

Buy Now Pay (Pain) Later

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Disclosure Statement

***Nothing to Disclose**

Research Question

How does Buy Now Pay Later (BNPL) adoption affect individual financial health?

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BNPL

- Unregulated consumer loans
- Finance the purchase of an item in four installments over six weeks
- Interest free, only late fees in case of late payments
- Not reported to credit bureaus before 2022 February
- Easy to use at the checkout
- 1.5-7% merchant fee

Research Question

How does Buy Now Pay Later (BNPL) adoption affect individual financial health?



Negative Effect

- Overborrowing – no reporting to credit bureaus
- Over-consumption
- BNPL providers are plausibly willing to extend riskier credit



Positive Effect

- Smooth consumption
- Avoid liquidity shocks
- Substitute from more expensive credit

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BNPL allows us to examine the effects of increased credit access without large borrowing costs

Research Question – BNPL Practitioner Evidence

How does Buy Now Pay Later (BNPL) adoption affect individual financial health?



Negative Effect

“Shoppers who use Afterpay spend +40% more than those who do not”
Afterpay Website

Reasons adopted BNPL (survey):

- Purchases that won't fit the budget
- Avoid a hard credit check
- Can't get a credit card

Positive Effect

“It is not accurate to say that Affirm makes users less financially responsible or helps convince people to spend more than they should”
Affirm Spokesperson

Reasons adopted BNPL (survey):

- Clear payment schedule
- Convenience
- Avoid credit card interest

Motivation

New type of unregulated credit - growing rapidly



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New type of unregulated credit - growing rapidly


Regulatory concerns



 PYMNTS.com

[Australia, EU May Take the Lead in BNPL Regulation](#)

Australia, the European Union, the United Kingdom and the U.S. are looking at regulating the buy now, pay later (BNPL) sector.

 Reuters

[Britain plans to regulate 'buy now, pay later' lenders](#)

LONDON, June 20 (Reuters) - Britain plans to make "buy now, pay later" (BNPL) companies carry out affordability checks, gain approval by the...

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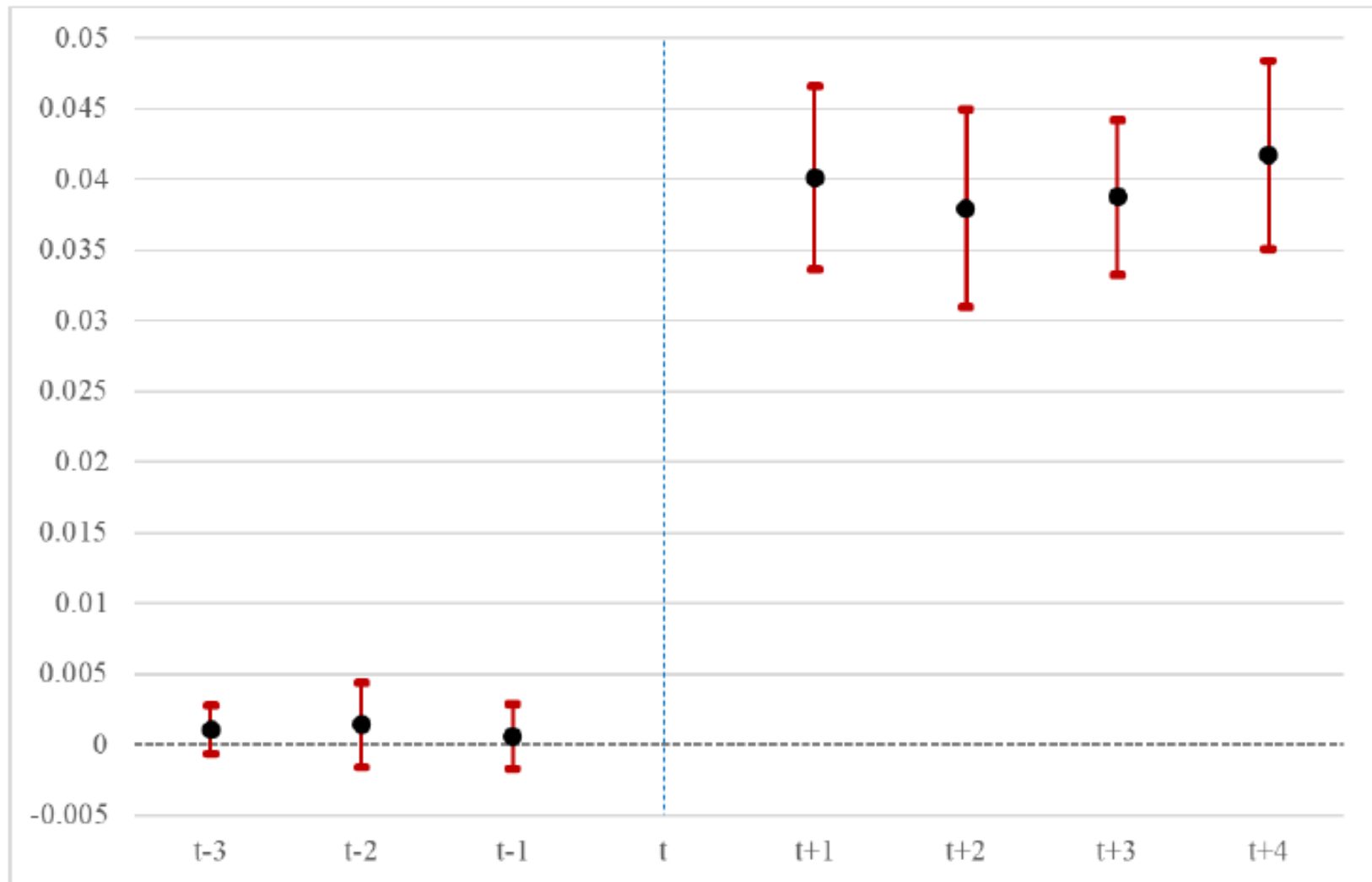


Research Question:

How does BNPL adoption affect individual financial health?

Key Findings - Consumers' financial health immediately deteriorates after BNPL adoption

Figure 2. BNPL Adoption and Overdraft Charges



Data

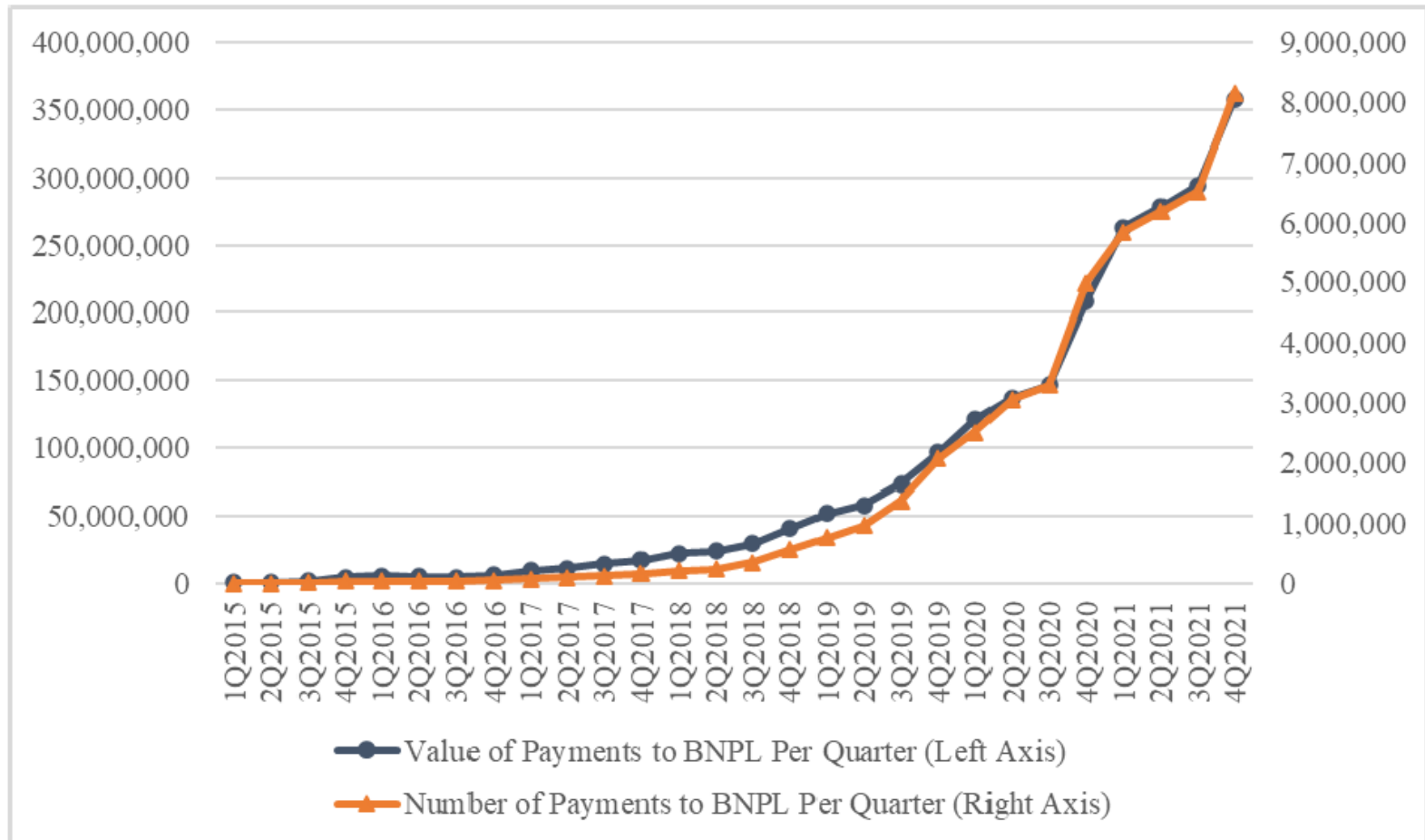
- Proprietary data provider – bank and credit card statements
 - 10.6 million unique users
 - 2015 to 2021
 - Identification: 1st payment to a BNPL provider

The Klarna logo consists of the word "Klarna." in a bold, black, sans-serif font, set against a light pink rectangular background.

- 1.37 million consumers (13.1%) use BNPL

Sharp increase in usage in recent years

Figure 1. Value and Number of BNPL Transactions per Quarter



There are significant differences between BNPL users and non-users

	BNPL Users		Non-BNPL Users		Difference:		
	Consumers = 1,374,901		Consumers = 9,192,111		(Users – Non-Users)		
	N	Mean	N	Mean	Diff	%Diff	Sig.
<i>Demographic Information</i>							
Proportion of Senior Population	1,373,991	0.157	9,129,623	0.159	-0.002	-2%	***
Proportion with College Education	1,373,991	0.375	9,129,623	0.403	-0.027	-7%	***
Proportion of Population under Poverty	1,373,991	0.118	9,129,623	0.113	0.005	4%	***
Proportion of Households with Computer	1,373,991	0.929	9,129,623	0.934	-0.005	-1%	***
Bank Branches per 1,000 residents	1,373,991	0.321	9,129,575	0.333	-0.012	-4%	***
CFPB Complaints per 1,000 residents	1,373,991	0.580	9,129,575	0.488	0.092	19%	***
Minority	1,373,991	0.306	9,129,623	0.301	0.005	2%	***
<i>Individuals' Financial Information</i>							
Income Tier	1,374,901	3.609	9,192,111	3.678	-0.069	-2%	***
Student Loan Ind.	1,374,901	0.148	9,192,111	0.127	0.020	16%	***
Mortgage Ind.	1,374,901	0.208	9,192,111	0.227	-0.019	-8%	***
Wage DD Ind.	1,374,901	0.666	9,192,111	0.586	0.081	14%	***
Consumption	1,374,901	2.340	9,192,111	2.247	0.093	4%	***
Overdraft	1,374,901	0.223	9,192,111	0.150	0.073	49%	***
Overdraft (unlogged)	1,374,901	0.773	9,192,111	0.486	0.287	59%	***
<i>Credit Card</i>							
Interest	629,289	0.098	5,285,900	0.065	0.034	52%	***
Interest (unlogged)	629,289	0.120	5,285,900	0.079	0.041	53%	***
Late_Fee	629,289	0.145	5,285,900	0.098	0.046	47%	***
Late_Fee (unlogged)	629,289	0.257	5,285,900	0.169	0.088	52%	***

Given the large differences between the groups we use a matched sample

- One-to-one matching centered around BNPL adoption
- Matching criteria: location, consumption, financial health

Table 1. Sample Selection

	BNPL Users	Non-Users	Total
Initial sample (consumers with basic data for at least one quarter during 2015-2021)	1,374,901	9,192,111	10,567,012
<i>Matched Sample Restrictions</i>			
Exclude consumers that do not exist in the next four quarters after BNPL adoption (largely adopters in 2021 and non-adopters who first appear in 2021).	(520,477)	(614,429)	(1,134,906)
Exclude consumers with missing matching variables (e.g., average consumption in the trailing four quarters)	(141,899)	(2,322,065)	(2,463,964)
Exclude unmatched consumers	(140,050)	(5,683,142)	(5,823,192)
Matched consumers	572,475	572,475	1,144,950

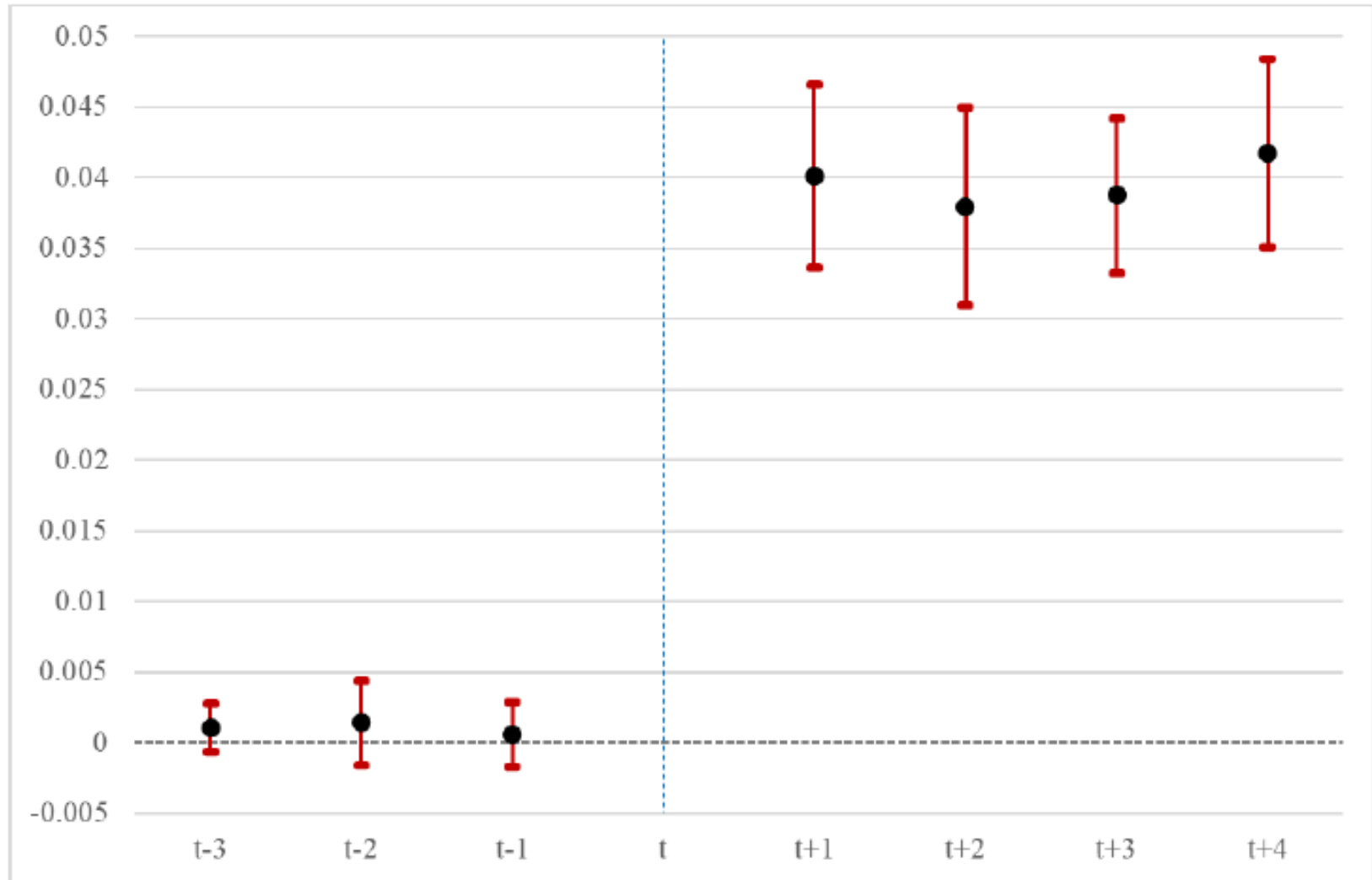
Research Design - DiD analyses for users and matches during 8 quarters centered around initial adoption

$$Wellbeing_{i,t} = \beta_0 BNPL_Adopter_i \times Post_{i,t} + \gamma_0 Post_{i,t} + X'_{i,t} \delta_0 + \eta_i + \mu_{s,t} + \epsilon_{i,t}$$

- Financial Health: Overdraft, Interest, and Late_Fee
- FE: Consumer fixed effects, State-year-quarter fixed effects
- Cluster: year-quarter and consumer
- Controls: Income Tier, Student Loan Ind., Mortgage Ind., Wage DD Ind.

Consumers' financial health immediately deteriorates in the quarter after BNPL adoption

Figure 2. BNPL Adoption and Overdraft Charges



The decision to adopt BNPL is likely endogenous, so we use IV analysis

- BNPL exposure due to prior shopping at BNPL collaborating retailers

Affirm and Walmart Announce Omnichannel Partnership

Customers can now use Affirm to make purchases and pay over time at Walmart stores and online

Feb. 27, 2019 | 3 Min. Read | [Business](#) | [f](#) [t](#) [in](#) [p](#) [✉](#) [🔗](#)

- Relevance condition: Walmart consumers are more likely to use BNPL after the partnership than consumers at other stores
- Exclusion restriction: The partnership is out of each consumer's control and unlikely to affect individuals outside BNPL

1st stage IV – one std increase in exposure is associated with a 15% increase in probability of adoption

$$BNPL_Adopter_i = \beta_1 BNPL_Exposure_i + \gamma_1 Health_i^{Pre} + \theta_1 Health_i^{Trend} + X_i' \delta_1 + \mu_{s,t} + \epsilon_i$$

	(1)	(2)	(3)
	First-stage Regressions		
DV= Health proxy=	<i>BNPL_Adopter Overdraft</i>	<i>BNPL_Adopter Interest</i>	<i>BNPL_Adopter Late_Fee</i>
<i>BNPL_Exposure</i>	0.061*** (22.107)	0.055*** (19.627)	0.054*** (19.524)
<i>Income_Tier</i>	-0.002*** (-5.225)	-0.002*** (-5.557)	-0.003*** (-6.667)
<i>Student_Loan_Ind.</i>	0.002** (2.610)	-0.000 (-1.674)	-0.002*** (-4.172)
<i>Mortgage_Ind.</i>	-0.004*** (-4.770)	-0.006*** (-5.629)	-0.006*** (-6.150)
<i>Wage_DD_Ind.</i>	-0.012*** (-8.177)	-0.007*** (-6.210)	-0.007*** (-6.482)
<i>Health^{Pre}</i>	0.001* (1.955)	-0.048*** (-9.996)	0.000 (0.029)
<i>Health^{Trend}</i>	0.001 (1.172)	0.033 (1.342)	0.001 (0.560)
Observations	1,144,950	368,038	368,038
Adjusted-R-squared	0.020	0.013	0.013
State-Year-Quarter-FE	YES	YES	YES
Kleibergen-Papp-Wald-F-statistic	488.70	385.20	381.17

2nd stage IV – instrumented BNPL adoption is associated with an 8.9% increase in overdraft charges

$$Health_i^{Post} = \beta_2 \widehat{BNPL_Adopter}_i + \gamma_2 Health_i^{Pre} + \theta_2 Health_i^{Trend} + X_i' \delta_2 + \mu_{s,t} + \epsilon_i$$

Dependent variable =	(1) <i>Overdraft</i> ^{Post}	(2) <i>Interest</i> ^{Post}	(3) <i>Late Fee</i> ^{Post}
<i>BNPL_Adopter</i>	0.089*** (14.355)	0.025*** (6.803)	0.084*** (14.659)
<i>Income Tier</i>	-0.001*** (-2.983)	-0.000 (-1.414)	-0.007*** (-28.917)
<i>Student Loan Ind.</i>	-0.010*** (-6.315)	0.004*** (6.587)	0.000 (0.086)
<i>Mortgage Ind.</i>	-0.013*** (-9.428)	0.003*** (6.996)	0.002 (1.422)
<i>Wage DD Ind.</i>	0.010*** (13.885)	-0.002*** (-2.987)	0.005*** (4.461)
<i>Health</i> ^{Pre}	0.642*** (24.145)	0.767*** (47.738)	0.489*** (37.133)
<i>Health</i> ^{Trend}	0.100*** (9.304)	0.274*** (40.431)	0.075*** (23.735)
Observations	1,144,950	368,038	368,038
Adjusted R-squared	0.494	0.660	0.215
State-Year-Quarter FE	YES	YES	YES
Kleibergen-Papp Wald F statistic	488.70	385.20	381.17

We address several potential concerns

Concern #1 - Consumers approaching financial difficulty change their habits and start shopping at BNPL retailers

- Alternative instrument measured in quarters (t-6, t-3)

Concern #2 - Long measurement window

- Narrower measurement window

Concern #3 - Covid pandemic

- Remove Covid pandemic from the analysis

We address several potential concerns (cont.)

Concern #4 - Overdraft and late fees are non-negative count variables

- Poisson regression

Concern #5 - Exclusion of BNPL users with limited banking data

- Matching using one quarter of pre-adoption data

BNPL users increase their consumption and there is a substitution effect with credit card consumption

Table 8. BNPL and Consumption

	(1) DID Estimates <i>Consumption</i>	(2) DID Estimates <i>Card_Ratio</i>	(3) IV 2SLS Estimates <i>Consumption^{Post}</i>	(4) IV 2SLS Estimates <i>Card_Ratio^{Post}</i>
<i>BNPL_Adopter</i> × <i>Post</i>	0.075*** (17.633)	-0.003*** (-5.553)		
<i>BNPL_Adopter</i>			0.645*** (14.934)	-0.098*** (-10.200)
Observations	9,159,600	2,944,304	1,144,950	368,038
Adjusted-R-squared	0.769	0.734	0.543	0.616
Controls & Fixed Effects	Yes	Yes	Yes	Yes

Limitations and Caveats

- Selection effects or an unobserved contemporaneous shock
- We cannot examine bankruptcy
- BNPL is a young market
- We mostly include consumers with extensive banking data
- We cannot identify BNPL late payments or delinquencies
- We can't identify what consumers are buying using BNPL

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Summary and Implications

- BNPL adopters experience rapid decrease in financial health
- Among first archival evidence on BNPL
- Regulatory implications

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Or more importantly:

“It's easy to get sucked in”

BNPL User

Thank You