

Economic Scarcity and Consumers Credit Choice

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Motivation

- ▶ Poor individuals are more likely to engage in behaviors, that risk to reinforce their conditions of poverty.

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Literature this behavioral difference has been studied for decades in social sciences

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Personality-traits

- ▶ More risks averse, less patient, less self control

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More recent proposal:

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Environmental-factors

- ▶ Rational adjust to the economic environment

More recent proposal:

Economic-scarcity

- ▶ Having less than you feel you need (Shah, Mullainathan and Shafir (Science, 2012 2013, NYT bestseller 2013))

Motivation

Shah et al. mechanism:

Scarcity changes how people allocate attention

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Scarcity changes how people allocate attention

Engage more deeply in some problems (*the more acute*)

Neglecting others (*the less acute*)

This paper

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 - ▶ eliciting cognitive tests and price lists

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- ▶ the causal impact of scarcity on credit choices by low income households in Sweden
 - ▶ this has been studied
 - ▶ in the laboratory and in the field (Shah et al (science 2012, 2013), Carvahlo et al (AER, 2016)
 - ▶ eliciting cognitive tests and price lists
- ▶ We attempt to identify an effect looking at real consumer credit choices

Identification challenge

- ▶ correlation between scarcity and credit choices driven by
 - ▶ **Reverse causality**: financial choices in the past increase likelihood to experience scarcity
 - ▶ **Selection**: omitted variables

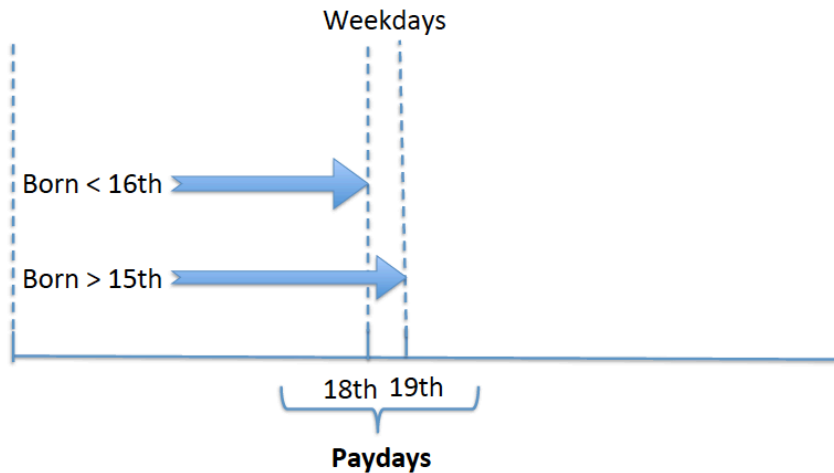
Swedish Social benefit Paydays

Swedish social benefit payday system

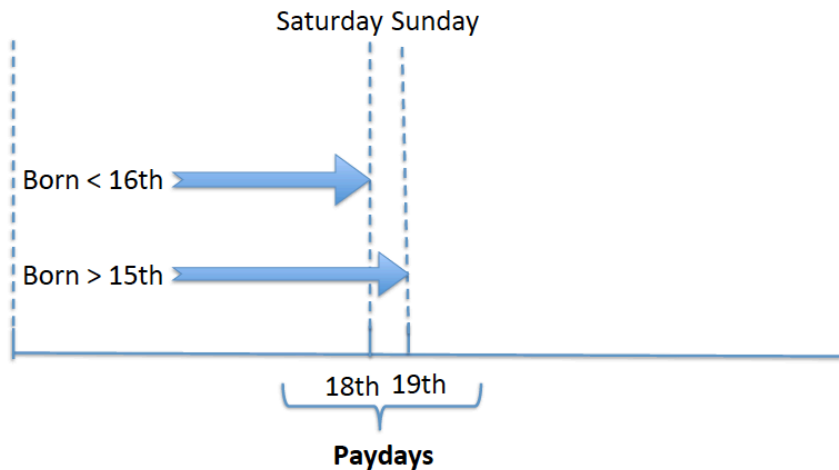
In Sweden, social transfers are paid out

- ▶ once a month
- ▶ on the same date of each month
- ▶ typical date determined by *your birthday*
- ▶ These paydayes are moved whenever this date either falls in the weekend or a holiday.

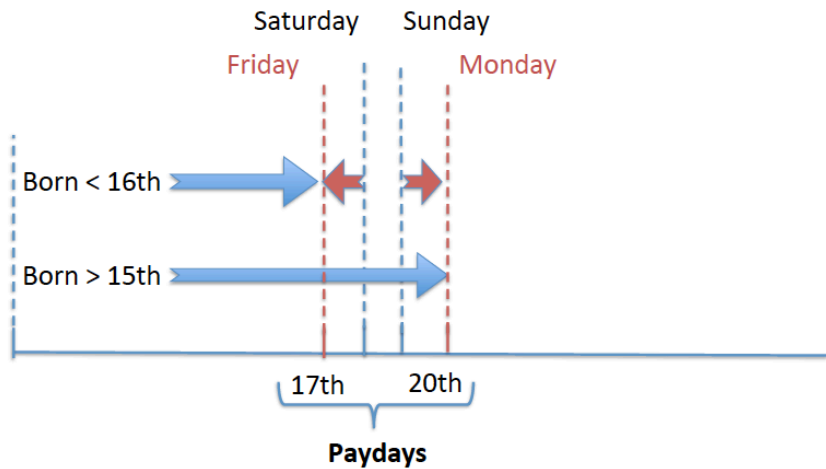
Payday variation



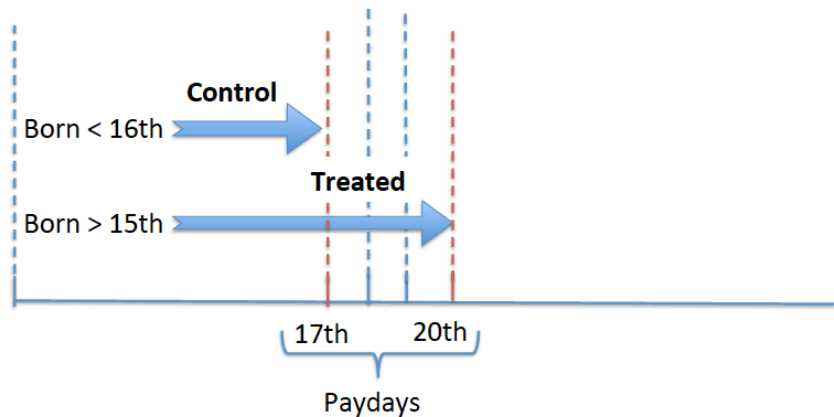
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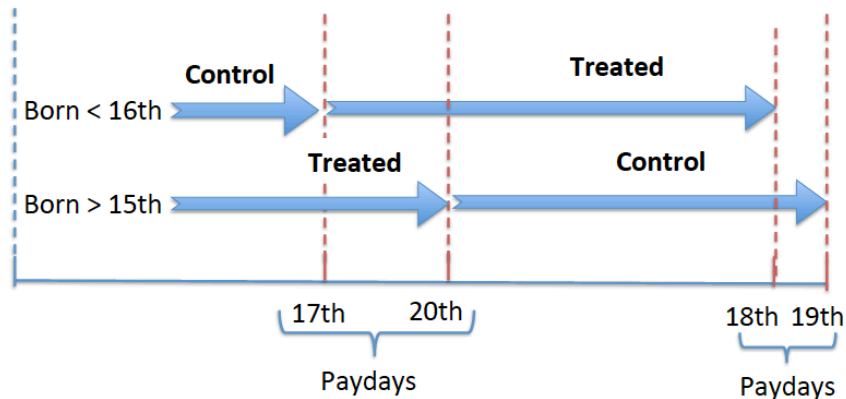
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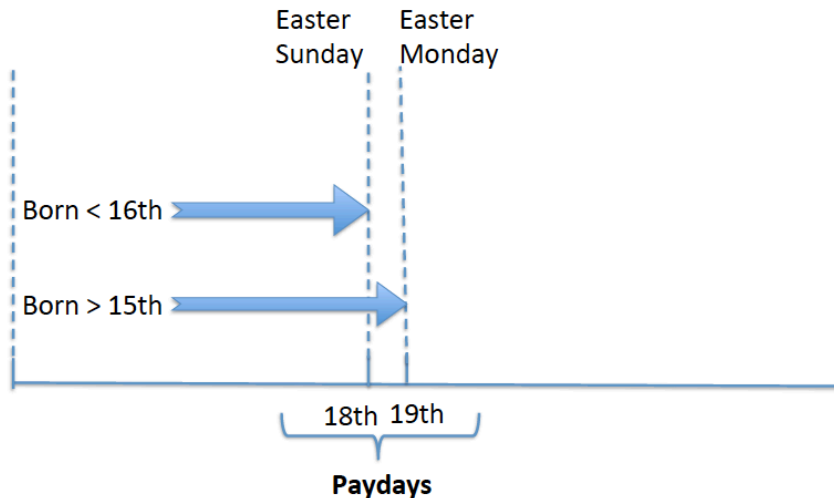
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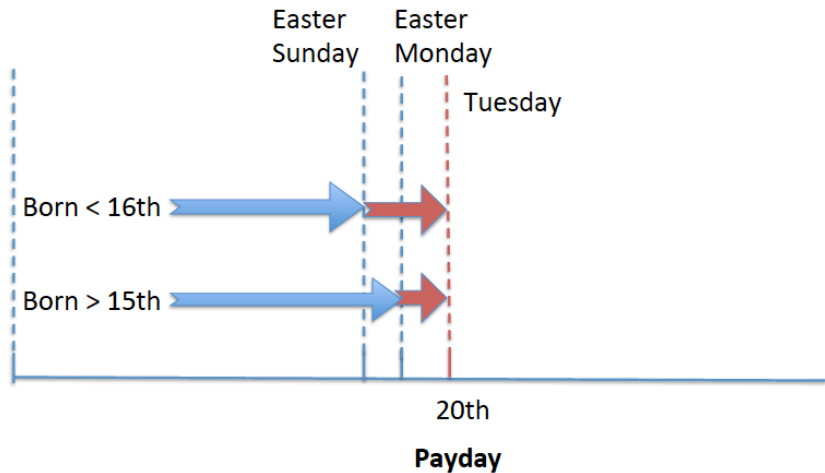
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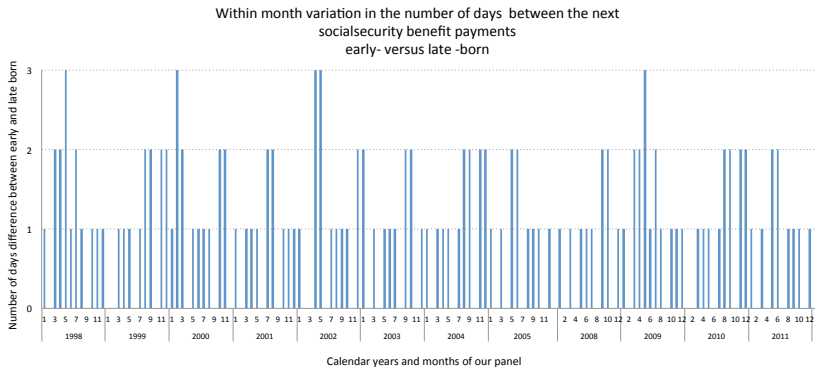
Payday variation



Payday variation



Variation in the number of days between paydays



Scarcity within our context

Our analysis speaks to the effects of sharp but short-lived variations in financial resources

- ▶ our effect is temporary, anticipated
- ▶ and anticipated to be temporary

Sample and data

- ▶ Sample Swedish pawn borrowers
 - ▶ 4 year daily panel (2008 to 2011)

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 - ▶ 4 year daily panel (2008 to 2011)
 - ▶ Well-suited for our purpose
 - ▶ Pawn borrowers live from 'paycheck to paycheck' (*additional days matter*)
 - ▶ Pawn brokers grant credit based on collateral (*avoid sample selection*)
 - ▶ Consequences of suboptimal behavior very costly (*policy relevant sample*)
 - ▶ Pawn instead of selling gold (*enables us to infer intention to repay*)

Sample and data

- ▶ Four main data sources:
 - ▶ Pawn credit industry daily data
 - ▶ Credit bureau data
 - ▶ Tax data
 - ▶ Statistics Sweden data

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- ▶ Four main data sources:
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 - ▶ Credit bureau data
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 - ▶ Statistics Sweden data
- ▶ We focus on individuals in our sample who are
 - ▶ social benefit recipients
 - ▶ use gold as collateral
 - ▶ 18-75 years old
- ▶ Balances panel 39,489 individuals

Pawn broking: quick facts

Exchange your gold for cash, LTV around 75%

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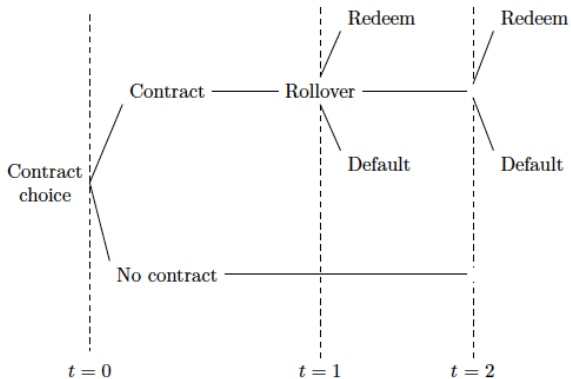
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Repay the loan after 3-4 months: redeem the gold

Interest rate around 3.5% per month

APR averages at 150%

Timing of pawn credit choices



Framework

- ▶ First we assume:
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 - ▶ That if we observe the individual taking a pawnloan his/her intention was to redeem their collateral
- ▶ Second, we assume individuals with quasi-hyperbolic preferences (*Laibson 1997; O'Donoghue and Rabin 1999*)
 - ▶ Customers have dynamically time-inconsistent preferences;
 - ▶ $U_0 = c_0 + \beta\delta c_1 + \beta\delta^2 c_2$
 - ▶ If $\beta = 1$: exponential discounting
 - ▶ If $\beta < 1$: present bias

Participation

Does the $Loansize_{max}$ that ensures repayment enable me to avoid Cost D ?

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I will take a pawn loan iff: $L_{max}(\beta) \geq E$

Difference in awareness of present bias

In reality you don't know your own β exactly you 'estimate' $\hat{\beta}$

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- ▶ *Sophisticated* consumers (proxy higher educated) correctly anticipate their present bias: $\beta - \hat{\beta} = 0$
- ▶ *Naive* consumers (proxy low educated) are unaware of their potential present bias: $\beta - \hat{\beta} > 0$

Framework intuition

Consumer potentially 'over' borrows if $\beta - \hat{\beta} > 0$
(*because underestimate ones own preference for c_1 at T_0*)

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- ▶ $L_{max}(\hat{\beta}) > L_{max}(\beta)$
- ▶ The more I value the present the more I want to post pone at T_1 if L is large

Empirical predictions

Under Economic Distress (given an $\beta < 1$ and expenditure shock E)

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1. $Loansize_{sophisticated} < Loansize_{naive}$
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2. $Prob(TakeLoan_{sophisticated}) < Prob(TakeLoan_{naive})$
 - ▶ *high educated have a higher probability that $L_{max}(\beta_{stress}) < E$*

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3. $Prob(Redeem)_{sophisticated} > Prob(Redeem)_{naive}$
 - ▶ *Follows from smaller loan size*

Identification strategy

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We implement a triple difference strategy;

- ▶ Compare the likelihood that borrowers make suboptimal credit decision in:
 1. Long versus short months (*treated versus control*)
 2. Higher versus low educated (*higheduc versus loweduc*)
 3. before and during scarcity the seven days before payday (*pre versus post*)

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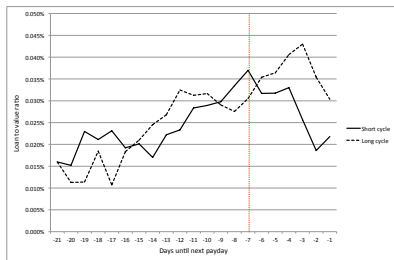
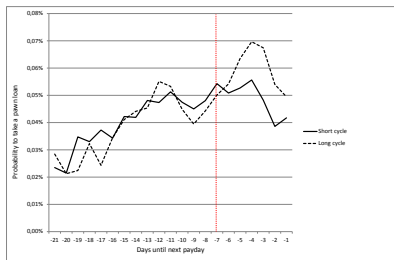
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- ▶ Fixed Effects: individual (i), month*year (m,y), day of the week (d), eventime (τ)
- ▶ Cluster on the individual

Identification assumption

- ▶ In the absence of additional scarcity before payday, relative loan uptake trends between higher and low educated groups in long (treated) and short (control) months would have evolved in parallel

Graphical evidence: Pre-trends Participation and LTV



The Effect of Scarcity on Credit Choice

Results: Effect of scarcity on participation

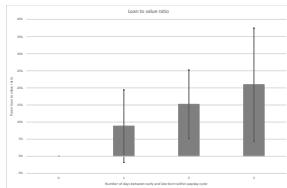
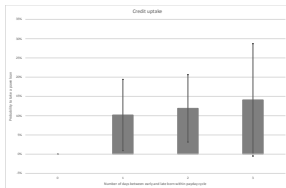
coefficient	(1)	(2)	(3)	(4)
low_educ*post*treated	0.02** (0.010)	0.03** (0.011)	0.01** (0.006)	
yearsschooling*post*treated				0.004** (0.002)
pre-period	0.22	0.22	0.22	0.21
% diff. in pro	9.1%	13.6%	4.5% p. ext day	1.9% p y.
sample	baseline	treated contrast	linear treatment	linear educ
Ob	27,142,473	19,234,533	27,142,473	27,142,473
R ²	0.0004	0.0004	0.0004	0.0004
Individuals	39,489	39,489	39,489	39,489

Results: Effect of scarcity on LTV

coefficient	(1)	(2)	(3)	(4)
low_educ*post*treated	0.018** (0.008)	0.02** (0.009)	0.013*** (0.005)	
years schooling*post*treated				0.003** (0.001)
pre-period	0.14	0.14	0.14	0.14
% diff. i rob	12.9 % baseline	14.3% treated contrast	9.3% p. day linear treatment	2.1% p y. linear educ
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Treatment intensity

- ▶ ID strategy relies on the longer the month the “more treated” the individuals are



Difference in access to liquidity investigation

- ▶ We explore if difference in education, in fact, captures difference in mainstream credit liquidity:
 - ▶ having a credit card
 - ▶ having low utilization of the credit card
 - ▶ having a good credit score
 - ▶ not having any arrears
 - ▶ having wealth
 - ▶ being older age
 - ▶ being married
 - ▶ having spousal income

Consequences of Credit Choice on Repayment

Repayment and default on pawn loans

Model prediction: higher likelihood to default on loans taken during scarcity by lower educated

- ▶ Driven by 'too high' loansize relative to loansize wrt true β

Repayment and default on pawn loans

Model prediction: higher likelihood to default on loans taken during scarcity by lower educated

- ▶ Driven by 'too high' loansize relative to loansize wrt true β
- ▶ For loans taken under distress vs non distress the lower educated borrowers are :
 - ▶ 5.7 percentage points more likely to default
 - ▶ More likely to roll over loans that end up defaulting
 - ▶ More days indebted (18%)

Default outside the pawncredit market

- ▶ We observe arrears outside the pawn credit market
 - ▶ Being 60-90 days late on a bill
 - ▶ Electricity, parking, mainstream credit
- ▶ Does taking a pawn loan help to avoid arrears?

Default outside the pawncredit market

- ▶ Participation (especially close to payday) associated with increased default risk
 - ▶ Low educated default more when they took credit during scarce periods (p-val 0.14)

Summary

We find evidence that

- ▶ relative to their higher educated benchmark, low income individuals with lower education are:
 - ▶ 9 percent more likely to participate
 - ▶ 13 percent higher LTV
 - ▶ 5.7 percentage points more likely to default on credit taken during scarcity
- ▶ No evidence results driven by a differential access to liquidity
- ▶ We find a monotonic increasing relationship in the size of the treatment
- ▶ Credit uptake did not help to avoid being late on payment (arrear receipt)

Towards policy

► Policy implication

1. Aim to 'smooth' scarcity levels over time
 - 1.1 more frequent paydays
 - 1.2 paydays every other Wednesday
 - 1.3 adjust billing to calendar irregularities
2. Focus education on the low income households awareness of their potential biased preferences

Thanks

Thank you!