Financial Conduct Authority

MS14/6.2: Annex 4

Market Study

Credit Card Market Study

Interim Report: Annex 4 – Switching Analysis

November 2015

This annex describes data analysis we carried out to improve our understanding of switching and shopping around behaviour in the UK credit card market.

Our main findings include:

- While the different interest rates (excluding promotional rates) and fees have remained stable or even increased slightly between 2010 and 2014, the length of promotional periods have been increasing, suggesting that firms compete to a larger extent on the length of introductory promotions that can incentivise consumers to switch. Interest rates and fees are higher on cash advances than on purchases and balance transfers, which is consistent with firms facing less competitive pressure on this feature.

- About 14% of existing consumers open a new credit card in a year. We consider this to be the upper bound estimate of the switching rate (within credit cards), as consumers opening a new credit card could move some or all of their usage to the new credit card. Narrowing the definition of switching to consumers who close an existing account when opening a new one, we calculate the lower bound of the switching rate to be 3%. We consider that both consumers switching entirely (closing an existing credit card) and consumers switching partially (moving some of their usage to a new credit card) exert pressure on firms, albeit possibly to different degrees.

- Almost half of consumers with a 0% balance transfer deal repay the full amount of the balance transferred by the end of their promotional period. This increases to 60% two months later and to over 70% by six months after the end of the introductory period. These results suggest that there may be a significant number of consumers who are able to repay but do so with a few months of delay – possibly because they only realise that their promotional period ended when they start incurring interest.

- We estimated how much consumers who only use their credit cards for domestic purchases could save by choosing a credit card that offers better interest rates. We found that most of them could save a large proportion (over 60% on average) of the interest they incur on purchases. However, most of those who incur interest incur a relatively small amount; therefore the potential savings in absolute terms are not necessarily substantial per account (less than £50 a year on average and less than £12 a year for half of them). For those who borrow more, however, the potential savings from choosing a cheaper credit card are clear and significant. For example, over a fifth of interest-bearing accounts in our sample incur over £100 interest on purchases a year (£225 on average) and could on average save over £150 a year by making different choices. Potential savings as a proportion of interest paid are similar across different risk categories.

Introduction

1.1 This annex describes data analysis we carried out to improve our understanding of switching and shopping around behaviour in the UK credit card market and provides a summary of our results.

1.2 The analysis reported in this annex is considered alongside the results of the online consumer survey, the literature reviews and the reviews of price comparison websites, firms' terms and conditions and financial promotions to inform our assessment of the extent to which consumers drive effective competition through shopping around and switching.

1.3 This annex contains:

- An assessment of how credit card terms have evolved between 2010 and 2014;

- An estimation of switching rates in the credit card market;

- An assessment of what proportion of their transferred balances consumers repay by the end of the promotional period and in the subsequent six months; and

- An analysis of how much consumers could save in interest by making different choices when choosing their credit card.

1.4 The assessment of interest rates, fees and introductory deals on new credit cards over time provides us with some background on competitive conditions in the market. Switching rates show to what extent consumers switch between providers. The assessment of what proportion of their transferred balances consumers repay improves our understanding of how consumers who switch to a 0% balance transfer card use these products.[1] Finally, the analysis of how much consumers could save in interest by choosing differently tells us whether consumers are making good choices when taking out a new credit card.

1.5 We discuss each of these analyses in more detail below. For each, we set out the scope of the analysis, then describe the data used, explain the methodology and finally present the results (including some basic statistics and sensitivities where relevant).

Interest rates, fees and introductory promotions over time

Introduction – scope of the analysis

1.6 In this section, we present a descriptive analysis of interest rates (excluding any promotional rates), fees and promotional offers over time. This analysis provides useful background to the market dynamics and helps us understand the dimensions (apart from rewards) along which firms appear to compete.

---

[1] We address the question whether repeated use of balance transfers may lead to unaffordable debt in Annex 6.

Description of the data used

1.7 The analysis is carried out using part of the account level data (see Annex 10); namely all accounts that were opened in any month between January 2010 and December 2014. The dataset used in the analysis covers data from all the 11 firms who submitted data, covering 80% of accounts that were open at any point during this period in the UK. We rely exclusively on information recorded when consumers opened a new credit card account (i.e. data from Table 1; see Annex 10, paragraph 1.6) and take the value of each feature as it was set for that particular customer (rather than using, for example, advertised interest rates).

Methodology

1.8 We calculate monthly averages of the following variables:

- Annual interest rate on purchases, balance transfers and cash advances (excluding any promotional rates, that is, using the go-to rate if a product is offered with an introductory rate);

- Duration of promotional offers on purchases and balance transfers; and

- Fees on balance transfers, cash advances and foreign transactions.

1.9 Firms do not appear to offer introductory promotions on cash advances; hence we do not include that in the analysis. We do not analyse interest rates, promotional offers and fees on money transfers as the dataset contains these variables for a small number of firms only.

1.10 Averages are calculated by taking an average of all observations for each month. For example, the average interest rate on purchases in January 2010 is the average of interest rates on purchases on all accounts that were opened in January 2010. This implies that an interest rate which was obtained by a large number of consumers has a greater impact on the average than an interest rate which was obtained by only a few. That is, interest rates set by a large firm will affect our averages to a greater extent than interest rates set by a small firm. We have cross-checked our results against simple averages, i.e. calculating one average for each firm and taking a simple average across all firms, and concluded that the choice of methodology does not lead to materially different conclusions for any variable.

1.11 Given that prices differ significantly depending on credit risk, we calculate average interest rates and average fees separately for firms who primarily operate in the low and medium risk segments and for firms who primarily operate in the high risk segments.[2] Averages of the duration of promotional offers is shown for firms primarily operating in the low and medium risk

---

[2] Note that unlike in the other analyses this annex contains, we do not use customer or account credit scores here. We consider this to be appropriate in this case, as this section does not include any customer or account specific estimation, and not using credit scores means that we can avoid having to drop observations with missing or inconsistent credit scores.

segments only, as promotional offers are much less common in the high risk segment.

1.12   If a credit card does not offer some feature (e.g. balance transfer), interest rates and fees are not recorded for it, so the account is not included in the calculation of the average value of that feature, but is included for other features. Similarly, if a credit card does not offer an introductory promotion, it is not included in the calculations of the average length of introductory promotions. Finally, observations are disregarded if a firm was unable to report the values that were set at the time of opening the account and instead included the most recent value for certain variables.

Basic statistics

1.13   While firms did not report all the features for all new accounts (e.g. because of legacy issues), for each variable the dataset used in the analysis contains at least 2.3 million observations within a year (maximum is 5.2 million). Interest rates are reported for the majority of accounts, followed by the number of accounts with fees and finally with promotional offers.

Results

1.14   Figure 1 below shows the evolution of annual interest rates (excluding promotional rates) on newly issued credit cards over time for firms that operate primarily in the low to medium risk segments.

*Figure 1: Average interest rates, low to medium risk*
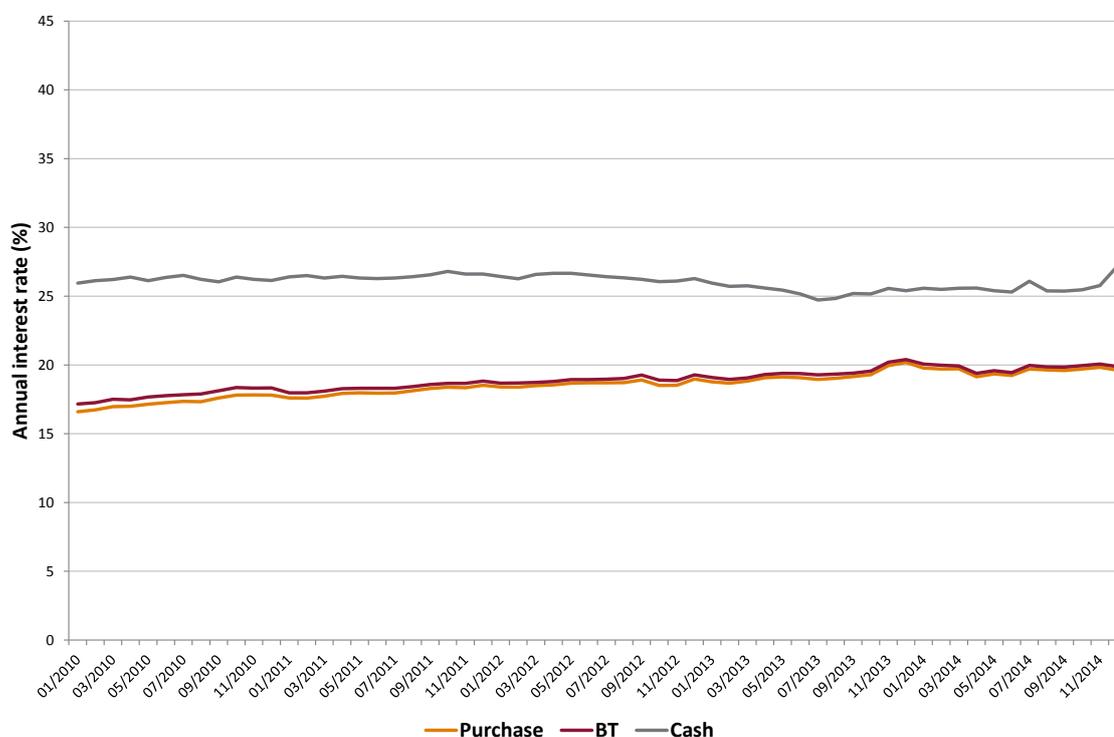
1.15   Figure 1 shows that in the low to medium risk segments annual interest rates on purchases and balance transfers moved closely together, and both

increased slightly from around 17% to about 20% between January 2010 and December 2014. Interest rates on cash advances are significantly higher and remained relatively stable at around 26%.

1.16   Figure 2 below shows the evolution of annual interest rates (excluding promotional rates) on newly issued credit cards over time for firms that operate primarily in the high risk segment.

Figure 2: Average interest rates, high risk
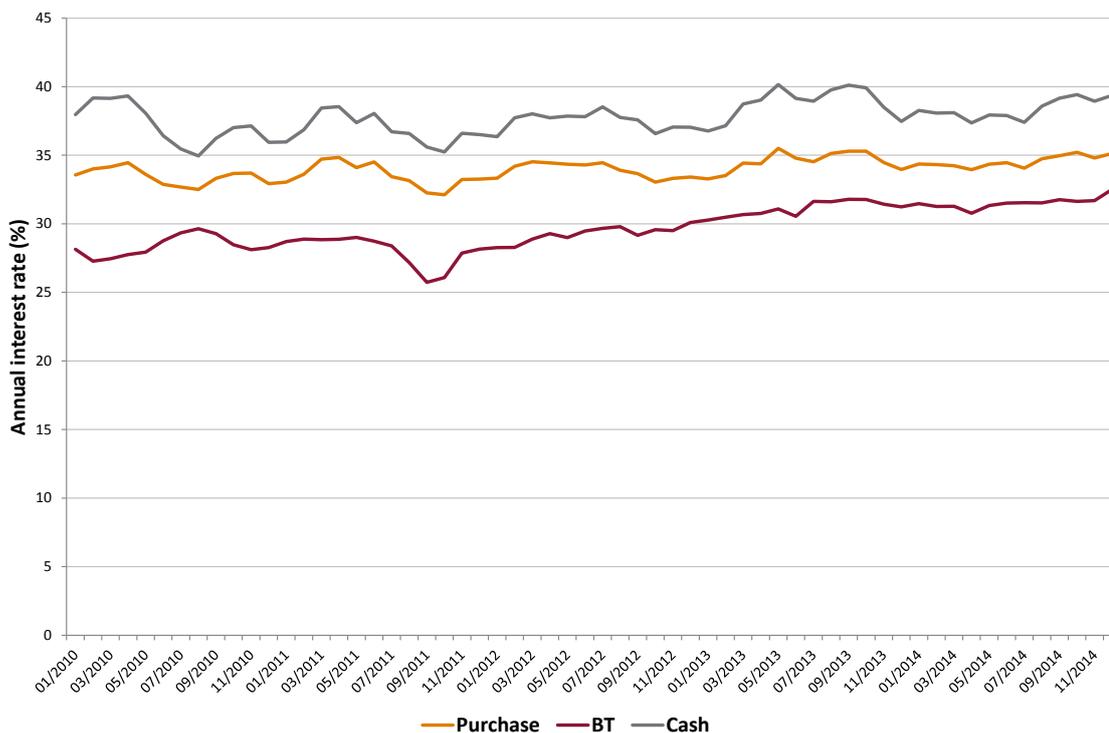
1.17   Figure 2 shows that there is a slight increasing trend in all interest rates in the high risk segment. Interest rates are around 32% on balance transfers, 35% on purchases and 39% on cash advances at the end of the period. As can be seen comparing the two graphs above, average interest rates of firms operating primarily in the high risk segment are significantly higher than interest rates in the low and medium risk segments.

1.18   Figure 3 below shows the evolution of the length of introductory promotional offers on newly issued credit cards over time, excluding firms who primarily operate in the high risk segment.

Figure 3: Average length of introductory promotional periods, low to medium risk
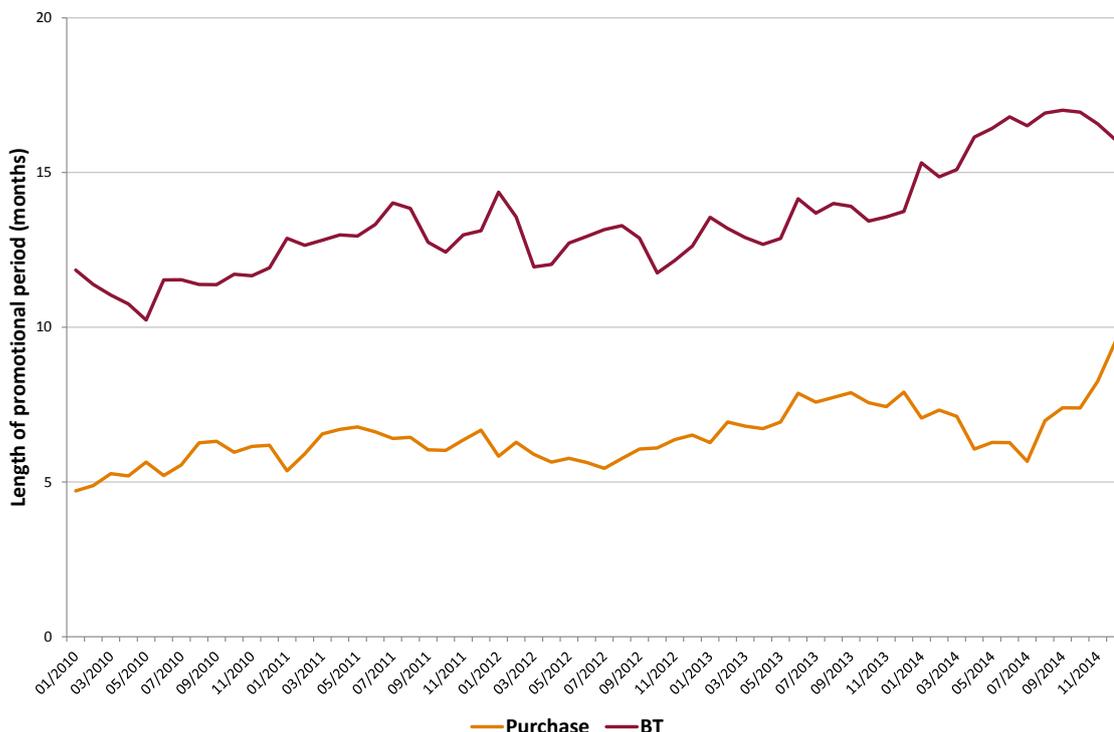
1.19   Figure 3 above shows that the length of promotional offers increased between January 2010 and December 2014 from less than five months to close to ten months for purchases and from just over ten months to 16-17 months for balance transfers.

1.20   Figure 4 below shows the evolution of fees on newly issued credit cards over time for firms that operate primarily in the low to medium risk segments.

Figure 4: Average fees, low to medium risk
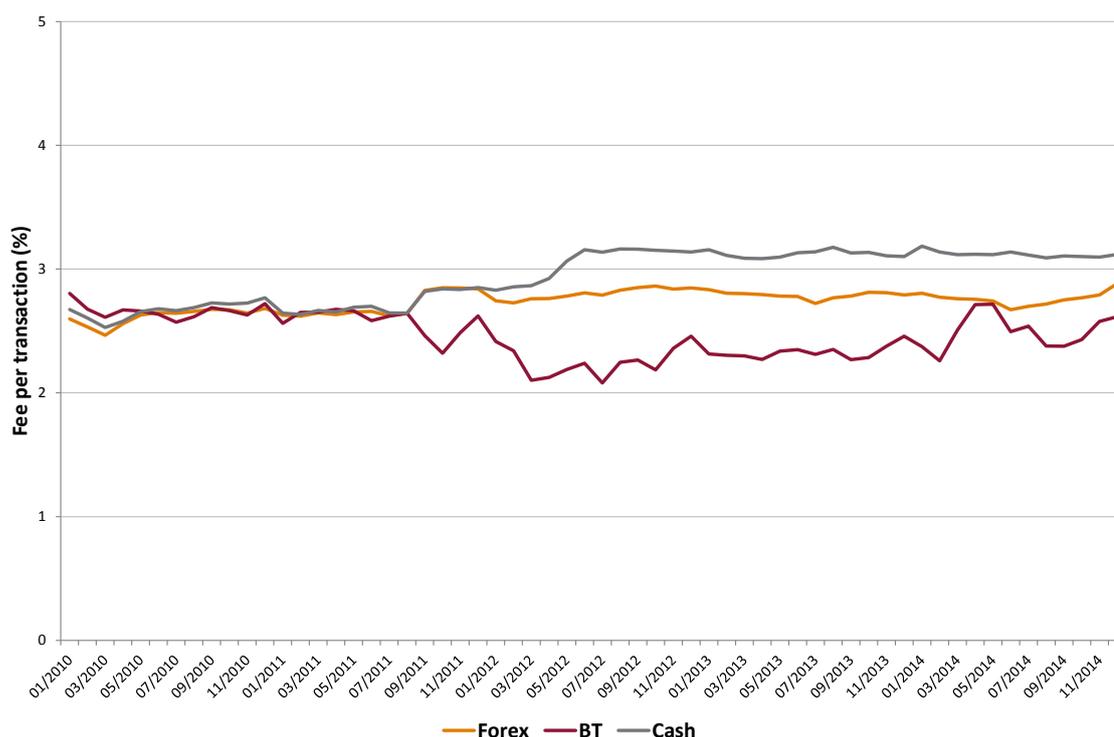
1.21   Figure 4 above shows that fees on foreign transactions, balance transfers and cash advances were similar at around 2.6% until the second half of 2011, when they started to diverge. The average fee on cash advances increased to around 3.1%, the average fee on foreign transactions increased to 2.9%, while the average fee on balance transfers first dropped down to 2.1% before gradually increasing back to 2.6%. Note that these statistics pool balance transfer fees on products with and without introductory promotions.

1.22   Figure 5 below shows the evolution of fees on newly issued credit cards over time for firms that operate primarily in high risk segments.

Figure 5: Average fees, high risk
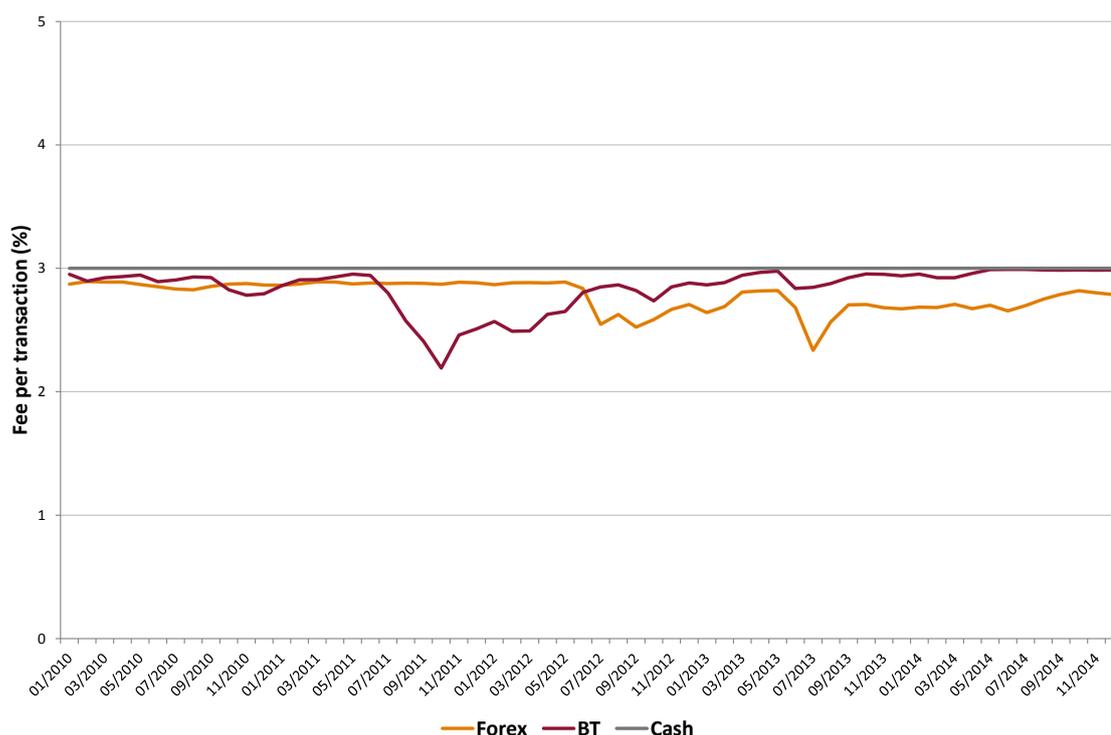
1.23 Figure 5 shows that in the high risk segment, cash advance fees stayed stable at 3% throughout the five-year period. Average fees on balance transfers started at 3%, dropped in the second half of 2011 but increased back to the starting level in 2014. Average fees on foreign transactions started at 2.9%, were somewhat lower from the second half of 2012 and increased back to 2.8% by the end of 2014.

1.24 Overall, it appears that credit card firms were primarily competing on the length of introductory offers between 2010 and 2014: while we observe longer and longer promotional periods, interest rates and fees are typically stable or even slightly increasing in the same time period.[3] The only exception is the balance transfer fee which decreased in 2011 in both risk segments but increased again in the following years.[4] Interest rates and fees are higher on cash advances than on purchases and balance transfers, which is consistent with firms facing less competitive pressure on this feature.[5]

Level of switching activity

Introduction – scope of the analysis

1.25 This section sets out our approach to estimating switching rates in the UK credit card market. It is worth noting that switching rates by themselves do not tell us whether the market is working well or not. For example, it could be that

---

[3] The analysis presented here does not assess competition in offering rewards.

[4] Note, however, that balance transfer fees on products offering introductory deals appear to have decreased over the course of 2015. See Credit card market study: interim report, paragraph 3.17.

[5] We understand that the cost of funding the credit to customers is the same, irrespective of whether it is used for purchases or cash withdrawals. We would expect any difference in cost of providing these services to be reflected in the upfront fee.

although we observe high switching rates, consumers are making suboptimal choices and switching to worse products. On the other hand, low switching rates are not necessarily a cause for concern if there is evidence of low switching costs (in this case low switching rates may only indicate that consumers are content with their current products).

1.26   As such, the switching rates reported here need to be considered alongside the results of the other analysis reported in this annex, results of our consumer survey on switching and shopping around and our overall findings on consumer outcomes in the credit card market.

1.27   There are many different forms of switching that are relevant in the credit card market. For example, credit card holders might move their existing balance to a newly acquired card as well as carrying out all new transactions on this new credit card. Alternatively, they may move an existing balance to a new card, but not new transactions, or the other way around. Unlike some other financial products (e.g. mortgages), switching in the credit card market does not necessarily involve terminating the relationship with the previous provider.

1.28   We expect that the various forms of switching observed in the market exert some competitive constraint on credit card issuers, giving issuers incentives to offer a proposition that will attract consumers to varying degrees. Given this, we provide lower and upper bound switching rate estimates that we expect will capture the spectrum of switching activity that can be observed in the credit card market. Note, however, that this analysis does not capture switching between existing credit cards, i.e. when consumers stop using one credit card and start using another one they already had.

1.29   We define the upper bound of switching rate as the proportion of existing credit card customers who opened at least one new credit card in a given year. We consider this to be the upper bound as all of these consumers had the opportunity to move some of their usage (either existing balances or new transactions or both) to the newly acquired credit card. We allow the upper bound to include consumers who do not change provider (i.e. only open a new credit card with an existing provider), as some of them may have switched credit cards as a response to competitive offers.

1.30   We define the lower bound of switching rate as the proportion of consumers who opened at least one new credit card and closed an existing credit card in a given year. We consider this to be the lower bound as all of these consumers appear to have moved all of their usage from the existing credit card to the new credit card(s). This estimate excludes those consumers who did not open a credit card with a new provider (only with their existing one), as some of them might have switched credit cards without shopping around and without exerting any competitive constraint on firms (e.g. by simply accepting an upgrade from their provider).

1.31   We note that consumers may switch completely without closing their previous account, i.e. by not using it any longer once they have their new credit card.

Our consumer survey suggests that about the same number of consumers who open a new credit card close and stop using an existing credit card (see Annex 3, Figure 17). While we do not estimate the proportion of consumers who stopped using a credit card permanently in this analysis, we take the information from the survey into account when interpreting the results.

1.32   We understand from firms' responses to our market questionnaire that not all credit cards are available to all consumers. Firms' decision whether to give a credit card to an applicant (and under what conditions) depends on the creditworthiness of the applicant. As a result, consumers' ability to switch may be inhibited by the lack of choice in risk segments where only a limited number of firms operate. We estimate switching rates at different risk levels to assess whether switching activity is lower in certain segments. If, for example, we find that switching rates are lower in the high risk segment than in the low risk segment that finding would be consistent with high risk consumers facing less choice or higher switching costs.[6]

Description of the data used

1.33   The switching analysis reported here is based on consumer information derived from two key sources:

- Data provided by a credit reference agency (see Annex 10, section "Credit Reference Agency Data"). This dataset contains information on the dates when consumers opened or closed a credit card account (for all the credit cards a consumer has had) and a credit score for each account.

- The account level data provided by 11 firms (see Annex 10, section "Account level data"). This dataset contains information on consumers' usage of their credit cards on a monthly basis between January 2010 and January 2015.

1.34   These datasets are used to identify consumers who were present and/or active in the credit card market in 2012, 2013 and 2014.

Methodology

1.35   We used two approaches to estimating switching rates. The first solely relies on credit reference agency data (approach one). The second uses both the data from the credit reference agency and the account level data (approach two).

1.36   For each of these approaches we set out below how we identified the base population as well as the set of consumers that meet the lower and upper bound definitions of switching (referred to as the "switching population"). To get to our switching rates we divide the lower and upper bound switching populations by the relevant base population.

1.37   As mentioned above (see paragraph 1.32), we are interested in switching rates in various consumer risk categories. We set out in this section how we created these risk categories (see paragraphs 1.48 to 1.50 below).

---

[6] However, it would also be consistent with other explanations and so would need to be considered together with results from other analyses.

Approach one: estimates using credit reference agency data

1.38 The credit reference agency data was used to identify a base population. This included those consumers who had:

- At least one credit card at the beginning of a given 12-month period (in January 2012, January 2013 and January 2014);

- At least one credit card the month after the given 12-month period ended (for example, in the case of 2014, this would be January 2015).

1.39 This base population includes all consumers, irrespective of whether they use their credit cards or not.

1.40 From the base population, we identify those consumers who acquired a new credit card at some point during the given 12-month period (2012, 2013 and 2014). This includes consumers who acquired a new credit card with (i) a provider they already held a credit card with; and (ii) a provider they did not already hold a credit card with at the beginning of the year. This provides us with the upper bound switching population.

1.41 Using this upper bound estimate, we strip out those consumers who did not acquire a new credit card with a new provider, only with their existing one(s). From the remaining population, we identify those consumers who at some point during the 12-month period also closed a credit card account. This gives us the lower bound switching population.

1.42 Note that the estimate of the lower bound includes all consumers who opened a new credit card and closed an existing credit card in the same year, irrespective of when these two events occurred. Thus, the calculations are likely to capture occasions when the two events were unrelated (e.g. closing an unused account in January 2014 and opening a new account in November 2014) but miss some other occasions when the consumer closed an existing credit card in the following calendar year (e.g. opening a new credit card in December 2014 and closing another one in January 2015). We take this uncertainty into account when interpreting the results.

Approach two: estimates using both credit reference agency and account level data

1.43 We draw on credit reference agency data – as before – to identify those consumers who had:

- At least one credit card at the beginning of a given 12-month period (in January 2012, January 2013 and January 2014);

- At least one credit card one month after the given 12-month period ended (for example, in the case of 2014, this would be January 2015).

1.44 From this, we strip out those accounts that are not covered by the 11 firms in our account level data. Using the account level data, we identify and keep the accounts that were active, i.e. had at least some transaction or balance on

them at any point during the 12-month period. This gives us the base population.

1.45   From the base population we then identify consumers who have acquired a new credit card in the 12-month period – either with a new or an existing provider but including only the providers who are also in our account level data. This gives us the upper bound switching population.

1.46   To get the lower bound estimate, we strip out those consumers who did not acquire a new credit card with a new provider, only with their existing one(s). From the remaining population we identify those who closed an existing credit card account in the relevant 12-month period. Regarding the lower bound estimate, the same caveat applies as for approach one (see paragraph 1.42 above).

Differences between the two approaches

1.47   There are two key differences in the approaches to estimating switching rates outlined above.

- Market coverage: the first approach covers customers and credit cards of all firms for which the CRA has data, whereas the second approach only covers the customers and credit cards of firms in our account level data (see paragraph 1.33 on the datasets used).

- Base population: the first approach includes both active and inactive consumers in the credit card market (as the CRA data does not contain information about usage so we are unable to remove consumers who do not use their credit cards). Approach two is restricted to consumers who used their credit card in the given 12-month period.

Consumer risk categories

1.48   As noted above, we are aware that the barriers, costs and benefits to switching may vary depending on the creditworthiness of the consumer. Therefore, we estimate the lower and upper bound switching rates using approach one and two for different consumer risk categories.

1.49   To create these consumer segments we used the consumer risk scores provided by a credit reference agency as at 25 May 2015. CRA risk scores are calculated using information and data collected about individuals and help firms assessing the credit risk of their existing and new customers. In this analysis we use CRA risk scores (rather than firm risk scores) because they provide a score for each consumer taking into account their wider debt portfolio. Firm risk scores are predictors of default for a particular account rather than for the consumer as a whole and different firms may judge the credit risk of the same consumer differently.

1.50   We divided the CRA risk score into three groups: low, medium and high risk. As there is not a definitive criterion by which we can divide consumers to risk buckets, this was done to result in a distribution similar to what we obtained

from the standardisation exercise of all the firms' internal credit scores (see Annex 10, section "Approach to standardising issuers' internal credit risk score"). That is, these cut-offs result in 49% of consumers classified as low risk, 36% as medium risk and 14% as high risk (for the remaining 1% we did not have valid CRA scores).

Results

1.51   The summary of the results for this analysis is reported in the table below.

Table 1: Lower bound and upper bound switching rate estimates

			All	Low risk	Medium risk	High risk
Approach one	2012	Base population*	27.1m	16.3m	8.2m	2.3m
		Upper bound**	15% (13%)	18% (16%)	9% (8%)	15% (14%)
		Lower bound	3%	4%	2%	3%
	2013	Base population*	27.3m	16.6m	8.1m	2.4m
		Upper bound**	14% (13%)	17% (15%)	9% (8%)	15% (14%)
		Lower bound	4%	5%	2%	3%
	2014	Base population*	27.5m	16.9m	8.0m	2.5m
		Upper bound**	13% (12%)	15% (14%)	9% (8%)	14% (13%)
		Lower bound	3%	4%	2%	2%
Approach two	2012	Base population*	24.5m	14.7m	7.4m	2.2m
		Upper bound**	16% (14%)	18% (15%)	11% (10%)	15% (15%)
		Lower bound	3%	3%	2%	2%
	2013	Base population*	17.8m	11.7m	4.4m	1.6m
		Upper bound**	16% (13%)	17% (15%)	11% (10%)	15% (14%)
		Lower bound	3%	4%	2%	2%
	2014	Base population*	19.3m	12.6m	4.7m	1.8m
		Upper bound**	14% (12%)	14% (12%)	10% (9%)	16% (14%)
		Lower bound	3%	3%	2%	2%

* The low, medium and high risk base numbers do not necessarily add up to the all base number due to (i) rounding and (ii) accounts in the data for which the risk score is missing.
** The estimates in parenthesis show the proportion of consumers who opened at least one account with a new provider.

1.52   For the whole of the credit card market, we find that switching rates in 2014 lie between 3% (lower bound estimate) and 13-14% (upper bound estimate). The lower bound estimates are similar across years for both approaches (3-4%). The upper bound estimates are slightly higher in earlier years (14-15% using approach one and 16% using approach two). The majority of those who open a new credit card obtain it from a new provider.

1.53   As can be observed above, the lower bound switching estimates are slightly lower in the medium and high risk segments (2-3%) than in the low risk segment (3-5%). There is somewhat more variation in the upper bound estimates, with 14-18% in the low risk segment, 9-11% in the medium risk segment and 14-16% in the high risk segment. Overall, it does not appear to be the case that high risk consumers switch significantly less than low risk consumers.

1.54   As noted above (see paragraph 1.31), these lower bound estimates exclude consumers who did not close but permanently stopped using one of their existing credit cards. Relying on results from the consumer survey, we consider that including those consumers would increase the lower bound to about 6%.

Repayment of balance transfers on 0% deals

Introduction – scope of the analysis

1.55   Firms use introductory balance transfer ('BT') offers to attract new customers and incentivise them to switch. 0% balance transfer deals can be particularly attractive to consumers who have an outstanding balance and/or would like to consolidate existing debt on different credit cards. As a result, balance transfer deals are a common feature of the market and we would like to understand how consumers use them. In this section we analyse what proportion of consumers repay their transferred balance by the end of the promotional period and in subsequent months.

1.56   One question that this analysis does not answer is how individuals repay their balances at the end of their promotional deals. This could be through actual repayments (e.g. cash, such that their level of debt reduces) or by shifting the balance to another credit card with another BT deal (such that their level of debt remains the same, or even grows once any transfer fees have been included). This second possibility raises the prospect that repeated use of balance transfers may be storing up debt that, at some point in the future when repayments are due, will be unaffordable. We analyse this issue in Annex 6.

Description of the data used

1.57   The analysis is carried out using a subset of the account level data (see Annex 10, section "Account level data"). Our dataset covers data from five firms that altogether account for about half of the credit card market in terms of number of accounts with 0% balance transfers deals in 2010 and 2011. The remaining firms were excluded from the data analysis due to data issues (e.g. because they did not report interest on balance transfers separately) or due to the lack of 0% balance transfers in the period under investigation.

1.58   We primarily rely on information obtained in Table 2 (see Annex 10, paragraphs 1.7-1.9) and also use some data from Table 1 (see Annex 10, paragraph 1.6). The main variables used in the analysis are the following: balance transfer account balance, value of balance transfer transactions,

annual interest rate on balance transfers, interest charged on balances transferred (from Table 2), promotional rate on balance transfers, duration of promotional rate on balance transfers and the dummy showing whether balance transfer is exercised (from Table 1).

1.59   We take accounts from the account level data that

- Were opened between January 2010 and December 2011,

- Had a 0% balance transfer deal, and

- Had some balance transferred within four months of account opening.

1.60   We use balance transfers originated in the first two years of the account level data in order to be able to track consumers' behaviour for six months after the end of the introductory period. The longest promotional offer given to consumers in December 2011 is 23 months, which means that the last data point we use in the analysis is from May 2014.

1.61   We focus on 0% deals and exclude introductory deals that offer a low but positive initial interest rate on transferred balances because 0% deals account for the vast majority of BT deals available in the market (and we expect consumer behaviour be more heavily influenced by 0% rather than low rate offers).

1.62   Finally, we use the filter of consumers transferring some balance in the first four months as the introductory 0% rate typically applies if the balance is transferred within 90 days (see Credit card market study: interim report, paragraph 3.15). We do not observe the exact number of days between the date of opening the account and the date of the balance transfer so we include all accounts where it is theoretically possible that the transfer was made within 90 days. For example, if an account was opened in January and the balance was transferred in April, it would be included in our dataset as there could be less than 90 days between the two actions (e.g. account opening on 25 January and balance transfer on 10 April).

1.63   Note that as part of this selection process, we excluded accounts (i) on which the values of key variables (such as interest rate on balance transfer, duration of the introductory offer or information on when the account was opened) were missing and (ii) on which the total value of the transferred balance in the first four months was negative. This gave us a raw dataset containing 945,692 accounts.

1.64   In addition to the above, as part of the data cleaning process, we removed accounts that:

a) Were charged off or closed (without repayment) before the end of the promotional period – 12,845 accounts;

b) Had some balance transferred to them beyond the first four months – 183,971 accounts;

c) Incurred interest on their transferred balance during the promotional period – 163,898 accounts.

1.65   This results in 584,978 accounts in our final dataset, which is 62% of the accounts in the raw dataset. Category b) – excluding consumers who made an additional balance transfer – accounts for about half of the reduction in the size of the dataset. The reason for excluding these accounts is that we do not have information on the interest rate applied to these new balance transfers, or if they are also on a promotional rate, the length of that promotional offer. In addition, in any subsequent month the dataset is structured such that we are unable to distinguish between balances transferred as part of the original introductory period and afterwards (this is because we only observe the total value of the balance transfer balance per month irrespective of its source). As such, we are unable to estimate whether these consumers repaid the original balance transfer by the end of the promotional period. However, we do not see any reason why the repayment behaviour of these consumers should be different from the ones included in our analysis – most of them are likely to have had a longer window to transfer a balance at the 0% rate or obtained another 0% deal subsequently.

1.66   We exclude accounts on which interest is paid during the promotional period (category c), as these accounts appear to have lost their 0% deal. We note that for most firms less than 5% of accounts start paying interest during their promotional period but this was not always the case, resulting in the overall 17% reduction in the size of the dataset used.

1.67   Note that this analysis is done at account level, rather than at consumer level, i.e. without identifying whether any two accounts in our dataset belong to the same consumer.

Methodology

1.68   For each account, we calculate the value of all balances transferred in the first four months.[7] We refer to this as 'BT value' below.

1.69   We observe the BT balance in each month. For each account and month, we calculate the proportion of BT value that is repaid as:

Repaid proportion = 1 - BT balance / BT value.

1.70   This gives us the proportion of the BT value that is repaid by the beginning of a given month. We calculate what proportion of consumers repaid 0-25%, 25-50%, 50-75%, 75-99% and 99-100% of their BT value by the end of their promotional period (i.e. at the beginning of the first month after the introductory period) and over the next five months. The reason for including a 99-100% category instead of 100% is that there are a number of observations

---

[7] We take the month when the account was opened as the first month, unless the account level dataset does not contain a record for this month. If that is the case, we take the next month as the first month.

in the dataset for which the BT balance is minimal but not zero after repayment.

1.71   Finally, we also calculate what proportion of the balances transferred is repaid on aggregate, rather than by account.

Results

1.72   Figure 6 below shows the proportion of accounts that repaid 0-25%, 25-50%, 50-75%, 75-99% and 99-100% of their transferred balances by the beginning of each month in the six-month period after the end of the promotional period.

Figure 6: Proportion of accounts that repaid different proportions of their transferred balances
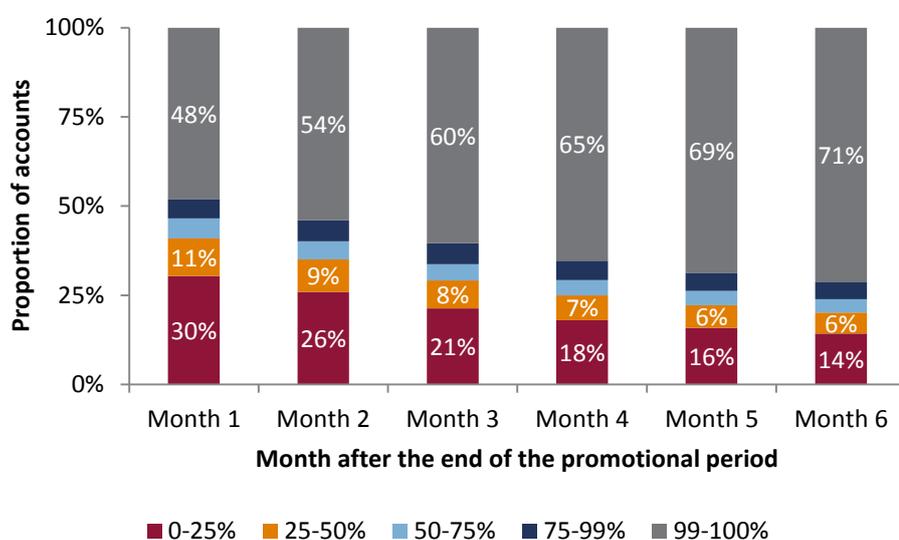
1.73   Figure 6 above shows that out of the 584,978 accounts in our cleaned dataset, almost half (48%) repaid the full amount of the balance transferred by the end of their promotional period. This increases to 60% by the beginning of the third month and to 71% by the beginning of the sixth month. The proportion of accounts that repaid less than 25% of their transferred balance decreases from 30% to 14%, and the proportion of accounts that repaid between 25% and 50% of their transferred balance decreases from 11% to 6%.

1.74   These results suggest that there are likely to be consumers who are able to repay but do so with a few months of delay – possibly because they only realise that their promotional period ended when they start incurring interest. In fact, 23% of accounts in the cleaned dataset did not repay by the end of their promotional period but did so within six months. The average BT balance on these accounts is £2,131 at the end of the promotional period so it does not seem to be the case that these consumers were repaying gradually and only a few more instalments were left when the promotional period ended. They incurred on average £54 interest on their BT balance in these six months.

1.75   Regarding the total amount of unpaid balances, we observe that overall 41% of all balances transferred are not repaid by the end of the promotional period.

This figure decreases to 20% by the beginning of the sixth month after the end of the promotional period.

Do consumers choose low-cost credit cards?

Introduction – scope of the analysis

1.76 Consumers can drive competition among firms if they are able to identify and acquire the best offer in the market. Identifying the best credit card may be difficult, as the way consumers will use them heavily influences which product is the best for them. For example, if someone typically repays at the end of every month but happens to need credit for a few months, a 0% purchase deal with a potentially higher rate afterwards may be the best option. On the contrary, if someone expects to revolve a balance for a longer period of time, it may be better to choose a credit card that offers a flat but low interest rate.[8]

1.77 In this analysis we are looking at whether consumers choose low-cost credit cards, *given* their usage after they have acquired a credit card. We take a sample of consumers who took out a new credit card and estimate how much these consumers could have saved in interest (if any) if they had chosen another credit card that was available to them. If we find that consumers could save a lot by choosing different credit cards, it is likely that they are not making the right choices at the first place. If we find that potential savings are limited, it may be because consumers are choosing well. However, it may also be because offers available to consumers are similar and in practice it does not make a material difference which product the consumer chooses. To investigate whether this could be the case, we also look at variability of interest rates across credit cards available to consumers.

1.78 To simplify the analysis, we estimate potential savings in interest on purchases only. We narrow our final dataset down to consumers who only use their credit cards for domestic purchases and do not use any other functionality such as foreign transactions, cash withdrawals, balance transfers or money transfers. Restricting the analysis to consumers who only use domestic purchases allows us to focus the analysis on potential savings in interest without having to consider the impact of different fees across credit cards and how repayments made by a consumer would be allocated on an alternative credit card. Our analysis focuses on the single largest component of consumers' costs: summary statistics of the account level data show that interest on purchases accounts for 73% of all interest and fees paid and 87% of all interest paid in 2014.

1.79 Consumers who use purchases only face a simpler decision when choosing a credit card than consumers who use several functionalities – simply because the number of interest rates and fees that are relevant for their decision is smaller – and so all else equal are less likely to make mistakes. In Table 4 below we show differences across groups of consumers who use domestic

---

[8] Alternatively, the consumer could switch regularly, making use of 0% deals. However, this may involve incurring balance transfer fees and other switching costs every time when the consumer opens a new account.

purchases only and consumers who use other functionalities as well. This comparison shows that consumers who use functionalities other than domestic purchases incur higher interest both on purchases and overall than consumers who use domestic purchases only. As a result, the former group have stronger incentives to identify the cheapest offer available. Given that the two effects identified (more complex decision and stronger incentive to search) work in opposite directions, it is not possible to conclude with certainty whether estimates for consumers who only use domestic purchases apply more widely or not.

1.80   However, there are reasons to believe that our results are relevant for consumers who use functionalities other than domestic purchases as well. First, the majority of interest incurred by those using other functionalities still comes from interest in purchases, so in this sense the two groups are similar. Second, our analysis shows that consumers who pay more interest on purchases a year do not make significantly better choices than those who pay little interest, even though they have stronger incentives to identify the cheapest card.

1.81   Rewards and benefits of using credit cards are not incorporated in the analysis. We also disregard annual fees on the basis that annual fees are typically charged on credit cards offering rewards (see Credit card market study: interim report, summary box "Annual (or monthly) fees", page 30). That is, from the consumer's perspective, the annual fee can be viewed as the price of having access to those benefits, which we do not cover in the analysis. We appreciate that any results need to be interpreted with caution as consumers may prefer a more expensive credit card if it offers better rewards (which implies that we may overestimate potential savings for consumers who value rewards in general or rewards of a particular card a lot).

Description of the data used

1.82   The analysis is carried out using a subset of the account level data (see Annex 10, section "Account level data"). Our dataset covers data from all the 11 firms from which we collected data. However, one portfolio of a firm had to be excluded from the analysis as the dataset provided did not contain a variable crucial to the analysis. We primarily rely on information obtained in Table 2 (see Annex 10, paragraphs 1.7-1.9) and also use some data from Table 1 (see Annex 10, paragraph 1.6). In particular, the main variables used include interest paid on purchases, interest rate on purchases, opening purchases balance, repayments (from Table 2), promotional interest rate on purchases, length of introductory promotion on purchases and interest rate on purchases after any promotional period as set at the opening of the account (from Table 1).

1.83   From the account level data we take all accounts that were opened in January 2013. Using data from a single month ensures that the analysis is done for credit cards that were all available at the same time (and using interest rates that were set on these products at this time). In order to test any bias our

choice of the month might have introduced, we replicate the core of the analysis for another month, July 2012.

1.84   We picked January 2013 as our base case in order to have two years of data to analyse (the account level data contains information until January 2015). The reason why we are looking at potential savings in two years is that certain products have promotional periods with 0% interest rate on purchases for longer than a year. Analysing two years of data means that it is not only the introductory rate but also the 'go-to' rate that is reflected in the results.[9]

1.85   The raw dataset contains about 439k accounts that were opened in January 2013. As part of data cleaning, we removed accounts:

- That were charged off or blocked in the subsequent two years (3%);

- For which there was no risk score recorded in the first three months (3%);

- With inconsistency between interest paid and interest rate (interest rate is shown to be zero but interest is charged; 1%);

- Where the interest rate was missing for some months (0.2%);

- Where opening balances on purchases were positive in the month of opening the account (2%)

- For which the dataset contained multiple observations for the same month (1%);

- For which negative interest is recorded in one or more months (1%);

- That were associated with a product that five or fewer people had (0.03%); and

- For which the dataset did not contain observations for each of the 24 months (18%).

1.86   This results in 313k accounts in our final dataset, which is 71% of the accounts in the raw dataset. Given that the last cleaning step resulted in the largest drop in the number of observations, we carried out a sensitivity analysis where only accounts for which we do not have records for January or February 2013 are dropped. This results in a cleaned dataset that contains 85% of the accounts in the raw dataset.

1.87   Note that this analysis is done at account level, rather than at consumer level, i.e. without identifying whether any two accounts in our dataset belong to the same consumer. We consider that this is appropriate for the purposes of the analysis as it is unlikely that a sufficiently large number of consumers would open two or more credit cards in the same month to affect the results. In the

---

[9] Analysing one year of data would simply lead to the conclusion that all consumers who have access to 0% deals could save all interest charges by choosing one of those deals.

remainder of this annex when we refer to consumers, it refers to the individual account a consumer opened in a given month, not all accounts held by the consumer.

1.88   The analysis also uses the standardised credit risk categories (see Annex 10, section "Approach to standardising issuers' internal credit risk score").

Methodology

1.89   The analysis has two main steps:

- First, given their credit risk, we create a choice set for each consumer that contains all the credit cards they could have chosen and the most likely terms (interest rates, taking into account introductory promotions) under which they could have acquired these credit cards.

- Second, we estimate the maximum value of how much each consumer could have saved on interest incurred had they chosen a different credit card in their choice set (and used it for the subsequent two years), and calculate average savings per consumer by risk category and overall.

1.90   These steps are described in more detail below.

Choice set of credit cards available to consumers

1.91   As mentioned above, we use the standardised credit scores that were created based on firms' internal credit scores, provided on a monthly basis as part of the account level data submissions (see Annex 10, section "Approach to standardising issuers' internal credit risk score"). This standardisation puts each account into one of 15 risk categories using their credit score for each month. We use the risk category assigned in the month of opening the account, i.e. January 2013, or, if it is not available, the risk category from the second or the third month.

1.92   For most firms, we follow their definitions of a "product": each credit card with a different product code in the account level data is considered to be a separate credit card product. For one firm where the number of different product codes was too large, we used their definitions of groups of products.

1.93   Credit cards obtained by consumers in the same risk category define their choice set. In other words, we assume that any credit card obtained by one consumer in a risk category would have been available to all consumers in the same risk category.[10] Note that at this stage we do not exclude any consumers from our cleaned dataset; it is in the calculation of average savings per consumer where we restrict the analysis to those who only use domestic purchases.

---

[10] In addition, we assume that any credit card would have been available to consumers with a credit limit that allows them to spend as much as they do on their actual credit card.

1.94   This definition of credit card choice sets does not necessarily reflect how firms make decisions on whom to give credit cards to and under what conditions.[11] However, we believe that having 15 categories results in sufficiently granular groups of consumers, and ensures that consumers at considerably different levels of credit risk (which is the main determinant of firms' decisions) are not captured within the same risk category. Summary statistics of each group are shown in Table 5 below.

1.95   We recognise that some consumers may fall into a risk category for reasons other than their credit risk. For instance, well-paid individuals without credit history may have low credit score and as such categorised as high risk. However, firms may still be willing to provide them with credit cards designed for medium or low risk consumers if they have reliable information that can make up for the lack of credit history. Our methodology would, in this case, result in having a product in the choice set of a high risk category that would in practice not be available to many of the consumers in this category. If this credit card has better terms than others in the same choice set, we may overestimate the potential savings consumers in this category could make. In order to correct for this potential bias, we run a sensitivity analysis excluding products that are not very common in each risk category.

1.96   Firms may vary interest rates on the same product depending on the applicant's circumstances. Therefore we need to make an assumption about the interest rate at which a product would have been available to a consumer. We have decided to use the median of the interest rates set on the same product in the same risk category.[12] We calculate the median interest rate for each month in our two-year period. Note that here we use interest rates as they were set at the point of application taking into account any introductory promotional offers (this information is obtained from Table 1 of the account level data).

Average savings per consumer

1.97   We understand that interest is typically calculated for each transaction as:

$$I = S*D*R \tag{1}$$

where I is the interest incurred, S is the amount the consumer spent on the transaction, D is the number of days between the date of the transaction and the date of the repayment and R is the interest rate. If the consumer repays such that the interest-free period applies, zero interest is incurred.

1.98   In the account level data we observe I and R on a monthly basis, but not S or D. However, using equation (1), we can define the balance on which interest is charged as:

---

[11] For example, some firms may apply a simple credit score threshold above which all applicants get the credit card with the same terms. Others may use a few categories and offer the same credit card with different terms to applicants with different credit risk.

[12] The median interest rate is obtained by arranging all the interest rates set on the same product in the same risk category from the lowest to the highest and choosing the middle one. The advantage of using the median compared to the mean is that it is less affected by extreme values.

$$S*D = I/R. \tag{2}$$

1.99 This allows us to estimate how much more or less a consumer would have had to pay in interest on an alternative product compared to the product he/she had. We define R1 as the interest rate on the consumer's product, R2 as the interest rate on an alternative product in the choice set, I1 as the interest the consumer actually incurred and I2 the interest the consumer would have incurred on the alternative product. We are interested in the difference between I1 and I2, that can be obtained as:

$$I1-I2 = S*D*R1-S*D*R2 = S*D*(R1-R2) = I1/R1*(R1-R2). \tag{3}$$

1.100 This is the formula we use to calculate the differences in interest incurred on the consumer's product and on other products in the consumer's choice set. We calculate the difference for each month and then sum it up for two years for each alternative product. Notice that if an account incurred zero interest in a month because it repaid within the interest-free period (that is, when I1 = 0), the calculated difference (I1-I2) is also zero.

1.101 The interest rates used in these calculations are the actual interest rate the consumer had in each month on his/her own product (i.e. the interest rate from Table 2) and the median interest rate on the alternative products (i.e. the median interest rate from Table 1). This implies that any temporary changes to the interest rate on the consumer's own product are taken into account but all other products are assumed to be available on interest rates for the whole period as they were set for most consumers in January 2013.

1.102 Notice that the formula in equation (3) does not work if the consumer has a product with 0% interest rate (as it is not possible to divide by zero). Therefore we need to make a further assumption on how to calculate interest incurred on alternative credit cards if the consumer's own interest rate is zero. We use the following methodology to calculate the difference in interest in this case.

- If the consumer repaid the full outstanding balance in a given month, we assume that no interest would have been incurred on any alternative credit card.

- If the consumer did not repay the full outstanding balance in a given month, we assume that the consumer would have incurred a full month of interest on the entire opening balance on any alternative credit card.

1.103 Regarding the first part of this assumption, we note that in practice on a non-zero rate product the interest-free period applies only if the consumer repaid the previous month's balance in full as well. That implies that in some cases we assume that the consumer would incur zero interest on the alternative credit card in a month when he/she would have actually paid some interest because the opening balance was positive. However, this is likely to apply in a few cases only as it requires that (i) the consumer has a 0% interest rate in a given month, (ii) which we are comparing with a product that has positive interest

rate in that month, and (iii) the consumer did not repay fully in the previous month but (iv) repaid fully in this month.

1.104   We consider that the second point in paragraph 1.102 is a conservative assumption as it calculates the maximum amount of interest one can incur in a month (that is, it may lead to potential savings being underestimated). Naturally, if we compare two credit cards with 0% interest rates in a given month, this calculation will show no differences in interest. However, if we compare a 0% product to a product with positive interest rate, this calculation will show that the consumer would have paid interest on the alternative credit card.

1.105   In Table 2 below we present some examples to illustrate the calculations.

Table 2: Calculation of monthly differences in interest, illustrative examples

	Opening balance	Repayment	Interest incurred	Monthly interest rate on own product	Monthly interest rate on alternative product	Monthly difference in interest incurred
1			£10	2%	1%	£5
2			£10	2%	0%	£10
3			£0	0%	0%	£0
4	£200	£200	£0	0%	1%	£0
5	£200	£100	£0	0%	1%	-£2

1.106   The first row in Table 2 above shows the simple example where both the consumer's own product and the alternative product have positive interest rate. The second row shows a comparison between a non-zero rate own product and a 0% alternative. For both of these rows we calculate the monthly difference in interest incurred using the formula in equation (3). In row 3, we are comparing two 0% rate products – the difference in interest incurred is zero in this case. We do not show the opening balance and the repayment in the first three rows as we do not use these variables in these scenarios.

1.107   Row 4 shows the case when the consumer has a 0%-rate product which we compare to a non-zero rate product and the consumer repays the entire opening balance in the same month. As explained above, we assume that the consumer would not have incurred any interest on alternative products either in this case. Finally, row 5 shows the case in which we compare a 0% product with a non-zero rate product and the consumer does not repay fully – this is where the opening balance is used to calculate the difference in interest, as explained in paragraph 1.102 above.

1.108   Our methodology implicitly assumes that consumers would have behaved in the exact same way had they chosen another credit card. In other words, we assume that the change in interest rate would not have had an impact on consumer behaviour; they would have made the same purchases and repayments on any credit card. This again is a conservative assumption for consumers on a 0% rate as it is likely that they would have repaid more on a non-zero rate card and thus would have incurred less interest than what our estimates show.

1.109   As mentioned above, at this point we restrict our data to consumers who only use domestic purchases. That is, we calculate the monthly differences in interest incurred for consumers who only use purchases but based on a choice set that is created based on data from all consumers.

1.110   Once we have calculated the monthly differences in interest incurred for each account and each month, we aggregate these differences for two years and identify the one that would have led to the highest savings. This is what we consider to be the potential savings this consumer could have made by choosing a credit card that is cheaper for him/her, given his/her usage. We also calculate what proportion of the total interest incurred over two years the potential savings account for, and the amount of interest that the consumer would have incurred on the best alternative card.

1.111   Finally, we calculate the average savings (both in absolute value and as a proportion) for each risk category by taking a simple average (and in the base case the median) of the results for individual accounts. At this last step we exclude consumers who did not pay any interest on purchases during the two years. By definition, these consumers could not save on interest by choosing another credit card and including them in the calculation of averages would lead to a biased picture of how much interest consumers could save by making different choices.

1.112   Note, however, that we keep all accounts in the calculation of average savings that paid *some* interest, irrespective of the amount. This includes accounts that incurred interest in a single month only and/or only of a trivial amount (e.g. less than £5 over the two years). As we are interested in the impact of making potentially suboptimal choices for all interest-bearing consumers as well as for those who pay more interest, we also calculate averages for the subset of accounts that pay at least £200 interest over two years.

Basic statistics

1.113   Table 3 below summarises the number of accounts at each stage of the analysis.

Table 3: Number of accounts in the dataset at each stage of the analysis

	Number of accounts
Raw data	439,227
Cleaned data / choice set	312,800
After excluding accounts that use functionalities other than domestic purchases[13]	85,970
After excluding accounts that do not pay interest (final sample)	32,140

1.114   Table 3 shows that we use 71% of the accounts included in the raw data when creating the choice sets (313k of 439k accounts; see paragraph 1.85 above on the cleaning steps). As mentioned above, the average savings are estimated excluding consumers who use functionalities other than domestic purchases (which results in excluding 227k accounts, resulting in 86k accounts) and consumers who did not pay any interest during the two years (which results in

---

[13] Note that some of those accounts that do not use other functionalities do not use purchases either (that is, credit card holders do not use these accounts at all).

excluding a further 54k accounts, resulting in 32k accounts). Savings per account are estimated for 10% of the cleaned data (32k of 313k accounts).[14]

1.115   Table 4 below shows a comparison of accounts that use domestic purchases only (included in the analysis) against accounts that use other functionalities (excluded from the analysis).

Table 4: Comparison of accounts using domestic purchases only and accounts that use other functionalities as well

	Domestic purchases only	Other functionalities
Number of accounts	85,970	226,830
Proportion that pay interest	37%	73%
Proportion that pay interest on purchases	37%	63%
Average of total interest paid by those who pay some interest (2 years)	£133	£244
Average of interest paid on purchases by those who pay some interest on purchases (2 years)	£133	£234
Average monthly value of new transactions	£168	£498
Average monthly value of new purchases	£168	£286

1.116   As shown in Table 4 above, accounts that use credit card functionalities other than domestic purchases spend more on their credit cards and incur higher interest; both for purchases and overall. In addition, a much larger proportion of them pay some interest.

1.117   Table 5 below shows summary statistics for two years for each of the 15 risk categories (on the basis which we determine consumers' choice sets) for the 86k accounts included in the analysis.

Table 5: Summary statistics for the 15 risk categories

Risk category	Number of accounts	Average monthly opening balance (£)	Proportion of accounts that incur some interest on purchases	Average interest incurred on interest-bearing accounts over two years (£)
1	29,324	256	32%	58
2	20,482	429	35%	99
3	13,931	476	35%	121
4	4,073	372	33%	174
5	1,848	272	32%	163
6	1,514	302	38%	192
7	3,389	158	30%	156
8	3,544	188	35%	186
9	1,685	367	61%	294
10	1,991	379	71%	281
11	1,434	465	77%	274
12	1,150	391	84%	275
13	1,103	352	89%	241
14	404	291	94%	207
15	98	206	95%	115

Note: credit risk is increasing from category 1 (low) to category 15 (high).

1.118   Table 5 above shows that the proportion of accounts on which interest is paid is similar in the low/medium risk categories (30-38%). Afterwards the proportion of interest-bearing accounts increases, from 61% in category 9 to 95% in category 15. The average interest incurred over two years broadly

---

[14] Overall, about half of the accounts not covered in the analysis are excluded because they do not incur any interest on purchases (and so by definition they could not save on interest by choosing a different credit card) and the other half is because they use functionalities other than domestic purchases.

increases with risk up to category 9 (from £58 to £294), where it starts to decrease, dropping down to £115 in risk category 15.

1.119   Table 6 below shows the number of products and providers in each risk segment, i.e. the choice set of consumers at different levels of risk.

Table 6: Number of products and number of firms by risk category, base case

Risk category	Number of products	Number of firms
1	102	10
2	103	10
3	74	10
4	69	10
5	67	9
6	69	10
7	57	8
8	60	8
9	56	8
10	42	6
11	40	7
12	35	5
13	45	7
14	26	5
15	12	2

Note: credit risk is increasing from category 1 (low) to category 15 (high).

1.120   As it is shown in Table 6 above, both the number of products offered in a risk segment and the number of firms active in a risk segment generally decreases as risk increases. There are a relatively large number of products in almost all risk categories, with the exception of category 15 where only 12 products were on offer in January 2013. Almost all firms appear to be active in the low risk segments but there are fewer providers in the higher risk categories, e.g. only five in category 14 and two in category 15. We note, however, that this table (i) excludes firms for which we do not have data and (ii) is valid as of January 2013 and may look different today.

1.121   Finally, in order to assess whether consumers have access to credit cards offering different interest rates we have looked at variability of annual interest rates in each risk segment. In this exercise we ignored any introductory rates and used the go-to rate of promotional products and the normal rate of flat rate products. We have found that there is an at least 20%-point difference between the lowest and the highest interest rate on purchases in each risk segment (e.g. the lowest annual interest rate on available credit cards within a risk category being around 10% and the highest annual interest rate being over 30%), which shows substantial variation of offers available to consumers. Including introductory promotions would lead to even higher price dispersion (at least for the months when these promotions apply).

Results – base case

1.122   Table 7 below shows how much on average consumers could save over two years by choosing the cheapest product in their choice set, both in terms of value and as a proportion of the interest they incurred over the two years, in our base case estimate. For ease of reference, we repeat the average interest

incurred per account for each risk category from Table 5, and also show the amount of interest they would have incurred on the cheapest alternative card (on average).

Table 7: Estimated average savings on interest incurred by choosing a cheaper credit card, by risk category and overall, base case

Risk category	Number of accounts	Average interest incurred over two years (£)	Average interest on cheapest alternative card over two years (£)	Average savings on interest over two years (£)	Average savings as a proportion of interest incurred (%)
1	9,281	58	24	34	76%
2	7,256	99	37	61	71%
3	4,868	121	43	78	70%
4	1,354	174	51	124	77%
5	590	163	46	117	78%
6	569	192	61	131	72%
7	1,014	156	47	109	79%
8	1,248	186	43	143	83%
9	1,020	294	89	205	73%
10	1,416	281	72	209	76%
11	1,104	274	76	198	73%
12	964	275	66	209	76%
13	982	241	55	186	77%
14	381	207	53	154	75%
15	93	115	100	16	14%
Total	32,140	133	42	90	74%

Note: credit risk is increasing from category 1 (low) to category 15 (high).

1.123   As Table 7 shows, consumers in our sample on average could save 74% of the interest they incur by choosing a credit card that is cheaper for them. Given that the average interest these consumers incur is £133 (£66.5 a year), the estimated savings amount to £90 for two years (£45 a year), reducing the average interest to £42 (£21 a year). In addition, half of the accounts in the sample pay less than £40 (£20 a year) interest on purchases and could save less than £23 (£12 a year).[15]

1.124   The estimated potential savings as a proportion of the interest paid are fairly similar across risk categories (varying between 70% and 83%), with the exception of the highest risk consumers who could only save 14% of their interest. The potential savings in value are higher for the medium to high risk segments (categories 9 to 13), which appears to be driven by the higher average interest they pay.

1.125   As explained above (see paragraphs 1.104 and 1.108), our methodology contains some conservative assumptions regarding how to calculate potential savings for consumers who chose a credit card with an introductory 0% purchase rate. In order to test the impact of these assumptions, we calculate the average savings for consumers having products with a 0% promotional rate and consumers having products with no promotional rate.[16] The results are summarised in Table 8 below.

---

[15] The difference between the mean (£90) and median (£23) estimates is driven by the fact that a large proportion of consumers incur very little interest over the two years. As noted in paragraph 1.112, we calculate average savings taking into account all accounts that incurred some interest, irrespective of the amount incurred.

[16] In the dataset, all introductory promotions offered a 0% interest rate in the introductory period.

Table 8: Estimated average savings on interest incurred by choosing a cheaper credit card, by product type, by risk category and overall, base case

Risk cat.	Number of accounts		Average interest incurred over two years (£)		Average interest on cheapest alternative card over two years (£)		Average savings on interest over two years (£)		Average savings as a proportion of interest incurred (%)	
	Products with promo period	Products with flat rate	Products with promo period	Products with flat rate	Products with promo period	Products with flat rate	Products with promo period	Products with flat rate	Products with promo period	Products with flat rate
1	3,937	5,344	101	26	48	6	53	20	56%	91%
2	3,922	3,334	129	63	57	14	72	48	56%	89%
3	3,359	1,509	130	103	51	26	79	77	64%	85%
4	753	601	202	140	67	30	134	110	69%	88%
5	286	304	205	122	66	27	139	95	71%	85%
6	238	331	207	182	83	46	124	136	59%	81%
7	261	753	214	135	76	37	139	99	74%	81%
8	294	954	165	192	47	42	118	150	77%	85%
9	123	897	267	297	126	84	141	214	58%	76%
10	86	1,330	228	285	77	72	151	213	71%	76%
11	135	969	155	291	85	75	70	216	42%	77%
12	38	926	238	277	85	66	152	211	72%	76%
13	30	952	196	243	63	55	133	187	67%	78%
14	5	376	252	206	97	52	155	153	65%	75%
15		93		115		100		16		14%
Total	13,467	18,673	133	132	55	33	78	100	60%	84%

Note: credit risk is increasing from category 1 (low) to category 15 (high).

1.126   As shown in the table above, we find that consumers with promotional products in our sample could save 60% of interest incurred if they had chosen a different credit card, which amounts to £78 for two years and £39 for one year. Consumers in our sample who have flat rate products could on average save 84% of interest incurred which is £100 for two years and £50 for one year.

1.127   As expected, the estimated average savings – both in absolute value and as a proportion of interest paid – are somewhat lower for consumers who chose a product with promotional interest rates than for consumers who obtained flat rate products. This difference is most likely partly attributable to the lower interest rates in the introductory period and partly to the conservative assumptions we apply for promotional products. Note, however, that consumers with promotional products pay on average *more* interest over two years than consumers with flat rate products, at least in the first seven risk categories that account for 95% of accounts with promotional period.[17]

1.128   Results for consumers with promotional products in the highest risk segments should be interpreted with caution given the low number of accounts falling into these categories. This is simply because introductory promotions are much less common in the high risk segments.

1.129   Finally, in order to understand the impact of making potentially suboptimal choices on consumers who pay more in interest (as averages for the entire population may hide the more extreme values and consumers paying more

---

[17] This holds true even if we are considering the median rather than the mean of interest incurred by risk category. Most likely this is due to the fact that consumers on 0% deals accumulate some debt during the introductory period on which they pay high interest once the promotion expired.

interest could potentially benefit the most from making better choices) we replicated the analysis for consumers who incur at least £200 interest over two years (£100 a year on average). The results are summarised in Table 9 below.

Table 9: Estimated average savings on interest incurred by choosing a cheaper credit card, by risk category and overall, on accounts that incur on average over £100 interest on purchases a year

Risk category	Number of accounts	Average interest incurred over two years (£)	Average interest on cheapest alternative card over two years (£)	Average savings on interest over two years (£)	Average savings as a proportion of interest incurred (%)
1	764	425	178	247	57%
2	1,075	449	172	277	60%
3	985	411	144	267	64%
4	411	460	136	324	70%
5	174	431	126	304	70%
6	194	454	145	309	68%
7	292	416	127	289	71%
8	421	450	108	343	77%
9	526	504	153	351	69%
10	712	476	122	354	74%
11	505	496	137	359	73%
12	460	473	113	360	76%
13	388	458	104	354	77%
14	133	396	101	294	75%
15	8	338	298	40	14%
Total	7,048	451	141	310	68%

Note: credit risk is increasing from category 1 (low) to category 15 (high).

1.130   As shown in Table 9 above, in our sample over a fifth of all the consumers who incurred interest incurred at least £200 over two years (7,048 of 32,140 accounts).[18] These consumers could save on average £310 over two years (£155 over a year), which account for 68% of their interest payments. In other words, they incur on average about £450 interest over two years (£225 a year), which would be reduced to about £140 (£70 a year). The absolute value of potential savings is higher than for all interest-bearing consumers, which is driven by the higher average interest these consumers pay. Potential savings as a proportion of interest incurred are slightly lower (68% compared to 74%). Using the median rather than the mean, we find that half of these consumers incur about £360 interest over two years (£180 a year), of which they could save more than £250 (£125 a year).

Sensitivity analyses

1.131   As part of the data cleaning and the analysis, we excluded certain accounts and made a number of assumptions. In order to check the robustness of our results, we carried out sensitivity analyses altering some of the assumptions made in the base case. The sensitivity analyses are described in more detail below, and the results of each are shown in the next section.

---

[18] In the cleaned dataset, i.e. before excluding consumers who use functionalities other than domestic purchases, 19% of all accounts and 34% of interest-bearing accounts pay more than £200 interest on purchases in the first two years.

Excluding products that represent a small proportion of a firm's sales

1.132   As mentioned above in paragraph 1.95, we carried out a sensitivity analysis in which products that accounted for a small proportion of sales of a firm within a risk segment were removed. This sensitivity analysis is aimed at removing credit cards from each choice set that would not typically be issued to consumers with that credit risk.

1.133   In practice, if a product represented less than 5% of sales of a particular firm in a risk category, all accounts having this product were dropped. In addition, we removed all accounts opened with a firm if a firm sold less than 50 credit cards in that risk segment overall. Note that for this filter portfolios of firms were treated separately.

1.134   After this modification, the number of firms active in most segments is somewhat lower than in the base case but the number of products offered in each risk segment is significantly reduced. The number of products and number of firms by risk segment for this sensitivity analysis are shown in Table 10 below.

Table 10: Number of products and number of firms by risk category, excluding products with small shares

Risk category	Number of products	Number of firms
1	31	10
2	34	10
3	32	9
4	32	9
5	32	9
6	30	9
7	24	7
8	24	7
9	21	7
10	14	4
11	14	6
12	11	4
13	15	5
14	7	2
15	7	2

Note: credit risk is increasing from category 1 (low) to category 15 (high).

Keeping all accounts that became active in January or February 2013 irrespective of how long they were active

1.135   As mentioned above in paragraph 1.86, as part of the data cleaning we removed all accounts for which we did not have 24 months of observations. Given that this affected 18% of the accounts included in the raw dataset, we applied an alternative approach to test the impact of this cleaning step. In this sensitivity analysis we kept all accounts in the cleaned dataset irrespective of the number of months for which the dataset contains observations. Instead, we only removed accounts for which the first observation is not in January or February 2013. This yielded in a cleaned dataset containing 373,709 accounts, which is 85% of the accounts in the raw dataset (compared to 71% in the base case).

1.136   The number of products offered and the number of firms active in each risk
         segment are not materially affected by this change.

Replicating the analysis for July 2012

1.137   As explained above in paragraph 1.84, we selected January 2013 for the
         analysis in order to have two years of data to analyse while using the most
         recent observations available. To test whether the choice of a particular month
         has a material impact on the results, we replicated the analysis for another
         month, July 2012.

1.138   Using the same cleaning steps, the cleaned dataset contains 64% of the
         accounts in the July 2012 raw data. The number of products and the number of
         firms in each risk segment are similar to the results in the base case, the
         number of products being slightly lower in most categories.

Summary of results

1.139   Table 11 below summarises the results of the base case and the sensitivity
         analyses for all interest-bearing accounts (without breaking the results down
         by risk segment).

*Table 11: Estimated average savings on interest incurred by choosing a
cheaper credit card, summary of results*

	Number of accounts	Average interest incurred over two years (£)	Average interest on cheapest alternative card over two years (£)	Average savings on interest over two years (£)	Average savings as a proportion of interest incurred (%)
Base case	32,140	133	42	90	74%
Excluding products with small shares	30,508	132	52	80	68%
Keeping accounts irrespective of how long they were active	38,167	122	38	84	76%
Using July 2012 data	26,984	148	54	95	65%

1.140   The number of accounts in the final dataset decreases slightly after excluding
         accounts with a product that is not very common in a risk category, from
         32,140 to 30,508. When accounts for which the dataset does not contain 24
         observations are not excluded, the size of the final dataset increases by 19%
         to 38,167. The July 2012 dataset contains somewhat fewer accounts than the
         January 2013 dataset.

1.141   The average interest incurred over two years varies between £122 and £133
         (£61 and £66.5 a year) using the January 2013 data and is £148 (£74 a year)
         using the July 2012 dataset. Our estimates show that this could be reduced to
         between £38 and £52 (£19 and £26 a year) for the former, and to £54 (£27 a
         year) for the latter.

1.142   Estimated potential savings for interest-bearing accounts in our sample vary
         between £80 and £95 for two years, which is equivalent to £40 and £47.5 a
         year. In terms of proportions, we estimate that consumers in our sample could
         save between 65% and 76% of their interest payments by choosing a different
         credit card.

1.143   Table 12 below summarises the results of the base case and the sensitivity
         analyses separately for accounts with promotional products and accounts with
         flat rate products.

*Table 12: Estimated average savings on interest incurred by choosing a
cheaper credit card, by product type, summary of results*

	Number of accounts		Average interest incurred over two years (£)		Average interest on cheapest alternative card over two years (£)		Average savings on interest over two years (£)		Average savings as a proportion of interest incurred (%)	
	Products with promo period	Products with flat rate	Prod. with promo period	Prod. with flat rate	Prod. with promo period	Prod. with flat rate	Prod. with promo period	Prod. with flat rate	Prod. with promo period	Prod. with flat rate
Base case	13,467	18,673	133	132	55	33	78	100	60%	84%
Excluding products with small shares	12,794	17,714	133	131	62	45	71	86	54%	78%
Keeping accounts irrespective of how long they were active	15,846	22,321	125	119	51	29	74	91	62%	86%
Using July 2012 data	12,770	14,214	123	170	62	46	61	124	53%	76%

1.144   Potential savings on interest-bearing accounts in our sample that hold a
         product with promotional period vary between 53% and 62%, while the range
         is 76% to 86% for accounts with flat rate products.

1.145   Finally, potential savings expressed as a proportion of interest paid are similar
         across all risk categories with the exception of the highest risk category, for all
         scenarios considered. We estimate that consumers in risk category 15 in our
         sample could only save 2% to 16% of their interest payments by choosing a
         different credit card. They incur on average between £113 and £125 interest
         over two years, so the potential savings are only £3 to £25.

Conclusions

1.146   In summary, the results above show that interest-bearing consumers in our
         sample could save a large proportion (65-76% on average) of the interest they
         incur by choosing a different credit card. This could be either because another

credit card would have fit better the consumer's usage profile (i.e. offering lower interest rates in months when the consumer spends more and/or repays less) or because there are credit cards offering lower interest rates overall. This result applies to both consumers who chose a product with an introductory promotion on purchases and who chose a product with a flat rate. Even consumers having promotional offers (for whom our methodology contains some conservative assumptions) could save over half of their interest payments.

1.147   Many consumers pay relatively little interest; therefore the potential savings in absolute terms are not necessarily substantial per account (less than £50 a year on average, and less than £12 a year for 50% of interest-bearing accounts in our sample). For those who borrow more, however, the potential savings from choosing a cheaper credit card are clear and significant. For example, over a fifth of interest-bearing accounts in our sample incur over £100 interest on purchases a year. On average, these consumers incur £225 interest a year, of which they could save over £150 by making better choices (see Table 9 above).

1.148   Potential savings as a proportion of interest paid are similar across different risk categories with the exception of consumers with the highest risk who could only achieve very limited savings by choosing a different credit card.

1.149   The above estimates focus on interest incurred on purchases and do not incorporate annual fees or the value of rewards and benefits a consumer can earn by using a credit card. It may be the case that while consumers could save in interest by choosing a different credit card, they would also forego some rewards they value highly. As a result, our methodology may overestimate potential benefits for these consumers.