

# PRICE LAB

## AN EXPERIMENTAL INVESTIGATION OF PERSONAL LOAN CHOICES

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# An Experimental Investigation of Personal Loan Choices

Pete Lunn, Marek Bohacek and Alicia Rybicki

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## Glossary

Accuracy	The accuracy of consumers' decisions is measured by the consistency of their choices and by the extent of any systematic biases in the decisions they make.
Annual Percentage Rate (APR)	Is the annual rate that is charged for borrowing, expressed as a single percentage number that represents the actual yearly cost of funds over the term of a loan. This includes any fees or additional costs associated with the transaction. Calculation of APR is standardised within the European Union.
Behavioural Economics	The use of insights and methods from experimental psychology (and related disciplines) for economic analysis.
Bias	A reduction in accuracy of decision-making due to systematic directional error. In a choice task bias is indicated by inconsistency of decisions across contexts. In a surplus identification (S-ID) task bias is displayed where the participant consistently overestimates or underestimates the surplus. Note that decisions can be unbiased but imprecise, i.e. accurate only on average, or precise but biased, i.e. consistently off in the same direction by a similar amount.
Choice Experiment	A forced-choice task used to elicit preferences. The method involves asking individuals to make a choice between hypothetical alternatives, such as two different loans.
Financial Cost (FC)	The difference between the amount you borrow and the total amount you will repay (including interest) by the time you have paid the loan off in full. Sometimes also referred to as the 'cost of credit'
Forced-Choice Task	An experimental method in which participants are presented with two or more specific response options and have to choose one. That is, participants must commit to an answer; 'don't know' is not permitted.
Full Information (FI)	An experimental condition where all main information relating to the loan is presented: term, Annual Percentage Rate (APR), financial cost (FC) and monthly repayment (MR).
High Cost Loan Warning	A warning statement based on the regulatory warning mandated for licensed moneylenders in the Irish market. The warning was presented alongside any loan with APR higher than 15 per cent.
Just Noticeable Difference (JND)	A measure of the precision of judgements. The JND is the amount of surplus required in order for participants to identify said surplus reliably. More technically, the JND is the size of surplus needed for a participant to go from identifying it 50 per cent of the time to 86 per cent of the time.

Linear	A relationship between two variables is linear if a one unit increase in one quantity always produces the same increase in the other quantity. A graph of a linear relationship produces a straight line.
Mandated Disclosure	A form of regulation that requires firms to provide specific product information or to disclose information in a standardised format. An example is a 'high cost loan' warning.
Mixed-Effect Logit (MEL) Model	A type of multilevel statistical model fitted to binary data. In the present report, MEL models are used to estimate the impact of different conditions on which loan is selected, while controlling for individual variation in preferences for longer versus shorter loans.
Monthly Repayment (MR)	An amount paid every month in order to repay a loan.
Non-linear	A relationship between two variables is non-linear if a one unit increase in one quantity does not always produces the same increase in the other quantity. A graph of a non-linear relationship deviates from a straight line, often because it is curved.
Nudge	An intervention that preserves freedom of choice (i.e. the decision-maker is not prevented from opting for a given alternative) but nevertheless steers people in a particular direction that is deemed to be beneficial.
Precision	The amount of variability in decisions. Note that decisions can be imprecise but unbiased, because they are subject to large variation but accurate on average, or precise but biased, because they are inaccurate in a consistent direction and to a similar extent.
Surplus	How much a product is worth product over and above its price or, equivalently, how much more one product is worth than another. In theory, surplus can be measured in multiple ways, but in the present report it is measured in percentage points of APR.
Surplus Identification (S-ID) Task	A forced-choice task specifically designed to assess the accuracy with which consumers are able to detect (identify) a surplus. In the present report, consumers learn which loans are better according to an objective function set by the experimenters. Their accuracy in identifying the surplus is then tested over multiple trials.



# Executive Summary

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PRICE Lab (Programme of Research Investigating Consumer Evaluations) is a research programme in behavioural economics funded by the Central Bank of Ireland, the Competition and Consumer Protection Commission (CCPC), the Commission for Energy Regulation (CER) and the Commission for Communications Regulation (ComReg). It focuses on how consumers make decisions when faced with multi-attribute products, with the aim of providing evidence for consumer policy. The programme has developed methods for assessing the quality of consumers' decision-making. The present report applies these methods to investigate consumer choice in the market for personal loans.

This market was selected for study in collaboration with PRICE Lab's funding bodies for two reasons. First, there are indications that some consumers may be making disadvantageous choices of loan, given the large difference between interest rates offered by different providers in the market and the focus of some current marketing campaigns (see Chapter 1). Second, how consumers negotiate the central trade-off between present consumption and future payments is relevant for other markets of interest, which will form the focus of future PRICE Lab reports. Choosing a personal loan (for a given principal sum) involves negotiating a relatively complex non-linear relationship between the term of the loan, the annual percentage rate (APR), the monthly repayment (MR) and the financial cost (FC) (or, equivalently, the cost of credit).

## METHODS

The present investigation conducted two incentivised laboratory experiments with samples of Irish consumers. The experiments were designed to address five research questions: (1) Do consumers' decisions differ according to whether MR and/or FC information is made explicit at the point of decision? (2) Does the effect of explicit MR and/or FC information depend on the term of the loan? (3) Does the provision of MR and FC information affect the precision with which consumers can make choices? (4) Will a 'high cost loan' warning (similar to that currently in place for *Consumer Protection Code for Licensed Moneylenders*) deter consumers from opting for loans with high APRs? (5) Are consumers' choices more consistent following an opportunity to examine a table designed to illustrate how MR and FC vary with the term of a loan? Questions (4) and (5) amounted to an experimental test of two 'nudges' that might assist consumers in making better decisions.

Experiment 1 presented multiple pairs of offerings for a personal loan of €7,500, using images based on current marketing practice. On each presentation, participants had to decide which of the two offerings they would prefer, assuming that they had to meet the repayments from their current monthly income. The pairs differed in APR and by plus or minus one or two years with respect to the term of the loan. Choices were made in one of four conditions in which different information was explicit: term + APR ('APR' condition); term + APR + MR ('MR' condition); term + APR + FC ('FC' condition); and term + APR + MR + FC (full information, 'FI', condition). Thus the experiment tested, using the same set of loans, whether choices were consistent across the conditions or whether they were influenced by which information was made explicit and which kept non-explicit. In addition, the experiment tested whether choices were affected by making loans with an APR of over 15 per cent subject to a 'high cost loan' warning.

In Experiment 2, consumers were given an opportunity to examine a table designed to illustrate how MR and FC vary as the term of a personal loan increases. The participants then completed two tasks. The first was a choice task like that in Experiment 1, using the APR, MR and FC conditions. The second was a 'surplus identification task' in which they repeatedly had to choose one of a pair of loans on behalf of a young couple with a particular set of preferences seeking to fund home improvements. This second task was objective, i.e. there was a right and a wrong answer. Participants were given examples, practice and feedback in relation to which loans the couple preferred. The experiment then measured how accurately participants could identify which of the pair was the better loan for the couple. The aim was to test how accurately participants could integrate information into their decisions, depending on whether the APR, MR and FC information was made explicit.

## **KEY FINDINGS**

The results of Experiment 1 showed that choices depended strongly on which information about the loans was explicit and which was left implicit, i.e. choices were not consistent across conditions. Consumers were more likely to opt for longer loans in the MR condition and shorter loans in the FC condition, compared with the APR and FI conditions. The size of this effect was large. Especially for terms of less than five years, a high proportion of decisions switched direction according to whether MR and/or FC information was explicitly presented. The consumers also displayed a second form of inconsistency in their decisions – one that was unanticipated in advance. Of the pair of offerings, the longer loan proved to be more attractive when it was just one year longer than when it was

two years longer. Again, this inconsistency in decision-making was substantial. The experiment also confirmed that the 'high cost loan' warning had a small but significant deterrent effect.

Turning to Experiment 2, the results of the choice task revealed that the example table was partially effective in making consumers' choices more consistent, suggesting that it improved understanding of the key relationships behind a loan. However, participants continued to opt for longer loans in the MR condition. In the surplus identification task, there was some evidence that providing explicit MR and FC information marginally reduced the precision of decisions, but this effect was small and overall decisions were quite inaccurate. More strikingly, the results confirmed that even in a repeated, objective task with feedback, consumers were unable to avoid placing too much weight on information that was presented explicitly, as opposed to information that was left implicit.

## **IMPLICATIONS**

Overall, our findings have implications for consumer protection. They suggest that consumers are prone to mistakes when choosing among offerings in the personal loan market. Furthermore, they show consumers' choices can be influenced by how and when information is presented.

Implications for policy are far from straightforward and are discussed in Section 4.3 of this report, in the context of the already extensive regulations that apply to this market. The findings provide evidence for potential benefits associated with the two 'nudges' tested, though the impact of these interventions would be unlikely to be large. The results also suggest a number of possible regulatory interventions that have the potential to help consumers to make better decisions, by exposing them to useful information at key points in the decision process. However, the likely outcomes are far from definitive. Further analysis and empirical tests are required to generate better evidence for policy.

# Section 1

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## Introduction

### 1.1 BACKGROUND

PRICE Lab (Programme of Research Investigating Consumer Evaluations) focuses on how consumers make decisions when faced with multi-attribute products. The programme has adapted techniques used in studies of perception and cognitive neuroscience to develop a set of methods for investigating the quality of consumer decision-making. An account of the development of these methods and the outcomes of an initial series of experiments conducted in 2013 and 2014 is presented in Lunn et al. (2016) and related papers.

This report presents the results of two experiments that applied the methods developed in PRICE Lab to the specific question of how consumers make choices between personal loans. The experiments were developed following discussions with PRICE Lab's funding organisations. This market was selected for study primarily because it is generating concern from a consumer protection perspective, but also because consumers' ability to trade off current and future payments has potential relevance for other key markets of interest, such as those for mobile telephones and pre-paid energy.

### 1.2 THE MARKET FOR PERSONAL LOANS

Initial investigations of the market for personal loans in Ireland, conducted by the research team, suggested that consumers do not find this market easy to negotiate. Prices, as measured by the annual interest rate (APR),<sup>1</sup> are widely dispersed, although the nature of the product does not vary essentially between providers. To a substantial extent, a personal loan for a given principal can be characterised by just two product attributes: the APR and the term of the loan. These determine the monthly repayments (MR) and overall financial cost (FC). While consumers may take other factors into account, such as the brand of the provider and whether the interest rate is fixed or variable, these are the dominant factors in the transaction. Yet, from April 2015 to April 2016, a period during which the PRICE Lab team regularly examined prevailing interest rates and marketing practices in the personal loans market, the most expensive loans on offer from Ireland's main high street banks typically had approximately double

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<sup>1</sup> APR is an international standard for describing interest rates on credit products, designed to take all payments and fees into account and, hence, to facilitate product comparison on a like-for-like basis. The formula that must be used by all providers to calculate the APR for a given product is publicly available and standardised across European Union countries.

the APR of the least expensive.<sup>2</sup> To some extent, this wide range of APRs, which was generally at least 6-8 percentage points throughout the 12-month period, may reflect a degree of loyalty or feeling of security associated with doing business with a given provider, perhaps the provider with whom the consumer has a current account. The spread is large nonetheless; consumers pay a high price for choosing certain providers. The advertising and web-based marketing of personal loans also displayed great variety, both in the information and examples supplied to consumers and in the methods used to attract consumers' attention. There was variation in how the primary relationships (between term, APR, MR and FC) were conferred and how salient each type of information was at key decisions points. Many of the attributes that were emphasised in advertisements, such as very rapid approval, could not be considered indicative of sound financial decision-making.

These cursory examinations of prices and marketing are not definitive indications that consumers find this market difficult, but they are suggestive. The implication of price dispersion in a product market where the product itself hardly varies is that some consumers struggle to locate good value. Meanwhile, based on the assumption that marketing strategies are at least partially successful, some superficial attributes of personal loans may be excessively influential in consumers' decisions from the perspective of overall value for money. The findings of Lunn et al. (2016), which show that consumers are able to take only a limited number of product attributes into account simultaneously, imply that where weight is given to superficial attributes it is likely to be at the expense of giving weight to attributes that are fundamental to the overall value of the product.

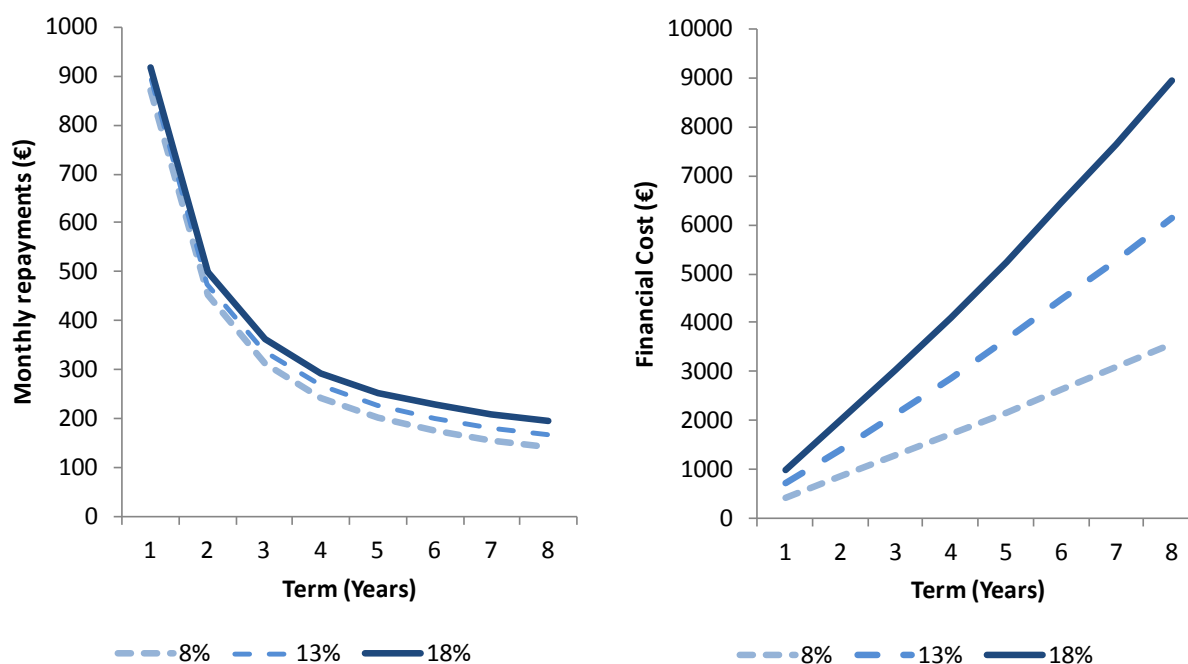
### 1.3 THE PROBLEM FACING THE CONSUMER

The relationships between term, APR, MR and FC are not straightforward. Figure 1 offers some potential insights into what might make them intuitively awkward. In Summer 2015, when the first experiment described below was carried out, the best APR on offer from a high street bank was approximately 8 per cent for a €10,000 loan repaid over five years, while the poorest was around 18 per cent. The curves shown in Figure 1 provide example MR and FC (the cost of credit) for both these rates and for an intervening one, at terms ranging from one to eight years. (Note that the shape of these curves varies little with the size of the principal – €10,000 is merely used for illustrative purposes.)

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<sup>2</sup> This is an approximation for a loan of €10,000 repaid over five years, based on regular monitoring by the research team of the price comparison website [www.consumerhelp.ie](http://www.consumerhelp.ie), which is maintained by CCPC. It is not possible to conduct this price comparison perfectly, since different providers attach somewhat different conditions to loans, e.g. the requirement to have an account with the provider, or to make payments by direct debit, etc. Nevertheless, the comparison is sufficient to show that the market is subject to substantial price dispersion.

**FIGURE 1** Relationship between term, APR, monthly repayments and financial cost for a €10,000 loan at APRs of 8 per cent, 13 per cent, and 18 per cent



Taking out a loan for a specific purchase requires the consumer to resolve a trade-off. If they opt for a shorter loan then the overall FC is reduced, but the MR is higher. Repayments are both a burden, in terms of reduced capacity for consumption during the period of the loan, and a potential risk, if there is any possibility of being unable to make the payments. Opting for a longer loan decreases this burden and risk, but raises the overall cost. This much is straightforward, but what may make the judgment difficult is the extent of non-linearity (curvature) in the term-MR relationship (Figure 1, left panel). At relatively long terms, shortening the period of the loan lowers the FC by a substantial amount in return for a modest rise in MR. At shorter terms, by contrast, the rise in MR becomes much steeper. A further point to note is that the interest rate has a much greater proportionate effect on the FC than it does on the MR. This difference arises because the bulk of the repayment goes to pay off the principal, while the FC is net of the principal.

Thus, even a consumer who understands well the financial benefit of opting for a lower interest rate faces a difficult trade-off when choosing the term of the loan. The extent to which failure to negotiate these relationships contributes to the spread of APRs observed in Ireland's market for personal loans is unclear. Yet it is sobering to note how much these large APR differences can affect what consumers pay for credit. The right hand panel of Figure 1 shows that, when taking out a €10,000 loan over five years in summer 2015, a consumer who opted

for the highest rather than the lowest APR in the market would effectively cost themselves more than €3,000.

During the pilot phase of the current study, we formed the impression that these relationships were far from intuitively obvious to most people, including to some professional economists. The strength of the non-linearity in the term-MR relationship, in particular, seemed to cause difficulty or surprise when people were asked to guess figures or simply to comment on successive examples of loans.

#### **1.4 PREVIOUS LITERATURE**

A modest volume of academic literature has previously addressed consumers' decision-making when choosing between loans. Kamleitner et al. (2012) provide a review, which divides the process of credit use up into three stages: (1) processes that precede credit use, i.e. how the initial decision to seek credit is reached; (2) processes during the acquisition of credit, i.e. how the specific credit product is chosen; (3) processes during the repayment period. For present purposes, the focus is on the second of these processes. Most of the relevant studies are to be found in the fields of psychology and marketing science.

It is well established at this stage that many consumers are 'present biased', meaning that they are inclined to weight earlier costs and benefits substantially more heavily than costs and benefits that arise further in the future, i.e. to a greater extent than would be expected by discounting at a constant interest rate (see Frederick et al., for review). This tendency might lead consumers to opt for longer loans that delay payments despite increased FC. However, Prelec and Loewenstein (1998) show how other psychological factors can counter this tendency and provide experimental survey evidence suggesting that this may lead many consumers to be averse to debt. Consumers engage in a degree of 'mental accounting' (Thaler, 1985), such that they tend to consider different transactions or financial processes separately in different mental accounts. Thus, consumers are inclined to link repayments to the benefits they get from the specific good they purchase with the loan. This means that the hedonic benefits consumers get from consumption are tempered by the pain of ongoing repayments, while paying off debts sooner allows them to enjoy the benefits of ongoing consumption more. Empirical evidence supports the idea that many consumers are debt-averse and seek short loans (Prelec and Loewenstein, 1998; Wonder et al., 2008) but, as highlighted in the previous subsection, they must trade this off against the burden of higher repayments.

In order to negotiate this trade-off accurately, consumers require an intuitive understanding of the relationships highlighted in Figure 1. Some experimental studies suggest that such understanding may be limited.<sup>3</sup> One simple way to test this is to provide information about a loan and to ask experimental respondents to estimate another aspect that is determined by the information provided. For instance, when asked to estimate how long it will take to pay off a loan with a given principal, MR and APR, consumers tend to produce underestimates (Overton and MacFadyen, 1998; Ranyard and Craig, 1995; Yard, 2004). Similarly, estimates of FC for one- or two-year loans of a given principal and APR are systematically too high (McHugh et al., 2011). An alternative method is to ask experimental participants to rate or rank a set of loans. Yard (2004) found that when experimental participants were given loans that varied in term, MR and FC, they often ranked loans with very high APRs above those with lower APRs when the term of the high-APR loan was shorter. Herrmann and Wricke (1998) asked participants to rate loans for price reasonableness and recorded that different price components were not weighted equally in terms of cash value.

A less common approach is to employ a choice experiment in which participants indicate their preferred choice between options, or adjust a price or attribute until they are indifferent between options. Using such methods, Estelami (2001) showed that consumers' preferences between loans could be influenced by superficial aspects of the way information was presented, namely whether the MR was priced just below a salient round number (e.g. €199, €349, etc.) or whether repayments were disaggregated into smaller more regular amounts.

Experiments conducted by Ranyard et al. (2006, Study 2) and McHugh et al. (2011, Study 3) are perhaps closest to the experimental designs employed in the present study. In the latter case, a sample of account holders with a UK high street bank was asked to imagine taking a loan for £7,500 to fund a consumer durable or home improvement. Each respondent was shown the same nine pairs of loans, but the study manipulated whether APR information and FC information was provided in addition to the term and MR information. Each pair had a shorter and a longer loan, varying in term between two and seven years. The shorter loan always had higher MR but lower FC, while either loan might have the lower APR. For some, but not all, of the nine pairs there were differences in the proportion of respondents who opted for the shorter loan, according to the information given. The provision of the APR information altered choices between the longer and shorter loan, but this effect was attenuated when FC information was also

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<sup>3</sup> The studies listed in this section vary in whether they focus on financial cost (i.e. sum of all repayments minus the principal) or total cost (i.e. sum of all repayments), but there is no indication that different results arise according to this difference.



present. Ranyard et al. (2006) recorded a similar interaction between the provision of APR and FC information.

The authors of these two studies interpret their findings as an indication that providing FC information moderates the effect of providing consumers with the APR. Certainly, the results indicate that consumers may make different choices depending on the information they are given. With only a small number of pre-determined loan pairs, however, it is difficult to disentangle the impact on choices of varying the term, APR, MR and FC information, since each of these four properties varied within and between the pairs of loans.

Overall, the results of previous research suggest that consumers possess limited understanding of the relationships between the essential properties of a personal loan, since they are not accurate in estimating important quantities and their choices appear to be sensitive to the information presented. Broadly speaking, the findings above are consistent with a descriptive model proposed by Ranyard and Craig (1995). This 'dual mental account model' posits that consumers have two mental representations of loans: (1) as total accounts, in which they compare the amount borrowed against the total amount repaid; (2) as recurrent budget period accounts, in which they compare costs and benefits over a limited time period, such as within a month. The information that is presented may lead to greater emphasis on one or other of these mental representations, with a consequent impact on choices.

## 1.5 POLICY AND REGULATIONS

This potential for consumers to struggle to understand the key relationships behind credit products is well recognised by policymakers and, consequently, providers are bound by a quite extensive regulatory framework involving both EU and domestic rules. The main regulation that applies to the advertising of loans of between €200 and €75,000 is contained in the *European Communities (Consumer Credit Agreements) Regulations 2010*. In the present context, the key regulations are worth quoting in full:

7. (1) *Any advertising concerning credit agreements that indicates an interest rate or any figures relating to the cost of the credit to the consumer shall include standard information in accordance with this Regulation.*
- (2) *The standard information shall specify in a clear, concise and prominent way by means of a representative example—*

- (a) the borrowing rate, fixed or variable or both, together with particulars of any charges included in the total cost of the credit to the consumer,*
- (b) the total amount of credit,*
- (c) subject to paragraph (3), the annual percentage rate of charge,*
- (d) if applicable, the duration of the credit agreement,*
- (e) in relation to credit in the form of deferred payment for a specific good or service, the cash price and the amount of any advance payment, and*
- (f) if applicable, the total amount payable by the consumer and the amount of the instalments.*

The aim is clear: a representative example is mandated to help the consumer to understand the relationships between term, APR, MR and FC. In addition to these requirements, European regulations also govern exactly how the annual percentage rate (APR) is to be calculated, in order to ensure that rates are comparable.

In practice, within these regulations, there is considerable variation across providers in how representative examples are displayed on advertisements, websites and in the output of online loan calculators. Different providers give different degrees of emphasis to APR, MR or FC information, e.g. through variation in font size, location of information on the page, or the order in which information is listed. Some providers offer tables that provide different representative examples for different principals, since there is often a relationship between the principal and the APR. In the Irish market, the PRICE Lab team could find no providers who offered examples showing how the MR and FC vary with the term of a personal loan, although many do offer online calculators so that customers could potentially generate such examples for themselves, assuming of course that they realised that it might be useful to do so.

In addition to the abovementioned regulations, under the Central Bank's *Consumer Protection Code* (Central Bank of Ireland, 2012), there are General Principles and Requirements that regulated entities must adhere to in the way they deal with customers. These include: making a full disclosure of relevant information; ensuring that information is clear, accurate, up to date and in plain English; and producing a detailed assessment of the suitability of products for the specific consumer. Various specific warning notices are also mandated. Specific rules apply to all advertisements, some of which are again worth citing in full:

9.2 *A regulated entity must ensure that:*

- a) the design, presentation and content of an advertisement is clear, fair, accurate and not misleading;*
- b) an advertisement does not seek to influence a consumer's attitude to the advertised product or service or the regulated entity either by ambiguity, exaggeration or omission; and*
- c) the nature and type of the advertised product or service is clear and not disguised in any way.*

Overall, therefore, there is a substantial regulatory effort in the market for personal loans that directs providers to help consumers in selecting suitable products, comparing offerings and avoiding misconceptions and mistakes. In part, these regulations have evolved in response to evidence regarding how consumers make decisions and how easily they understand the products they engage with. Consumer policy is an evolving area that must continue to respond to empirical findings.

## 1.6 RESEARCH QUESTIONS

The experiments reported here attempted to build substantially on the previous literature described in Section 1.4. We set out to explore consumers' preferences for loans more thoroughly and systematically than had been attempted previously, exploiting the experimental techniques developed in PRICE Lab. The broader aim was to reveal influences on consumers' choices of loan that might be important from a consumer protection perspective. The research questions addressed are as follows:

- To what extent do consumers' choices of personal loans differ according to the information made explicit at the point of decision?
- Given the non-linear relationship between MR and term, does the effect of making MR and FC information explicit depend on the term of the loan?
- Does the available information alter the precision with which consumers are able to choose between personal loans?

In addition to these most fundamental research questions, the experimental methods that we used, which are described in the following subsection, allowed us to address the impact of two potential interventions that might assist consumers in choosing loans. The interventions tested would fall into the category of 'nudges' (Thaler and Sunstein, 2008), because they do not deny

consumers any choices but instead aim to direct them towards what seem to be better options. Specifically, we were able to ask:

- Does the application of a ‘high cost loan’ warning deter consumers from opting for higher rate personal loans?
- Does the availability of an example designed explicitly to highlight the non-linear nature of the MR-term relationship help to reduce biases in personal loan choice?

The above questions are important from a consumer policy perspective. If decisions are imprecise or biased, or if they vary according to what product information is emphasised, then a substantial proportion of loans chosen may not be selected optimally. Moreover, the larger these effects, the more scope there is for consumer outcomes to be improved by changing how information is provided. Given Figure 1 above, a particular concern is that some consumers who take out loans for four or five years (or more) may not realise that they could save substantially on FC in return for a fairly modest increase in MR by taking out a somewhat shorter loan. This possibility also implies a specific incentive for providers, who may be able to tempt consumers into longer loans that make greater profits, if the consumer does not realise that a shorter loan would involve a fairly marginal increase in MR. We return to these issues in Section 4.3.

## 1.7 GENERAL METHODS

The experiments described in this report are of two sorts: choice tasks and surplus identification (S-ID) tasks. These are briefly introduced and discussed here and described more fully in the two main sections.

The choice tasks present participants with two alternative products and they are simply asked to decide which they prefer. The task is repeated over a series of trials and conditions, where the specific product information varies from trial to trial within an experimental run and the condition (the amount or type of information available) varies between different runs. The key test is whether the choices change between conditions and, if so, how.

Choice tasks are a standard technique in consumer research. However, PRICE Lab has introduced two innovations to standard choice tasks. First, in most studies of this sort, product and price information is provided in lists, tables and blocks of text. Yet, in real markets, product information is generally communicated through adverts, displays and other marketing materials. In designing our experiments, we studied the typical online marketing environment for personal loans and

constructed a similarly engaging onscreen experimental environment. Instead of requiring them to process tables, lists and text, we presented participants with attractive images and graphics, introduced with an animation. In this way, the choice experiments more closely resemble the real marketing environment. They are also more engaging for the experimental participants, which is important if we want them to concentrate over repeated decisions. Screenshots are provided in the main sections.

Second, we typically offer a ‘tournament’ incentive of a €50 shopping voucher for at least one in every ten participants who attends PRICE Lab. For the choice experiments, participants were told that those who responded most accurately according to what they truly preferred, would be most likely to win a voucher. On the rare occasion that participants asked, we explained to them that we had a statistical method for determining how accurately and consistently people responded according to their true preferences. No participant queried this method further or requested additional detail. In fact, the method we used was to estimate statistical models at the individual level similar to those estimated for the whole experimental sample (as shown in the Appendices and described in the results sections). The vouchers were then sent to the participants whose decisions were most consistent with the model.

The purpose of this incentive scheme was to motivate participants to concentrate across multiple trials. It is, of course, possible to criticise the scheme. In theory, there are two particular concerns. First, any statistical model must make approximations and assumptions (e.g. assuming that the relationship between differences in APR between two loans and which of two loans would be chosen could be adequately captured by a linear and a squared term). Thus, it cannot guarantee to capture the shape of people’s true preferences, especially if their preferences are highly sophisticated or unusual. It might therefore be argued that the measure of performance is not entirely fair. Second, there is a danger that the participant might try to second-guess the statistical model that the experimenters are planning to use and, consequently, not respond according to their true preferences but according to their best guess as to how performance is to be scored.

While accepting that these concerns are legitimate and real, they are theoretical and not practical in nature. After conducting pilots of the first experiment, our experience was that the level of individual inconsistency in decisions was so large that a linear or simple non-linear statistical model was likely to be effective in capturing it. While an element of luck would doubtless come in to who won the vouchers, participants whose decisions were more consistent across the different

conditions would be substantially more likely to be successful. Furthermore, we concluded based on these pilots that attempting to second-guess the experimenters' statistical method for scoring performance, given the apparent complexity of the task already at hand, was an impossibly complex strategy to follow even for an economist trained in statistics. The fact that no participant sought additional information on the scoring system is consistent with this view. Hence, following the pilots, we were happy that participants were taking the incentive scheme at face value and simply trying to decide which offering they preferred. Lastly, note that any scoring system would be bound to favour consistency in decisions, so even in the unlikely event that participants did try to second-guess the scoring system, they would still be incentivised to make consistent choices.

The S-ID task is a different kind of experimental task. Rather than testing what consumers prefer, it tests how accurately consumers can combine the available product information in order to judge which product is better. That is, the task measures how much better one product has to be than another in order for participants to identify its superiority reliably. To accomplish this, the degree to which one product is superior, the available 'surplus', must be objectively defined. Lunn et al. (2016) contains a detailed account of various methods for achieving this. The method used here is a 'buyer's agent' paradigm. The participant is told that their job is to choose a product for someone else, such as a friend or relative. They are given a description of what that person is looking for and shown examples of the products the person likes more and those they like less. They then undertake a series of trials in which their task is to pick which of two products would be preferred by their friend or relative, with feedback after each choice. We test whether the accuracy with which they perform this task varies with the type of information presented.

For S-ID tasks, the tournament incentive for winning a voucher is much more straightforward. The technique generates precise estimates of how accurately each participant can identify the surplus. Those who are most accurate stand to win the voucher.

For Experiment 1, participants were recruited via radio and newspaper advertisements that accompanied articles or discussions about using experiments to study consumer choices. Over one hundred people responded to the adverts and voluntarily signed up online via the ESRI website. From this group, a sample was selected that was broadly balanced by gender, age (18-70) and working status (working, not working). For Experiment 2, the participants were recruited by a market research company that set out to obtain a similarly balanced sample.

Each participant was paid a fee (either €25 or €30) for participating. Sessions were organised so that they lasted about one hour, with a refreshment break near the halfway point. There was some variation in the length of sessions; participants were placed under no time limit to make their decisions and so some finished more quickly than others.

## 1.8 POTENTIAL LIMITATIONS

Carefully designed laboratory studies have the capacity to isolate consumers' capabilities when choosing between products and to show how these capabilities are likely to vary across different environments. However, like all scientific methods they have limitations and different people will vary somewhat in the weight they are inclined to place upon specific findings. In order to provide helpful context for interpreting the findings, this subsection briefly considers two common arguments: (1) that laboratory studies may not generalise to real-world contexts; (2) that the small samples used in laboratory studies raise issues of generalisability.

Obviously, there are many aspects of the laboratory environment that differ from the contexts in which consumers' decisions are generally taken. Logically speaking, therefore, it is possible that these contextual differences matter and that the abilities we record in our experiments do not reflect consumers' abilities in their everyday lives. However, our experiments are designed to home in on specific cognitive abilities and psychological mechanisms in a scientifically controlled way. Participants are given clear explanations of their task and plenty of familiarisation and practice. During the experiments, they are likely to receive more explanation and feedback than they typically would in the real market, unless they are extensive users of price comparison websites or third-party information sources. They sign up for the experiments voluntarily and are incentivised to respond to the best of their abilities. Unlike in the real world, decision-makers are not subject to any distractions but can give the task their full attention. They make decisions in their own time. Thus, the experimental outputs we generate measure how consistently or accurately consumers make decisions when incentivised to be consistent and accurate, while able to give the decision their full attention. Given these factors, it would be surprising if the abilities consumers display in these tasks and, especially, how these abilities vary across conditions, do not reflect cognitive constraints that apply in everyday life. To give an analogy, suppose people sign up to a voluntary arithmetic or spelling test, with prizes on offer for the best performers. It is a good presumption that how well they do will reflect how well they are able to do sums and spell correctly in other aspects of their lives. It is probably an even better assumption that the sums they find hardest and the words they spell incorrectly will reflect the types of sums

and words they find difficult in everyday life. Thus, although the lab and market settings are different, our experiments are designed so that performance in the market setting is unlikely to exceed performance in the lab unless an additional factor, such as advice from a third party, is involved. Thus, while there is no guarantee that our results generalise to the market, we are confident that the capabilities we record offer at least a good approximation of consumers' capabilities.

That said, our experimental designs are 'forced-choice' and to some extent this limits what can be inferred. Although participants voluntarily sign up to take part in a consumer choice experiment, are incentivised to put effort into their decisions and, in our experience, do indeed expend plenty of effort, there is no guarantee that they are interested in the particular market or product being studied. Participants are required to choose one of two options we present and cannot decide to opt out altogether, as they could in a real-world setting. Thus, the results give an indication of how consumers decide *given that they are committed to making a decision between products*, not whether they engage with the market in the first place. The results may nevertheless offer some insights into when, for instance, a particular type of advert is likely to appear attractive or persuasive.

For researchers and policymakers used to dealing with empirical evidence generated via surveys, the small size of experimental samples can cause some concern in relation to the strength of evidence that laboratory experiments generate. Although PRICE Lab aims to make its experimental samples representative of the population of consumers, in terms of gender, age and working status, we make no pretence to obtaining genuinely representative samples of consumers. This would be nearly impossible to achieve with small samples recruited via adverts and voluntary sign-up – the standard method of recruitment for research in experimental economics and economic psychology. It is important to understand, however, that the statistical inference involved in experimental research differs greatly from that involved in the analysis of survey data. The focus is not on how responses vary with an individual's background characteristics, i.e. individual differences. Instead, this kind of experimental research aims to measure general capabilities and, in particular, how those capabilities vary between experimental conditions that are undertaken by all participants. To continue the analogy from above, suppose a sample of 30 volunteers performed tasks involving basic arithmetic and each undertook four types of task: addition, subtraction, multiplication and division of numbers from 1 to 20. The average number of correct responses would be an estimate of the capabilities of the population. While it would be somewhat biased by how the



capabilities of the 30 individuals selected compared to the population at large, had we begun from a position of knowing very little about the arithmetic capabilities of the population it would nevertheless provide a useful indication. Much more importantly, however, we would be likely to find a statistically significant decrease in the likelihood of a correct response for multiplication and division, compared to addition and subtraction, regardless of the representativeness of our sample. This is simply because multiplication and division are substantially harder cognitive tasks. Similarly, if we randomly assigned 20 individuals from the same pool to do addition and subtraction, and another 20 to do multiplication and division, we would be highly likely to find that the first group made significantly fewer mistakes than the second. In other words, the small sample size and a degree of sample bias would be no obstacle to us making good statistical inferences about which tasks are more difficult. To summarise, the aim is not to make statistical inferences about the relative responses of subsections of the population, but to make general inferences about how choices and capabilities differ when the task at hand changes. For this purpose, comparing performance within a group of individuals can be highly instructive, even when that sample is small and only broadly representative.

## Summary of Experiments

**TABLE 1** Summary of design, research questions and findings by experiment

Exp.	Design	Research Questions	Findings
1	<ul style="list-style-type: none"> <li>• Choices between pairs of loans undertaken in four conditions, defined by which information made explicit:               <ul style="list-style-type: none"> <li>○ Term + APR ('APR')</li> <li>○ Term + APR + MR ('MR')</li> <li>○ Term + APR + FC ('FC')</li> <li>○ Term + APR + MR + FC ('FI')</li> </ul> </li> <li>• 'High cost loan' warning presented for loans above 15 per cent APR.</li> </ul>	<ul style="list-style-type: none"> <li>• Is consumer choice of loan affected by which properties of the loan are made explicit and which are left implicit?</li> <li>• Does an explicit 'high cost loan' warning reduce the likelihood that consumers opt for higher APR loans?</li> </ul>	<ul style="list-style-type: none"> <li>• Consumers much more likely to opt for longer loans in the MR condition, compared to other conditions</li> <li>• Consumers much more likely to opt for shorter loans in the FC condition, compared to other conditions</li> <li>• Effects largest for loans of less than five years</li> <li>• Consumers more likely to choose longer loans when pair of loans being considered differed in term by one year rather than two</li> <li>• 'High cost loan' warning reduced likelihood of opting for high APR loans.</li> </ul>
2	<ul style="list-style-type: none"> <li>• Half participants shown an example table; half not</li> <li>• Choices between pairs of loans undertaken in three conditions from Experiment 1 (APR, MR, FI)</li> <li>• Second task required participants to pick 'best' loan for a young couple under the three conditions.</li> </ul>	<ul style="list-style-type: none"> <li>• Does an example table designed to illustrate the relationship between loan term, MR and FC assist decision-making?</li> <li>• Does providing additional information about MR and FC make it easier or harder for consumers to integrate information into decisions?</li> </ul>	<ul style="list-style-type: none"> <li>• Example table improved consistency of consumers' decisions, though some inconsistencies remained</li> <li>• Small decrease in precision of decisions when additional information provided</li> <li>• Too much weight placed on explicit (versus implicit) information even in an objective decision task with feedback.</li> </ul>

## Section 2

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### The Role of Explicit Information in Loan Choice

#### 2.1 INTRODUCTION

One difficulty faced by the present investigation in developing an experimental approach to the research questions outlined in the previous section was that the investigation began with no empirical estimate of consumers' preferences for loans on which to base products for an experiment. That is, for a loan of a given size, we had no measure of how the average consumer would trade off the APR and term, or of how much consumers' preferences might vary. Given this, Experiment 1 used a simple choice experiment to explore consumers' preferences for a broad range of loans of different terms and APRs, while varying the availability of MR and FC information.

Our examination of the marketing of personal loans in Ireland suggested that almost all offerings described in adverts and on websites presented consumers with an APR for a loan of a given size and term, but that the presentation of the implied MR or FC information varied in location and/or emphasis.<sup>4</sup> How much difference might this make to consumers' choices? Additionally, in collaboration with PRICE Lab's funding bodies and given the spread in APRs on the market, Experiment 1 tested whether consumers' choices would be affected by a warning that alerted them to the fact that a loan had a relatively high APR relative to the spread in the market.

#### 2.2 EXPERIMENT 1: AIMS AND METHODS

##### Aims

Experiment 1 had two broad aims. First, it set out to estimate consumers' preferences for personal loans across a plausible range of terms and APRs. Second, it sought to test whether consumers' preferences were affected by which pieces of information were presented at the point of decision. The principal of the loan was held constant, with the term and the APR always presented. The conditions varied, however, according to whether the monthly repayment (MR) and financial cost (FC) information were shown explicitly. Of course, for a given

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<sup>4</sup> Note that firms are obligated to carry out an assessment of affordability and there are regulatory requirements with respect to the disclosure of APR, MR and FC information before the consumer agrees a loan contract (see Section 4.3). However, MR and FC information is not necessarily available at the various decision points the consumer encounters en route to taking out a personal loan, e.g. in deciding whether to follow up on an advert, in choosing whether to continue on a current website or to investigate a site of another provider, and so on.

principal, term and APR, these magnitudes are determined – we varied only whether they were made explicit in the information provided for each offering.

In addition, we tested whether a regulatory warning statement alerting participants to a high interest rate by market standards would have any impact on decisions. At present, moneylenders in Ireland are obligated to post such a warning for loans in excess of 23 per cent (Central Bank of Ireland, 2009, p.8). For personal loans, given the spread of APRs in the market, we set the warning level at 15 per cent.

## Methods

Participants undertook a repeated choice task in which they decided which of two loans they preferred. The principal was always €7,000. This principal was chosen following piloting of the experiment and was designed to ensure that few consumers would be likely to opt for the very shortest and very longest loans, since the aim of the experiment was to test the impact of the need to resolve the central trade-off between MR and FC. The term varied between one and eight years. The APR varied between 8 per cent and 18 per cent, which was the approximate spread of APRs for personal loans from the main providers in Ireland in summer 2015. Four different price conditions constituted the four conditions tested: just the term and APR ('APR' condition), a condition where MR was also provided ('MR' condition), a condition where FC was provided ('FC' condition) and a condition where both MR and FC were shown as well as the term and APR (the full information, or 'FI' condition). A summary of conditions is shown in Table 2.

**TABLE 2** Summary of conditions in Experiment 1

Condition	Information displayed	Run order
APR	Term + APR	Randomised 1 <sup>st</sup> - 3 <sup>rd</sup>
Monthly Repayment (MR)	Term + APR + MR	Randomised 1 <sup>st</sup> - 3 <sup>rd</sup>
Financial Cost (FC)	Term + APR + FC	Randomised 1 <sup>st</sup> - 3 <sup>rd</sup>
Full Information (FI)	Term + APR + FC + MR	Always last (4 <sup>th</sup> )

The computer display was designed to mimic aspects of how loans are currently advertised and marketed. Figure 2 provides an example screenshot for the full information condition. The background consisted of a desirable picture of a product for purchase (a new kitchen, furniture, etc.), while at the top of the screen was written €7,000 next to a pile of €50 notes. Each trial began with a brief animation, in which two coloured balloons floated down from the top of the

screen with the two APRs written on them. The term of the loan together with a graphic then appeared just below. In the conditions where additional MR and/or FC information was provided, this was presented simultaneously as shown.

**FIGURE 2** Example display for Experiment 1. The two balloons floated down from the top of the screen at the beginning of each trial



At the start of the experimental session, participants were shown images relating to five possible purchases that might require them to take out a loan (a conservatory, a kitchen, a range of furniture, a car and a holiday). They were told to suppose that they were going to take out a personal loan for €7,000 to assist them with one of these purchases and to select which item they would be most inclined to buy. Once they had made this initial choice, the associated image then became the onscreen background for the rest of their entire session, as illustrated in Figure 2 for the furniture and Figure 3 for the kitchen. Participants were told that on each trial they would be offered two loans and that they had to choose which of the two they preferred, indicating their decision by pressing a button on the response box. Following pilots, it was decided that participants should ignore any savings they might have and instead should assume that they had to meet the repayments from their monthly income. This was made clear to participants. It was also stressed that there were no right or wrong answers and that we were interested in what they would really chose in this situation. As described in Section 1, we told participants that those who responded consistently according to their true preferences were more likely to win the €50 shopping voucher.

Each of the pairs of loans differed in term by either one or two years, making 13 possible pairings of loan terms (1 v 2 years; 2 v 3; 3 v 4; 4 v 5; 5 v 6; 6 v 7; 7 v 8; then 1 v 3; 2 v 4; 3 v 5; 4 v 6; 5 v 7; and 6 v 8). Each pairing was presented three times in an experimental run, with different APRs. These were selected by the following procedure. First a mid-APR was selected randomly from a uniform distribution covering 8-18 per cent. Then an APR difference was selected from one of three uniform distributions: -4 to -1.33 per cent; -1.33 to 1.33 per cent; 1.33 to 4 per cent. Positive figures indicate that the longer term loan had the higher APR. Each term pairing was matched with each APR difference distribution only once, making  $13 \times 3 = 39$  trials per experimental run. In this way, the (APR x term) space was covered fairly uniformly for each participant.

Any time the APR on a loan exceeded 15 per cent, it triggered a warning statement, which appeared alongside the APR balloon and simply stated 'Warning! This is a high cost loan'. The warning statement was based on regulatory warnings that can be seen on the websites of moneylenders in the Irish market. An example screen shot with the warning is shown in Figure 3.

Participants undertook 39 trials in each experimental run, making a total of 156 decisions across the four conditions. There was a refreshment break after two runs. In most cases the session lasted less than one hour (including the break). The different conditions were presented in a pseudo-randomised order across participants, subject to the fact that the FI condition was always undertaken last. This was done in part to minimise possible order effects, but also because it can be argued that decisions made with full information after the maximum exposure to examples and hence to learning opportunities constitute the best available measure of individuals 'true' preferences, for comparison with other conditions.

**FIGURE 3** Example display for Experiment 1, with a warning statement for a loan exceeding 15 per cent APR (FC condition, participant opted for kitchen)



The participants consisted of 25 adults aged between 18 and 70 years. They were paid a €25 fee for taking part, with an additional amount given to a few who travelled to the lab from outside Dublin.

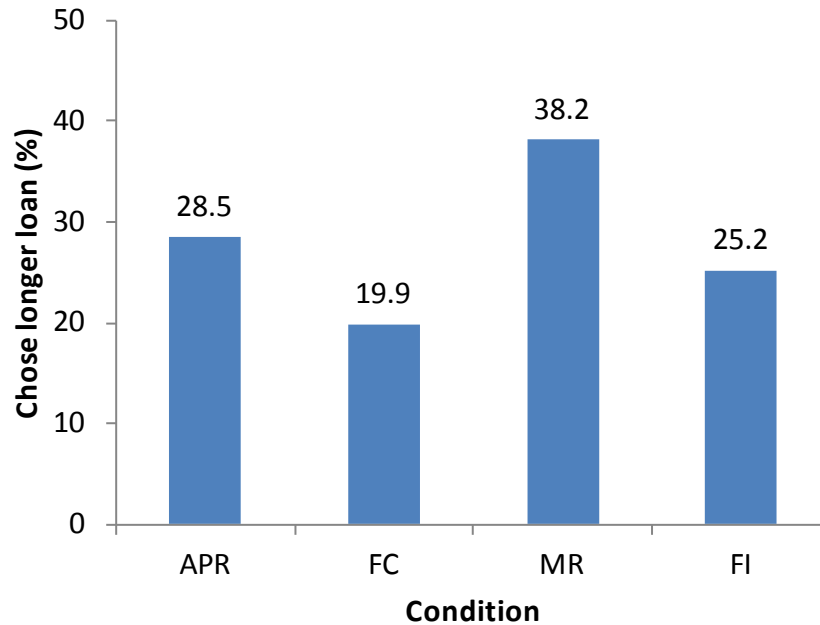
### 2.3 EXPERIMENT 1: RESULTS

Our primary output measure is whether the participant chose the shorter or longer term loan. Figure 4 shows the likelihood of opting for the longer term loan by condition. There was substantial variation in these descriptive data according to whether the MR or FC information was provided alongside the term and APR. Participants were almost twice as likely to opt for the longer term when MR information was explicit and FC absent, compared to when FC was explicit and MR absent, with the FI and APR conditions somewhere in between. It is important to understand that the pairs of loans presented in each condition were drawn from the same distributions; the decisions facing the participants were logically identical. Yet their choices were very different and depended on which information was made explicit, despite the incentive to respond consistently.

This effect is in line with a simple theory that when the MR or FC is made explicit, consumers weigh the explicit information more strongly in the trade-off between the two. Focussing on the MR means that the longer option with the lower MR is

more attractive; focussing on the FC makes the shorter term option with the lower FC more attractive.

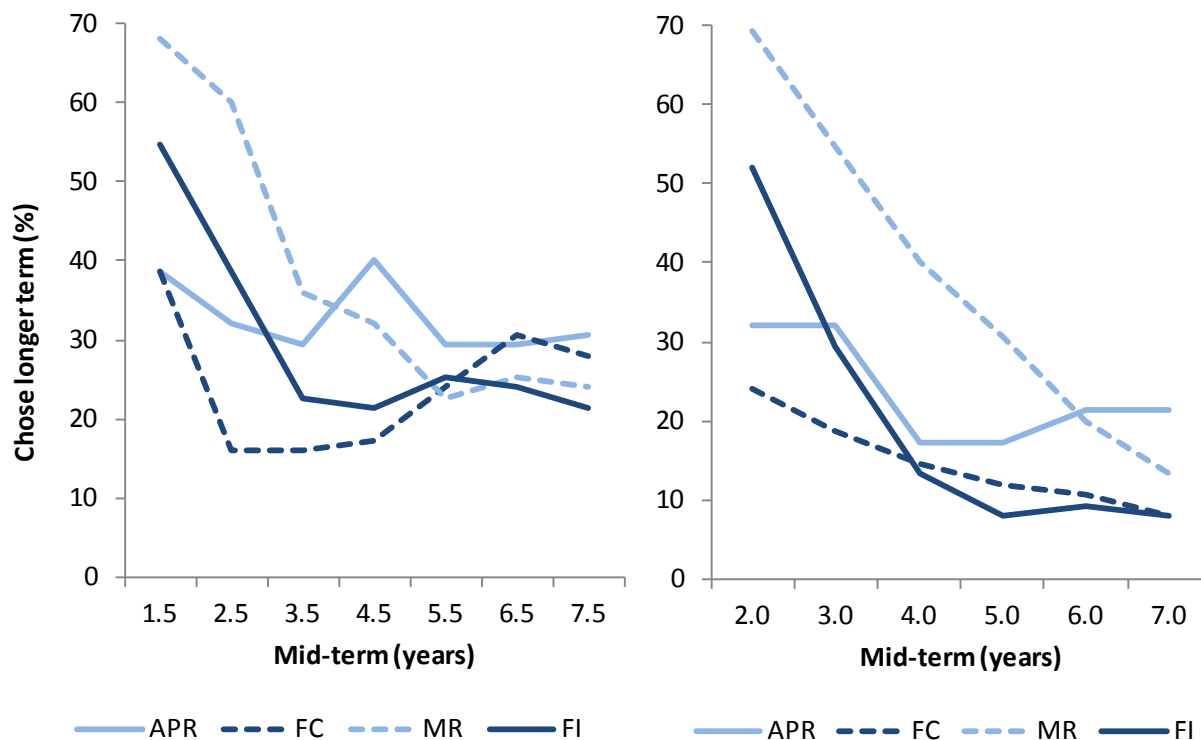
**FIGURE 4** Proportion opting for longer term loan by condition in Experiment 1



The situation is more complex than this simple theory, however. Figure 5 plots the likelihood of choosing the longer term loan by condition and by term (the x-axis shows the average term of the pair, e.g. 2.5 for the comparison between two- and three-year loans). The two charts correspond to the pairs with terms separated by one year (left panel) and by two years (right panel). A number of effects are apparent. Firstly, the impact of explicit information on choices was most evident for shorter loans with terms under five years. This is consistent with the hypothesis that the non-linearity in the term-MR relationship causes consumers problems. Secondly, the size of the effect was very large. Comparing the MR condition with the other three conditions for terms up to five years, approximately one quarter of decisions were altered by the change of condition. Thirdly, when the gap between the terms was two years instead of one, the effect was larger still, presumably because the difference in MR or in FC was greater and therefore more salient. Lastly, even in the FI condition, different loans were preferred when the gap between the loan terms was two years versus one year. Comparison of the solid dark blue lines between the panels shows that participants were less likely to opt for the longer term loan when the gap was two years.



**FIGURE 5** Proportion opting for longer term loan by mid-term of loans and condition and in Experiment 1. The effect of condition on choices is somewhat larger for the two-year gap (right panel) than for the one-year gap (left panel)

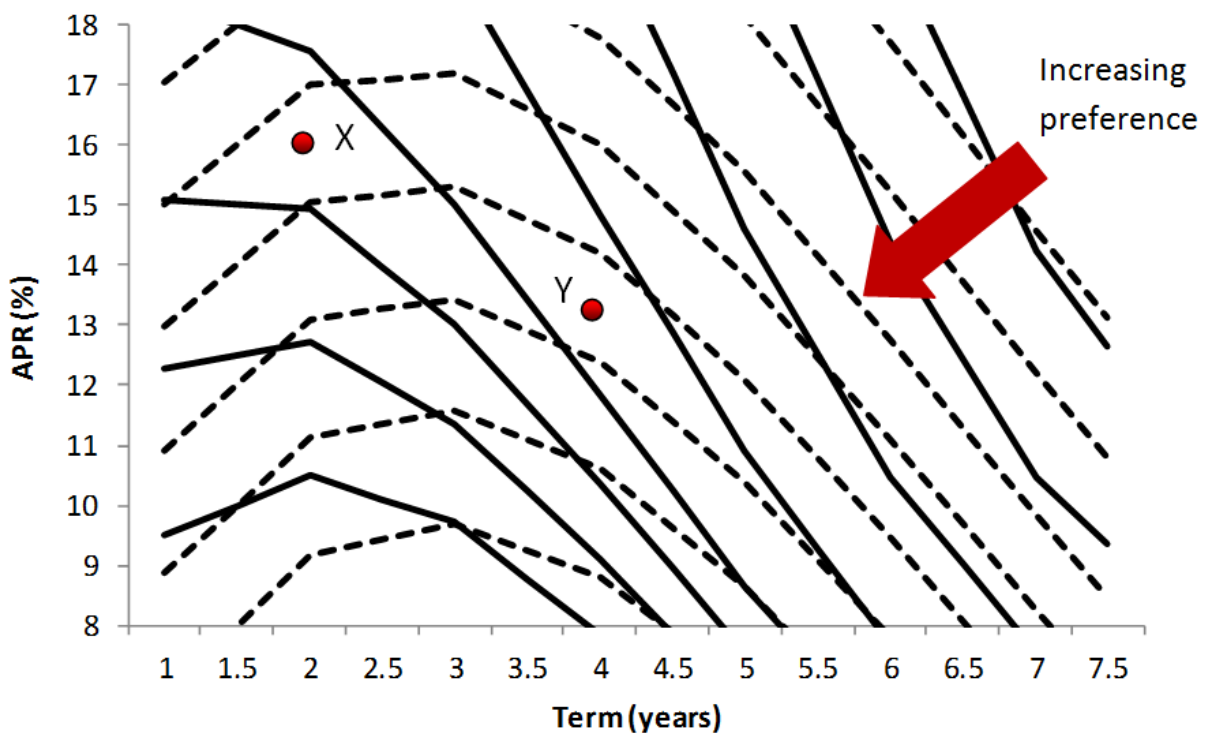


The statistical significance of each of these four effects was tested using a series of mixed-effect logit (MEL) models. Due to the detailed and technical nature of these models, they are supplied in Appendix A. All four of the effects described in relation to Figure 5 are statistically significant. In addition, on average, participants preferred loans with lower APRs, which is to be expected.

From these statistical models it is possible to estimate preference maps that give further insight into consumers' choices and how they changed under different conditions. Figure 6 shows the comparison between the FI and MR conditions. The lines on the preference map are 'indifference curves', which are just like contour lines for altitude on a standard map, except that instead of altitude they depict how much participants liked the loans. Those loans towards the bottom left of the chart (low APR, short term) are preferred to those towards the top right (high APR, long term), i.e. they are higher up the preference map. All loans on the same line are equally preferred – participants would be indifferent between them. Thus, the map shows that the FI (solid lines) and MR (dashed lines) conditions induce substantially different preferences. When our participants considered a loan of €7,000 under the MR condition, the peak in the dashed lines shows that they felt that a three-year loan represented the optimal

trade-off between MR and FC. They required a lower APR if the term was either longer or shorter than three years. Under the FI condition, however, they saw the trade-off differently and this optimum became shorter. The chart also shows how the effect was largest at shorter terms, since the shape of the sets of curves diverges more for shorter terms. For instance, consider loan X (a two-year loan at 16 per cent APR) and loan Y (a four-year loan at 13 per cent). Under the FI condition, X is preferred to Y, because it is higher up the preference map of solid lines. In contrast, under the MR condition Y is preferred to X, as it is higher up the map of dashed lines.

**FIGURE 6** Indifference curves for FI (solid lines) and MR (dashed lines) conditions in Experiment 1



Despite the fact that our results imply that whether MR and FC information is made explicit has a large impact on the choice of loans, it is possible that the measures above somewhat underestimate what might be thought of as the 'true' effect size. This is because of the randomisation of the order in which the experimental runs were undertaken. For 13 of the 25 participants, the run with the FC condition appeared before the run with the MR condition, while for 12 participants it was the other way around. It is possible that once an individual got a feel for how the FC varied with APR and term, they then carried this knowledge over into the experimental runs where FC was not explicit. Figure 7 confirms that the order in which conditions were presented mattered. The left panel shows how the overall effect was larger for participants who undertook the MR

condition before the FC condition. Indeed, all of these participants were more likely to choose longer loans under the MR condition than the FC condition. The right panel compares responses by term for the participants who undertook the MR condition without previous exposure to any FC information, with the FI condition for all participants. This is potentially important from a policy perspective, because it is probably the best measure of the extent of the effect for individuals who make decisions about personal loans without being aware of the FC of the available options (including those who are made aware of the FC in the loan documentation but are by that stage committed to the decision). For loans with terms of five years or less, 29 per cent of decisions differed between these conditions.

**FIGURE 7** Larger effect of condition on choices for participants who had seen no FC information prior to undertaking MR condition in Experiment 1

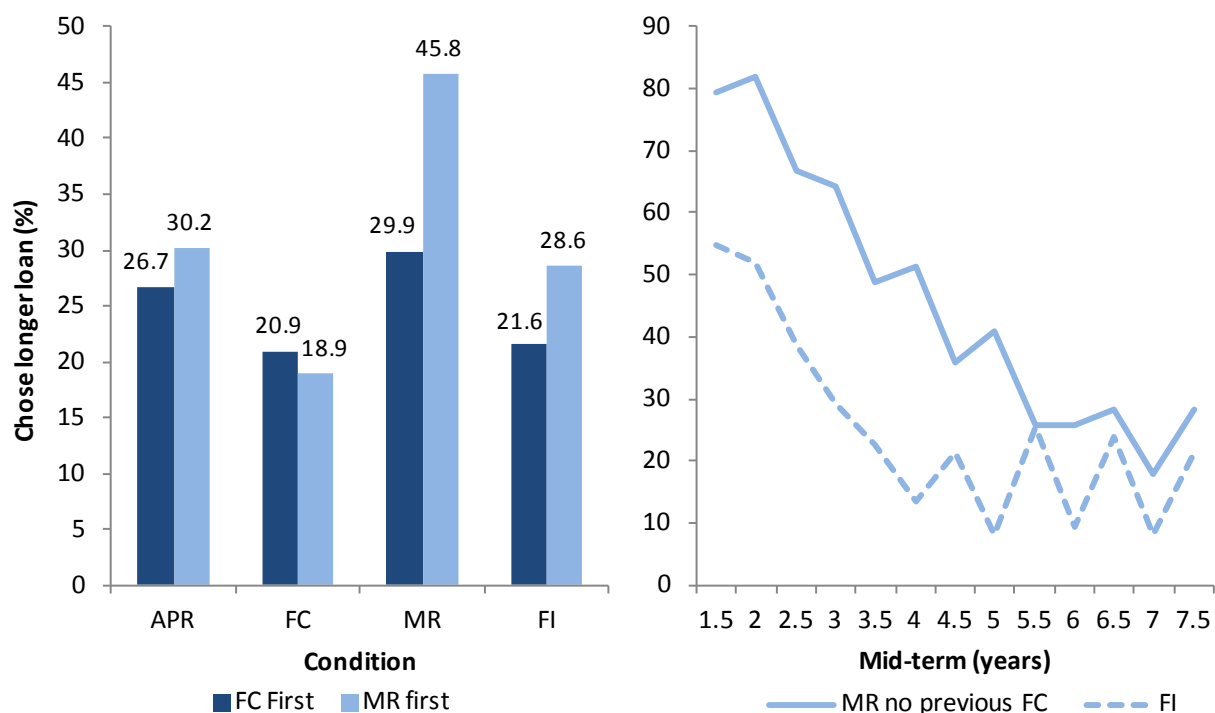
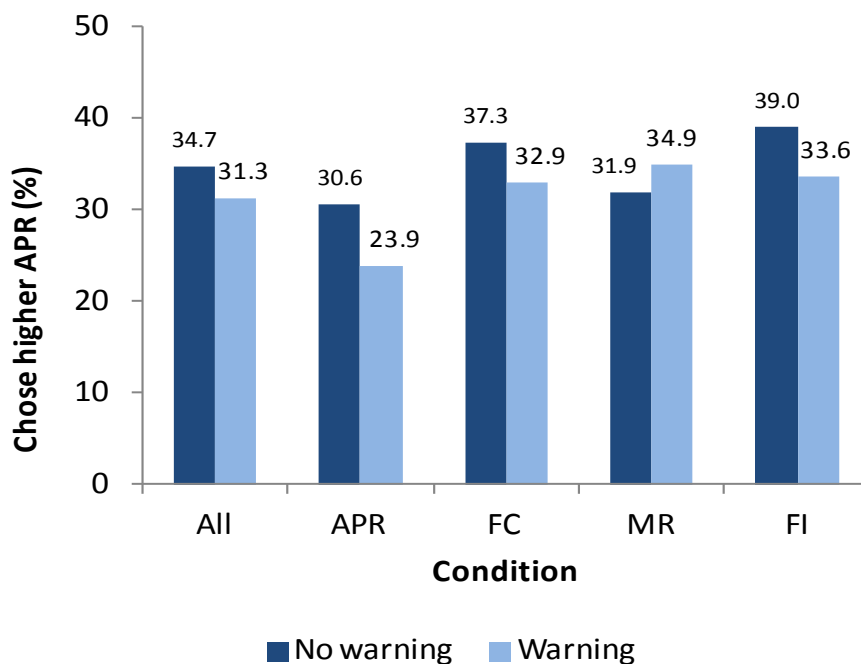


Figure 7 is also noteworthy because it gives a strong indication as to one of the reasons why participants took different decisions when loans differed in term by two years rather than one. This is apparent from the zigzag pattern for the FI condition in the right panel. Mid-terms that are whole numbers correspond to the two-year gaps (i.e. a mid-term of 3 implies that the participant was choosing between loans with terms of two years and four years), while those in between correspond to the one-year gaps (i.e. a mid-term of 4.5 implies that the participant was choosing between loans with terms of four years and five years). The additional reduced probability of choosing the longer loan when FC

information was explicit was probably due to the large *difference* in FC when the terms were separated by two years. Similarly, there is a zigzag pattern in the MR condition for shorter loans, which suggests that the larger MR difference with two-year gaps became influential in the decision. Both of these effects are found to be statistically significant in the statistical models.

Finally, we examined whether the ‘high cost loan’ warning had been effective. Figure 8 shows the probability that participants chose the loan with the higher APR by whether there was a warning present on the higher APR loan and not on the lower APR loan. Since, on average, the APR difference on a given trial was the same regardless of whether the two APRs presented straddled 15 per cent, any difference suggests that the warning had an impact on decisions. There was a small overall difference of 3.4 percentage points. This difference was statistically significant, but not consistent across the conditions. Specifically, it had no impact on choices in the MR condition, when the salience of the MR information appeared to be a dominant factor.

**FIGURE 8** Proportion opting for higher APR loan by whether there was one ‘high cost loan’ warning present by condition in Experiment 1



## 2.4 EXPERIMENT 1: DISCUSSION

Experiment 1 confirmed that preferences for personal loans emerge from a trade-off between the burden of high repayments associated with shorter loans

and the wish to avoid longer term loans, given the rising FC and perhaps a general preference for avoiding ongoing debt. The primary result of Experiment 1, however, was that how this trade-off was resolved was strongly sensitive to the information made explicit at the key point of decision. Consumers were more likely to opt for a longer loan when MR information was explicit and for a shorter loan when FC information was explicit, which suggests that FC as well as a general preference for shorter loans was influential in decisions. Importantly, this effect of explicit information was very large, resulting in a high proportion of binary decisions that were reversed by changing the information that was made explicit.

Assuming that this laboratory finding is replicated in real consumer decisions, it has strong implications. It suggests that consumers' decisions are inconsistent, such that they can be altered quite radically when exactly the same loans are offered in different contexts. On the reasonable presumption that each consumer has an underlying set of preferences that dictates which loans are in fact better options for them, the implication of this inconsistency is that a significant proportion of consumer decisions when choosing a personal loan represent mistakes – a better option was available but not chosen.

Experiment 1 also revealed a second effect that was not as large, but was nevertheless significant and potentially important. Preferences were altered by whether two loans being compared were separated in term by one or two years. This was unexpected. The likely explanation is that, when confronted with a choice between two loans, consumers process the differences between the MR and FC for the two options. Because these differences become greater and, hence, more salient when the terms are separated by two years rather than one, the impact of the explicit information is stronger. As is clear from Figure 1 in Section 1, this is especially true for FC, leading to stronger preference for shorter loans when the gap between the terms is two years.

This inconsistency in decisions results in what is technically referred to as 'intransitivity'. Suppose the term of loan B is one year longer than the term of loan A, and that a consumer just prefers loan B when both are considered side-by-side with full information (i.e. APR, term, MR and FC). Suppose then that loan C is one year longer still and the consumer just prefers it to loan B, when B and C are offered side-by-side. The implication of the present experiment is that despite B being preferred to A, and C being preferred to B, the same consumer might choose A over C when loan A is offered alongside loan C in the absence of loan B. From a marketing perspective, this might be an important finding. As Figure 1 shows, at a given interest rate the lender does considerably better from a consumer who opts for a longer loan. The evidence presented here implies that

sequentially offering loans that are one year longer would increase the likelihood that the consumer opts for the longer loan.

Returning to the larger of the two effects, from the perspective of application to policy, the key comparison is perhaps the MR condition versus the FI condition, since while FC condition is helpful experimentally for understanding the effect, it represents an unusual situation to encounter in the real world. While the research team encountered numerous examples where adverts or websites made MR information more prominent than FC information, no examples were found where the opposite was the case. The primary implication of Experiment 1 is that where FC information is not explicit at the point of decision, consumers will tend to opt for longer loans. The analysis of order effects above shows that where consumers have the opportunity to learn about the relationship between APR, term and FC, this effect is reduced. Note, however, that the exposure required to achieve the reduced effect for the 'FC first' group in Figure 7 consisted of 39 trials involving pairs of loans of differing terms. The resulting exposure to the non-linear nature of the trade-off underlying loan choice is obviously far greater than is likely to be achieved by any regulatory requirement to provide a single representative example loan and far greater than is available, for instance, on the main providers' websites. The research team found no examples where providers' examples showed the systematic effect of altering the term of a loan, although it was possible for consumers to explore this relationship via an online loan calculator (assuming that the individual consumer realised that there might be a benefit to doing so).

## Section 3

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### The Impact of Potential Interventions on the Consistency and Precision of Loan Choice

#### 3.1 INTRODUCTION

Experiment 1 provides good initial evidence that the non-linear nature of the trade-off between MR and FC when choosing a personal loan causes consumers substantial difficulty. The effect recorded was large and occurred at loan terms of five years or less – terms for which the non-linearity in the term-MR relationship is most severe (see Figure 1). Once FC information was explicit, consumers' choices altered radically.

Under EU legislation, lenders are obligated to provide 'representative examples' of how FC (or 'total cost of credit') is calculated. Yet the precise nature of the examples is not mandated. For instance, providers often show example tables, but can decide which properties of the loan are varied within the table and which are held constant. Thus, providers have flexibility with respect to the kind of example they display and, as discussed in Section 1, this varies in practice. Consequently, while the present regulatory design reflects an understanding that a loan is a complex product and that consumers might find the relationships between term, APR, MR and FC confusing, the regulations are not specific regarding the nature of the problem and, hence, not specific regarding how a representative example might help.

Experiment 2 set out to generate an example table that was explicitly designed to highlight the non-linearity inherent in the MR-FC trade-off and to test whether this table reduced the inconsistency in consumers' decisions. Several providers in the Irish market currently display example tables in their marketing material, but we have found none designed to show how MR and FC co-vary with the term of the loan, which appears to be at the root of the problems revealed by Experiment 1.

Whether decisions can be altered by context is, however, only one measure of the quality of decision-making. Also important is the precision with which information can be integrated into the decision. Experiment 1 showed that the average decision could be altered substantially by explicitly presented information, but did not investigate how much an individual's decisions can vary

around that average. The distinction is important when considering the likelihood that a consumer makes an error. When combining the key information into a decision, mistakes may occur if a consumer is prone to over-weight or under-weight one type of information relative to another, but a mistake may also occur if the consumer performs the decision process imprecisely, such that their decisions are subject to a degree of random error.

Prior to Experiment 1, we had no empirical basis for inferring the shape of consumers' preferences for loans. However, the statistical models fitted to the data for Experiment 1 provide such a basis, in the form of estimates of average preferences for a loan of €7,000 from a sample of 25 consumers. These estimates allowed us to specify a set of realistic preferences in order to construct a 'buyer's agent' S-ID experiment to measure the precision with which consumers can integrate loan information into their decisions and, therefore, whether this also varies with the explicit provision of information.

A measure of how the explicit provision of information affects precision is important. Assuming, for now, that choices made under the FI condition were more reflective of what might be termed 'true preferences', a regulatory mandate to give equal prominence to FC and MR information at all key decision points might be appealing,<sup>5</sup> on the grounds that it would improve consumer decisions. Yet it is also the case that making each of these properties of the loan explicit increases the volume of information that the consumer processes. This might cause some increased cognitive load with the result that decisions, while closer to true preferences on average, could become more imprecise. Alternatively, since the additional information makes the trade-off to be negotiated more explicit, it is possible that it will produce more precise decisions. The buyer's agent paradigm in Experiment 2 was designed to provide an empirical assessment of the impact of explicit information about MR and FC on precision.

### 3.2 EXPERIMENT 2: AIMS AND METHODS

#### Aims

Experiment 2 had two primary aims. First, it sought to assess whether the inconsistent weighting of information, depending on whether it was explicit or

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<sup>5</sup> At present, under the *Consumer Protection Code*, providers must ensure that all key information is prominent and is not obscured or disguised. However, advertisements for personal loans can and do place greater emphasis on, for example, the monthly repayment rather than on other aspects of the loan. The research team encountered multiple examples of adverts and online loan calculations where some of the four main properties of personal loans were more prominent than others.



non-explicit, could be improved by a simple intervention, which consisted of the opportunity to view a table specifically designed to highlight the non-linear nature of the trade-off between MR and FC. Second, it measured the precision with which consumers could integrate the information provided, again depending on whether it was explicit or non-explicit.

The FC condition was included in Experiment 1 in order to gain insight into the impact of explicit FC information. However, it would not be common in the market that a consumer would be given explicit FC information for a loan without being given MR information. Hence, Experiment 2 focussed on differences between the APR, MR and FI conditions only, all of which are commonly encountered in the advertising and marketing of personal loans.

### Methods

Experiment 2 proceeded in two stages. In the first stage, participants again undertook a choice task. This part of the experiment differed from Experiment 1 in only the following ways. Half of the 48 participants (the 'Table' group, determined by random assignment), had the opportunity to view a laminated version of the table shown in Figure 9; the other half (the 'Control' group) did not. The table was designed to highlight the relationships between term, MR and FC. The figures show how MR and FC varies with term for a loan of constant principal and APR. Participants were given several minutes to view the table prior to the experiment and it was left on the desk should they wish to refer back to it. In this way, we aimed to mimic the potential effect of providing the table in marketing material, such as on a lender's website.

**FIGURE 9** Example table for Experiment 2

Loan Amount	€ 7,000.00		
APR	13%		
Repayment Term	Per Month Payment	Total Amount Repayable	Total Cost of Credit
1 Year	€ 625.22	€ 7,502.65	€ 502.65
2 Years	€ 332.79	€ 7,987.03	€ 987.03
3 Years	€ 235.86	€ 8,490.88	€ 1,490.88
4 Years	€ 187.79	€ 9,014.04	€ 2,014.04
5 Years	€ 159.27	€ 9,556.29	€ 2,556.29

To generate an efficient test of whether the table would reduce the effect recorded in Experiment 1, we employed the findings of that experiment to ensure that APR differences were such that decisions would be marginal. The terms of the loans were also concentrated around where the effect was strongest, i.e. at terms of five years or less. The principal for this stage remained at €7,000. Rather than presenting pairs of loans with a randomly selected difference in APR, we presented pairs that were on the same indifference curve for the FI condition in Experiment 1 (see Figure 6). Hence, decisions were designed to be marginal for the average participant, with fewer decisions where almost all participants would choose the same option. Thus, responses were designed to be closer to 50 per cent than was the case in Experiment 1. This design increased the sensitivity of the experiment, allowing us to employ fewer trials than in Experiment 1. Each participant undertook 16 choice trials with each of the APR, MR and FI conditions, making 48 trials in total. Loan terms were always separated by one year. There were four trials at each of the four possible one-year gaps up to a maximum term of five years (1 v 2; 2 v 3; 3 v 4; 4 v 5). For each of these four term-gaps, we presented four trials where the mid-APR was selected randomly from the four quartiles of a uniform distribution spanning the 8-18 per cent APR range. Thus, the 16 loans were selected to cover the APR-term space uniformly.

Trials were also matched between the two groups. Each APR-term combination was presented to one participant in the Table group and one participant in the Control group, counterbalanced across participants and conditions. The order of the APR and MR conditions was pseudo-randomised; the FI condition always came last.

In the second stage of Experiment 2, participants completed three experimental runs of an S-ID task using a buyer's agent paradigm. For this stage we increased the principal sum. With hindsight, the principal of €7,000 employed in Experiment 1 turned out to be lower than ideal. The terms of personal loans are typically longer than two years and our pilot data suggested that individuals might prefer three- to four-year loans for this principal. However across all conditions the average participant preferred loans of two years and required a substantially lower APR to opt for a longer loan. To make the S-ID task more realistic, we therefore increased the principal to €12,000.

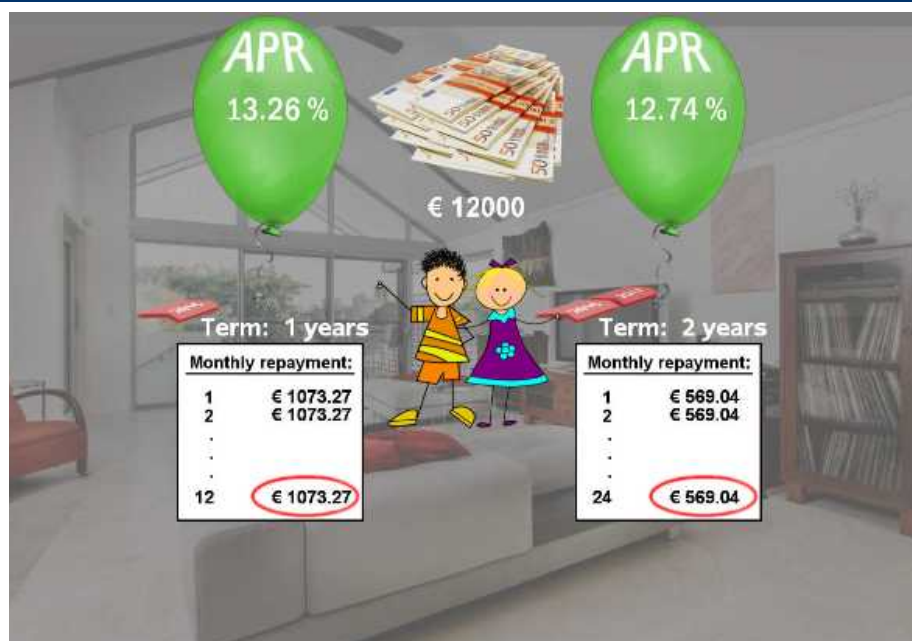
Participants were told that their task was to assist a young couple looking for a loan of €12,000 for home improvements. On each trial they were presented with two loans and had to decide which loan the couple would prefer. The correct

answer was determined by the preferences for the MR condition in Experiment 1, based on the logic that this set of preferences would be realistic for a loan with a higher principal and, therefore, less affordable MRs at shorter terms. Participants received feedback: an audible 'ping' and smiling young couple when they got the answer correct, an audible 'buzz' and unhappy looking young couple when they got the answer incorrect.

Participants were instructed that the young couple's preferences were typical, in that they generally wanted lower monthly repayments but also did not want to pay too much in total for the loan. Given that the S-ID task followed on directly from the choice task, participants were already highly familiar with this trade-off. They were shown a series of examples designed to help them to understand the preferences of the couple. These made clear that when the loan was longer than three years the couple required a lower APR to keep the FC down, and similarly that when the loan was shorter than three years they needed a lower APR to keep the MR down. Following the examples were four practice trials to familiarise the participants with the task and feedback. They then completed 56 trials with feedback for each condition. The order of the conditions was pseudo-randomised across participants.

An example screenshot of the display is provided in Figure 10, which shows a trial in the MR condition. In this case, the couple would require a much better interest rate to choose a one-year loan rather than a two-year loan, given the increase in monthly repayments, so the correct answer is to opt for the loan on the right. In this case, the participant has pressed the correct button and so receives the feedback of the smiling couple.

**FIGURE 10** Example display for the S-ID task in Experiment 2. The couple prefer the loan on the right



The trials were selected as follows. There were seven possible term pairs, consisting of all one- or two-year gaps possible from loans of one to five years. Each of these appeared eight times in the experimental run. For each trial, two loans were randomly selected between which the couple would be indifferent for the given term gap (i.e. two loans on the same dashed indifference curve in Figure 6). The APR of one was then adjusted upwards and the other downwards up to a maximum of -3 per cent and +3 per cent for the easiest trials. An adaptive method was used such that these increments and decrements were reduced in size following a succession of correct answers and increased following a specified number of incorrect answers. In this way, the level of difficulty was adjusted to allow efficient estimation of the precision of each participant's judgements.

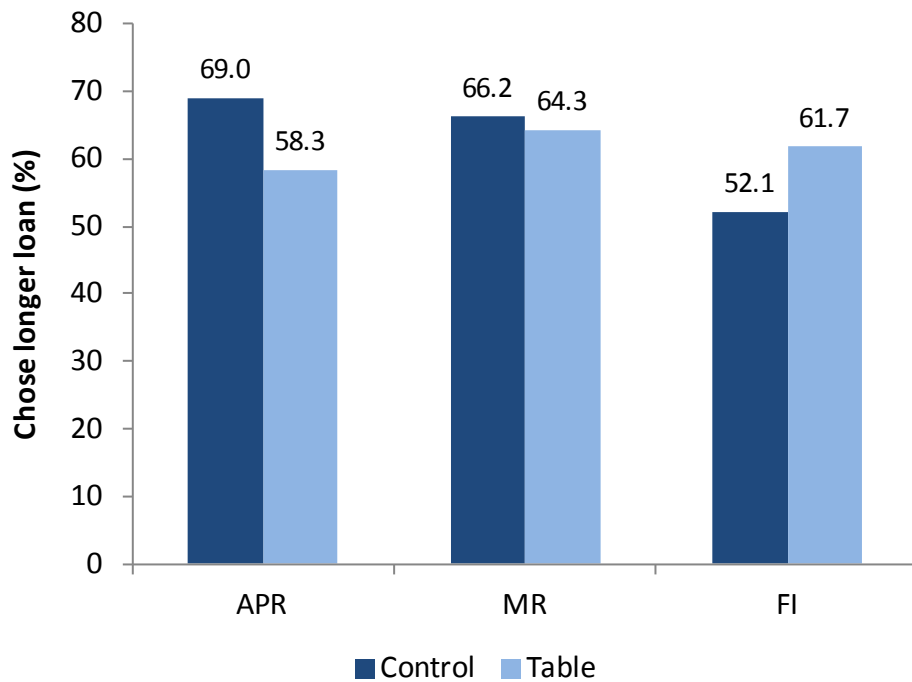
### 3.3 EXPERIMENT 2: RESULTS

#### Choice task

Figure 11 shows the likelihood of opting for the longer term loan by condition and by group. As anticipated, given the use of loan pairs derived from the indifference curves estimated in Experiment 2, decisions were more evenly split between longer and shorter loans. There is some initial evidence that the example table reduced the effect of explicit versus non-explicit information. There was greater variation in the likelihood of choosing the longer term by condition for the Control group (52.1-69 per cent) than for the Table group (58.3-64.3 per cent).

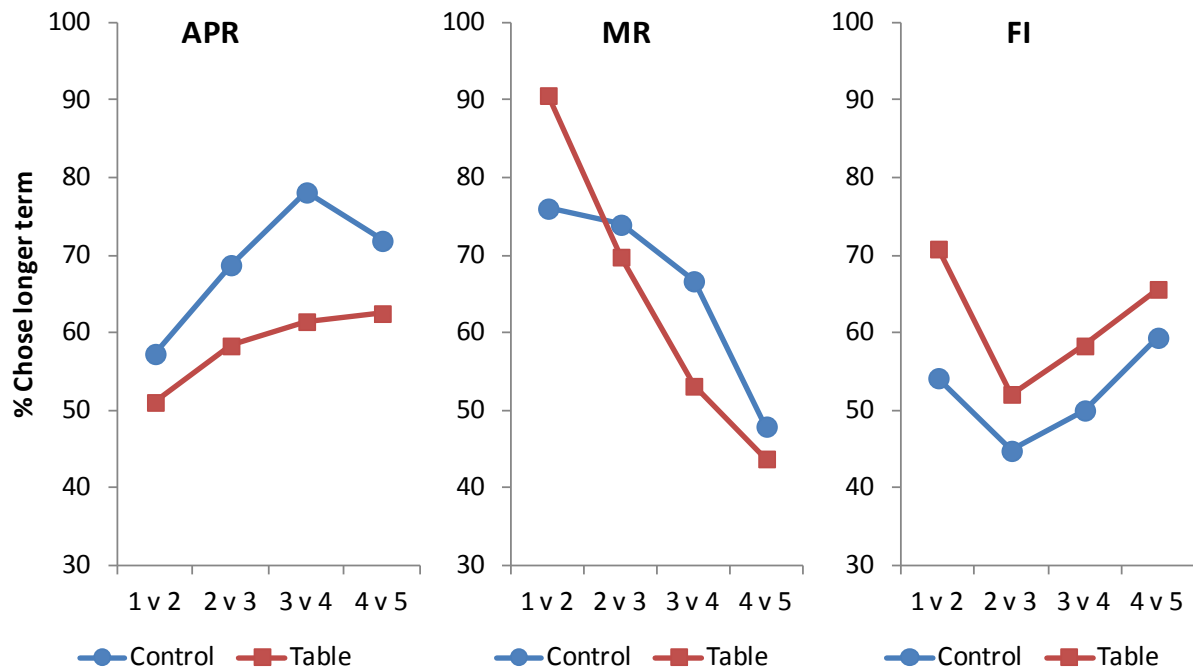
This difference was statistically significant, suggesting that the opportunity to study the table reduced the overall effect of explicit information.

**FIGURE 11** Proportion opting for longer loan by condition and experimental group in the choice task of Experiment 2. Differences between conditions are statistically significant for the Control group, but not for the Table group



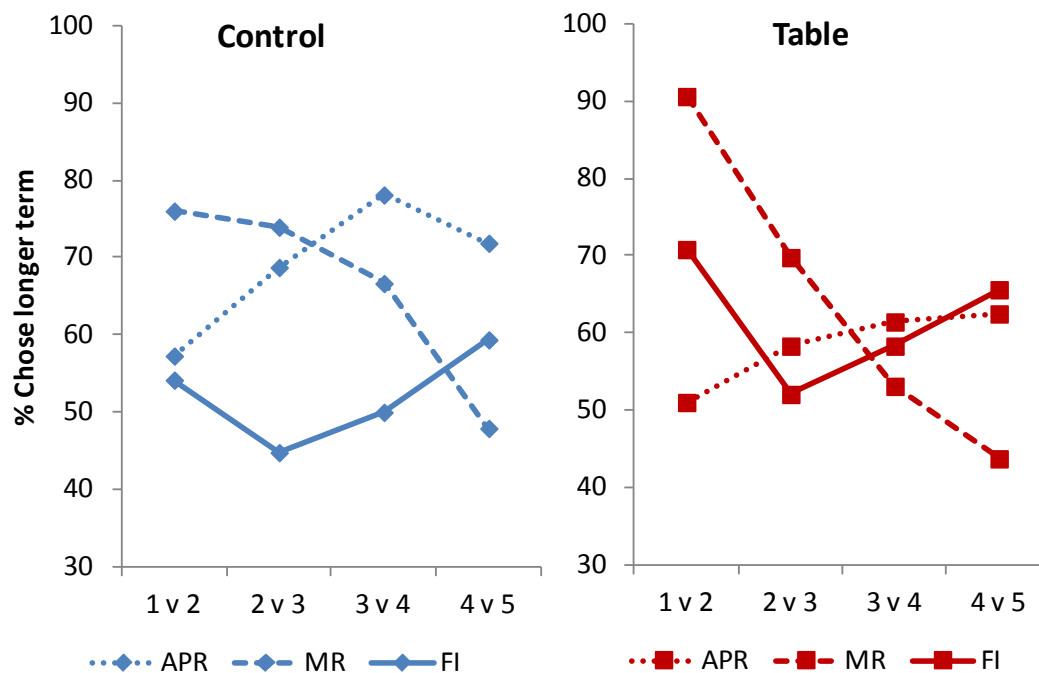
Perhaps surprisingly, however, the difference between the conditions did not simply consist of a greater likelihood of opting for the longer loan under the MR condition, but was more complex. As for Experiment 1, we fitted a series of mixed-effect logit (MEL) models to the responses. These models, provided in Appendix B, revealed that the choices of the participants differed in a complex pattern by group, condition and term, including some statistically significant three-way interactions. For ease of interpretation, the main statistically significant findings are illustrated via the combination of Figures 12 and 13, which organise the data by condition and by group respectively.

**FIGURE 12** Proportion opting for longer loan by condition, experimental group and term of loan in the choice task of Experiment 2. In each case, differences between the two curves are statistically significant



The pattern of results is not straightforward. Figure 12 suggests that participants who were shown the table were less likely to opt for the longer term loan in the APR condition, but more likely to do so in the FI condition. However, as Figure 13 reveals, this effect is mainly caused by variation in the responses of the Control group. The Table group produced similar choices in the APR and FI conditions, while the Control group were far more likely to select the longer loan in the APR condition than in the FI condition, presumably because they placed weight on FC information in the FI condition. The models in Appendix B reveal that this difference between APR and FI conditions was strongly statistically significant for the Control group but non-significant for the Table group. Meanwhile, the differences between the two groups fell short of statistical significance for both the APR and FI conditions. That is, it is not clear that the red (Table) and blue (Control) lines in the right and left panel of Figure 12 represent meaningful differences, but it is clear that the difference between the two blue (Control) lines for these conditions was significant. This pattern is therefore consistent with the hypothesis that the Table group did develop a superior understanding of how the term and APR related to the MR and FC.

**FIGURE 13** Proportion opting for longer loan by experimental group, condition, and term of loan in the choice task of Experiment 2. Overall, responses of the Table group were somewhat more consistent across conditions



However, both the Control and the Table group continued to produce radically different decisions in the MR condition. For both groups, MR information increased the likelihood of opting for a longer loan at short terms and a shorter loan at long terms. This pattern is again consistent with the idea that the difference in monthly repayments became a stronger factor in the MR condition and, furthermore, that the non-linearity in the MR-term relationship caused difficulty. More intriguingly, the statistical models reveal that the difference in the slope of the MR curves in Figure 12 (centre panel) was actually greater for the Table group.

In summary, the opportunity to observe the example table reduced the overall effect of explicit versus non-explicit information, suggesting that participants in the Table group factored in FC information to a greater extent than those in the Control group, at least until that information was made explicit to both groups in the FI condition. However, exposure to the Table did not reduce the effect in the MR condition, which produced radically different choices for both groups and had, if anything, a greater effect on the Table group. The implication is that while showing the example table resulted in FC playing a greater role in decisions, it did not lead to greater appreciation of the non-linearity in the MR-term relationship, nor eliminate the dominance of explicit information over non-explicit information

in the decision-making process. The experiment therefore provides evidence that an example table such as this might improve the consistency of consumers' decisions.

### S-ID Task (Objective)

Figure 14 presents just noticeable differences (JND) and biases for the S-ID task. These are two different measures of the accuracy with which participants are able to decide which of two alternatives is better (for the young couple). The JND indicates how large the difference between the two offerings had to be before participants could reliably determine that one was better than the other. For technical reasons, we employ a criterion of 86 per cent accuracy.<sup>6</sup> In other words, the JND tells us how large the difference in APR had to be before participants could reliably judge that one of the two offerings was better for the young couple than the other. The bias is a measure of any systematic tendency to overestimate the desirability of a longer or shorter loan.

The mean JND was 2.6 percentage points of APR. Before considering the variation across conditions, this absolute level of precision is worthy of comment. Because the range of APRs in the experiment spanned 10 percentage points of APR, this means that differences of more than one quarter of the range were required for the better value product to be chosen reliably. Interestingly, this is slightly higher than the level of precision for the binary comparison of two-attribute products in general, as recorded by Lunn et al. (2016), perhaps reflecting the strong non-linearity in the trade-off. The implication is that, unless consumers are committed already to take out a loan of a given term, APR differences of this magnitude are necessary in order to determine which of two loans is the better deal. Given that most APRs offered by the same provider are unlikely to vary by this much for loans of different terms, consumers may be quite imprecise when choosing between loans of different terms.

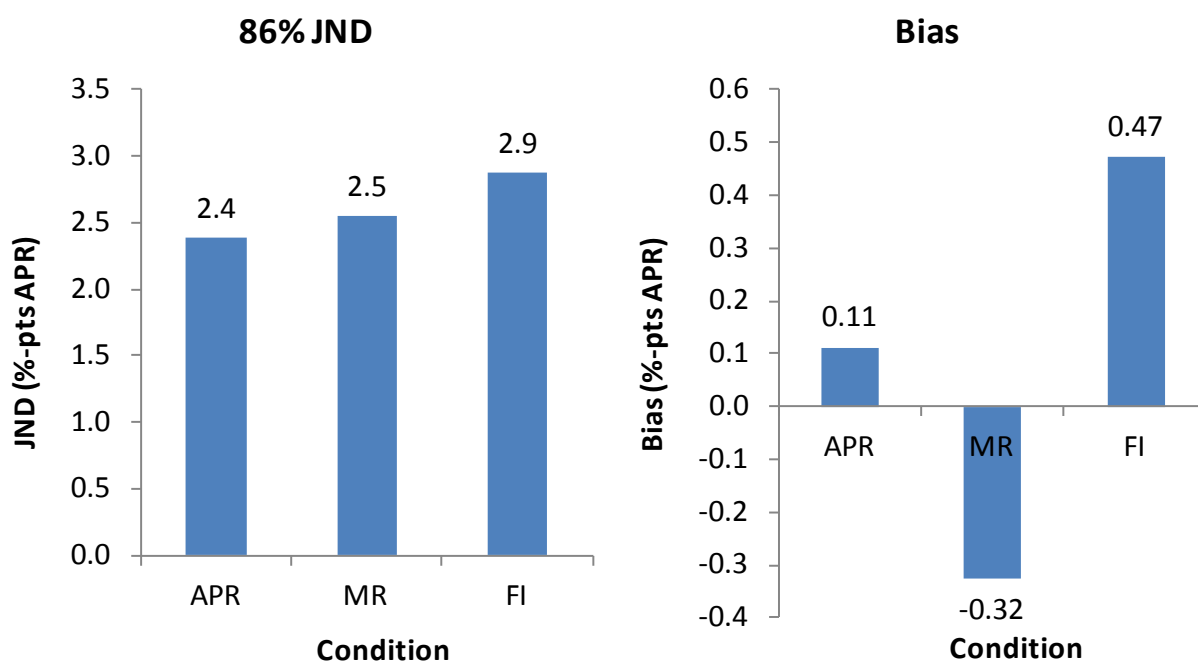
The JND varied from 2.4 to 2.9 percentage points across the three conditions. The descriptive data contain a hint that precision may have declined slightly (i.e. the JND increased), as the amount of explicit information provided rose (APR→MR→FI). The statistical models in Appendix C provide significance tests, which show that the difference in JND between the APR and FI condition was marginally statistically significant ( $p=0.09$ ).

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<sup>6</sup> This equates to one standard deviation of a logistic distribution, which is the psychometric function we fit to the data. Loosely speaking, therefore, the JND can be thought of also as the average amount of imprecision when identifying a surplus.



**FIGURE 14** Just noticeable difference (JND) and bias for S-ID (objective) task in the S-ID task of Experiment 2. Differences in JND are marginally statistically significant (APR vs. FI, 10 per cent level). Differences in bias are strongly statistically significant. Positive bias indicates bias towards shorter loans

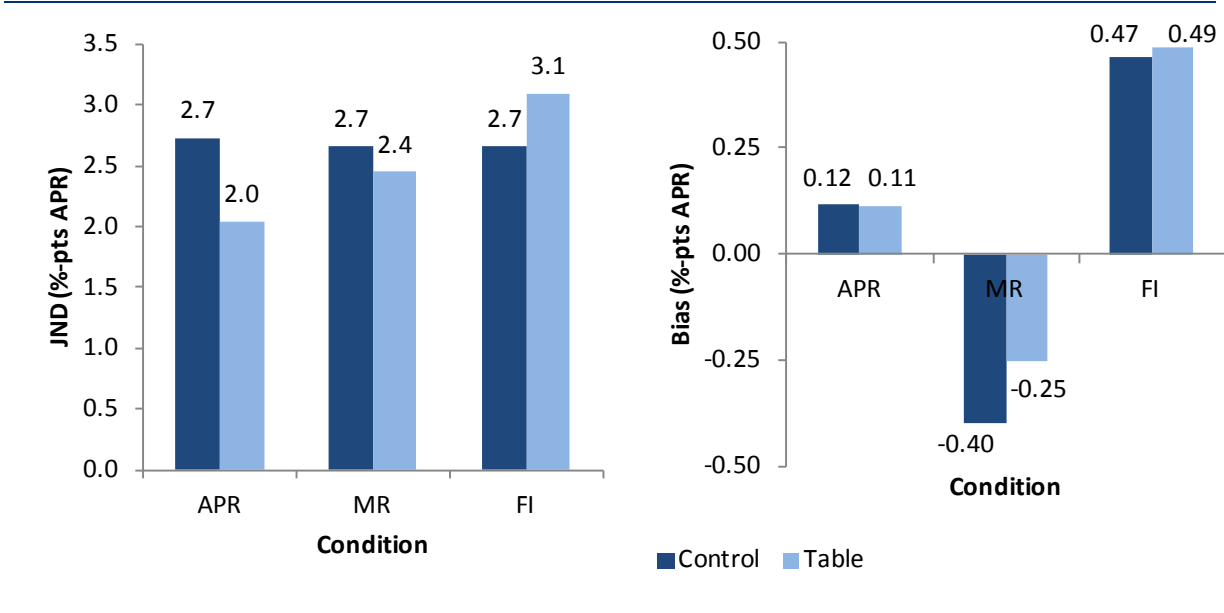


In contrast, the impact of the condition on the bias was strongly statistically significant. Participants were biased towards shorter loans (positive bias in Figure 14) in the FI condition and longer loans in the MR condition (negative bias). This is a further indication of the strength of the effect of explicit information. Despite the fact that the task was objective, incentivised and involved feedback on every trial, participants were apparently unable to avoid overweighting MR and FC information when this information was provided explicitly.

The statistical analysis also examined whether these results varied by group (Appendix C). Figure 15 shows the outcome. It is important to note that while any differences between the groups relate to whether the participant was able to scrutinise the example table at the beginning of the experiment (and refer back to it as they wished), all participants had undertaken the first stage of the experiment (48 trials of the subjective choice task) prior to undertaking the S-ID task. Nevertheless, as Figure 15 shows, exposure to the table continued to have an impact during the second stage of the experiment. The variation in JND by condition was entirely driven by the Table group. The implication of this finding is particularly interesting and perhaps somewhat counterintuitive. It suggests that, in comparison with the Control group, the Table group had developed and maintained a sufficiently superior understanding of the trade-off between MR

and FC to be able to absorb and apply a set of preferences based upon this trade-off when only APR and term information was available. Yet, when all of these figures were explicit in the FI condition, their precision deteriorated to the level of the Control group (the difference in JND for the FI condition is not significant). This apparent contradiction is probably explained by the fact that better understanding of the APR-term-MR-FC relationships improves the precision of judgements, but that explicit exposure to a larger number of figures induces a degree of cognitive load that reduces precision. Lastly, Figure 15 shows that both groups remained subject to bias (the difference for the MR condition was not statistically significant).

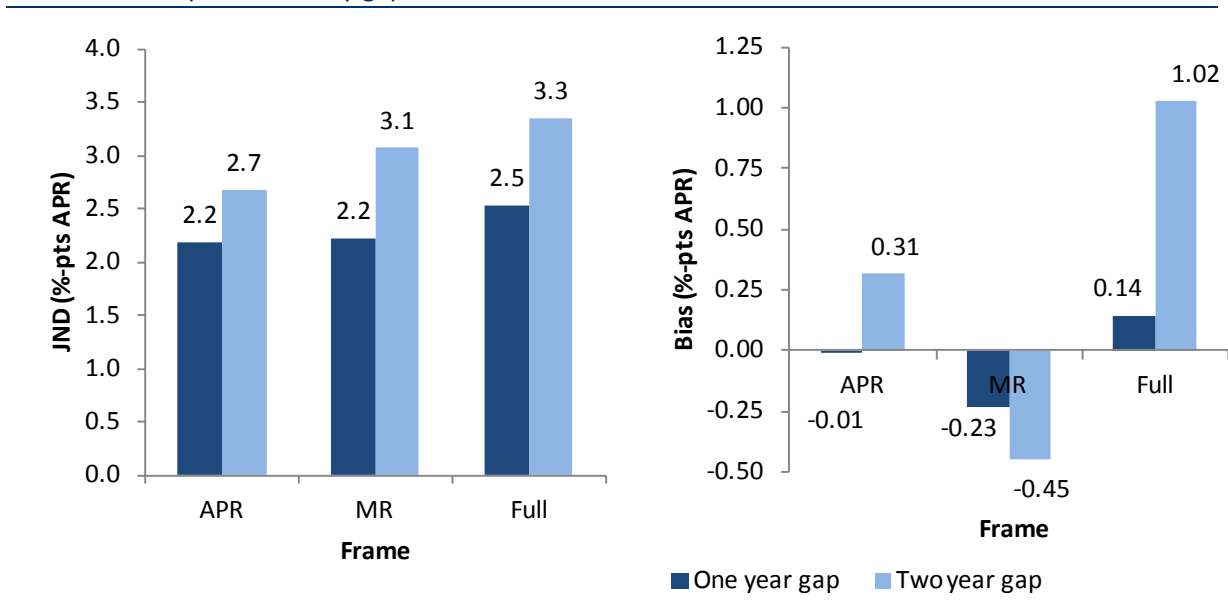
**FIGURE 15** Just noticeable difference (JND) and bias for S-ID (objective) task in the S-ID task of Experiment 2 by group



For some trials, the difference between the terms of the two loans in the S-ID task was just one year, while for others it was two. Going back to Experiment 1, we found that the effect of explicit MR and FC information was greater when the difference between terms was two years as opposed to one. Figure 16 performs a similar analysis to that above, showing how JND and bias in Experiment 2 varied with the difference between terms. Again, despite the fact that the S-ID task had an objective (right or wrong) answer, with participants subject to incentives and feedback, there was a particularly strong bias when the difference between the terms was two years. Furthermore, the JNDs were significantly larger, indicating greater imprecision in judgements. The implication is that participants primarily processed differences in MR and FC between the two loans and found it very difficult not to be drawn to the lower MR or FC when the difference appeared large in absolute terms, simply because of the larger difference in loan terms. The

result was, again, inconsistency between decisions. This is a further indication that consumers struggled to integrate the available information in a manner that takes account of the non-linearity in the MR-FC trade-off.

**FIGURE 16** Just noticeable difference (JND) and bias for S-ID (objective) task in the S-ID task of Experiment 2 by gap between two loan terms



### 3.4 EXPERIMENT 2: DISCUSSION

The example table designed and tested in Experiment 2 (Figure 9) did have an impact on consumers' choices. In general, exposure to the table reduced but did not eliminate the dependence of choice on the explicit versus non-explicit nature of the key information relating to the loans. More specifically, the table did not prevent the greatly increased weight given to explicit MR information in the absence of explicit FC information. Yet some learning had clearly been induced by exposure to the example table, leading responses in the APR and FI conditions to be more similar. That learning also carried over to the S-ID task, such that participants exposed to the table were more precise when comparing loans on the basis of only the term of the loan and its APR. Thus, the experimental evidence suggests that an example table designed to highlight the relationship between the term of the loan, MR and FC, might improve the consistency of consumers' decisions.

The S-ID task for personal loans revealed that consumers struggle to integrate information on the key attributes of a personal loan into decisions. Decisions were in general quite imprecise, requiring differences of more than one quarter of the APR range for participants to distinguish reliably which was the better loan,

for a given set of objective preferences. There is some suggestion in the data that the provision of both MR and FC information may increase cognitive load and hence increase imprecision, although the size of this effect in the present experiment was quite small.

Intriguingly, the extent of bias induced by the explicit provision of MR and FC information was such that even in an incentivised, objective task, in which there was a right and wrong answer, following practice and feedback, participants were unable to avoid overweighting explicit information at the expense of non-explicit information. Furthermore, the results of this task provided further evidence that when two loans are considered side by side, choices are not consistent across different gaps between the terms of the two loans. This latter finding supports the idea that consumers process the differences in MR and FC between two options, leading to greater influence on decisions when loans are separated in term by two years, with greater weight in particular being given to FC.

# Section 4

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## Conclusions and Policy Implications

### 4.1 INTRODUCTION

This section pulls together the findings of both experiments to consider the implications for the effectiveness of the personal loans market and for consumer protection. While some implications are clear, others are far from straightforward.

### 4.2 SUMMARY OF FINDINGS

Experiment 1 demonstrated that a substantial proportion of choices between two personal loans could be influenced by which information was made explicit at the point of decision. Where two loans had the same principal but differed in APR, consumers became more likely to opt for the longer loan when monthly repayment (MR) information was made explicit and more likely to opt for the shorter loan when financial cost (FC) information was made explicit. Experiment 1 also showed that when the two loans were separated in term by just one year (e.g. three- versus four-year loan, four- versus five-year loan), there was a greater tendency to opt for the longer loan than when the separation was two years (e.g. three- versus five-year loan). The experiment also showed that consumers were less likely to choose a loan that carried a 'high cost loan' warning.

Experiment 2 tested whether decisions were made more consistent by giving consumers the opportunity to examine a specific type of representative example table that was designed to illuminate the relationship between the term of the loan, MR and FC. This intervention was partially successful, in that it made decisions somewhat more consistent, but consumers remained much more likely to opt for longer loans when MR information was explicit and FC information was not. Experiment 2 also found that choices between loans were quite imprecise. In order to determine reliably which of two loans was superior, for a given set of preferences, a difference equivalent to approximately one quarter of the spread of APRs in the market was typically required. This level of imprecision varied only slightly with whether MR and/or FC information was explicitly provided. The tendencies to opt for longer loans when MR information was explicit and to opt for shorter loans when FC information was explicit, or when loans were separated in term by two years instead of one, were resistant to practice and feedback. Experiment 2 therefore reinforced the findings of Experiment 1, showing that

choice could be strongly influenced by which information about a personal loan is made explicit and which is left non-explicit.

### 4.3 POLICY IMPLICATIONS

This final subsection considers the implications for policy of the present findings. It is important to understand that the following discussion should not be read as a criticism of the present regulatory regime. Behavioural economics is bringing the development of policy and empirical investigation closer together, but this is an evolving process of interplay in which definitive inferences about what constitutes good policy are likely to be rare. It is not possible to infer a 'right' policy from the available evidence, which instead should be understood as altering the balance of argument for different options and suggesting possible ways forward, subject to proper cost-benefit analysis and further empirical study. Furthermore, although great care was taken to design the present experiments such that the results gave insight into consumers' capabilities not only in the laboratory, but in real-world contexts, the extent to which the behaviours recorded in the two experiments generalise to real consumer decisions is open to debate and interpretation. Different perspectives on the strength of the evidence can reasonably be adopted. All this said, it is nevertheless important to place the findings in the context of consumer policy.

Experiments 1 and 2 were designed in collaboration with PRICE Lab's funding bodies and they tested two potential interventions to see whether they would have an effect on choices between personal loans. These interventions could be classified as 'nudges' (Thaler and Sunstein, 2008), since they do not alter the range of options available for consumers but instead aim to influence those decisions in what appear to be desirable directions. The results of these tests were fairly clear.

The 'high cost loan' warning in Experiment 1 had a small, but nevertheless measurable, effect on choices. Consumers were somewhat dissuaded from opting for a personal loan when it was accompanied by the warning. It is possible that the experimental design employed here might, if anything, have underestimated this effect. Choices were repeated over many trials, so some insensitivity to the warning may have developed with repeated viewing. Overall, Experiment 1 offers evidence that the introduction of a mandated 'high cost loan' warning into the market for personal loans would be inclined to influence some consumers in the direction of opting for loans with lower APRs. Additionally, of course, the introduction of such a warning might have an effect on the APRs that providers offer in the first place, assuming that they view the imposition of the warning as

something to be avoided from a reputational perspective. From a regulatory perspective, the introduction of such a warning would clearly require a mechanism for setting an appropriate APR threshold, above which the warning must be shown, and for adjusting it as and when market conditions dictate. As noted in Section 1, a similar regulation is already in place for licensed moneylenders.

Experiment 2 tested another kind of intervention. The aim was to simulate a situation where a representative example table was made available that was specifically designed to illustrate how MR and FC vary with the term of a loan, in the hope that this would assist consumers in resolving the trade-off between the two. The results indicate that spending some time looking at a table such as this is likely to improve the consistency of consumers' decisions, especially if they subsequently consider offers on the basis of the term and the APR of the loan. However, it did not prevent consumers opting for longer loans in situations where MR information was explicit and FC information not, compared to situations where both pieces of information were available. Overall, then, a representative example table designed to show the effect of varying the term of a loan may be of some assistance to consumers and the evidence presented here would therefore support a policy that encouraged or mandated providers to display such a table in contexts where it is practical to do so, such as on websites, or in brochures and other marketing material. The research team could find no examples in the Irish market, at present, of representative example tables designed to show the effect of varying the term of the loan.

Beyond the effectiveness of the two potential interventions that were tested in the present experiments, the findings have broader implications for consumer protection in the market for personal loans. At a general level, the fact that decisions can be so easily swayed implies that consumers do not understand the relationships between the fundamental attributes of a personal loan sufficiently to make accurate, consistent choices between offerings. Although the MR and FC of a loan are co-determined by the term and APR, decisions vary greatly depending on which figures are explicit at the point of decision. Furthermore, decisions are not consistent across pairs of loans that are separated in term by either one or two years.

There are potential implications for consumer welfare here. The information made explicit or emphasised in the market for personal loans varies between different providers and at different decision points (e.g. when responding to an advertisement, when deciding what term to put into an online loan calculator, when being told about different offerings in person or on the telephone, when

reading full offer documentation, and so on). The result is likely to be that a proportion of consumers will choose a particular combination of term and APR that is not in fact the best option given their real preferences. More simply, consumers will be prone to mistakes.

Importantly, where a provider is compliant with regulations outlined in Section 1, according to which it must provide a representative example that includes information on repayments and the cost of credit, there remains considerable flexibility regarding the term(s) of the loan(s) for which information is displayed. This means that the inconsistencies in consumers' decision-making highlighted here have the potential to leave them vulnerable to certain marketing methods. In general and at any decision point, a presentation of an offering in which greater priority is given to MR information than to FC information is likely to lead consumers to choose longer loans, or perhaps not to consider obtaining full information on a shorter loan for comparison. Furthermore, if the loans being compared differ by just one year, consumers are again more likely to opt for the longer loan. Given that longer loans will generally be more profitable for providers, these influences on decision-making could leave consumers exposed. It should be noted in this context that, as described in Section 1, the current regulations stipulate that advertising must be 'fair' and not 'misleading', and must not 'seek to influence a consumer's attitude... by ambiguity, exaggeration or omission'. Still, the present findings suggest that there might be benefits to more prescriptive rules in relation to how consumers choose the term of personal loans and the accompanying provision of MR and FC information. This could include a mandate to make MR and FC information equally prominent, or to show at specific decision points the impact of changing the term of the loan (see suggestion below). There may of course be costs associated with such an approach too, which would need to be taken into account. Importantly, it would be possible for future research to pre-test any proposed change empirically, to gauge the likely size of the effect on consumers' decision-making.

There is a further issue here, however, with respect to the criteria used to evaluate the quality of decisions. It can be argued that choices made when MR and FC information are equally explicit will be more likely to reflect consumers' true preferences, on the grounds that a good decision is one where MR and FC are traded off and that this may be more likely where both are equally explicit. If this premise is accepted, it can be argued that giving equal emphasis to FC information and MR information at all key decision points would tend to improve consumer decisions. Caution is needed though. There is no guarantee that the premise is correct. For instance, it is possible that some consumers might give too much weight to FC information because they don't like the implications for the



profit made by the provider. If so, focussing on both MR and FC could lead them to take on repayments that may prove excessively onerous or risky.

This is an instance of a broader concern raised by certain findings in behavioural economics. Where consumers make choices that are inconsistent, while it may be clear that potentially costly mistakes are being made, it may be unclear which choice represents the better outcome for the consumer. The evidence presented in this report shows that choices of loans change when different information is made explicit, but it does not show which choices are good ones, i.e. choices that regulatory policy might seek to support. Consequently, the present analysis needs to be considered alongside other sources of evidence, such as loan-level data on arrears, non-repayment or financial distress, and how these vary with the term of loans. In the absence of significant problems caused by shorter personal loans, however, the present findings imply that there could be benefits to the provision of FC information with equal emphasis to MR information for all offerings at all decision points.

The effect on choices of the gap in terms between alternative loans also has implications for consumer protection. There is an argument for tighter control of how loans of different terms are offered for comparison. This again varies between providers in the Irish market at present. One possibility might be that, once the consumer has indicated an initial choice of principal and term for the loan, information should be provided in relation to the implications for MR and FC of opting for a loan one year shorter and one year longer than the one being entertained. There are also dangers in such an approach, as it might potentially reduce the precision of decisions by increasing the requirement to process and integrate information. Again, the approach could be pre-tested experimentally to gauge the likely impact on consumers' choices.

Overall, while there remains considerable doubt in relation to how any specific changes in regulatory regime might affect consumer outcomes, the central message of the present investigation can be stated more robustly. The decisions of consumers with respect to personal loans depend on the information made explicit at the point of decision.

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# Appendix A

## Statistical Models, Experiment 1

Mixed effects logit (MEL) models, with random effects for the likelihood of opting for the longer term loan and a gap between terms of one year or two. The two random effects allowed for individual differences in time preference. All models included covariates for the level and square of APR and term. Model 1 tested effect of condition. Model 2 tested interactions between condition and term. Model 3 tested interactions between condition and whether the gap between terms was one or two years. Model 4 tested three-way interactions. Coefficients are standard, i.e. equivalent to logged odds ratios.

Model	1	2	3	4
<b>Constant</b>	-0.763 (1.403)	0.510 (1.477)	0.464 (1.490)	-0.347 (1.489)
<b>MidAPR</b>	0.401** (0.181)	0.455** (0.189)	0.464** (0.190)	0.455** (0.190)
<b>MidAPR<sup>2</sup></b>	-0.0172** (0.00672)	-0.0192*** (0.00704)	-0.0195*** (0.00710)	-0.0192*** (0.00716)
<b>MidTerm</b>	-1.175*** (0.316)	-1.912*** (0.460)	-1.896*** (0.473)	-1.566*** (0.442)
<b>MidTerm<sup>2</sup></b>	0.0965*** (0.0290)	0.164*** (0.0439)	0.163*** (0.0453)	0.139*** (0.0408)
<b>TwoYearGap</b>	-0.240* (0.137)	-0.249* (0.145)	-0.332* (0.190)	2.003* (1.050)
<b>Δ APR per year</b>	-0.685*** (0.0598)	-0.711*** (0.0633)	-0.707*** (0.0630)	-0.699*** (0.0649)
<b>Conditions (reference = FI)</b>				
<b>APR</b>	0.259 (0.173)	-3.093*** (0.910)	-3.095*** (0.904)	-2.648*** (0.874)
<b>FC</b>	-0.426* (0.220)	-2.725*** (1.050)	-2.726*** (1.046)	-1.886 (1.209)
<b>MR</b>	0.909*** (0.201)	0.282 (1.050)	0.271 (1.051)	1.254 (1.002)
<b>Condition*Term interactions</b>				
<b>APR*MidTerm</b>		1.384*** (0.388)	1.416*** (0.407)	1.279*** (0.398)
<b>FC*MidTerm</b>		0.801* (0.446)	0.836* (0.453)	0.384 (0.515)
<b>MR*MidTerm</b>		0.588 (0.415)	0.465 (0.430)	-0.0146 (0.396)

Contd.

Model	1	2	3	4
<b>Condition*Term<sup>2</sup> interactions</b>				
APR*MidTerm <sup>2</sup>		-0.117***	-0.121***	-0.115***
		(0.0385)	(0.0406)	(0.0407)
FC*MidTerm <sup>2</sup>		-0.0512	-0.0551	-0.00730
		(0.0459)	(0.0462)	(0.0502)
MR*MidTerm <sup>2</sup>		-0.0840**	-0.0699*	-0.0224
		(0.0394)	(0.0413)	(0.0381)
<b>Condition*Term-gap interactions</b>				
APR*TwoYearGap			-0.119	-1.153
			(0.243)	(1.143)
FC*TwoYearGap			-0.144	-3.066**
			(0.242)	(1.409)
MR*TwoYearGap			0.478***	-2.455**
			(0.169)	(1.136)
TwoYearGap*MidTerm				-0.883
				(0.581)
<b>Three-way interactions</b>				
APR*TwoYearGap*MidTerm				0.292
				(0.632)
FC*TwoYearGap*MidTerm				1.579**
				(0.726)
MR*TwoYearGap*MidTerm				1.405**
				(0.578)
<b>Three-way interactions</b>				
TwoYearGap*MidTerm <sup>2</sup>				0.0613
				(0.0680)
APR*TwoYearGap*MidTerm <sup>2</sup>				-0.00550
				(0.0750)
FC*TwoYearGap*MidTerm <sup>2</sup>				-0.173**
				(0.0812)
MR*TwoYearGap*MidTerm <sup>2</sup>				-0.139**
				(0.0662)
<b>Random effects parameters</b>				
var(TwoYearGap)	0.114	0.137	0.163	0.224
	(0.144)	(0.161)	(0.184)	(0.236)
var(Constant)	0.760	0.835	0.820	0.782
	(0.258)	(0.285)	(0.280)	(0.267)
corr (TwoYearGap, Constant)	0.240	0.267	0.296	0.357*
	(0.164)	(0.182)	(0.194)	(0.216)
Observations	3,900	3,900	3,900	3,900
Number of groups	25	25	25	25

Note: \* p<0.1, \*\* p<0.05, \*\*\* p<0.01, standard errors in parentheses.

# Appendix B

## Statistical Models, Experiment 2 (Choice Task)

Mixed effects logit (MEL) models, with random effects specified for the likelihood of opting for the longer term loan. Model 1 tested whether decisions were affected by being given sight of the example table. Model 2 tested for interactions between being in the Table group, the condition and the term. Coefficients are standard, i.e. equivalent to logged odds ratios.

Model	1	2
<b>Constant</b>	-0.230 (0.375)	-0.459 (0.434)
<b>MidAPR</b>	0.064*** (0.021)	0.072*** (0.021)
<b>APRdiff</b>	-0.010 (0.018)	-0.022 (0.019)
<b>Table</b>	-0.529 (0.349)	-0.460 (0.464)
<i>Conditions (reference = FI)</i>		
<b>APR</b>	-0.184 (0.168)	0.177 (0.341)
<b>MR</b>	0.140 (0.170)	-0.309 (0.338)
<i>Term pair (reference = 3 vs 4 years)</i>		
<b>1 vs 2 Years</b>	0.283** (0.137)	0.711** (0.350)
<b>2 vs 3 Years</b>	-0.001 (0.135)	-0.344 (0.338)
<b>4 vs 5 Years</b>	-0.145 (0.135)	0.420 (0.344)
<i>Condition*Table interactions</i>		
<b>APR*Table</b>	1.032*** (0.235)	1.330*** (0.487)
<b>MR*Table</b>	0.553** (0.235)	1.139** (0.470)
<i>Term pair*Table interactions</i>		
<b>1 vs 2 Years*Table</b>		-0.519 (0.473)
<b>2 vs 3 Years*Table</b>		0.086 (0.464)
<b>4 vs 5 Years*Table</b>		0.041 (0.469)

Contd.

Model	1	2
<b>Condition*Term pair interactions</b>		
APR*1 vs 2Years		-1.302***
		(0.489)
APR*2 vs 3Years		0.163
		(0.479)
APR*4 vs 5 Years		-0.370
		(0.486)
MR*1 vs 2 Years		1.977***
		(0.565)
MR*2 vs 3 Years		1.310***
		(0.486)
MR*4 vs 5 Years		-0.919*
		(0.483)
<b>Three-way interactions</b>		
Table*APR*1 vs 2 Years		-0.058
		(0.679)
Table*APR*2 vs 3 Years		-0.473
		(0.677)
Table*APR*4 vs 5 Years		-0.475
		(0.684)
Table*MR*1 vs 2 Years		-1.634**
		(0.736)
Table*MR*2 vs 3 Years		-0.646
		(0.675)
Table*MR*4 vs 5 Years		-0.494
		(0.665)
<b>Random effects parameters</b>		
var(Constant)	1.129	1.279
	(0.267)	(0.300)
<b>Observations</b>	2,304	2,304
<b>Number of groups</b>	48	48

Note: \* p<0.1, \*\* p<0.05, \*\*\* p<0.01, standard errors in parentheses.

# Appendix C

## Statistical Models, Experiment 2 (S-ID task)

We fitted mixed effects logit (MEL) models to the data, with random effects specified for the likelihood of opting for the longer term loan. Model 1 tested whether bias and precision (interactions with APRincrement) were affected by the condition. Model 2 tested for effects associated with being in the Table or Control group. Model 3 tested whether bias and precision were affected by changing the gap between terms from one year to two. Coefficients are standard, i.e. equivalent to logged odds ratios.

Model	1	2	3
<b>Constant</b>	-0.302*** (0.085)	-0.285** (0.121)	-0.101 (0.090)
<b>APRincrement</b>	0.632*** (0.052)	0.587*** (0.071)	0.720*** (0.065)
<b>Control group (i.e. not shown table)</b>		-0.033 (0.170)	
<b>TwoYearGap</b>			-0.468*** (0.105)
<b>Conditions (reference = FI)</b>			
<b>APR</b>	0.213** (0.092)	0.184 (0.149)	0.112 (0.102)
<b>MR</b>	0.530*** (0.091)	0.470*** (0.126)	0.292*** (0.101)
<b>Condition*APRincrement interactions</b>			
<b>APR*APRincrement</b>	0.130* (0.077)	0.301** (0.124)	0.113 (0.078)
<b>MR*APRincrement</b>	0.081 (0.061)	0.154** (0.072)	0.096 (0.080)
<b>Control*APRincrement interaction</b>			
<b>Control*APRincrement</b>		0.095 (0.099)	
<b>Condition*Control interactions</b>			
<b>APR*Control</b>		0.058 (0.183)	
<b>MR*Control</b>		0.120 (0.180)	
<b>TwoYearGap*APRincrement interaction</b>			
<b>TwoYearGap*APRincrement</b>			-0.165** (0.069)

Contd.



Model	1	2	3
<i>Condition*TwoYearGap interactions</i>			
APR*TwoYearGap			0.236*
			(0.133)
MR*TwoYearGap			0.547***
			(0.148)
<i>Three-way interactions</i>			
APR*Control*APRIncrement		-0.319**	
		(0.152)	
MR*Control*APRIncrement		-0.153	
		(0.117)	
APR*TwoYearGap*APRIncrement			0.026
			(0.092)
MR* TwoYearGap *APRIncrement			-0.052
			(0.096)
<i>Random effects parameters</i>			
var(Constant)	0.096	0.096	0.087
	(0.029)	(0.029)	(0.024)
var(APRIncrement)	0.049	0.047	0.050
	(0.011)	(0.012)	(0.013)
var(TwoYearGap)			0.144
			(0.042)
cov(Constant, APRIncrement)	-0.018	-0.018	-0.009
	(0.014)	(0.014)	(0.017)
<b>Observations</b>	8,064	8,064	8,064
<b>Number of groups</b>	48	48	48

Note: \* p<0.1, \*\* p<0.05, \*\*\* p<0.01, standard errors in parentheses.



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