extra liquidity available by spending more on credit.

This means that the accumulation of liquid assets should be independent from the credit card debt because the usage of such assets to pay off the debt will not succeed in actually reducing the credit card debt. Bertaut and Haliassos have succeeded through their theoretical model to show that households have credit card debt not because they are liquidity constrained and thus cannot borrow otherwise, but because of a self control problem.

The debt puzzle refers to the fact that households seem to be impatient in the short run and thus borrow on their credit cards but seem to be very patient with respect to their long term plans and save for retirement. This is a puzzle in the literature because it is not possible, in a simple model where a unique impatience or discounting factor is incorporated, to explain the simultaneous borrowing of households through credit cards and accumulation of retirement wealth.

Laibson-Tobacman and Repetto (2000) tried to explain the coexistence of credit card borrowing and saving for retirement by incorporating hyperbolic discounting in their model. The aforementioned authors are able through hyperbolic discounting to tackle the intertemporal self control problem faced by households and are thus able to show that the coexistence of illiquid assets accumulation and credit card debt, thus of a patient and impatient self, is no longer implausible. In this paper we do not address the debt puzzle.

The puzzles to which we will try to provide some new empirical insight are the first two which relate to (1) why people borrow through credit cards which bear a high interest rate and not through lower interest rate bearing loans and (2) why people borrow on credit cards and accumulate liquid assets since they can use the latter to repay their loans. We find that liquid assets such as financial assets (but not income) are significant which agrees with the second puzzle and we find that liquidity constraints are also important.

Apart from the work done by Ausebel, 1991 and Brito-Hartley, 1995 some recent work was done by Bertaut and Haliassos, 2005. But all in all, there is only a limited number of studies regarding the aforementioned puzzle and they concentrate on explaining it based on wealth and income variables, demographic characteristics of households such as education, gender, number of kids etc, which Bertaut and Haliassos find for the US to be significant and in line with economic theory<sup>2</sup>.

Our contribution is that we complement the above empirical models by introducing additional variables that measure the behavioral characteristics of the household that are related to credit card deficits and to the aforementioned economic theories, which we find to have an additional significant effect in explaining household credit card debt.

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<sup>2</sup> The data used by Bertaut and Haliassos is taken from the Surveys of Consumer Finances and they use a pooled sample of the 1983, 1992, 1995, 1998 and 2001 waves of the SCF.

### 3. Data

Our data refers to a panel of six years, 2000, 2001, 2002, 2003, 2004, 2005 from the DNB household survey. The purpose of this survey, formerly known as CentER Savings Survey, is to study the economic and psychological/behavioral determinants of the saving behavior of households in the Netherlands. The data are collected through the Internet panel of CentER data, the CentER panel. Participating respondents do not necessarily have to have their own computer with Internet. If a household does not have access to Internet, CentER data provides a so-called set-top box with built-in Internet connection and, if necessary a television set as well, so that the households can fill in the questionnaires via the television set.

Since 1993, CentER data annually collects economic data through a panel that consists of some two thousand households.

The DNB Household Survey consists of seven questionnaires. Below, we give an overview of the topics that are covered by each of the questionnaires.

1. General information on the household;
2. Household and work;
3. Accommodation and mortgages;
4. Health and income;
5. Assets and liabilities;
6. Economic and psychological concepts;
7. Additional questions for DNB.

All questionnaires are presented to the CentER panel. Within each household, all persons aged 16 or over are interviewed. The section General Information on the Household includes *all* members of the household (also those under 16 years of age), and mainly consists of derived variables. The questions from this section are not

presented to the respondents but are derived from other variables. For example, the province where the respondent lives is derived from the zip code.

Note: The questionnaire on economic and psychological concepts has only been presented to the (partners of) the head of the household (positions 1, 2, 3).

Some of the questions in the questionnaire on economic and psychological concepts that have been used in our estimations to capture the determinants of debt revolving in the Netherlands are the following:

1. How well can you manage on the total income of your household?
2. How is the financial situation of your household at the moment?
3. Some people spend all their income immediately. Others save some money in order to have something to fall back on. Please indicate what you do with money that is left over after having paid for food, rent, and other necessities -- on a scale from 1 to 7, where 1 means 'I like to spend all my money immediately' and 7 means 'I want to save as much as possible'.
4. Do you find it difficult to control your expenditures? Please indicate how difficult you find this on a scale from 1 to 7, where 1 means 'very easy' and 7 means 'very difficult'.
5. Do you have good control of your investments and their returns?

The DNB household survey contains information on debit cards and not credit cards. Credit cards are not common in the Netherlands but debit cards could essentially be regarded as credit cards.

This may be inferred from the following facts:

- 1) In general, commercial banks in the Netherlands do not offer interest on positive balances on checking accounts.

- 2) Checking account holders pay interest on negative balances and the interest rates payable are generally higher than the interest receivable on savings accounts.
- 3) It is possible to revolve debt on the checking accounts and in general there are no interest-free periods.

#### **4. Descriptive Statistics**

Tables 1 and 2 show the mean and median amounts of credit card debt amongst households in the Netherlands and the US that borrow on credit. In 2001 and 2004 the mean debt amongst debt revolvers in the US was \$4.400 and \$5.100 respectively. In the Netherlands the respective amounts were 9.034 Dutch Guilders and 4.212 Dutch Guilders. This means that using the irrevocable exchange rate of the Dutch Guilder with the euro as of 1 January 2000, the mean credit card debt in the Netherlands corresponding to the surveys of 2001 and 2004 were approximately 4.100 euros and 1.910 euros or \$5.400 and \$2.500 respectively. This shows that the behavior of the households in the Netherlands and the US, with respect to the mean debt, is quite similar. Regarding the median credit card debt the amounts are at least double for the US households compared to the Dutch households.

However, there is quite some difference on the participation rates on credit card debt between households in the Netherlands and the US. In the Netherlands it is barely 10% while in the US the participation rate is well above 40%. This may be taken as a criticism to our data and it could be argued that using data from the SCF would have been better than from the DNB Household Survey. Even though we would be subject to the above criticism our data have two important features that make them quite unique in this type of studies and thereby provide some useful findings.

First of all, our data are in the form of panel and this increases the information that is available because we can estimate the variation both across different households but also across different years. Also the fact that our data are in the form of panel, it

means that our estimated results are less likely to be contaminated by some particular year effect that could be regarded as an outlier either due to some exogenous unanticipated shock in the economy or due to a business cycle. The second value added factor of our model data is the questionnaire regarding economic and psychological/behavioral factors which allows us to use some additional variables in our estimations that give us some extra insight and they help explain the irrational behavior portrayed by households in their usage of credit card borrowing.

Table 3 indicates that the incidence of liquidity constraints in the Netherlands is quite high and is in line with the incidence of liquidity constraints faced in other advanced economies that are also at the peak of financial development, such as the US. Following pioneering work by Hall (1978) that used time-series data to test for liquidity constraints, a number of papers have emphasized the existence of liquidity constraints in US data. Hall and Mishkin (1982), and Mariger (1986) used the Panel Study of Income Dynamics, while Hubbard and Judd (1986) used the 1983 Survey of Consumer Finances to show that approximately 20% of the US population is credit constrained. At the same time Hayashi (1985) and Zeldes (1989) indicate that sensitivity of consumption to income changes depends on household wealth and, in particular, younger households with low levels of wealth and savings are more likely to face liquidity constraints. Jappelli (1990) also uses the 1983 Survey of Consumer Finances (SCF) to show that 20% of the sample consists of rejected applicants and discouraged borrowers, while current income, wealth, and age are the most important determinants of the probability of one being denied a loan, Haliassos *et al.* 2006.

## **5. Determinants of Credit Card Debt Revolving Behavior**

Econometric analysis of household-level data is used to isolate the role of a given household characteristic, controlling for all others. The DNB Household Survey contains a unique section in its questionnaire on economic and psychological/behavioral variables, something that enables us to investigate the question of what determines whether households will borrow on credit instead of through lower interest bearing loans

by looking at the financial behavior of the economic agent. In this Section, we utilize this question and report results from probit estimation for the incidence of revolving debt.

Table 4 reports the results from a pooled probit estimation with time (annual) dummies and robust standard errors where only economic variables are used to determine the incidence of credit card borrowing<sup>3</sup>.

We find that a number of the standard economic variables are statistically significant in explaining credit card debt. For instance, households where the head is below the age of 40 have 15% higher probability of revolving debt than in the case where the head of the household is above the age of 40. This could be attributed to the fact that younger households are in general more liquidity constrained as they may be at the start of their careers and thus do not earn as much money. Thus it is no surprise that when we isolate the effect of liquidity constraints, we find that those households that face or believe they may face liquidity constraints in the future are 57% more likely to borrow on credit compared to their counterparts that do not face liquidity constraints. Moreover, households with unemployed heads or with heads in college also have a higher probability of revolving debt on their credit cards compared to households where the heads are in employment or earn income as retirees etc. Moreover, having kids contributes significantly to the probability of borrowing on credit, consistent with the idea that couples with kids have greater financial needs.

Even though the level of income plays no role in determining whether a household will borrow on credit, households with financial assets below the median have 52% higher probability of doing so, consistent with the idea that if they have a low level of financial assets then they are likely to be more liquidity constrained than households with more financial assets.

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<sup>3</sup> As a next step we will estimate a panel probit. However, the fact that all dummy variables are insignificant provides confidence that our results will be robust to panel estimation.

It is important to note that apart from income, real assets and education do not seem to affect whether a household will borrow on credit or not.

Last but not least our estimated results reported in Table 4 are compatible with other studies, i.e. Bertaut et al (2005) for the US cross-section using CFS data.

Next we extend the above model by adding a set of behavioral variables to the probit model. We find that these variables not only help to explain further the dependent variable but most importantly these additional variables are significant with high estimated values. The results from this model are reported in Table 5. The estimation results show that the following behavioral variables matter for explaining credit card debt.

First, households that report they can manage their income have 60% lower probability of borrowing on credit compared to households that cannot manage their income.

Second, households that like to spend their money immediately are significantly more likely to borrow on credit compared to those that want to save as much as possible.

Third, households that report that they find it difficult to plan or control their expenditures have about 26% higher probability of revolving debt than their counterparts that report that they find it easy to plan or control their expenditures.

Apart from noting that these additional variables have the right sign and reasonable coefficients it would be interesting to see how they interact and affect the initial economic variables used in our first estimated equation. One important change to the initial estimation is that even though all variables that were significant before the addition of the behavioral variables remain significant and retain the correct sign there is

a reduction in the magnitude of their effect on the dependent variable<sup>4</sup>. The more pronounced reduced effect is seen in the case of the liquidity constraint variable and in the availability of financial assets. This is something that reinforces the idea that the behavioral variables we used in the second equation are actually important in determining whether a household will revolve debt or not.

Last but not least, the Pseudo  $R^2$  increases from 0.098 to 0.155 when the behavioral variables are added in the model.

Next we try to do some robustness check of our model by replacing two of the behavioral variables used in Table 5 with some other variables that should be related with the initial variables and we try to see if overall our results and conclusions drawn from them do not change in any significant way. More precisely, we replace the variable “good management of income” with the variable “good control on investments and their returns” and the variable “spender” with the variable “not sound financial position”. The variables “management of income” and “control on investments” could be related to the accountant and the variables “spender” and “not sound financial position” could be related to the shopper in Bertaut and Haliassos model. Therefore by re-estimating the model by replacing the aforementioned variables as described above will provide a way to us to check for the robustness of our model. The results of this third regression are shown in Table 6.

The estimation results show that the results given by our model in Table 5 are quite robust to using different behavioral variables to capture the accountant and shopper in Bertaut et al. (2001, 2005) and thus the notion of the self control problem faced by economic agents. First, all variables that are common in Tables 5 and 6, remain significant even after the substitution of the variable “good management of income” with the variable “good control on investments and their returns” and the variable “spender”

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<sup>4</sup> The variable on age becomes insignificant but this may be explained because the liquidity constrained faced by younger households is captured through other explanatory variables in the model.

with the variable “not sound financial position”. Second, their signs do not change and third, their magnitude or marginal effect on the dependent variable does not change in any significant way.

Regarding the two newly introduced behavioral variables in Table 6, we find that qualitatively, at least, they do have the same effect on the dependent variable as the variables used in Table 5. This means that we are still in the position to capture the self control problem as portrayed by Bertaut and Haliassos through an accountant self and a shopper self. However, not surprisingly enough, it seems to be the case that, especially in the situation of the accountant self, we are able to capture it best through the variable “good management of income” instead of “good control on investments”.

More precisely, Table 6 shows that households that are not in a healthy financial position (they need to draw upon savings or are in debt) have 74% higher probability of revolving debt than their counterparts that report that the financial situation of their household is sound because they report that they either save some or a lot of money.

Furthermore, our last estimated equation shows that households that have a good control on their investments have 12% lower probability of revolving debt than their counterparts that report that they do not have a good control on their investments.

The next step of our empirical analysis will involve the estimation of a panel probit model which will adequately capture the panel structure of our data. In addition we will estimate a bivariate probit so that apart from examining the determinants of whether a household revolves credit card debt, we will also investigate the factors that help explain the amount of debt that the households revolve on their credit cards.

## **6. Concluding Remarks**

This study contributes not only to the empirical evidence on explaining the credit card deficit of showing the significance of financial and demographic variables as well as behavioral variables but we believe that it provides further evidence for the development of theoretical models. The existing theoretical models regarding credit card behavior could be extended to incorporate the behavioral aspect of individuals and households.

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## Appendix A: Description of Variables

**All variables (except for education):** binary variables that take the value 0 or 1. The variable on the **education level** attained by the household is categorical.

**Deficit:** At the end of the previous year did you have a credit or a deficit on your checking account? It takes the value 1 if the household had a deficit and the value 0 otherwise.

**Financial Assets** = the value of savings or deposit accounts + value of savings certificates + value of savings or endowment insurance policies + growth funds + value of bonds + value of mutual funds + deposit books + value of stocks and shares + other amounts owed to you – other amounts you owe to others. It takes the value 1 if the financial assets of a household in any given year are below the median in that particular year and 0 otherwise.

**Real Assets** = Value of house – mortgage on house + pieces of real estate not for primary residence – mortgages on pieces of real estate not for primary residence + cars + motorbikes + boats + caravans. It takes the value 1 if the financial assets of a household in any given year are below the median in that particular year and 0 otherwise.

**Income:** It takes the value 1 if the total annual income of a household in any given year is below the median in that particular year and 0 otherwise.

**Less 40:** takes the value 1 if the head of the household is below 40 years of age and the value 0 otherwise.

**Below High School:** takes the value 1 if the head of the household has completed primary education and the value 0 if he/she has no education or has at least a high school diploma.

**High School:** takes the value 1 if the head of the household has completed high school and the value 0 if he has at least a university degree or if he has at most completed primary education.

**Above High School:** takes the value 1 if the head of the household has obtained at least a university degree and the value 0 otherwise.

**Liquidity Constrained:** takes the value 1 if the head of the household or his/her partner has ever been denied a loan in the past 2 years or did not receive as much credit as requested or was discouraged from applying for a loan because he/she thought might be turned down or if the head of the household expects that in case he/she applied for credit today the application would be turned down; and 0 otherwise.

**Not working:** takes the value 1 if the head of the household is unemployed or seeking work for the first time or too young and thus has no occupation or a student and 0 otherwise.

**Kids:** takes the value 1 if the household has kids and 0 otherwise.

*Behavioral Factors:*

**Good Management of income:** takes the value 1 if the head of the household answers that he/she finds it easy or very easy to manage on the total income of the household and takes the value 0 otherwise.

**Good control on Investments:** takes the value 1 if the head of the household answers that he/she has good control on his/her investments and their returns and takes the value 0 otherwise.

**Not Sound Financial Position:** takes the value 1 if the head of the household reports that the household just manages financially or needs to draw upon savings or is in debt and takes the value 0 if he/she reports that the household is in the position to save some or a lot of money.

**Spender:** takes the value 1 if the head of the household likes to spend all the money immediately and 0 otherwise. (Scale of 1 to 7). Possible answers that correspond to the value 1 are: 1, 2, and 3.

**Difficulty in controlling expenditure:** takes the value 1 if the head of the household finds it difficult to plan or control expenditures and 0 otherwise. (Scale of 1 to 7). Possible answers that correspond to the value 1 are: 1, 2, and 3.

**D2000, D2001, D2002, D2003, D2004, D2005:** year dummies.

**Table 1: Percentage of households that borrow on credit as well as mean and median credit card debt in the Netherlands**

	Percentage of debt revolvers (%)	Mean Debt (Dutch Guilders <sup>5</sup> )	Median Debt (Dutch Guilders)
2000	7,00	5.416	968
2001	5,98	9.034	1.500
2002	7,98	9.844	1.250
2003	9,34	5.371	374
2004	7,71	4.212	680
2005	8,73	2.523	735

Source: DNB household survey, 2000, 2001, 2002, 2003, 2004, 2005.

**Table 2: Percentage of households that borrow on credit as well as mean and median credit card debt in the US**

	Percentage of debt revolvers (%)	Mean Debt (2004 USD)	Median Debt (2004 USD)
2001	44,4	4.400	2.000
2004	46,2	5.100	2.200

Source: Survey of Consumer Finances, 2004.

**Table 3: Percentage of households that face liquidity constraints in the Netherlands**

	Percentage of households that are liquidity constrained (%)
2000	13
2001	10
2002	12
2003	14
2004	15
2005	18

Source: DNB household survey, 2000, 2001, 2002, 2003, 2004, 2005.

<sup>5</sup> The irrevocable exchange rate for the Netherlands, i.e. the fixed exchange rate of the Dutch Guilder against the euro is 2.20371 Dutch Guilders = 1 euro.

**Table 4: Results for pooled probit estimation regarding the probability of revolving debt on the credit card – economic variables only**

Revolves Debt on card	Indep. Variables	Coef.	Robust Std. error	Z	P> z	95% conf. interval	
	Age below 40	0,15	0,059	2,51	0,012	0,032	0,265
	Below High School	0,38	0,271	1,41	0,158	-0,149	0,912
	High School	0,42	0,270	1,54	0,123	-0,113	0,947
	Above High School	0,38	0,271	1,40	0,160	-0,151	0,913
	Kids	0,45	0,057	7,88	0,000	0,334	0,556
	Liquidity Constrained	0,57	0,075	7,66	0,000	0,425	0,717
	Not Working	0,25	0,139	1,80	0,072	-0,022	0,523
	Below Median Income	-0,01	0,059	-0,20	0,838	-0,128	0,104
	Below Median Real Assets	0,10	0,060	1,69	0,091	-0,016	0,220
	Below Median Financial Assets	0,52	0,057	9,14	0,000	0,407	0,629
	D2000	0,11	0,104	1,07	0,287	-0,093	0,316
	D2001	0,14	0,096	1,49	0,137	-0,045	0,331
	D2002	0,09	0,097	0,97	0,331	-0,096	0,285
	D2003	0,05	0,094	0,48	0,630	-0,139	0,229
	D2004	-0,01	0,091	-0,11	0,912	-0,188	0,168
	Constant	-2,35	0,281	-8,37	0,000	-2,900	-1,799

**Table 5: Results for pooled probit estimation regarding the probability of revolving debt on the credit card – economic and behavioral variables**

Revolves Debt on card	Indep. Variables	Coef.	Robust Std. error	Z	P> z	95% conf. interval	
	Age below 40	0,10	0,062	1,63	0,103	-0,021	0,222
	Below High School	0,35	0,286	1,21	0,225	-0,214	0,907
	High School	0,40	0,285	1,39	0,166	-0,164	0,955
	Above High School	0,44	0,286	1,52	0,129	-0,126	0,996
	Kids	0,34	0,059	5,73	0,000	0,224	0,457
	Liquidity Constrained	0,46	0,077	5,97	0,000	0,310	0,613
	Not Working	0,17	0,138	1,22	0,221	-0,102	0,441
	Below Median Income	-0,07	0,061	-1,17	0,243	-0,191	0,049
	Below Median Real Assets	0,02	0,063	0,38	0,705	-0,099	0,146
	Below Median Financial Assets	0,37	0,059	6,30	0,000	0,258	0,491
	Good management of income	-0,60	0,063	-9,48	0,000	-0,724	-0,476
	Spender	0,38	0,071	5,32	0,000	0,237	0,514
	Difficulty in controlling expenditure	0,26	0,064	4,13	0,000	0,138	0,388
	D2001	0,03	0,105	0,27	0,790	-0,178	0,234
	D2002	0,02	0,105	0,22	0,829	-0,184	0,229
	D2003	-0,03	0,103	-0,27	0,786	-0,230	0,174
	D2004	-0,11	0,099	-1,15	0,250	-0,309	0,080
	D2005	-0,12	0,108	-1,12	0,261	-0,332	0,090
	Constant	-1,98	0,288	-6,85	0,000	-2,540	-1,410

**Table 6: Results for pooled probit estimation regarding the probability of revolving debt on the credit card – economic and behavioral variables – Some Robustness Check of the estimated results**

Revolves Debt on card	Indep. Variables	Coef.	Robust Std. error	Z	P> z	95% conf. interval	
	Age below 40	0,15	0,062	2,44	0,015	0,030	0,274
	Below High School	0,40	0,283	1,42	0,155	-0,152	0,957
	High School	0,43	0,283	1,54	0,124	-0,119	0,989
	Above High School	0,45	0,284	1,58	0,114	-0,108	1,005
	Kids	0,32	0,060	5,36	0,000	0,203	0,437
	Liquidity Constrained	0,40	0,077	5,23	0,000	0,252	0,555
	Not Working	0,17	0,138	1,25	0,212	-0,098	0,443
	Below Median Income	-0,10	0,063	-1,59	0,113	-0,222	0,023
	Below Median Real Assets	0,03	0,063	0,50	0,616	-0,092	0,156
	Below Median Financial Assets	0,33	0,059	5,60	0,000	0,216	0,449
	Good control on investments	-0,12	0,058	-2,04	0,041	-0,232	-0,005
	Not Sound Financial Position	0,74	0,063	11,82	0,000	0,616	0,861
	Difficulty in controlling expenditure	0,29	0,064	4,47	0,000	0,161	0,413
	D2000	0,19	0,110	1,71	0,088	-0,028	0,403
	D2001	0,16	0,101	1,55	0,121	-0,041	0,356
	D2002	0,15	0,101	1,50	0,133	-0,046	0,350
	D2003	0,06	0,098	0,62	0,533	-0,131	0,254
	D2004	0,02	0,095	0,16	0,874	-0,171	0,201
	Constant	-2,62	0,300	-8,74	0,000	-3,207	-2,033