Buy Now Pay (Less) Later: Leveraging Private BNPL data in Consumer Banking

Christine Laudenbach[1] Elin Molin[2] Kasper Roszbach[3] Talina Sondershaus[2]

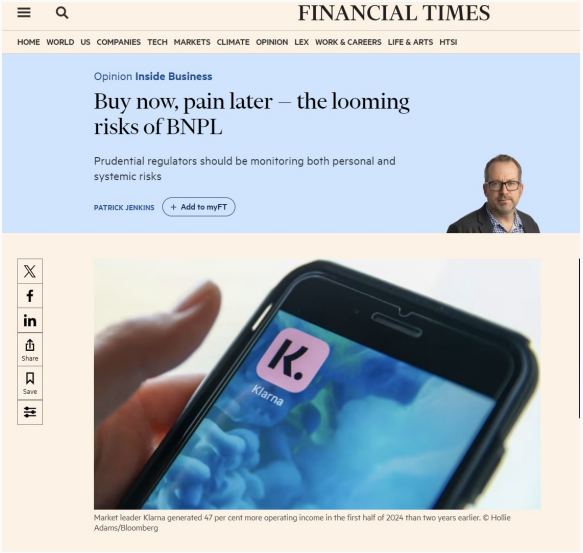
CEPR European Conference on Household Finance 2025
September 20, 2025

[1]SAFE and Goethe University

[2]Lund School of Economics and Management

[3]Norges Bank, U. Groningen

Motivation



FINANCIAL TIMES

HOME WORLD US COMPANIES TECH MARKETS CLIMATE OPINION LEX WORK & CAREERS LIFE & ARTS HTSI

Opinion **Inside Business**

Buy now, pain later – the looming risks of BNPL

Prudential regulators should be monitoring both personal and systemic risks

PATRICK JENKINS + Add to myFT

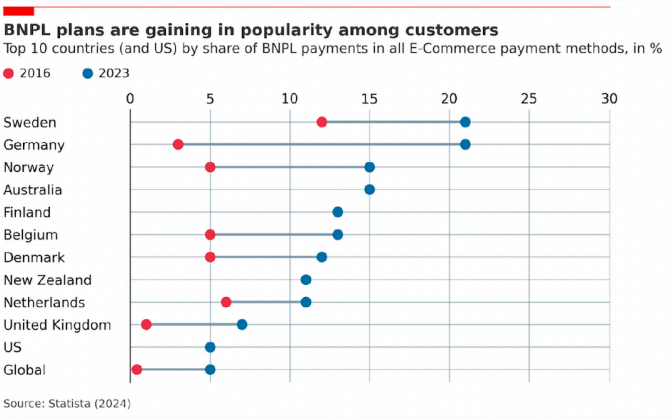
Share

Save

Market leader Klarna generated 47 per cent more operating income in the first half of 2024 than two years earlier. © Hollie Adams/Bloomberg

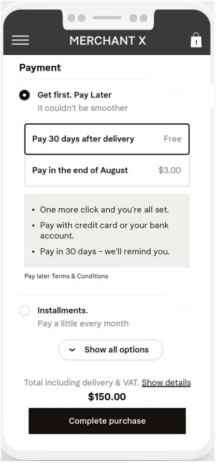
BNPL's Rising Popularity

- Merchant adoption rates from 10-15 percent in emerging economies, >50 percent in some advanced economies (Cornelli et al., 2023)



What is BNPL?

- Small loans where customers pay interest-free installment(s) after purchasing a product
- BNPL credit:
  - Customer $\rightarrow$ merchant $\rightarrow$ bank/BNPL provider
  - Light regulation and light credit check; information about loan and repayment behavior not shared with credit bureau
  - Financing: fees merchants pay to operators of BNPL platform, charges resulting from late payments



Background

- Users are typically riskier, younger, less educated and less well served in regular credit markets (Aidala et al., 2023; Cornelli et al., 2023; DiMaggio et al., 2022)
- BNPL stimulates sales
  - Customers - mostly with low creditworthiness - are 20% more likely to complete a purchase (Berg et al., 2024)
  - Especially lighter spenders more likely to make a purchase and spend more (Maesen and Ang, 2025)
  - Size of spending response very large, suggests a *liquidity flypaper* effect (DiMaggio et al., 2022)
- Contradictory findings on whether BNPL increases or alleviates financial stress:
  - \+ Guttman-Kenney et al. (2023); deHaan et al. (2024)
  - \- Bian et al. (2023); Papich (2022)

This Paper

Data and Setting:
Proprietary data from a Nordic bank that provides both **BNPL** and **unsecured bank loans**.

Research Questions:

- How does BNPL data influence borrowers' future access to credit and loan terms?
- How is BNPL repayment data incorporated into banks' credit scoring and pricing strategies?
- Who benefits from this data use – borrowers, banks, or both?

Key Findings

Customers screened based on their BNPL payment behavior:

- have a higher likelihood of bank loan acceptance,
- receive a discount on interest rates but pay more than what their internal risk profile would suggest,
- exhibit lower delinquency and default risk.

The Bank:

- use BNPL data from 'unregulated' lending to improve its credit risk assessments on bank loans,
- increase margins through price discrimination, gains when internal $\neq$ external risk assessments.

Key Findings

Customers screened based on their BNPL payment behavior:

- have a higher likelihood of bank loan acceptance,
- receive a discount on interest rates but pay more than what their internal risk profile would suggest,
- exhibit lower delinquency and default risk.

The Bank:

- use BNPL data from 'unregulated' lending to improve its credit risk assessments on bank loans,
- increase margins through price discrimination, gains when internal $\neq$ external risk assessments.

Data

Data Overview

- BNPL payment histories, loan applications, offers, and repayment Summary Statistics
- External and internal credit scores Heatmap

Sample Construction

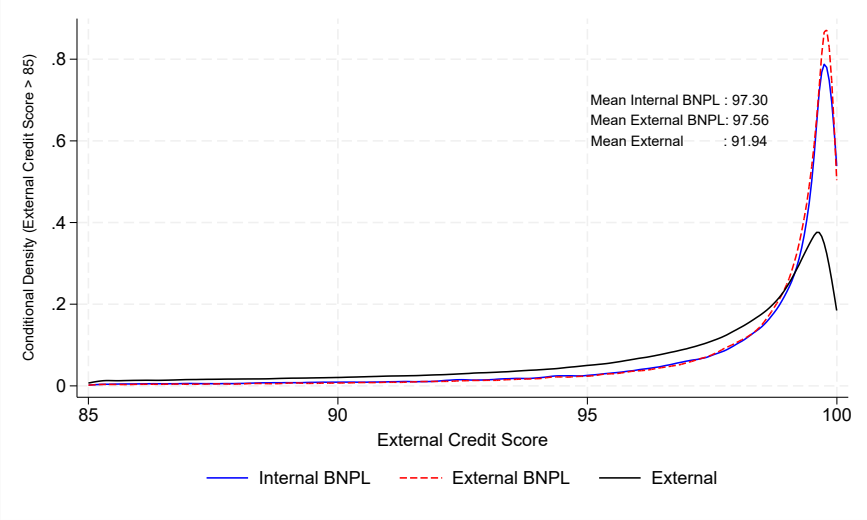
- Applicant sample: 1,066,503 **first-time** loan applicants via **online broker**
- Internal BNPL Customers (2.8% of applicants) **screened on BNPL data**
- Mean (median) application amount: USD 15,500 (12,250), mean duration: 110 m
- Loan offers sample: 393,080 individuals and customer sample: 8,052 individuals

External BNPL Users: Same Data, Different Treatment

- A subset of the external customers have previously had a BNPL loan at the bank.
- **External BNPL Customers (6.4% of applicants)**
  Previous BNPL users *not labeled as internal*.
  BNPL data exists but is ignored.
- What differs from internals is the timing and potentially frequency of the BNPL transactions.

Robustness: Compare internal and external BNPL with exactly 3 transactions within 13 months.

Distribution of External Credit Scores (ECS>85)



Internal and external BNPL customers have similar ECS distributions. Summary Statistics

Summary Statistics

Econometric Specification

What is the effect of internal customer status on loan approval, interest rates, and repayment behavior?

$$Y_{i,t} = \beta \, \textit{Internal BNPL Customer}_i + \alpha_x \boldsymbol{X_i} + \alpha_t + \epsilon_{i,t}, \tag{1}$$

- Y: 1 for loan applications accepted by the bank, interest rate or default indicator
- *Internal BNPL Customer* is defined as 1 if the customer had a BNPL relationship with the bank with at least three payments within the last 12 months.
- Control variables **X**: amount and maturity of the loan, log income of the applicant, external credit score
- Sample: varying
- Daily time fixed effects α_t

Results

How is Access to Consumer Loans Affected by Using BNPL?

	(1)	(2)	(3)
Internal BNPL	0.177***	0.164***	0.172***
	(0.003)	(0.003)	(0.003)
External Credit Score	0.033***	0.029***	
	(0.000)	(0.000)	
Observations	98,203	98,203	98,199
Adj. R^2	0.202	0.240	0.309
Mean dependent	0.667	0.667	0.667
SD dependent	0.471	0.471	0.471
Controls	No	Yes	Yes
Time FE	Yes	Yes	Yes
External Score FE	No	No	Yes

Approval rate increases by **26%** for internals.

Why? Internal BNPL customers receive, on average, **8 points higher** internal credit scores. See ICS Results Robust in sample with 3 transaction in 13 months

Do All Internal Applicants Benefit?

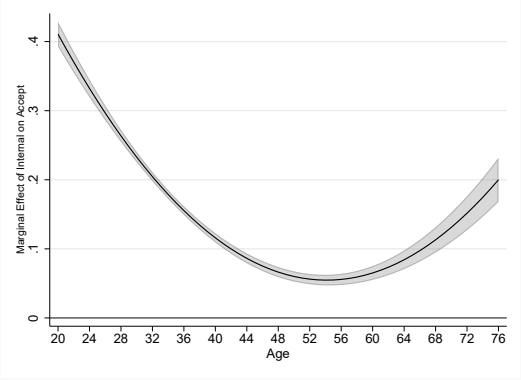
- **Repayment History:** Good BNPL repayment may increase approval; bad repayment may decrease it.
- **Hard-to-Screen:** Internal data may especially help **young** and **low-income** applicants with weak external credit scores.

Loan Approval and BNPL Repayment History

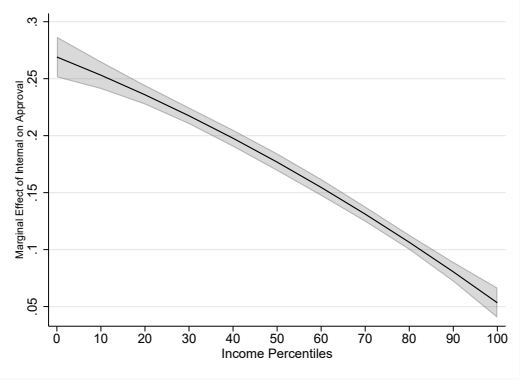
	(1)	(2)	(3)
	All	Never Late	At Least 60 Days Late
Internal BNPL	0.172***	0.204***	-0.506***
	(0.003)	(0.003)	(0.009)
Observations	98,199	90,144	69,526
Adj. R^2	0.309	0.327	0.339
Mean dependent	0.667	0.669	0.604
SD dependent	0.471	0.470	0.489
Controls	Yes	Yes	Yes
Date FE	Yes	Yes	Yes
External Score FE	Yes	Yes	Yes

Good repayment history increases approval chances for internal applicants, while delinquencies sharply reduce them.

Impacts on Approval by Age and Income Rank



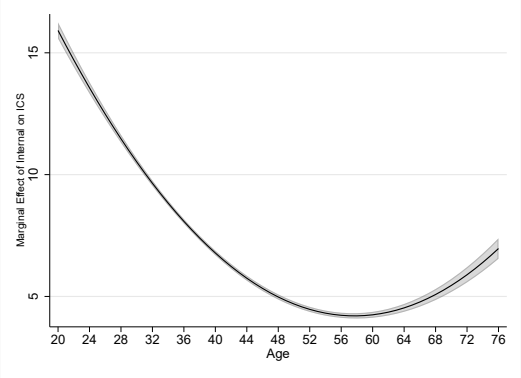
(A.) Approval by Age



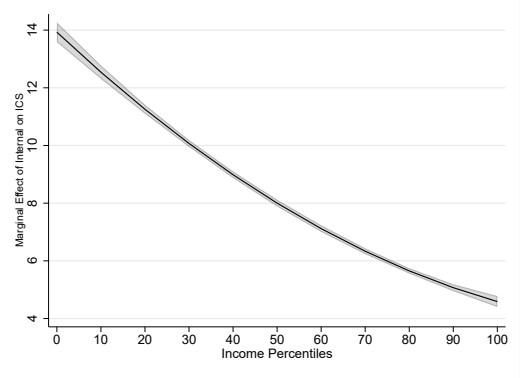
(B.) Approval by Income (%)

Young and low-income internals benefit more

Impacts on Internal Credit Scores by Age and Income Rank



(C.) ICS by Age



(D.) ICS by Income

Suggest that BNPL data increases financial inclusion.

How does BNPL data affect the interest rate offered?

We now focus on the sample of applicants who received a *loan offer*.

Results: BNPL Users Receive Lower Interest Rates

	(1)	(2)	(3)
Internal BNPL	-1.227***	-1.205***	-1.230***
	(0.014)	(0.014)	(0.014)
External Credit Score	-0.451***	-0.385***	
	(0.006)	(0.006)	
Observations	71,494	71,494	71,494
Adj. R^2	0.286	0.321	0.332
Mean dependent	8.277	8.277	8.277
SD dependent	2.087	2.087	2.087
Controls	No	Yes	Yes
Date FE	Yes	Yes	Yes
External Score FE	No	No	Yes

Internal BNPL applicants are offered interest rates 1.2 percentage points lower - a 15% discount relative to the mean.

Robust in sample with 3 transaction in 13 months

Do All Internals Benefit on Interest Rates?

- **Payment History:** Do internals with good BNPL repayment records receive lower rates, while those with delinquencies face higher ones?
- **Price Discrimination:** Does the bank use its information advantage – differences between internal and external credit scores–to set interest rates?

Who benefits: heterogeneity in interest rate

	(1)	(2)	(3)
	All	Never Late	At Least 60 Days Late
Internal BNPL	-1.230***	-1.369***	0.271***
	(0.014)	(0.014)	(0.068)
Observations	71,494	64,894	46,161
Adj. R^2	0.332	0.339	0.274
Mean dependent	8.277	8.286	8.676
SD dependent	2.087	2.068	2.016
Controls	Yes	Yes	Yes
Date FE	Yes	Yes	Yes
External Score FE	Yes	Yes	Yes

Late BNPL payments increase interest rates for internals Back

Classification of Internal BNPL Customers Receiving a Loan Offer

		Internal Score	
		Good	**Bad**
External Score	**Good**	*Low Risk*	*Revealed High Risk*
	Bad	*Revealed Low Risk*	*High Risk*

Comparing internals with the same External Credit Score

	(1)	(2)	(3)	(4)
	Sample: ECS < median		Sample: ECS > median	
Revealed Low Risk	-2.367***	-2.316***		
	(0.031)	(0.031)		
Revealed High Risk			1.398***	1.495***
			(0.023)	(0.023)
External Credit Score	0.232***		1.295***	
	(0.008)		(0.054)	
Observations	13,115	13,115	13,111	13,111
Adj. R2	0.412	0.417	0.517	0.491
Mean dependent	8.629	8.629	6.595	6.595
SD dependent	2.245	2.245	1.168	1.168
Controls	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
External Score FE	No	Yes	No	Yes

Bank prices based on what it knows - not just what the market knows.

Comparing internals with the same Internal Credit Score

	(1)	(2)	(3)	(4)
	Sample: ICS $<$ median		Sample: ICS $>$ median	
Revealed Low Risk	0.111***	0.313***		
	(0.009)	(0.012)		
Revealed High Risk			-0.936***	-0.751***
			(0.030)	(0.029)
Internal Credit Score	1.832***		0.696***	
	(0.022)		(0.014)	
Observations	13,062	13,062	13,155	13,154
Adj. R2	0.692	0.460	0.457	0.539
Mean dependent	6.274	6.274	8.941	8.941
SD dependent	0.719	0.719	2.097	2.096
Controls	Yes	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
Internal Score FE	No	Yes	No	Yes

Same risk, different interest rates - tailoring prices to what others are willing to offer.

Do internal customers repay better - and why?

We now focus on the sample of applicants who received a *loan offer* and *accepted* the offer.

Potential Mechanisms:

- **Screening channel**
- **Pricing channel**
- **Learning channel**

Results: Payment delays 30 days

	(1)	(2)	(3)	(4)
Internal BNPL	-0.056**	-0.076***	-0.071***	-0.062**
	(0.026)	(0.026)	(0.026)	(0.027)
External Credit Score	-0.016***	-0.011***		
	(0.004)	(0.004)		
Interest Rate				0.019**
				(0.008)
Observations	1,363	1,361	1,361	1,361
Adj.R^2	0.056	0.083	0.082	0.086
Mean dependent	0.278	0.278	0.278	0.278
SD dependent	0.448	0.448	0.448	0.448
Controls	No	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
External Score FE	No	No	Yes	Yes

Internals are less likely to be 30 days late. Not explained by the lower interest rates.

Results: Payment delays 120 days (Default)

	(1)	(2)	(3)	(4)
Internal BNPL	-0.018	-0.026*	-0.025*	-0.016
	(0.015)	(0.015)	(0.015)	(0.015)
External Credit Score	-0.005**	-0.003		
	(0.003)	(0.003)		
Interest Rate				0.020***
				(0.005)
Observations	1,363	1,361	1,361	1,361
Adj.R^2	0.026	0.037	0.055	0.070
Mean dependent	0.070	0.070	0.070	0.070
SD dependent	0.255	0.255	0.255	0.255
Controls	No	Yes	Yes	Yes
Time FE	Yes	Yes	Yes	Yes
External Score FE	No	No	Yes	Yes

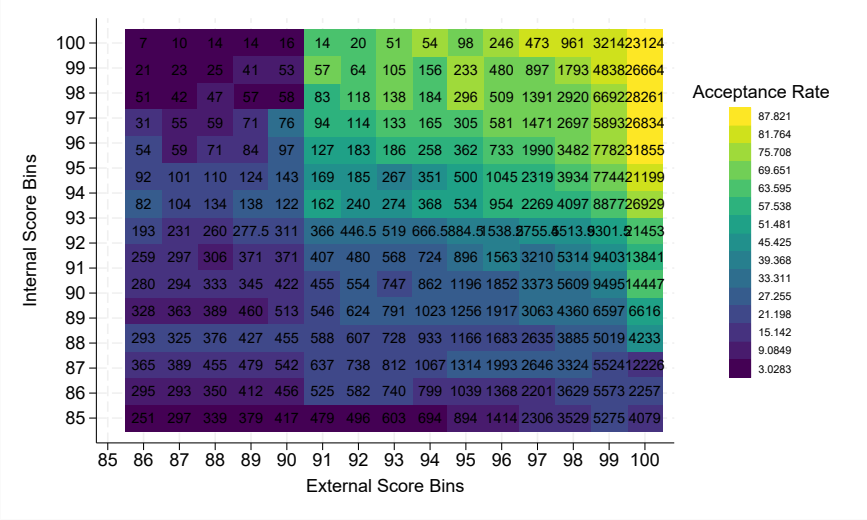
Internals are less likely to default. Seems to be explained by the lower interest rates.

Conclusions

- Applicants with good BNPL repayment behavior are more likely to be approved for a bank loan and offered lower interest rates.
- Banks benefit from improved screening and price discrimination.
- Participation in the market for BNPL payments can thus open up for **benefits to both the demand and supply side of regular credit markets** through new information collection and reputation building.
- Regulation trade-off $\rightarrow$ protecting consumers may limit access & innovation.
- Information dilemma $\rightarrow$ more sharing improves competition but may reduce uptake.

Thank you!

Internal and External Credit Score Heatmap



Back

Impact of Internal Status on Internal Credit Scores

	(1)	(2)	(3)
Internal BNPL	8.422***	8.142***	8.318***
	(0.046)	(0.045)	(0.045)
External Credit Score	0.720***	0.636***	
	(0.013)	(0.013)	
Observations	98,203	98,203	98,199
Adj. R^2	0.330	0.371	0.457
Mean dependent	92.098	92.098	92.099
SD dependent	10.094	10.094	10.094
Controls	No	Yes	Yes
Date FE	Yes	Yes	Yes
External Score FE	No	No	Yes

Back

Robustness Approval: Applicants with 3 Transactions Within Last 13 Months From Loan Application

	(1)	(2)	(3)
Internal BNPL	0.277***	0.258***	0.206***
	(0.022)	(0.022)	(0.022)
External Credit Score	0.034***	0.028***	
	(0.004)	(0.004)	
Observations	2,435	2,435	2,418
Adj. R^2	0.260	0.300	0.372
Mean dependent	0.678	0.678	0.681
SD dependent	0.467	0.467	0.466
Controls	No	Yes	Yes
Date FE	Yes	Yes	Yes
External Score FE	No	No	Yes

Back

Robustness Interest Rate: Applicants with 3 Transactions Within Last 13 Months From Loan Application

	(1)	(2)	(3)
Internal BNPL	-1.570***	-1.540***	-1.425***
	(0.118)	(0.116)	(0.107)
External Credit Score	-0.455***	-0.393***	
	(0.060)	(0.058)	
Observations	1,506	1,506	1,505
Adj.R^2	0.344	0.376	0.429
Mean dependent	7.959	7.959	7.958
SD dependent	2.000	2.000	2.000
Controls	No	Yes	Yes
Date FE	Yes	Yes	Yes
External Score FE	No	No	Yes

Back

Summary statistics

Back

	(1)	(2)	(3)	(4)	(5)	(6)
	Applicant group			Customer group		
	Internal BNPL	External	External BNPL	Internal BNPL	External	External BNPL
Accept	0.78	0.30	0.62	1.00	1.00	1.00
	(0.41)	(0.46)	(0.49)	(0.00)	(0.00)	(0.00)
Interest Rate	7.32	6.90	8.01	8.51	9.71	9.05
	(2.61)	(4.68)	(3.04)	(2.04)	(2.24)	(1.79)
Late 30 days				0.272	0.395	0.286
				(0.445)	(0.489)	(0.452)
Late 60 days				0.123	0.235	0.133
				(0.329)	(0.424)	(0.340)
Default				0.068	0.163	0.072
				(0.251)	(0.369)	(0.259)
Internal Credit Score	97.75	80.90	89.60	97.19	92.54	93.84
	(3.58)	(16.08)	(11.00)	(2.66)	(3.58)	(3.52)
External Credit Score	97.30	91.94	97.56	96.24	96.42	97.01
	(5.77)	(12.50)	(5.38)	(3.44)	(3.52)	(3.15)
Female	0.444	0.409	0.428	0.533	0.427	0.514
	(0.497)	(0.492)	(0.495)	(0.499)	(0.495)	(0.500)
Age	41	41	39	41	46	44
	(12)	(13)	(12)	(14)	(16)	(16)
Married or Co-habiting	0.627	0.510	0.582	0.458	0.393	0.449
	(0.484)	(0.500)	(0.493)	(0.499)	(0.488)	(0.498)
Having Children	0.506	0.356	0.451	0.407	0.280	0.322
	(0.500)	(0.479)	(0.498)	(0.492)	(0.449)	(0.468)
Homeowner	0.632	0.361	0.579	0.397	0.404	0.478
	(0.482)	(0.480)	(0.494)	(0.490)	(0.491)	(0.500)
Employed	0.893	0.879	0.889	0.809	0.670	0.700
	(0.309)	(0.326)	(0.315)	(0.393)	(0.470)	(0.459)
Co-applicant	0.143	0.075	0.123	0.065	0.063	0.077
	(0.350)	(0.263)	(0.329)	(0.247)	(0.243)	(0.267)
Taxable Income	32,712	26,862	31,327	24,429	22,984	22,447
	(16,888)	(15,974)	(18,083)	(14,553)	(16,570)	(15,276)
Application Amount	13,416	15,556	13,789	14,045	11,974	11,940
	(10,737)	(12,290)	(10,999)	(13,761)	(13,024)	(13,201)
Maturity	96	111	96	103	102	97
	(49)	(51)	(50)	(58)	(58)	(58)
Observations	30,115	1,036,388	68,088	754	7,298	609

Summary statistics Loan Offers

Back

	Internal BNPL	External	External BNPL
Interest Rate	7.61	9.35	8.66
	(2.06)	(2.39)	(2.01)
Internal Credit Score	98.556	93.690	94.743
	(1.615)	(3.631)	(3.423)
External Credit Score	98.573	98.506	99.015
	(2.156)	(2.110)	(1.607)
Married or Co-habiting	0.642	0.568	0.631
	(0.479)	(0.495)	(0.483)
Having Children	0.516	0.398	0.488
	(0.500)	(0.489)	(0.500)
Homeowner	0.666	0.560	0.695
	(0.472)	(0.496)	(0.461)
Employed	0.894	0.871	0.884
	(0.307)	(0.335)	(0.320)
Co-applicant	0.150	0.133	0.160
	(0.357)	(0.340)	(0.367)
Taxable Income	34,029	31,385	34,760
	(16,903)	(18,576)	(18,849)
Application Amount	13,249	14,547	13,665
	(10,570)	(11,462)	(10,840)
Maturity	94	100	93
	(48)	(50)	(48)
Observations	26,323	366,757	45,172

References

Aidala, F., D. Mangrum, and W. Van der Klaauw (2023): "Who Uses â€œBuy Now, Pay Later"?" *Federal Reserve Bank of New York Liberty Street Economics*.

Berg, T., V. Burg, J. Keil, and M. Puri (2024): "The Economics of "Buy Now, Pay Later": A Merchant's Perspective," *Available at SSRN: https://ssrn.com/abstract=4448715 or http://dx.doi.org/10.2139/ssrn.4448715*.

Bian, W., L. W. Cong, and Y. Ji (2023): "The Rise of E-Wallets and Buy-Now-Pay-Later: Payment Competition, Credit Expansion, and Consumer Behavior," Tech. rep., National Bureau of Economic Research.

Cornelli, G., L. Gambacorta, and L. Pancotto (2023): "Buy now, pay later: a cross-country analysis," *BIS Quarterly Review*.

deHaan, E., J. Kim, B. Lourie, and C. Zhu (2024): "Buy Now Pay (Pain?) Later," *Management Science*, 70, 5586 – 5598.

DiMaggio, M., E. Williams, and J. Katz (2022): "Buy now, pay later credit: User characteristics and effects on spending patterns," Tech. rep., National Bureau of Economic Research.

References ii

Guttman-Kenney, B., C. Firth, and J. Gathergood (2023): "Buy now, pay later (BNPL)... on your credit card," *Journal of Behavioral and Experimental Finance*, 37, 100788.

Maesen, S. and D. Ang (2025): "Buy Now, Pay Later: Impact of Installment Payments on Customer Purchases," *Journal of Marketing*, 89, 13–35.

Papich, S. (2022): "Effects of Buy Now, Pay Later on Financial Well-Being," *Available at SSRN: https://papers.ssrn.com/sol3/papers.cfm?abstract_id = 4247360*.