The Red, the Black, and the Plastic: Paying Down Credit Card Debt for Hotels Not Sofas

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Abstract

Using transaction data from a sample of 1.8 million credit card accounts, we provide the first field test of a major prediction of Prelec and Loewenstein's (1998) theory of mental accounting: that consumers will pay off expenditure on transient forms of consumption more quickly than expenditure on durables. According to the theory, this is because the pain of paying can be offset by the future anticipated pleasure of consumption only when money is spent on consumption that endures over time. Consistent with this prediction, we found that repayment of debt incurred for non-durable goods is an absolute 10% more likely than repayment of debt incurred for durable goods. The strength of this relationship is comparable to an increment in 15 percentage points in the credit card APR. Our results have managerial implications not only for the structuring of financial transactions (e.g., that credit card customers should be given the option of paying off specific purchases), but more general implications for exploiting variations in the pain of paying in incentive schemes aimed at customers and employees.

Keywords: mental accounting, credit card repayment, durable goods, decision making

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1. Introduction

The assumption of fungibility is an essential feature of standard consumer theory. Consumers are assumed to purchase what they value most, and to pay for their purchases using the least costly options for payment. What a person pays for should not affect how they pay for it (e.g., via cash or credit), and how money is obtained should not affect the way it is spent. Research on mental accounting (Thaler 1999) challenges these assumptions. There is by now a large body of empirical research documenting violations of fungibility, showing that people like to pay for different types of purchases in different ways, and that people like to spend money arising from different sources, or stored in different ways, differently (for a discussion of the assumption of fungibility in standard economics see Thaler 1985).

Most of the early research on mental accounting involved surveys and hypothetical choice studies. O'Curry and Strahilevitz (2001) found that, compared to ordinary income, windfall gains, including winnings from longshot lotteries, are more likely to be spend on hedonic, as opposed to utilitarian, goods. Thaler and Johnson (1990) report the phenomenon, since well documented (Ackert et al. 2006, Keasey and Moon 1996, Weber and Heiko 2005), that gamblers are more willing to take risks after a recent gain since they feel they are playing with house money. Heath and Soll (1996) find that when consumers purchase an item that is prototypical of an expense category, they are subsequently less likely to purchase other items in that category, which they attribute to non-fungibility between mental accounts.

A number of field studies have subsequently documented diverse violations of fungibility (for a recent review see Zhang and Sussman 2018). Virtually all of these focus on the question of whether money that is framed as coming from, or designated as being earmarked for, a specific category of consumption is, in fact, spent on that category (as discussed by Thaler 1985). Kooreman (2000), in an early field study, found that the marginal propensity to consume child clothing out of child benefits is higher than out of other income. Beatty et al. (2014), using a regression discontinuity analysis, find that the UK Winter Fuel Payment, a cash grant, is disproportionately spent on heating. Hastings and Shapiro (2017), using a data set of grocery transactions that include information about payment medium, find that Supplemental Nutrition Assistance Program (SNAP) payments are disproportionately spent on food, relative to cash income. Milkman and Beshears (2009) find that a grocery coupon provided by an online retailer leads to a much greater increase in spending on food than that which is predicted by standard economic theory. Finally, whereas all the studies just reviewed relied on observational field data, Abeler and Marklein (2017) conducted a field experiment in which patrons of a wine restaurant were given a coupon good for either any usage or for wine. Customers given the wine coupon spent more on wine than those given the coupon earmarked for any usage and both groups spent more on

their overall meal. Both results violate fungibility (given that virtually all patrons of the wine restaurant would have spent at least the value of the coupon on wine).

We used data from a large data set on credit card spending to test a major prediction of a theory of mental accounting proposed by Prelec and Loewenstein (1998): that consumers will be more motivated to pay off expenditure on more transient forms of consumption more quickly than expenditures on durables. We provide the first field test of this theoretical prediction using transaction and repayment data from a sample of 1.8 million credit card accounts. In line with the predictions of Prelec and Loewenstein, we find that people are an absolute 10% less likely to pay off, and hence more likely to pay interest on, durable items like vehicles, clothes and education, compared to non-durable items like grocery products, gas, hotel accommodation, and restaurants. This result holds in analyses comparing repayments across individuals and also analyses comparing changes in repayments within individuals over time (with individual fixed effects). As a complement to the judgments of hypothetical scenarios presented in Prelec and Loewenstein, our field data are the first evidence that debt aversion varies as a function of the nature of the associated consumption, and the first evidence regarding preferences for the relative timing of consumption and payment.

Prior research has examined patterns of behavior involving credit cards using diverse research methods and data sources. For example, in incentivized laboratory experiments Amar et al. (2011) found that consumers were more likely to spend on credit cards with the lowest balance rather than, as cost-minimization would suggest, the lowest rate of interest. Stewart (2009, see also Navarro-Martinez et al. 2011, and Keys and Wang 2016) examined, using both credit card repayment data and an experiment, whether consumers anchor repayments on minimum payment amounts that are currently included on all credit card statements. Gathergood et al (2017, see also Stango and Zinman 2015 and Ponce et al. 2017) examine how consumers split repayments across debts held over multiple cards. All three contributions show that consumers tend not to minimize interest costs when allocating repayments across cards and Gathergood et al. (2017) show that this arises because consumers tend to split the ratio of repayments across their cards in approximate proportion to the ratio of revolving balances, instead of paying down the highest interest rate debt first, as economic logic would predict. Using detailed transactions data from a relatively affluent and financially sophisticated online panel of 917 households, Stango and Zinman (2009) found that the median household pays $500 per year in credit card costs and could avoid more than half these costs with minor changes in behavior. In contrast to these prior contributions, the current paper is, to the best of our knowledge the first to use credit card data to test for a violation of fungibility, as well as the first to test a key prediction of the Prelec and Loewenstein (1998) model using field data. Rather than examining the impact of credit balances and

APRs on card repayment, here we examine the impact of the specific type of consumption financed with a credit card on the likelihood of fully paying off the credit balance on the card.

Beyond providing support for a key prediction of Prelec and Loewenstein, our results have implications for the designers of financial products. In particular, if customers have a preference for paying down certain types of consumption ahead of others, customers may value payment options which allow the them to prioritize payments against certain spending types. Credit card issuers currently report customer card balances, with manual and automated payment options at various level of payment (including minimum payment or full payment), but customers might also benefit from options which allow them to identify the balance due by the spending it represented, and then pay for specific items. The research reported here suggests that, given such an option, consumers would be prone to pay off debt incurred for non-durable than for durable consumption, and that doing so might well decrease the pain they experience from paying off their credit card. More generally, managers should look for ways to reduce customers' and workers' pain of paying to enhance the value of incentives that they provide. For example, if customers find it painful to pay for shipping on purchases, a promotional offer could be framed as paying for, or providing free, shipping as opposed to a discount from the price of the product itself. Or, if gas prices are high and consumers find it painful to pay for their daily commute, a wellness program that provided incentives in the form of gas cards might be more effective than one that paid the same amount in cash, despite the compelling economic logic favoring cash that can be spent in a maximally flexible fashion.

2. Background

Prelec and Loewenstein (1998) propose a double mental accounting model in which people establish mental accounts to link the *pleasure* of the consumption of an item with the *pain* of payment for it. In their model, every act of consumption evokes painful consideration of its cost, and every act of payment is buffered by (typically) pleasurable thoughts about the consumption that the payment is financing. The key assumption of the model, dubbed *prospective accounting* is that people only care about future costs and benefits: For each transaction, people offset the pain of repayments against future consumption, and offset the pleasure of consumption against the pain of future repayments. Prospective accounting predicts, for example, that a vacation paid for ahead of time will be more enjoyable because, since there are no payments in the future, it feels as if it is free. Likewise, it predicts that paying for the vacation after one returns will be especially painful because, given that the vacation has already happened in the past, it feels as if one is paying for nothing. Purchase and repayment decisions are, therefore, contingent on the expected sequence of consumption and payment utilities. When a good is not fully paid off, or when a transaction is made in multiple payments, the pleasure of its consumption

is undermined by painful thoughts regarding the remaining payments. Hence, consumers would be inclined to prepay for a product rather than accumulate the debt.

However, the attractiveness of prepayments is not the same for all types of consumption in the double mental accounting model. People are happier to pay interest on durable goods because the pain of paying interest is offset by their anticipated future consumption from the durable good. But for non-durable goods that are consumed immediately, as in the vacation example above, there is no future consumption to offset the pain of paying interest. Hence people have a stronger preference for prepaying debt associated with non-durable goods compared with durable goods.

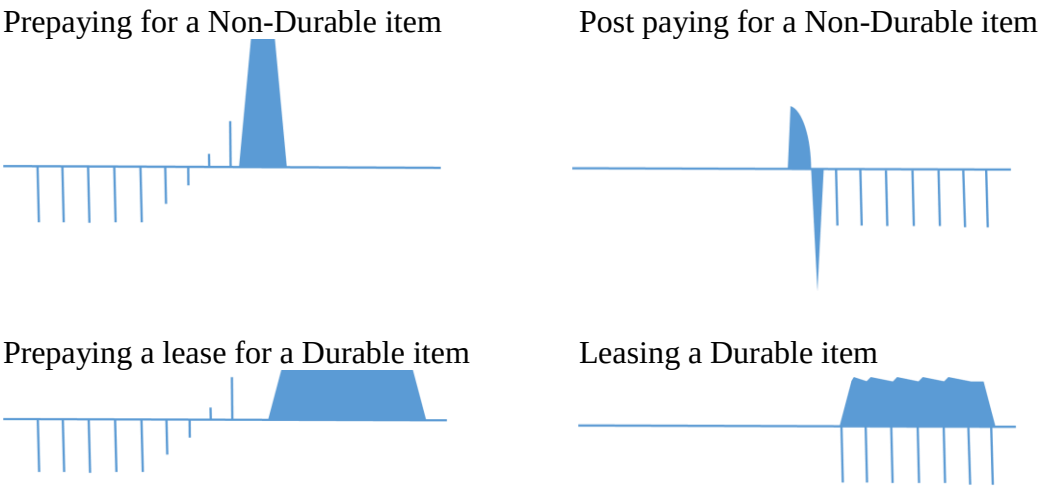

Figure 1. Impact of prepayment (left) or post-payment (right) on the hedonics of consumption and payment for a non-durable good (top) and a durable good (bottom). The shaded area is experienced utility of consumption and the bars are the experienced disutility of the payments as predicted by the Mental Accounting Model (Prelec and Loewenstein 1998). Redrawn from Prelec and Loewenstein (1998) Figure 4.

Figure 1 illustrates the interaction between the magnitude of hedonic benefits of prepayment and the durations of the utility flow. The top panels represent the utility flow obtained when prepaying (left) and post-paying or leasing (right) a non-durable item with high utility, such as the vacation. The bottom panel illustrates the equivalent utility flow for a durable item, such as a clothes dryer. The shaded area indicates the net utility derived from consumption after subtracting the disutility associated with the future payments. The vertical bars record the net disutility of payments after subtracting the utility related to future consumption.

When the payment schedule for the vacation is shifted into the future, there is a large hedonic fall at the very end of the vacation since there are only payments to look forward to. In contrast, there is little psychological cost to delaying the payments for the clothes dryer, as the dryer delivers sufficient residual utility over its lifetime. So, the mental account approach predicts a strong tendency to accelerate payment for items whose utility declines over time. Note that consumers may also prefer not to pay in advance for durable goods, so that they can maintain the ability to withhold payments for durable goods that later break down (Patrick and Park 2006).

Prelec and Loewenstein (1998) show, for instance, that although prepayment would greatly enhance the quality of a vacation experience, it would have a small or negligible influence on the hedonics obtained from the use of a clothes dryer. In one of their studies, they described two scenarios to 91 visitors to the Phipps Conservatory in Pittsburgh. In the first scenario, the visitors were asked to imagine they were planning a one-week vacation to the Caribbean, six months from now, that will cost $1,200. They could finance the vacation by either a six-monthly payment of $200 before the beginning of the vacation or a six-monthly payment of $200 after returning. About 60% of respondents chose the earlier payments. However, in the second scenario, when they were asked to imagine that they were planning to purchase a clothes washer and dryer that will cost $1,200 and that they could finance it by either six monthly payments of $200 before the machine arrives or by six monthly payments beginning after it arrives, 84% of visitors opted to postpone the payments.

In summary, to keep mental accounts in the black, people are prone to accelerate payments for items whose utility declines overt time (non-durables), but will be less motivated to do so with items whose utility persists over time (durables). Mental accounting may act at the time of repayment, encouraging people to repay debt on non-durable items when they receive their bill, or it may at the time of purchase, so that people avoid spending on non-durable items they cannot immediately afford because they anticipate the greater pain of repaying. Either way, the prediction is the same. People should be more likely to repay debt incurred on non-durable items. To test this prediction, we consider different spending and repayment patterns in which individuals might link their propensity to repay their credit card bill to the type of consumption that created the bill.

We begin by analysing repayment patterns in new credit card accounts that begin with no debt and incur spending of a single purchase type only – durable or non-durable – during the month. Using a classification proposed by Kuchler (2013), we categorize spending into durable and non-durable purchases from 25 underlying merchant categories of expenditure. Kuchler lists short-run consumables and other non-durable spending categories (see Kuchler, 2013, p. 46). We used this list to assign our merchant category codes to durable and non-durable categories. For example, `airlines' are classified

as non-durable and 'electric appliance stores' are classified as durable. We test the sensitivity of our results to re-classification of categories which might arguably contain both durable and non-durable items. In response to a reviewer's comments we also ran a consumer survey of 501 UK residents, measuring the durability of 152 goods and services from the 25 merchant categories. These ratings lead to a durable/non-durable classification that is very similar to Kuchler's.

We evaluate how the nature of the spending increases or decreases the likelihood of full repayment of the debt. Regression analysis shows that individuals who spend on non-durable goods are almost 9 percentage points more likely to pay the bill in full at the end of the month. Durable goods are often big ticket items, so we control for the size of the credit card balance using a fifth-order polynomial and also conduct separate regressions across samples by quartile of the balance amount. This result also holds when additional controls are added to the regression specification, including characteristics of the credit card account (including the Annualised Percentage Rate (APR) and credit limit) and controls for matched socio-economic characteristics of the postcode of the card holder obtained from census data. The postcode level control variables allow us to control, albeit imperfectly, for differences in socio-economic characteristics (e.g. incomes) which might determine credit card repayment behavior.

We then expanded our analysis to evaluate repayment behavior of accounts which show spending on both durables and non-durables within the month. Specifically, we quantify how the probability of full repayment is related to the proportion of total spending of each type within the month. Results show the same effect as in the single purchase type analysis, the coefficient estimates implying that a switch from the percentage of purchases in the non-durable category from 0% to 100% increases the likelihood of full repayment of the credit card bill by 15 percentage points. This result is again robust to the inclusion of controls for account balance amount, credit card account characteristics and socio-economic characteristics.

In subsequent analyses, we expand the data sample to include older credit card accounts and again conduct analysis of months of data in which accounts incur spending of a single purchase type and multiple purchase types. These samples provide multiple observations of spending and repayment undertaken by the same individual over time. With these data we are able to estimate models which include random and fixed effects. The inclusion of individual fixed effects allows us to control for individual-specific time-invariant unobserved heterogeneity, which might drive differences in repayment behaviors across individuals, such as differences in permanent incomes or Intelligence Quotient (IQ). These models allow us to control for unobserved heterogeneity across individuals, such as an underlying propensity to repay an account in full (which might correlate with the type of

spending). We find that our central result is robust to the inclusion of either random effects or individual fixed effects.

Unfortunately, conducting a field experiment on the question this paper addresses would be difficult if not impossible because we cannot experimentally assign debts accruing from spending on durable or non-durable goods to a sample of credit card holders in real world data. While Prelec and Lowenstein (1998) examined closely related questions by presenting experimental subjects with hypothetical scenarios, in real world data we are limited to observing natural occurring variation in spending over time, which has inevitable limitations. Specifically, it is difficult to definitely rule out potential confounds, such as individual differences which might lead to differences in repayment behavior. Our data do allow us to control for a rich set of time-varying credit card account characteristics, socio-economic characteristics and individual fixed effects. The inclusion of individual fixed effects allows us to allay a concern with models exploiting variation across individuals that some individuals might be inherently more likely to repay than others due to differences in time preferences and this might also explain their tendency to purchase durables instead of non-durables. Nevertheless, our data do not allow us to account for selection into credit card spending for durable and non-durable goods. For example, individuals may be more likely to put spending on non-durable goods they intend to repay straightaway onto their credit card than they are to put spending on durable goods they intend to repay straightaway.

3. Data and estimation strategy

3.1 Credit Card Data

Our data source is the Argus Information and Advisory Services' "Credit Card Payments Study" (CCPS). The Argus data contains detailed records of credit card transactions (including spending and repayments), contract terms (e.g. APR and credit limits) and billing records (including minimum payments due and billing dates). We have a subset of data from five large UK credit card issuers. Together these issuers have a market share of over 40%. We use a 10% representative sample of all individuals in the CCPS who held a credit card between January 2013 and December 2014 with at least one of the five issuers. This data sample provides approximately 1.8 million cards. The UK credit card market is similar to the US in many respects. Visa and Mastercard are the most dominant card networks. The most widely issued credit cards are the general purpose credit cards, which offer comparable features and fee structures and often include rewards programs, teaser rate deals and balance transfer facilities. Moreover, some UK card issuers are subsidiaries of US firms (e.g., Barclaycard, Capital One, etc).

3.2 Purchases of Durable and Non-Durables

The data include detailed records of card spending incurred each month in 25 merchant coded categories, such as 'restaurant / bars', 'food stores' and 'vehicles'. We classify each category as 'durable' or 'non-durable', closely following the classification used in Kuchler (2013). For example, 'airlines' and 'hotels services' are classified as non-durable; while purchases made in 'clothing stores' and 'electric appliance stores' are classified as durable. Table 1 provides a breakdown of the classification of the categories into the two spending types. Some spending categories might contain purchases of both durables and non-durables, such as the 'other retail' and 'discount stores' categories. In a subsequent analysis, we test the sensitivity of our results to re-classification of categories which might contain both durable and non-durable items and to a re-classification based upon consumer's judgments of durability.

3.3 Sample Selection

Our interest in this paper is in the relationship between types of credit card spending and subsequent repayment behavior. The unit of analysis is a month of data in which we observe the spending and repayment on an account. We therefore first restrict the sample to months in which (a) spending is incurred on the account in either the durable or non-durable types (or both), (b) the account has a balance due which is above the obligatory minimum repayment, (c) the account does not show a balance transfer to another credit card account.[1] After applying these sample restrictions, we focus our analysis on samples of the data in which the relationship between spending and repayment can be most cleanly analyzed. We used two main samples.

[1] Specifically, under restriction (a) we remove month observations in which the account holder makes no transactions, withdraws cash using his/her card, pays utility bills or undertakes a classification unclassified in the merchant code data. These transactions fall outside of the mental accounting framework we consider here. Under restriction (b) we also excluded all months with total purchase amount lower than £5 during the preceding month, as balances equal to or less than this quantity need to be repaid in full, due to the required minimum policy. Ignoring such transactions is not problematic if small, routine expenses, such as coffee or lunch, are habitually not booked, emulating the organizational practice of allocating small expenditures to a petty cash fund that is not under scrutiny (Thaler 1999). Under restriction (c) we also excluded months in which a balance transfer occurred on the account, as balance transfers reflect substitution of debts to other credit cards. We also excluded months in which repayments were made automatically by direct debit.

The first sample includes only the first month of data for new credit card accounts, in which all the spending is in either durable purchases or non-durable purchases. This is the cleanest sample for our analysis as the sample exhibits no prior history of spending or repayment behavior and accounts can be cleanly separated by spending type. We use a dummy variable to label observations as either durable-spend or non-durable-spend months. We call this sample the *Single-Purchase-Type Sample*, which provides 21,671 month observations.

The second sample also restricts data to only the first month for new credit card accounts, but includes months in which the account incurs durable and non-durable spends in addition to the single purchase type months (hence, this sample includes the first sample above). For this sample we calculate the share of spending on durable purchases and the share of spending on non-durable purchases (which together sum to 1). We term this the *Multiple-Purchase-Type Sample*, which includes 58,404 month observations. Summary data for spending incurred in the first and second samples are shown in Tables 1 and 2.

In additional analysis, we extend the sample to include all months, not just the first month. Hence, we construct Single-Purchase-Type and Multiple-Purchase-Type samples which include repeated observations from the same account. Theses samples include accounts for which we have records of between a single month to many years. This substantially increases the sample size, with 154,000 observations of single purchase type months and 130,000 observations of multiple purchase type months. However, this represents a less clean sample for analysis as these accounts have histories of spending and repayment that may decouple mental accounts on the part of the cardholder (i.e., people may no longer be able to remember what they spent the money on when they are repaying their bill). Summary data for spending incurred in these samples are shown in Tables A-1 and A-2 of Appendix A.

Apart from differing in the number of observations, the four samples we draw show some differences in the level and composition of spends. The monthly spend on the new accounts single purchase type sample is lower compared to the new accounts multiple purchase type sample (£660 vs £745), a difference also see in the sample of all accounts in Tables A-1 and A-2 (£320 vs £420). The non-durable spending category with the highest mean spend, travel agencies, is the same across single and multiple samples (for new and all accounts), while in the multiple purchase type sample mean spending on airlines is notably higher.[2] In each sample, spending on durables is broadly spread across

[2] This might be as expected if holiday purchases made via travel agents commonly occur in the same cycle as purchases of airline tickets to holiday destinations.

categories. As we show in Table 3, the socio-economic characteristics of card holders who contribute observations to each sample are very similar across samples.

Table 1. Descriptive statistics for purchase amounts for the first purchase for new accounts – Single-Purchase-Type Sample

Merchant Category	Frequency	Mean	SD	p25	p50	p75
Non-durables						
Airlines	601	£931.12	£1,119.47	£208.75	£547.06	£1,194.87
Auto Rental	258	£263.60	£411.43	£73.29	£140.69	£286.90
Hotel/Motel	754	£526.41	£895.42	£90.00	£220.14	£500.00
Restaurants/Bars	632	£233.44	£821.13	£24.65	£49.65	£95.40
Travel Agencies	1885	£1,450.72	£1,224.57	£511.91	£1,140.87	£2,040.00
Other Transportation	561	£485.63	£1,059.86	£40.90	£100.00	£322.77
Drug Stores	125	£63.73	£173.20	£15.75	£25.00	£51.57
Gas Stations	1331	£90.35	£245.46	£34.46	£51.00	£80.08
Mail Orders	465	£230.69	£419.24	£29.50	£71.80	£235.31
Food Stores	2450	£113.14	£295.09	£23.59	£54.32	£112.56
Other Retail	1897	£457.90	£1,052.26	£29.99	£79.99	£363.00
Recreation	771	£422.19	£771.18	£65.00	£150.00	£405.60
Subtotal	11730	£501.78	£957.17	£40.05	£102.27	£466.00
Durables						
Department Stores	485	£458.81	£921.34	£55.79	£142.82	£458.32
Discount Stores	294	£191.40	£243.60	£44.99	£119.98	£263.93
Clothing Stores	1433	£170.40	£317.94	£37.00	£71.98	£150.00
Hardware Stores	687	£1,017.68	£1,594.09	£72.06	£331.56	£1,230.90
Vehicles	1200	£2,080.72	£2,282.94	£299.98	£1,100.00	£3,184.50
Interior Furnishing Stores	783	£1,113.82	£1,528.05	£234.00	£575.00	£1,248.45
Electric Appliance Stores	1028	£660.03	£811.64	£196.49	£419.99	£855.75
Sporting Goods/Toy Stores	510	£471.72	£784.74	£56.00	£155.34	£499.46
Health Care	414	£1,237.53	£1,573.06	£150.00	£414.50	£2,000.00
Education	191	£1,283.57	£1,640.86	£168.00	£775.00	£1,700.00
Professional Services	1257	£672.93	£852.91	£179.04	£410.00	£825.30
Repair Shops	16	£1,019.63	£1,273.31	£97.05	£491.39	£1,388.14
Other Services	1643	£831.82	£1,485.23	£60.50	£222.50	£947.12
Subtotal	9941	£854.70	£1,435.33	£81.41	£290.64	£931.25
Single purchase total	21671	£663.67	£1,213.18	£50.99	£167.95	£687.76

Note. Single purchase total shows the monthly spending for the Single-Purchase-Type Sample of monthly observations belonging to new credit card accounts. SD=standard deviation. p25=25th percentile, p50=median, and p75=75th percentile.

Table 2. Descriptive statistics for purchase amounts for the first purchase for new accounts – Multiple-Purchase-Type Sample

	Frequency	Mean	SD	p25	p50	p75
Non-durables						
Airlines	2559	£1,176.40	£1,106.75	£412.81	£850.90	£1,571.49
Auto Rental	1138	£917.37	£1,082.72	£215.78	£540.18	£1,183.42
Hotel/Motel	5282	£959.71	£992.49	£311.00	£652.96	£1,257.84
Restaurants/Bars	12572	£796.63	£890.66	£237.12	£525.02	£1,025.39
Travel Agencies	4982	£1,445.37	£1,193.59	£563.55	£1,127.27	£1,973.36
Other Transportation	5888	£835.91	£960.92	£219.61	£523.17	£1,092.10
Drug Stores	4954	£834.38	£861.93	£275.70	£583.23	£1,084.79
Gas Stations	14894	£735.42	£853.47	£201.51	£470.37	£941.65
Mail Orders	3812	£807.45	£889.52	£218.38	£544.95	£1,066.45
Food Stores	23087	£668.35	£821.68	£166.94	£408.22	£849.35
Other Retail	16867	£806.69	£950.35	£216.22	£513.00	£1,030.25
Recreation	6394	£866.70	£910.35	£272.23	£591.46	£1,133.69
Subtotal	45304	£689.94	£930.20	£129.02	£365.98	£867.72
Durables						
Department Stores	6084	£919.96	£974.92	£295.14	£624.05	£1,170.77
Discount Stores	4052	£821.51	£841.83	£286.94	£581.33	£1,052.89
Clothing Stores	14563	£742.01	£822.92	£206.72	£485.90	£964.81
Hardware Stores	7124	£1,109.67	£1,197.62	£341.06	£743.07	£1,408.39
Vehicles	4700	£1,481.26	£1,642.09	£412.14	£887.19	£1,959.05
Interior Furnishing Stores	5656	£1,228.85	£1,275.01	£413.24	£825.02	£1,557.05
Electric Appliance Stores	5887	£1,031.85	£1,059.91	£354.99	£700.93	£1,344.82
Sporting Goods/Toy Stores	5611	£864.47	£881.34	£275.52	£594.87	£1,129.82
Health Care	2332	£1,101.77	£1,190.37	£325.59	£679.67	£1,425.71
Education	866	£1,102.37	£1,181.63	£344.00	£793.01	£1,404.02
Professional Services	5617	£1,049.22	£1,091.03	£355.20	£725.98	£1,352.74
Repair Shops	236	£1,125.72	£1,123.40	£349.27	£844.68	£1,449.76
Other Services	11158	£988.92	£1,161.31	£275.02	£633.79	£1,236.14
Subtotal	39685	£848.82	£1,117.68	£199.64	£477.17	£1,021.74
Multiple purchases total	58404	£735.09	£1,058.35	£122.85	£362.22	£893.76

Note. Multiple purchase total shows the monthly spending for the Multiple-Purchase-Type Sample of monthly observations belonging to new credit card accounts. Note that the Multiple-Purchase-Type Sample includes the Single-Purchase-Type Sample described in Table 1. As cardholders can

consume products in more than one category during the month, frequencies for each category do not add to the month observations displayed in the multiple purchases total. SD=standard deviation. p25=25th percentile, p50=median, and p75=75th percentile.

3.4 Census Data Socio-Economic Controls

The data include geocodes, allowing us to match in socio-economic controls from the UK National Census Records. The data is geocoded at the 4-digit UK postcode level.[3] We match the following variables: (a) the median house price within the locality based on self-reported evaluations of selling prices, (b) self-reported median net weekly income, (c) the proportion of households within the locality with children enrolled in education who receive free school meal vouchers. The final measure is commonly used in the UK as an indication of social insurance dependency. Due to some missing postcodes within the credit card dataset, in the Single-Purchase-Type Sample we can match 70% of months to census records (107,384 of 154,924 months); and in the Multiple-Purchase-Type Sample, 69% (194,214 of 282,997 months). The addition of these variables to the dataset allows us to partially control for differences in credit card repayment arising from differences in socio-economic characteristics.

3.5 Summary Statistics

Summary data for spending amounts in each of the 25 categories in the first month Single-Purchase-Type Sample are shown in Table 1. The sample comprises 21,671 observations. For non-durable spending the most common purchase category is 'food stores', for durable spending the most common purchase category is 'clothing stores'. Mean spending totals approximately £664 with median spending of £168. Table 2 shows the summary statistics for purchases in the Multiple-Purchase-Type Sample. Summary statistics for Single-Purchase-Type and Multiple-Purchase-Type samples including all accounts (not just new accounts) are shown in Tables A-1 and A-2 of Appendix A. Table 3 summarizes the socioeconomic variables for the four samples (New Accounts Single-Purchase-Type; New Accounts Multiple-Purchase-Type; All Accounts Single-Purchase-Type; All Accounts Multiple-Purchase-Type). The summary statistics are very similar across these samples.[4]

[3] There are approximately 3,000 UK 4-digit postcodes, which each contain on average 9,000 individual addresses, or 0.03% of all UK addresses.

[4] This suggests that our four samples are very similar in terms of average socioeconomic cardholder characteristics. However, we are only able to match socioeconomic variables based on postcode for 68% of the cardholders in the data.

Table 3. Descriptive statistics of cardholders' socioeconomic characteristics for the samples under study

	Number of Cardholders	Number of Accounts	Mean	SD	p25	p50	p75
New accounts							
Single-Purchase-Type Sample							
Median house price (£)	14,766	14,851	£203,261.50	£103,940.20	£133,622.90	£182,269.40	£241,094.10
Free school meals (%)	14,766	14,851	12.97%	7.01%	7.83%	11.57%	16.68%
Weekly Household Income (£)	14,766	14,851	£742.29	£155.42	£626.54	£719.58	£837.01
New accounts							
Multiple-Purchase-Type Sample							
Median house price (£)	38,010	38,481	£206,902.10	£105,695.60	£135,989.00	£185,029.90	£244,892.20
Free school meals (%)	38,010	38,481	12.77%	6.98%	7.65%	11.44%	16.52%
Weekly Household Income (£)	38,010	38,481	£749.99	£156.83	£631.34	£726.35	£847.48
All accounts							
Single-Purchase-Type Sample							
Median house price (£)	64,478	66,021	£204,339.10	£105,353.00	£135,034.20	£184,025.80	£241,339.10
Free school meals (%)	64,478	66,021	12.35%	6.72%	7.44%	11.01%	15.82%
Weekly Household Income (£)	64,478	66,021	£746.44	£155.47	£630.00	£721.99	£839.18
All accounts							
Multiple-Purchase-Type Sample							
Median house price (£)	104,643	108,050	£207,050.30	£107,419.00	£136,933.60	£185,437.60	£243,501.40
Free school meals (%)	104,643	108,050	12.34%	6.77%	7.39%	11.00%	15.84%
Weekly Household Income (£)	104,643	108,050	£750.68	£156.74	£631.78	£725.22	£846.84

Note. Socioeconomic data were obtained by matching cardholders' postcodes to the UK National Census Records. Data matched includes: the median house price within the locality based on self-reported evaluations of selling prices, self-reported median net weekly income, and the proportion of households within the locality with children enrolled in education who receive free school meal vouchers. Due to some missing postcodes within the credit card dataset, descriptive statistics in the table correspond to 68% of the total number of cardholders in the dataset whose month observations met the selection criteria imposed. SD=standard deviation. p25=25th percentile, p50=median, and p75=75th percentile.

4 Econometric Model

Our main interest lies in estimating whether the propensity of credit cardholders to repay a credit card bill incurred in a given month relates to the type of purchases made in that month.

We begin by estimating the following baseline model:

$$P(Repay_{i,t} = 1) = \alpha + \beta_1 Non\text{-}Durable_{i,t} + \beta_2 APR_{i,t} + \beta_3 Credit\ Limit_{i,t} + \beta_4 Tenure_{i,t} + \beta_5 Utilization_{i,t} + \psi X_{i,t} \quad (1)$$

where *Repay* is a 1/0 dummy variable which takes a value of 1 if at least 90% of the bill is repaid within the following month (the period in which payment of the bill becomes due). We used the 90% threshold to take into account the possibility of people paying the bill by rounding down to the nearest tenth or hundred and failing to pay the exact amount, though our analysis is robust to variations in this arbitrary choice. The variable *Non-Durable* describes the purchases made on the account. In estimates based on the Single-Purchase-Type Sample, this variable is a 1/0 dummy variable taking a value of 1 if the month contains non-durable purchases and a value of 0 for durable purchases. In the Multiple-Purchase-Type Sample, this variable is the proportion of purchases (as a proportion of the total monthly spend) on non-durables.

The additional variables in the model which act as control variables (all measured at the month level) are: the annualized percentage rate on card purchases (*APR*), the credit limit on the credit card account (*Credit Limit*), the age of the account in years (*Tenure*) and a measure of utilization (*Utilization*). Account utilization is measured as the ratio of the account balance (before repayment is made) over the credit limit. Hence a utilization value of 0.5 indicates a balance on the account at a value of half the credit limit.

The model also includes additional controls (captured by the vector X in Equation 1): calendar month fixed effects to control for seasonal differences in patterns of spending and repayment (for example, the months of November and December are more likely to include purchases of seasonal gifts). The vector also includes the socio-economic control variables, which are measured at the geocode level (which contains a cluster of account × months).

We also add to the model controls for the value of the credit card bill. These are important controls, as due to the lumpiness of durable purchases, accounts with durable purchases typically have higher total purchases than those with non-durable purchases and hence these accounts might naturally have a lower likelihood of being repaid in full. As a first approach, we control for the total purchase

amount, allowing for a flexible relationship between purchase amount and the probability of repayment using a fifth-order polynomial. As a second approach, we split the sample into quartiles of the total amount of durable purchases and estimate models on each quartile on observations separately, while continuing to include the fifth order polynomial of the total purchase amount as controls in the model.[5]

We estimate our main models as Linear Probability Models (LPMs). We also present estimates based upon Random Effects (RE) models and Fixed Effects (FE) models. These account for correlations among repeated measures of the same credit card account holder within the dataset.

5 Results

5.1 Single Purchase Type Sample

Results from our main model estimates of Equation 1 for the Single-Purchase-Type Sample are shown in Table 4. Column 1 shows estimates from a model which includes only a 1/0 dummy variable indicating whether purchases in the month were non-durable and a constant term. Hence the reference group is months of account data which contain durable purchases only. The coefficient on the non-durable purchase dummy is 0.197, 95% CI [0.184, 0.210], and indicates that people are almost an absolute 20 percentage points more likely to pay their bill in full when the bill comprises monies spent on non-durable purchases. Columns 2 and 3 add the controls for the fifth-order polynomial in purchase amount, calendar month fixed effects and card characteristics. As expected, with the addition of controls for the purchase amount in Column 2, the R-squared of the model increases substantially and the coefficient on the non-durable dummy variable reduces in absolute magnitude. The coefficient on the non-durable dummy is 0.0966, 95% CI [0.084, 0.106], and indicates that people are almost an absolute 10 percentage points more likely to pay their bill in full when the bill comprises monies spent on non-durable purchases.

[5] We split the sample by quartiles of the total value of durable purchases, instead of splitting the sample by the total value of all purchases, in order to avoid generating quartiles which contain account x month observations with nearly all observations of durable purchases only or non-durable purchases only.

Table 4. Estimated likelihood of repaying full balance, Single-Purchase-Type Sample for new accounts

	All observations			Sample split by quartiles of purchase amount			
VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS – Quartile 1 (£5.02 - £81.41)	(5) OLS – Quartile 2 (Q2: £81.42 - £290.64)	(6) OLS – Quartile 3 (Q3: £290.65 - £931.25)	(7) OLS – Quartile 4 (£931.26 - £17000)
Non-durable = 1	0.197***	0.0966***	0.0955***	0.0422***	0.139***	0.0992***	0.0372***
	(0.00667)	(0.00571)	(0.00564)	(0.00883)	(0.0131)	(0.0139)	(0.00918)
Merchant APR (%)			0.00615***	0.00326***	0.00730***	0.00837***	0.00893***
			(0.000343)	(0.000471)	(0.000791)	(0.000894)	(0.000750)
Credit limit (£1000)			0.00242*	-0.000805	0.00740**	0.00255	0.000143
			(0.00129)	(0.00195)	(0.00304)	(0.00371)	(0.00367)
Utilization (%)			-0.00152***	-0.00723***	-0.00176*	-0.00229***	-0.000782**
			(0.000217)	(0.00222)	(0.00102)	(0.000449)	(0.000352)
Account age (years)			0.126***	0.00449	0.162***	0.281***	0.298***
			(0.0123)	(0.0167)	(0.0289)	(0.0310)	(0.0263)
Amount purchase (£1000)		-1.036***	-0.919***	29.37**	9.604	-56.08*	-0.264***
		(0.0163)	(0.0197)	(13.21)	(61.99)	(29.39)	(0.0629)
Amount purchase (£1000)^2		0.459***	0.419***	-1,619*	-93.55	198.2*	0.0907***
		(0.0114)	(0.0118)	(843.0)	(755.9)	(107.8)	(0.0264)
Amount purchase (£1000)^3		-0.0821***	-0.0756***	38,230	291.3	-339.2*	-0.0136***
		(0.00273)	(0.00274)	(23,613)	(4,430)	(191.3)	(0.00468)
Amount purchase (£1000)^4		0.00619***	0.00571***	-421,664	-97.45	280.1*	0.000904**
		(0.000252)	(0.000251)	(298,838)	(12,515)	(164.5)	(0.000358)
Amount purchase (£1000)^5		-0.000162***	-0.000150***	1.752×10^6	-601.2	-89.57	-2.19×10^{-5}**
		(7.67×10^{-6})	(7.62×10^{-6})	(1.396×10^6)	(13,677)	(54.90)	(9.63×10^{-6})
Constant	0.421***	0.759***	0.681***	0.659***	0.264	6.413**	0.287***
	(0.00491)	(0.00557)	(0.0160)	(0.0744)	(1.951)	(3.093)	(0.0559)
Observations	21,671	21,671	21,671	7,676	5,317	4,223	4,455
Observations Non-durable = 1	11,730	11,730	11,730	5,191	2,832	1,737	1,970
R-squared	0.039	0.325	0.344	0.033	0.077	0.100	0.106
Month FEs	NO	NO	YES	YES	YES	YES	YES

Note. The sample is restricted to new accounts and includes months in which purchases were related to only one merchant code (there are 25 codes). All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise takes a value of zero. Models 4 to 7 split the sample in 4 quartiles based on purchase amount. For instance, all purchases included in Model 4 had a monthly balance higher than £5.02 and up to £81.41. Quartiles cut-off values were defined based on the value of durable purchases. Reference category: Durable goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

To gauge the quantitative importance of the coefficient estimates, Figure 2 plots the predicted probability of repayment from the model estimates in Table 4 (Column 3). The circles indicate the predicted probability and bars indicate 95% confidence intervals. In the top panel, the whole sample bars show that non-durable spending type months have a predicted probability of repayment of approximately 60%, compared with approximately 50% for accounts in the durable category. This 10-percentage-point difference is large in economic terms. A natural economic comparison is to the increase in APR which would generate an equivalent increase in the predicted probability of bill repayment. We make this comparison based on the estimated coefficient on the APR variable in the model, which allows us to make a correlational comparison.[6] Using the estimates from Column 3 of Table 4, a 15-percentage-point increase in APR would be needed to deliver the equivalent increase in likelihood of card repayment.

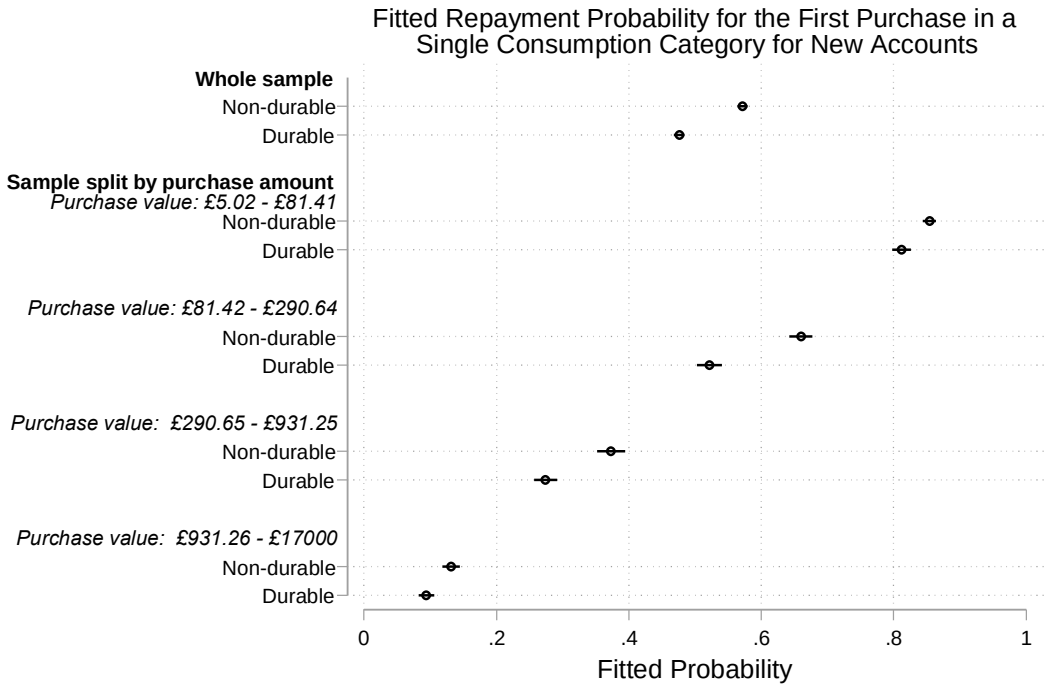

Figure 2. Fitted probabilities of full repayment based on linear probability models (see Table 4, columns 3 to 7), evaluated at the mean of the other covariates. Lines span 95% confidence intervals.

The lower part of Figure 2 breaks down the predictions by quartiles of purchase value. Coefficient estimates are shown in Columns 4–7 of Table 4. Across the quartiles, the predicted

[6] One caveat to this exercise is that in our data we do not have random variation in APR. For studies exploiting quasi-experimental variation in APR or random variation, see Gross and Souleles (2002), Bertrand et al. (2010), and Alan and Loranth (2013).

probability of repayment is higher for spends on non-durable goods, with the difference in predicted probability ranging from approximately 0.04 to 0.14.

Table B-1 in the Appendix shows results with the addition of socio-economic controls. The coefficients on the non-durable dummy variable are very similar to those in Table 4.

5.2 Multiple Purchase Type Sample

Table 5 shows results from the main model estimates of Equation 1 for the multiple purchase type sample. In these models the non-durable variable measures the proportion of the spend in the month that are of the non-durable type.

The coefficient for the non-durable variable is 0.239, 95% CI [0.229, 0.249], and implies that as the share of non-durable purchases increases from zero to 100%, people are almost exactly an absolute 24 percentage points more likely to pay their bill in full for non-durable purchases. As in the estimates in Table 3, with the inclusion of controls in Columns 2 and 3, the value of this coefficient falls in magnitude. The coefficient value of 0.149, 95% CI [0.140, 0.158], in Column 3, indicates that a switch in the proportion of the total monthly spending in the non-durable category from 0% to 100% increases the likelihood of full repayment by almost exactly 15 percentage points. Again, this is a large effect in economic terms. Using the coefficient estimates in Column 3, the effect of switching spending on non-durable purchases from 0% to 100% is equivalent to a 21-percentage-point increase in the card APR. Figure 3 shows the size of the difference of the predicted probability of repayments of durable and non-durable purchases.

The pattern of coefficient estimates on the control variables resembles that in Table 4. The likelihood of full repayment of the credit card bill is increasing with the APR and credit limit, but falling with account utilization.

Columns 4 to 7 of Table 5 present estimates by quartile sub-samples. As before, the coefficients on the non-durable variable are positive and precisely defined in each specification, with the coefficient values implying an increase in the likelihood of repayment of between 5 and 22 percentage points from a switch in the proportion of the spend in non-durable purchases from 0 to 1. Table B-2 in the Appendix presents estimates from the same set of models as Table 5 with the inclusion of socio-economic control variables. The pattern in the coefficient estimates is as before.

Table 5. Estimated likelihood of repaying full balance, Multiple-Purchase-Type Sample for new accounts

	All observations			Sample split by quartiles of purchase amount			
VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS – Quartile 1 (£5.02 - £81.41)	(5) OLS – Quartile 2 (Q2: £81.42 - £290.64)	(6) OLS – Quartile 3 (Q3: £290.65 - £931.25)	(7) OLS – Quartile 4 (£931.26 - £17000)
Non-durable (proportion)	0.239***	0.152***	0.149***	0.0454***	0.171***	0.219***	0.105***
	(0.00488)	(0.00448)	(0.00441)	(0.00820)	(0.00946)	(0.00883)	(0.00762)
Merchant APR (%)			0.00697***	0.00372***	0.00684***	0.00787***	0.00878***
			(0.000249)	(0.000411)	(0.000480)	(0.000520)	(0.000618)
Credit limit (£1000)			0.00745***	0.00128	0.0102***	0.0123***	0.00786***
			(0.000914)	(0.00173)	(0.00188)	(0.00185)	(0.00233)
Utilization (%)			-0.00199***	-0.00530***	-0.00163***	-0.00185***	-0.00136***
			(0.000140)	(0.00175)	(0.000538)	(0.000244)	(0.000245)
Account age (years)			0.143***	0.0150	0.139***	0.217***	0.259***
			(0.00976)	(0.0149)	(0.0195)	(0.0207)	(0.0231)
Amount purchase (£1000)		-0.855***	-0.696***	21.00*	68.64*	2.353	-0.183***
		(0.0111)	(0.0132)	(12.15)	(37.90)	(14.58)	(0.0495)
Amount purchase (£1000)^2		0.389***	0.325***	-1,076	-844.2*	-7.114	0.0500**
		(0.00820)	(0.00839)	(759.2)	(457.5)	(53.25)	(0.0221)
Amount purchase (£1000)^3		-0.0730***	-0.0613***	23,187	4,913*	7.491	-0.00645
		(0.00207)	(0.00208)	(20,873)	(2,656)	(94.05)	(0.00413)
Amount purchase (£1000)^4		0.00577***	0.00485***	-235,712	-13,768*	-2.133	0.000403
		(0.000201)	(0.000200)	(259,915)	(7,438)	(80.48)	(0.000330)
Amount purchase (£1000)^5		-0.000158***	-0.000133***	912,643	14,925*	-0.484	$-9.71\text{x}10^{-6}$
		$(6.36\text{x}10^{-6})$	$(6.31\text{x}10^{-6})$	$(1.197\text{x}10^{6})$	(8,063)	(26.76)	$(9.21\text{x}10^{-6})$
Constant	0.334***	0.682***	0.568***	0.691***	-1.638	0.00857	0.259***
	(0.00341)	(0.00446)	(0.0107)	(0.0694)	(1.205)	(1.541)	(0.0411)
Observations	58,404	58,404	58,404	10,585	15,185	18,672	13,962
R-squared	0.040	0.219	0.245	0.033	0.063	0.087	0.084
Month FEs	NO	NO	YES	YES	YES	YES	YES

Note. Table 5 replicates Table 4 specifications for the sample in which months with both consumption types are included in the sample. All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise takes a value of zero. Models 4 to 7 split the sample in 4 quartiles based on purchased amount. For instance, all purchases included in Model 4 had a monthly balance higher than £5.02 and up to £81.41. Quartiles cut-off values were defined based on the value of durable purchases. Reference category: Proportion of the total month spending on durable goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

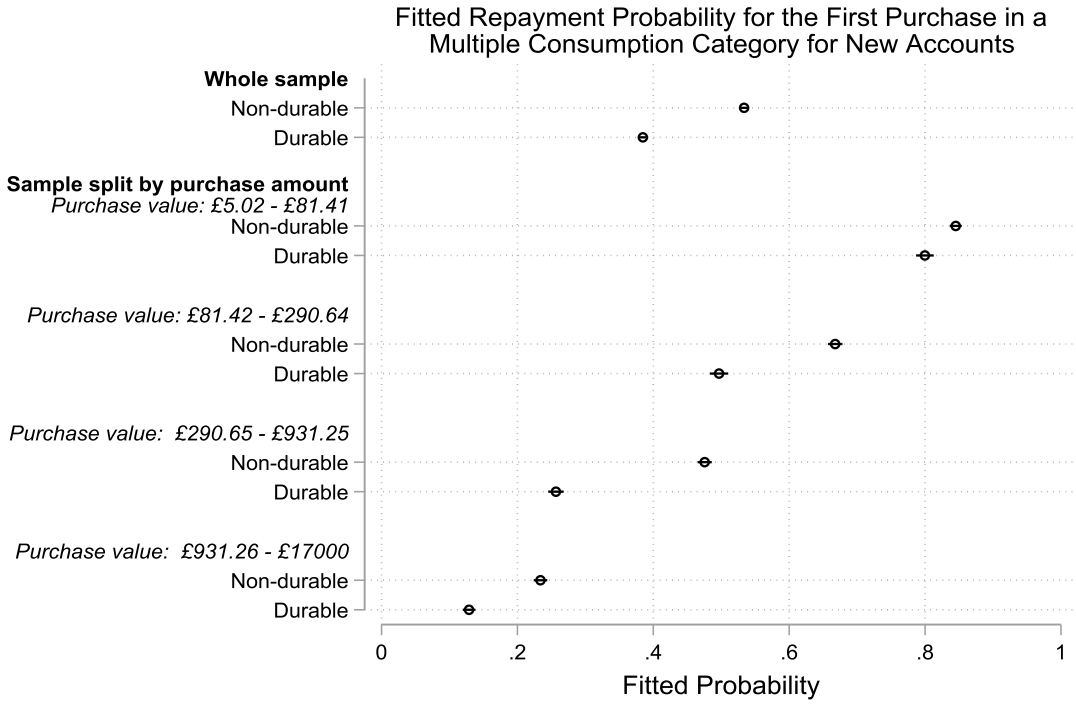

Figure 3. Fitted probabilities for full repayment based on linear probability models (see Table 5, columns 3 to 7), evaluated at the mean of the other covariates. Lines span 95% confidence intervals.

5.3 Alternative Classification of Purchase Categories

To test whether our results depend on the classification of purchases used, we perform two additional robustness tests. First, as discussed above, some purchase categories might contain both durable and non-durable items. Therefore, we re-estimate the main results re-classifying these items in to the opposite purchase type. Specifically, we flip the classification of the following categories: from non-durable to durable, other retail; and from durable to non-durable, professional services, other services, and discount stores. Appendix C replicates the main results (Tables C-3–C-4) for this alternative classification. Our findings remain consistent with the main results.

Second, although our sample does not contain business credit cards, it is possible that some card holders use a personal credit card for business expenses. Such expenditure is likely to be non-durable spending which are reimbursed by the card holder's employer and hence are likely to be repaid quickly. To control for this, we re-estimated the main models omitting the following categories which are those most likely to contain business expense: hotel / motel, travel agencies, airlines, other transportation.

Appendix D replicates the main results (Tables D1 – D6). Our findings remain consistent with the main results.

We also estimate models using the underlying merchant codes which are classified into durable and non-durable expenditure. Appendix E (Tables E1 – E4) shows the estimated marginal effects for each individual merchant code. The size of these effects can be observed in Figures 5 and 6. Figure 5 displays the probability of full repayment of each non-durable merchant code and, as a point of comparison at the bottom of the figure, the probability of full repayment over all *durable* expenditures. Figure 5 shows that every non-durable expenditure is more likely to be repaid in full than the average over all durable expenditures. Figure 6 displays the probability of full repayment of each durable merchant code and, as a point of comparison at the bottom of the figure, the probability of full repayment over all non-durable expenditures. Figure 6 shows that every durable expenditure is less likely to be repaid in full than the average over all non-durable expenditures. Hence our main result that individuals are less likely to pay down durable spending is not driven by only a few categories.

5.4 Using Durability Measures from a Consumer Survey

As an alternative approach to classifying items as durable and non-durable we undertook a consumer survey on the platform Prolific Academic in which 501 individuals recruited were asked to rate the durability of items on a 1-7 scale. We obtained from Argus the approximately 500 next-level-down items that feed into the 25 categories used in the analyses above, and asked survey respondents to rate the durability of these individual items. Several of the items received from Argus made reference to company names (for instance, for the merchant code "airlines" we have American Airlines, British Airways, Japan Airlines, etc.). There were 126 airlines companies, 80 hotels, and 24 auto rental companies. After aggregating such items, we ended up with 274 items to test. However, some of these items were exceptionally rare with purchase frequencies of less than 1 in 1000 in the National Accounts. After excluding these rare cases, we retained and tested 152 items. These 152 categories cover 95% of the weights used in the 2014 UK Consumer Price Inflation indices. We used the following question format:

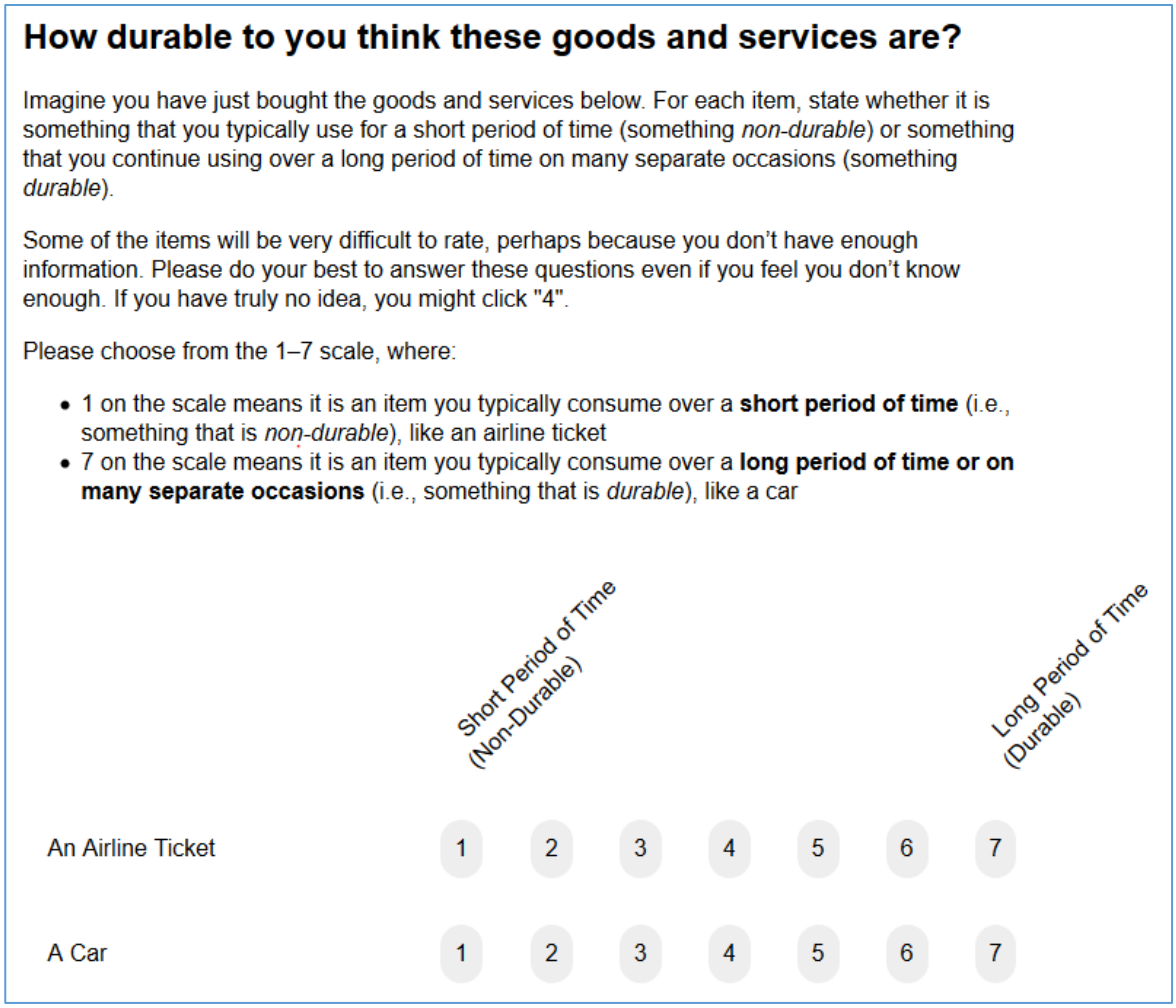

Figure 4. Question format used in the consumer survey for the classification of items in durables and non-durables.

We gave each of 501 respondents recruited from Prolific Academic (and restricted to UK nationals living in the UK) a list of these 152 of these 500 next-level-down spending categories (e.g., "An Airline Ticket") and had them evaluate the degree to which the item was a durable or non-durable. Some few people did not provide scores to some items in the survey because they were not required to evaluate all items if they did not want to. But 500 people replied at least 95% of the survey items.

From these responses we calculated weighted average durability scores for the 25 merchant categories, applying expenditure weights from the UK National Accounts and reclassified the 25 merchant categories as durable or non-durable items. Our survey design and steps in analysis were pre-registered, with details of the methods (https://aspredicted.org/f9iu4.pdf) and results shown in Appendix G.

The durable/non-durable classification from the consumer survey was very close to the original classification based on Kuchler (2013), with the exceptions being 'health care', 'professional services', 'other services', 'mail orders' and 'other retail'. To test the sensitivity of our results, we re-estimated the main models using durability scores from the survey responses. The regression tables in Appendix G are in keeping with our earlier analysis for both the single purchase type and multiple purchase samples.

5.5 Controlling for Characteristics of Other Cards

We also test whether our results are robust to controlling for balances due on other cards held by the individual at the same time. Drawing from the same universe of data, Gathergood et al. (2017) show that consumers tend adopt a repayment heuristic when making intra-temporal choices over allocating payments across cards due within the same month. Instead of paying down the highest interest rate debt first, as economic logic would predict, consumers tend to split the ratio of repayments across their cards in approximate proportion to the ratio of revolving balances, which Gathergood et al. (2017) describe as the application of a 'balance-matching heuristic'.

We draw the sub-sample of observations from our main sample in which individuals hold two or more cards concurrently within the same month with positive balances due.[7] The resulting sample differs from that used in Gathergood et al. (2017), who design their analysis to focus on partial repayment of revolving debts, restricting to cases where consumer face interest payments, in contrast to our focus on full repayment.[8] We first replicate our main models on this sample (without adding

[7] Our universe of data contains records from five UK credit card issuers. While these issuers comprise more than 40% of the UK market by number of cards, we cannot see all cards held by all individuals in our sample. Therefore, we necessarily restrict our sample by more than if we had data on all cards in the UK.

[8] Specifically, Gathergood et al. (2017) restrict their sample to observations where individuals, holding fixed total monthly repayments, have scope to reallocate payments across cards to minimize interest charges. They restrict the sample to months in which the individual i) carries revolving debt on all cards, ii) faces different interest rates on the cards, iii) pays at least the minimum balance due on all cards and iv) does not pay all their cards down in full. These restrictions allow the authors to analyse whether individuals are minimising their interest charges. In the current analysis we restrict to observations where the individual begins the month *not* revolving any debt (so that we can link

controls for additional cards), for completeness including socio-economic controls in the regression specification. Appendix F Table F1 shows that the coefficients on the non-durable variables are very similar to those obtained using the main samples.

In Tables F-2 to F5 we then expand the econometric specification by adding control variables drawing on characteristics of the other cards held. We first control for the number of cards held. In a series of additional models, we then control for the balance on other cards, the ratio of the balance of the first card to the total balance on all cards (to control for 'balance-matching' across cards), and additional specifications including dummy variables for whether the first card has the highest utilization among all cards, lowest utilization among all cards, highest balance among all cards and finally the lowest balance among all cards. We do not include all of these measures in a single specification are they are highly correlated.[9]

Results show that the coefficients on the non-durable variables are unchanged from those in the earlier models. The coefficients on the multiple-card variables are consistent with consumers being more likely to pay down the card with the highest balance. The coefficient on the ratio of balance on the first card to balances on all cards is positive and statistically significant at the 1% level, implying a higher balance on the current card increases the likelihood of full repayment. The coefficients on the other variables show that when the first card has the highest balance, or utilization (which correlate), the card is more likely to be repaid in full, and conversely when the first card has the lowest balance, or utilization, it is less likely to be repaid in full. From this analysis we conclude that repayment behavior appears to be driven by both inter-temporal mental accounting and also the application of intra-temporal heuristics.

spending and repayment). Hence the samples used in the current paper and those in Gathergood et al. (2017) are mutually exclusive.

[9] Gathergood et al. (2017) design analysis to distinguish which from a set of candidate repayment heuristics based on these variables best explain consumer repayment behavior across multiple cards. They use two approaches, one based upon goodness of fit criterion to determine which heuristic is closest on average to the observed allocation of payments across cards and a second based on determining which heuristic best fits on an observation-by-observation basis. Our econometric implementation of these heuristics as control variables in Appendix F, while delivering results in keeping with those from Gathergood et al. (2017), does not therefore exactly match the econometric techniques used in that paper.

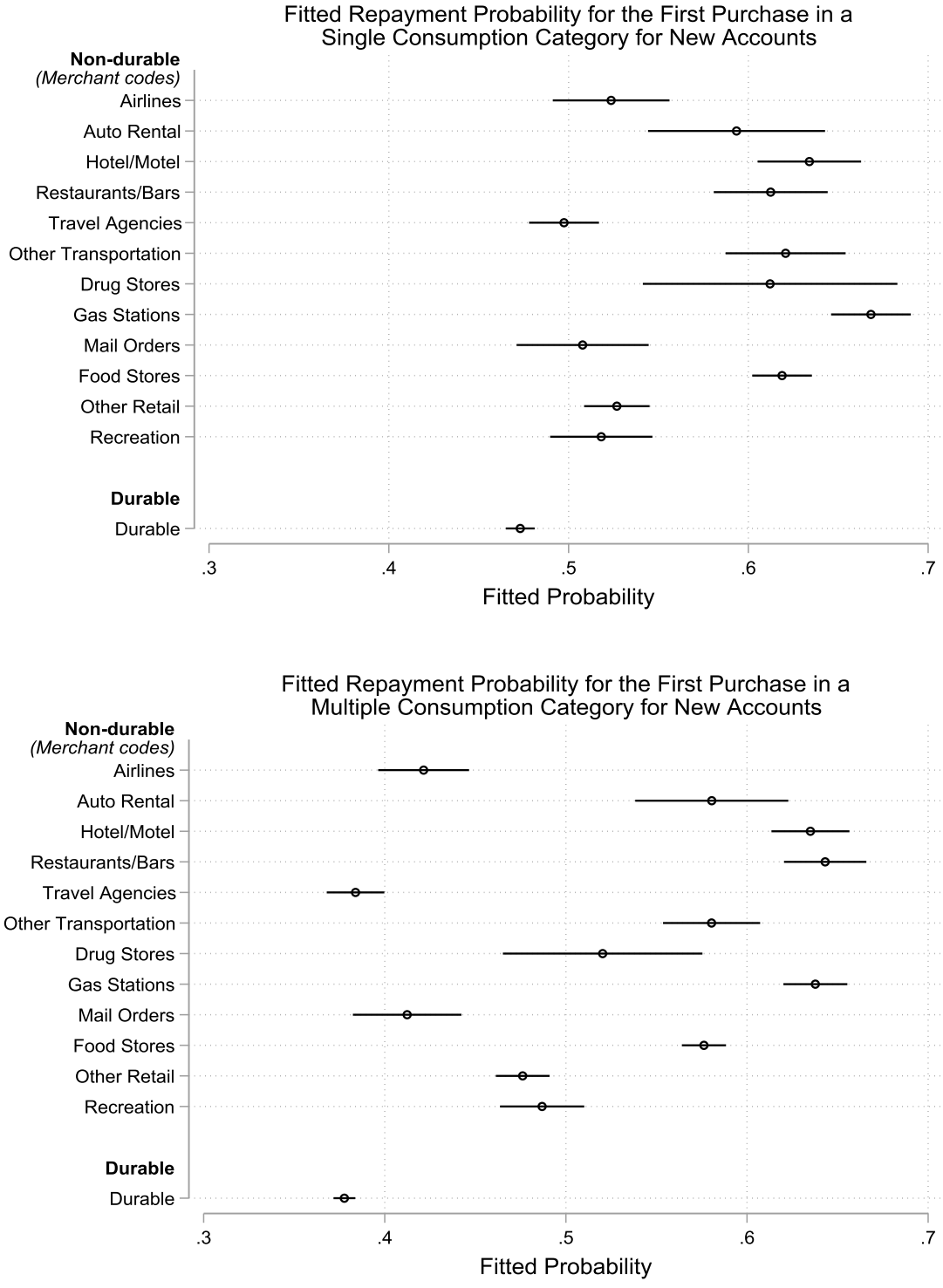

Figure 5. Fitted probabilities of full repayment based on linear probability models (see Tables E-1 and E-2, column 1), evaluated at the mean of the other covariates. Lines span 95% confidence intervals.

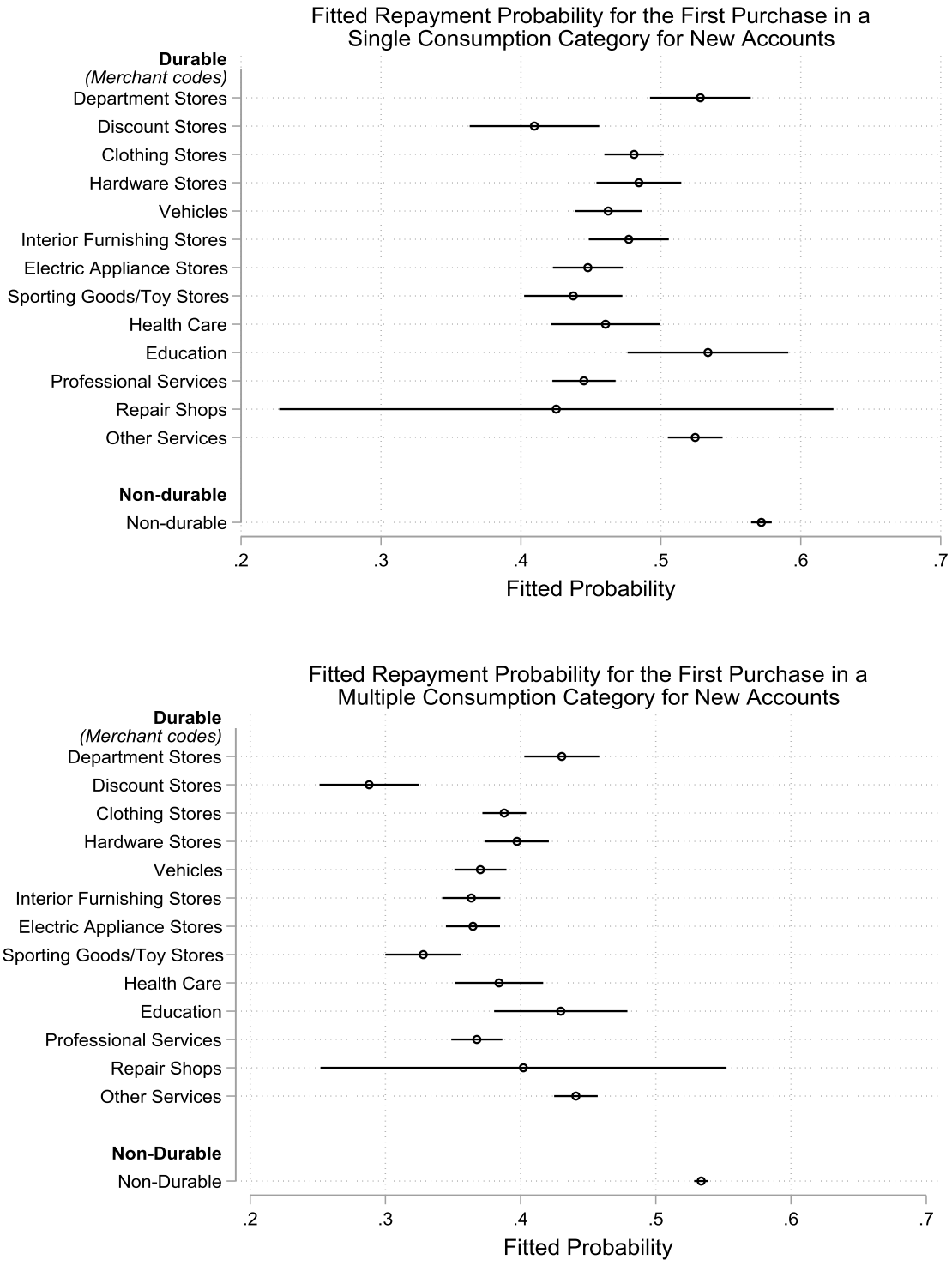

Figure 6. Fitted probabilities for full repayment based on linear probability models (see Tables E-3 and E-4, column 1), evaluated at the mean of the other covariates. Lines span 95% confidence intervals.

5.6 Older Accounts Samples

Next, we widened the sample to older accounts, incorporating months of data which include single and multiple purchase types. In these wider samples, we see multiple observations of the same account over different months. Therefore, we are able to estimate models with individual level random effects and fixed effects.

Table 6 shows results from a Single-Purchase-Type Sample of older accounts. We report specifications without controls (Column 1), with the inclusion of a fifth-order polynomial in purchase amount (Column 2) and with the inclusion of additional controls and month fixed effects (Column 3). Columns 4 – 6 repeat these three specifications with the addition of socio-economic controls. The sample size is smaller as these controls are available for only for 69% of the data. Columns 7 – 9 again repeat these specifications with the addition of individual fixed effects. The sample size reduces in these specifications as only accounts which contribute at least two months are retained in the account fixed effects models.

Results show that, consistently across all model estimates, the coefficient on the non-durable purchase type dummy is positive with a tight CI. Based upon the fullest specifications incorporating controls (Columns 3, 6 and 9), the coefficient on the non-durable dummy implies switching from durable to non-durable purchases raises the likelihood of repayment by between 0.7 – 3.0 percentage points, a smaller range of magnitude to that found in the earlier analysis of new accounts. The coefficient estimates on the covariates are keeping with those returned in previous models: the propensity to repay an account in full increases with APR and reduces with the credit limit and card utilization.

Table 7 reports results from the Multiple-Purchase-Type Sample. The sample is here again much larger due to the higher prevalence of accounts with purchase of more than one consumption type. Across all model estimates shown in Table 7, the coefficient on the proportion of the total monthly spending on purchases of the non-durable type is positive and precisely defined. Depending upon the model specification, the coefficient varies between 1.0–4.0 percentage points. Hence the propensity to repay accounts in full increases with non-durable purchases among older accounts even when conditioning for account random and fixed effects.

Table 6. Estimated likelihood of repaying full balance, Single-Purchase-Type Sample for all accounts

	RE			RE (+ socioeconomic controls)			FE		
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Non-durable = 1	0.0403***	0.0243***	0.0249***	0.0383***	0.0223***	0.0230***	0.0116***	0.00717***	0.00708***
	(0.00162)	(0.00159)	(0.00156)	(0.00194)	(0.00191)	(0.00188)	(0.00201)	(0.00201)	(0.00201)
Merchant APR (%)			0.0103***			0.00875***			0.00280***
			(0.000153)			(0.000187)			(0.000372)
Credit limit (£1000)			-0.00285***			-0.00255***			0.00643*
			(0.000379)			(0.000444)			(0.00357)
Utilization (%)			-0.00323***			-0.00334***			-0.000726***
			($9.49x10^{-5}$)			(0.000115)			(0.000156)
Account age (years)			0.00484***			0.00461***			-0.0111***
			(0.000137)			(0.000155)			(0.00171)
Amount purchase (£1000)		-0.357***	-0.211***		-0.348***	-0.208***		-0.145***	-0.120***
		(0.00543)	(0.00640)		(0.00646)	(0.00766)		(0.00742)	(0.00927)
Amount purchase $(£1000)^2$		0.110***	0.0817***		0.107***	0.0792***		0.0555***	0.0503***
		(0.00380)	(0.00378)		(0.00447)	(0.00447)		(0.00539)	(0.00552)
Amount purchase $(£1000)^3$		-0.0153***	-0.0123***		-0.0146***	-0.0115***		-0.00875***	-0.00816***
		(0.000853)	(0.000833)		(0.000984)	(0.000969)		(0.00124)	(0.00125)
Amount purchase $(£1000)^4$		0.000937***	0.000776***		0.000859***	0.000698***		0.000555***	0.000525***
		($7.15x10^{-5}$)	($6.96x10^{-5}$)		($8.10x10^{-5}$)	($7.94x10^{-5}$)		(0.000107)	(0.000107)
Amount purchase $(£1000)^5$		$-2.03x10^{-5}$***	$-1.71x10^{-5}$***		$-1.79x10^{-5}$***	$-1.48x10^{-5}$***		$-1.20x10^{-5}$***	$-1.15x10^{-5}$***
		($1.96x10^{-6}$)	($1.90x10^{-6}$)		($2.18x10^{-6}$)	($2.13x10^{-6}$)		($2.99x10^{-6}$)	($2.99x10^{-6}$)
Median house price (£)				$1.32x10^{-8}$	$7.37x10^{-9}$	$-1.04x10^{-9}$			
				($2.30x10^{-8}$)	($2.14x10^{-8}$)	($2.05x10^{-8}$)			
Free school meals (%)				-0.306***	-0.276***	-0.194***			
				(0.0268)	(0.0250)	(0.0240)			
Weekly Household Income (£)				$-2.44x10^{-5}$	$-8.17x10^{-6}$	$6.07x10^{-6}$			
				($1.77x10^{-5}$)	($1.65x10^{-5}$)	($1.58x10^{-5}$)			
Constant	0.782***	0.870***	0.694***	0.844***	0.914***	0.738***			
	(0.00154)	(0.00172)	(0.00402)	(0.0124)	(0.0116)	(0.0119)			
R-squared							0.001	0.014	0.016
Observations	154,924	154,924	154,924	107,384	107,384	107,384	93,957	93,957	93,957
Number of accounts	95,461	95,461	95,461	66,021	66,021	66,021	34,494	34,494	34,494
Month FEs	NO	NO	YES	NO	NO	YES	NO	NO	YES

Note. The sample includes all accounts and includes months in which expenses were related to only one merchant code (there are 25 codes). All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise

takes a value of zero. Models 1 to 6 are RE models, while Models 7 to 9 are FE models that control for unobserved account heterogeneity. Reference category: Durable goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table 7. Estimated likelihood of repaying full balance, Multiple-Purchase-Type Sample for all accounts

	RE			RE (+ socioeconomic controls)			FE		
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Non-durable (proportion)	0.0469***	0.0316***	0.0357***	0.0433***	0.0288***	0.0329***	0.0172***	0.0117***	0.0117***
	(0.00138)	(0.00137)	(0.00133)	(0.00165)	(0.00164)	(0.00160)	(0.00160)	(0.00159)	(0.00159)
Merchant APR (%)			0.0126***			0.0111***			0.00475***
			(0.000113)			(0.000137)			(0.000235)
Credit limit (£1000)			-0.00220***			-0.00236***			0.00957***
			(0.000335)			(0.000392)			(0.00236)
Utilization (%)			-0.00322***			-0.00328***			-0.000854***
			($6.69x10^{-5}$)			($8.18x10^{-5}$)			(0.000103)
Account age (years)			0.00659***			0.00628***			-0.00743***
			(0.000125)			(0.000140)			(0.00128)
Amount purchase (£1000)		-0.343***	-0.165***		-0.323***	-0.159***		-0.153***	-0.122***
		(0.00397)	(0.00459)		(0.00471)	(0.00550)		(0.00498)	(0.00613)
Amount purchase $(£1000)^2$		0.118***	0.0700***		0.107***	0.0647***		0.0630***	0.0560***
		(0.00292)	(0.00287)		(0.00341)	(0.00338)		(0.00380)	(0.00387)
Amount purchase $(£1000)^3$		-0.0181***	-0.0114***		-0.0159***	-0.0101***		-0.0109***	-0.0100***
		(0.000692)	(0.000669)		(0.000791)	(0.000772)		(0.000929)	(0.000933)
Amount purchase $(£1000)^4$		0.00121***	0.000780***		0.00102***	0.000658***		0.000763***	0.000708***
		($6.10x10^{-5}$)	($5.86x10^{-5}$)		($6.83x10^{-5}$)	($6.63x10^{-5}$)		($8.44x10^{-5}$)	($8.44x10^{-5}$)
Amount purchase $(£1000)^5$		$-2.83x10^{-5}$***	$-1.84x10^{-5}$***		$-2.31x10^{-5}$***	$-1.50x10^{-5}$***		$-1.81x10^{-5}$***	$-1.69x10^{-5}$***
		($1.73x10^{-6}$)	($1.66x10^{-6}$)		($1.91x10^{-6}$)	($1.84x10^{-6}$)		($2.48x10^{-6}$)	($2.48x10^{-6}$)
Median house price (£)				$8.53x10^{-8}$***	$7.40x10^{-8}$***	$5.10x10^{-8}$***			
				($1.96x10^{-8}$)	($1.83x10^{-8}$)	($1.71x10^{-8}$)			
Free school meals (%)				-0.365***	-0.356***	-0.228***			
				(0.0232)	(0.0216)	(0.0203)			
Weekly household income (£)				$-5.23x10^{-5}$***	$-1.95x10^{-5}$	$1.34x10^{-5}$			
				($1.52x10^{-5}$)	($1.42x10^{-5}$)	($1.33x10^{-5}$)			
Constant	0.699***	0.812***	0.606***	0.784***	0.865***	0.637***			
	(0.00133)	(0.00154)	(0.00316)	(0.0107)	(0.01000)	(0.00997)			
R-squared							0.001	0.017	0.021

	RE			RE (+ socioeconomic controls)			FE		
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Observations	282,997	282,997	282,997	194,214	194,214	194,214	184,673	184,673	184,673
Number of accounts	159,100	159,100	159,100	108,050	108,050	108,050	60,776	60,776	60,776
Month FEs	NO	NO	YES	NO	NO	YES	NO	NO	YES

Note. Table 7 replicates Table 6 specifications but months with multiple consumption categories or merchant codes are added to the sample (there are 25 codes). All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise takes a value of zero. Models 1 to 6 are RE models, while Models 7 to 9 are FE models that control for unobserved account heterogeneity. Reference category: Proportion of the total month spending on durable goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

6. Conclusions

Research on mental accounting has extensively probed violations of the commonly assumed fungibility of money and has convincingly argued that the labeling of mental budgets, the allocation of money and the sources of income can have an important influence on consumers' choices (Prelec and Loewenstein 1998; Thaler 1999). Much of the early evidence, however, came from studies using judgments of hypothetical spending and repayment scenarios and from non-representative samples of young adults.

Subsequent empirical investigations of mental accounting have shifted toward observational field studies (Kooreman 2000, Beatty et al. 2014, Milkman and Beshears 2009), as well as one experimental field study (Abeler and Marklein 2017). However, most of these studies have focused almost exclusively on the issue of labeling—that is, of whether earmarking payments for particular purposes affects the way they are spent, even when individuals would naturally spend more on the category of consumption than the amount of the earmarked payments.

In this paper, we use credit card data to test a specific prediction of a theory of mental accounting proposed by Prelec and Loewenstein (1989): whether debt incurred on consumables is more likely to be paid off more rapidly than debt incurred on durables. Analyzing data on credit card usage and repayment behavior provided by five UK credit card issuers, we provide strong support for this prediction of the theory. In a series of analyses that based on different subsets of the data including both new and older credit card accounts, and that incorporate different configurations of controls including random effects and individual fixed effects, we find that this effect of purchase type on the propensity to repay is strong and robust. Repayment of non-durable goods is an absolute 10% more likely than repayment of durable goods. The size strength of this relationship is comparable to an increment in 15 percentage points in the credit cards' APR—an economically large relationship. We hope these results will motivate a deeper investigation of the mental accounting implications on consumer choice.

Although our evidence provides support for the prediction it was intended to test, inevitably, there limitations to our analysis. One is that there was some arbitrariness in the division of spending categories used to catalogue the nature of consumption. We carefully chose our original classification based on the previous literature, and this was the first and only classification we have tested. After the initial analysis we conducted, and report here, we ran tests designed to assess the robustness of the estimated effects under alternative classification schemes. Unfortunately, however, we do not have data on the exact product or service purchased in an individual transaction. Furthermore, we were unable to filter the impact of other important determinants of repayment behavior, such as the sources of income or the locations of funds cardholders use for repayment, due to data constraints. These may be other dimensions of the credit card spending and repayment decisions in which mental accounting might be relevant. Our analysis, however,

attempts to reduce these concerns by controlling for differences in socioeconomic status, using proxies of income deprivation in the area surrounding the cardholder postcode, and by controlling for unobserved (time constant) heterogeneity among cardholders.

These results have diverse implications for managerial decision making. First, focusing specifically on credit cards, they point to potential new innovations that could give credit cards a strategic advantage. Repayment options currently are focusing on the amount to be repaid, with typical options being the minimum amount to avoid a penalty charge, the last statement balance, or the full current balance. The results just presented suggest, however, that credit card issuers could potentially attract customers by offering repayment options that permit repayment of specific purchases as opposed to amounts. This would increase the tightness of 'coupling' of purchases and payments, which, according to Prelec and Loewenstein's (1998) model, should increase the pain of paying for goods and services, but decrease the pain of paying off the credit card. Similar strategies could be employed for other financial instruments via, for example, the partitioning of spending and savings accounts (see Loewenstein et al. 2012). Second, and more generally, the notion of pain of paying, reinforced by these new findings, could have diverse implications for the delivery of incentives. In many situations, managers are interested in increasing the impact of incentives, e.g., for employees or customers, and in these situations the value of incentives could be enhanced by delivering them in the form of earmarked payments aimed at expenses that individuals find it painful to pay for. For example, although from an economic perspective, customers should be indifferent to whether a discount is applied to an overall purchase, or to some specific component of that purchase (e.g., the cost of the good itself, taxes, or shipping), customers may find some of these components more painful to pay for than others; and firms could benefit from framing a discount as being applied to those components. Likewise, special bonus rewards provided to employees for engaging in specific behaviors, such as engaging with a wellness program or achieving high rates of customer satisfaction, could again be targeted to paying off expenses that employees dislike paying for – e.g., dental insurance premiums, parking, or other commuting costs. As these examples suggest, managers have barely begun to take advantage of the diverse opportunities available for exploiting variability in the pain of paying, both across situations and people (see, Rick, Cryder and Loewenstein 2008).

In sum, our analysis provides a new, theoretically grounded data point in a growing body of empirical research documenting systematic violations of the predictions of standard consumer theory in ways predicted by theories of mental accounting.

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Appendix A - Descriptive statistics of purchase amounts for all accounts

Table A-1. Descriptive statistics of purchase amounts for all accounts – Single-Purchase-Type Sample

	Frequency	Mean	SD	p25	p50	p75
Non-durables						
Airlines	3310	£687.28	£896.29	£171.26	£376.17	£843.81
Auto Rental	1699	£232.90	£653.84	£65.95	£125.00	£248.81
Hotel/Motel	6428	£352.50	£604.42	£84.00	£175.88	£385.51
Restaurants/Bars	4588	£158.61	£546.68	£30.00	£59.28	£116.47
Travel Agencies	7509	£1,057.38	£1,138.03	£257.10	£680.22	£1,449.66
Other Transportation	3980	£314.42	£756.31	£34.90	£82.12	£250.00
Drug Stores	905	£54.92	£117.79	£16.00	£32.95	£59.99
Gas Stations	7570	£73.01	£207.80	£32.72	£49.31	£68.96
Mail Orders	13682	£110.09	£227.94	£23.00	£49.99	£121.31
Food Stores	14920	£88.22	£206.36	£24.00	£49.50	£96.61
Other Retail	17528	£180.00	£568.35	£19.46	£43.95	£118.38
Recreation	5774	£255.34	£513.93	£50.75	£109.61	£246.00
Subtotal	87893	£260.65	£627.71	£30.30	£68.83	£199.00
Durables						
Department Stores	3629	£239.77	£560.15	£39.99	£84.00	£228.95
Discount Stores	1704	£166.09	£218.47	£45.91	£101.41	£225.99
Clothing Stores	8939	£122.45	£217.56	£33.99	£61.19	£122.95
Hardware Stores	5022	£434.42	£1,048.35	£34.95	£89.99	£301.59
Vehicles	5894	£880.63	£1,569.33	£135.00	£285.00	£698.54
Interior Furnishing Stores	4493	£671.81	£998.71	£112.88	£330.00	£805.57
Electric Appliance Stores	6169	£384.74	£566.86	£59.99	£247.98	£460.76
Sporting Goods/Toy Stores	2886	£245.67	£797.44	£38.20	£79.99	£199.99
Health Care	3164	£441.70	£895.00	£66.88	£165.00	£347.10
Education	744	£715.45	£1,195.68	£61.28	£206.00	£866.00
Professional Services	12791	£311.76	£529.87	£68.88	£187.70	£346.47
Repair Shops	122	£314.43	£646.86	£34.67	£79.00	£299.00
Other Services	11474	£386.89	£972.88	£30.00	£89.84	£274.50
Subtotal	67031	£389.61	£871.30	£45.98	£132.00	£348.30
Single purchase total	154924	£316.45	£745.71	£36.00	£89.74	£265.75

Note. Single purchase total shows the monthly spending for the Single-Purchase-Type Sample of monthly observations belonging to all credit card accounts. SD=standard deviation. p25=25th percentile, p50=median, and p75=75th percentile.

Table A-2. Descriptive statistics of purchase amounts for all accounts – Multiple-Purchase-Type Sample

	Frequency	Mean	SD	p25	p50	p75
Non-durables						
Airlines	9140	£913.88	£994.19	£277.80	£580.07	£1,198.82
Auto Rental	5275	£627.96	£859.00	£149.16	£348.09	£771.60
Hotel/Motel	23202	£658.96	£807.45	£180.30	£397.79	£818.73
Restaurants/Bars	34714	£591.75	£777.08	£136.69	£338.51	£749.61
Travel Agencies	16807	£1,091.29	£1,111.30	£329.68	£737.39	£1,470.14
Other Transportation	18705	£607.33	£835.77	£122.93	£325.31	£748.73
Drug Stores	11347	£611.50	£761.65	£129.84	£359.88	£802.15
Gas Stations	38893	£512.97	£721.04	£90.89	£264.15	£643.15
Mail Orders	29807	£314.29	£567.46	£41.70	£119.88	£335.86
Food Stores	65526	£451.56	£679.03	£81.04	£219.79	£540.19
Other Retail	66961	£468.18	£751.61	£67.31	£213.30	£552.47
Recreation	21587	£584.19	£769.27	£132.00	£322.13	£735.25
Subtotal	201729	£416.22	£717.53	£60.00	£169.10	£455.08
Durables						
Department Stores	19045	£610.54	£823.67	£128.49	£329.46	£760.78
Discount Stores	9664	£586.99	£718.87	£144.99	£349.99	£749.97
Clothing Stores	43212	£495.36	£682.22	£98.37	£252.84	£609.98
Hardware Stores	21944	£699.69	£1,018.36	£118.86	£342.14	£848.62
Vehicles	16170	£895.12	£1,282.45	£206.01	£449.56	£1,000.00
Interior Furnishing Stores	16900	£859.11	£1,062.17	£210.54	£510.21	£1,089.32
Electric Appliance Stores	19460	£661.94	£876.12	£158.60	£388.00	£807.61
Sporting Goods/Toy Stores	14928	£600.04	£808.47	£127.46	£338.58	£760.22
Health Care	9508	£628.08	£907.03	£145.73	£318.37	£694.78
Education	2388	£781.05	£1,031.59	£152.49	£429.24	£1,019.88
Professional Services	28118	£559.69	£805.32	£131.45	£301.72	£648.93
Repair Shops	601	£733.74	£927.61	£140.65	£379.79	£965.40
Other Services	38198	£621.45	£956.66	£100.70	£294.24	£740.43
Subtotal	163269	£511.69	£845.92	£90.94	£241.08	£560.00
Multiple purchases total	282997	£418.52	£768.13	£58.17	£164.95	£437.83

Note. Multiple purchase total shows the monthly spending for the Multiple-Purchase-Type Sample of monthly observations belonging to all credit card accounts. Note that the Multiple-Purchase-Type Sample includes the Single-Purchase-Type Sample described in Table A-1. As cardholders can consume products in more than one category during the month, frequencies for each category do not add to the month observations displayed in the multiple purchases total. SD=standard deviation. p25=25th percentile, p50=median, and p75=75th percentile.

Appendix B - Regressions with additional controls

Table B-1. Estimated likelihood of repaying full balance, Single-Purchase-Type Sample for new accounts, additional controls

	All observations			Sample split by quartiles of purchase amount			
VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS – Quartile 1 (£5.02 - £81.41)	(5) OLS – Quartile 2 (Q2: £81.42 - £290.64)	(6) OLS – Quartile 3 (Q3: £290.65 - £931.25)	(7) OLS – Quartile 4 (£931.26 - £17000)
Non-durable = 1	0.193***	0.0920***	0.0909***	0.0386***	0.135***	0.0864***	0.0450***
	(0.00801)	(0.00690)	(0.00682)	(0.0100)	(0.0157)	(0.0176)	(0.0125)
Merchant APR (%)			0.00547***	0.00290***	0.00680***	0.00799***	0.00838***
			(0.000386)	(0.000521)	(0.000887)	(0.00103)	(0.000886)
Credit limit (£1000)			0.00150	0.000252	0.00363	0.000941	-0.00955*
			(0.00151)	(0.00223)	(0.00352)	(0.00456)	(0.00490)
Utilization (%)			-0.00192***	-0.00868***	-0.00244**	-0.00272***	-0.00181***
			(0.000271)	(0.00260)	(0.00119)	(0.000565)	(0.000486)
Account age (years)			0.116***	-0.00467	0.159***	0.262***	0.277***
			(0.0147)	(0.0190)	(0.0342)	(0.0384)	(0.0337)
Amount purchase (£1000)		-1.046***	-0.916***	17.21	5.127	-73.35**	-0.221**
		(0.0211)	(0.0252)	(14.80)	(74.59)	(37.36)	(0.0944)
Amount purchase (£1000)^2		0.475***	0.432***	-942.3	-30.40	266.0*	0.0767*
		(0.0157)	(0.0161)	(950.7)	(910.1)	(137.4)	(0.0412)
Amount purchase (£1000)^3		-0.0884***	-0.0812***	22,639	-147.7	-466.7*	-0.0110
		(0.00393)	(0.00395)	(26,754)	(5,337)	(244.3)	(0.00764)
Amount purchase (£1000)^4		0.00700***	0.00645***	-261,099	1,342	395.7*	0.000711
		(0.000381)	(0.000380)	(339,801)	(15,086)	(210.6)	(0.000612)
Amount purchase (£1000)^5		-0.000194***	-0.000179***	1.148×10^6	-2,353	-130.0*	-1.72×10^{-5}
		(1.22×10^{-5})	(1.22×10^{-5})	(1.592×10^6)	(16,496)	(70.50)	(1.73×10^{-5})
Median house price (£)	1.30×10^{-7}**	3.31×10^{-8}	2.76×10^{-8}	-1.44×10^{-7}*	4.61×10^{-8}	1.55×10^{-7}	2.33×10^{-7}**
	(6.55×10^{-8})	(5.52×10^{-8})	(5.46×10^{-8})	(7.79×10^{-8})	(1.20×10^{-7})	(1.41×10^{-7})	(1.07×10^{-7})
Free school meals (proportion)	-0.297***	-0.290***	-0.274***	-0.243***	-0.228*	-0.395***	-0.266**
	(0.0702)	(0.0592)	(0.0587)	(0.0826)	(0.136)	(0.152)	(0.108)
Weekly Household Income (£)	-7.71×10^{-5}	-1.86×10^{-5}	-1.01×10^{-5}	8.67×10^{-6}	5.13×10^{-5}	-4.55×10^{-5}	-0.000123
	(4.98×10^{-5})	(4.20×10^{-5})	(4.15×10^{-5})	(5.87×10^{-5})	(9.48×10^{-5})	(0.000107)	(7.91×10^{-5})
Constant	0.530***	0.826***	0.763***	0.781***	0.463	8.219**	0.430***
	(0.0342)	(0.0291)	(0.0340)	(0.0919)	(2.347)	(3.926)	(0.0976)
Observations	14,851	14,851	14,851	5,677	3,662	2,777	2,735
Observations Non-durable = 1	8,029	8,029	8,029	3,817	1,906	1,115	1,191
R-squared	0.039	0.317	0.335	0.031	0.080	0.101	0.111
Month FEs	NO	NO	YES	YES	YES	YES	YES

Note. Table B-1 replicates Table 4 specifications with the addition of socioeconomic controls: Median house price, proportion of students on free school meals and weekly household income. The sample is restricted to new accounts and includes months in which expenses were related to only

one spending type. All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise takes a value of zero. Models 4 to 7 split the sample in 4 quartiles based on purchase amount. For instance, all purchases included in Model 4 had a monthly balance higher than £5.02 and up to £81.41. Quartiles cut-off values were defined based on the value of durable purchases. Reference category: Durable goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table B-2. Estimated likelihood of repaying full balance, Multiple-Purchase-Type Sample for new accounts, additional controls

	All observations			Sample split by quartiles of purchase amount			
VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS – Quartile 1 (£5.02 - £81.41)	(5) OLS – Quartile 2 (Q2: £81.42 - £290.64)	(6) OLS – Quartile 3 (Q3: £290.65 - £931.25)	(7) OLS – Quartile 4 (£931.26 - £17000)
Non-durable (proportion)	0.234***	0.144***	0.142***	0.0413***	0.158***	0.209***	0.119***
	(0.00598)	(0.00546)	(0.00539)	(0.00932)	(0.0113)	(0.0112)	(0.00996)
Merchant APR (%)			0.00613***	0.00334***	0.00576***	0.00722***	0.00816***
			(0.000278)	(0.000455)	(0.000533)	(0.000584)	(0.000694)
Credit limit (£1000)			0.00582***	0.00254	0.00801***	0.0105***	0.00413
			(0.00109)	(0.00198)	(0.00222)	(0.00229)	(0.00297)
Utilization (%)			-0.00202***	-0.00544***	-0.00126*	-0.00188***	-0.00157***
			(0.000175)	(0.00206)	(0.000657)	(0.000310)	(0.000321)
Account age (years)			0.146***	0.00657	0.148***	0.239***	0.270***
			(0.0115)	(0.0169)	(0.0228)	(0.0248)	(0.0287)
Amount purchase (£1000)		-0.885***	-0.726***	11.02	85.40*	-5.885	-0.183***
		(0.0143)	(0.0169)	(13.60)	(45.01)	(18.56)	(0.0702)
Amount purchase (£1000)^2		0.412***	0.347***	-561.1	-1,051*	24.16	0.0521
		(0.0110)	(0.0113)	(854.6)	(544.3)	(67.89)	(0.0323)
Amount purchase (£1000)^3		-0.0801***	-0.0680***	12,078	6,110*	-48.83	-0.00702
		(0.00289)	(0.00290)	(23,594)	(3,165)	(120.1)	(0.00625)
Amount purchase (£1000)^4		0.00662***	0.00563***	-127,313	-17,052*	46.25	0.000464
		(0.000292)	(0.000291)	(294,754)	(8,875)	(102.9)	(0.000519)
Amount purchase (£1000)^5		-0.000190***	-0.000162***	519,083	18,397*	-16.47	$-1.21\text{x}10^{-5}$
		$(9.69\text{x}10^{-6})$	$(9.63\text{x}10^{-6})$	$(1.361\text{x}10^{6})$	(9,633)	(34.27)	$(1.51\text{x}10^{-5})$
Median house price (£)	$1.85\text{x}10^{-7}$***	$1.19\text{x}10^{-7}$***	$1.06\text{x}10^{-7}$***	$-8.48\text{x}10^{-8}$	$1.99\text{x}10^{-7}$***	$1.21\text{x}10^{-7}$*	$1.25\text{x}10^{-7}$*
	$(3.95\text{x}10^{-8})$	$(3.55\text{x}10^{-8})$	$(3.50\text{x}10^{-8})$	$(6.94\text{x}10^{-8})$	$(7.34\text{x}10^{-8})$	$(6.29\text{x}10^{-8})$	$(6.82\text{x}10^{-8})$
Free school meals (proportion)	-0.239***	-0.331***	-0.298***	-0.229***	-0.320***	-0.244***	-0.434***
	(0.0440)	(0.0395)	(0.0391)	(0.0713)	(0.0802)	(0.0765)	(0.0747)
Weekly Household Income (£)	$-4.34\text{x}10^{-5}$	$3.85\text{x}10^{-5}$	$3.91\text{x}10^{-5}$	$-2.29\text{x}10^{-5}$	$-9.16\text{x}10^{-6}$	0.000115**	$5.08\text{x}10^{-5}$
	$(3.03\text{x}10^{-5})$	$(2.72\text{x}10^{-5})$	$(2.68\text{x}10^{-5})$	$(5.15\text{x}10^{-5})$	$(5.67\text{x}10^{-5})$	$(5.02\text{x}10^{-5})$	$(5.05\text{x}10^{-5})$
Constant	0.397***	0.703***	0.592***	0.809***	-2.099	0.791	0.277***
	(0.0212)	(0.0194)	(0.0226)	(0.0842)	(1.429)	(1.959)	(0.0663)
Observations	38,481	38,481	38,481	7,854	10,440	11,741	8,446
R-squared	0.041	0.227	0.250	0.030	0.062	0.094	0.102
Month FEs	NO	NO	YES	YES	YES	YES	YES

Note. Table B-2 replicates Table 5 specifications but including socioeconomic controls: Median house price, proportion of students on free school meals and weekly household income. The sample is restricted to new accounts and includes months in which expenses were related to one or more purchase types. All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater

than .9 and otherwise takes a value of zero. Models 4 to 7 split the sample in 4 quartiles based on purchased amount. For instance, all purchases included in Model 4 had a monthly balance higher than £5.02 and up to £81.41. Quartiles cut-off values were defined based on the value of durable purchases. Reference category: Proportion of the total month spending on durable goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Appendix C - Reclassification of consumption categories

Table C-1. Estimated likelihood of repaying full balance, Single-Purchase-Type Sample for new accounts

	All observations			Sample split by quartiles of purchase amount			
VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS – Quartile 1 (£5.02 - £59.93)	(5) OLS – Quartile 2 (Q2: £59.94 - £229.00)	(6) OLS – Quartile 3 (Q3: £229.01 - £884.40)	(7) OLS – Quartile 4 (£884.41 - £17000)
Non-durable = 1	0.122***	0.0704***	0.0722***	0.0229**	0.109***	0.0962***	0.0353***
	(0.00688)	(0.00574)	(0.00568)	(0.00919)	(0.0125)	(0.0130)	(0.00906)
Merchant APR (%)			0.00622***	0.00297***	0.00646***	0.00882***	0.00862***
			(0.000344)	(0.000500)	(0.000715)	(0.000834)	(0.000744)
Credit limit (£1000)			0.00257**	-0.00110	0.00538*	0.00416	-0.000140
			(0.00129)	(0.00213)	(0.00279)	(0.00336)	(0.00361)
Utilization (%)			-0.00156***	-0.00883***	-0.00279**	-0.00230***	-0.000824**
			(0.000218)	(0.00311)	(0.00117)	(0.000445)	(0.000344)
Account age (years)			0.127***	0.00511	0.0969***	0.282***	0.304***
			(0.0124)	(0.0177)	(0.0257)	(0.0296)	(0.0259)
Amount purchase (£1000)		-1.070***	-0.950***	27.76	-81.11	-20.15	-0.246***
		(0.0161)	(0.0196)	(25.66)	(56.63)	(16.31)	(0.0602)
Amount purchase (£1000)^2		0.479***	0.439***	-1,620	1,228	73.34	0.0851***
		(0.0114)	(0.0117)	(2,081)	(906.7)	(67.72)	(0.0256)
Amount purchase (£1000)^3		-0.0864***	-0.0797***	43,749	-9,084	-131.0	-0.0128***
		(0.00272)	(0.00273)	(75,445)	(6,935)	(134.4)	(0.00458)
Amount purchase (£1000)^4		0.00655***	0.00606***	-606,983	32,210	113.1	0.000862**
		(0.000251)	(0.000250)	(1.251×10^6)	(25,434)	(128.0)	(0.000352)
Amount purchase (£1000)^5		-0.000173***	-0.000160***	3.467×10^6	-43,884	-37.88	-2.10×10^{-5}**
		(7.66×10^{-6})	(7.62×10^{-6})	(7.715×10^6)	(35,931)	(46.99)	(9.53×10^{-6})
Constant	0.455***	0.776***	0.696***	0.685***	2.728**	2.417	0.300***
	(0.00533)	(0.00559)	(0.0160)	(0.113)	(1.348)	(1.500)	(0.0529)
Observations	21,671	21,671	21,671	6,151	5,922	4,961	4,637
Observations Non-durable = 1	13,027	13,027	13,027	3,991	3,758	2,802	2,476
R-squared	0.014	0.321	0.340	0.022	0.065	0.105	0.104
Month FEs	NO	NO	YES	YES	YES	YES	YES

Note. The sample is restricted to new accounts and includes months in which expenses were related to only one purchase type. All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise takes a value of zero. Models 4 to 7 split the sample in 4 quartiles based on purchase amount. For instance, all purchases included in Model 4 had a monthly balance higher than £5.02 and up to £59.93. Quartiles cut-off values were defined based on the value of durable purchases. Reference category: durable

goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table C-2. Estimated likelihood of repaying full balance, Single-Purchase-Type Sample for new accounts, additional controls

	All observations			Sample split by quartiles of purchase amount			
VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS – Quartile 1 (£5.02 - £59.93)	(5) OLS – Quartile 2 (Q2: £59.94 - £229.00)	(6) OLS – Quartile 3 (Q3: £229.01 - £884.40)	(7) OLS – Quartile 4 (£884.41 - £17000)
Non-durable = 1	0.110***	0.0643***	0.0660***	0.0183*	0.105***	0.0798***	0.0377***
	(0.00826)	(0.00693)	(0.00686)	(0.0104)	(0.0146)	(0.0163)	(0.0123)
Merchant APR (%)			0.00556***	0.00274***	0.00582***	0.00854***	0.00799***
			(0.000387)	(0.000554)	(0.000800)	(0.000960)	(0.000876)
Credit limit (£1000)			0.00170	-0.000404	0.00305	0.00284	-0.00876*
			(0.00152)	(0.00244)	(0.00319)	(0.00410)	(0.00481)
Utilization (%)			-0.00196***	-0.0118***	-0.00306**	-0.00268***	-0.00179***
			(0.000272)	(0.00363)	(0.00136)	(0.000551)	(0.000478)
Account age (years)			0.115***	-0.00729	0.0960***	0.266***	0.285***
			(0.0147)	(0.0202)	(0.0301)	(0.0365)	(0.0331)
Amount purchase (£1000)		-1.085***	-0.951***	30.86	-107.4	-15.11	-0.185**
		(0.0209)	(0.0251)	(28.70)	(66.75)	(20.58)	(0.0904)
Amount purchase (£1000)^2		0.499***	0.455***	-2,203	1,701	52.34	0.0637
		(0.0156)	(0.0160)	(2,338)	(1,071)	(85.61)	(0.0399)
Amount purchase (£1000)^3		-0.0938***	-0.0864***	73,411	-13,019	-88.57	-0.00903
		(0.00392)	(0.00393)	(85,075)	(8,204)	(170.3)	(0.00746)
Amount purchase (£1000)^4		0.00747***	0.00690***	$-1.175x10^6$	47,506	71.85	0.000585
		(0.000380)	(0.000379)	($1.414x10^6$)	(30,138)	(162.5)	(0.000601)
Amount purchase (£1000)^5		-0.000208***	-0.000193***	$7.172x10^6$	-66,317	-22.40	$-1.43x10^{-5}$
		($1.22x10^{-5}$)	($1.21x10^{-5}$)	($8.744x10^6$)	(42,646)	(59.75)	($1.71x10^{-5}$)
Median house price (£)	$1.22x10^{-7}$*	$2.83x10^{-8}$	$2.34x10^{-8}$	$-1.30x10^{-7}$	$-1.83x10^{-8}$	$1.45x10^{-7}$	$2.26x10^{-7}$**
	($6.64x10^{-8}$)	($5.54x10^{-8}$)	($5.47x10^{-8}$)	($8.08x10^{-8}$)	($1.16x10^{-7}$)	($1.28x10^{-7}$)	($1.07x10^{-7}$)
Free school meals (proportion)	-0.296***	-0.290***	-0.273***	-0.330***	-0.145	-0.339**	-0.294***
	(0.0711)	(0.0594)	(0.0588)	(0.0885)	(0.123)	(0.142)	(0.107)
Weekly Household Income (£)	$-6.46x10^{-5}$	$-1.33x10^{-5}$	$-5.32x10^{-6}$	$-4.09x10^{-5}$	0.000121	$-4.37x10^{-5}$	-0.000134*
	($5.05x10^{-5}$)	($4.21x10^{-5}$)	($4.16x10^{-5}$)	($6.18x10^{-5}$)	($8.70x10^{-5}$)	(0.000100)	($7.85x10^{-5}$)
Constant	0.561***	0.842***	0.775***	0.794***	3.257**	2.059	0.462***
	(0.0347)	(0.0292)	(0.0341)	(0.133)	(1.587)	(1.889)	(0.0928)
Observations	14,851	14,851	14,851	4,581	4,150	3,284	2,836
Observations Non-durable = 1	8,934	8,934	8,934	2,950	2,605	1,854	1,525
R-squared	0.014	0.313	0.331	0.023	0.069	0.104	0.108
Month FEs	NO	NO	YES	YES	YES	YES	YES

Note. Table C-2 replicates Table C-1 specifications with the addition of socioeconomic controls: Median house price, proportion of students on free school meals and weekly household income. The sample is restricted to new accounts and includes months in which expenses were related to only one purchase type. All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is

greater than .9 and otherwise takes a value of zero. Models 4 to 7 split the sample in 4 quartiles based on purchase amount. For instance, all purchases included in Model 4 had a monthly balance higher than £5.02 and up to £59.93. Quartiles cut-off values were defined based on the value of durable purchases. Reference category: Durable goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table C-3. Estimated likelihood of repaying full balance, Multiple-Purchase-Type Sample for new accounts

	All observations			Sample split by quartiles of purchase amount			
VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS – Quartile 1 (£5.02 - £59.93)	(5) OLS – Quartile 2 (Q2: £59.94 - £229.00)	(6) OLS – Quartile 3 (Q3: £229.01 - £884.40)	(7) OLS – Quartile 4 (£884.41 - £17000)
Non-durable (proportion)	0.162***	0.112***	0.112***	0.0183**	0.126***	0.174***	0.0726***
	(0.00504)	(0.00454)	(0.00448)	(0.00867)	(0.00951)	(0.00858)	(0.00760)
Merchant APR (%)			0.00699***	0.00314***	0.00618***	0.00813***	0.00868***
			(0.000251)	(0.000450)	(0.000467)	(0.000477)	(0.000612)
Credit limit (£1000)			0.00759***	-0.000519	0.00758***	0.0133***	0.00719***
			(0.000918)	(0.00193)	(0.00186)	(0.00173)	(0.00226)
Utilization (%)			-0.00207***	-0.00929***	-0.00237***	-0.00186***	-0.00150***
			(0.000140)	(0.00259)	(0.000661)	(0.000242)	(0.000238)
Account age (years)			0.142***	0.0108	0.0981***	0.208***	0.261***
			(0.00980)	(0.0160)	(0.0186)	(0.0192)	(0.0228)
Amount purchase (£1000)		-0.886***	-0.723***	14.40	-89.06**	-12.04	-0.213***
		(0.0111)	(0.0132)	(23.98)	(37.90)	(8.117)	(0.0469)
Amount purchase (£1000)^2		0.406***	0.341***	-646.1	1,344**	48.35	0.0636***
		(0.00821)	(0.00841)	(1,916)	(598.4)	(33.51)	(0.0213)
Amount purchase (£1000)^3		-0.0768***	-0.0648***	12,588	-9,928**	-96.10	-0.00899**
		(0.00208)	(0.00208)	(68,577)	(4,518)	(66.19)	(0.00403)
Amount purchase (£1000)^4		0.00610***	0.00516***	-148,006	35,407**	91.63	0.000603*
		(0.000201)	(0.000200)	($1.124x10^6$)	(16,379)	(62.77)	(0.000325)
Amount purchase (£1000)^5		-0.000167***	-0.000142***	914,844	-48,778**	-33.45	$-1.52x10^{-5}$*
		($6.38x10^{-6}$)	($6.33x10^{-6}$)	($6.864x10^6$)	(22,904)	(22.95)	($9.11x10^{-6}$)
Constant	0.371***	0.709***	0.594***	0.741***	2.877***	1.456*	0.312***
	(0.00367)	(0.00446)	(0.0107)	(0.107)	(0.916)	(0.751)	(0.0385)
Observations	58,404	58,404	58,404	7,890	14,423	21,312	14,779
R-squared	0.017	0.212	0.238	0.022	0.052	0.081	0.078
Month FEs	NO	NO	YES	YES	YES	YES	YES

Note. Table C-3 replicates Table C-1 specifications but months with multiple consumption categories or merchant codes are added to the sample. All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise takes a value of zero. Models 4 to 7 split the sample in 4 quartiles based on purchased amount. For instance, all purchases included in Model 4 had a monthly balance higher than £5.02 and up to £59.93. Quartiles cut-off values were defined based on the value of durable purchases. Reference category: Proportion of the total month spending on durable goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table C-4. Estimated likelihood of repaying full balance, Multiple-Purchase-Type Sample for new accounts, additional controls

	All observations			Sample split by quartiles of purchase amount			
VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS – Quartile 1 (£5.02 - £59.93)	(5) OLS – Quartile 2 (Q2: £59.94 - £229.00)	(6) OLS – Quartile 3 (Q3: £229.01 - £884.40)	(7) OLS – Quartile 4 (£884.41 - £17000)
Non-durable (proportion)	0.148***	0.101***	0.102***	0.0127	0.121***	0.153***	0.0789***
	(0.00619)	(0.00555)	(0.00548)	(0.00987)	(0.0112)	(0.0107)	(0.00998)
Merchant APR (%)			0.00616***	0.00287***	0.00528***	0.00731***	0.00813***
			(0.000279)	(0.000499)	(0.000517)	(0.000536)	(0.000685)
Credit limit (£1000)			0.00594***	$3.38x10^{-5}$	0.00664***	0.0112***	0.00298
			(0.00110)	(0.00222)	(0.00218)	(0.00213)	(0.00289)
Utilization (%)			-0.00210***	-0.0112***	-0.00183**	-0.00189***	-0.00176***
			(0.000176)	(0.00308)	(0.000804)	(0.000305)	(0.000314)
Account age (years)			0.143***	-0.00509	0.104***	0.230***	0.278***
			(0.0116)	(0.0184)	(0.0215)	(0.0230)	(0.0283)
Amount purchase (£1000)		-0.920***	-0.756***	14.90	-97.26**	-10.75	-0.209***
		(0.0143)	(0.0169)	(26.85)	(44.48)	(10.25)	(0.0668)
Amount purchase $(£1000)^2$		0.432***	0.366***	-963.1	1,490**	39.82	0.0652**
		(0.0110)	(0.0113)	(2,155)	(703.6)	(42.42)	(0.0312)
Amount purchase $(£1000)^3$		-0.0846***	-0.0722***	30,133	-11,120**	-72.86	-0.00968
		(0.00290)	(0.00291)	(77,381)	(5,323)	(83.94)	(0.00610)
Amount purchase $(£1000)^4$		0.00702***	0.00601***	-476,604	39,921**	63.77	0.000688
		(0.000293)	(0.000292)	$(1.272x10^6)$	(19,332)	(79.75)	(0.000511)
Amount purchase $(£1000)^5$		-0.000203***	-0.000173***	$2.934x10^6$	-55,165**	-21.32	$-1.85x10^{-5}$
		$(9.72x10^{-6})$	$(9.66x10^{-6})$	$(7.782x10^6)$	(27,082)	(29.21)	$(1.50x10^{-5})$
Median house price (£)	$1.79x10^{-7}$***	$1.13x10^{-7}$***	$1.02x10^{-7}$***	$-7.25x10^{-8}$	$1.17x10^{-7}$	$1.36x10^{-7}$**	$1.22x10^{-7}$*
	$(4.00x10^{-8})$	$(3.56x10^{-8})$	$(3.51x10^{-8})$	$(7.40x10^{-8})$	$(7.45x10^{-8})$	$(6.05x10^{-8})$	$(6.62x10^{-8})$
Free school meals (proportion)	-0.248***	-0.341***	-0.306***	-0.343***	-0.272***	-0.219***	-0.463***
	(0.0445)	(0.0397)	(0.0393)	(0.0784)	(0.0789)	(0.0722)	(0.0737)
Weekly Household Income (£)	$-3.33x10^{-5}$	$4.60x10^{-5}$*	$4.59x10^{-5}$*	$-6.51x10^{-5}$	$9.43x10^{-6}$	0.000128***	$4.83x10^{-5}$
	$(3.06x10^{-5})$	$(2.73x10^{-5})$	$(2.69x10^{-5})$	$(5.60x10^{-5})$	$(5.62x10^{-5})$	$(4.80x10^{-5})$	$(4.95x10^{-5})$
Constant	0.434***	0.730***	0.615***	0.870***	3.066***	1.351	0.348***
	(0.0215)	(0.0194)	(0.0227)	(0.125)	(1.074)	(0.947)	(0.0628)
Observations	38,481	38,481	38,481	5,895	10,116	13,560	8,910
R-squared	0.017	0.220	0.243	0.023	0.054	0.085	0.094
Month FEs	NO	NO	YES	YES	YES	YES	YES

Note. Table C-4 replicates Table C-3 specifications but including socioeconomic controls: Median house price, proportion of students on free school meals and weekly household income. The sample is restricted to new accounts and includes months in which expenses were related to one or more merchant code (there are 25 codes). All models are linear probability models in which the outcome takes the value of one when the repayment-

purchase ratio is greater than .9 and otherwise takes a value of zero. Models 4 to 7 split the sample in 4 quartiles based on purchased amount. For instance, all purchases included in Model 4 had a monthly balance higher than £5.02 and up to £59.93. Quartiles cut-off values were defined based on the value of durable purchases. Reference category: Proportion of the total month spending on durable goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Appendix D - Omitting travel related categories

Table D-1. Estimated likelihood of repaying full balance, Single-Purchase-Type Sample for new accounts

	All observations			Sample split by quartiles of purchase amount			
VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS – Quartile 1 (£5.02 - £81.41)	(5) OLS – Quartile 2 (Q2: £81.42 - £290.64)	(6) OLS – Quartile 3 (Q3: £290.65 - £931.25)	(7) OLS – Quartile 4 (£931.26 - £17000)
Non-durable = 1	0.300***	0.102***	0.104***	0.0432***	0.135***	0.101***	0.0391***
	(0.00714)	(0.00668)	(0.00660)	(0.00899)	(0.0144)	(0.0184)	(0.0144)
Merchant APR (%)			0.00593***	0.00320***	0.00754***	0.00899***	0.00688***
			(0.000372)	(0.000487)	(0.000854)	(0.00101)	(0.000873)
Credit limit (£1000)			0.00218	-0.00140	0.00749**	0.00515	0.00159
			(0.00139)	(0.00202)	(0.00328)	(0.00422)	(0.00418)
Utilization (%)			-0.00156***	-0.00712***	-0.00182*	-0.00207***	-0.000516
			(0.000253)	(0.00231)	(0.00109)	(0.000512)	(0.000406)
Account age (years)			0.104***	-0.00428	0.169***	0.247***	0.274***
			(0.0135)	(0.0173)	(0.0321)	(0.0353)	(0.0305)
Amount purchase (£1000)		-1.047***	-0.926***	33.60**	24.52	-77.75**	-0.246***
		(0.0190)	(0.0229)	(13.64)	(66.68)	(33.07)	(0.0698)
Amount purchase (£1000)^2		0.465***	0.425***	-1,881**	-266.3	275.9**	0.0814***
		(0.0130)	(0.0133)	(872.1)	(814.0)	(121.6)	(0.0286)
Amount purchase (£1000)^3		-0.0828***	-0.0763***	45,239*	1,255	-473.8**	-0.0119**
		(0.00302)	(0.00303)	(24,462)	(4,775)	(216.1)	(0.00497)
Amount purchase (£1000)^4		0.00619***	0.00572***	-505,934	-2,701	393.8**	0.000788**
		(0.000274)	(0.000273)	(309,979)	(13,500)	(186.0)	(0.000373)
Amount purchase (£1000)^5		-0.000161***	-0.000149***	2.128×10^6	2,124	-127.1**	-1.90×10^{-5}*
		(8.24×10^{-6})	(8.19×10^{-6})	(1.450×10^6)	(14,763)	(62.20)	(9.91×10^{-6})
Constant	0.421***	0.760***	0.686***	0.647***	-0.246	8.721**	0.268***
	(0.00476)	(0.00612)	(0.0176)	(0.0767)	(2.096)	(3.474)	(0.0629)
Observations	17,870	17,870	17,870	7,139	4,543	3,238	2,950
Observations Non-durable = 1	7,929	7,929	7,929	4,654	2,058	752	465
R-squared	0.090	0.321	0.338	0.033	0.081	0.091	0.094
Month FEs	NO	NO	YES	YES	YES	YES	YES

Note. The sample is restricted to new accounts and includes months in which purchases were related to only one merchant code. Months with travel related expenditures are omitted from the sample (Hotel/Motel, Travel Agencies, Airlines, Other Transportation). All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise takes a value of zero. Models 4 to 7 split the sample in 4 quartiles based on purchase amount. For instance, all purchases included in Model 4 had a monthly balance higher than

£5.02 and up to £81.41. Quartiles cut-off values were defined based on the value of durable purchases. Reference category: Durable goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table D-2. Estimated likelihood of repaying full balance, Single-Purchase-Type Sample for new accounts, additional controls

	All observations			Sample split by quartiles of purchase amount			
VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS – Quartile 1 (£5.02 - £81.41)	(5) OLS – Quartile 2 (Q2: £81.42 - £290.64)	(6) OLS – Quartile 3 (Q3: £290.65 - £931.25)	(7) OLS – Quartile 4 (£931.26 - £17000)
Non-durable = 1	0.286***	0.0948***	0.0957***	0.0402***	0.132***	0.0816***	0.0452**
	(0.00853)	(0.00799)	(0.00791)	(0.0102)	(0.0173)	(0.0237)	(0.0196)
Merchant APR (%)			0.00531***	0.00281***	0.00732***	0.00875***	0.00632***
			(0.000418)	(0.000539)	(0.000960)	(0.00117)	(0.00104)
Credit limit (£1000)			0.00196	-0.000100	0.00517	0.00393	-0.00997*
			(0.00162)	(0.00231)	(0.00381)	(0.00513)	(0.00564)
Utilization (%)			-0.00194***	-0.00866***	-0.00231*	-0.00261***	-0.00160***
			(0.000315)	(0.00271)	(0.00128)	(0.000648)	(0.000568)
Account age (years)			0.0892***	-0.0154	0.160***	0.215***	0.247***
			(0.0159)	(0.0197)	(0.0380)	(0.0437)	(0.0386)
Amount purchase (£1000)		-1.065***	-0.933***	21.69	-0.114	-105.9**	-0.207**
		(0.0245)	(0.0292)	(15.27)	(80.61)	(42.27)	(0.104)
Amount purchase (£1000)^2		0.485***	0.443***	-1,229	36.83	387.6**	0.0699
		(0.0177)	(0.0181)	(983.1)	(984.2)	(155.8)	(0.0446)
Amount purchase (£1000)^3		-0.0899***	-0.0830***	30,516	-554.2	-685.0**	-0.00978
		(0.00435)	(0.00436)	(27,725)	(5,775)	(277.8)	(0.00812)
Amount purchase (£1000)^4		0.00707***	0.00654***	-357,990	2,496	585.0**	0.000625
		(0.000415)	(0.000414)	(352,725)	(16,332)	(239.9)	(0.000640)
Amount purchase (£1000)^5		-0.000195***	-0.000181***	$1.586x10^6$	-3,598	-193.7**	$-1.51x10^{-5}$
		($1.32x10^{-5}$)	($1.31x10^{-5}$)	($1.655x10^6$)	(17,864)	(80.49)	($1.79x10^{-5}$)
Median house price (£)	$8.43x10^{-8}$	$5.47x10^{-8}$	$5.23x10^{-8}$	$-1.01x10^{-7}$	$4.86x10^{-8}$	$2.09x10^{-7}$	$2.19x10^{-7}$*
	($7.08x10^{-8}$)	($6.13x10^{-8}$)	($6.07x10^{-8}$)	($8.78x10^{-8}$)	($1.28x10^{-7}$)	($1.60x10^{-7}$)	($1.17x10^{-7}$)
Free school meals (proportion)	-0.197***	-0.239***	-0.216***	-0.226***	-0.0868	-0.310*	-0.269**
	(0.0748)	(0.0649)	(0.0644)	(0.0862)	(0.148)	(0.174)	(0.127)
Weekly Household Income (£)	$-4.73x10^{-5}$	$-1.61x10^{-5}$	$-7.12x10^{-6}$	$-1.44x10^{-5}$	$7.81x10^{-5}$	$-3.42x10^{-5}$	$-7.73x10^{-5}$
	($5.34x10^{-5}$)	($4.63x10^{-5}$)	($4.58x10^{-5}$)	($6.32x10^{-5}$)	(0.000102)	(0.000123)	($9.11x10^{-5}$)
Constant	0.504***	0.816***	0.761***	0.776***	0.569	11.51***	0.407***
	(0.0365)	(0.0320)	(0.0375)	(0.0949)	(2.535)	(4.432)	(0.111)
Observations	12,341	12,341	12,341	5,259	3,117	2,136	1,829
Observations Non-durable = 1	5,519	5,519	5,519	3,399	1,361	474	285
R-squared	0.085	0.313	0.329	0.030	0.085	0.094	0.096
Month FEs	NO	NO	YES	YES	YES	YES	YES

Note. Table D-2 replicates Table D-1 specifications with the addition of socioeconomic controls: Median house price, proportion of students on free school meals and weekly household income. The sample is restricted to new accounts and includes months in which expenses were related to only one spending type. Months with travel related expenditures are omitted from the sample (Hotel/Motel, Travel Agencies, Airlines, Other

Transportation). All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise takes a value of zero. Models 4 to 7 split the sample in 4 quartiles based on purchase amount. For instance, all purchases included in Model 4 had a monthly balance higher than £5.02 and up to £81.41. Quartiles cut-off values were defined based on the value of durable purchases. Reference category: Durable goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table D-3. Estimated likelihood of repaying full balance, Multiple-Purchase-Type Sample for new accounts

	All observations			Sample split by quartiles of purchase amount			
VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS – Quartile 1 (£5.02 - £81.41)	(5) OLS – Quartile 2 (Q2: £81.42 - £290.64)	(6) OLS – Quartile 3 (Q3: £290.65 - £931.25)	(7) OLS – Quartile 4 (£931.26 - £17000)
Non-durable (proportion)	0.316***	0.148***	0.152***	0.0439***	0.166***	0.226***	0.137***
	(0.00548)	(0.00528)	(0.00521)	(0.00841)	(0.0103)	(0.0107)	(0.0113)
Merchant APR (%)			0.00621***	0.00380***	0.00670***	0.00673***	0.00598***
			(0.000280)	(0.000430)	(0.000536)	(0.000613)	(0.000748)
Credit limit (£1000)			0.00626***	0.000948	0.0106***	0.0105***	0.00354
			(0.00103)	(0.00181)	(0.00211)	(0.00219)	(0.00286)
Utilization (%)			-0.00183***	-0.00546***	-0.00144**	-0.00184***	-0.00106***
			(0.000166)	(0.00185)	(0.000604)	(0.000286)	(0.000295)
Account age (years)			0.134***	0.00524	0.156***	0.235***	0.238***
			(0.0110)	(0.0156)	(0.0220)	(0.0249)	(0.0272)
Amount purchase (£1000)		-0.913***	-0.760***	27.93**	52.05	11.94	-0.165***
		(0.0130)	(0.0156)	(12.62)	(41.95)	(17.19)	(0.0562)
Amount purchase (£1000)^2		0.421***	0.361***	-1,508*	-633.7	-40.91	0.0477*
		(0.00948)	(0.00975)	(790.8)	(507.4)	(63.00)	(0.0244)
Amount purchase (£1000)^3		-0.0785***	-0.0678***	34,622	3,634	64.99	-0.00649
		(0.00235)	(0.00236)	(21,793)	(2,952)	(111.6)	(0.00444)
Amount purchase (£1000)^4		0.00613***	0.00530***	-371,200	-10,047	-49.43	0.000423
		(0.000223)	(0.000223)	(271,889)	(8,281)	(95.80)	(0.000346)
Amount purchase (£1000)^5		-0.000165***	-0.000143***	1.503×10^6	10,760	14.62	-1.04×10^{-5}
		(6.97×10^{-6})	(6.94×10^{-6})	(1.254×10^6)	(8,993)	(31.94)	(9.49×10^{-6})
Constant	0.337***	0.693***	0.584***	0.661***	-1.151	-1.034	0.224***
	(0.00349)	(0.00494)	(0.0122)	(0.0719)	(1.331)	(1.812)	(0.0476)
Observations	42,857	42,857	42,857	9,639	12,350	12,950	7,918
R-squared	0.072	0.238	0.260	0.034	0.065	0.085	0.076
Month FEs	NO	NO	YES	YES	YES	YES	YES

Note. Table D-3 replicates Table D-1 specifications for the months with both consumption types. Months with travel related expenditures are omitted from the sample (Hotel/Motel, Travel Agencies, Airlines, Other Transportation). All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise takes a value of zero. Models 4 to 7 split the sample in 4 quartiles based on purchased amount. For instance, all purchases included in Model 4 had a monthly balance higher than £5.02 and up to £81.41. Quartiles cut-off values were defined based on the value of durable purchases. Reference category: Proportion of the total month spending on durable goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table D-4. Estimated likelihood of repaying full balance, Multiple-Purchase-Type Sample for new accounts, additional controls

	All observations			Sample split by quartiles of purchase amount			
VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS – Quartile 1 (£5.02 - £81.41)	(5) OLS – Quartile 2 (Q2: £81.42 - £290.64)	(6) OLS – Quartile 3 (Q3: £290.65 - £931.25)	(7) OLS – Quartile 4 (£931.26 - £17000)
Non-durable (proportion)	0.301***	0.130***	0.134***	0.0389***	0.151***	0.201***	0.132***
	(0.00669)	(0.00639)	(0.00632)	(0.00956)	(0.0124)	(0.0138)	(0.0146)
Merchant APR (%)			0.00549***	0.00348***	0.00589***	0.00625***	0.00579***
			(0.000312)	(0.000476)	(0.000598)	(0.000691)	(0.000831)
Credit limit (£1000)			0.00555***	0.00244	0.00963***	0.00911***	-6.78×10^{-5}
			(0.00123)	(0.00207)	(0.00251)	(0.00274)	(0.00368)
Utilization (%)			-0.00180***	-0.00551**	-0.000902	-0.00194***	-0.00124***
			(0.000209)	(0.00219)	(0.000744)	(0.000369)	(0.000388)
Account age (years)			0.129***	-0.00845	0.159***	0.260***	0.225***
			(0.0130)	(0.0178)	(0.0260)	(0.0301)	(0.0333)
Amount purchase (£1000)		-0.962***	-0.812***	18.13	56.79	0.675	-0.144*
		(0.0169)	(0.0201)	(14.12)	(50.27)	(22.18)	(0.0796)
Amount purchase $(£1000)^2$		0.455***	0.395***	-1,010	-693.3	3.218	0.0397
		(0.0129)	(0.0132)	(890.2)	(609.3)	(81.43)	(0.0357)
Amount purchase $(£1000)^3$		-0.0880***	-0.0770***	24,040	3,959	-17.02	-0.00517
		(0.00333)	(0.00335)	(24,651)	(3,550)	(144.5)	(0.00675)
Amount purchase $(£1000)^4$		0.00718***	0.00630***	-268,093	-10,854	23.24	0.000334
		(0.000331)	(0.000331)	(308,719)	(9,972)	(124.3)	(0.000550)
Amount purchase $(£1000)^5$		-0.000204***	-0.000179***	1.119×10^6	11,515	-10.11	-8.59×10^{-6}
		(1.08×10^{-5})	(1.08×10^{-5})	(1.429×10^6)	(10,842)	(41.52)	(1.58×10^{-5})
Median house price (£)	2.12×10^{-7}***	1.60×10^{-7}***	1.44×10^{-7}***	-1.45×10^{-8}	2.73×10^{-7}***	1.11×10^{-7}	1.54×10^{-7}*
	(4.67×10^{-8})	(4.20×10^{-8})	(4.15×10^{-8})	(7.73×10^{-8})	(8.33×10^{-8})	(7.62×10^{-8})	(8.65×10^{-8})
Free school meals (proportion)	-0.148***	-0.265***	-0.237***	-0.229***	-0.235***	-0.179*	-0.357***
	(0.0509)	(0.0458)	(0.0454)	(0.0751)	(0.0908)	(0.0932)	(0.0922)
Weekly Household Income (£)	-3.63×10^{-5}	9.35×10^{-6}	1.29×10^{-5}	-5.87×10^{-5}	-2.83×10^{-5}	0.000125**	1.45×10^{-5}
	(3.53×10^{-5})	(3.18×10^{-5})	(3.14×10^{-5})	(5.54×10^{-5})	(6.41×10^{-5})	(6.07×10^{-5})	(6.32×10^{-5})
Constant	0.382***	0.727***	0.620***	0.791***	-1.257	0.0211	0.244***
	(0.0246)	(0.0226)	(0.0262)	(0.0875)	(1.592)	(2.334)	(0.0783)
Observations	28,260	28,260	28,260	7,120	8,386	7,989	4,765
R-squared	0.069	0.246	0.265	0.031	0.064	0.088	0.087
Month FEs	NO	NO	YES	YES	YES	YES	YES

Note. Table D-4 replicates Table D-3 specifications but including socioeconomic controls: Median house price, proportion of students on free school meals and weekly household income. The sample is restricted to new accounts and includes months in which expenses were related to one or more purchase types. Months with travel related expenditures are omitted from the sample (Hotel/Motel, Travel Agencies, Airlines, Other Transportation).

All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise takes a value of zero. Models 4 to 7 split the sample in 4 quartiles based on purchased amount. For instance, all purchases included in Model 4 had a monthly balance higher than £5.02 and up to £81.41. Quartiles cut-off values were defined based on the value of durable purchases. Reference category: Proportion of the total month spending on durable goods. Standard errors in parentheses. Significance levels: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table D-5. Estimated likelihood of repaying full balance, Single-Purchase-Type Sample for all accounts

	RE			RE (+ socioeconomic controls)			FE		
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Non-durable = 1	0.0599***	0.0192***	0.0202***	0.0575***	0.0190***	0.0195***	0.0153***	0.00430*	0.00425*
	(0.00172)	(0.00174)	(0.00171)	(0.00206)	(0.00209)	(0.00205)	(0.00222)	(0.00226)	(0.00226)
Merchant APR (%)			0.00941***			0.00809***			0.00254***
			(0.000163)			(0.000199)			(0.000419)
Credit limit (£1000)			-0.00277***			-0.00255***			0.00544
			(0.000390)			(0.000456)			(0.00394)
Utilization (%)			-0.00349***			-0.00362***			-0.000975***
			(0.000108)			(0.000131)			(0.000185)
Account age (years)			0.00448***			0.00428***			-0.0123***
			(0.000141)			(0.000158)			(0.00185)
Amount purchase (£1000)		-0.385***	-0.228***		-0.369***	-0.218***		-0.152***	-0.116***
		(0.00628)	(0.00739)		(0.00744)	(0.00878)		(0.00887)	(0.0111)
Amount purchase (£1000)^2		0.117***	0.0880***		0.113***	0.0850***		0.0552***	0.0477***
		(0.00428)	(0.00426)		(0.00501)	(0.00502)		(0.00635)	(0.00652)
Amount purchase (£1000)^3		-0.0160***	-0.0131***		-0.0155***	-0.0126***		-0.00842***	-0.00757***
		(0.000936)	(0.000917)		(0.00108)	(0.00106)		(0.00143)	(0.00144)
Amount purchase (£1000)^4		0.000954***	0.000816***		0.000919***	0.000773***		0.000514***	0.000473***
		($7.68x10^{-5}$)	($7.49x10^{-5}$)		($8.69x10^{-5}$)	($8.53x10^{-5}$)		(0.000119)	(0.000119)
Amount purchase (£1000)^5		$-2.01x10^{-5}$***	$-1.77x10^{-5}$***		$-1.91x10^{-5}$***	$-1.64x10^{-5}$***		$-1.06x10^{-5}$***	$-9.96x10^{-6}$***
		($2.07x10^{-6}$)	($2.01x10^{-6}$)		($2.30x10^{-6}$)	($2.25x10^{-6}$)		($3.25x10^{-6}$)	($3.25x10^{-6}$)
Median house price (£)				$-3.47x10^{-9}$	$4.36x10^{-9}$	$-3.46x10^{-9}$			
				($2.33x10^{-8}$)	($2.20x10^{-8}$)	($2.11x10^{-8}$)			
Free school meals (proportion)				-0.246***	-0.229***	-0.157***			
				(0.0275)	(0.0259)	(0.0250)			
Weekly Household Income (£)				$-1.31x10^{-5}$	$-9.15x10^{-7}$	$1.10x10^{-5}$			
				($1.80x10^{-5}$)	($1.69x10^{-5}$)	($1.63x10^{-5}$)			
Constant	0.791***	0.884***	0.719***	0.839***	0.914***	0.750***			
	(0.00153)	(0.00180)	(0.00426)	(0.0126)	(0.0119)	(0.0124)			
R-squared							0.001	0.013	0.015
Observations	133,697	133,697	133,697	92,968	92,968	92,968	77,705	77,705	77,705
Number of accounts	85,153	85,153	85,153	59,014	59,014	59,014	29,161	29,161	29,161
Month FEs	NO	NO	YES	NO	NO	YES	NO	NO	YES

Note. The sample includes all accounts and includes months in which expenses were related to only one merchant code. Months with travel related expenditures are omitted from the sample (Hotel/Motel, Travel Agencies, Airlines, Other Transportation). All models are linear probability models

in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise takes a value of zero. Models 1 to 6 are RE models, while Models 7 to 9 are FE models that control for unobserved account heterogeneity. Reference category: Durable goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table D-6. Estimated likelihood of repaying full balance, Multiple-Purchase-Type Sample for all accounts

	RE			RE (+ socioeconomic controls)			FE		
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Non-durable (proportion)	0.0644***	0.0194***	0.0269***	0.0606***	0.0184***	0.0245***	0.0212***	0.00651***	0.00660***
	(0.00152)	(0.00154)	(0.00149)	(0.00181)	(0.00183)	(0.00179)	(0.00181)	(0.00184)	(0.00184)
Merchant APR (%)			0.0117***			0.0104***			0.00409***
			(0.000126)			(0.000153)			(0.000287)
Credit limit (£1000)			-0.00200***			-0.00206***			0.0109***
			(0.000352)			(0.000411)			(0.00273)
Utilization (%)			-0.00349***			-0.00361***			-0.00111***
			($7.90x10^{-5}$)			($9.68x10^{-5}$)			(0.000129)
Account age (years)			0.00600***			0.00575***			-0.00886***
			(0.000129)			(0.000145)			(0.00145)
Amount purchase (£1000)		-0.400***	-0.203***		-0.377***	-0.197***		-0.171***	-0.131***
		(0.00475)	(0.00551)		(0.00566)	(0.00661)		(0.00626)	(0.00776)
Amount purchase (£1000)^2		0.134***	0.0836***		0.123***	0.0794***		0.0675***	0.0584***
		(0.00343)	(0.00338)		(0.00403)	(0.00400)		(0.00472)	(0.00482)
Amount purchase (£1000)^3		-0.0197***	-0.0131***		-0.0178***	-0.0122***		-0.0110***	-0.00987***
		(0.000790)	(0.000766)		(0.000909)	(0.000887)		(0.00112)	(0.00112)
Amount purchase (£1000)^4		0.00125***	0.000853***		0.00110***	0.000774***		0.000717***	0.000652***
		($6.77x10^{-5}$)	($6.52x10^{-5}$)		($7.61x10^{-5}$)	($7.40x10^{-5}$)		($9.75x10^{-5}$)	($9.77x10^{-5}$)
Amount purchase (£1000)^5		$-2.79x10^{-5}$***	$-1.93x10^{-5}$***		$-2.40x10^{-5}$***	$-1.70x10^{-5}$***		$-1.58x10^{-5}$***	$-1.45x10^{-5}$***
		($1.88x10^{-6}$)	($1.81x10^{-6}$)		($2.07x10^{-6}$)	($2.01x10^{-6}$)		($2.78x10^{-6}$)	($2.78x10^{-6}$)
Median house price (£)				$7.05x10^{-8}$***	$6.78x10^{-8}$***	$4.23x10^{-8}$**			
				($2.10x10^{-8}$)	($1.96x10^{-8}$)	($1.85x10^{-8}$)			
Free school meals (proportion)				-0.299***	-0.295***	-0.189***			
				(0.0245)	(0.0230)	(0.0217)			
Weekly household income (£)				$-2.03x10^{-5}$	$2.44x10^{-6}$	$2.18x10^{-5}$			
				($1.61x10^{-5}$)	($1.51x10^{-5}$)	($1.42x10^{-5}$)			
Constant	0.723***	0.845***	0.642***	0.776***	0.873***	0.661***			
	(0.00136)	(0.00165)	(0.00346)	(0.0113)	(0.0106)	(0.0107)			
R-squared							0.002	0.017	0.021
Observations	224,287	224,287	224,287	154,243	154,243	154,243	139,386	139,386	139,386
Number of accounts	133,310	133,310	133,310	90,823	90,823	90,823	48,409	48,409	48,409
Month FEs	NO	NO	YES	NO	NO	YES	NO	NO	YES

Note. Table D-6 replicates Table D-5 specifications but months with multiple consumption categories or merchant codes are added to the sample. However, months with travel related expenditures remain omitted from the sample (Hotel/Motel, Travel Agencies, Airlines, Other Transportation).

All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise takes a value of zero. Models 1 to 6 are RE models, while Models 7 to 9 are FE models that control for unobserved account heterogeneity. Reference category: Proportion of the total month spending on durable goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Appendix E – Estimating marginal effects for individual merchant codes

Table E-1. Estimated likelihood of repaying full balance for Single-Purchase-Type Sample, durable goods as reference category

	First purchase of new accounts		All accounts		
VARIABLES	(1) OLS	(2) OLS (+ socioeconomic controls)	(3) RE	(4) RE (+ socioeconomic controls)	(5) FE
Non-durable merchant codes					
Airlines	0.0505***	0.0477**	0.0328***	0.0268***	0.0252***
	(0.0170)	(0.0213)	(0.00542)	(0.00673)	(0.00724)
Auto Rental	0.120***	0.147***	0.00178	0.00208	-0.0265***
	(0.0255)	(0.0302)	(0.00747)	(0.00893)	(0.00991)
Hotel/Motel	0.161***	0.147***	0.0522***	0.0544***	0.0131***
	(0.0152)	(0.0184)	(0.00379)	(0.00466)	(0.00468)
Restaurants/Bars	0.139***	0.140***	0.0406***	0.0408***	0.0112*
	(0.0168)	(0.0193)	(0.00454)	(0.00534)	(0.00580)
Travel Agencies	0.0243**	0.0296**	0.00993***	0.00121	0.0123**
	(0.0106)	(0.0133)	(0.00383)	(0.00467)	(0.00514)
Other Transportation	0.148***	0.134***	0.0463***	0.0429***	0.0169***
	(0.0175)	(0.0202)	(0.00490)	(0.00578)	(0.00630)
Drug Stores	0.139***	0.0949**	0.0349***	0.0270**	0.0141
	(0.0364)	(0.0410)	(0.00968)	(0.0115)	(0.0121)
Gas Stations	0.195***	0.184***	0.0554***	0.0516***	0.0107*
	(0.0122)	(0.0146)	(0.00398)	(0.00483)	(0.00565)
Mail Orders	0.0347*	0.0516**	-0.00259	-0.00292	-0.00444
	(0.0192)	(0.0237)	(0.00300)	(0.00362)	(0.00390)
Food Stores	0.146***	0.122***	0.0375***	0.0345***	0.00659*
	(0.00955)	(0.0116)	(0.00287)	(0.00356)	(0.00388)
Other Retail	0.0537***	0.0501***	0.0175***	0.0182***	0.00728**
	(0.0102)	(0.0123)	(0.00253)	(0.00306)	(0.00319)
Recreation	0.0451***	0.0391**	0.00965**	0.00993**	0.00304
	(0.0151)	(0.0181)	(0.00402)	(0.00484)	(0.00507)
Merchant APR (%)	0.00628***	0.00554***	0.0104***	0.00884***	0.00282***
	(0.000341)	(0.000385)	(0.000153)	(0.000187)	(0.000372)
Credit limit (£1000)	0.00262**	0.00170	-0.00274***	-0.00247***	0.00638*
	(0.00128)	(0.00151)	(0.000379)	(0.000443)	(0.00357)
Utilization (%)	-0.00148***	-0.00188***	-0.00320***	-0.00332***	-0.000724***
	(0.000216)	(0.000271)	($9.49x10^{-05}$)	(0.000115)	(0.000156)
Account age (years)	0.136***	0.124***	0.00495***	0.00470***	-0.0111***
	(0.0123)	(0.0146)	(0.000138)	(0.000155)	(0.00171)
Amount purchase (£1000)	-0.856***	-0.865***	-0.208***	-0.203***	-0.124***
	(0.0205)	(0.0263)	(0.00661)	(0.00790)	(0.00948)

	First purchase of new accounts		All accounts		
	(1)	(2)	(3)	(4)	(5)
VARIABLES	OLS	OLS (+ socioeconomic controls)	RE	RE (+ socioeconomic controls)	FE
Amount purchase (£1000)^2	0.392***	0.409***	0.0808***	0.0776***	0.0517***
	(0.0120)	(0.0164)	(0.00384)	(0.00454)	(0.00559)
Amount purchase (£1000)^3	-0.0710***	-0.0773***	-0.0122***	-0.0113***	-0.00836***
	(0.00277)	(0.00399)	(0.000840)	(0.000977)	(0.00126)
Amount purchase (£1000)^4	0.00538***	0.00616***	0.000772***	0.000690***	0.000537***
	(0.000252)	(0.000383)	($7.00x10^{-05}$)	($7.98x10^{-05}$)	(0.000107)
Amount purchase (£1000)^5	-0.000142***	-0.000172***	$-1.71x10^{-05}$***	$-1.47x10^{-05}$***	$-1.17x10^{-05}$***
	($7.65x10^{-06}$)	($1.22x10^{-05}$)	($1.90x10^{-06}$)	($2.14x10^{-06}$)	($2.99x10^{-06}$)
Median house price (£)		$3.27x10^{-08}$		$-1.09x10^{-09}$	
		($5.44x10^{-08}$)		($2.05x10^{-08}$)	
Free school meals (proportion)		-0.254***		-0.190***	
		(0.0585)		(0.0240)	
Weekly Household Income (£)		$-1.17x10^{-05}$		$6.30x10^{-06}$	
		($4.14x10^{-05}$)		($1.58x10^{-05}$)	
Constant	0.658***	0.744***	0.690***	0.734***	
	(0.0160)	(0.0340)	(0.00404)	(0.0119)	
R-squared	0.351	0.341			0.017
Observations	21,671	14,851	154,924	107,384	93,957
Number of accounts	21,671	14,851	95,461	66,021	34,494
Month FEs	YES	YES	YES	YES	YES

Note. Samples in all models include months in which expenses were related to only one merchant code. Models 1 and 2 evaluate the probability of full repayment of the first purchase made by new accounts. Models 3 to 5 include all accounts in the analysis. All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise takes a value of zero. Reference category: durable goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table E-2. Estimated likelihood of repaying full balance for Multiple-Purchase-Type Sample, proportion of the total month spending on durable goods as reference category

	First purchase of new accounts		All accounts		
	(1)	(2)	(3)	(4)	(5)
VARIABLES	OLS	OLS (+ socioeconomic controls)	RE	RE (+ socioeconomic controls)	FE
Non-durable merchant codes (proportion)					
Airlines	0.0438***	0.0424**	0.0321***	0.0277***	0.0233***
	(0.0132)	(0.0167)	(0.00440)	(0.00545)	(0.00535)
Auto Rental	0.203***	0.211***	0.0283***	0.0271***	-0.00817
	(0.0218)	(0.0259)	(0.00641)	(0.00759)	(0.00757)
Hotel/Motel	0.257***	0.260***	0.0672***	0.0695***	0.0203***
	(0.0115)	(0.0140)	(0.00309)	(0.00376)	(0.00354)
Restaurants/Bars	0.265***	0.256***	0.0619***	0.0579***	0.0159***
	(0.0122)	(0.0141)	(0.00362)	(0.00423)	(0.00423)
Travel Agencies	0.00617	0.0145	0.0146***	0.00943**	0.0141***
	(0.00861)	(0.0109)	(0.00322)	(0.00393)	(0.00398)
Other Transportation	0.203***	0.189***	0.0550***	0.0524***	0.0156***
	(0.0141)	(0.0164)	(0.00417)	(0.00490)	(0.00492)
Drug Stores	0.143***	0.120***	0.0295***	0.0320***	0.0140
	(0.0284)	(0.0326)	(0.00802)	(0.00942)	(0.00918)
Gas Stations	0.260***	0.224***	0.0678***	0.0568***	0.0174***
	(0.00976)	(0.0119)	(0.00341)	(0.00412)	(0.00434)
Mail Orders	0.0347**	0.0452**	0.00534*	0.00330	-0.00264
	(0.0157)	(0.0194)	(0.00275)	(0.00330)	(0.00328)
Food Stores	0.199***	0.164***	0.0447***	0.0384***	0.0129***
	(0.00728)	(0.00898)	(0.00245)	(0.00302)	(0.00305)
Other Retail	0.0985***	0.104***	0.0246***	0.0259***	0.0111***
	(0.00840)	(0.0102)	(0.00222)	(0.00266)	(0.00257)
Recreation	0.109***	0.112***	0.0234***	0.0224***	0.00797**
	(0.0124)	(0.0150)	(0.00346)	(0.00416)	(0.00402)
Merchant APR (%)	0.00723***	0.00630***	0.0127***	0.0112***	0.00475***
	(0.000248)	(0.000277)	(0.000113)	(0.000137)	(0.000235)
Credit limit (£1000)	0.00713***	0.00561***	-0.00218***	-0.00235***	0.00958***
	(0.000908)	(0.00109)	(0.000334)	(0.000391)	(0.00236)
Utilization (%)	-0.00188***	-0.00192***	-0.00320***	-0.00326***	-0.000855***
	(0.000139)	(0.000174)	($6.68x10^{-05}$)	($8.17x10^{-05}$)	(0.000103)
Account age (years)	0.160***	0.157***	0.00672***	0.00640***	-0.00741***
	(0.00972)	(0.0115)	(0.000125)	(0.000141)	(0.00128)

	First purchase of new accounts		All accounts		
	(1)	(2)	(3)	(4)	(5)
VARIABLES	OLS	OLS (+ socioeconomic controls)	RE	RE (+ socioeconomic controls)	FE
Amount purchase (£1000)	-0.658***	-0.700***	-0.166***	-0.161***	-0.125***
	(0.0133)	(0.0170)	(0.00468)	(0.00561)	(0.00623)
Amount purchase (£1000)^2	0.316***	0.343***	0.0717***	0.0665***	0.0571***
	(0.00838)	(0.0113)	(0.00289)	(0.00341)	(0.00391)
Amount purchase (£1000)^3	-0.0608***	-0.0681***	-0.0118***	-0.0105***	-0.0102***
	(0.00207)	(0.00290)	(0.000672)	(0.000775)	(0.000937)
Amount purchase (£1000)^4	0.00486***	0.00569***	0.000815***	0.000692***	0.000720***
	(0.000199)	(0.000290)	(5.88×10^{-05})	(6.65×10^{-05})	(8.47×10^{-05})
Amount purchase (£1000)^5	-0.000134***	-0.000164***	-1.93×10^{-05}***	-1.58×10^{-05}***	-1.72×10^{-05}***
	(6.27×10^{-06})	(9.59×10^{-06})	(1.66×10^{-06})	(1.85×10^{-06})	(2.48×10^{-06})
Median house price (£)		1.07×10^{-07}***		5.04×10^{-08}***	
		(3.48×10^{-08})		(1.71×10^{-08})	
Free school meals (proportion)		-0.276***		-0.224***	
		(0.0389)		(0.0202)	
Weekly Household Income (£)		2.97×10^{-05}		1.23×10^{-05}	
		(2.67×10^{-05})		(1.32×10^{-05})	
Constant	0.541***	0.580***	0.603***	0.635***	
	(0.0107)	(0.0225)	(0.00319)	(0.00997)	
R-squared	0.257	0.259			0.022
Observations	58,404	38,481	282,997	194,214	184,673
Number of accounts	58,404	38,481	159,100	108,050	60,776
Month FEs	YES	YES	YES	YES	YES

Note. Table E-2 replicates Table E-1 specifications but months with multiple consumption categories or merchant codes are added to the sample. Models 1 and 2 evaluate the probability of full repayment of the first purchase made by new accounts. Models 3 to 5 include all accounts in the analysis. All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise takes a value of zero. Reference category: Proportion of the total month spending on durable goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table E-3. Estimated likelihood of repaying full balance for Single-Purchase-Type Sample, non-durable goods as reference category

	First purchase of new accounts		All accounts		
VARIABLES	(1) OLS	(2) OLS (+ socioeconomic controls)	(3) RE	(4) RE (+ socioeconomic controls)	(5) FE
Durable merchant codes					
Department Stores	-0.0436**	-0.0316	-0.0229***	-0.0186***	-0.0145**
	(0.0188)	(0.0221)	(0.00478)	(0.00569)	(0.00578)
Discount Stores	-0.162***	-0.161***	-0.0224***	-0.0205**	-0.00168
	(0.0239)	(0.0283)	(0.00683)	(0.00823)	(0.00823)
Clothing Stores	-0.0910***	-0.0884***	-0.0346***	-0.0345***	-0.0129***
	(0.0114)	(0.0134)	(0.00326)	(0.00396)	(0.00412)
Hardware Stores	-0.0876***	-0.0952***	-0.0114***	-0.0111**	0.00150
	(0.0159)	(0.0197)	(0.00415)	(0.00496)	(0.00510)
Vehicles	-0.109***	-0.103***	-0.0397***	-0.0375***	-0.00700
	(0.0129)	(0.0160)	(0.00398)	(0.00477)	(0.00502)
Interior Furnishing Stores	-0.0948***	-0.0900***	0.00391	0.00647	-0.00143
	(0.0151)	(0.0186)	(0.00441)	(0.00532)	(0.00545)
Electric Appliance Stores	-0.124***	-0.108***	-0.0289***	-0.0289***	-0.00729
	(0.0133)	(0.0160)	(0.00379)	(0.00452)	(0.00468)
Sporting Goods/Toy Stores	-0.134***	-0.126***	-0.0328***	-0.0285***	0.00438
	(0.0183)	(0.0224)	(0.00554)	(0.00672)	(0.00710)
Health Care	-0.111***	-0.104***	-0.0188***	-0.0155**	-0.00355
	(0.0203)	(0.0251)	(0.00513)	(0.00610)	(0.00616)
Education	-0.0382	-0.0353	-0.0355***	-0.0279**	0.00534
	(0.0296)	(0.0356)	(0.0111)	(0.0131)	(0.0149)
Professional Services	-0.127***	-0.134***	-0.0309***	-0.0308***	-0.0116***
	(0.0122)	(0.0148)	(0.00287)	(0.00344)	(0.00365)
Repair Shops	-0.147	-0.177	-0.00291	0.000571	0.0258
	(0.101)	(0.122)	(0.0251)	(0.0280)	(0.0295)
Other Services	-0.0473***	-0.0425***	-0.0187***	-0.0148***	-0.00678*
	(0.0107)	(0.0127)	(0.00296)	(0.00353)	(0.00381)
Merchant APR (%)	0.00620***	0.00553***	0.0103***	0.00875***	0.00280***
	(0.000343)	(0.000386)	(0.000153)	(0.000187)	(0.000372)
Credit limit (£1000)	0.00235*	0.00149	-0.00284***	-0.00254***	0.00640*
	(0.00129)	(0.00151)	(0.000379)	(0.000444)	(0.00357)
Utilization (%)	-0.00151***	-0.00190***	-0.00322***	-0.00333***	-0.000731***
	(0.000217)	(0.000272)	($9.50x10^{-05}$)	(0.000115)	(0.000156)
Account age (years)	0.126***	0.115***	0.00483***	0.00460***	-0.0112***
	(0.0123)	(0.0146)	(0.000138)	(0.000155)	(0.00171)
Amount purchase (£1000)	-0.911***	-0.907***	-0.213***	-0.209***	-0.120***

	First purchase of new accounts		All accounts		
VARIABLES	(1) OLS	(2) OLS (+ socioeconomic controls)	(3) RE	(4) RE (+ socioeconomic controls)	(5) FE
	(0.0200)	(0.0256)	(0.00645)	(0.00773)	(0.00934)
Amount purchase (£1000)^2	0.414***	0.426***	0.0821***	0.0793***	0.0502***
	(0.0119)	(0.0162)	(0.00380)	(0.00450)	(0.00556)
Amount purchase (£1000)^3	-0.0746***	-0.0800***	-0.0123***	-0.0114***	-0.00813***
	(0.00276)	(0.00398)	(0.000837)	(0.000974)	(0.00126)
Amount purchase (£1000)^4	0.00563***	0.00635***	0.000771***	0.000689***	0.000523***
	(0.000252)	(0.000382)	($6.99x10^{-05}$)	($7.97x10^{-05}$)	(0.000107)
Amount purchase (£1000)^5	-0.000148***	-0.000176***	$-1.69x10^{-05}$***	$-1.45x10^{-05}$***	$-1.14x10^{-05}$***
	($7.66x10^{-06}$)	($1.22x10^{-05}$)	($1.90x10^{-06}$)	($2.14x10^{-06}$)	($2.99x10^{-06}$)
Median house price (£)		$2.08x10^{-08}$		$-1.39x10^{-09}$	
		($5.45x10^{-08}$)		($2.05x10^{-08}$)	
Free school meals (proportion)		-0.279***		-0.193***	
		(0.0587)		(0.0240)	
Weekly Household Income (£)		$-1.44x10^{-05}$		$5.88x10^{-06}$	
		($4.15\ x10^{-05}$)		($1.58\ x10^{-05}$)	
Constant	0.776***	0.857***	0.719***	0.761***	
	(0.0157)	(0.0340)	(0.00395)	(0.0119)	
R-squared	0.346	0.337			0.016
Observations	21,671	14,851	154,924	107,384	93,957
Number of accounts	21,671	14,851	95,461	66,021	34,494
Month FEs	YES	YES	YES	YES	YES

Note. Samples in all models include months in which expenses were related to only one merchant code. Models 1 and 2 evaluate the probability of full repayment of the first purchase made by new accounts. Models 3 to 5 include all accounts in the analysis. All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise takes a value of zero. Reference category: non-durable goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table E-4. Estimated likelihood of repaying full balance for Multiple-Purchase-Type Sample, proportion of the total month spending on non-durable goods as reference category

	First purchase of new accounts		All accounts		
	(1)	(2)	(3)	(4)	(5)
VARIABLES	OLS	OLS (+ socioeconomic controls)	RE	RE (+ socioeconomic controls)	FE
Durable merchant codes (proportion)					
Department Stores	-0.103***	-0.0950***	-0.0330***	-0.0288***	-0.0191***
	(0.0145)	(0.0176)	(0.00401)	(0.00479)	(0.00458)
Discount Stores	-0.246***	-0.218***	-0.0492***	-0.0440***	-0.00676
	(0.0190)	(0.0227)	(0.00588)	(0.00704)	(0.00676)
Clothing Stores	-0.146***	-0.137***	-0.0523***	-0.0487***	-0.0212***
	(0.00889)	(0.0107)	(0.00275)	(0.00331)	(0.00323)
Hardware Stores	-0.136***	-0.146***	-0.0280***	-0.0272***	-0.00754*
	(0.0124)	(0.0154)	(0.00356)	(0.00425)	(0.00412)
Vehicles	-0.163***	-0.163***	-0.0447***	-0.0440***	-0.0104***
	(0.0103)	(0.0129)	(0.00336)	(0.00404)	(0.00400)
Interior Furnishing Stores	-0.170***	-0.171***	-0.0214***	-0.0172***	-0.00627
	(0.0114)	(0.0143)	(0.00365)	(0.00441)	(0.00427)
Electric Appliance Stores	-0.169***	-0.148***	-0.0363***	-0.0344***	-0.0117***
	(0.0107)	(0.0130)	(0.00325)	(0.00389)	(0.00379)
Sporting Goods/Toy Stores	-0.206***	-0.194***	-0.0480***	-0.0450***	-0.000204
	(0.0147)	(0.0180)	(0.00471)	(0.00567)	(0.00557)
Health Care	-0.149***	-0.138***	-0.0227***	-0.0198***	-0.00709
	(0.0169)	(0.0209)	(0.00442)	(0.00523)	(0.00503)
Education	-0.104***	-0.119***	-0.0456***	-0.0417***	-0.0184
	(0.0253)	(0.0305)	(0.00949)	(0.0112)	(0.0116)
Professional Services	-0.166***	-0.169***	-0.0312***	-0.0288***	-0.0112***
	(0.0101)	(0.0124)	(0.00256)	(0.00306)	(0.00303)
Repair Shops	-0.131*	-0.195**	-0.0181	-0.0150	0.00719
	(0.0766)	(0.0945)	(0.0216)	(0.0243)	(0.0245)
Other Services	-0.0926***	-0.0828***	-0.0293***	-0.0267***	-0.0106***
	(0.00880)	(0.0105)	(0.00258)	(0.00306)	(0.00305)
Merchant APR (%)	0.00702***	0.00618***	0.0125***	0.0111***	0.00474***
	(0.000249)	(0.000278)	(0.000113)	(0.000137)	(0.000235)
Credit limit (£1000)	0.00729***	0.00575***	-0.00225***	-0.00240***	0.00956***
	(0.000915)	(0.00109)	(0.000335)	(0.000392)	(0.00236)
Utilization (%)	-0.00200***	-0.00202***	-0.00323***	-0.00328***	-0.000863***
	(0.000140)	(0.000175)	(6.69×10^{-05})	(8.18×10^{-05})	(0.000104)
Account age (years)	0.142***	0.145***	0.00655***	0.00624***	-0.00747***

	First purchase of new accounts		All accounts		
	(1)	(2)	(3)	(4)	(5)
VARIABLES	OLS	OLS (+ socioeconomic controls)	RE	RE (+ socioeconomic controls)	FE
	(0.00976)	(0.0115)	(0.000125)	(0.000141)	(0.00128)
Amount purchase (£1000)	-0.692***	-0.720***	-0.168***	-0.162***	-0.123***
	(0.0133)	(0.0170)	(0.00461)	(0.00553)	(0.00617)
Amount purchase (£1000)^2	0.322***	0.344***	0.0708***	0.0654***	0.0565***
	(0.00842)	(0.0113)	(0.00288)	(0.00339)	(0.00389)
Amount purchase (£1000)^3	-0.0607***	-0.0674***	-0.0115***	-0.0101***	-0.0101***
	(0.00208)	(0.00291)	(0.000671)	(0.000774)	(0.000936)
Amount purchase (£1000)^4	0.00481***	0.00559***	0.000786***	0.000662***	0.000715***
	(0.000200)	(0.000291)	($5.87x10^{-05}$)	($6.64x10^{-05}$)	($8.46x10^{-05}$)
Amount purchase (£1000)^5	-0.000132***	-0.000161***	$-1.85x10^{-05}$***	$-1.50x10^{-05}$***	$-1.71x10^{-05}$***
	($6.31x10^{-06}$)	($9.63x10^{-06}$)	($1.66x10^{-06}$)	($1.85x10^{-06}$)	($2.48x10^{-06}$)
Median house price (£)		$9.94x10^{-08}$***		$5.05x10^{-08}$***	
		($3.49x10^{-08}$)		($1.71x10^{-08}$)	
Free school meals (proportion)		-0.301***		-0.227***	
		(0.0391)		(0.0202)	
Weekly Household Income (£)		$3.59x10^{-05}$		$1.34x10^{-05}$	
		($2.68x10^{-05}$)		($1.33x10^{-05}$)	
Constant	0.716***	0.737***	0.643***	0.671***	
	(0.0105)	(0.0225)	(0.00309)	(0.00995)	
R-squared	0.247	0.252			0.021
Observations	58,404	38,481	282,997	194,214	184,673
Number of accounts	58,404	38,481	159,100	108,050	60,776
Month FEs	YES	YES	YES	YES	YES

Note. Table E-4 replicates Table E-3 specifications but months with multiple consumption categories or merchant codes are added to the sample. Models 1 and 2 evaluate the probability of full repayment of the first purchase made by new accounts. Models 3 to 5 include all accounts in the analysis. All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise takes a value of zero. Reference category: Proportion of the total month spending on non-durable goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Appendix F - Regressions with consumers holding multiple cards

Table F-1. Estimated likelihood of repaying full balance, Cardholders holding multiple cards in main samples

VARIABLES	(1) New Accounts - SP	(2) New Accounts - MP	(3) All Accounts - SP	(4) All Accounts - MP
Non-durable (proportion)		0.149***		0.0448***
		(0.0124)		(0.00390)
Non-durable = 1	0.0836***		0.0293***	
	(0.0163)		(0.00465)	
Merchant APR (%)	0.00589***	0.00799***	0.00940***	0.0120***
	(0.00117)	(0.000830)	(0.000446)	(0.000318)
Credit limit (£1000)	0.00318	0.00780***	-0.00140	-0.000173
	(0.00333)	(0.00229)	(0.000961)	(0.000841)
Utilization (%)	-0.000947	-0.00143***	-0.00437***	-0.00373***
	(0.000627)	(0.000400)	(0.000280)	(0.000194)
Account age (years)	0.0354	0.0644**	0.00467***	0.00620***
	(0.0384)	(0.0288)	(0.000390)	(0.000345)
Amount purchase (£1000)	-0.962***	-0.667***	-0.263***	-0.179***
	(0.0555)	(0.0352)	(0.0171)	(0.0118)
Amount purchase (£1000)^2	0.442***	0.304***	0.104***	0.0683***
	(0.0349)	(0.0230)	(0.00890)	(0.00658)
Amount purchase (£1000)^3	-0.0820***	-0.0578***	-0.0145***	-0.00957***
	(0.00844)	(0.00583)	(0.00174)	(0.00138)
Amount purchase (£1000)^4	0.00648***	0.00469***	0.000824***	0.000551***
	(0.000805)	(0.000577)	(0.000131)	(0.000110)
Amount purchase (£1000)^5	-0.000181***	-0.000134***	-1.64×10^{-05}***	-1.10×10^{-05}***
	(2.57×10^{-05})	(1.90×10^{-05})	(3.31×10^{-06})	(2.87×10^{-06})
Median house price (£)	-7.29×10^{-08}	3.16×10^{-08}	1.18×10^{-07}***	8.44×10^{-08}**
	(1.28×10^{-07})	(8.33×10^{-08})	(4.51×10^{-08})	(3.70×10^{-08})
Free school meals (proportion)	-0.0798	-0.373***	-0.101*	-0.246***
	(0.143)	(0.0909)	(0.0555)	(0.0456)
Weekly Household Income (£)	9.47×10^{-05}	7.36×10^{-05}	-4.94×10^{-06}	1.30×10^{-05}
	(9.75×10^{-05})	(6.16×10^{-05})	(3.50×10^{-05})	(2.89×10^{-05})
Constant	0.671***	0.524***	0.689***	0.598***
	(0.0829)	(0.0517)	(0.0271)	(0.0221)
Observations	2,613	7,644	20,255	38,390
R-squared	0.358	0.235		
Month FEs	YES	YES	YES	YES
Number of accounts			13,941	23,851

Note. The samples used on each column are subsets of each of the main samples used in Tables 4, 5, 6 and 7, column 3. These subsets correspond to the account x months in which a cardholder hold multiple cards with positive balance and has postcode socioeconomic data. SP: Single Purchase Months; MP: Multiple Purchase Months. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table F-2. Estimated likelihood of repaying full balance, Single-Purchase-Type Sample for new accounts, Multiple credit card cardholders

VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS	(6) OLS	(7) OLS
Non-durable = 1	0.0834***	0.0837***	0.0842***	0.0831***	0.0830***	0.0833***	0.0835***
	(0.0163)	(0.0163)	(0.0163)	(0.0163)	(0.0163)	(0.0163)	(0.0163)
Merchant APR (%)	0.00583***	0.00586***	0.00596***	0.00583***	0.00583***	0.00587***	0.00585***
	(0.00117)	(0.00117)	(0.00117)	(0.00117)	(0.00117)	(0.00117)	(0.00117)
Credit limit (£1000)	0.00326	0.00322	0.00348	0.00411	0.00427	0.00335	0.00329
	(0.00333)	(0.00333)	(0.00332)	(0.00334)	(0.00334)	(0.00333)	(0.00333)
Utilization (%)	-0.000949	-0.000917	-0.000855	-0.00106*	-0.00101	-0.000917	-0.000924
	(0.000627)	(0.000627)	(0.000626)	(0.000628)	(0.000627)	(0.000627)	(0.000627)
Account age (years)	0.0359	0.0387	0.0375	0.0381	0.0390	0.0375	0.0383
	(0.0384)	(0.0385)	(0.0383)	(0.0384)	(0.0384)	(0.0384)	(0.0384)
Amount purchase (£1000)	-0.962***	-0.961***	-1.043***	-0.998***	-1.005***	-0.988***	-0.991***
	(0.0555)	(0.0554)	(0.0595)	(0.0570)	(0.0574)	(0.0577)	(0.0579)
Amount purchase (£1000)^2	0.442***	0.442***	0.476***	0.457***	0.460***	0.453***	0.454***
	(0.0349)	(0.0349)	(0.0360)	(0.0353)	(0.0354)	(0.0354)	(0.0355)
Amount purchase (£1000)^3	-0.0820***	-0.0819***	-0.0882***	-0.0848***	-0.0854***	-0.0839***	-0.0841***
	(0.00844)	(0.00843)	(0.00858)	(0.00849)	(0.00850)	(0.00851)	(0.00851)
Amount purchase (£1000)^4	0.00648***	0.00647***	0.00697***	0.00671***	0.00675***	0.00663***	0.00664***
	(0.000805)	(0.000805)	(0.000814)	(0.000808)	(0.000809)	(0.000810)	(0.000810)
Amount purchase (£1000)^5	-0.000181***	-0.000181***	-0.000195***	-0.000187***	-0.000189***	-0.000185***	-0.000185***
	($2.57x10^{-05}$)	($2.57x10^{-05}$)	($2.59x10^{-05}$)	($2.58x10^{-05}$)	($2.58x10^{-05}$)	($2.58x10^{-05}$)	($2.58x10^{-05}$)
Median house price (£)	$-7.20x10^{-08}$	$-7.22x10^{-08}$	$-7.01x10^{-08}$	$-6.39x10^{-08}$	$-6.63x10^{-08}$	$-6.72x10^{-08}$	$-6.91x10^{-08}$
	($1.28x10^{-07}$)	($1.28x10^{-07}$)	($1.28x10^{-07}$)	($1.28x10^{-07}$)	($1.28x10^{-07}$)	($1.28x10^{-07}$)	($1.28x10^{-07}$)
Free school meals (proportion)	-0.0761	-0.0773	-0.0675	-0.0629	-0.0655	-0.0747	-0.0752
	(0.143)	(0.143)	(0.143)	(0.143)	(0.143)	(0.143)	(0.143)
Weekly Household Income (£)	$9.54x10^{-05}$	$9.79x10^{-05}$	0.000106	$9.76x10^{-05}$	$9.76x10^{-05}$	$9.63x10^{-05}$	$9.73x10^{-05}$
	($9.75x10^{-05}$)	($9.75x10^{-05}$)	($9.74x10^{-05}$)	($9.74x10^{-05}$)	($9.74x10^{-05}$)	($9.75x10^{-05}$)	($9.75x10^{-05}$)
Number of Cards w/ Positive Balance	0.000302	0.00207*	0.000397	0.000358	0.000172	0.000323	0.000225
	(0.000494)	(0.00120)	(0.000494)	(0.000494)	(0.000495)	(0.000494)	(0.000496)
Balance in other cards (£1000)		-0.00265					
		(0.00163)					
Ratio balance of card to total balance on all cards			0.121***				
			(0.0326)				
Card has the highest utilization = 1				0.0548***			
				(0.0200)			
Card has the lowest utilization = 1					-0.0567***		

					(0.0196)		
Card has the highest balance = 1						0.0331*	
						(0.0201)	
Card has the lowest balance =1							-0.0350*
							(0.0197)
Constant	0.669***	0.667***	0.633***	0.651***	0.708***	0.661***	0.696***
	(0.0829)	(0.0829)	(0.0833)	(0.0831)	(0.0839)	(0.0830)	(0.0843)
Observations	2,613	2,613	2,613	2,613	2,613	2,613	2,613
R-squared	0.358	0.359	0.361	0.360	0.360	0.359	0.359
Month FEs	YES	YES	YES	YES	YES	YES	YES

Note. The sample is based on the sample used in Table F-1, column 1. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table F-3. Estimated likelihood of repaying full balance, Multiple-Purchase-Type Sample for new accounts, Multiple credit card cardholders

VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS	(5) OLS	(6) OLS	(7) OLS
Non-durable (proportion)	0.149***	0.151***	0.152***	0.149***	0.148***	0.150***	0.150***
	(0.0124)	(0.0124)	(0.0123)	(0.0123)	(0.0123)	(0.0123)	(0.0123)
Merchant APR (%)	0.00786***	0.00791***	0.00836***	0.00793***	0.00794***	0.00818***	0.00816***
	(0.000832)	(0.000830)	(0.000826)	(0.000825)	(0.000826)	(0.000829)	(0.000830)
Credit limit (£1000)	0.00789***	0.00773***	0.00836***	0.00972***	0.00978***	0.00830***	0.00824***
	(0.00229)	(0.00229)	(0.00228)	(0.00228)	(0.00229)	(0.00229)	(0.00229)
Utilization (%)	-0.00145***	-0.00142***	-0.00119***	-0.00155***	-0.00145***	-0.00129***	-0.00129***
	(0.000400)	(0.000399)	(0.000398)	(0.000397)	(0.000398)	(0.000399)	(0.000399)
Account age (years)	0.0654**	0.0722**	0.0667**	0.0664**	0.0658**	0.0672**	0.0668**
	(0.0288)	(0.0288)	(0.0286)	(0.0286)	(0.0286)	(0.0287)	(0.0287)
Amount purchase (£1000)	-0.665***	-0.662***	-0.792***	-0.743***	-0.743***	-0.732***	-0.734***
	(0.0352)	(0.0351)	(0.0367)	(0.0356)	(0.0358)	(0.0360)	(0.0362)
Amount purchase (£1000)^2	0.304***	0.303***	0.356***	0.336***	0.336***	0.329***	0.331***
	(0.0230)	(0.0230)	(0.0233)	(0.0230)	(0.0231)	(0.0231)	(0.0232)
Amount purchase (£1000)^3	-0.0577***	-0.0576***	-0.0676***	-0.0640***	-0.0640***	-0.0622***	-0.0628***
	(0.00582)	(0.00581)	(0.00584)	(0.00580)	(0.00582)	(0.00582)	(0.00584)
Amount purchase (£1000)^4	0.00469***	0.00468***	0.00549***	0.00521***	0.00521***	0.00503***	0.00509***
	(0.000577)	(0.000576)	(0.000577)	(0.000574)	(0.000575)	(0.000576)	(0.000577)
Amount purchase (£1000)^5	-0.000134***	-0.000134***	-0.000157***	-0.000149***	-0.000149***	-0.000144***	-0.000145***
	($1.90x10^{-05}$)	($1.90x10^{-05}$)	($1.90x10^{-05}$)	($1.89x10^{-05}$)	($1.90x10^{-05}$)	($1.90x10^{-05}$)	($1.90x10^{-05}$)
Median house price (£)	$3.36x10^{-08}$	$2.93x10^{-08}$	$2.41x10^{-08}$	$2.67x10^{-08}$	$2.14x10^{-08}$	$2.66x10^{-08}$	$2.63x10^{-08}$
	($8.33x10^{-08}$)	($8.31x10^{-08}$)	($8.26x10^{-08}$)	($8.26x10^{-08}$)	($8.27x10^{-08}$)	($8.29x10^{-08}$)	($8.30x10^{-08}$)
Free school meals (proportion)	-0.365***	-0.369***	-0.365***	-0.348***	-0.350***	-0.359***	-0.358***
	(0.0909)	(0.0908)	(0.0902)	(0.0902)	(0.0904)	(0.0906)	(0.0906)
Weekly Household Income (£)	$7.50x10^{-05}$	$8.11x10^{-05}$	$9.43x10^{-05}$	$8.64x10^{-05}$	$8.96x10^{-05}$	$8.97x10^{-05}$	$8.85x10^{-05}$
	($6.16x10^{-05}$)	($6.15x10^{-05}$)	($6.11x10^{-05}$)	($6.11x10^{-05}$)	($6.12x10^{-05}$)	($6.13x10^{-05}$)	($6.14x10^{-05}$)
Number of Cards w/ Positive Balance	0.000758**	0.00466***	0.000978***	0.000914***	0.000534	0.000836**	0.000569*
	(0.000344)	(0.000801)	(0.000342)	(0.000342)	(0.000343)	(0.000343)	(0.000344)
Balance in other cards (£1000)		-0.00638***					
		(0.00118)					
Ratio balance of card to total balance on all cards			0.209***				
			(0.0187)				
Card has the highest utilization = 1				0.124***			
				(0.0111)			
Card has the lowest utilization = 1					-0.110***		
					(0.0110)		

Card has the highest balance = 1						0.0915***	
						(0.0113)	
Card has the lowest balance =1							-0.0855***
							(0.0112)
Constant	0.519***	0.515***	0.456***	0.480***	0.589***	0.490***	0.577***
	(0.0518)	(0.0517)	(0.0517)	(0.0515)	(0.0519)	(0.0517)	(0.0521)
Observations	7,644	7,644	7,644	7,644	7,644	7,644	7,644
R-squared	0.235	0.238	0.247	0.248	0.245	0.242	0.241
Month FEs	YES	YES	YES	YES	YES	YES	YES

Note. The sample is based on the sample used in Table F-1, column 2. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table F-4. Estimated likelihood of repaying full balance, Single-Purchase-Type Sample for all accounts, Multiple credit card cardholders

VARIABLES	(1) RE	(2) RE	(3) RE	(4) RE	(5) RE	(6) RE	(7) RE
Non-durable = 1	0.0293***	0.0286***	0.0307***	0.0299***	0.0298***	0.0302***	0.0298***
	(0.00465)	(0.00464)	(0.00464)	(0.00464)	(0.00464)	(0.00465)	(0.00465)
Merchant APR (%)	0.00940***	0.00971***	0.00964***	0.00949***	0.00943***	0.00951***	0.00945***
	(0.000446)	(0.000446)	(0.000445)	(0.000444)	(0.000445)	(0.000445)	(0.000445)
Credit limit (£1000)	-0.00140	-0.000743	-0.000545	-0.000131	-0.000346	-0.00105	-0.00115
	(0.000961)	(0.000961)	(0.000961)	(0.000966)	(0.000969)	(0.000961)	(0.000962)
Utilization (%)	-0.00437***	-0.00423***	-0.00426***	-0.00460***	-0.00448***	-0.00432***	-0.00433***
	(0.000280)	(0.000280)	(0.000280)	(0.000280)	(0.000280)	(0.000280)	(0.000280)
Account age (years)	0.00467***	0.00443***	0.00433***	0.00445***	0.00451***	0.00454***	0.00458***
	(0.000390)	(0.000389)	(0.000389)	(0.000389)	(0.000389)	(0.000389)	(0.000390)
Amount purchase (£1000)	-0.263***	-0.264***	-0.339***	-0.302***	-0.295***	-0.296***	-0.288***
	(0.0171)	(0.0171)	(0.0186)	(0.0175)	(0.0176)	(0.0178)	(0.0178)
Amount purchase (£1000)^2	0.104***	0.104***	0.132***	0.119***	0.116***	0.115***	0.113***
	(0.00891)	(0.00889)	(0.00930)	(0.00902)	(0.00904)	(0.00907)	(0.00908)
Amount purchase (£1000)^3	-0.0145***	-0.0146***	-0.0186***	-0.0169***	-0.0162***	-0.0161***	-0.0157***
	(0.00174)	(0.00173)	(0.00178)	(0.00175)	(0.00175)	(0.00175)	(0.00176)
Amount purchase (£1000)^4	0.000824***	0.000832***	0.00108***	0.000976***	0.000933***	0.000925***	0.000902***
	(0.000131)	(0.000131)	(0.000133)	(0.000132)	(0.000132)	(0.000132)	(0.000132)
Amount purchase (£1000)^5	-1.64x10^{-05}***	-1.66x10^{-05}***	-2.19x10^{-05}***	-1.97x10^{-05}***	-1.87x10^{-05}***	-1.85x10^{-05}***	-1.80x10^{-05}***
	(3.31x10^{-06})	(3.30x10^{-06})	(3.34x10^{-06})	(3.32x10^{-06})	(3.32x10^{-06})	(3.32x10^{-06})	(3.32x10^{-06})
Median house price (£)	1.18x10^{-07}***	1.16x10^{-07}***	1.13x10^{-07}**	1.16x10^{-07}***	1.16x10^{-07}***	1.15x10^{-07}**	1.16x10^{-07}***
	(4.51x10^{-08})	(4.50x10^{-08})	(4.49x10^{-08})	(4.50x10^{-08})	(4.50x10^{-08})	(4.51x10^{-08})	(4.51x10^{-08})
Free school meals (proportion)	-0.101*	-0.100*	-0.0965*	-0.0941*	-0.0966*	-0.100*	-0.101*
	(0.0555)	(0.0553)	(0.0553)	(0.0553)	(0.0554)	(0.0554)	(0.0554)
Weekly Household Income (£)	-4.90x10^{-06}	2.20x10^{-06}	2.66x10^{-06}	-1.70x10^{-06}	-2.88x10^{-06}	-1.62x10^{-06}	-3.13x10^{-06}
	(3.50x10^{-05})	(3.49x10^{-05})	(3.49x10^{-05})	(3.49x10^{-05})	(3.49x10^{-05})	(3.50x10^{-05})	(3.50x10^{-05})
Number of Cards w/ Positive Balance	8.71x10^{-05}	0.00511***	0.000256	0.000191	-5.14x10^{-05}	0.000140	-7.30x10^{-06}
	(0.000434)	(0.000700)	(0.000432)	(0.000433)	(0.000433)	(0.000433)	(0.000434)
Balance in other cards (£1000)		-0.00733***					
		(0.000803)					
Ratio balance of card to total balance on all cards			0.106***				
			(0.0104)				
Card has the highest utilization = 1				0.0589***			
				(0.00595)			
Card has the lowest utilization = 1					-0.0416***		
					(0.00556)		

Card has the highest balance = 1						0.0409***	
						(0.00613)	
Card has the lowest balance =1							-0.0276***
							(0.00565)
Constant	0.689***	0.678***	0.662***	0.674***	0.719***	0.681***	0.712***
	(0.0272)	(0.0271)	(0.0272)	(0.0271)	(0.0274)	(0.0272)	(0.0275)
Observations	20,255	20,255	20,255	20,255	20,255	20,255	20,255
Number of accounts	13,941	13,941	13,941	13,941	13,941	13,941	13,941
Month FEs	YES	YES	YES	YES	YES	YES	YES

Note. The sample is based on the sample used in Table F-1, column 3. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table F-5. Estimated likelihood of repaying full balance, Multiple-Purchase-Type Sample for all accounts, Multiple credit card cardholders

VARIABLES	(1) RE	(2) RE	(3) RE	(4) RE	(5) RE	(6) RE	(7) RE
Non-durable (proportion)	0.0448***	0.0444***	0.0464***	0.0456***	0.0453***	0.0459***	0.0455***
	(0.00390)	(0.00389)	(0.00389)	(0.00389)	(0.00389)	(0.00389)	(0.00389)
Merchant APR (%)	0.0119***	0.0122***	0.0123***	0.0120***	0.0120***	0.0121***	0.0120***
	(0.000319)	(0.000318)	(0.000317)	(0.000317)	(0.000317)	(0.000318)	(0.000318)
Credit limit (£1000)	-0.000160	0.000636	0.000995	0.00160*	0.00139*	0.000391	0.000269
	(0.000841)	(0.000839)	(0.000836)	(0.000840)	(0.000843)	(0.000838)	(0.000839)
Utilization (%)	-0.00374***	-0.00360***	-0.00358***	-0.00394***	-0.00383***	-0.00366***	-0.00367***
	(0.000194)	(0.000194)	(0.000193)	(0.000194)	(0.000194)	(0.000194)	(0.000194)
Account age (years)	0.00621***	0.00591***	0.00568***	0.00585***	0.00594***	0.00596***	0.00603***
	(0.000345)	(0.000344)	(0.000343)	(0.000343)	(0.000344)	(0.000344)	(0.000344)
Amount purchase (£1000)	-0.179***	-0.179***	-0.280***	-0.236***	-0.228***	-0.229***	-0.220***
	(0.0118)	(0.0117)	(0.0128)	(0.0121)	(0.0122)	(0.0122)	(0.0123)
Amount purchase (£1000)^2	0.0683***	0.0683***	0.107***	0.0909***	0.0876***	0.0862***	0.0836***
	(0.00658)	(0.00656)	(0.00683)	(0.00666)	(0.00668)	(0.00668)	(0.00671)
Amount purchase (£1000)^3	-0.00957***	-0.00957***	-0.0156***	-0.0132***	-0.0126***	-0.0123***	-0.0119***
	(0.00138)	(0.00137)	(0.00140)	(0.00138)	(0.00139)	(0.00138)	(0.00139)
Amount purchase (£1000)^4	0.000551***	0.000556***	0.000937***	0.000790***	0.000747***	0.000721***	0.000704***
	(0.000110)	(0.000109)	(0.000111)	(0.000110)	(0.000110)	(0.000110)	(0.000110)
Amount purchase (£1000)^5	-1.10x10^{-05}***	-1.12x10^{-05}***	-1.96x10^{-05}***	-1.65x10^{-05}***	-1.54x10^{-05}***	-1.48x10^{-05}***	-1.45x10^{-05}***
	(2.87x10^{-06})	(2.86x10^{-06})	(2.89x10^{-06})	(2.87x10^{-06})	(2.87x10^{-06})	(2.87x10^{-06})	(2.88x10^{-06})
Median house price (£)	8.47x10^{-08}**	8.34x10^{-08}**	7.59x10^{-08}**	7.91x10^{-08}**	7.80x10^{-08}**	7.87x10^{-08}**	8.06x10^{-08}**
	(3.70x10^{-08})	(3.68x10^{-08})	(3.66x10^{-08})	(3.66x10^{-08})	(3.67x10^{-08})	(3.68x10^{-08})	(3.68x10^{-08})
Free school meals (proportion)	-0.244***	-0.244***	-0.242***	-0.235***	-0.238***	-0.243***	-0.243***
	(0.0456)	(0.0454)	(0.0452)	(0.0452)	(0.0454)	(0.0454)	(0.0455)
Weekly Household Income (£)	1.34x10^{-05}	2.05x10^{-05}	2.49x10^{-05}	1.88x10^{-05}	1.83x10^{-05}	2.04x10^{-05}	1.77x10^{-05}
	(2.89x10^{-05})	(2.87x10^{-05})	(2.86x10^{-05})	(2.86x10^{-05})	(2.87x10^{-05})	(2.87x10^{-05})	(2.88x10^{-05})
Number of Cards w/ Positive Balance	0.000510*	0.00651***	0.000760**	0.000668**	0.000347	0.000603**	0.000375
	(0.000300)	(0.000501)	(0.000298)	(0.000298)	(0.000299)	(0.000299)	(0.000300)
Balance in other cards (£1000)		-0.00934***					
		(0.000626)					
Ratio balance of card to total balance on all cards			0.147***				
			(0.00746)				
Card has the highest utilization = 1				0.0795***			
				(0.00417)			
Card has the lowest utilization = 1					-0.0600***		
					(0.00398)		

Card has the highest balance = 1						0.0617***	
						(0.00425)	
Card has the lowest balance =1							-0.0450***
							(0.00401)
Constant	0.596***	0.586***	0.558***	0.577***	0.639***	0.583***	0.632***
	(0.0221)	(0.0220)	(0.0220)	(0.0220)	(0.0222)	(0.0220)	(0.0223)
Observations	38,390	38,390	38,390	38,390	38,390	38,390	38,390
Number of accounts	23,851	23,851	23,851	23,851	23,851	23,851	23,851
Month FEs	YES	YES	YES	YES	YES	YES	YES

Note. The sample is based on the sample used in Table F-1, column 4. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Appendix G - Reclassification of categories based on survey results

The classification of categories of expenditure as durable and non-durable in our main analysis follows the classification used in Kuchler (2013). One referee asked us to conduct a survey of consumers to generate an independent classification of expenditure types. We conducted a preregistered survey to estimate the durability of items from each merchant category, see https://aspredicted.org/f9iu4.pdf. The Argus data contains 27 main categories in total. We exclude 2 from our main analysis: cash and utilities. Many of the remaining 25 categories are very broad and might contain both durable and non-durable goods. Therefore, we obtained the next-level-down disaggregation of individual items and designed the survey based on these. Respondents were asked to rate the durability of each among 152 individual items on a 1-7 scale. We excluded from the survey items whose consumption is rare (with a weight of less than 1 in 1,000 in the 2014 UK Consumer Price Inflation indices (CPI)). The exact wording of the questions was as follows:

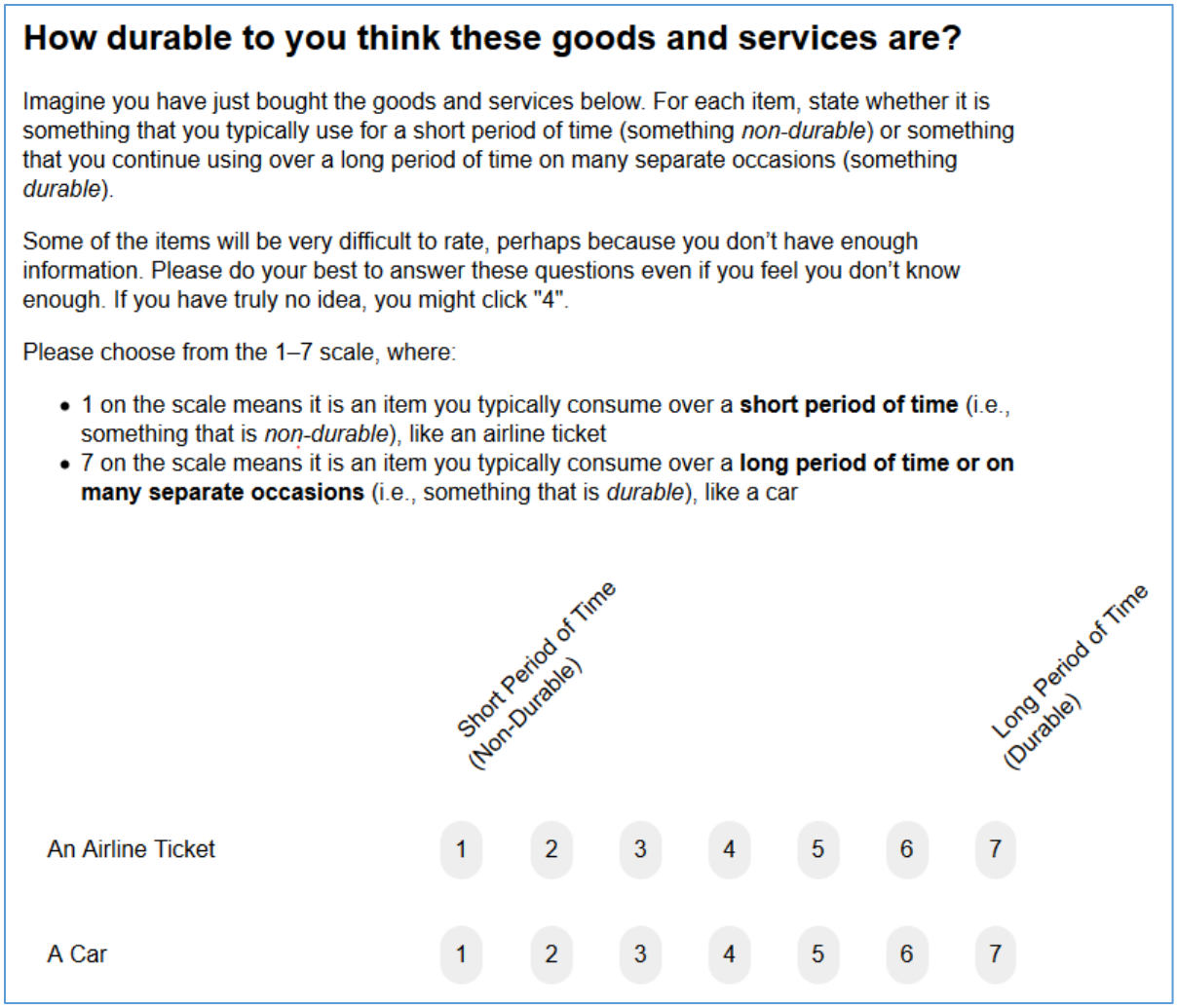

Figure G-1. Question format used in the consumer survey for the classification of items in durables and non-durables.

The survey sample was drawn from Prolific Academic, and restricted to UK Nationals living in the UK. The survey, which was conducted online, can be viewed here: http://www.stewart.warwick.ac.uk/expt/durability_1/

We collected responses from 501 participants. The survey received ethical approval from the University of Warwick Humanities and Social Sciences Research Ethics Committee, approval number 102/17-18. For each item, we constructed the mean durability score over participants. We then took the weighted average of durability scores within each category (using CPI weights). CPI weights reflect the levels of spending on different goods and services in the UK National Accounts and are used for the calculation of inflation statistics.

Based on this approach we obtained a weighted mean durability score for each of the 25 spending categories. We have median split the 25 categories into low and high durability and repeat our main analysis using 25 reclassified categories. We have also use category non-durability scores (normalized between 0 and 1) in place of the 0/1 dummy for low/high non-durability and repeat the analysis (See tables G-7 and G-8).

The detailed procedure to construct average weighted scores is defined as follows:

1. *Data cleaning.* As recorded in advance in our preregistration, we flagged: (1) participants who rate an airline ticket as more durable than a car, (2) the 5% fastest and 5% slowest participants, (3) participants with duplicated IP, (4) participants whose autocorrelation over successive responses are in the top 2.5% of bottom 2.5% of the distribution, (5) participants whose responses scale entropy is in the lowest 5%, and (6) the 5% of participants with the lowest correlation between their ratings and the average of everyone else's ratings. Participants identified through this (non-sequential) procedure were dropped from the sample (112 participants from the 501 sample).

2. For each item, we computed the item mean score over participants.

3. We computed the relative weights for item within each merchant code. We have weights for each CPI subcategory, however, a subcategory can be matched to many items, e.g., the items "An Item of Men's or Boy's Clothing", "An Item of Women's Clothing", "An Item of Children's Clothing", are related to the CPI subcategory "03.1 Clothing". Or the items "A Visit to the Osteopath", "A Visit to the Chiropractor", "A Visit to the Opticians", are related to the CPI subcategory "06.2.1/3 Medical services & paramedical services". So, to prevent double counting or multiple counting weights, for each merchant code, we adjusted the item's weight to account for the number of items within CPI subcategories.

4. Then, for each merchant code, we computed a merchant code average durability, weighting the items durability (from step 2) with the relative weights (from step 3) and adding these weighted scores to get the merchant code score. The results from this procedure are displayed in Figure G-2. The figure also shows merchant code scores that are just average of items scores (from step 2) and do not use any weight.

Tables G-1 to G-6 use the durability classification of the merchant codes after median split the merchant codes from Figure G-2 into low and high durability. Tables G-7 and G-8 use the category non-durability scores (normalized between 0 and 1) in place of the 0/1 dummy for low/high non-durability and repeat the analysis. These scores are displayed in Figure G-4.

While our data analysis procedure described is consistent with the preregistration of the study, to have an estimate of the uncertainty in the average scores obtained above, we also repeated the analysis but this time calculating scores within subjects. Thus, we omitted step 2 because each participant provided only one score for each item and we repeated steps 2 to 4 within participant. Figure G-3 shows the average merchant code scores along with 95% CI. The general average scores are close to the scores obtained in Figure G-2 with very small differences, differing only because some participant did not provide scores to some items.

In all cases, our consumers' judgments of the durability of each category are very close to the Kuchler (2013) classification we used in our original analysis. This means that our estimates of the coefficient for the non-durability dummy / proportion are very close to those presented for the original Kuchler classification in the main text (in the main text, our results showed a coefficient for the non-durable dummy of 0.095 (Table 4, column 3); while the results after the reclassification of merchant codes show a coefficient of 0.075 (Table G-1, column 3))

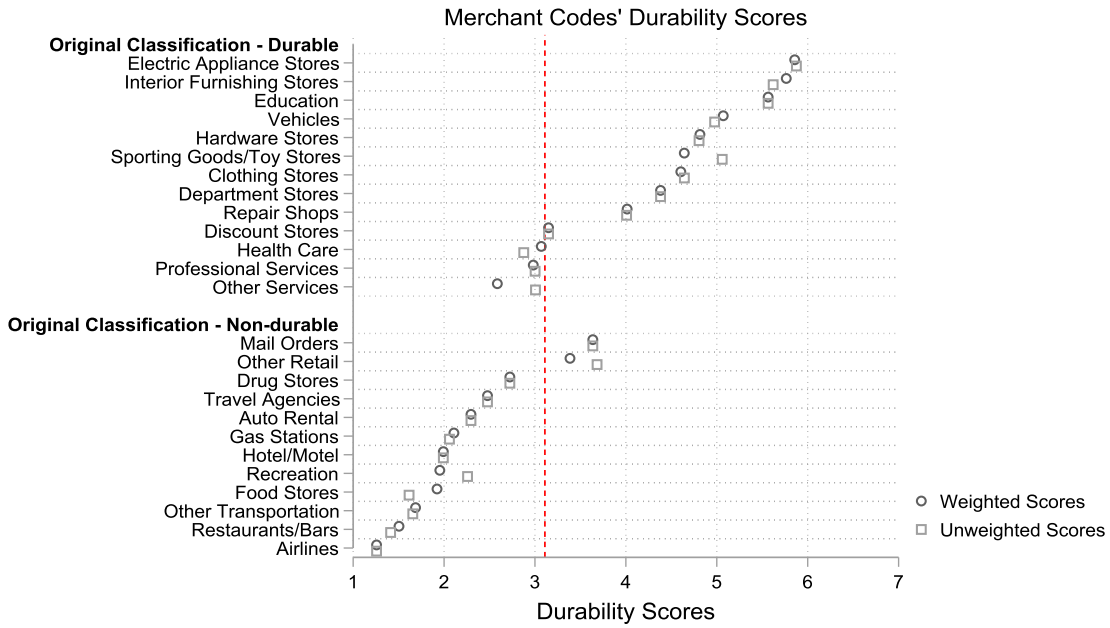

Figure G-2. Average durability scores for each merchant code. The red line highlights the median score.

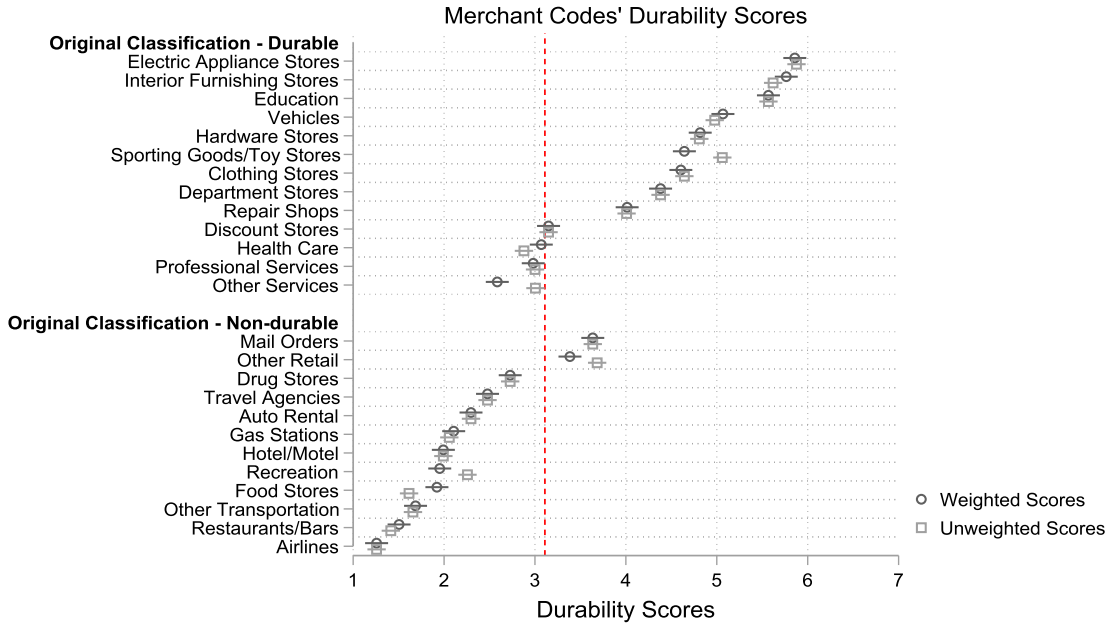

Figure G-3. Average durability scores for each merchant code computed within subject. For comparability, the red line highlights the median score computed in Figure G-2. Lines span 95% confidence intervals.

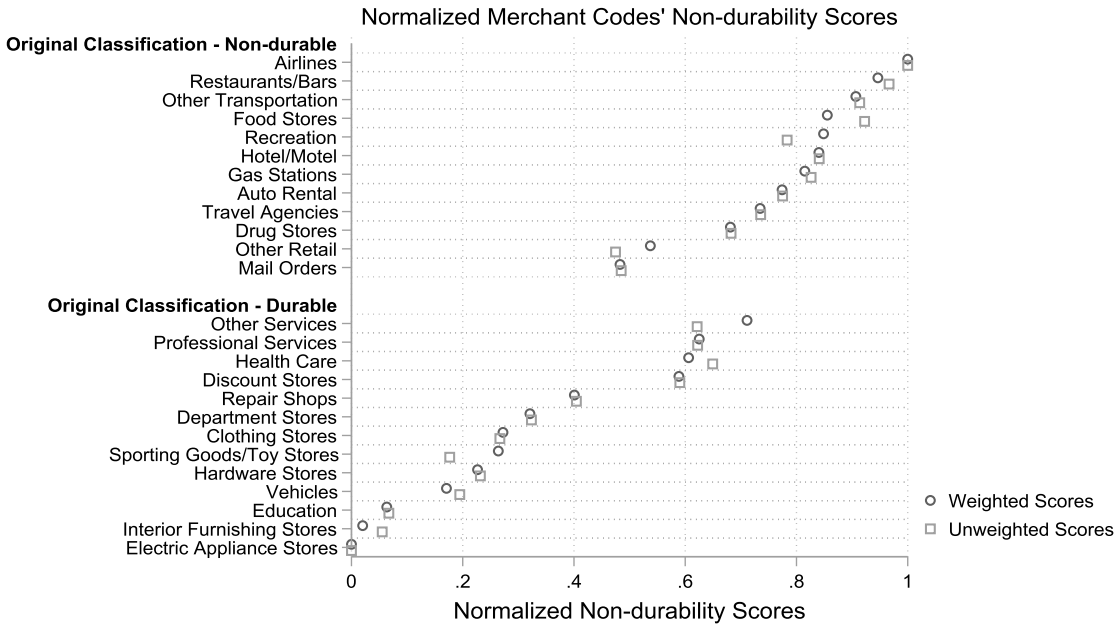

Figure G-4. Normalized non-durability scores for each merchant code. Average weighted scores displayed in Figure G-2 were rescaled to calculate a 0 to 1 score for non-durability.

Table G-1. Estimated likelihood of repaying full balance, Single-Purchase-Type Sample for new accounts

	All observations			Sample split by quartiles of purchase amount			
VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS – Quartile 1 (£5.02 - £54.69)	(5) OLS – Quartile 2 (Q2: £54.70 - £200.00)	(6) OLS – Quartile 3 (Q3: £200.01-£750.00)	(7) OLS – Quartile 4 (£750.01-£17000)
Non-durable = 1	0.0958***	0.0729***	0.0754***	0.0303***	0.102***	0.107***	0.0377***
	(0.00685)	(0.00569)	(0.00563)	(0.00924)	(0.0122)	(0.0133)	(0.00886)
Merchant APR (%)			0.00625***	0.00307***	0.00605***	0.00879***	0.00831***
			(0.000344)	(0.000515)	(0.000703)	(0.000834)	(0.000715)
Credit limit (£1000)			0.00252*	-0.000778	0.00354	0.00491	0.00321
			(0.00129)	(0.00219)	(0.00277)	(0.00333)	(0.00341)
Utilization (%)			-0.00156***	-0.00858**	-0.00352***	-0.00227***	-0.000700**
			(0.000218)	(0.00338)	(0.00130)	(0.000477)	(0.000328)
Account age (years)			0.128***	-0.00345	0.0941***	0.259***	0.321***
			(0.0124)	(0.0182)	(0.0252)	(0.0301)	(0.0245)
Amount purchase (£1000)		-1.073***	-0.953***	44.81	-125.6*	20.92	-0.215***
		(0.0161)	(0.0196)	(31.86)	(72.32)	(20.51)	(0.0533)
Amount purchase (£1000)^2		0.480***	0.439***	-3,223	2,129*	-116.9	0.0710***
		(0.0114)	(0.0117)	(2,770)	(1,294)	(98.93)	(0.0234)
Amount purchase (£1000)^3		-0.0864***	-0.0797***	109,502	-17,731	293.6	-0.0104**
		(0.00272)	(0.00273)	(108,277)	(11,089)	(228.5)	(0.00430)
Amount purchase (£1000)^4		0.00655***	0.00605***	$-1.819x10^{+06}$	71,726	-344.2	0.000691**
		(0.000251)	(0.000250)	($1.944x10^{+06}$)	(45,717)	(253.8)	(0.000337)
Amount purchase (£1000)^5		-0.000173***	-0.000160***	$1.167x10^{+07}$	-112,894	152.8	$-1.67x10^{-05}$*
		($7.66x10^{-06}$)	($7.61x10^{-06}$)	($1.303x10^{+07}$)	(72,759)	(108.7)	($9.22x10^{-06}$)
Constant	0.472***	0.778***	0.696***	0.613***	3.564**	-0.952	0.231***
	(0.00524)	(0.00543)	(0.0160)	(0.132)	(1.546)	(1.625)	(0.0455)
Observations	21,671	21,671	21,671	5,701	5,836	4,990	5,144
Observations Non-durable = 1	12,682	12,682	12,682	3,453	3,564	2,762	2,903
R-squared	0.009	0.322	0.341	0.023	0.065	0.099	0.108
Month FEs	NO	NO	YES	YES	YES	YES	YES

Note. The sample is restricted to new accounts and includes months in which purchases were related to only one merchant code. All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise takes a value of zero. Models 4 to 7 split the sample in 4 quartiles based on purchase amount. For instance, all purchases included in Model 4 had a monthly balance higher than £5.02 and up to £54.69. Quartiles cut-off values were defined based on the value of durable purchases. Reference category:

Durable goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table G-2. Estimated likelihood of repaying full balance, Single-Purchase-Type Sample for new accounts, additional controls

	All observations			Sample split by quartiles of purchase amount			
VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS – Quartile 1 (£5.02 - £54.69)	(5) OLS – Quartile 2 (Q2: £54.70 - £200.00)	(6) OLS – Quartile 3 (Q3: £200.01-£750.00)	(7) OLS – Quartile 4 (£750.01-£17000)
Non-durable = 1	0.0850***	0.0659***	0.0684***	0.0251**	0.0969***	0.0926***	0.0355***
	(0.00823)	(0.00687)	(0.00681)	(0.0105)	(0.0143)	(0.0165)	(0.0121)
Merchant APR (%)			0.00560***	0.00299***	0.00510***	0.00860***	0.00777***
			(0.000387)	(0.000571)	(0.000788)	(0.000953)	(0.000844)
Credit limit (£1000)			0.00168	0.000483	0.000818	0.00619	-0.00702
			(0.00152)	(0.00252)	(0.00318)	(0.00401)	(0.00453)
Utilization (%)			-0.00196***	-0.0109***	-0.00374**	-0.00236***	-0.00184***
			(0.000272)	(0.00398)	(0.00152)	(0.000579)	(0.000454)
Account age (years)			0.116***	-0.0193	0.100***	0.245***	0.294***
			(0.0147)	(0.0207)	(0.0294)	(0.0372)	(0.0311)
Amount purchase (£1000)		-1.088***	-0.954***	41.81	-95.44	20.17	-0.155*
		(0.0209)	(0.0251)	(35.63)	(85.30)	(25.31)	(0.0793)
Amount purchase (£1000)^2		0.499***	0.455***	-3,209	1,603	-114.2	0.0505
		(0.0156)	(0.0160)	(3,115)	(1,527)	(122.1)	(0.0362)
Amount purchase (£1000)^3		-0.0938***	-0.0864***	113,170	-13,216	289.1	-0.00668
		(0.00392)	(0.00393)	(122,394)	(13,098)	(282.4)	(0.00694)
Amount purchase (£1000)^4		0.00747***	0.00690***	$-1.876x10^{+06}$	52,723	-340.6	0.000407
		(0.000380)	(0.000379)	$(2.208x10^{+06})$	(54,039)	(313.7)	(0.000570)
Amount purchase (£1000)^5		-0.000208***	-0.000193***	$1.167x10^{+07}$	-81,694	151.6	$-9.45x10^{-06}$
		$(1.22x10^{-05})$	$(1.21x10^{-05})$	$(1.487x10^{+07})$	(86,072)	(134.5)	$(1.64x10^{-05})$
Median house price (£)	$1.24x10^{-07}$*	$3.05x10^{-08}$	$2.56x10^{-08}$	$-1.71x10^{-07}$**	$3.05x10^{-08}$	$5.35x10^{-08}$	$2.59x10^{-07}$**
	$(6.65x10^{-08})$	$(5.54x10^{-08})$	$(5.47x10^{-08})$	$(8.26x10^{-08})$	$(1.21x10^{-07})$	$(1.21x10^{-07})$	$(1.04x10^{-07})$
Free school meals (proportion)	-0.289***	-0.287***	-0.270***	-0.312***	-0.205*	-0.244*	-0.327***
	(0.0713)	(0.0594)	(0.0588)	(0.0910)	(0.121)	(0.144)	(0.105)
Weekly Household Income (£)	$-6.71x10^{-05}$	$-1.78x10^{-05}$	$-9.92x10^{-06}$	$-3.15x10^{-05}$	$5.60x10^{-05}$	$7.40x10^{-05}$	-0.000186**
	$(5.06x10^{-05})$	$(4.21x10^{-05})$	$(4.16x10^{-05})$	$(6.32x10^{-05})$	$(8.86x10^{-05})$	$(9.79x10^{-05})$	$(7.71x10^{-05})$
Constant	0.577***	0.846***	0.778***	0.734***	2.924	-0.853	0.430***
	(0.0348)	(0.0292)	(0.0341)	(0.153)	(1.822)	(2.006)	(0.0824)
Observations	14,851	14,851	14,851	4,262	4,099	3,341	3,149
Observations Non-durable = 1	8,687	8,687	8,687	2,559	2,485	1,853	1,790
R-squared	0.009	0.313	0.332	0.026	0.067	0.101	0.112
Month FEs	NO	NO	YES	YES	YES	YES	YES

Note. Table G-2 replicates Table G-1 specifications with the addition of socioeconomic controls: Median house price, proportion of students on free school meals and weekly household income. The sample is restricted to new accounts and includes months in which expenses were related to only

one spending type. All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise takes a value of zero. Models 4 to 7 split the sample in 4 quartiles based on purchase amount. For instance, all purchases included in Model 4 had a monthly balance higher than £5.02 and up to £54.69. Quartiles cut-off values were defined based on the value of durable purchases. Reference category: Durable goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table G-3. Estimated likelihood of repaying full balance, Multiple-Purchase-Type Sample for new accounts

	All observations			Sample split by quartiles of purchase amount			
VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS – Quartile 1 (£5.02 - £54.69)	(5) OLS – Quartile 2 (Q2: £54.70 - £200.00)	(6) OLS – Quartile 3 (Q3: £200.01- £750.00)	(7) OLS – Quartile 4 (£750.01- £17000)
Non-durable (proportion)	0.149***	0.119***	0.118***	0.0253***	0.121***	0.190***	0.0853***
	(0.00498)	(0.00447)	(0.00441)	(0.00870)	(0.00944)	(0.00861)	(0.00730)
Merchant APR (%)			0.00703***	0.00317***	0.00608***	0.00818***	0.00794***
			(0.000250)	(0.000466)	(0.000475)	(0.000471)	(0.000576)
Credit limit (£1000)			0.00749***	-0.000653	0.00724***	0.0128***	0.00776***
			(0.000918)	(0.00200)	(0.00193)	(0.00172)	(0.00210)
Utilization (%)			-0.00206***	-0.00988***	-0.00248***	-0.00177***	-0.00161***
			(0.000140)	(0.00291)	(0.000780)	(0.000256)	(0.000223)
Account age (years)			0.142***	0.00282	0.0951***	0.192***	0.266***
			(0.00979)	(0.0166)	(0.0186)	(0.0193)	(0.0211)
Amount purchase (£1000)		-0.889***	-0.726***	61.03**	-101.3**	-13.63	-0.228***
		(0.0111)	(0.0132)	(29.91)	(51.02)	(10.58)	(0.0401)
Amount purchase (£1000)^2		0.406***	0.341***	-5,019*	1,624*	55.65	0.0691***
		(0.00820)	(0.00840)	(2,567)	(902.9)	(50.87)	(0.0190)
Amount purchase (£1000)^3		-0.0768***	-0.0648***	192,802*	-12,793*	-112.8	-0.00984***
		(0.00207)	(0.00208)	(99,206)	(7,667)	(117.2)	(0.00371)
Amount purchase (£1000)^4		0.00610***	0.00516***	$-3.498x10^{+06}$**	48,897	110.4	0.000661**
		(0.000201)	(0.000200)	($1.763x10^{+06}$)	(31,344)	(129.8)	(0.000306)
Amount purchase (£1000)^5		-0.000167***	-0.000142***	$2.385x10^{+07}$**	-72,566	-41.76	$-1.66x10^{-05}$*
		($6.37x10^{-06}$)	($6.32x10^{-06}$)	($1.170x10^{+07}$)	(49,535)	(55.53)	($8.72x10^{-06}$)
Constant	0.381***	0.709***	0.594***	0.563***	3.064***	1.597*	0.326***
	(0.00356)	(0.00433)	(0.0107)	(0.125)	(1.104)	(0.842)	(0.0316)
Observations	58,404	58,404	58,404	7,190	13,240	20,751	17,223
R-squared	0.015	0.214	0.240	0.023	0.054	0.083	0.083
Month FEs	NO	NO	YES	YES	YES	YES	YES

Note. Table G-3 replicates Table G-1 specifications for the months with both consumption types. All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise takes a value of zero. Models 4 to 7 split the sample in 4 quartiles based on purchased amount. For instance, all purchases included in Model 4 had a monthly balance higher than £5.02 and up to £54.69. Quartiles cut-off values were defined based on the value of durable purchases. Reference category: Proportion of the total month spending on durable goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table G-4. Estimated likelihood of repaying full balance, Multiple-Purchase-Type Sample for new accounts, additional controls

	All observations			Sample split by quartiles of purchase amount			
VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS – Quartile 1 (£5.02 - £54.69)	(5) OLS – Quartile 2 (Q2: £54.70 - £200.00)	(6) OLS – Quartile 3 (Q3: £200.01- £750.00)	(7) OLS – Quartile 4 (£750.01- £17000)
Non-durable (proportion)	0.134***	0.106***	0.107***	0.0215**	0.113***	0.170***	0.0838***
	(0.00612)	(0.00546)	(0.00540)	(0.00990)	(0.0111)	(0.0108)	(0.00958)
Merchant APR (%)			0.00620***	0.00310***	0.00507***	0.00735***	0.00754***
			(0.000279)	(0.000517)	(0.000525)	(0.000530)	(0.000644)
Credit limit (£1000)			0.00588***	$3.15x10^{-06}$	0.00578***	0.0116***	0.00326
			(0.00110)	(0.00230)	(0.00223)	(0.00211)	(0.00267)
Utilization (%)			-0.00209***	-0.0120***	-0.00209**	-0.00172***	-0.00187***
			(0.000176)	(0.00341)	(0.000915)	(0.000321)	(0.000294)
Account age (years)			0.144***	-0.0151	0.103***	0.209***	0.287***
			(0.0116)	(0.0190)	(0.0214)	(0.0233)	(0.0260)
Amount purchase (£1000)		-0.922***	-0.759***	56.72*	-100.9*	-12.30	-0.220***
		(0.0143)	(0.0169)	(33.45)	(59.70)	(13.27)	(0.0567)
Amount purchase (£1000)^2		0.432***	0.366***	-4,865*	1,624	51.85	0.0692**
		(0.0110)	(0.0113)	(2,883)	(1,057)	(63.89)	(0.0276)
Amount purchase (£1000)^3		-0.0847***	-0.0723***	189,909*	-12,769	-110.3	-0.0103*
		(0.00290)	(0.00291)	(111,850)	(8,986)	(147.4)	(0.00557)
Amount purchase (£1000)^4		0.00703***	0.00601***	$-3.423x10^{+06}$*	48,373	115.2	0.000727
		(0.000293)	(0.000292)	($1.994x10^{+06}$)	(36,766)	(163.4)	(0.000477)
Amount purchase (£1000)^5		-0.000203***	-0.000174***	$2.293x10^{+07}$*	-70,729	-47.24	$-1.95x10^{-05}$
		($9.71x10^{-06}$)	($9.65x10^{-06}$)	($1.328x10^{+07}$)	(58,150)	(69.96)	($1.42x10^{-05}$)
Median house price (£)	$1.77x10^{-07}$***	$1.12x10^{-07}$***	$9.96x10^{-08}$***	$-8.95x10^{-08}$	$1.22x10^{-07}$	$1.54x10^{-07}$**	$7.83x10^{-08}$
	($4.00x10^{-08}$)	($3.56x10^{-08}$)	($3.51x10^{-08}$)	($7.59x10^{-08}$)	($7.76x10^{-08}$)	($6.14x10^{-08}$)	($6.20x10^{-08}$)
Free school meals (proportion)	-0.240***	-0.337***	-0.303***	-0.345***	-0.289***	-0.213***	-0.416***
	(0.0446)	(0.0397)	(0.0392)	(0.0812)	(0.0800)	(0.0732)	(0.0699)
Weekly Household Income (£)	$-3.58x10^{-05}$	$4.26x10^{-05}$	$4.28x10^{-05}$	$-6.85x10^{-05}$	$2.48x10^{-06}$	$9.73x10^{-05}$**	$8.03x10^{-05}$*
	($3.07x10^{-05}$)	($2.73x10^{-05}$)	($2.69x10^{-05}$)	($5.77x10^{-05}$)	($5.77x10^{-05}$)	($4.88x10^{-05}$)	($4.69x10^{-05}$)
Constant	0.447***	0.732***	0.619***	0.704***	3.062**	1.424	0.330***
	(0.0215)	(0.0194)	(0.0226)	(0.144)	(1.291)	(1.055)	(0.0539)
Observations	38,481	38,481	38,481	5,394	9,392	13,339	10,356
R-squared	0.015	0.221	0.244	0.026	0.056	0.084	0.098
Month FEs	NO	NO	YES	YES	YES	YES	YES

Note. Table G-4 replicates Table G-3 specifications but including socioeconomic controls: Median house price, proportion of students on free school

meals and weekly household income. The sample is restricted to new accounts and includes months in which expenses were related to one or more purchase types. All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise takes a value of zero. Models 4 to 7 split the sample in 4 quartiles based on purchased amount. For instance, all purchases included in Model 4 had a monthly balance higher than £5.02 and up to £54.69. Quartiles cut-off values were defined based on the value of durable purchases. Reference category: Proportion of the total month spending on durable goods. Standard errors in parentheses. Significance levels: *** $p<0.01$, ** $p<0.05$, * $p<0.1$.

Table G-5. Estimated likelihood of repaying full balance, Single-Purchase-Type Sample for all accounts

	RE			RE (+ socioeconomic controls)			FE		
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Non-durable = 1	0.00532***	0.0139***	0.0185***	0.00420**	0.0123***	0.0166***	0.000869	0.00345*	0.00337*
	(0.00161)	(0.00158)	(0.00155)	(0.00194)	(0.00190)	(0.00187)	(0.00201)	(0.00200)	(0.00200)
Merchant APR (%)			0.0103***			0.00878***			0.00281***
			(0.000153)			(0.000187)			(0.000372)
Credit limit (£1000)			-0.00281***			-0.00253***			0.00636*
			(0.000379)			(0.000444)			(0.00357)
Utilization (%)			-0.00325***			-0.00335***			-0.000729***
			($9.50x10^{-05}$)			(0.000115)			(0.000156)
Account age (years)			0.00486***			0.00461***			-0.0111***
			(0.000138)			(0.000155)			(0.00171)
Amount purchase (£1000)		-0.368***	-0.222***		-0.358***	-0.218***		-0.148***	-0.122***
		(0.00540)	(0.00638)		(0.00643)	(0.00763)		(0.00740)	(0.00925)
Amount purchase (£1000)^2		0.116***	0.0879***		0.112***	0.0849***		0.0572***	0.0519***
		(0.00379)	(0.00376)		(0.00445)	(0.00445)		(0.00538)	(0.00551)
Amount purchase (£1000)^3		-0.0164***	-0.0134***		-0.0155***	-0.0125***		-0.00906***	-0.00846***
		(0.000850)	(0.000831)		(0.000981)	(0.000966)		(0.00124)	(0.00125)
Amount purchase (£1000)^4		0.00101***	0.000857***		0.000928***	0.000770***		0.000577***	0.000547***
		($7.14x10^{-05}$)	($6.95x10^{-05}$)		($8.08x10^{-05}$)	($7.93x10^{-05}$)		(0.000106)	(0.000107)
Amount purchase (£1000)^5		$-2.21x10^{-05}$***	$-1.90x10^{-05}$***		$-1.95x10^{-05}$***	$-1.65x10^{-05}$***		$-1.25x10^{-05}$***	$-1.20x10^{-05}$***
		($1.95x10^{-06}$)	($1.90x10^{-06}$)		($2.17x10^{-06}$)	($2.13x10^{-06}$)		($2.98x10^{-06}$)	($2.98x10^{-06}$)
Median house price (£)				$1.24x10^{-08}$	$6.55x10^{-09}$	$-2.02x10^{-09}$			
				($2.31x10^{-08}$)	($2.14x10^{-08}$)	($2.05x10^{-08}$)			
Free school meals (proportion)				-0.307***	-0.277***	-0.196***			
				(0.0269)	(0.0250)	(0.0240)			
Weekly Household Income (£)				$-2.14x10^{-05}$	$-7.12x10^{-06}$	$6.82x10^{-06}$			
				($1.77x10^{-05}$)	($1.65x10^{-05}$)	($1.58x10^{-05}$)			
Constant	0.801***	0.878***	0.700***	0.861***	0.921***	0.743***			
	(0.00153)	(0.00162)	(0.00399)	(0.0124)	(0.0115)	(0.0119)			
R-squared							0.000	0.014	0.016
Observations	154,924	154,924	154,924	107,384	107,384	107,384	93,957	93,957	93,957
Number of accounts	95,461	95,461	95,461	66,021	66,021	66,021	34,494	34,494	34,494
Month FEs	NO	NO	YES	NO	NO	YES	NO	NO	YES

Note. The sample includes all accounts and includes months in which expenses were related to only one merchant code. All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise takes a value of zero. Models 1 to 6 are RE models, while Models 7 to 9 are FE models that control for unobserved account heterogeneity. Reference category: Durable goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table G-6. Estimated likelihood of repaying full balance, Multiple-Purchase-Type Sample for all accounts

	RE			RE (+ socioeconomic controls)			FE		
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Non-durable (proportion)	0.0133***	0.0224***	0.0280***	0.0107***	0.0195***	0.0250***	0.00470***	0.00796***	0.00772***
	(0.00138)	(0.00136)	(0.00132)	(0.00165)	(0.00163)	(0.00159)	(0.00160)	(0.00159)	(0.00158)
Merchant APR (%)			0.0126***			0.0111***			0.00475***
			(0.000113)			(0.000137)			(0.000235)
Credit limit (£1000)			-0.00217***			-0.00235***			0.00954***
			(0.000335)			(0.000392)			(0.00236)
Utilization (%)			-0.00324***			-0.00330***			-0.000861***
			($6.69x10^{-05}$)			($8.18x10^{-05}$)			(0.000103)
Account age (years)			0.00659***			0.00627***			-0.00737***
			(0.000125)			(0.000141)			(0.00128)
Amount purchase (£1000)		-0.354***	-0.177***		-0.333***	-0.170***		-0.157***	-0.126***
		(0.00396)	(0.00458)		(0.00470)	(0.00549)		(0.00497)	(0.00612)
Amount purchase (£1000)^2		0.123***	0.0766***		0.112***	0.0707***		0.0653***	0.0583***
		(0.00291)	(0.00286)		(0.00340)	(0.00337)		(0.00379)	(0.00387)
Amount purchase (£1000)^3		-0.0193***	-0.0127***		-0.0169***	-0.0112***		-0.0114***	-0.0105***
		(0.000691)	(0.000668)		(0.000790)	(0.000771)		(0.000928)	(0.000932)
Amount purchase (£1000)^4		0.00130***	0.000876***		0.00110***	0.000742***		0.000798***	0.000743***
		($6.09x10^{-05}$)	($5.86x10^{-05}$)		($6.82x10^{-05}$)	($6.62x10^{-05}$)		($8.43x10^{-05}$)	($8.43x10^{-05}$)
Amount purchase (£1000)^5		-3.04x10^{-05}***	-2.08x10^{-05}***		-2.49x10^{-05}***	-1.70x10^{-05}***		-1.90x10^{-05}***	-1.78x10^{-05}***
		($1.73x10^{-06}$)	($1.66x10^{-06}$)		($1.90x10^{-06}$)	($1.84x10^{-06}$)		($2.47x10^{-06}$)	($2.47x10^{-06}$)
Median house price (£)				$8.51x10^{-08}$***	$7.34x10^{-08}$***	$5.02x10^{-08}$***			
				($1.97x10^{-08}$)	($1.83x10^{-08}$)	($1.71x10^{-08}$)			
Free school meals (proportion)				-0.367***	-0.358***	-0.230***			
				(0.0233)	(0.0216)	(0.0203)			
Weekly household income (£)				-4.99x10^{-05}***	-1.88x10^{-05}	1.39x10^{-05}			
				($1.53x10^{-05}$)	($1.42x10^{-05}$)	($1.33x10^{-05}$)			
Constant	0.718***	0.820***	0.614***	0.801***	0.872***	0.644***			
	(0.00133)	(0.00147)	(0.00312)	(0.0107)	(0.00999)	(0.00996)			
R-squared							0.000	0.017	0.021
Observations	282,997	282,997	282,997	194,214	194,214	194,214	184,673	184,673	184,673
Number of accounts	159,100	159,100	159,100	108,050	108,050	108,050	60,776	60,776	60,776
Month FEs	NO	NO	YES	NO	NO	YES	NO	NO	YES

Note. Table G-6 replicates Table G-5 specifications but months with multiple consumption categories or merchant codes are added to the sample. All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and

otherwise takes a value of zero. Models 1 to 6 are RE models, while Models 7 to 9 are FE models that control for unobserved account heterogeneity. Reference category: Proportion of the total month spending on durable goods. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table G-7. Estimated likelihood of repaying full balance, Single-Purchase-Type Sample for new accounts, additional controls

	All observations			Sample split by quartiles of purchase amount			
VARIABLES	(1) OLS	(2) OLS	(3) OLS	(4) OLS – Quartile 1 (£5.02 - £54.69)	(5) OLS – Quartile 2 (Q2: £54.70 - £200.00)	(6) OLS – Quartile 3 (Q3: £200.01- £750.00)	(7) OLS – Quartile 4 (£750.01- £17000)
Non-durability Score (0 to 1)	0.307***	0.138***	0.142***	0.0420**	0.188***	0.159***	0.0827***
	(0.0137)	(0.0118)	(0.0116)	(0.0200)	(0.0255)	(0.0259)	(0.0194)
Merchant APR (%)			0.00559***	0.00297***	0.00514***	0.00862***	0.00774***
			(0.000386)	(0.000570)	(0.000787)	(0.000952)	(0.000843)
Credit limit (£1000)			0.00164	0.000414	0.000651	0.00604	-0.00679
			(0.00151)	(0.00252)	(0.00318)	(0.00401)	(0.00452)
Utilization (%)			-0.00197***	-0.0108***	-0.00380**	-0.00243***	-0.00181***
			(0.000272)	(0.00398)	(0.00151)	(0.000579)	(0.000453)
Account age (years)			0.116***	-0.0193	0.0997***	0.246***	0.292***
			(0.0147)	(0.0208)	(0.0294)	(0.0372)	(0.0311)
Amount purchase (£1000)		-1.058***	-0.923***	41.35	-95.54	23.02	-0.157**
		(0.0210)	(0.0252)	(35.64)	(85.21)	(25.29)	(0.0792)
Amount purchase (£1000)^2		0.483***	0.439***	-3,148	1,597	-127.6	0.0507
		(0.0156)	(0.0160)	(3,115)	(1,525)	(122.0)	(0.0362)
Amount purchase (£1000)^3		-0.0905***	-0.0830***	110,216	-13,109	319.3	-0.00665
		(0.00392)	(0.00394)	(122,393)	(13,084)	(282.1)	(0.00693)
Amount purchase (£1000)^4		0.00720***	0.00662***	$-1.815x10^{+06}$	52,112	-373.4	0.000400
		(0.000381)	(0.000380)	($2.208x10^{+06}$)	(53,982)	(313.4)	(0.000569)
Amount purchase (£1000)^5		-0.000200***	-0.000185***	$1.123x10^{+07}$	-80,557	165.3	$-9.22x10^{-06}$
		($1.22x10^{-05}$)	($1.21x10^{-05}$)	($1.486x10^{+07}$)	(85,982)	(134.4)	($1.64x10^{-05}$)
Median house price (£)	$1.25x10^{-07}$*	$3.03x10^{-08}$	$2.52x10^{-08}$	$-1.73x10^{-07}$**	$3.59x10^{-08}$	$4.87x10^{-08}$	$2.65x10^{-07}$**
	($6.57x10^{-08}$)	($5.53x10^{-08}$)	($5.46x10^{-08}$)	($8.26x10^{-08}$)	($1.21x10^{-07}$)	($1.21x10^{-07}$)	($1.04x10^{-07}$)
Free school meals (proportion)	-0.303***	-0.292***	-0.276***	-0.316***	-0.213*	-0.243*	-0.332***
	(0.0704)	(0.0593)	(0.0587)	(0.0910)	(0.121)	(0.144)	(0.104)
Weekly Household Income (£)	$-8.50x10^{-05}$*	$-2.14x10^{-05}$	$-1.34x10^{-05}$	$-2.98x10^{-05}$	$4.83x10^{-05}$	$7.17x10^{-05}$	-0.000193**
	($4.99x10^{-05}$)	($4.21x10^{-05}$)	($4.16x10^{-05}$)	($6.32x10^{-05}$)	($8.85x10^{-05}$)	($9.78x10^{-05}$)	($7.70x10^{-05}$)
Constant	0.464***	0.800***	0.734***	0.723***	2.886	-1.118	0.413***
	(0.0348)	(0.0296)	(0.0344)	(0.153)	(1.821)	(2.005)	(0.0824)
Observations	14,851	14,851	14,851	4,262	4,099	3,341	3,149
Observations Non-durable = 1	8,687	8,687	8,687	2,559	2,485	1,853	1,790
R-squared	0.034	0.315	0.334	0.026	0.069	0.103	0.114
Month FEs	NO	NO	YES	YES	YES	YES	YES

Note. Table G-7 replicates Table G-2 specifications but uses the normalized durability score instead of the dummy for durability. The sample is restricted to new accounts and includes months in which expenses were related to only one spending type. All models are linear probability models

in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise takes a value of zero. Models 4 to 7 split the sample in 4 quartiles based on purchase amount. For instance, all purchases included in Model 4 had a monthly balance higher than £5.02 and up to £54.69. Quartiles cut-off values were defined based on the value of durable purchases. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.

Table G-8. Estimated likelihood of repaying full balance, Single-Purchase-Type Sample for all accounts

	RE			RE (+ socioeconomic controls)			FE		
VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Non-durability Score (0 to 1)	0.0599***	0.0373***	0.0436***	0.0570***	0.0345***	0.0407***	0.0174***	0.0106***	0.0104***
	(0.00293)	(0.00288)	(0.00282)	(0.00352)	(0.00346)	(0.00340)	(0.00365)	(0.00363)	(0.00363)
Merchant APR (%)			0.0103***			0.00877***			0.00281***
			(0.000153)			(0.000187)			(0.000372)
Credit limit (£1000)			-0.00283***			-0.00253***			0.00640*
			(0.000379)			(0.000444)			(0.00357)
Utilization (%)			-0.00324***			-0.00335***			-0.000727***
			($9.49x10^{-05}$)			(0.000115)			(0.000156)
Account age (years)			0.00488***			0.00464***			-0.0111***
			(0.000137)			(0.000155)			(0.00171)
Amount purchase (£1000)		-0.361***	-0.214***		-0.352***	-0.210***		-0.146***	-0.120***
		(0.00541)	(0.00638)		(0.00644)	(0.00764)		(0.00741)	(0.00926)
Amount purchase (£1000)^2		0.113***	0.0837***		0.109***	0.0810***		0.0562***	0.0509***
		(0.00379)	(0.00377)		(0.00446)	(0.00446)		(0.00539)	(0.00551)
Amount purchase (£1000)^3		-0.0158***	-0.0127***		-0.0150***	-0.0118***		-0.00888***	-0.00829***
		(0.000851)	(0.000832)		(0.000982)	(0.000967)		(0.00124)	(0.00125)
Amount purchase (£1000)^4		0.000970***	0.000805***		0.000888***	0.000722***		0.000565***	0.000535***
		($7.15x10^{-05}$)	($6.95x10^{-05}$)		($8.09x10^{-05}$)	($7.93x10^{-05}$)		(0.000106)	(0.000107)
Amount purchase (£1000)^5		$-2.11x10^{-05}$***	$-1.78x10^{-05}$***		$-1.86x10^{-05}$***	$-1.54x10^{-05}$***		$-1.22x10^{-05}$***	$-1.17x10^{-05}$***
		($1.95x10^{-06}$)	($1.90x10^{-06}$)		($2.17x10^{-06}$)	($2.13x10^{-06}$)		($2.98x10^{-06}$)	($2.98x10^{-06}$)
Median house price (£)				$1.09x10^{-08}$	$5.96x10^{-09}$	$-2.67x10^{-09}$			
				($2.30x10^{-08}$)	($2.14x10^{-08}$)	($2.05x10^{-08}$)			
Free school meals (proportion)				-0.310***	-0.278***	-0.197***			
				(0.0269)	(0.0250)	(0.0240)			
Weekly Household Income (£)				$-2.47x10^{-05}$	$-8.33x10^{-06}$	$5.59x10^{-06}$			
				($1.77x10^{-05}$)	($1.65x10^{-05}$)	($1.58x10^{-05}$)			
Constant	0.770***	0.863***	0.683***	0.833***	0.908***	0.728***			
	(0.00211)	(0.00223)	(0.00426)	(0.0125)	(0.0117)	(0.0120)			
R-squared							0.000	0.014	0.016
Observations	154,924	154,924	154,924	107,384	107,384	107,384	93,957	93,957	93,957
Number of accounts	95,461	95,461	95,461	66,021	66,021	66,021	34,494	34,494	34,494
Month FEs	NO	NO	YES	NO	NO	YES	NO	NO	YES

Note. Table G-8 replicates Table G-5 specifications but uses the normalized durability score instead of the dummy for durability. The sample includes all accounts and includes months in which expenses were related to only one merchant code. All models are linear probability models in which the outcome takes the value of one when the repayment-purchase ratio is greater than .9 and otherwise takes a value of zero. Models 1 to 6 are RE

models, while Models 7 to 9 are FE models that control for unobserved account heterogeneity. Standard errors in parentheses. Significance levels: *** p<0.01, ** p<0.05, * p<0.1.