Expenditure Risks and High-Cost Consumer Credit*

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Abstract

This paper highlights the link between the utilization of high-cost consumer credits by wealth-poor households and the risks associated with household expenditures. Using the PSID and the SCF, I document that households with very limited liquid wealth and available credit while facing unexpected expenses are more likely to resort to high-cost credit options, such as payday loans. Furthermore, these unexpected expenses probably stem from specific spending categories, such as medical costs as well as vehicle and home repairs. For households at their borrowing constraints, occurrence of expenditure shocks tends to reduce consumption growth and savings rate, which impedes wealth accumulation. I discuss the role of expenditure shocks in models of consumption-savings and why they are crucial for understanding the demand for high-cost credits.

Keywords: Consumer Credit, Consumption, Savings, Incomplete Markets
JEL Codes: E21, G51, I32

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1 Introduction

It has been well-documented that a large share of the US population hold very little wealth, and the reasons behind this phenomenon have been at the center of discussions by many researchers and policymakers. Furthermore, a non-trivial fraction of the wealth-poor face extremely high cost of borrowing and often have to resort to payday loans and pawn shop loans to address their financial needs. For example, a typical payday loan would charge an APR or more than 300% for a duration of 2 weeks (CFPB (2013)). Answering why so many households fail to accumulate sufficient wealth, especially in the face of such high marginal returns, is apparently a more challenging yet equally important endeavor.

The consumption-savings literature provides three main explanations for the substantial wealth inequality observed in the data: income risks (e.g. Castañeda, Díaz-Giménez and Ríos-Rull (2003)), return heterogeneity (e.g. Hubmer, Krusell and Smith. (2021)) and preference heterogeneity (e.g. Krusell and Smith (1998)). However, these explanations might not be sufficient when it comes to explaining the demand for high-cost credits among wealth-poor households. First, as documented by Aguiar et al. (2021), poor households tend to have more volatile income, which increases the incentive for accumulating precautionary savings. Furthermore, as borrowers of high-cost credits face extremely high interest rates, they should in principle prefer to substitute current consumption for future consumption by increasing their savings. Lastly, to rationalize borrowing at interest rates as high as those charged by payday loans, one would possibly need to assume an extremely high discount rate for these households. In order to understand the demand for credits that are so costly to borrow, it would thus be necessary to take a closer look at households who experience financial difficulties and see whether they are different from others in terms of consumption-savings behavior.

In this paper, I aim to unveil the reasons behind the need for high-cost consumer credits. Using the SCF and the PSID, I find that households often fail to fully foresee and control their expenditures. In particular, borrowers of high-cost credits such as payday loans are more likely to experience events leading to unexpected expenses. These households resort to high-cost credits when they need to finance larger-than-expected expenses but have depleted other ways to smooth consumption, such as their own savings and less costly credit options. Moreover, it is likely that these unexpected expenses stem from particular spending categories, such as medical costs as well as vehicle and home repairs, as expenditures in these categories tend to be less correlated with income fluctuations and much more volatile than income. This is in line with survey findings by CFPB (2020), in which households claim these expenses as main reasons for their difficulties in paying bills or other expenses.

Motivated by these findings, I therefore construct a measure of expenditure shocks based on

variations in medical and repair costs in the PSID, and examine their effects on households' consumption-savings behavior. I find that those who experience large expenditure shocks exhibit patterns of consumption growth and savings rate that are very different from predictions of standard consumption-savings models. More precisely, while standard incomplete markets models predict higher consumption growth and savings rate for borrowing-constrained households, my evidence shows that these households would have flat or even lower consumption growth and savings rate when confronted with large expenditure shocks. As a result, these expenditure shocks lead to more front-loaded consumption and impede wealth accumulation.

Through these findings I aim to highlight the importance of incorporating expenditure shocks into consumption-savings models in order to understand the demand for high-cost credits among wealth-poor families. It remains an open question how the expenditure shocks can be modelled in a way that is consistent with the empirical findings in this paper and has substantive interactions with other household decisions, enabling the model to explain the behavior of both of high-cost credit borrowers and the rest of the population who follow patterns predicted by standard models. I briefly outline how a model could be formulated to address this question.

The rest of the paper is organized as follows. In Section 2, I describe the data used for empirical analysis and highlight some key features of the data. Section 3 presents empirical findings regarding the link between the demand for high-cost credits and expenditure shocks as well as the effects of expenditure shocks on consumption-savings behavior. In Section 4, I discuss why it is necessary to incorporate expenditure shocks into consumption-savings models to explain high-cost borrowing, and outline how such expenditure shocks could potentially be modelled. Section 5 concludes.

2 Data

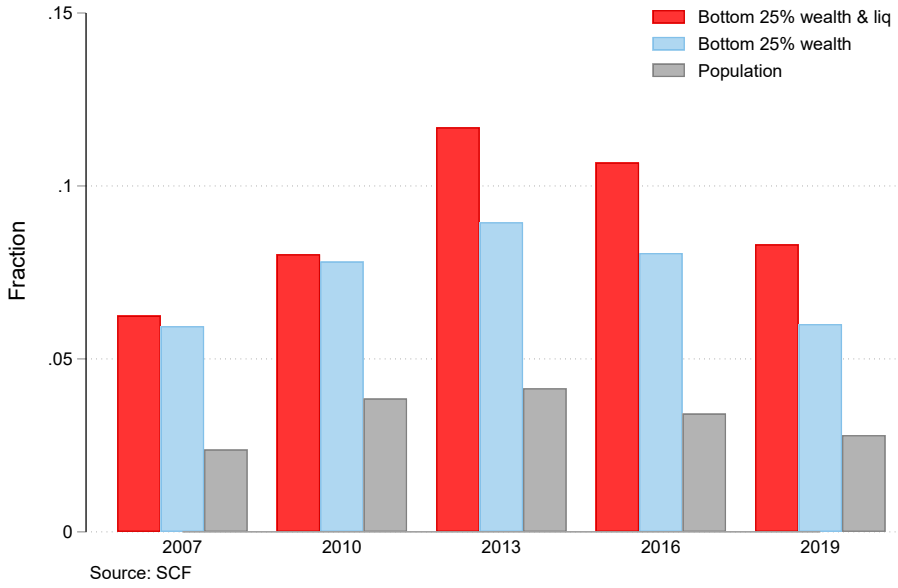
2.1 The Survey of Consumer Finances (SCF)

The SCF is a cross-sectional survey conducted every 3 years on households that are representative of the US population, with rich information about their income, wealth, saving/borrowing behavior, and demographic characteristics. From 2007 onward, the SCF began collecting information about payday borrowing, which is of key interest to this paper. The sample I use for empirical analysis is thus based on 5 rounds of surveys from 2007 to 2019.

A non-trivial fraction of the population borrow high-cost loans such as payday loans, and demand for such loans is more pervasive among the wealth-poor. Figure 1 shows the proportions of households having borrowed payday loans in the past 12 months at each wave of the survey, with the grey bars representing the shares among the whole population, blue bars the

shares among households in the bottom 25th wealth percentiles, and red bars the shares among households in the bottom 25th percentiles of both net worth and liquid wealth distributions. Over the sample period, 2-3% of households in the whole population had borrowed payday loans in the 12 months leading up to the survey, while that number goes up to almost 10% for households at the lowest quartiles of both net worth and liquid wealth distributions.

Figure 1: Shares of Payday Borrowers in Different Subsets of the Population



Notes: This graph shows the shares of households borrowing payday loans in the past 12 months among the whole population (grey), households in the bottom 25th wealth percentiles (blue), and households in the bottom 25th percentiles of both net worth and liquid wealth distributions (blue).

The SCF data shows remarkable differences between payday borrowers and the rest of the population in terms of demographic characteristics, financial conditions as well as consumption-saving behavior. I highlight the comparison between borrowers vs. non-borrowers along these dimensions in Table 1.

The most striking differences between the two groups are their financial conditions, especially their balance sheets. While the earnings of payday borrowers are slightly less than a half of non-borrowers', their checking accounts are only less than 1/5 the size of non-borrowers'. On the liability side, payday borrowers tend to owe much more relative to their earnings than non-borrowers, which results in a negative average liquid wealth position. This is consistent with the findings by Bhutta et al. (2015) that applicants of payday loans tend to have exhausted their credit card limit.

One may wonder why the gap in liquid wealth positions dwarf the earnings differentials, especially since there is a high return for borrowers to save given the high interest rates they face. A

Table 1: Characteristics of Payday Borrowers vs. Non-borrowers

	Non-borrowers	Borrowers
Demographics		
Age	43.2	41.5
Minority (%)	30.7	47.3
Years educ	9.4	8.7
Financial conditions		
HH annual earnings ($)	85,715.7	38,779.5
Ckng acct bal ($)	6,667.9	1,153.8
Liquid wlth ($)	10,167.0	-17,630.8
Net worth ($)	581,783.8	44,129.4
Spending behavior		
Expenses unusually high (%)	28.9	37.8
Total spending > Income (%)	15.0	33.5
Share (%)	97.6	2.4

Notes: Source: 2007-2019 SCF. This table shows the characteristics of payday borrowers and non-borrowers aged between 18 and 64. All dollar values are in 2009 dollars.

potential explanation, which I will explore later in Section 3, comes from their spending behavior. A 9 p.p. higher share of respondents among borrowers claim that their households' expenses are unusually high compared to what they would expect in a normal year, and that share is 19 p.p. higher for households claiming that their overall spending is higher than total income in the previous year. During these episodes of unusually high, and perhaps unexpected expenses, households might be compelled to dis-save in spite of potentially high cost of borrowing.

2.2 The Panel Study of Income Dynamics (PSID)

I use the PSID to uncover sources of the unexpected expenses and study their impacts on households consumption-savings decision, as the PSID has a reasonably long panel and provides a rich set of information about household income, wealth and different components of their consumption expenditure. I use the nationally representative sample [1] starting from 1999 since it was the first wave collecting information about household balance sheets. Following Aguiar et al. (2021), I define liquid wealth as liquid assets net of liquid debts, where liquid assets consist of checking, saving and money market accounts and stocks not in pension funds, and liquid debts consist of credit card debts, student loans, medical or legal bills, or loans from relatives. Household income is measured on an after-tax basis, and taxes are estimated using TAXSIM.

[1] The Survey Research Center sample and the immigrant sample.

A comprehensive set of information about household expenditure is also available from the PSID starting from 2005. Total household expenditure can be divided into the following broad categories: food, clothing, education, health care, child care, housing, transportation, trips and other recreational expenses, and can be further decomposed into subcategories. For example, health care expenditures can be further decomposed into expenditures for hospital and nursing home, doctor, prescription drugs and insurance. As will be shown in Section 3, I construct a measure of expenditure shocks based on some of these subcategories which are likely to be less predictable and study its properties.

3 Empirical Results

3.1 Determinants of Payday Borrowing

Section 2 documented the distinct characteristics of payday borrowers. In this section, I examine in more detail the conditions under which households borrow payday loans. The baseline regression model can be characterized by the following equation

$$\Pr\left(payday_{i,t}=1\right)=F\left(\alpha_0+\alpha_1 poorhtm_{i,t}+\mathbf{X}_{i,t}'\beta\right) \tag{1}$$

where $F\left(x\right)=e^x/\left(1+e^x\right)$ represents the cumulative logit function. I use logit regression instead of OLS as the dependent variable takes on binary values: *payday* is a dummy which equals 1 if the household borrowed payday loans in the past year. The main explanatory variable *poorhtm* is a dummy of whether the households' were poor hand-to-mouth at the borrowing constraint, as defined by Kaplan and Violante (2014). In their paper, households are characterized as poor hand-to-mouth at the borrowing constraint if they have negative net worth and their liquid wealth positions hit the borrowing limit, where the borrowing limit is set as 74% of quarterly labor income, or equivalently 18.5% of annual labor income. These households are limited in their ability to smooth consumption. $\mathbf{X}$ represents a set of controls including quadratic functions of age and years of education, marital status, sex, numbers of children, race dummies, and year fixed effects.

I further extend the baseline model to incorporate additional variables describing household financial conditions and spending behavior. Table 2 reports the coefficients of interest from Equation 1 as well as its extensions.[2] In particular, *turndown* is a dummy of whether the respondents had at least one credit applications turned down in the past 12 months, *expensehi*

[2]Coefficients are estimated using the Stata command *SCFCOMBO* developed by Pence (2005) to account for multiple imputation errors and sample variability errors in the SCF data. For details, see https://www.federalreserve.gov/econres/files/Standard_Error_Documentation.pdf.

is a dummy of whether the respondent claims to have unusually high expenses in the past year, and *negsave* is a dummy of whether total expenditure exceeds total income in the past year.

Table 2: Determinants of Payday Borrowing

	(1)	(2)	(3)	(4)
poorhtm	0.744***	0.472***	0.389***	0.300***
	(0.090)	(0.092)	(0.088)	(0.089)
turndown		1.433***	1.406***	1.338***
		(0.058)	(0.058)	(0.058)
expensehi			0.299***	0.195***
			(0.054)	(0.053)
negsave				0.704***
				(0.064)
Observations	28,938	28,938	24,521	24,521
Pseudo R^2	0.081	0.126	0.123	0.133

Notes: Source: 1998-2019 SCF. Controls include quadratic functions of age and years of education, marital status, sex, numbers of children, race and year dummies. Multiple imputation and sample variability errors are corrected using the *SCFCOMBO* command in Stata.

The coefficients in Table 2 reflect the effect of each explanatory variable on the log odds of payday borrowing. [3] All coefficients of interest are highly statistically significant, revealing that payday borrowing tend to happen when (1) households have low liquidity; (2) they are unable to increase their borrowing limits through the standard credit market; (3) they experience unexpected expenses which increase their total spending, and (4) the unexpected expenses are large enough so that their incomes during the period are insufficient for all expenses. This finding is consistent with the results from Saldain (2018), who instead uses the same data to study the differential propensities of these financial conditions among payday borrowers and non-borrowers.

Note that while unexpected expenses have been explored here as a potential reason for borrowing high-cost credits, I do not intend to rule out alternative explanations such as a lack of financial literacy or self control. In fact, these traits might also induce households to make more mistakes in purchases, which in turn leads to expenses that are larger than planned. To examine the causes and consequences of unexpected expenses, one needs to go beyond the SCF

[3] If the probability of an event happening is p, then the log odds is $\log\left(\frac{p}{1-p}\right)$, which is strictly increasing for $p \in (0,1)$.

and take a close look at the consumption patterns of different households, and understand the underlying reasons for unexpected expenses.

3.2 Sources of Unexpected Expenditure

A natural follow-up question is, therefore, what are the causes of the large unexpected expenditure that these households claim to experience? The Consumer Financial Protection Bureau (CFPB), through the Making Ends Meet Survey series, provides some insights on the reasons underlying households' financial difficulties. In the surveys, households are asked the reasons for having difficulty paying for bills or expenses. A summary of the responses in CFPB (2020) is shown in Table 3.

Table 3: Reasons for Financial Difficulty

Reasons	% of respondents	Event was unexpected (%)
Medical expenses or fees	**48**	**85**
Loss of job or other income	33	78
Auto repair	**31**	**87**
Helping children, parents, or other family members	27	84
Home repair	**20**	**81**
Loss of income from illness	20	87
No event	28	

Notes: Source: CFPB "Insights from the Making Ends Meets Survey" (2020).

Most of the respondents in the survey point to at least one events that caused financial difficulty. The most common reasons for increases in expenses are medical expenses, auto repairs and home repairs, and most respondents claim that these events are unexpected.

Using the PSID, I document more formally the properties of these categories of expenditure. The panel feature of PSID allows me to calculate changes in expenditure by the same households over time and examine their co-movements with other characteristics of the households. Motivated by the CFPB survey, I separate out medical expenses (doctors, hospital & prescription drug costs), auto repairs and home repairs from their respective main categories (health care, transportation and housing). I then look at the correlations of these subcategories with income as well as their volatility.

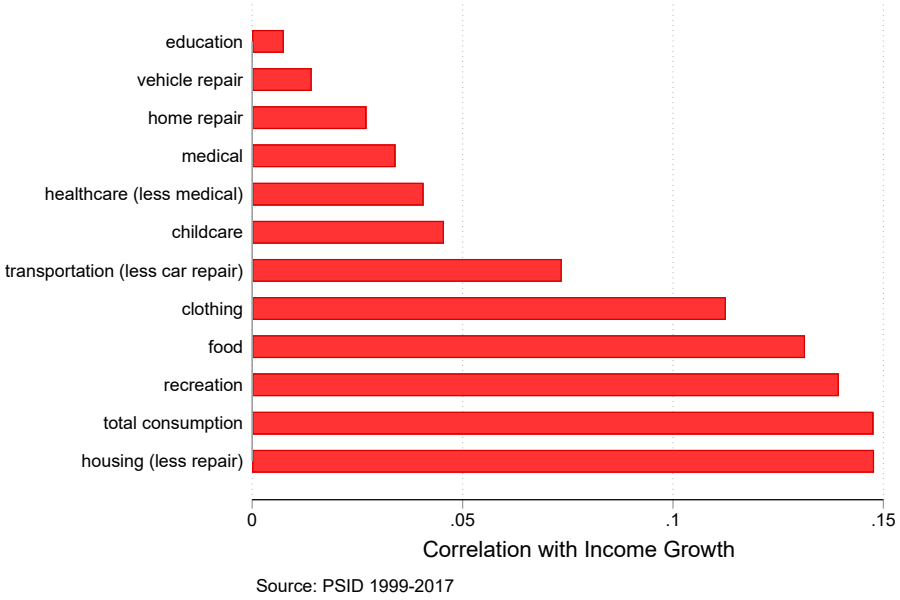
To fix ideas, it proves helpful to introduce some notations first. Let $C_{i,j,t}$ denote the real expenditure by household i in subcategory j in year t, and let $Y_{i,t}$ denote total income (labor plus

asset income net of social security contributions) received by household i in year t. Furthermore, let $\Delta^c_{i,j,t} \equiv \log(C_{i,j,t}) - \log(C_{i,j,t-2})$ and $\Delta^y_{i,t} \equiv \log(Y_{i,t}) - \log(Y_{i,t-2})$ be the log differences in $C_{i,j,t}$ and $Y_{i,t}$ between years $t-2$ and t respectively. [4]

Next, for each household i and subcategory j, I calculate within the sample period (1) the correlation between $\Delta^c_{i,j,t}$ and $\Delta^y_{i,t}$, and (2) the ratio of the standard deviation of $\Delta^c_{i,j,t}$ over that of $\Delta^y_{i,t}$. A substantial amount of heterogeneity exists in these statistics among households due to their idiosyncratic lifetime events and preferences. Therefore I take the median of these statistics and focus on the comparison between different categories of expenditure.

Figure 2 shows the median correlation between expenditure growth and income growth among households for each subcategory of expenditure. Education, vehicle repair, home repair and medical costs have much lower correlation with income, compared with food, recreation and housing. [5] This suggests that the three types of expenses of interest in the CFPB survey are possibly driven by something independent of income realizations. Although irrelevance with income does not necessarily prove that these expenses are not expected by households, it is a necessary condition for the lack of predictability.

Figure 2: Correlations of Expenditure Growth with Income Growth



Notes: This graph shows the median among all households of $corr(\Delta^c_{i,j,t}, \Delta^y_{i,t})$ for each subcategory of expenditure j.

That being said, an expense would be inconsequential for the households' financial well-being

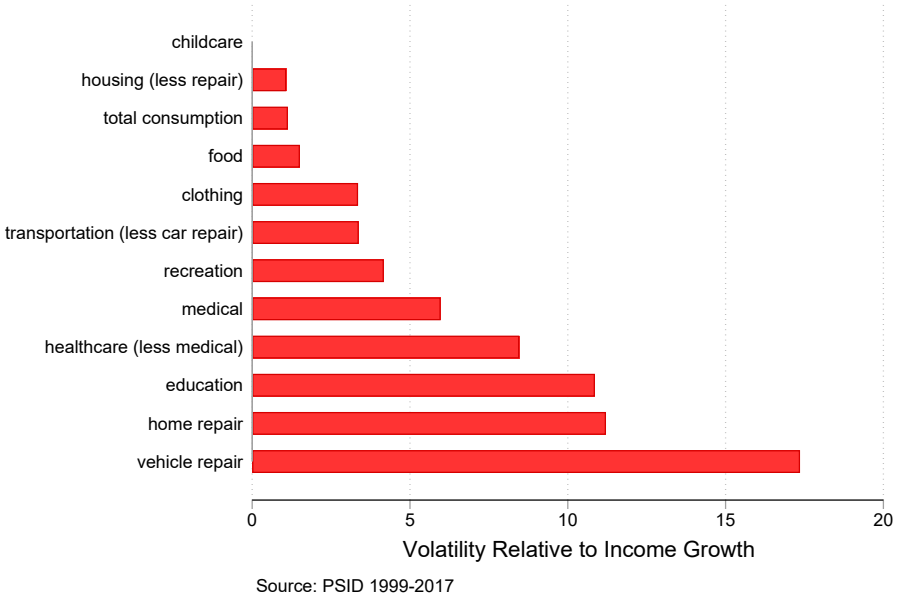
[4] Growth rates are calculated in 2-year intervals since the PSID waves are updated biennially in the sample period.

[5] Education is not very correlated with income possibly because most educational expenses are made before workers enter the labor market.

in spite of its unpredictability if it is small relative to income. Therefore it proves useful to also look at how volatile these expenses are. Figure 3 shows the median volatility of each subcategory relative to income growth among all households. A level above 1 means that expenditure in the subcategory tends to be more volatile than income.

For average households, vehicle repair and home repair costs are indeed the most volatile: expenses in these two categories are over 10 times more volatile than income, while medical expenses are also over 5 times more volatile than income.

Figure 3: Volatility of Expenditure Growth Relative to Income Growth



Notes: This graph shows the median among all households of $\sigma(\Delta^c_{i,j,t})/\sigma(\Delta^y_{i,t})$ for each subcategory of expenditure j.

The two facts above suggest that the three subcategories of interest are unlike the other ones which households have more control of (e.g. food, clothing) and are thus more likely to be the sources of expenditure shocks, which many households have quoted as the main reason for financial difficulty. This is consistent with the CFPB survey results.

3.3 Expenditure Shocks and Consumption-Savings

To further unveil the reasons why expenditure shocks leads to demand for high-cost credits, I construct a measure of expenditure shocks based on medical, vehicle repair, and home repair expenses, and examine how occurrence of expenditure shocks affect households' consumption-savings behavior, especially at the borrowing constraint. In particular, I look at the effect of expenditure shocks on consumption growth and savings rate at the borrowing constraint,

as these two outcomes reflect the success of wealth building and thus the extent to which households can avoid the borrowing constraint.

Let $\chi_{i,t}$ denote the sum of medical and vehicle repair costs.[6] The first regression, which studies how expenditure shocks affect consumption growth, can be specified by the following equation

$$\Delta^{c,nd}_{i,t} = \alpha_0 + \alpha_1 poorhtm_{i,t} + \alpha_2 poorhtm_{i,t} \times \Delta^{\chi}_{i,t} + \mathbf{X}'_{i,t}\beta + \epsilon_{i,t} \tag{2}$$

where $\Delta^{c,nd}_{i,t} \equiv \log(C^{nd}_{i,t+2}) - \log(C^{nd}_{i,t})$ is the change in logged non-durable consumption between years t and $t+2$, and $\Delta^{\chi}_{i,t} \equiv \log(\chi_{i,t}) - \log(\chi_{i,t-2})$ is the change in logged medical and repair costs between years $t-2$ and t. $\mathbf{X}$ represents the same set of demographic controls that are used in Equation 1. Table 4 reports the coefficients of interest, i.e. α_1 and α_2, from Equation 2.

Table 4: Effect of Expenditure Shocks on Consumption Growth

	$\Delta^{c,nd}$		
	coefficient	std. err.	p-value
$poorhtm$	0.020**	0.009	0.022
$poorhtm \times \Delta^{\chi}$	-0.015***	0.003	0.000

Notes: Source: 1999-2017 PSID. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Results from Table 4 indicate that (non-durable) consumption growth are indeed higher at the borrowing constraint, consistent with predictions from standard incomplete markets models. However, growth rates tend to be significantly lower if households experience expenditure shocks $\Delta^{\chi} > 0$ and would be flat or even lower if the expenditure shocks are sufficiently large, an effect that is absent in standard models.

Next, I examine the effect of expenditure shocks on saving rate. Define saving rate as $s_{i,t} \equiv (Y_{i,t} - C_{i,t})/Y_{i,t}$, where $C_{i,t}$ denotes total expenditure (both durable and non-durable). A higher saving rate implies that wealth grows more in the following period. The second regression can be specified by the following equation

$$s_{i,t} = \alpha_0 + \alpha_1 poorhtm_{i,t} + \alpha_2 poorhtm_{i,t} \times \Delta^{y}_{i,t} + \alpha_3 poorhtm_{i,t} \times \Delta^{\chi}_{i,t} + \mathbf{X}'_{i,t}\beta + \epsilon_{i,t} \tag{3}$$

where again Δ^{y} is the growth in logged income between years $t-2$ and t. Table 5 reports the coefficients α_1, α_2 and α_3 from equation 3.

The first two coefficients confirm predictions from standard models of consumption and sav-

[6] Home repair costs are not included in the baseline results due to a shorter panel. However, the results below are qualitatively the same if I include home repair.

Table 5: Effect of Expenditure Shocks on Saving Rates

	s		
	coefficient	std. err.	p-value
$poorhtm$	-0.164***	0.022	0.000
$poorhtm \times \Delta^y$	0.642***	0.044	0.000
$poorhtm \times \Delta^\chi$	-0.025***	0.008	0.002

Notes: Source: 1999-2017 PSID. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

ings: households dis-save when hit by a bad income shock, until they reach a binding borrowing constraint. The third coefficient, however, indicates that when households face an unexpected increase in medical bills or repair costs, they continue to save less rather than reducing spending in other categories. This result is also absent in standard models.

Taken together, these facts highlight the role expenditure shocks play in the borrowing behavior of the poor. While poor households have strong incentive to build their wealth, their wealth accumulation is often disrupted by the repeated occurrence of expenditure shocks, which force them to dis-save and return to their initial wealth level. It is therefore possible that households demand high-cost credits due to bad luck, even if they are perfectly time-consistent and rational.

4 Discussion

The findings in Section 3.3 provide some insights into why standard incomplete markets (SIM) models as in e.g. Aiyagari (1994), Bewley (1977) and Huggett (1993) should be modified by incorporating expenditure shocks in order to understand the behavior of high-cost credit borrowers. Note in a SIM model, the Euler equation is typically expressed by

$$u'(c_t) \geq \frac{1+r}{1+\rho} E_t u'(c_{t+1}) \tag{4}$$

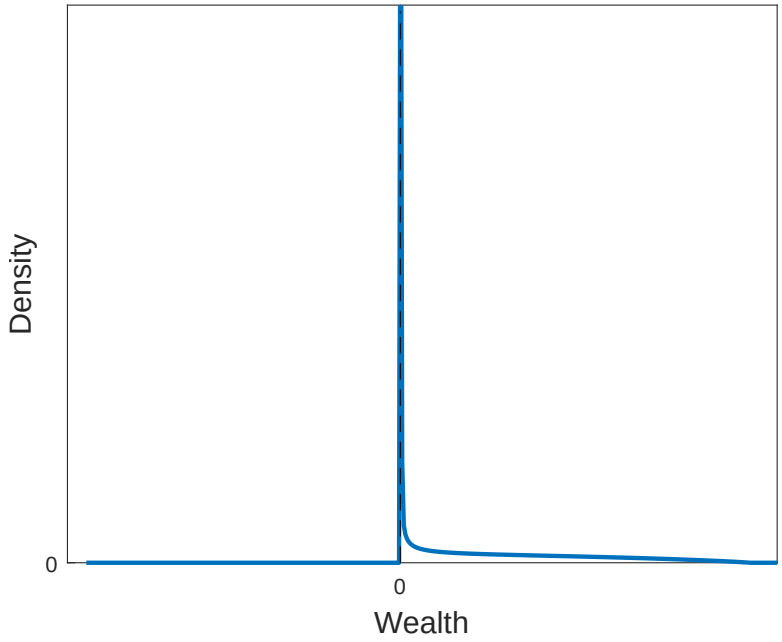
where $u(.)$ is households' utility function, ρ is households' subjective discount rate and r is the interest rate. When the borrowing constraint is loose, the Euler equation 4 holds with equality and consumption growth is thus driven by $(1+r)/(1+\rho)$ as well as income realizations in each period. For households facing low income realizations today, they smooth their consumption by dis-saving and keeping their consumption high relative to their low income realizations. On the other hand, when interest rate is high (e.g. when households borrow high-cost credits), households face a high return from savings and are willing to substitute current consumption

for future consumption. This results in high saving rates, which would always be positive if the interest rate is so high that the intertemporal substitution incentive dominates the consumption smoothing incentive.

Furthermore, consumption growth is even higher at the borrowing constraint. When the borrowing constraint is binding, the Euler equation 4 holds with inequality, so that marginal utility today is high relative to tomorrow. A high marginal utility today means that c_t is low relative to future consumption c_{t+1}, which means higher expected consumption growth.

Figure 4 shows the distribution of wealth in SIM models where income follows a Markov process with three income types and where interest rate for borrowing r^{borrow} is much higher than the discount rate ρ, while interest rate for saving r^{save} is lower than the discount rate. The distribution has a spike at the point where wealth is zero and has a positive mass to the right. However, the mass is 0 to the left of the zero-wealth point as no households choose to dis-save when the interest rate is particularly high.

Figure 4: Wealth Distribution in SIM models where $r^{borrow} >> \rho > r^{save}$



Notes: This graph shows the wealth distribution in SIM models where the interest rate on borrowing is much higher than the discount rate, which is in turn higher than the interest rate on saving.

Results from Tables 4 and 5 confirm that absent expenditure shocks, household would behave in the same way as predict by the SIM models. On the other hand, household who frequently draw large expenditure shocks are unable to save and thus face repeated needs to borrow, even if interest rates are high.

Expenditure risks have been modelled in a number of papers, such as Chatterjee et al. (2007), Livshits et al. (2007), Miranda-Pinto et al. (2022) and Saldain (2022), albeit with different

approaches. In Chatterjee et al. (2007) and Livshits et al. (2007), expenditure shocks are modelled as negative wealth shocks: when medical costs arise for example, households are obliged to pay the bill in full, unless they choose to file for bankruptcy. An alternative method introduced by Miranda-Pinto et al. (2022) incorporates stochastic "consumption thresholds" into an otherwise standard Bewley (1977) incomplete markets model, and households adjust their total consumption in response to changes in the thresholds. The utility function allowing for consumption thresholds is modeled in the following way

$$U(C) = f(C) - \lambda \max\{\chi - C, 0\} \tag{5}$$

where $f(C)$ is a standard CRRA utility, $\lambda >> 0$, and the consumption threshold χ follows an $AR(1)$ process. Consumption below the threshold χ leads to large utility costs, so that when χ is high relative to income, households would rather dis-save than letting consumption drop below the threshold and paying large utility costs. Note that adding expenditure risks to standard income risks raises households' precautionary savings motive ex-ante, so that on average households tend to hold more wealth relative to an economy without expenditure shocks. However, some households might receive persistently bad income and consumption threshold draws ex-post, which necessitates borrowing in spite of high interest rates. Following this approach, Saldain (2022) studies the trade-offs of payday lending regulation in an economy where demand for payday loans results from both expenditure shocks and temptation. Regulators thus need to weigh the benefit of payday loans for smoothing out expenditure shocks against the harm of over-borrowing caused by self-control problems.

This paper, among some others, documents that demand for high-cost credits is higher in socially-disadvantaged groups. These households also turn out to be the ones that are more susceptible to expenditure risks. Table 6 shows the average variances of household-level expenditure shocks in different demographic groups. I compare households along three different dimensions: (1) whether the household head has a college degree; (2) whether the household head belongs to a ethnic minority group, and (3) whether the average household income is at the top or bottom half of the income distribution. As the table shows, households headed by individuals without college degrees and from ethnic minority backgrounds, whose lifetime incomes fall within the lower half of the population, are subject to more volatile risks in expenditure.

The link between unexpected expenses and medical costs as well as repairs suggests that inadequate maintenance of crucial household assets, such as health, housing and vehicles, could lead to high expenditure risks. Households in financial difficulty, who tend to come from socially-disadvantaged backgrounds, might find it impossible to invest in these assets as the costs involved are substantial, which further increases their exposure to expenditure shocks.

The analysis in this section is intended to serve as a motivation for future research on

Table 6: Volatility of Expenditure Shocks by Demographic Groups

Demographic group	avg $\sigma^2_{\Delta^x}$	p-value
College	3.88	0.00
No college	5.71	
White	4.46	0.00
Minority	8.12	
High avg income	3.05	0.00
Low avg income	6.35	

Notes: Source: 1999-2017 PSID. This table shows the average within-household variance of expenditure shocks Δ^x in different groups of the population. The third column shows the p-value of tests of equal variance between two demographic groups.

household expenditure risks and financial health. To my knowledge, the existing literature on household consumption-saving decisions and consumer credit tend to model expenditure shocks as a exogenous process which is ex-ante identical for all households. In such models, being financially-constrained results from bad luck, and household decisions have no impact on the realization of income and expenditure shocks. However, it is well possible that households could influence their exposure to shocks by having more regular maintenance of their health, housing and other assets that are crucial to their well-being. A model which allows for interactions between expenditure risks and household choices not only elucidates the drivers of high-cost credit demand among wealth-poor households, but also facilitates consideration of the efficacy of various social policies in shielding these households from expenditure risks and promoting sustainable financial well-being.

5 Conclusion

The main contributions of this paper are to (1) unveil the conditions under which borrowing of high-cost credits, such as payday loans, occur; (2) explore the sources of expenditure shocks, namely medical and repair costs, which drive the demand for high-cost credits among wealth-poor households, and (3) document the effects of those expenditure shocks on household consumption-savings behavior. The empirical findings suggest that a model of consumption-savings with expenditure shocks can go a long way in explaining the borrowing behavior of the poor.

Households from different backgrounds are exposed to expenditure shocks to different extents. For example, a household with healthy members and well-maintained housing and vehicles are less likely to experience these shocks. However, poor households may simply not have enough resources to achieve that level of stability. Therefore, future research should study the interplay between household decisions, in particular maintenance of health and other crucial household assets, and exposure to expenditure risks. In doing so, one could better understand the reasons under the financial challenges experienced by many households, as well as the types of investments needed to mitigate such challenges.

Such a model will also allow us to study a wide range of new policy questions. For example, are fiscal stimulus payments currently in place actually helpful for households' lifetime well-being, or are these payments just temporary relief for households in deep financial trouble due to their susceptibility to expenditure shocks? Answering these questions will help us design better policies geared towards improving financial health of poor households, in particular by giving them more control over their expenditure.

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