Self-imposed Liquidity Constraints via Voluntary Debt Repayment

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Abstract

Debt-repayment flexibility should help temporarily liquidity-constrained households but not necessarily households struggling to save. In a natural experiment in which households can apply for free mortgage-repayment flexibility, I find that two-thirds of liquidity-constrained applicants with high-cost debt voluntarily restrict flexibility and forgo, on average, 4,070 EUR of low-cost liquidity. An overconsumption tendency reflecting self-control problems can explain the voluntary liquidity restrictions as well as the persistent liquidity constraints, the consumption drop at the predictable end of flexibility, and saving in other illiquid assets. Self-imposed liquidity constraints reflect characteristics instead of circumstances and reduce the potency of debt-forbearance offers in recessions.

Keywords: liquidity constraints, mortgages, flexibility, self-control, commitment, consumption smoothing
JEL codes: D14, D15, D91, E21, G51

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1 Introduction

Debt-repayment flexibility can help liquidity-constrained households because debt payments form a large part of household expenditures. In response to COVID-19, many countries promoted mortgage-forbearance policies, leading to over $1 trillion of mortgages in forbearance only in the US (Cherry et al. 2021). Despite the potential benefits of debt-repayment flexibility to liquidity-constrained households, the potency of forbearance policies depends on whether people prefer flexibility to mandatory debt payments. If liquidity constraints reflect bad temporary circumstances, liquidity relief via debt-repayment flexibility should be appealing. By contrast, if liquidity constraints reflect persistent characteristics such as self-control problems (Gelman 2022), additional liquidity may cause short-run overconsumption with adverse consequences. Hence, people with self-control problems may forgo flexibility despite their liquidity constraints by committing to saving via mandatory debt repayment. Yet we do not know how commonly liquidity-constrained households voluntarily restrict liquidity. In terms of theory, whether liquidity constraints are self-imposed matters for the specification of correct consumption-saving models. In terms of policy, self-imposed liquidity restrictions would reduce the potency of voluntary debt-forbearance offers.

This paper documents significant voluntary liquidity restrictions by liquidity-constrained households using proprietary customer data on 19.7 percent of Finnish mortgage holders. I study a natural experiment in 2015 in which a bank offered almost all existing mortgage holders a free flexibility option to reduce the minimum principal payment to zero for one to twelve months. If a household applied for flexibility, the default principal payment declined to zero temporarily, and the bank extended the maturity of the mortgage. In a standard model, all debtors *weakly* prefer the maximum flexibility of twelve months on all mortgages because flexibility reduces the minimum payment but allows them to make free extra payments. Moreover, the flexibility offer providing low-cost liquidity should *strictly* benefit liquidity-constrained households unable to repay high-cost unsecured debt beforehand.

I document that flexibility take-up is low independent of liquidity constraints. Of all households, 77 percent do not apply for any flexibility. High-liquidity households may understandably forgo all flexibility if a small inconvenience of the otherwise free application

outweighs the benefits of flexibility. Yet 62 percent of liquidity-constrained households with negative net liquid assets (more interest-paying unsecured debt than deposits) do not apply for any flexibility. These households should strictly benefit from flexibility because they could save on interest by using low-cost mortgage debt to reduce high-cost unsecured debt.

To study voluntary liquidity restrictions, I focus on applicants restricting flexibility because not applying at all may be an involuntary default option due to, for instance, inattention.[1] By contrast, applicants can voluntarily restrict liquidity by taking flexibility on only some mortgages or short flexibility of less than the maximum twelve months. Crucially, applying for short and maximum flexibility is equally convenient: both requiring a free online application taking a few minutes. Consequently, maximum flexibility should dominate because it equals any other choice plus the option of additional flexibility, which people can forgo by making free extra principal payments via a standard online bank transfer.

The low flexibility take-up is often voluntary because two-thirds of liquidity-constrained applicants restrict liquidity ex ante by applying for less than maximum flexibility. Liquidity restrictions might not be puzzling if applicants expect a future liquidity increase making additional flexibility unnecessary. Yet most liquidity-constrained applicants restrict flexibility despite 74 percent still having negative net liquid assets after the end of all flexibility policies in June 2016. These liquidity-constrained applicants restricting flexibility forgo, on average, 4,069 EUR (48 percent) of available liquidity, which implies an average yearly cost of 162 EUR from not repaying high-cost unsecured debt with low-cost mortgage debt. Moreover, by ignoring other adjustment margins such as consumption or labor supply, this financial cost is a lower bound for the true cost of forgoing additional flexibility in a standard model.

Any hypothesis for the voluntary liquidity restrictions by liquidity-constrained households should explain two other key findings. First, liquidity constraints are persistent because applicants restricting flexibility do not reduce high-cost unsecured debt despite access to low-cost liquidity via mortgage flexibility. Second, contrary to standard model predictions, applicants restricting flexibility decrease consumption discontinuously at the predictable end of flexibility. In particular, liquidity-constrained applicants restricting flexibility decrease card expenditure on nondurables by 2.3 percent in the first month after flexibility.

[1] The importance of defaults has been reviewed, for instance, by Gomes, Haliassos, and Ramadorai (2021).

A desire for commitment due to self-control problems can parsimoniously explain the three key findings. First, restricting flexibility alleviates overconsumption by limiting liquidity. Second, self-control problems can explain the persistent liquidity constraints by hampering the repayment of credit card debt that allows reborrowing. Third, whereas a standard parametrization of a model without self-control problems would predict essentially stable consumption at the end of flexibility, the high short-run discount rate of households with self-control problems can explain a significant consumption drop. Finally, commitment can explain an additional finding: voluntary flexibility restrictions correlate with saving in illiquid deposit accounts and delayed tax refunds. Hence, restricting mortgage-payment flexibility can be one of many ways to alleviate overconsumption.

Although self-control problems can parsimoniously explain the three key findings, a natural alternative hypothesis is that households restricting flexibility do not need more flexibility. Choosing only essential flexibility is also compatible with a status-quo bias or a high effort cost of extra principal payments. Yet the evidence does not suggest that–absent self-control problems–applicants restricting flexibility would not benefit from more flexibility in absolute or relative terms. Regarding absolute need, liquidity-constrained applicants restricting flexibility incur an average yearly financial cost of 162 EUR by forgoing the option to repay persistent high-cost unsecured debt with more flexibility. Regarding relative need, applicants restricting flexibility are not better off than maximum-flexibility applicants before or after the flexibility offer. For instance, liquidity constraints are equally prevalent among applicants restricting flexibility and maximum-flexibility applicants before and after flexibility. Finally, a temporary liquidity need such as a house renovation could explain decreasing expenditure–but not consumption–at the end of flexibility.

I also consider several other hypotheses for the three key findings. First, flexibility restrictions are unlikely a supply effect by individual bank branches because the main application method was an online form that did not prejudice maximum flexibility. Furthermore, a model predicting flexibility restrictions that includes fixed effects for bank branch and application week–capturing policy differences between branches and over time–explains little of the variation in flexibility take-up. Second, debt aversion may reduce the value of flexibility, but debt aversion does not explain why applicants restrict flexibility ex ante instead of ex

post. Moreover, debt aversion seems inconsistent with the high propensity and persistence of liquidity constraints among applicants restricting flexibility. Third, misinterpreting the offer is unlikely to quantitatively explain flexibility restrictions because even (financially sophisticated) bank employees often restrict flexibility. Fourth, intrahousehold bargaining could explain flexibility restrictions within couples with different time preferences, but singles often restrict flexibility too. Finally, absent self-control problems, the consumption drop at the end of flexibility and the persistent liquidity constraints imply high impatience, but highly impatient households should value maximum flexibility to frontload consumption.

My main contribution is to document significant voluntary liquidity restrictions by liquidity-constrained households, which informs us about the nature of liquidity constraints and the specification of correct consumption-saving models. In the canonical buffer-stock model, liquidity constraints reflect bad shocks or persistent impatience instead of self-control problems, and liquidity-constrained households would want more liquidity.[2] Recent evidence suggests that liquidity-constrained behavior reflects persistent characteristics rather than circumstances (Parker 2017; Gelman 2022). In particular, Gelman (2022) finds that people "cause" their constraints by spending their paychecks fast, which is quantitatively consistent with a model with self-control problems but not only with impatience. Unlike Gelman (2022), I show that liquidity-constrained households often restrict liquidity. As rare evidence of voluntary liquidity reductions, Olafsson and Pagel (2018) document an auxiliary result that low-liquidity households reduce overdraft limits after income payments but the authors do not elaborate on the result's economic significance. By contrast, I show that two-thirds of liquidity-constrained flexibility applicants reject thousands of euros in cheap liquidity.

My paper also provides the first evidence of households with little liquid wealth but high illiquid wealth voluntarily restricting liquidity, which supports a behavioral hypothesis for the existence of these wealthy-hand-to-mouth (WHtM) households (Kaplan and Violante 2014; Kaplan, Violante, and Weidner 2014).[3] The liquidity-constrained households in my data have, on average, 62,545 EUR of net housing equity despite negative net liquid assets. Behavioral WHtM models would explain such an asset composition–together with voluntary

[2]Models of buffer-stock behavior include Zeldes (1989), Deaton (1991), and Carroll (1997).

[3]Understanding the WHtM matters because of their ubiquity and responsiveness to economic stimulus.

liquidity restrictions–by mandatory debt repayments enabling saving in illiquid net housing equity for households with self-control problems (Laibson et al. 1998; Angeletos et al. 2001; Schlafmann 2020; Attanasio, Kovacs, and Moran 2020).[4] By contrast, my evidence is inconsistent with a model of the WHtM without self-control problems in which households prioritize the high returns on illiquid wealth at the cost of short-run liquidity constraints (Kaplan and Violante 2014). Whereas such households would value debt-repayment flexibility that alleviates short-run constraints while keeping the returns from illiquid assets, I find that liquidity-constrained homeowners often voluntarily restrict liquidity.

My findings imply less demand for voluntary mortgage-forbearance policies than standard models would predict. Such policies appeal theoretically because Campbell, Clara, and Cocco (2021) find that a maturity extension and the option only to pay interest in recessions–similar to my setting–stabilize consumption and decrease defaults. Yet Cherry et al. (2021) document that less than 10 percent of eligible mortgages entered forbearance after COVID-19 forbearance policies.[5] Unlike Cherry et al. (2021), I show that a lack of potential benefits does not explain my similarly low take-up because flexibility should benefit my liquidity-constrained households in the absence of self-control problems.

On the other hand, my results contrast with the "missing" commitment puzzle (Laibson 2015)–an empirical regularity that households rarely restrict their choice sets.[6] My setup may be conducive to commitment because households can commit implicitly and costlessly by forgoing maximum flexibility instead of needing to opt for explicit and "patronizing" behavioral restrictions (Afzal et al. 2019). Despite the "missing" commitment puzzle, Cho and Rust (2017) find that Koreans often forgo interest-free installment loans on credit cards or opt for quick repayment.[7] Unlike Cho and Rust, my data on liquid assets uncovers that voluntary liquidity restrictions do not only reflect well-off people with little need for more liquidity. Moreover, my high stakes relative to Cho and Rust make it unlikely that liquidity

[4]My results also accord with Bernstein and Koudijs (2021), who—while agnostic about the mechanism–document that increasing mandatory mortgage amortization increases wealth accumulation.

[5]Bandyopadhyay (2022) also documents low demand for mortgage forbearance.

[6]Commitment models include Laibson (1997), Gul and Pesendorfer (2001), Fudenberg and Levine (2006).

[7]Experiments in development economics have yielded mixed results on demand for flexibility versus commitment in debt repayment. For instance, Afzal et al. (2019) find flexibility does not increase take-up of microfinance loans, whereas in Barboni and Agarwal (2018) flexibility appeals to time-consistent and financially disciplined borrowers.

restrictions reflect transaction or mental accounting costs, which Cho and Rust consider as plausible alternatives to commitment for their findings.[8]

Finally, the traditional suspect for the excess sensitivity of consumption–liquidity constraints–cannot explain my consumption drop after the end of flexibility because households can smooth consumption by saving.[9] Ganong and Noel (2019) explain a consumption drop after the predictable end of unemployment benefits by naive present bias. Moreover, Shapiro (2005) and Gelman (2022) document decreases in food expenditure in periods of no income payments that are quantitatively inconsistent with exponential discounting. By contrast, my consumption drop together with voluntary liquidity restrictions points to households aware of their self-control problems. In addition, Jørring (2020) argues that households' obliviousness explains a consumption drop after an initial multiyear interest-only period on home-equity loans. Yet lack of knowledge cannot be a confounder in my setting: I study existing mortgage holders used to monthly principal payments explicitly choosing flexibility of one to twelve months. Finally, Baugh et al. (2021) find that high-liquidity households smooth consumption around predictable tax payments. I also find ex ante more liquid households decrease consumption less at the end of flexibility.

Section 2 presents the natural experiment of mortgage-payment flexibility. Section 3 presents the data. Section 4 describes the take-up of flexibility, the costs of flexibility restrictions, and applicant characteristics. Section 5 evaluates which mechanisms can explain my key findings. Section 6 concludes.

2 Natural Experiment: Mortgage-Payment Flexibility

This section describes the practice and theory of the offer of mortgage-payment flexibility.

[8]Installment loans in Cho and Rust (2017) average $287 in 2004–07, or 1.8 percent of household income, and the interest-free loans have a maximum maturity of twelve months. By contrast, the liquidity from my flexibility offer averages 7,446 EUR, or 26.8 percent of household income, and the mortgage maturity without flexibility averages 12.3 years, only after which households need to repay the liquidity from flexibility. Data on household incomes are from https://data.oecd.org/hha/household-disposable-income.htm.

[9]By contrast, ex-ante liquidity constraints can explain the excess sensitivity of consumption after a predictable liquidity *increase* (see, for instance, Johnson, Parker, and Souleles 2006).

2.1 Description of the Flexibility Offer

In February 2015, a Finnish bank offered its existing mortgage holders a free flexibility option to reduce minimum principal payments to zero for one to twelve months. If a borrower applied for flexibility, the default principal payment decreased to zero temporarily, and the bank extended the maturity of the mortgage. Borrowers would continue to pay interest during flexibility. Therefore, although the option of flexibility was free, exercising the option of not making principal payments during flexibility had a cost. All mortgage holders could apply for flexibility, and the bank ensured acceptance for all but the least creditworthy borrowers. The signup window lasted from early February to the end of June 2015.

The offer unambiguously increased borrower flexibility. Adjustable-rate mortgages–97 percent of all mortgages–allow free extra principal payments via a bank transfer from the debtor's deposit account to their mortgage account. Therefore, the offer only relaxed the constraint on the minimum principal payment, and even conditional on applying for flexibility, a household maintained the option to pay the mortgage on the original schedule.

The main application methods were two online forms that took a few minutes to complete and did not prejudice against maximum flexibility. In the first version of the form, the household selected the length of flexibility from a dropdown menu with options from one to twelve months without heterogeneous marketing regarding the different flexibility lengths. In the second (simplified) version of the form, households chose between the two main options of six months or twelve months of flexibility without heterogeneous marketing regarding the two options. If a household had multiple mortgages, the household needed to complete the first version of the form for each mortgage. By contrast, the second form allowed the household to select flexibility for each mortgage in one go.

The bank portrayed the offer as a benevolent relief to Finnish households after the financial and eurozone crises. The framing was likely credible because the bank is one of the largest in the country and has significant reputational capital, which reduces the concern that households were deterred from applying because of stigma associated with the policy. The bank's reputation also matters for validating the promise that the offer was free and immaterial to future credit access or cost of credit.

The flexibility offer was a major public campaign that included marketing by the bank and national media coverage. For instance, the largest national newspaper, *Helsingin Sanomat*, published the offer as its lead article (February 6, 2015). Searching for the name of the policy (*lyhennysvapaa*) returns twenty-six articles published during the application window in their digital archive.[10] The national broadcasting company Yle also covered the offer.

For the free flexibility offer to be beneficial, households must incur a cost for not paying minimum principal payments if they do not sign up. The penalty fee for missing a single payment is modest (in the range of 5–10 EUR), although recurring nonpayments will lead to debt collection. Moreover, missing payments can increase the cost of future credit or prevent new borrowing. Finally, my sample excludes households with payment arrears on debts or a bad debt rating that could have prevented access to flexibility. These restrictions on debt quality decrease my sample by only 3.8 percent, implying by revealed preference that households consider the minimum principal payments as binding.

2.2 Theoretical Framework for the Flexibility Offer

The flexibility offer presents a choice between different minimum-principal-payment constraints. Mortgages include a minimum monthly principal payment $P_{min} > 0$ to ensure the borrower repays the mortgage by the maturity date. Yet Finnish adjustable-rate mortgages do not restrict partial or full prepayment. Therefore, flexibility is a choice at time t between alternative principal-payment constraints on each mortgage: $P_{t+j} \geq P_{min}, j \in [1, 2, \ldots, 12]$ under no flexibility, and $P_{t+1}, \ldots, P_{t+j} \geq 0$ under flexibility of j months. Because the bank extends the maturity of the mortgage conditional on application, the minimum constraint after the potential flexibility period is the same in all scenarios, $P_{t+k} \geq P_{min}, k > j$.

Because flexibility increases choice, a household without self-control problems weakly prefers the choice-maximizing option of twelve-month flexibility on all mortgages.[11] A single-mortgage household can be indifferent between the maximum flexibility of twelve months and other options if the probability of needing flexibility in the twelfth month is

[10] https://www.hs.fi/haku/. I conducted the search on March 20, 2019.

[11] This weak preference holds if we abstract from any effort cost of application or extra principal payments (both otherwise free). In section 5, I discuss whether such effort costs can explain my findings.

zero ($\text{Prob}(P^*_{t+12} < P_{min}) = 0$)– that is, if not having flexibility does not constrain the optimal principal payment P^*. Conversely, even if the household does not immediately need flexibility ($\text{Prob}(P^*_{t+1} < P_{min}) = 0$), the household strictly prefers maximum flexibility if the probability of needing flexibility in the twelfth month is positive ($\text{Prob}(P^*_{t+12} < P_{min}) > 0$). Moreover, a household with multiple mortgages can be indifferent between taking flexibility on all mortgages versus on only some mortgages if the probability of needing additional flexibility is zero in all months ($\text{Prob}(P^*_{t+j} < P^{\text{partialFlexibility}}_{min}) = 0 \; \forall j \in [1, \ldots, 12]$).

Self-control problems can make it rational to restrict flexibility ex ante. If self-control problems reflect present-biased $\beta - \delta$ preferences (Laibson 1997), a household may act more impatiently in the future than the current self would want. Hence, the current self may want to restrict the flexibility of its future selves by enforcing $P_{t+j} \geq P_{min}$. If self-control problems reflect temptation preferences (Gul and Pesendorfer 2001), flexibility generates a temptation cost because of the increase in maximum consumption. A household can avoid this additional temptation cost by committing to strictly positive minimum principal payments.

Yet self-control problems rationalize flexibility restrictions only if the benefits exceed the costs (Laibson 2015) and if households realize their self-control problems. First, restricting flexibility is only relevant for households aware of their self-control problems (the sophisticated) because unaware households (the naive) see no value in commitment. Second, the costs and benefits of flexibility occur mainly via changes in the intertemporal distribution of consumption. Flexibility can worsen the intertemporal distribution of consumption if households with self-control problems overconsume relative to future income. Conversely, flexibility improves the intertemporal distribution of consumption if liquidity or credit constraints restrict current consumption relative to future income. Finally, flexibility generally affects little total lifetime consumption because lifetime income does not change.[12]

A household with self-control problems may restrict flexibility, first, by not taking flexibility on all mortgages. Consider a constrained $\beta - \delta$ household that cannot consume without flexibility as much as its permanent income would allow in the potential flexibility period j: $c^{\max}_j < c^*_{\text{permInc}}$, in which c^*_{permInc} is the desired consumption by the current

[12]Frontloading consumption via flexibility can negatively affect total lifetime consumption because frontloading has an interest cost. By contrast, the net effect can be positive via a decrease in the average debt interest rate if households use low-cost flexibility to repay higher-cost debt.

self. The constrained household benefits from flexibility Δ^* that equates consumption in the potential flexibility period with desired consumption: $c_j^{\Delta^{\text{taken}}=\Delta^*} = c^*_{\text{permInc}}$. Yet the total available flexibility can exceed the optimal amount: $\Delta^{\text{available}} > \Delta^*$. Consequently, a single-mortgage household with self-control problems may forgo all flexibility if overconsumption ($c_j^{\Delta^{\text{taken}}=\Delta^{\text{available}}} > c^*_{\text{permInc}}$) is worse than underconsumption ($c_j^{\max} < c^*_{\text{permInc}}$). Moreover, a household with self-control problems and multiple mortgages can take flexibility on only some mortgages to avoid overconsumption: $\Delta^{\text{taken}} \approx \Delta^* < \Delta^{\text{available}}$.[13]

Alternatively, people may restrict flexibility by taking short flexibility of less than twelve months. Short flexibility has two potential benefits for a household with self-control problems: i) it enables higher current consumption consistent with short-run impatience, and ii) it restricts future overconsumption. The planning horizon of the household affects its desire to restrict the length of flexibility. If a present-biased household with utility $U_t = u_t + \beta \sum_{k=1}^{T} \delta^k u_{t+k}$ has a present period lasting for over a year, even maximum-length flexibility happens entirely in the present, and the household heavily discounts the future costs of present overconsumption. Hence, a household with a long present is unlikely to restrict the length of flexibility. Conversely, suppose the present period lasts only one month, and flexibility starts next month. In that case, flexibility occurs entirely in the future, and the household discounts the costs and benefits of flexibility similarly. Hence, if resources do not constrain desired consumption over the potential flexibility period, a short present rationalizes forgoing all flexibility to avoid overconsumption. Between the extremes, households with an intermediate-length present period benefit from short flexibility that increases consumption in the next few months but prevents overconsumption further in the future.

3 Data

This section describes the data and the sample selection and representativeness.

[13] By contrast, households with self-control problems would struggle to make intermediate principal payments after taking flexibility on all mortgages. Whereas self-control problems allow restricting future choices, they hamper restricting current consumption via voluntary payments.

3.1 Proprietary Bank Data

I have customer microdata from the bank that provided the flexibility offer.[14] I link individuals in the same household with an address-based identifier. In addition to demographics, my data include information on assets, debts, income, and card expenditure.

Assets: I observe deposit balances and other financial assets held at the bank. I also observe the value of the property underlying the mortgage.

Debts: I observe mortgage and other debt held at the bank. Mortgage data include the balance, the interest rate, and scheduled minimum principal payments.

Income: I observe net income payments to bank accounts from July 2014 onwards. To validate this income measure, I compare it with administrative income data from the tax authority in 2015. Supplementary table A.1 shows that both measures imply a similar income distribution for my sample households. I favor the (monthly) data on net income payments to bank accounts because of its availability immediately before the flexibility offer. By contrast, I have (annual) tax-authority-income data only for 2012 and 2015. I also have tax-refund data for 2012 that identifies individuals who receive tax refunds and, conditional on a positive tax refund, the percentile rank of the tax refund (but not the EUR amount).

Consumption: I observe purchases with debit and credit cards issued by the bank by store category (for instance, grocery store, gas station). I create measures of total nondurable spending and restaurant spending to proxy consumption.

Appendix A details the variable definitions.

3.2 Sample Selection and Representativeness

I need to identify households with a mortgage for whom the flexibility offer is relevant. Therefore, I require households to have a mortgage with at least one year to maturity in the baseline month of January 2015 (preceding the flexibility offer in February 2015) and at least 100 EUR in monthly minimum principal payments over the potential flexibility period. I omit bullet mortgages without regular principal payments and fixed-rate mortgages that may restrict free extra principal payments. I also require that the mortgage have a property

[14] Vihriälä (2022) uses data from the same bank to study the credit card debt puzzle.

collateral owned by the household, the borrower be alive and not in a trusteeship, and age and municipality be not missing. Finally, I drop entrepreneurs not to mix business and personal accounts. These minimum sample criteria identify 265,317 households.

Because I only observe assets, debts, and expenditure within the bank, I need to ensure my data does not capture only a small subset of customer finances. Fortunately, my focus on households with a mortgage reduces the concern because Finnish mortgage lenders ask borrowers to transfer all finances to the lender. To further ensure that I capture most of the customers' finances, I drop a household if any member states that they have a different main bank in regular surveys that Finnish law mandates banks to conduct to know their customers. I also require that the two oldest adults make regular card purchases over 2014–16[15] and that the average monthly net income flows to bank accounts be at least 500 EUR from July 2014 to January 2015. These restrictions leave 179,043 households.

Finally, although all mortgage holders could apply for flexibility, the bank imposed restrictions on automatic approval for a small minority of customers. Therefore, I omit households with payment difficulties or a bad debt rating to drop potentially involuntary restrictions on flexibility. These restrictions identify my baseline sample of 172,176 households.

I create a subsample to study household behavior over time regarding, for instance, consumption. The time-series analyses rely on 143,740 *stable* households that include couples who stay together and singles who remain single from June 2014 to December 2016.

Table 1 describes the baseline sample. The mortgage balance averages 97,752 EUR, and the minimum principal payment averages 620 EUR per month. Hence, households can obtain, on average, 7,446 EUR of liquidity from maximum flexibility.[16]

Supplementary table A.2 considers the representativeness of my data. My baseline sample contains 19.7 percent of households with a mortgage in Finland. My sample slightly overweights younger borrowers and underweights the capital region (Helsinki-Uusimaa). My sample means for deposit balances, income, and property value are somewhat lower than in the population. Although differences in definitions between the data sources can matter, part of the financial differences likely reflect my data overweighting (relatively poor) young

[15]Purchases in 8+ months per year and average monthly purchases of at least 100 EUR per year.

[16]Table 1 does not allow a calculation of the saving rate because the spending data is incomplete due to only including card expenditure.

households and underweighting the (relatively affluent) region of Helsinki-Uusimaa.

4 Take-Up of Mortgage-Payment Flexibility

This section describes flexibility take-up, the costs of restricting flexibility, and applicant characteristics.

4.1 Take-Up Overall and by Ex-ante Liquidity Constraints

Overall, 23 percent of households apply for a strictly positive amount of flexibility (table 1). Yet because applicants often take flexibility on only some mortgages or short flexibility, the take-up rate as a share of total available flexibility is only 15 percent. I can disaggregate this take-up rate roughly into the share of mortgages on flexibility times the conditional flexibility length as a share of the maximum twelve months: $0.15 \approx 0.19 \times (9.3/12)$.[17]

Flexibility should particularly benefit liquidity-constrained households that could use the additional liquidity to increase consumption or to repay higher-interest debt. By contrast, not taking flexibility would be unsurprising in the case of unconstrained households with plenty of ex-ante liquidity. I define a household as liquidity constrained if the household has negative net liquid assets (interest-paying unsecured debt exceeding deposit balances) in January 2015 before the flexibility offer.[18] By definition, these liquidity-constrained households could not have fully repaid their high-cost debt before the flexibility offer.[19] Hence, they should strictly benefit from low-cost (mortgage) flexibility by repaying high-cost debt.

Table 2 summarizes the take-up of flexibility by ex-ante liquidity, and figure 1 presents the distribution of take-up for all households, liquidity-constrained households, and applicants. I find that 62 percent of liquidity-constrained households do not apply for any flexibility. Moreover, conditional on application, 65 percent (9,904/15,308) of liquidity-constrained households take less than maximum flexibility. The forgone flexibility by liquidity-constrained

[17]The approximation is not exact because the probability of taking a flexibility policy on a mortgage depends on the size of the principal payment.

[18]I omit zero-interest transaction balances on credit cards.

[19]This inability to repay high-cost unsecured debt differentiates liquidity constraints from the co-holding of low-interest deposits and high-cost debt (credit card debt puzzle). Vihriälä (2022) shows that co-holding households tend to have high liquidity in contrast to liquidity-constrained households.

applicants restricting flexibility averages 4,069 EUR, or, 48 percent of the total available.

Figure 1 reveals that–in addition to clustering at no flexibility and maximum flexibility–many households take roughly half of the available flexibility. This finding reflects that the dominant short flexibility length is six months (supplementary figure A.1). The likely reason is that the bank promoted six and twelve months as the main options (section 2.1).

4.2 Costs of Restricting Flexibility to Persistently Liquidity-constrained Households

The financial costs of restricting flexibility for liquidity-constrained households equal the forgone interest-rate savings from not using low-cost mortgage debt to repay high-cost unsecured debt. This financial cost is a lower bound for the true cost of restricting flexibility in a standard model because it ignores other adjustment margins such as consumption or labor supply. Moreover, although my sample selects households that use the bank for which I have data as their main bank, any unobserved unsecured debts–for instance, payday loans not provided by the bank–would weakly increase the financial costs of restricting flexibility.

The financial cost has two main components: i) the unsecured debt that flexibility would allow to repay, and ii) the interest-rate difference by type of debt:

$$\text{forgoneSavings} = \min(\text{flexibilityForgone}, \text{unsecuredDebt}) * (r_{\text{unsecuredDebt}} - r_{\text{mortgage}}) + \theta. \quad (1)$$

Here flexibilityForgone is the forgone liquidity by not applying for maximum flexibility, unsecuredDebt is interest-paying unsecured debt, and θ are the avoidable invoicing fees if the additional liquidity sufficed to fully repay interest-paying unsecured debt.[20]

Calculating the interest-paying unsecured debt in equation (1) differs between households not applying for flexibility and applicants restricting flexibility. For non-applicants, I use the average interest-paying unsecured debt from February 2014 to January 2015. This long-term average is preferable to using debt right before the flexibility offer that might overstate typical unsecured debt because my sample of liquidity-constrained households conditions on negative net liquid assets in January 2015. By contrast, for applicants, I use interest-paying

[20]The bank charges an invoicing fee conditional on a positive interest-paying unsecured debt balance.

unsecured debt in the first month after flexibility ends, which accounts for the possibility that applicants use some of the flexibility they did apply for to reduce unsecured debt.

Table 3 presents the distribution of forgone savings by liquidity-constrained households restricting flexibility. This lower-bound cost for applicants restricting flexibility averages 162 EUR annually, or 0.4 percent of annual disposable income (higher for non-applicants).[21] These costs reflect the persistence of liquidity constraints: 79 percent of liquidity-constrained households in January 2015 who restrict flexibility were constrained already in June 2014, and 74 percent remain constrained in June 2016 after the conclusion of all flexibility policies (figure 2 panel A). Moreover, the overall propensity of liquidity constraints among applicants restricting flexibility does not materially change after the flexibility offer (figure 2 panel B). The persistence of liquidity constraints reflects that applicants restricting flexibility do not reduce high-cost unsecured debt with low-cost mortgage debt after the flexibility offer (supplementary figure A.2). By contrast, if liquidity constraints in January 2015 had been transitory, flexibility restrictions would not have had significant costs. Finally, if these annual savings persisted until mortgage maturity, the cumulative costs for applicants restricting flexibility and non-applicants would be 1,651 EUR and 2,170 EUR, respectively.

4.3 Characteristics of Flexibility Applicants

Table 4 compares households that take no, some, or maximum flexibility to identify differences in characteristics by cohort.[22] A key difference is that non-applicants have more liquidity before the flexibility offer (higher deposit balances and less interest-paying unsecured debt). Ex-ante liquidity is a key predictor of application also in a linear-probability model that controls for other household characteristics (supplementary table A.3). Moreover, the mortgage interest rate correlates negatively with application, likely because a higher

[21] This lower-bound cost is similar to the costs of many other extensively studied puzzles in household finance. For instance, regarding the credit card debt puzzle (the simultaneous holding of high-interest credit card debt and low-interest liquid deposits) Gorbachev and Luengo-Prado (2018) estimate average annual costs between 307–426 USD (or 0.4–0.5 percent of annual income). Second, Gathergood et al. (2019) find that the failure of households with multiple credit cards to prioritize repayments on the highest-cost credit card implies an average annual cost of £104 (the data do not allow to compare this cost to annual income).

[22] I underestimate household size because I observe only customers of the bank. The bank has records on 52 (78) percent of children (adults) in Finland. I should observe a larger share of both because I study households for whom the bank is their main bank.

interest rate increases the costs of flexibility if the household delays mortgage repayment.

Table 4 also documents key similarities and differences between maximum-flexibility applicants and applicants restricting flexibility. First, the similarity in deposit balances and unsecured debt is initial evidence that applicants restricting flexibility do not seem to need flexibility less than maximum-flexibility applicants. Second, applicants restricting flexibility have more mortgage contracts than maximum-flexibility applicants. Yet the choice of flexibility length contributes more to flexibility restrictions than applying for flexibility on only some mortgages. Whereas applicants restricting flexibility take flexibility on 77 percent of their mortgages, the average conditional flexibility length of 7.8 months equals only 65 percent of the maximum twelve months. Therefore, "forgetting" to apply for flexibility on some mortgages does not explain the restrictions.[23] Finally, observable characteristics seem to–in general–explain little of the heterogeneity in flexibility take-up among applicants given the low R-squared of 0.11 in my predictive regression model (supplementary table A.4).

5 Understanding Voluntary Flexibility Restrictions

Forgoing all flexibility can reflect a default-option effect because households may be, for instance, inattentive to the offer. Moreover, households with high ex-ante liquidity or small principal payments may consider the effort of applying to outweigh the small liquidity benefits from flexibility. Hence, this section focuses on why two-thirds of applicants restrict flexibility despite being attentive and making an effort to apply. I also consider which hypotheses can explain two other key findings: the persistence of liquidity constraints and the consumption drop at the predictable end of flexibility.

5.1 Commitment to Mandatory Debt Repayment

Commitment to mandatory debt repayment because of self-control problems can explain restricting flexibility ex ante to alleviate overconsumption (section 2.2). Self-control problems can also explain the second key finding regarding persistent liquidity constraints (section 4.2) because self-control problems hamper the repayment of credit card debt that allows

[23] All my findings hold if I only consider short flexibility policies as voluntary liquidity restrictions.

reborrowing. The high short-run discount rate due to self-control problems can also explain the third key finding–documented in this section–that households restricting flexibility decrease consumption discontinuously at the predictable end of flexibility in a sign of overconsumption. Moreover, commitment can explain an additional finding: voluntary flexibility restrictions correlate with saving in other illiquid assets such as illiquid deposit accounts and delayed tax refunds.

5.1.1 Consumption at the End of Flexibility

Theory of Consumption Smoothing at the End of Flexibility Flexibility provides a rare test of consumption smoothing in anticipation of a predictable decrease in liquidity. When flexibility ends, the constraint on the minimum principal payment reverts from zero to a strictly positive amount. Yet a household can save during flexibility to smooth consumption once flexibility ends. Hence, unlike with a predictable increase in liquidity, ex-ante liquidity constraints do not prevent consumption smoothing at the end of flexibility.

Models with and without self-control problems generate different predictions about consumption at the predictable end of flexibility. Whereas a household with no self-control problems should smooth consumption at the end of flexibility, the high short-run discounting by households with self-control problems can lead to a discontinuous consumption drop.

Because the end of flexibility is predictable, the Euler equation determines the consumption path for a household with exponential discounting and no self-control problems:

$$u'(C_{flex}) \geq \delta R_{liq} \mathbb{E}[u'(C_{post-flex})], \tag{2}$$

in which C_{flex} refers to consumption in the last month of flexibility, and $C_{post-flex}$ refers to consumption in the first month after flexibility. With no uncertainty, a zero interest rate, and constant relative risk aversion (CRRA) utility,

$$\frac{C_{post-flex} - C_{flex}}{C_{flex}} \geq \delta^{1/\rho} - 1, \tag{3}$$

in which ρ is the coefficient of relative risk aversion in the CRRA utility function $\frac{C^{1-\rho}}{1-\rho}$.

Supplementary table A.5 provides a benchmark for the subsequent empirical results by presenting monthly consumption decreases at the end of flexibility for different parameter

values in a model without self-control problems. Consumption decreases little with typical parameter values because even a high annual exponential discount factor corresponds to little monthly discounting. For instance, with log utility and an annualized $\delta = 0.95$, the monthly consumption drop is less than 0.5 percent. Furthermore, these estimates overestimate the expected consumption drop because they abstract from uncertainty (and interest rates).[24]

By contrast, self-control problems can explain larger consumption drops. Following Harris and Laibson (2001) while abstracting from uncertainty and interest rates, the Euler equation of a sophisticated $\beta - \delta$ household with a monthly planning horizon is

$$C_{flex}^{-\rho} \geq [C'_{post-flex}(W_{post-flex})\beta\delta + (1 - C'_{post-flex}(W_{post-flex}))\delta]C_{post-flex}^{-\rho}, \tag{4}$$

in which $C'_{post-flex}(W_{post-flex})$ is the marginal propensity to consume from liquid wealth.

The additional discount factor β between the present and all future periods allows the $\beta-\delta$ model to explain significant short-run consumption decreases if the household is close to its borrowing constraint and has a high marginal propensity to consume. At the extreme, if $C'_{post-flex}(W) = 1$, then $\frac{C_{post-flex}-C_{flex}}{C_{flex}} \geq (\beta\delta)^{1/\rho} - 1$. With log utility, $\delta = 1$, and a monthly $\beta = 0.95$, consumption decreases by five percent in the first month after flexibility.

Results on Consumption Smoothing at the End of Flexibility I study consumption smoothing at the end of flexibility with an event-study regression in which I compare the consumption change for flexibility applicants with a matched sample of control households. The matched sample controls for the seasonal and overall macroeconomic variation in spending. I form the baseline matched sample of controls from households without a mortgage ineligible for flexibility (appendix B). In sensitivity checks, I consider a matched sample of non-applicant households with a mortgage as controls. The validity of the controls requires that the end of flexibility be the only major change with heterogeneous effects on the monthly consumption of flexibility applicants and controls at the end of flexibility.

The estimation equation is:

[24]Uncertainty increases precautionary savings, which reduces the expected consumption drop after the end of flexibility relative to no uncertainty. A positive interest rate increases $C_{post-flex}$ because saving becomes more valuable (although interest rates were low in the sample period).

$$y_{i,c,t,p} = \alpha_i + \lambda_t + \sum_{p=e-j}^{e+j, p \neq e} \delta_p \mathbf{1}_{c=flexibility} \mathbf{1}_{period=p} + \\ \delta_{early} \mathbf{1}_{c=flexibility} \mathbf{1}_{period<e-j} + \delta_{late} \mathbf{1}_{c=flexibility} \mathbf{1}_{period>e+j} + \epsilon_{i,c,t,p}, \tag{5}$$

in which y measures consumption, c refers to the cohort (flexibility or control), α_i are household fixed effects, and λ_t are common month-year fixed effects. The symbol e refers to the last month of flexibility, which is the omitted baseline month. The δ_p coefficients capture the consumption of applicants relative to control households in a window of $[-j, \ldots, j]$ months relative to the end of flexibility. I measure consumption with total nondurable expenditure or restaurant expenditure. The dependent variable is $\log(\text{consumption} + 1)$ to approximate a percentage change in consumption. I prefer percentage changes to EUR changes because my card-expenditure data does not cover total expenditure, and hence EUR changes are not easy to interpret. The regression sample covers monthly consumption from July 2014 to December 2016 for the subsample of stable households.

My main consumption-smoothing estimates pertain to households restricting flexibility who indicate a potential desire for commitment and for whom potential confounding effects on consumption at the end of flexibility are small. I only consider applicants for flexibility of either six or twelve months to, first, omit households applying for very short flexibility policies that hinder a pre-trend analysis of consumption before the end of flexibility. Second, omitting applicants for idiosyncratic flexibility lengths–while not changing the results qualitatively–alleviates the concern that the choice of flexibility length reflects specific circumstances, such as a planned parental leave, that affect the marginal utility of consumption at the end of flexibility. By contrast, the clustering of households at six and twelve months (supplementary figure A.1) likely reflects that the bank promoted these as the main options (section 2.1), which alleviates potential household-specific confounding effects on consumption in the month that flexibility ends.

Figure 3 panel A shows that consumption decreases, on average, by 1.8 percent for applicants restricting flexibility in the first month after the predictable end of flexibility. The discontinuous consumption drop occurring in the exact month that flexibility ends alleviates

concerns that the consumption drop would reflect confounding household-specific circumstances affecting the marginal utility of consumption around the end of flexibility. Nor can liquidity constraints by themselves explain the consumption drop because even credit-constrained households can smooth consumption at the end of flexibility by saving during flexibility. By contrast, the consumption drop at the end of flexibility validates restricting flexibility ex ante to restrict overconsumption.

Consistent with the consumption drop reflecting self-control problems, figure 3 panel B documents a larger consumption drop for ex-ante-liquidity-constrained households with negative net liquid assets before the flexibility offer. These households cut consumption by 2.3 percent in the first month after flexibility (versus 1.5 percent for households with positive net liquid assets before the flexibility offer). Although the monthly confidence intervals overlap, table 5 shows that the difference in the average consumption change between the two groups is statistically significant over the first three months after flexibility relative to the last three months of flexibility. If liquidity constraints reflected bad temporary circumstances, differences in liquidity before the flexibility offer should not predict consumption changes at the end of flexibility because everyone can smooth consumption by saving during flexibility. By contrast, heterogeneity in the degree of self-control problems can explain differences in both ex-ante liquidity and consumption at the end of flexibility.

The consumption drop at the end of flexibility holds in alternative specifications. First, the point estimate for restaurant spending suggests an even larger drop (supplementary figure A.3). Second, the consumption drop holds also if I change the control group to a matched sample of non-applicant households with a mortgage (supplementary figure A.4). Finally, supplementary figure A.5 shows that also maximum-flexibility applicants cut consumption at the predictable end of flexibility. If the consumption drop is consistent with self-control problems, why do these households not commit to mandatory debt repayment by restricting flexibility ex ante? As explained in section 2.2, maximum flexibility can be optimal despite self-control problems i) if current resources are low relative to expected lifetime income, or ii) if maximum-flexibility applicants are naive about their self-control problems leading them not to value commitment.[25] In both cases, the high short-run impatience due to self-control

[25]Households can choose maximum flexibility despite self-control problems also if they consider the entire

problems can rationalize significant consumption drops after the end of flexibility.

For completeness, figure 4 estimates the full consumption profile for applicants for six or twelve-month flexibility relative to the last month before flexibility using a similar regression to equation (5).[26] The consumption increase at the beginning of flexibility is unsurprising because flexibility relaxes ex-ante liquidity constraints. Yet my setup relying on matching instead of randomization precludes strong causal statements regarding the effect of flexibility on the overall consumption profile. First, the increasing consumption by applicants for six-month flexibility during flexibility (from month 0 to month 5) can reflect self-selection.[27] For instance, households applying because of transitory income shocks can increase consumption faster than control households due to mean reversion.[28] Indeed, supplementary figure A.6 shows that applicants for six-month flexibility experience faster income growth during flexibility than controls. Second, potential self-selection effects also preclude a causal statement about the net effect of flexibility on consumption in the months after the end of flexibility. By contrast, my high-frequency test of self-control problems–whether consumption significantly decreases when flexibility ends–is immune to gradual differences between flexibility applicants and controls. If anything, the gradual differences in income growth strengthen the evidence for overconsumption during flexibility because consumption drops at the end of flexibility despite the increasing income profile.

Finally, I find that applicants finance the consumption increase during flexibility by reducing mortgage debt repayment. In my alternative matched sample of households with a mortgage, applicants and non-applicants reduce mortgage debt and total debt at a similar pace before the flexibility offer, but the behavior of the two groups diverges afterward (figure 5). Consequently, both the consumption and debt evidence suggest that households do not undo the effects of flexibility via transactions on other accounts. Instead, flexibility leads to

flexibility period as part of the "present" about which they are impatient (section 2.2). Yet this explanation would predict smooth consumption because–in the last month of flexibility–both the last month of flexibility and the first month after flexibility would be part of the same "present" period.

[26]The rarity of flexibility lengths other than six or twelve months (supplementary figure A.1) precludes precise estimation of the full consumption path for applicants for idiosyncratic flexibility lengths.

[27]This increasing profile might be surprising because the high impatience caused by self-control problems would intuitively suggest that consumption should peak immediately after the start of flexibility.

[28]Moreover, the consumption increase from the first flexibility month to the second could reflect people unsure about the need to make principal payments at the beginning of the first flexibility month.

a temporary consumption increase at the cost of higher future debt.

5.1.2 Restricting Flexibility, Other Illiquid Savings, and Temptation Spending

Although commitment because of self-control problems can explain the three key findings, I also study whether saving in other illiquid assets and measures of temptation spending before the flexibility offer predict the take-up share of flexibility. I add to the baseline ordinary-least-squares model of flexibility take-up (supplementary table A.4) information predating the flexibility offer on gambling and alcohol spending, deposit balances held outside checking accounts, and tax-refund data on the highest-earning individual within the household.[29]

If restricting flexibility serves as a commitment to save in illiquid net housing equity, restricting flexibility should correlate positively with my two other forms of illiquid savings enabling commitment already before the flexibility offer. First, I consider the correlation between restricting flexibility and keeping deposits in non-checking accounts. Unlike checking accounts, non-checking accounts have varying withdrawal restrictions. Fixed-term deposit accounts do not allow any intra-term withdrawals, whereas other non-checking accounts allow up to four free withdrawals per year. Moreover, people cannot attach a payment card to non-checking accounts. Hence, non-checking accounts are less liquid than checking accounts by reducing liquidity available for expenditure (even if not always fully illiquid). Second, I consider the correlation between restricting flexibility and saving in delayed tax refunds paid out in December (until 2018) before the high holiday-expenditure needs. These delayed tax refunds are fully illiquid until December because people cannot reclaim in advance excess tax payments or use delayed tax refunds as collateral for loans from financial institutions.

The correlation between temptation spending and flexibility restrictions is a priori more ambiguous. Gambling and alcohol spending can create a demand for commitment for sophisticated households who consider these behaviors harmful in the long run. On the other hand, high alcohol and gambling expenditure may only reflect a high preference for current versus future consumption (instead of self-control problems), or households may be naive about their self-control problems. In these cases, households with high alcohol and gambling expenditure would prefer maximum flexibility to frontload consumption as much as possible.

[29]The only tax-refund data I have before the flexibility offer is from 2012.

I find that other illiquid savings before the flexibility offer correlate positively with subsequent flexibility restrictions (table 6), consistent with the same set of households using multiple methods to restrict overconsumption. Households with a higher share of deposit balances in less liquid accounts in January 2015 apply for less flexibility. Similarly, households in the top half of tax refunds in 2012 apply for less flexibility than the omitted baseline category of households not receiving tax refunds.[30] All regressions control for a rich set of household observables to reduce omitted-variable-bias concerns. By construction, all applicants are also attentive to the offer and make an effort to apply. Yet I cannot rule out unobservable characteristics other than a desire for commitment that might correlate with restricting flexibility and the propensity to save in other illiquid assets.

Because of worries about omitted variable bias, I consider plausible reasons for saving in illiquid deposits or receiving significant tax refunds unrelated to a desire for a saving commitment. First, a higher interest rate does not explain holding deposit balances outside checking accounts because yields on all deposit accounts were near zero percent in 2015. Second, households may receive tax refunds in 2012 if their income decreased from 2011 to 2012, but they did not change the withholding rate. I cannot control for income changes from 2011 to 2012 because I do not have income data for 2011. Yet I find it unlikely that the income change from 2011 to 2012 would affect the take-up share of flexibility in 2015 conditional on income in 2012, net income flows to bank accounts before the flexibility offer, and other financial characteristics of the applicants before the flexibility offer. Finally, Gelman et al. (2022) rationalize high tax withholding as a precaution even without self-control problems because US households incur a cost if they withhold less than the (uncertain) tax liability. Yet Finns can make free extra tax payments after the fiscal year when they know the exact tax liability and before they incur any interest costs for under-withholding. Therefore, the model of Gelman et al. (2022) would not predict over-withholding in Finland.

Though statistically significant, the relationship between other illiquid savings and the take-up share of flexibility is quantitatively modest. Being in the top half of tax refunds

[30]By contrast, households in the bottom half of tax refunds do not apply, on average, for less flexibility than households receiving no tax refunds. Yet many tax refunds are negligible and unlikely to reflect a savings commitment (81 percent of households in my sample receive a refund). For instance, in 2015, positive tax refunds averaged 670 EUR nationally (Finnish Tax Authority). My data only includes the percentile rank of tax refunds; hence, I cannot calculate equivalent monetary statistics for my sample.

decreases the take-up share of flexibility by 1.2 percent relative to the mean take-up share. As explained, tax refunds in 2012 can partly reflect income changes from 2011 to 2012. While not a plausible reason for restricting flexibility conditional on my household controls, these historical income changes increase the variance in tax refunds for reasons unrelated to a desire for commitment, which attenuates any commitment effect. Furthermore, even going from only checking-account deposits to only *non*-checking-account deposits would change the predicted take-up share of flexibility by only 2.3 percent relative to the mean take-up share. This small effect likely reflects that the non-checking accounts provide only limited commitment benefits: although non-checking accounts do not allow access to the funds via a payment card, many non-checking accounts allow periodic free withdrawals.

The correlations between the measures of temptation spending and the take-up share of flexibility are more mixed, consistent with the ambiguous a priori hypothesis. I find that gambling spending in the second half of 2014–measured as a dummy because of the relative rarity of gambling–predicts less take-up of flexibility. Yet alcohol spending as a share of total spending is a statistically insignificant predictor of restricting flexibility. These mixed results can reflect that my measures of temptation spending partly capture a higher preference for current consumption (but not self-control problems), or, that some households engaging in such expenditure are naive about their self-control problems.

The results remain the same if the dependent variable is the maximum length of flexibility in months instead of the take-up share of available flexibility. Households gambling, favoring illiquid deposits, or with high tax refunds take shorter flexibility (supplementary table A.6).

5.2 Alternative Explanations

This section considers whether alternative hypotheses can explain the three key findings regarding the voluntary liquidity restrictions by liquidity-constrained households, the persistence of liquidity constraints, and the consumption drop at the predictable end of flexibility.

5.2.1 No Need for Additional Flexibility and Status Quo Bias

Applicants restricting flexibility might not need additional flexibility or at least need it less than maximum-flexibility applicants. If needing additional flexibility is unlikely, applicants may prefer to restrict flexibility ex ante to avoid the small inconvenience of extra principal payments later (because the default principal payment under flexibility is zero).[31] Choosing as little flexibility as essential would also allow households with a status quo bias to keep their principal payments closer to a potential reference level.

If applicants restricting flexibility needed flexibility less than maximum-flexibility applicants, the former group should be financially less fragile. Yet figure 2 panel B shows that the two groups are equally likely to be liquidity constrained before the flexibility offer. Moreover, the similar trends in the propensity of liquidity constraints before the offer suggest little role for liquidity shocks in explaining flexibility restrictions. Finally, I find no relationship between changes in income flows to bank accounts before the flexibility offer and the take-up of flexibility, inconsistent with individuals with worse income shocks applying for more flexibility (supplementary table A.7).

Alternatively, liquidity-constrained applicants restricting flexibility might anticipate a future liquidity increase rendering additional flexibility useless. Yet the finances of applicants restricting flexibility do not significantly improve in absolute terms or relative to maximum-flexibility applicants. In particular, the propensity of liquidity constraints among applicants restricting flexibility is almost constant and mostly above the rate for maximum-flexibility applicants (figure 2 panel B). These liquidity-constrained applicants would strictly benefit from more flexibility in a standard model by reducing unsecured debt and total interest costs (table 3). These persistent liquidity constraints are inconsistent with a lack of need for additional flexibility but consistent with self-control problems preventing applicants from using flexibility to repay unsecured debt that allows reborrowing (supplementary figure A.2).

Although we cannot observe what households restricting flexibility would do with more flexibility, the lack of voluntary principal payments during flexibility suggests that they at least need the flexibility they apply for (supplementary table A.8). After the first flexibility

[31] Households can make extra principal payments with a simple online bank transfer to their mortgage account (similar to transferring funds between two deposit accounts).

month, only 6 percent of mortgages on six-month flexibility–the main type of flexibility restriction–experience any principal payments during the rest of flexibility.[32] Self-control problems can explain the lack of voluntary principal payments which would require restricting current consumption. That said, the lack of extra payments conditional on application can also partly reflect that well-off people with little prospective benefits of flexibility prefer not to apply for any flexibility ex ante instead of making extra payments ex post. Hence, the application decision may act as an exclusionary filter of people who would make extra payments if flexibility was imposed on them.

Finally, not needing additional flexibility cannot explain the consumption drop at the end of flexibility. A temporary liquidity need, such as a house renovation, could explain a drop in total expenditure but not a drop in consumption such as dining out less.

5.2.2 Supply of Flexibility

Flexibility restrictions could reflect a supply effect if some bank branches discouraged maximum flexibility. Yet the main application methods were two online forms that included the option of maximum flexibility without prejudice (section 2.1). Furthermore, the model predicting the take-up of flexibility that includes fixed effects for bank branch and application week–capturing potential differences in policies between branches and over time–explains little of the variation in flexibility take-up (an adjusted R^2 of 0.11 in supplementary table A.4). Finally, bank policies regarding the supply of flexibility do not explain the persistence of liquidity constraints or the consumption drop at the end of flexibility.

5.2.3 Debt Aversion or Rush to Finish Mortgage Payments

Debt aversion reduces the value of flexibility because reducing principal payments leads to higher debt. Therefore, debt-averse households might be less willing to exercise the option of delaying principal payments. Yet debt aversion does not–in theory–explain forgoing the *option* of additional flexibility ex ante. In a model in which debt generates a utility penalty, households would still benefit from the option of additional flexibility, which they could undo by making extra principal payments. Crucially, debt-averse households would not

[32] I focus on post-first months of flexibility because principal payments in the first month can reflect inertia.

struggle to make these extra principal payments because–unlike self-control problems–debt aversion does not imply time inconsistency. Empirically, applicants restricting flexibility do not seem particularly debt averse because they have more debt than maximum-flexibility applicants (table 4). Moreover, debt aversion seems inconsistent with the high propensity and persistence of liquidity constraints among applicants restricting flexibility (figure 2). That said, even if debt aversion contributed to flexibility restrictions, it would also imply self-imposed liquidity constraints that reduce the potency of debt-forbearance offers (similarly to commitment).

Alternatively, households might choose as little flexibility as essential not to delay the non-pecuniary benefits from the approaching completion of their mortgage payments. Yet flexibility does not seem less essential to applicants restricting flexibility than to maximum-flexibility applicants (section 5.2.1). Moreover, by comparing minimum principal payments to outstanding mortgage balances in table 4, we see that applicants restricting flexibility are equally far off from repaying their mortgage as maximum-flexibility applicants (roughly 14 years on average for both groups). Given the long remaining maturities, avoiding a further delay of a few months is an unlikely reason to restrict flexibility.

Finally, debt aversion or a rush to finish mortgage payments do not explain the consumption drop at the end of flexibility.

5.2.4 Low Financial Sophistication or Mistaken Beliefs

Low financial sophistication can contribute to flexibility restrictions if households misinterpret the offer or are uncertain about the consequences of applying for flexibility. Uncertainty about the offer might lead risk-averse people to choose as little flexibility as essential. Yet flexibility does not seem less essential to applicants restricting flexibility than to maximum-flexibility applicants (section 5.2.1). Second, although my data do not measure financial sophistication, I can study decisions by employees of the bank providing the flexibility offer (N = 6,377). Bank employees should be financially sophisticated and understand their employer's offer. Yet, conditional on application, 58 percent of employee households restrict flexibility (table 7). The share is substantial, although lower than the propensity of regular customers (65 percent). Moreover, employee status has no statistically significant effect

on flexibility take-up conditional on other household characteristics.[33] Therefore, even if low financial sophistication may explain some flexibility restrictions, it is unlikely to be a quantitatively sufficient explanation. Finally, for low financial sophistication to explain the consumption drop at the end of flexibility, applicants should not understand the time limit on flexibility. Yet, these households have a long history of making principal payments and explicitly choose a flexibility policy of a given length. Therefore, my setup differs from Jørring (2020) in which borrowers with an initial interest-only period of multiple years might not understand or remember the payment structure of their mortgage.

Alternatively, people may restrict flexibility if they are too optimistic about future income and wrongly think they would not benefit from additional flexibility. Whereas optimistic forecasts could explain why *some* people restricting flexibility remain liquidity-constrained afterward, optimistic forecast errors would need to be large and systematic to explain why–as a group–people restricting flexibility do not experience virtually *any* decrease in liquidity constraints (figure 2 panel B). Moreover, if people have erroneously optimistic expectations, consumption should decrease once people learn the truth: hence, consumption would decrease at the end of flexibility only under the strict assumption that people learn the truth exactly when flexibility ends, not before or after.

5.2.5 Intrahousehold Bargaining

Flexibility restrictions could reflect a compromise in couples with different time preferences, because such differences can lead to similar predictions as self-control problems (Adams et al. 2014). Yet intrahousehold bargaining is unlikely to explain flexibility restrictions quantitatively because 59 percent of single applicants restrict flexibility (table 7). The share is lower than for couples (67 percent) because–conditional on application–couples apply for flexibility on a smaller share of their mortgages. Yet conditional on flexibility, singles choose, on average, shorter flexibility policies (9.1 months for singles versus 9.3 months for couples).

[33] If I add an employee dummy to model 5 in table 6, the coefficient estimate is 0.001 (p-value 0.88).

5.2.6 Impatience or Rules of Thumb in Consumption

Could high impatience absent self-control problems explain my findings? Sufficiently high impatience and low risk aversion can explain steeply declining consumption (supplementary table A.5) and persistent liquidity constraints. Yet high impatience absent self-control problems is inconsistent with restricting flexibility ex ante because highly impatient individuals should prefer maximum flexibility to frontload consumption.

Rules of thumb might also contribute to the consumption drop at the end of flexibility if households spent, for instance, a fraction of their discretionary income each month. Yet to explain voluntary flexibility restrictions, consumption rules of thumb should coincide with frictions that lead people not to value additional flexibility. Yet similar behavior by (financially sophisticated) bank employees as regular customers (section 5.2.4) suggests that frictions such as low financial sophistication or mistaken beliefs are unlikely to be a quantitatively sufficient explanation for the flexibility restrictions.

Policy Implications of Explanations based on Preferences or Mistakes Many potential mechanisms for flexibility restrictions reflect either preferences (commitment, debt aversion, intrahousehold bargaining) or mistakes (low financial sophistication, mistaken beliefs). Crucially, policy implications differ substantially between these two classes of potential mechanisms. If we consider all preferences equally valid, preference-based explanations imply no role for policy to correct peoples' decisions. By contrast, policy could improve mistaken decisions reflecting false or incomplete information. This paper argues that preference-based explanations, particularly commitment, better explain the data. That said, my paper cannot answer how many people would change their behavior if they received independent financial advice before making any choice. Consequently, further work should study how exogenous variation in financial advice would affect liquidity restrictions in an otherwise similar setting.

6 Conclusions

I document widespread self-imposed liquidity constraints by households who voluntarily restrict debt-repayment flexibility despite being persistently liquidity constrained and pay-

ing high interest on unsecured debt. These voluntary liquidity restrictions by liquidity-constrained households inform us about the nature of liquidity constraints and matter for the specification of correct consumption-saving models. In terms of theory, the results are inconsistent with models in which liquidity constraints reflect bad income shocks, impatience absent self-control problems, or high returns on illiquid assets. By contrast, the results accord with models in which the empirically persistent liquidity constraints reflect households with self-control problems who–given the opportunity–may voluntarily restrict liquidity to restrict overconsumption. In terms of policy, self-imposed liquidity restrictions reduce the potency of voluntary debt-forbearance offers. Moreover, if liquidity constraints reflect characteristics instead of circumstances, also other temporary measures such as one-off fiscal relief policies are unlikely to be sufficient to improve the long-term financial resilience of households.

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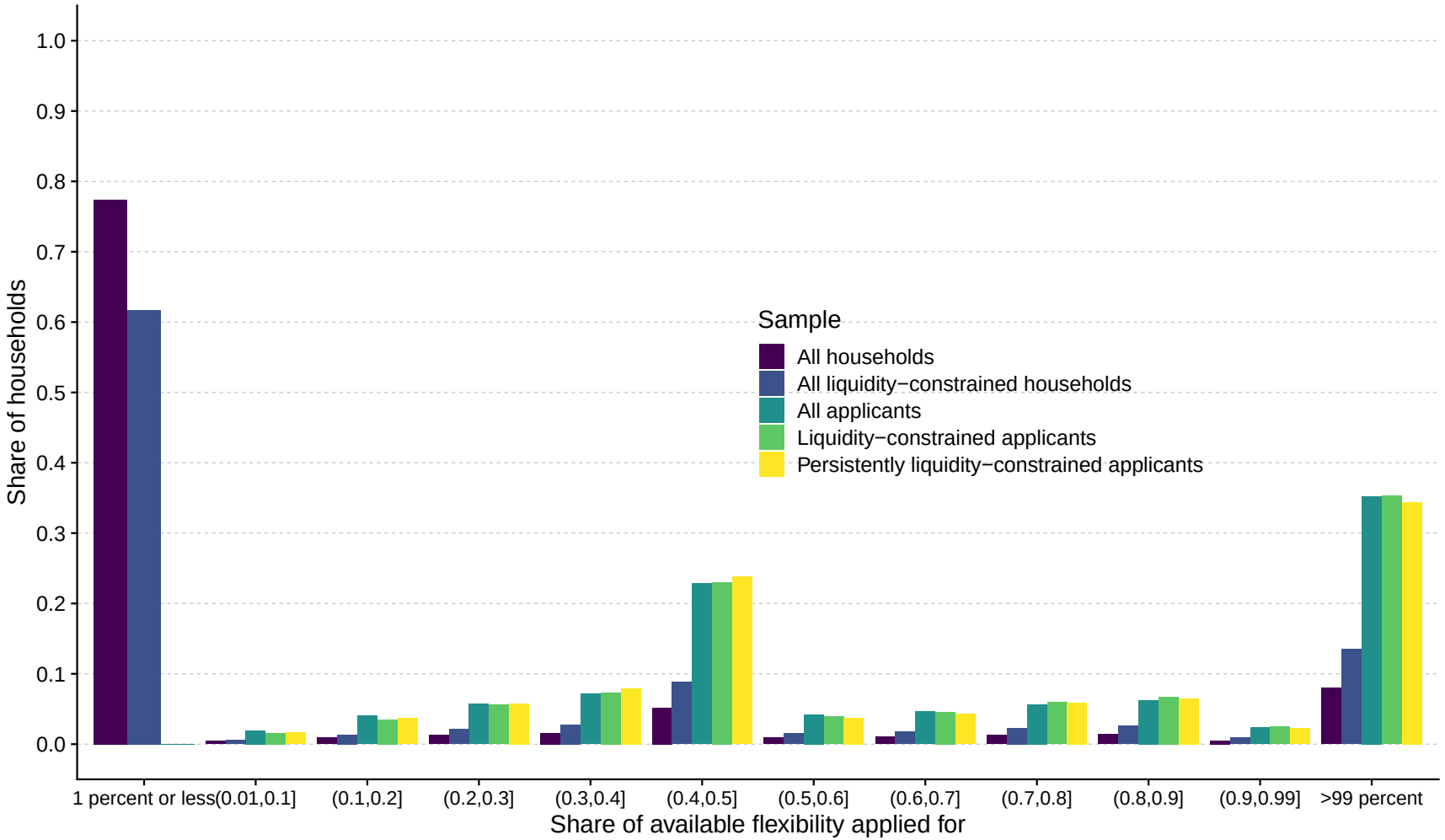
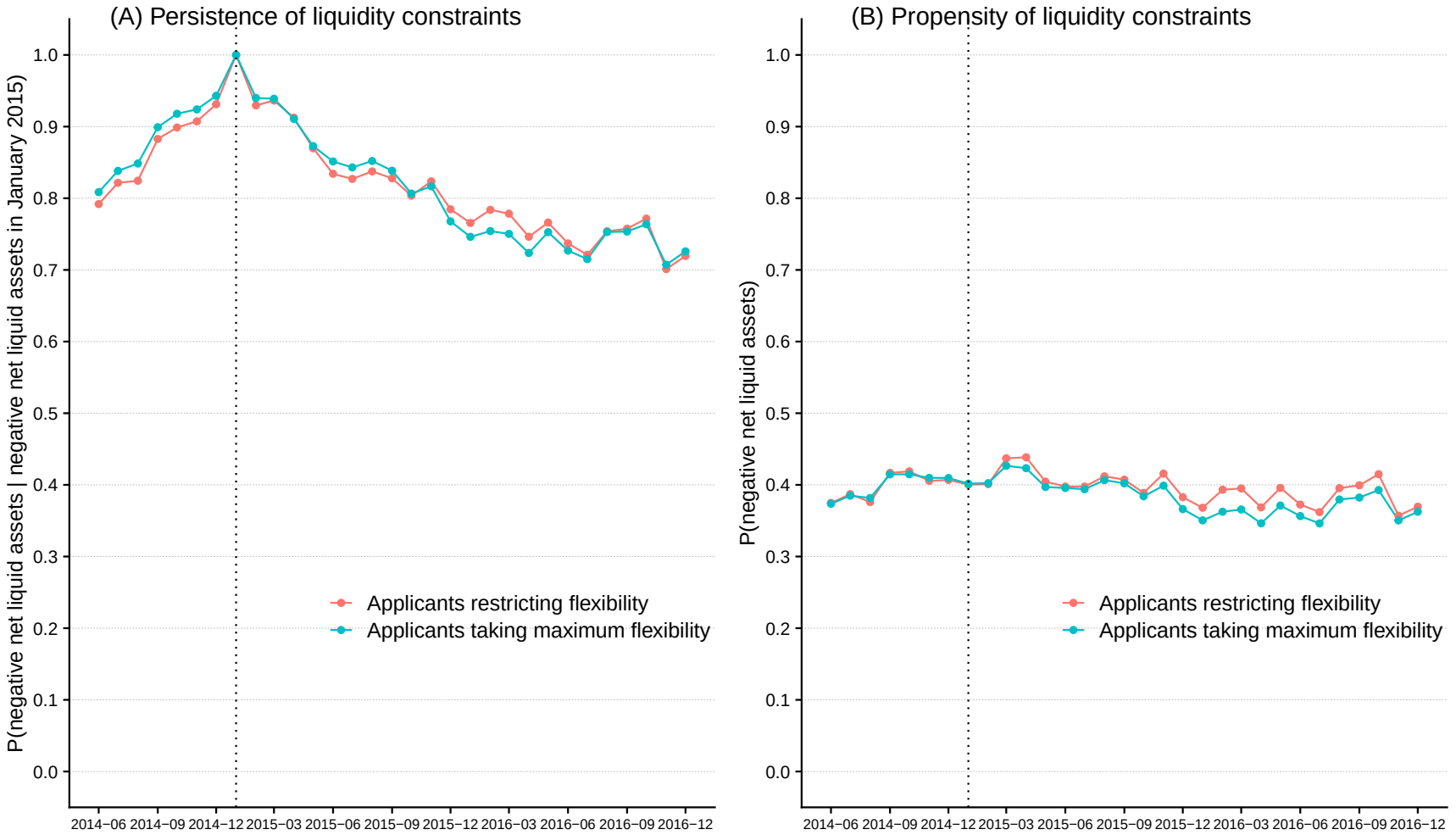


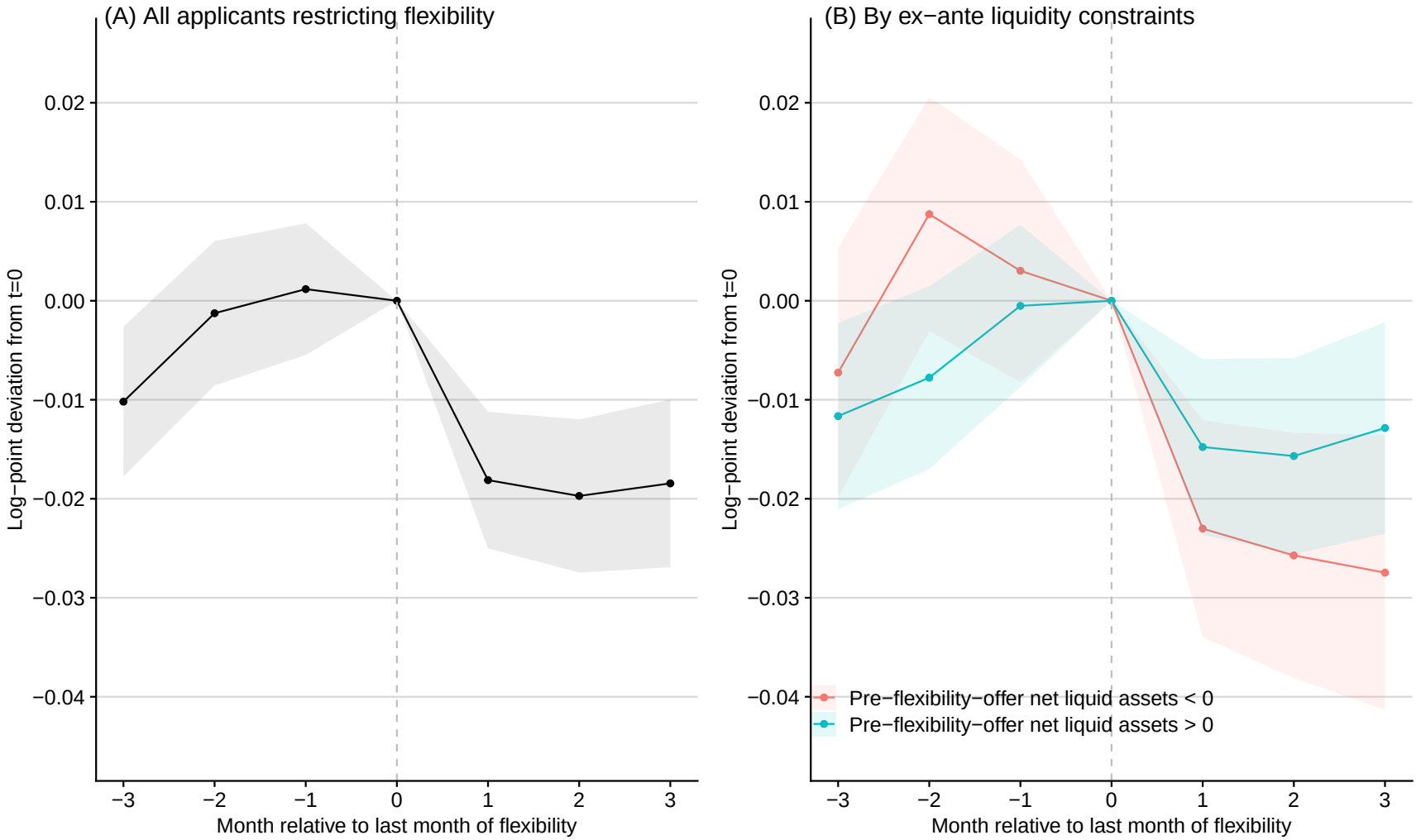
Note: The figure plots the distribution of the take−up share of available flexibility. Available flexibility equals the sum of minimum principal payments on all mortgages over 12 months. I calculate the amount of flexibility taken as the sum of minimum principal payments deferred by taking a flexibility policy of up to 12 months on each mortgage. The take−up share is the amount of flexibility taken divided by the amount of available flexibility. Liquidity−constrained households have negative net liquid assets (deposits minus interest−paying unsecured debt) in January 2015 before the flexibility offer. Applicants refer to households who apply for a strictly positive amount of flexibility. Persistently liquidity−constrained applicants have negative net liquid assets in both January 2015 and in the month after the end of flexibility. For each category of households, the vertical bars sum to 1.

Figure 1: Distribution of the take-up share of available flexibility



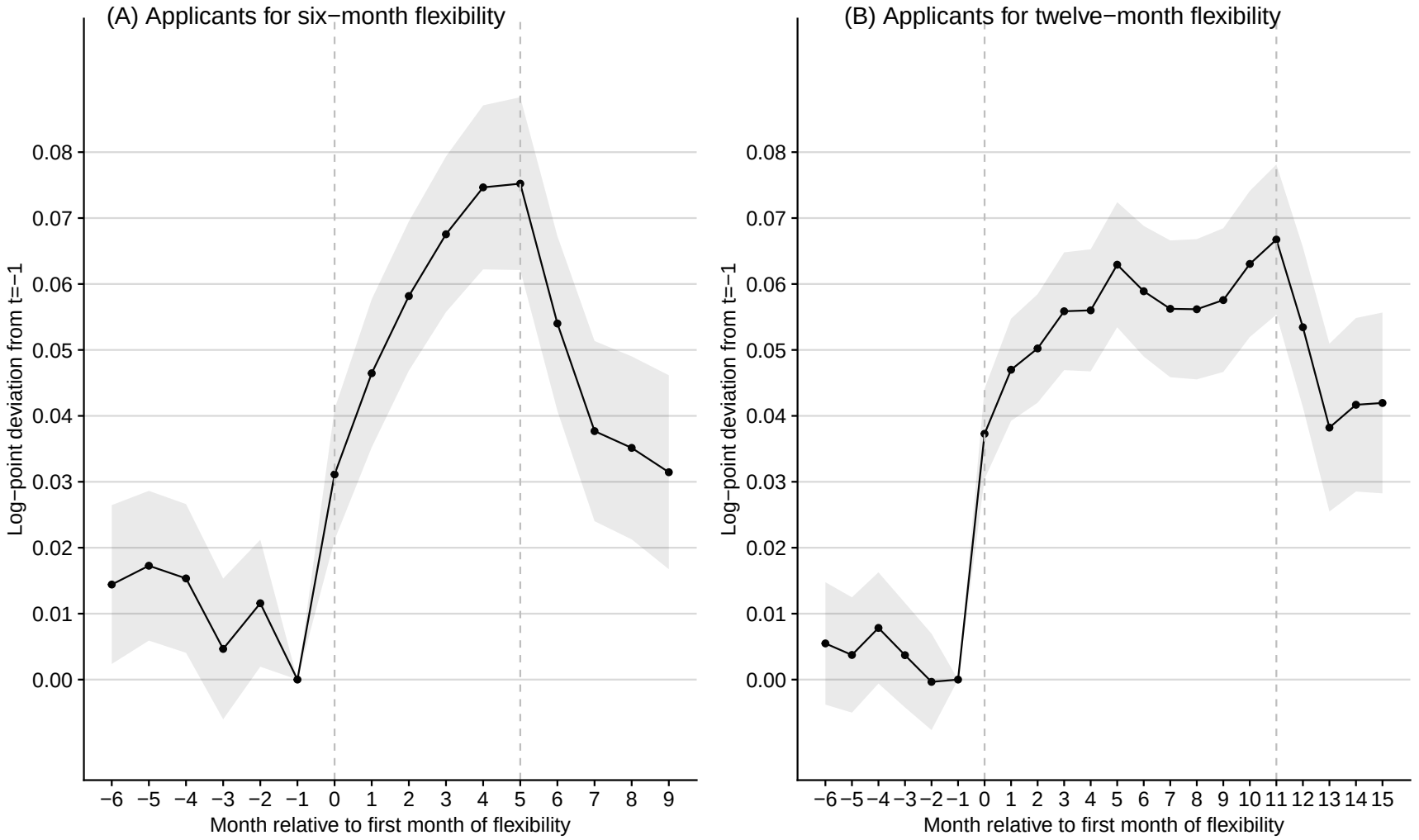
Note: Panel A plots the persistence of liquidity constraints for households liquidity constrained in January 2015 before the flexibility offer in February 2015. I define a household as liquidity constrained if their interest−paying unsecured debt exceeds their deposit balances. Panel B plots the overall propensity of liquidity constraints by measuring the percentage of liquidity−constrained applicants. Both panels provide measures separately for applicants restricting flexibility and for applicants taking maximum flexibility. The vertical dashed lines mark January 2015 before the introduction of the flexibility offer in February 2015. The data represent stable households (couples who stay together and singles who remain single from June 2014 to December 2016).

Figure 2: Persistence and propensity of liquidity constraints by flexibility take-up



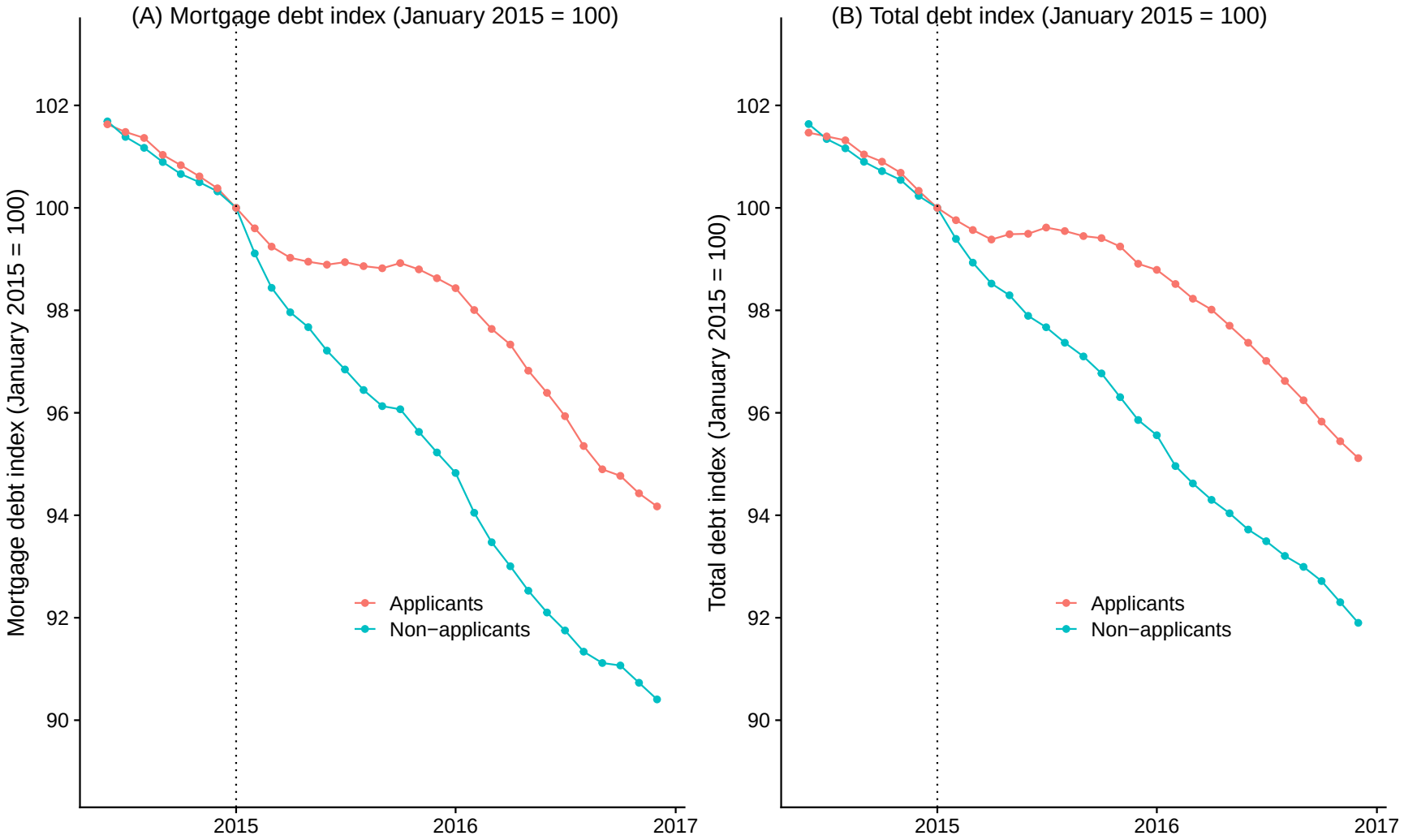
Note: Panel A depicts the change in total nondurable consumption after the end of flexibility for applicants who restrict flexibility. The dashed vertical line portrays the last month of flexibility. Panel B provides estimates separately for households with positive/negative net liquid assets in January 2015 before the flexibility offer. The dependent variable is log(nondurables expenditure + 1). I estimate the consumption paths with event−study regressions (equation (5)) that control for overall consumption trends with a matched sample of households without a mortgage. The shaded areas around the consumption paths are 95 percent confidence intervals given standard errors clustered by household.

Figure 3: Nondurable consumption at the end of flexibility among applicants restricting flexibility



Note: Panel A depicts the change in total nondurables consumption relative to the month before the start of flexibility for applicants for whom the maximum length of flexibility is six months. Panel B provides equivalent estimates for applicants for whom the maximum length of flexibility is twelve months. The dashed vertical lines portray the first and last months of flexibility. The dependent variable is log(nondurable expenditure + 1). I estimate the consumption paths with event−study regressions that control for overall consumption trends with a matched sample of households without a mortgage (similar to equation (5) but with the month before the first month of flexibility as the reference month). The shaded areas around the consumption paths are 95 percent confidence intervals given standard errors clustered by household.

Figure 4: Nondurable consumption before, during, and after flexibility



Note: Panel A depicts the evolution of mortgage debt for applicants versus a matched sample of non−applicants from the end of June 2014 to the end of December 2016. Panel B depicts the evolution of total debt. The sample includes households with positive mortgage debt in June 2014 to study debt−repayment behavior before the flexibility offer. The horizontal dashed line refers to the end of January 2015 before the flexibility offer in February 2015.

Figure 5: Evolution of debt by applicants versus matched non-applicants

Table 1: Descriptive statistics for households with a mortgage in January 2015

	N=172,176							
	Mean	SD	Q0.01	Q0.25	Median	Q0.75	Q0.99	Unit
Flexibility take-up								
Apply for any flexibility (0/1)	0.23	0.42	0.00	0.00	0.00	0.00	1.00	Share
Share of available flexibility taken	0.15	0.32	0.00	0.00	0.00	0.00	1.00	Share
Share of mortgages on which take flexibility	0.19	0.37	0.00	0.00	0.00	0.00	1.00	Share
Conditional length of flexibility	9.26	3.35	1.00	6.00	12.00	12.00	12.00	Months
Demographics								
Adults	1.75	0.63	1.00	1.00	2.00	2.00	4.00	Number
Children	0.76	1.07	0.00	0.00	0.00	1.00	4.00	Number
Age of oldest adult	44.42	12.21	24.00	35.00	43.00	53.00	74.00	Years
Mortgage								
Mortgage contracts	1.48	0.74	1.00	1.00	1.00	2.00	4.00	Number
Mortgage balance	97,752	74,476	4,995	42,763	83,097	134,628	337,518	EUR
Principal payment	620	386	132	363	532	781	1,941	EUR/month
Mortgage interest rate	1.33	0.52	0.23	0.98	1.25	1.64	2.52	Percent
Property value	175,280	104,307	36,695	105,000	153,060	220,344	526,234	EUR
Income and expenditure								
Disposable income	3,552	1,954	711	2,218	3,281	4,618	8,658	EUR/month
Card expenditure	1,602	1,178	103	840	1,419	2,097	5,183	EUR/month
Financial assets								
Deposit balances	11,625	31,923	-8,453	1,532	4,642	12,875	101,815	EUR
Other assets	6,162	214,539	0	0	0	1,367	94,857	EUR
Other credit								
Total unsecured debt	1,803	2,626	0	19	736	2,468	11,827	EUR
Interest-paying unsecured debt	1,382	2,502	0	0	0	1,795	11,197	EUR
Unsecured interest rate	7.06	0.43	6.08	7.08	7.08	7.08	8.33	Percent
Other debt	11,835	34,390	0	0	0	9,845	160,020	EUR

[a] "Share of available flexibility taken": flexibility taken as a share of total available flexibility if took maximum flexibility on all mortgages.

[b] "Conditional length of flexibility": average flexibility length on mortgages for which the household takes a flexibility policy of 1 to 12 months.

[c] Disposable income: average monthly net income flows to bank accounts from July 2014 to January 2015.

[d] Principal payment: average monthly principal payment due from February 2015 to June 2016 in the absence of flexibility

[e] Other variables refer to values at the end of January 2015.

Table 2: Flexibility take-up by ex-ante liquidity

			Flexibility			
By ex-ante liquidity	Subgroup	Obs.	Available (EUR)	Taken (EUR)	Not taken (EUR)	Take-up share
All households		172,176	7,712	1,286	6,425	0.15
Negative net liquid assets		39,951	7,128	2,018	5,110	0.26
	All applicants	15,308	7,899	5,267	2,632	0.69
	Less than max flexibility	9,904	8,486	4,417	4,069	0.52
	Max flexibility	5,404	6,824	6,824	0	1.00
	Non-applicants	24,643	6,649	0	6,649	0.00
Positive net liquid assets		132,225	7,889	1,066	6,822	0.12

[a] Note: The table presents the take-up of flexibility by ex-ante liquidity of households. I calculate net liquid assets as deposit balances minus interest-paying unsecured debt (measured in January 2015 before the flexibility offer). Available flexibility equals the sum of minimum principal payments on all mortgages over 12 months. I calculate the amount of flexibility taken as the sum of minimum principal payments deferred by taking a flexibility policy of up to 12 months on each mortgage. The take-up share is the amount of flexibility taken divided by the amount of available flexibility (calculated as an average across households; therefore not exactly equal to dividing the average amount of flexibility taken with the average amount of flexibility available).

Table 3: Financial costs of forgoing flexibility to households with negative net liquid assets

Subsample	Obs.	Mean	Q0.01	Q0.25	Q0.50	Q0.75	Q0.99
Yearly costs							
Applicants and non-applicants	27,907	204.0	0.0	111.8	176.0	267.2	622.5
Applicants	7,999	162.3	0.0	79.2	139.8	219.9	556.3
Non-applicants	19,908	220.8	47.5	126.0	190.8	284.7	639.2
Cumulative costs by mortgage maturity							
Applicants and non-applicants	27,907	2,021.0	0.0	906.9	1,661.8	2,737.9	7,192.2
Applicants	7,999	1,650.9	0.0	685.1	1,343.1	2,251.7	6,145.7
Non-applicants	19,908	2,169.7	156.3	1,005.2	1,797.6	2,922.6	7,530.2

[a] Note: The table presents the distribution of the financial costs in EUR of the limited take-up of flexibility to households with negative net liquid assets in January 2015 taking less than maximum flexibility. I calculate the costs according to equation (1). The costs equal the forgone interest savings from not using additional low-cost (mortgage) flexibility to repay high-cost unsecured debt. The cumulative costs equal the sum of yearly costs over the maturity of the mortgage discounted by an annualized discount factor of three percent. I omit couples that split and singles that form a couple from June 2014 to December 2016. I also omit a few households with a mortgage interest rate exceeding the unsecured debt interest rate.

Table 4: Mean characteristics of households who take no, some, or maximum flexibility

				P-value from t-test of means	
	No flexibility	Some flexibility	Max flexibility	Some vs. no flex.	Some vs. max flex.
Number of households	133,221	25,246	13,709		
Flexibility					
Share of available flexibility taken	0.00	0.51	1.00	0.00	0.00
Share of mortgages on which take flexibility	0.00	0.77	1.00	0.00	0.00
Conditional length of flexibility		7.78	12.00	0.00	0.00
Demographics					
Adults	1.75	1.81	1.73	0.00	0.00
Children	0.71	0.98	0.86	0.00	0.00
Age of oldest adult	44.74	42.73	44.35	0.00	0.00
Mortgage					
Mortgage contracts	1.42	1.83	1.34	0.00	0.00
Mortgage balance	92,118	124,122	103,937	0.00	0.00
Principal payment	597	746	618	0.00	0.00
Mortgage interest rate	1.35	1.27	1.22	0.00	0.00
Property value	172,625	188,398	176,927	0.00	0.00
Income and expenditure					
Disposable income	3,548	3,650	3,410	0.00	0.00
Card expenditure	1,598	1,661	1,529	0.00	0.00
Financial assets					
Deposit balances	13,303	5,810	6,037	0.00	0.13
Other assets	7,011	3,216	3,332	0.00	0.61
Other credit					
Total unsecured debt	1,527	2,772	2,706	0.00	0.05
Interest-paying unsecured debt	1,123	2,280	2,241	0.00	0.23
Unsecured interest rate	7.07	7.05	7.06	0.00	0.21
Other debt	11,457	15,048	9,591	0.00	0.00

[a] "Some flexibility": households applying for some but not maximum flexibility.
[b] "Share of available flexibility taken": flexibility taken as a share of total available flexibility if took maximum flexibility on all mortgages.
[c] "Conditional length of flexibility": average flexibility length on mortgages for which the household takes a flexibility policy of 1 to 12 months.
[d] Disposable income: average monthly net income flows to bank accounts from July 2014 to January 2015.
[e] Principal payment: average monthly principal payment due from February 2015 to June 2016 in the absence of flexibility
[f] Other variables refer to values at the end of January 2015.

Table 5: Change in consumption at the end of flexibility for applicants restricting flexibility

	Dependent variable:			
	log(nondurables + 1)			
	(1)	(2)	(3)	(4)
Post	−0.019***	−0.028***	−0.012***	−0.012***
	(0.003)	(0.005)	(0.004)	(0.004)
Post × Negative Net Liquid Assets				−0.016***
				(0.006)
Sample	All HHs restricting flexibility	Negative net liquid assets	Positive net liquid assets	All HHs restricting flexibility
Observations	751,830	286,500	465,330	751,830
Adjusted R^2	0.692	0.691	0.690	0.692

Note: *p<0.1; **p<0.05; ***p<0.01

The table provides regression estimates regarding the change in total nondurable consumption in the first three months after flexibility relative to the last three months of flexibility for applicants that restrict the amount of flexibility. The estimation equation in columns 1, 2, and 3 is: $y_{i,c,t} = \alpha_i + \lambda_t + \delta_{\text{Post}} \mathbf{1}_{c=\text{flexibility}} \mathbf{1}_{t \in [e+1, e+2, e+3]} + \delta_{\text{early}} \mathbf{1}_{c=\text{flexibility}} \mathbf{1}_{t<e-3} + \delta_{\text{late}} \mathbf{1}_{c=\text{flexibility}} \mathbf{1}_{t>e+3} + \epsilon_{i,c,t}$, in which e refers to the last month of flexibility. Therefore, the coefficient estimates of δ_{Post} presented in the table measure the average consumption change for flexibility applicants in the first three months after flexibility relative to the last three months of flexibility (omitted baseline period). I control for overall consumption trends with a matched sample of households without a mortgage. In column 4, the estimation equation includes additional interaction terms for flexibility applicants between time-period dummies and an indicator variable for negative net liquid assets before the flexibility offer. The dependent variable is log(nondurable expenditure + 1). Robust standard errors in parentheses.

Table 6: Predicting the amount of flexibility: other illiquid savings and temptation spending

	Dependent variable:				
	Share of available flexibility that applicant applies for				
	(1)	(2)	(3)	(4)	(5)
Gambling spending in 2014H2 (dummy)	-0.010^{***}				-0.010^{***}
	(0.004)				(0.004)
Alcohol spending share in 2014H2		0.001			-0.0003
		(0.034)			(0.037)
Tax returns bottom half in 2012 (dummy)			0.0004		-0.0001
			(0.004)		(0.004)
Tax returns top half in 2012 (dummy)			-0.009^{**}		-0.008^{**}
			(0.004)		(0.004)
Share of deposit balances on non-checking accounts				-0.016^{***}	-0.016^{***}
				(0.006)	(0.006)
Controls	Yes	Yes	Yes	Yes	Yes
Mean share of available flexibility applied for	0.68	0.68	0.68	0.68	0.68
Observations	38,862	38,862	38,862	36,079	36,079
Adjusted R^2	0.116	0.116	0.116	0.114	0.114

Note: *p<0.1; **p<0.05; ***p<0.01

The table provides estimates that predict the amount of flexibility among all applicants. The dependent variable is the share of available flexibility applied for by the household. The omitted category regarding tax returns represents households who do not receive tax refunds. Control variables include fixed effects for the number of adults and children, municipality, number of mortgage contracts, and fixed effects for bins of age, total deposit balances, interest-paying unsecured debt, disposable income before the flexibility offer, gross income in 2012 for the highest earner in the household, card expenditure, principal payment, property value, mortgage value, mortgage interest rate, bank branch, and application week. I drop households with negative deposit balances in regressions that include the share of deposit balances outside checking accounts as an explanatory variable. Robust standard errors in parentheses.

Table 7: Flexibility take-up by household type

Statistic	All households	Singles	Couples	Bank employee	Not bank employee
Number of households	**172,176**	57,308	114,868	6,377	165,799
Share of available flexibility taken	**0.15**	0.15	0.16	0.26	0.15
Number of mortgage contracts	**1.5**	1.3	1.6	1.6	1.5
Conditional share of mortgages on which take flexibility	**0.85**	0.90	0.83	0.85	0.85
Conditional length of flexibility	**9.3**	9.1	9.3	10.0	9.2
Share of applicants taking maximum flexibility	**0.35**	0.41	0.33	0.42	0.35

[a] Note: The table presents the average take-up of flexibility by household type (couples vs. singles; regular customers vs. bank employees).
[b] "Share of available flexibility taken": flexibility taken as a share of total available flexibility if took maximum flexibility on all mortgages.
[c] "Conditional share of mortgages on which take flexibility": share of mortgages on which take a flexibility policy conditional on taking at least one flexibility policy.
[d] "Conditional length of flexibility": average flexibility length on mortgages for which the household takes a flexibility policy of 1 to 12 months.

Online Appendices

A Variable Definitions and Concepts

I aggregate financial variables of the two oldest adults to the household level. Therefore, I do not consider, for instance, the deposit balances of children, which I consider irrelevant to the decision about flexibility. I do consider total household expenditure in consumption studies (including children's consumption) to avoid the confounder of expenditure shifting across household members.

Deposit balances: End-of-month balances on deposit accounts.

Total unsecured debt: End-of-month balances on unsecured credit accounts including credit card debt on an interest-free period.

Interest-paying unsecured debt: End-of-month interest-accruing balances on unsecured credit accounts disregarding credit card debt on an interest-free period.

Net liquid assets: Deposit balances minus interest-paying unsecured debt.

Disposable income: I observe monthly net income payments to bank accounts from July 2014 onwards. To validate this income measure, I compare it with administrative income data from the tax authority in 2015. Supplementary table A.1 shows that both measures imply a similar income distribution for my sample households.

Card expenditure: Expenditure with credit and debit cards issued by the bank.

Nondurable consumption: Card-expenditure data identifies the store category. I measure nondurable consumption with expenditure on groceries, supermarkets, restaurants, bars, alcohol, gambling, tobacco, gasoline, energy, transportation, entertainment, newspapers, massage parlors, spas, laundry services, dry cleaners, hair salons, flowers, dress rentals, hardware rentals, escort services, and unidentified services and nondurable goods. I do not include travel expenditure, for instance, hotels, air transport, ship transport, because expenditure may occur at a different time than the actual travel.

Property value: I measure the value of the main property of the household. I identify the main property as the property with the highest value owned by the household.

Other financial assets: Financial assets other than deposit balances.

Other debt: Other debt except mortgage debt and unsecured debt, for instance, collateralized consumer loans. Other debt also includes mortgages with a maturity less than one year in January 2015, mortgages with a fixed interest rate, mortgages without a property collateral owned by the household, and bullet mortgages that do not fulfill my sample criteria.

Stable households: Stable households have the same two oldest adults from June 2014 to December 2016. Single households are stable if they remain single throughout the sample period. Unstable households live in the same address in January 2015 but either do not live

together in January 2014 or move apart before December 2016.

B Consumption: Matching Applicants to Controls

The consumption study needs to control for the monthly seasonality and overall macroeconomic variation of spending to isolate the relationship between the end of flexibility and consumption. Therefore, I identify a group of households unaffected by flexibility but subject to other spending variation: households without a mortgage ineligible for flexibility. Yet households without a mortgage differ from flexibility applicants in observable characteristics, which can lead to different consumption trends between the two groups. Consequently, I create a matched sample of flexibility applicants and households without a mortgage. Matching ensures that consumption trends between the two groups do not differ because of differences in, for instance, the age distribution. For sensitivity analysis, I also create a second comparison group by matching flexibility applicants to households with a mortgage who did not apply for flexibility.

B.1 Matching Flexibility Applicants with Households without a Mortgage

I create the matched sample of flexibility applicants and households without a mortgage by nearest-neighbor propensity score matching with replacement. Similarly to the sample construction for households with a mortgage, I require that the two oldest adults of households without a mortgage have regular card expenditures in 2014–2016. I also only consider stable households from June 2014 to December 2016 because I aggregate consumption to the household level. I use the following logit regression to calculate the propensity score based on information in January 2015:

$$\mathbb{1}_{\text{flexibility},h} = f\Big(\sum_{i}^{4} \alpha_i \mathbb{1}_{\text{adults}=i} + \sum_{i}^{4} \beta_i \mathbb{1}_{\text{children}=i} + \gamma \mathbb{1}_{\text{depositBalances}\leq 0} + \delta \mathbb{1}_{\text{unsecuredDebt}=0} + \mu \mathbb{1}_{\text{netLiquidAssets}<0} +$$
$$\sum_{b=1}^{10} \eta_b \mathbb{1}_{\text{age}_\text{h} \in \text{ageBin}_\text{b}} + \sum_{b=1}^{5} \theta_b \mathbb{1}_{\text{unsecuredDebt}_\text{h} \in \text{unsecuredDebtBin}_\text{b}} +$$
$$\sum_{b=1}^{10} \iota_b \mathbb{1}_{\text{depositBalances}_\text{h} \in \text{depositBalancesBin}_\text{b}} +$$
$$\sum_{b=1}^{10} \lambda_b \mathbb{1}_{\text{cardExp2014Q4}_\text{h} \in \text{cardExp2014Q4Bin}_\text{b}} + \sum_{b=1}^{10} \zeta_b \mathbb{1}_{\text{incomeFlow2014Q4}_\text{h} \in \text{incomeFlow2014Q4Bin}_\text{b}} +$$
$$\sum_{b=1}^{10} \sigma_b \mathbb{1}_{\text{cardExp2014Q4toQ3}_\text{h} \in \text{cardExp2014Q4toQ3Bin}_\text{b}} +$$
$$\sum_{b=1}^{10} \tau_b \mathbb{1}_{\text{incomeFlow2014Q4toQ3}_\text{h} \in \text{incomeFlow2014Q4toQ3Bin}_\text{b}} +$$
$$\sum_{b=1}^{19} \nu_b \mathbb{1}_{\text{region}_\text{b}} + \sum_{b=1}^{3} \xi_b \mathbb{1}_{\text{urbanizationLevel}_\text{b}}\Big).$$

The regression includes dummies for the number of adults and children[34], deposit balances of less or equal to zero, zero interest-paying unsecured debt, and negative net liquid assets. In addition, the regression includes dummies for deciles of household age, deposit balances (conditional on positive deposits), card expenditure in 2014Q4, income flows to bank accounts in 2014Q4, change in card expenditures from 2014Q4 to 2014Q3, change in income flows to bank accounts from 2014Q4 to 2014Q3, and quintiles of interest-paying unsecured debt (conditional on positive interest-paying unsecured debt). Finally, the regression includes dummies for the nineteen regions of the country and three levels of urbanization.

After estimating the propensity score, I find for each flexibility applicant a match from the pool of households without a mortgage. I match exactly on the number of adults and children in the household, a dummy for negative net liquid assets, and the region and urbanization level of the municipality. Within the remaining pool of potential matches, I use nearest-neighbor propensity score matching with replacement. Replacement means that a household without a mortgage can be matched to multiple flexibility applicants.

Table A.9 documents mean household characteristics before and after matching in January 2015. Matching drops a few flexibility applicants for whom the set of variables on which I require an exact match do not leave any potential matches. The number of unique households without a mortgage is smaller than the number of flexibility applicants in the matched dataset because I match with replacement.

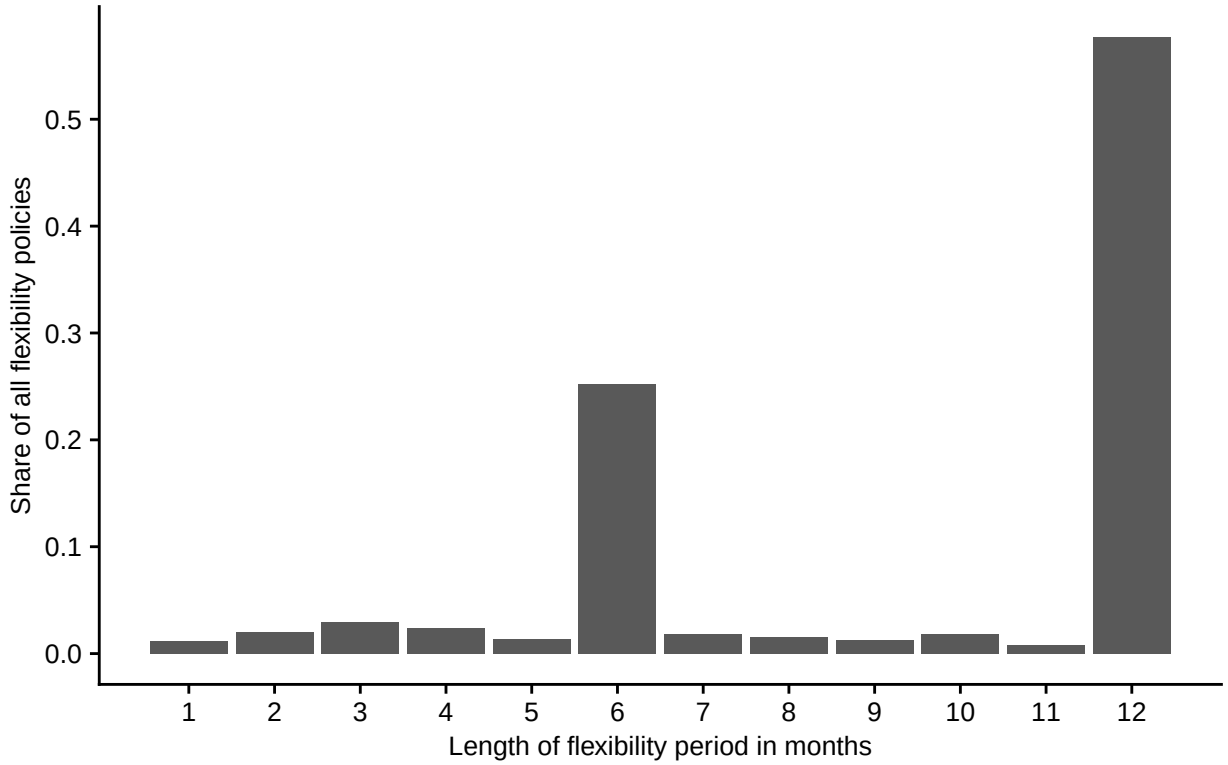
Regressions using the matched dataset use regression weights to account for matching with replacement.

[34] I code households with more than four adults or children as having four adults or children because I match later exactly on the number of adults and children; otherwise, finding matches for these outlier households is difficult.

B.2 Matching Flexibility Applicants with Non-applicant Households with a Mortgage

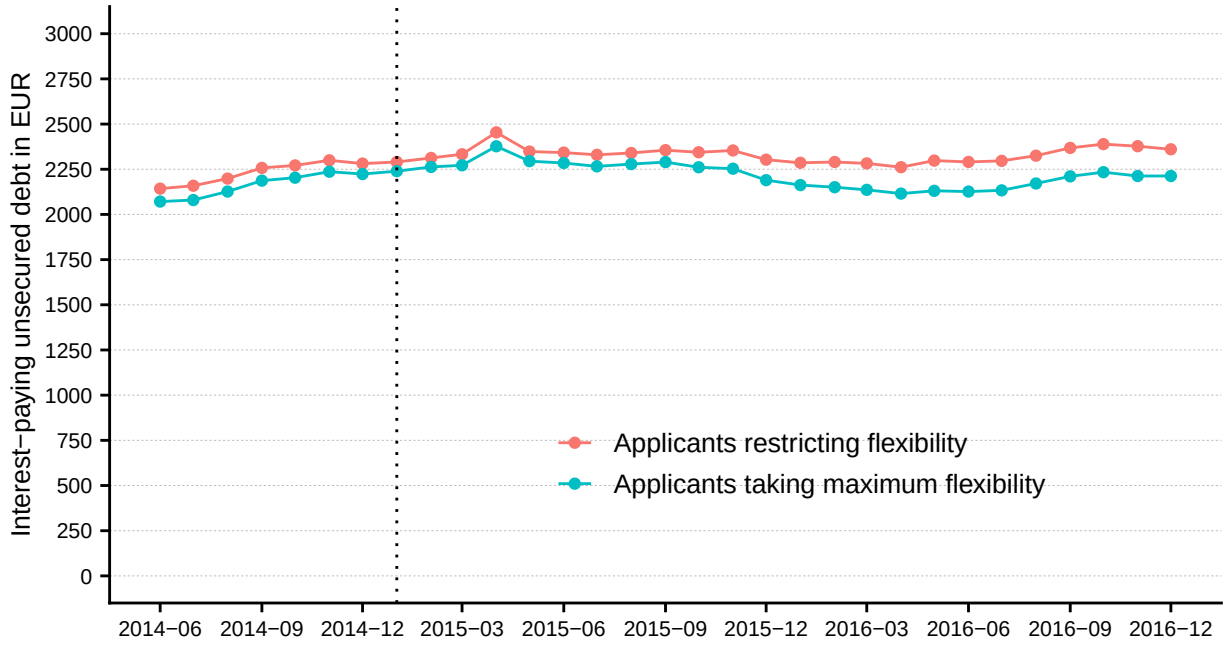
For sensitivity analysis, I create a second matched comparison group from households with a mortgage who did not apply for flexibility. The procedure is the same as in the previous step, except that I add deciles of the mortgage balance, minimum principal payment due without flexibility, mortgage interest rate, and property value to the propensity score regression. Table A.10 documents mean household characteristics before and after matching in January 2015.

C Additional Figures and Tables



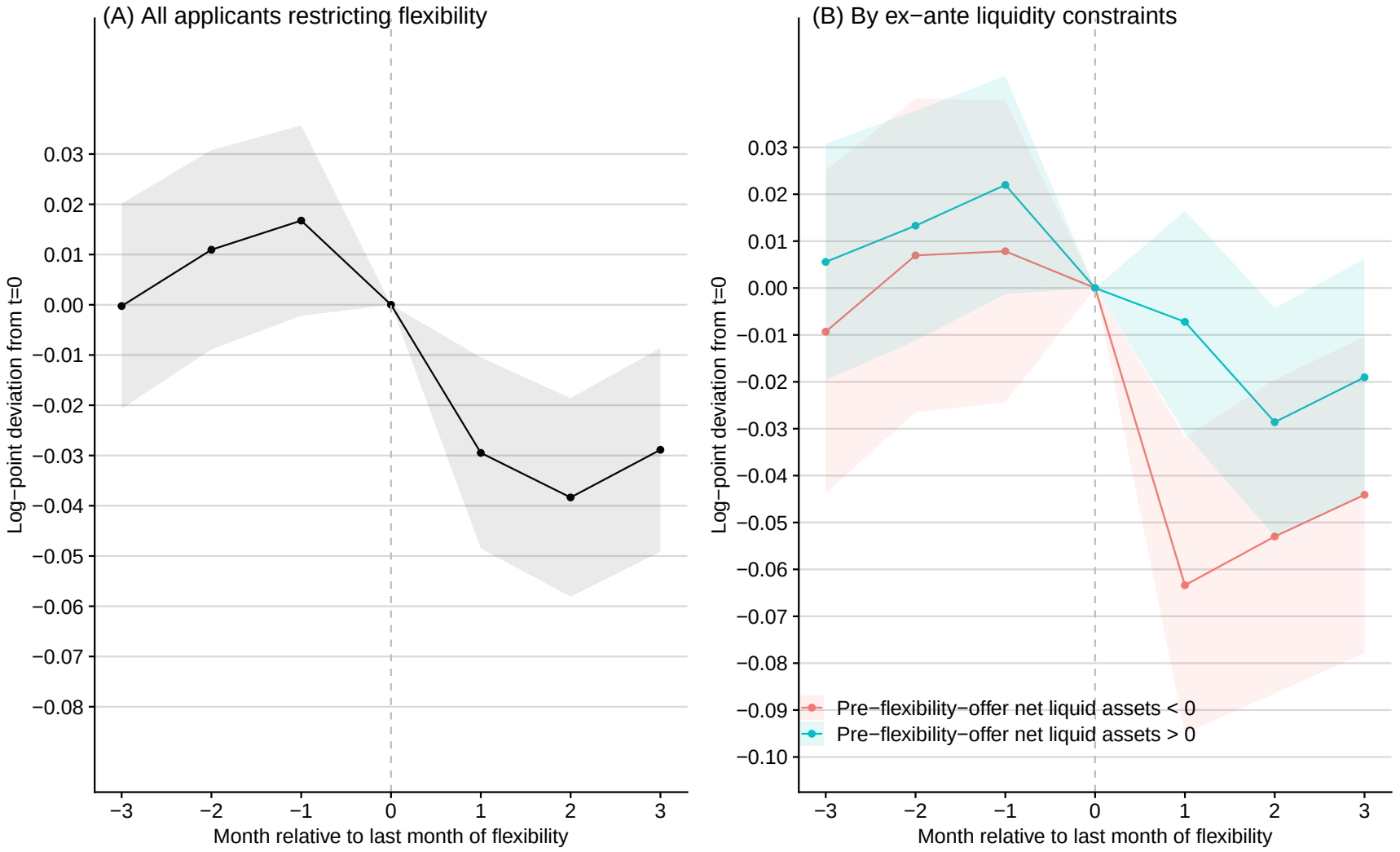
Note: The figure plots the popularity of flexibility policies of different lengths among applicants. The share of applications for policies shorter than the maximum is 42 percent.

Figure A.1: Distribution of flexibility lengths



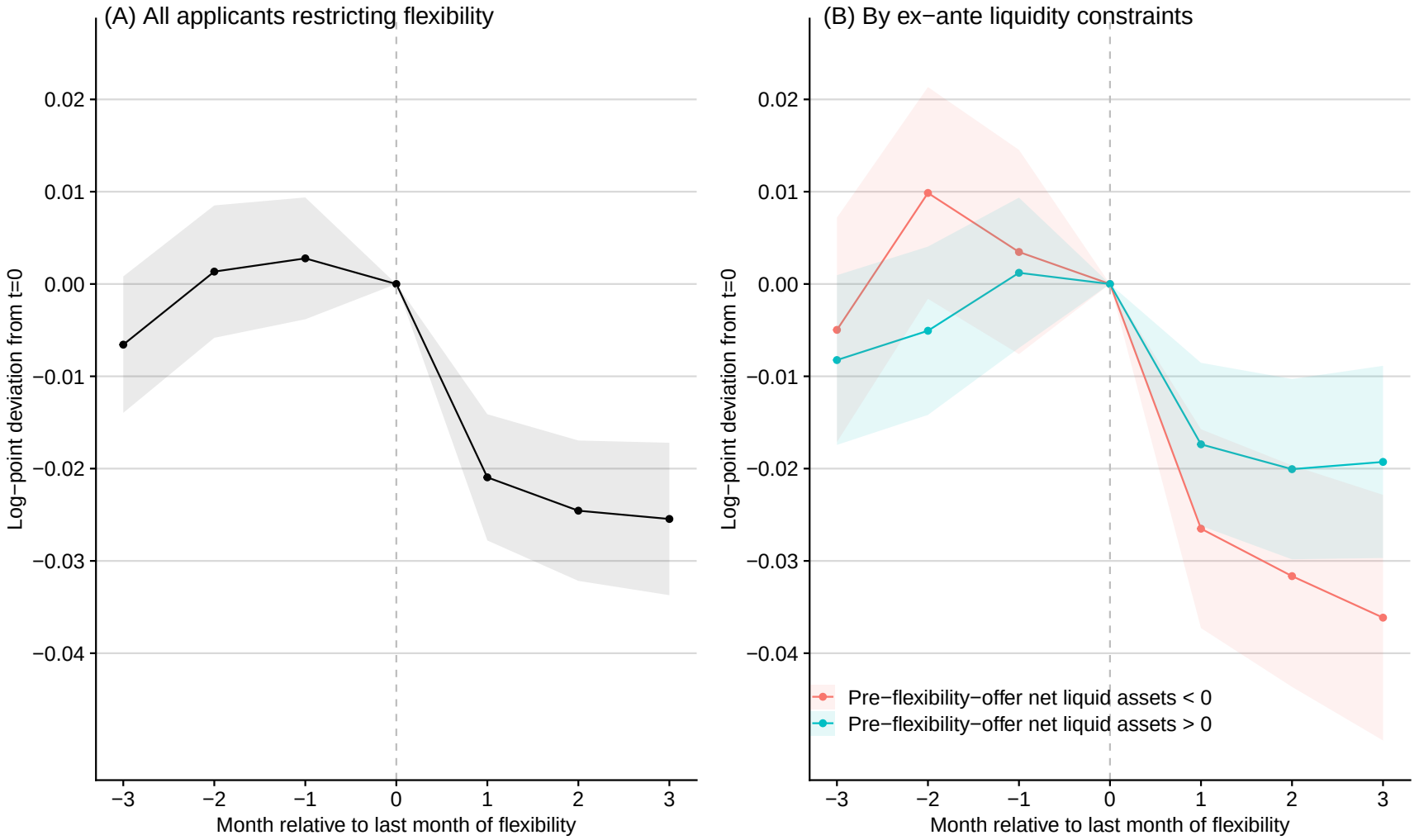
Note: The figure plots the average amount of interest−paying unsecured debt by applicants restricting flexibility or taking maximum flexibility from June 2014 to December 2016. The vertical dashed line refers to January 2015, the month before the flexibility offer in February 2015. The data represent stable households (couples who stay together and singles who remain single from June 2014 to December 2016).

Figure A.2: Average interest-paying unsecured debt by flexibility applicants



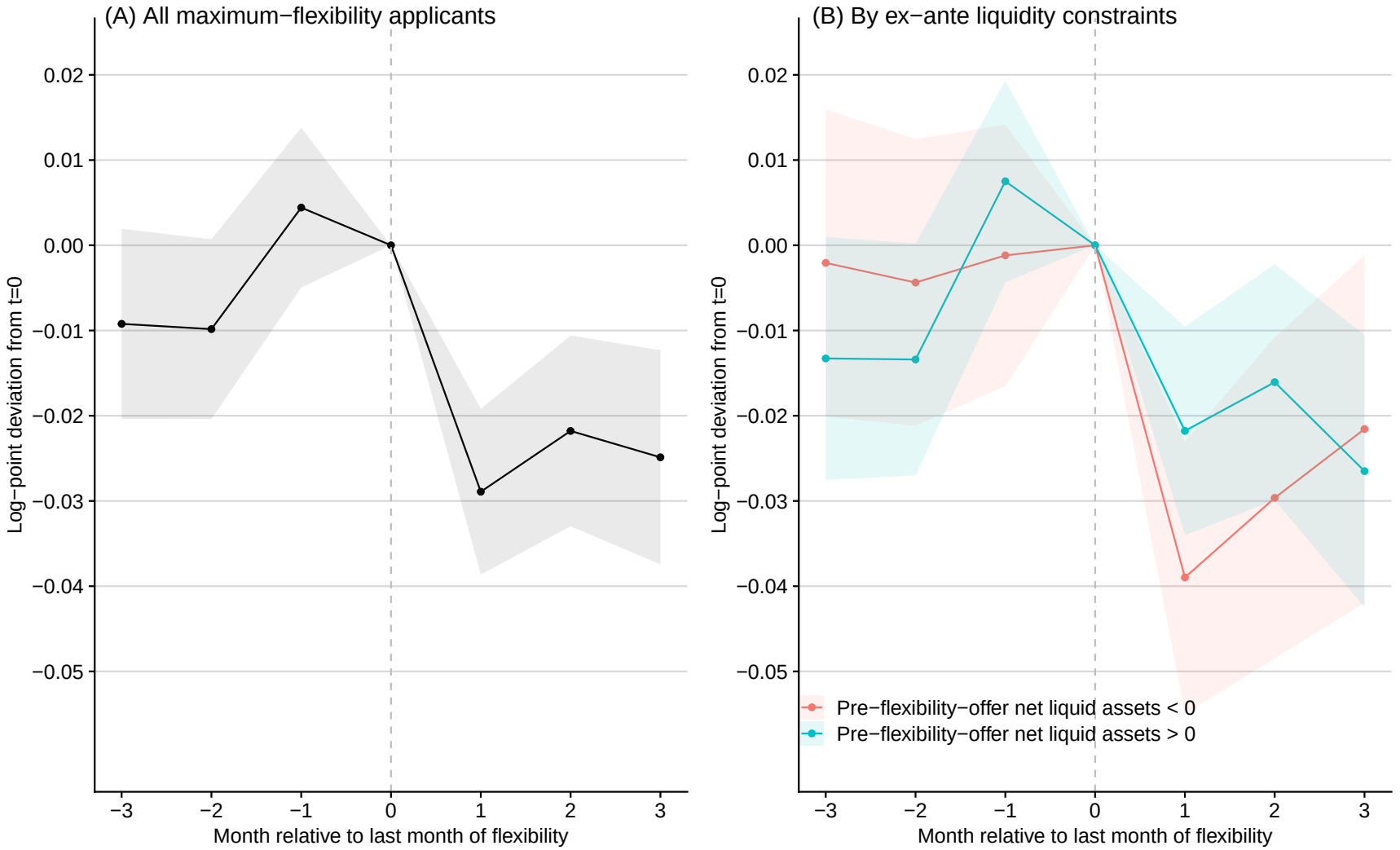
Note: Panel A depicts the change in restaurant consumption after the end of flexibility for applicants who restrict flexibility. The dashed vertical line portrays the last month of flexibility. Panel B provides estimates separately for households with positive/negative net liquid assets in January 2015 before the flexibility offer. The dependent variable is log(restaurant expenditure + 1). I estimate the consumption paths with event−study regressions (equation (5)) that control for overall consumption trends with a matched sample of households without a mortgage. The shaded areas around the consumption paths are 95 percent confidence intervals given standard errors clustered by household.

Figure A.3: Restaurant consumption at the end of flexibility among applicants restricting flexibility



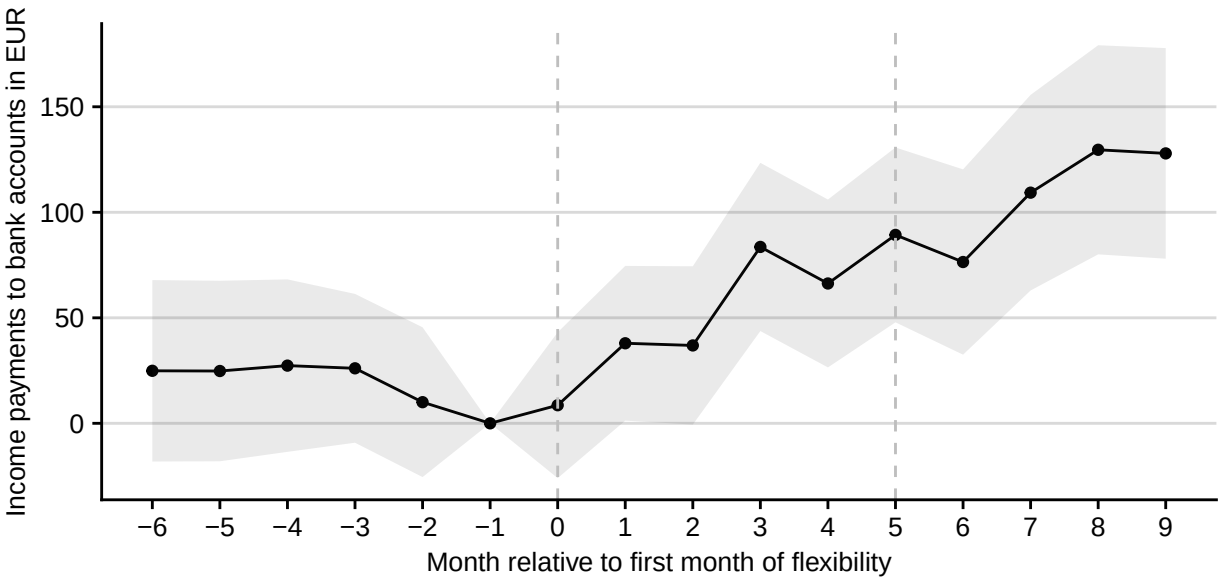
Note: Panel A depicts the change in total nondurable consumption after the end of flexibility for applicants who restrict flexibility. The dashed vertical line portrays the last month of flexibility. Panel B provides estimates separately for households with positive/negative net liquid assets in January 2015 before the flexibility offer. The dependent variable is log(nondurables expenditure + 1). I estimate the consumption paths with event−study regressions (equation (5)) that control for overall consumption trends with a matched sample of households with a mortgage that do not apply for any flexibility. The shaded areas around the consumption paths are 95 percent confidence intervals given standard errors clustered by household.

Figure A.4: Nondurable consumption at the end of flexibility among applicants restricting flexibility (non-applicant controls)



Note: Panel A depicts the change in total nondurable consumption after the end of flexibility for maximum−flexibility applicants. The dashed vertical line portrays the last month of flexibility. Panel B provides estimates separately for households with positive/negative net liquid assets in January 2015 before the flexibility offer. The dependent variable is log(nondurables expenditure + 1). I estimate the consumption paths with event−study regressions (equation (5)) that control for overall consumption trends with a matched sample of households without a mortgage. The shaded areas around the consumption paths are 95 percent confidence intervals given standard errors clustered by household.

Figure A.5: Nondurable consumption at the end of flexibility among maximum-flexibility applicants



Note: The figure depicts the change in income payments to bank accounts in EUR relative to the month before the start of flexibility for applicants for whom the maximum length of flexibility is six months. I estimate the income path with an event−study regression that controls for aggregate trends with a matched sample of households without a mortgage (similar to equation (5) but with the month before the first month of flexibility as the reference month). The shaded areas represent 95 percent confidence intervals given standard errors clustered by household. The vertical dashed lines refer to the first and last month of flexibility. The data represent stable households (couples who stay together and singles who remain single from June 2014 to December 2016).

Figure A.6: Income event study for applicants for six-month flexibility

Table A.1: Comparison of administrative income data and bank-income-flow data

	Obs.	Mean	Q0.01	Q0.25	Median	Q0.75	Q0.99
Administrative data	169,677	3,444	686	2,253	3,387	4,366	7,644
Bank-income-flow data	169,677	3,486	548	2,203	3,273	4,599	7,739

[a] The table compares the distribution of two net income concepts for my sample households in 2015. The administrative income data reflect administrative gross earned income percentiles and information on average gross earned income within a given percentile. To calculate administrative net income, I use average tax rates by income level (in brackets of 1,000 EUR) provided by the Taxpayers Association of Finland. By contrast, the bank-income-flow data refers to income paid into accounts at the bank for which I have data. The bank-income-flow data also measure net income because employers withhold taxes at the source. The table omits households with income in the top one percent by either measure because the administrative income data is winsorized for households with income in the top one percent.

Table A.2: Representativeness of household sample

	Baseline sample	Sample of stable households	Population
Number of households w/ mortgage	172,176	143,740	873,780
Age shares			
0-24	0.02	0.01	0.02
25-34	0.23	0.21	0.20
35-44	0.30	0.30	0.28
45-54	0.24	0.25	0.25
55-64	0.15	0.16	0.16
65-	0.07	0.07	0.08
Regional shares (NUTS 2)			
Aland	0.00	0.00	0.01
Helsinki-Uusimaa	0.23	0.22	0.29
North and East	0.27	0.27	0.23
South	0.25	0.25	0.22
West	0.25	0.26	0.25
Mean financials			
Deposit balances	12,443	12,284	15,346
Monthly disposable income	3,600	3,537	4,443
Mortgage value	97,752	95,025	94,328
Property value	175,280	173,366	214,056
Total debt	109,587	106,574	116,382
Median financials			
Deposit balances	4,642	4,548	5,030
Monthly disposable income	3,431	3,377	4,069
Mortgage value	83,097	80,106	75,606
Property value	153,060	151,333	181,109
Total debt	92,816	89,518	92,703

[a] The table compares my sample of households with a mortgage to national statistics on households with a mortgage. Population values for age and regional NUTS 2 shares are from the Statistics Finland Indebtedness database for year-end 2014 (https://tilastokeskus.fi/til/velk/index_en.html). Population values for financial variables are an average over the 2013 and 2016 waves of the Household Wealth Survey (https://www.stat.fi/til/vtutk/index_en.html).

[b] Stable households include couples that do not split and singles that remain single from June 2014 to December 2016.

Table A.3: Predicting application: linear probability model
(application rate = 0.23; N = 172,176; adjusted $R^2 = 0.11$)

Predictor	Group	Estimate	T-statistic	P-value
Age	Q2	0.00	-0.63	0.53
	Q3	0.00	1.00	0.32
	Q4	0.00	0.51	0.61
Deposit balances	Q2	-0.07	-23.49	0.00
	Q3	-0.14	-45.09	0.00
	Q4	-0.20	-62.48	0.00
Interest-paying unsecured debt	Q2	0.04	15.69	0.00
	Q3	0.10	30.30	0.00
	Q4	0.14	41.73	0.00
Disposable income	Q2	-0.01	-3.48	0.00
	Q3	-0.02	-4.76	0.00
	Q4	-0.03	-8.25	0.00
Card expenditure	Q2	0.00	-1.33	0.18
	Q3	-0.01	-3.49	0.00
	Q4	-0.02	-5.29	0.00
Principal payment	Q2	0.04	14.42	0.00
	Q3	0.07	21.13	0.00
	Q4	0.11	28.55	0.00
Property value	Q2	0.00	-1.51	0.13
	Q3	0.00	-0.99	0.32
	Q4	-0.01	-3.68	0.00
Mortgage value	Q2	0.04	15.67	0.00
	Q3	0.06	20.41	0.00
	Q4	0.10	24.57	0.00
Mortgage interest rate	Q2	-0.04	-14.55	0.00
	Q3	-0.06	-22.02	0.00
	Q4	-0.07	-22.80	0.00

[a] The table presents estimates from a linear probability model in which the dependent variable is 1 if the household applies for any flexibility and 0 otherwise.

[b] The omitted category for binned variables is the bottom quartile. The omitted group for interest-paying unsecured debt refers to households with no interest-paying unsecured debt.

[c] The regression includes unreported fixed effects for the number of adults, the number of children, the number of mortgage contracts, and municipality.

[d] Standard errors are robust to heteroskedasticity.

Table A.4: Predicting the amount of flexibility conditional on application (mean flexibility share = 0.68; N = 38,955; adjusted R^2 = 0.11)

Predictor	Group	Estimate	T-statistic	P-value
Age	Q2	0.01	1.55	0.12
	Q3	0.02	3.40	0.00
	Q4	0.03	5.60	0.00
Deposit balances	Q2	0.00	-0.30	0.76
	Q3	0.02	4.59	0.00
	Q4	0.03	7.24	0.00
Interest-paying unsecured debt	Q2	-0.02	-4.17	0.00
	Q3	-0.01	-1.47	0.14
	Q4	0.02	4.52	0.00
Disposable income	Q2	0.00	-0.06	0.95
	Q3	-0.01	-1.61	0.11
	Q4	-0.01	-2.62	0.01
Card expenditure	Q2	-0.01	-1.56	0.12
	Q3	-0.01	-1.47	0.14
	Q4	-0.02	-2.82	0.00
Principal payment	Q2	-0.01	-3.27	0.00
	Q3	-0.03	-5.84	0.00
	Q4	-0.06	-10.03	0.00
Property value	Q2	0.01	1.75	0.08
	Q3	0.01	2.48	0.01
	Q4	0.02	2.92	0.00
Mortgage value	Q2	0.02	4.75	0.00
	Q3	0.03	5.37	0.00
	Q4	0.03	5.01	0.00
Mortgage interest rate	Q2	-0.03	-8.16	0.00
	Q3	-0.05	-12.60	0.00
	Q4	-0.07	-15.18	0.00

[a] The table presents estimates from a model in which the dependent variable is the share of available flexibility that the applicant applies for.

[b] The omitted category for binned variables is the bottom quartile. The omitted group for interest-paying unsecured debt refers to households with no interest-paying unsecured debt.

[c] The regression includes unreported fixed effects for the number of adults, the number of children, the number of mortgage contracts, municipality, bank branch, and application week.

[d] Standard errors are robust to heteroskedasticity.

Table A.5: Predicted consumption drop at the end of flexibility for household with exponential discounting

	ρ							
	0.5	1 (log-utility)	1.5	2	2.5	3	3.5	4
Annualized δ								
0.800	-0.037	-0.018	-0.012	-0.009	-0.007	-0.006	-0.005	-0.005
0.850	-0.027	-0.013	-0.009	-0.007	-0.005	-0.005	-0.004	-0.003
0.900	-0.017	-0.009	-0.006	-0.004	-0.004	-0.003	-0.003	-0.002
0.950	-0.009	-0.004	-0.003	-0.002	-0.002	-0.001	-0.001	-0.001
0.975	-0.004	-0.002	-0.001	-0.001	-0.001	-0.001	-0.001	-0.001

[a] The table presents the predicted monthly consumption drop at the end of flexibility ($C_{post-flex}/C_{flex} - 1$) based on the Euler equation for a household with CRRA utility for different values of the coefficient of relative risk aversion ρ and exponential discount factor δ (equation (3)). Values of δ are annualized. I abstract from uncertainty and interest rates, which means I overestimate the expected consumption drop.

Table A.6: Predicting the amount of flexibility: other illiquid savings and temptation spending (alt. dep. var.)

	Dependent variable:				
	Number of flexibility months that applicant chooses				
	(1)	(2)	(3)	(4)	(5)
Gambling spending in 2014H2 (dummy)	-0.131^{***}				-0.132^{***}
	(0.045)				(0.046)
Alcohol spending share in 2014H2		0.048			-0.076
		(0.403)			(0.430)
Tax returns bottom half in 2012 (dummy)			-0.030		-0.031
			(0.046)		(0.048)
Tax returns top half in 2012 (dummy)			-0.137^{***}		-0.125^{***}
			(0.046)		(0.048)
Share of deposit balances outside checking accounts				-0.217^{***}	-0.217^{***}
				(0.065)	(0.065)
Controls	Yes	Yes	Yes	Yes	Yes
Mean number of flexibility months	9.31	9.31	9.31	9.31	9.31
Observations	38,862	38,862	38,862	36,079	36,079
Adjusted R^2	0.098	0.098	0.098	0.099	0.100

Note: *p<0.1; **p<0.05; ***p<0.01

The table provides estimates that predict the length of flexibility among all applicants. The dependent variable is the length in months of the longest flexibility policy taken by the household. The omitted category regarding tax returns represents households who do not receive tax refunds. Control variables include fixed effects for the number of adults and children, number of mortgage contracts, municipality, and fixed effects for bins of age, total deposit balances, interest-paying unsecured debt, disposable income before the flexibility offer, gross income in 2012 for the highest earner in the household, card expenditure, principal payment, property value, mortgage value, mortgage interest rate, bank branch, and application week. I drop households with negative deposit balances in regressions that include the share of deposit balances outside checking accounts as an explanatory variable. Robust standard errors in parentheses.

Table A.7: Changes in income flows before the flexibility offer do not predict the amount of flexibility

	Dependent variable:			
	Share of flexibility applied for			
	(1)	(2)	(3)	(4)
Income2014Q4/Income2014Q3	−0.00004	0.0004		
	(0.0001)	(0.005)		
Income2014Q4/Income2014Q3 above median (dummy)			0.0002	
			(0.003)	
Income2014Q4/Income2014Q3 second quintile (dummy)				0.001
				(0.004)
Income2014Q4/Income2014Q3 third quintile (dummy)				0.006
				(0.004)
Income2014Q4/Income2014Q3 fourth quintile (dummy)				0.002
				(0.005)
Income2014Q4/Income2014Q3 fifth quintile (dummy)				−0.001
				(0.005)
Sample	All	Exclude top/bottom 1pct	All	All
Controls	Yes	Yes	Yes	Yes
Mean share of available flexibility applied for	0.68	0.68	0.68	0.68
Observations	38,725	37,949	38,725	38,725
Adjusted R^2	0.115	0.114	0.115	0.115

Note: *p<0.1; **p<0.05; ***p<0.01

The table provides estimates of a regression in which the dependent variable is the share of available flexibility that the applicant applies for. The main explanatory variable in columns 1 and 2 is the income flow to bank accounts in 2014Q4 relative to 2014Q3 (I require positive income in 2014Q3). The main explanatory variable in column 3 is a dummy for whether the income flow growth from 2014Q3 to 2014Q4 is above median. The main explanatory variables in column 4 are dummies for quintiles of income growth from 2014Q3 to 2014Q4 (bottom quintile the omitted baseline category). In column 2, I exclude observations with income growth in the top/bottom one percent. Controls include fixed effects for the number of adults and children, number of mortgage contracts, municipality, and fixed effects for bins of age, total deposit balances, interest-paying unsecured debt, gross income in 2012 for the highest earner in the household, card expenditure, principal payment, property value, mortgage value, mortgage interest rate, bank branch, and application week. Robust standard errors in parentheses.

Table A.8: Probability of making principal payments during flexibility

Flexibility length	P(Principal payments > 1)	P(Principal payments after first month > 1)	P(Consistent principal payments)
1	0.145		
2	0.146	0.041	0.041
3	0.168	0.054	0.054
4	0.147	0.048	0.012
5	0.156	0.070	0.010
6	0.169	0.060	0.005
7	0.181	0.089	0.006
8	0.180	0.080	0.001
9	0.173	0.101	0.003
10	0.189	0.083	0.002
11	0.277	0.119	0.005
12	0.210	0.095	0.003

[a] The table plots the probability of making principal payments during flexibility by length of flexibility. Column 2 provides the probability of making at least one principal payment during flexibility. Column 3 provides the probability of making at least one principal payment during flexibility when omitting the first month of flexibility (to account for potential inertia in principal payments). Column 4 provides the probability of making principal payments in at least 50 percent of flexibility months (omitting the first month of flexibility).

Table A.9: Mean characteristics before and after matching flexibility applicants to households without a mortgage

	Before matching		After matching	
	Flexibility	No mortgage	Flexibility	No mortgage
Unique households	26,383	327,130	25,716	16,858
Adults	1.75	1.32	1.75	1.75
Children	0.92	0.17	0.90	0.90
Age of oldest adult	44.15	50.17	44.07	44.22
Deposit balances	5,854	20,129	5,901	5,576
Interest-paying unsecured credit	2,300	440	2,292	2,107
Share with net liquid assets < 0	0.40	0.12	0.40	0.40
Card expenditure	1,575	848	1,589	1,601
Disposable income	3,303	1,874	3,332	3,401

[a] Flexibility applicants include applicants for a flexibility policy of six or twelve months.
[b] I omit couples that split and singles that form a couple from June 2014 to December 2016.
[c] Characteristics refer to values at the end of January 2015 (before the flexibility offer in February 2015).
[d] Net liquid assets equal deposit balances minus interest-paying unsecured debt.

Table A.10: Mean characteristics before and after matching flexibility applicants to non-applicants with a mortgage

	Before matching		After matching	
	Flexibility	No flexibility	Flexibility	No flexibility
Unique households	26,383	111,691	25,789	19,979
Adults	1.75	1.71	1.75	1.75
Children	0.92	0.69	0.91	0.91
Age of oldest adult	44.15	45.50	44.06	44.20
Deposit balances	5,854	13,086	5,884	6,119
Interest-paying unsecured credit	2,300	1,116	2,306	2,214
Share with net liquid assets < 0	0.40	0.19	0.40	0.40
Card expenditure	1,575	1,559	1,590	1,601
Disposable income	3,303	3,263	3,334	3,318
Mortgage value	114,163	89,492	114,717	112,640
Principal payment	698	591	701	687
Mortgage interest rate	1.24	1.34	1.23	1.24
Property value	183,938	170,753	184,685	184,641

[a] Flexibility applicants include applicants for a flexibility policy of six or twelve months.
[b] I omit couples that split and singles that form a couple from June 2014 to December 2016.
[c] Characteristics refer to values at the end of January 2015 (before the flexibility offer in February 2015).
[d] Net liquid assets equal deposit balances minus interest-paying unsecured debt.