

Inverting the question

RCT findings on reframing borrowing in
terms of repayment

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Shift

Introduction

This report presents our findings from a second service improvement trial run by [Shift](#), behavioural scientist [Paul Adams](#) and [Fair Finance](#), funded by the JP Morgan Foundation. Results from the first trial, which focused on default loan amounts, can be found [here](#).

Shift is working with Paul Adams and Fair Finance to devise and implement Randomised Controlled Trials (RCTs) to improve the impact of their Personal Loan service, which provides affordable loans to those who are excluded from mainstream finance.

Through these trials, we are interested in exploring whether small changes to the online application process can affect two issues related to acceptance rates currently experienced by Fair Finance:

Affordability

Between July 2020 and June 2021, clients were offered on average 11% less than the amount they requested, indicating that clients are currently applying for loan amounts deemed by Fair Finance to be unaffordable.

Client satisfaction

Less than half (47%) of loans offered to online customers were taken up between July 2020 and June 2021, suggesting client dissatisfaction with loan amounts being offered.

This second trial sought to assess whether changing the framing of the online calculator - such that it is the weekly or monthly repayment amount rather than loan amount that is inputted by the customer - leads the customer to apply for more affordable loans.

We found that inverting the question on the online calculator results in 4.7% fewer customers going on to submit a loan application compared to the control group. Of those who do go on to apply for a loan, customers in the treatment group tend to apply for larger loans (£380 compared to £366). We cannot say whether this change in loan size requested is due to the framing of the question or because the intervention affects the type of people who go on to apply for a loan. We do see that higher loan amount requested transfers through to approval amounts (£364 compared to £349 for the control group), suggesting that these higher amounts are still realistic.

Rationale

The project sought to assess whether changing the loan application process from asking individuals how much they want to borrow to how much they can afford to repay would have an impact on the loan size requested.

Switching from focussing on loan amount to repayment amounts has several features which could help applicants make better loan choices:

Present bias

First, by switching the focus on repayment amounts, the costs of borrowing are made salient, up-front. Due to human preferences for reward and gratification now, costs of borrowing that occur later are often ignored or heavily discounted when choosing to borrow. This is also known as **present bias**.

Framing

Second, the repayment frame helps to put the costs of the loan into time periods which consumers are used to thinking about - focussing on weekly or monthly budgets. Observational and experimental studies indicate that '**framing**' (the information presented to customers) influences how they think about loans: either as 'total accounts' in which they compare how much they're borrowing compared with the total amount they're repaying, or as 'recurrent budget period accounts' in which they compare the costs of the loan and the benefits they get from it over a certain period of time.^{1,2}

Positive friction

Finally, both of these mechanisms force the consumer to slow down, focussing the consumer on the future and making them think about their existing budget. Although not exactly the same as other interventions that more explicitly add "**positive frictions**" to consumer journeys, the reframing of the decision to focus on repayment amounts could have a similar effect.

A 'positive friction' is an additional touch point in the customer experience which slows down the customer journey, prompting more deliberative and considered decision making. UX tends to prioritise speed and efficiency through frictionless processes whereby the customer moves through a journey with minimal barriers. However, the benefits of positive friction are being increasingly recognised within the financial industry. For example Monzo includes a 'late night spending review' setting which allows customers to double-check whether they wish to proceed with purchases made late at night the next morning. Monzo also offers customers the option of designating a carer to verify purchases over the value of £100, slowing down the purchasing process and adding in safety nets for those who are liable to spend recklessly at certain times of the day or when unwell.³

The positive friction introduced for this trial involved changing the choice architecture on the online calculator such that clients are required to enter how much they feel they are able to repay weekly or monthly, as opposed to the amount they wish to borrow. This intervention engages an extra level of cognition by requiring the client to actively calculate how much they can afford to repay.

Our hypothesis is that by focussing customers on how much they will need to repay weekly / monthly, consumers will choose loan amounts that are more suitable for their situation. For any given repayment amount, individuals can either borrow more over a longer period or borrow less over a shorter period. So in our case, a more suitable loan could be larger or smaller, or the same but spread out over a different duration.

Intervention

The intervention focussed on the online calculator that loan applicants interact with at the start of the loan application process. The original calculator (control) asks customers to input the amount they would like to borrow while the intervention (treatment) asks customers to input how much they are able to repay.

Control design - Loan amount frame

The original calculator (control) enables customers to interact with two sliders: one which alters the loan amount and the other which alters the loan duration. The calculator calculates the repayment amount according to the loan amount and loan duration the customer selects.

Variable	Value
Loan Amount	£300
Duration of Loan	39 Weeks
Weekly repayments	£111.91
Interest	£165
Administration Fee	£30
Total to repay	£495

Control design -

Loan amount frame

The original calculator (control) enables customers to interact with two sliders: one which alters the loan amount and the other which alters the loan duration. The calculator calculates the repayment amount according to the loan amount and loan duration the customer selects.

Treatment design - Affordability frame

The intervention (treatment) flips around two of the variables - loan amount and repayment amount - such that the customer selects how much they can afford to repay monthly or weekly and the loan duration, then the amount they can afford to borrow (loan amount) is automatically calculated. Repayment amounts were presented as discontinuous options, as opposed to a continuous slider, to reduce the complexity of the backend calculations. The second interactive variable - duration of loan - is the same for the treatment as for the control.

Variable	Value
How much can you afford to pay weekly?	£20
Duration of Loan	39 Weeks
Loan amount	£267
Interest	£123
Administration Fee	£30
Total to repay	£420

Treatment design -

Affordability frame

The intervention (treatment) flips around two of the variables - loan amount and repayment amount - such that the customer selects how much they can afford to repay monthly or weekly and the loan duration, then the amount they can afford to borrow (loan amount) is automatically calculated. Repayment amounts were presented as discontinuous options, as opposed to a continuous slider, to reduce the complexity of the backend calculations. The second interactive variable - duration of loan - is the same for the treatment as for the control.

Trial design and implementation

For a period of just over 6 weeks, from 18th June 2021 to 9th August 2021, a total of 9,218 new online customers applied for a loan. Of these, 8,958 used the online calculator to start their loan application. The remaining 260 most likely directly navigated to the application form and so we remove these observations from most of our analysis. Interestingly, the individuals that bypassed our experiment by navigating directly to the application page were more likely to be older (38.5 compared with 35 years old) and had a different distribution of employment and accommodation types (see Table 2 in [Appendix 1](#) for details).

Randomisation

When a new customer arrived on the personal loan webpage they were automatically allocated using a random number generator to either see the Control (Loan Amount framing) or Treatment (Affordability framing) versions of the calculator. To avoid confusion, a cookie which lasts 12 months is used to ensure that any returning visitors will continue to see the version that they saw on their first visit. There are limits to these cookies however, as if the customer uses a different browser, device, clears cookies or blocks cookies, then they may end up seeing different versions of the calculator.

Attrition

As the design of the treatment was different to what many customers would expect, we wanted to understand how this affected consumers' willingness to apply in the first place. We track website behaviours before application, as best as possible with the data that was available, to understand what is happening at each stage in the online journey. A detailed breakdown of attrition between control and treatment at each stage of the application journey can be found in [Appendix 1](#).

At every stage in the journey, the differences between control and treatment are strongly statistically significant. In the treatment group:

- People start **more** sessions on the web page, indicating returning customers reloaded the page
- They hit "Apply Now" **less** and make it to the first page of the application form **less**
- They complete the first page of the application form **less**
- However, if they do start an application, then they are **more** likely to complete it.
- They make **fewer** applications overall

Overall, this leads to 4.7% fewer applications in the treatment group. This makes it difficult to interpret the remaining analysis. This is because the treatment is not only affecting how people behave but also who is affected by our treatment.

As a specific example, if there was no attrition, then we can confidently say that any differences in loan amounts requested are due to the treatment changing applicant behaviour. However with attrition we can't be sure whether we are affecting applicant behaviour or simply changing the type of applicants who apply, or a combination of both.

In some cases we may not care about such differences, if our treatment discourages some people from applying, then that could be a good outcome in itself. However it is hard to know in our context who should be discouraged to apply, and for those who did not apply, what alternative options they might consider (for example taking out another loan from another, more expensive provider).

Balance

Beyond whether consumers applied for a loan at all, we can also check whether the two groups are balanced on the demographic information we know about them. In our case we find that there is a statistically significant difference in age between the two groups - customers in the treatment group are just over 6 months older than those in the control group. This could be related to the differential attrition we see between groups. For all other customer characteristics we see no difference between treatment and control. For more detail about balance, see Table 3 in [Appendix 1](#).

Findings

Primary findings

Loan amounts requested

Our primary outcome of interest is the loan amount requested by individuals in the two groups. Receiving the web page with the calculator in the monthly repayment frame has a significant (p -value = 0.000003) and positive impact on the amount requested. Consumers in the control group requested a loan of £366 on average, while consumers in the treatment group requested a loan of £380 on average, an increase of £14 (3.8 percent). For more detail, see Table 4 in [Appendix 2](#).



Chart: Comparing raw means for amount requested between Treatment and Control

Loan amounts offered

We are also interested in loan amounts offered as a primary outcome. In this case, 13.6% of the applicants receive a loan offer. A simple comparison of means shows that there is a statistically significant increase (£15) in loan amounts offered (p -value = 0.01). For more detail, see Table 5 in [Appendix 2](#).

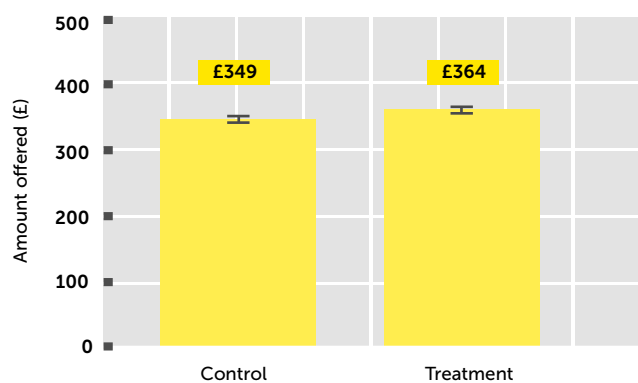


Chart: Comparing raw means for amount offered between Treatment and Control

Secondary findings

Difference in duration requested

We find no difference in the duration of loans requested between the control and treatment groups, both average just over 9 months.

Difference in requested vs approved amount

The gap between what a customer requests and what is ultimately approved could be a signal of how realistic customers are about their own finances, and could contribute to customers being dissatisfied with what Fair Finance offer. In this trial, the gap between the requested and approved amounts rises from £26 in the control group, to £31 in the treatment group, but this is not a statistically significant change.

Fair Finance conversion rates

We find no differences in the approval rates between control and treatment groups, nor any differences in offer rates or drop-off rates (when customers do not follow up on the next part of their application).

For more detail on secondary findings, see [Appendix 2](#).

Appendix 1

RCT implementation

Pre-registration

In line with best scientific practice, we pre-registered all the implementation details and our planned analysis. You can find the pre-registered plans [here](#).

Attrition in the customer journey

	Control	Treatment	Total	Control population	Control proportion
Unique page views (1)	11,115	13,831	24,946	55.4%	44.6%
Apply now (2)	7,040	5,739	12,779	44.9%	55.1%
Visits to first page (3)	7,551	5,965	13,516	44.1%	55.9%
Completion of first page (4)	6,188	5,199	11,387	45.7%	54.3%
Applications (5)	4,587	4,371	8,958	51.2%	48.8%
Application conversion (5/4)	74%	84%	79%		

Table 1: Attrition in the customer journey

Table 2: Comparison of untreated and treated individuals

Variable		Control	Treatment	p-value of t-test / Chi ² test of difference between control and treatment
Age (yrs)		35.10	38.52	0.000002598
Total income (£)		1748	1595	0.7927
Total expenditures (£)		604	599	0.9385
Marital status (proportions)	Divorced	0.035	0.065	Chi ² test p-value=0.1499
	Living with partner	0.166	0.138	
	Married	0.100	0.115	
	Separated	0.030	0.023	
	Single	0.651	0.635	
	Widowed	0.011	0.015	
	Other	0.006	0.008	
Nationality	UK	0.92	0.90	Chi ² test p-value=0.1779
	EU	0.05	0.08	
	RoW	0.02	0.02	
Employment status	Employed full time	0.35	0.23	Chi ² test p-value=0.00050
	Employed part time	0.07	0.05	
	Home maker	0.11	0.17	
	Retired	0.04	0.06	
	Self employed	0.03	0.02	
	Unemployed	0.41	0.47	
Accommodation type	Living with parents	0.202	0.096	Chi ² test p-value=0.0035
	Owner occupier	0.052	0.077	
	Tenant - council housing	0.271	0.319	
	Tenant - housing association	0.146	0.154	
	Tenant - private landlord	0.290	0.304	
	Other	0.029	0.031	
	Blank	0.010	0.019	
Number of dependents	None	0.57	0.54	Chi ² test p-value=0.6262
	1	0.18	0.17	
	2	0.14	0.16	
	3	0.07	0.07	
	4	0.03	0.04	
	5 or more	0.01	0.01	

Table 3: Balance between control and treatment groups

Variable		Control	Treatment	p-value of t-test / Chi ² test of difference between control and treatment
Age (yrs)		34.83	35.38	0.0227
Total income (£)		1739	1758	0.9246
Total expenditures (£)		619	589	0.2154
Marital status (proportions)	Divorced	0.032	0.038	Chi ² test p=0.115
	Living with partner	0.170	0.162	
	Married	0.102	0.098	
	Separated	0.027	0.034	
	Single	0.651	0.651	
	Widowed	0.010	0.012	
	Other	0.008	0.005	
Nationality	UK	0.924	0.926	Chi ² test p=0.9236
	EU	0.054	0.054	
	RoW	0.022	0.021	
Employment status	Employed full time	0.358	0.340	Chi ² test p=0.3424
	Employed part time	0.064	0.068	
	Home maker	0.106	0.109	
	Retired	0.036	0.040	
	Self employed	0.031	0.027	
	Unemployed	0.405	0.415	
Accommodation type	Living with parents	0.208	0.196	Chi ² test p=0.0981
	Owner occupier	0.046	0.058	
	Tenant - council housing	0.273	0.269	
	Tenant - housing association	0.144	0.147	
	Tenant - private landlord	0.289	0.291	
	Other	0.028	0.030	
	Blank	0.012	0.009	
Number of dependents	None	0.572	0.567	Chi ² test p=0.1652
	1	0.174	0.189	
	2	0.141	0.136	
	3	0.070	0.070	
	4	0.028	0.027	
	5 or more	0.015	0.010	

Appendix 2

Results

	Control	Treatment
Sample Size	4587	4371
Mean	365.5	379.7
SD	157.3	128.7
Median	350	400
Min/Max	100	100
Max	3000	2000

Table 4: Difference in loan amount requested in the control and treatment groups

Loan amount requested

The figures in Table 4 compare raw means between the two groups. We have significant additional information about individuals, and we know for example that the two groups are not balanced on age. By using this additional information in a regression we are able to get more precise estimates of the effect of our treatment. The positive effect of treatment on loan amounts requested remains statistically significant, when including the full set of variables as controls.

In addition, we find that being unemployed, part time or being a homemaker reduces the amounts requested relative to being employed, having more dependents in the household increases the amounts requested, and those from the UK request less than those from EU. As we found in the first trial, stated income or stated expenditures, and accommodation type do not have any effect on the loan amount requested. Marital status does seem to affect loan amounts requested, but this is mainly driven by the "other" category, so it is hard to interpret what this means.

We also look at the interaction between the treatment and different demographic characteristics - are some types of people more or less sensitive to treatment? In a regression including all controls and all interactions terms, we find that the treatment reduces loan amount requested for older applicants. However there are a few reasons not to put too much faith in this result: First, the interaction term is only just under the normal threshold for statistical significance (p -value=0.049 relative to 0.05 threshold); second, we are not fully powered to look at so many interactions; and, finally the effect disappears when looking at other regression specifications.

	Control	Treatment
Sample Size	642	588
Mean	348.9	364.3
SD	109.2	103.6
Median	330	330
Min/Max	130	130
Max	530	530

Table 5: Difference in loan amount offered in treatment and control groups

	Control	Treatment
Sample Size	606	567
Mean	350.8	363.9
SD	109.0	103.8
Median	330	330
Min/Max	130	130
Max	530	530

Table 6: Difference in loan amount offered and not later declined

Loan amount offered

13.6% of the applicants receive a loan offer. A simple comparison of means shows that there is a statistically significant increase (£15) in loan amounts offered (p-value = 0.01) in the treatment group compared to the control group. This difference remains significant even when controlling for the full set of borrower characteristics that we have. As was the case for loan amounts requested, being unemployed or being from the UK reduces the loan amounts offered. The effect of dependents on loan amounts offered disappears, which might be what would be expected from the affordability checks that Fair Finance undertakes.

We also note that in some cases loan amounts are offered but contingent on some further information being provided and sufficient (for example borrowers might be accepted for a loan amount of £200 but contingent on being able to verify income via bank statements). In some cases these offered amounts are later declined. So we can also look at loan amounts that are offered and not later declined as this gives us a truer picture of offers that would be honoured by Fair Finance.

Again, a simple comparison of means shows that there is a statistically significant increase (£13, p-value = 0.036) in loans offered that were not later declined. This also remains when we control for the other borrowing characteristics.

Relationship between affordability and disposable income

We were interested in understanding the relationship between affordability and disposable income. Roughly speaking, if my disposable income (income minus expenditures) is higher, then the amount that I can afford to repay should be higher. We do not see this information perfectly as the application form asks for gross income before tax and National Insurance is taken, and so the data we have overstates individuals true disposable income. However we should still see a relationship between the two, as shown in the chart below.

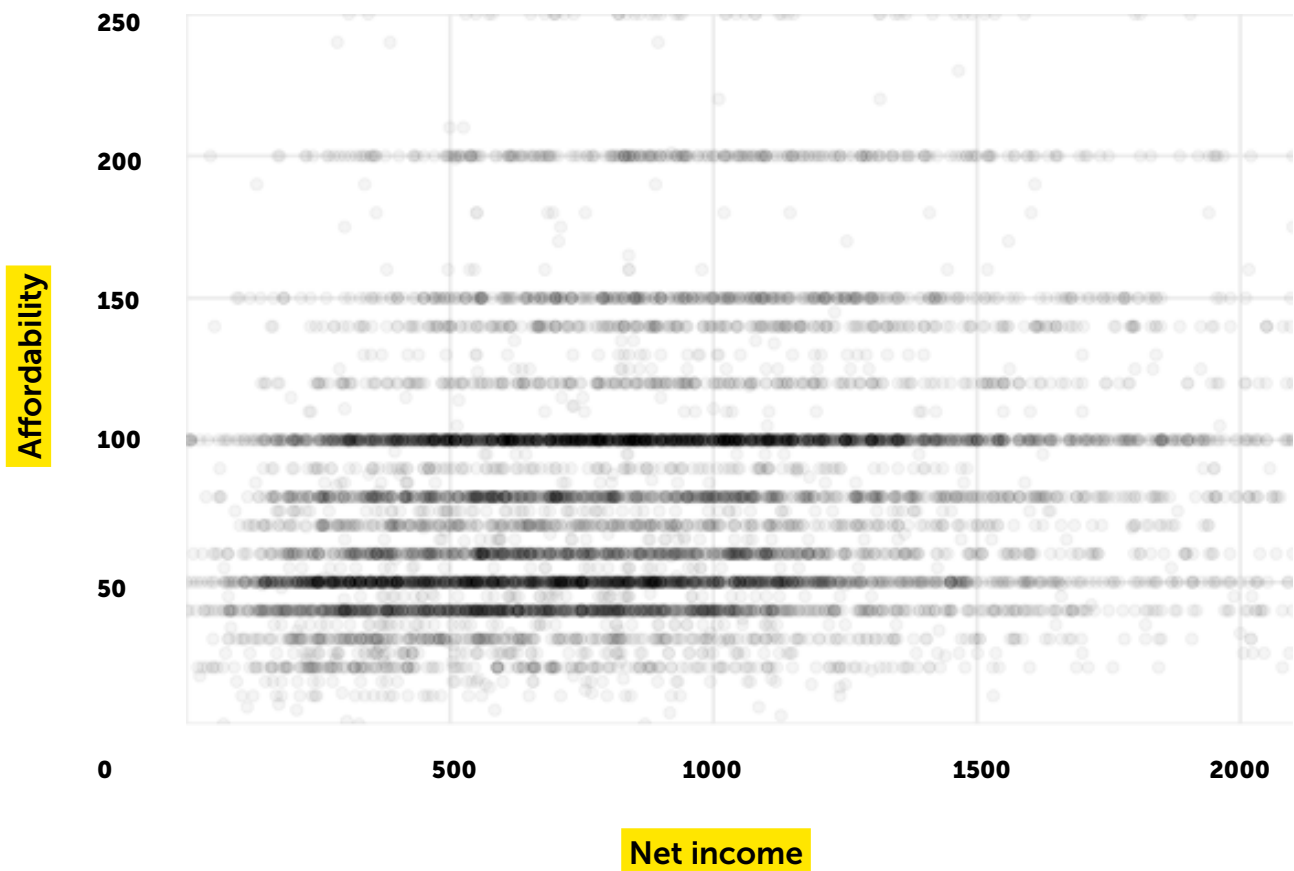


Chart: Relationship between net income and affordability

References ¹Lunn, P., M. Bohacek and A. Rybicki (2016) 'An Experimental Investigation of Personal Loan Choices'. Price Lab' <https://www.esri.ie/system/files/media/file-uploads/2016-07/BKMNEXT314.pdf> ²Raynard, R. and G. Craig (1995) 'Evaluating and budgeting with instalment credit: An interview study' <https://www.sciencedirect.com/science/article/abs/pii/016748709500020Q> ³ 'Designing a product with mental health issues in mind', 27th January 2017 <https://monzo.com/blog/2017/01/27/designing-product-mental-health-mind>



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