



# Should Credit Remarks be Forgotten? Evidence from Legally Mandated Removal

joint work with Leonard Nakamura

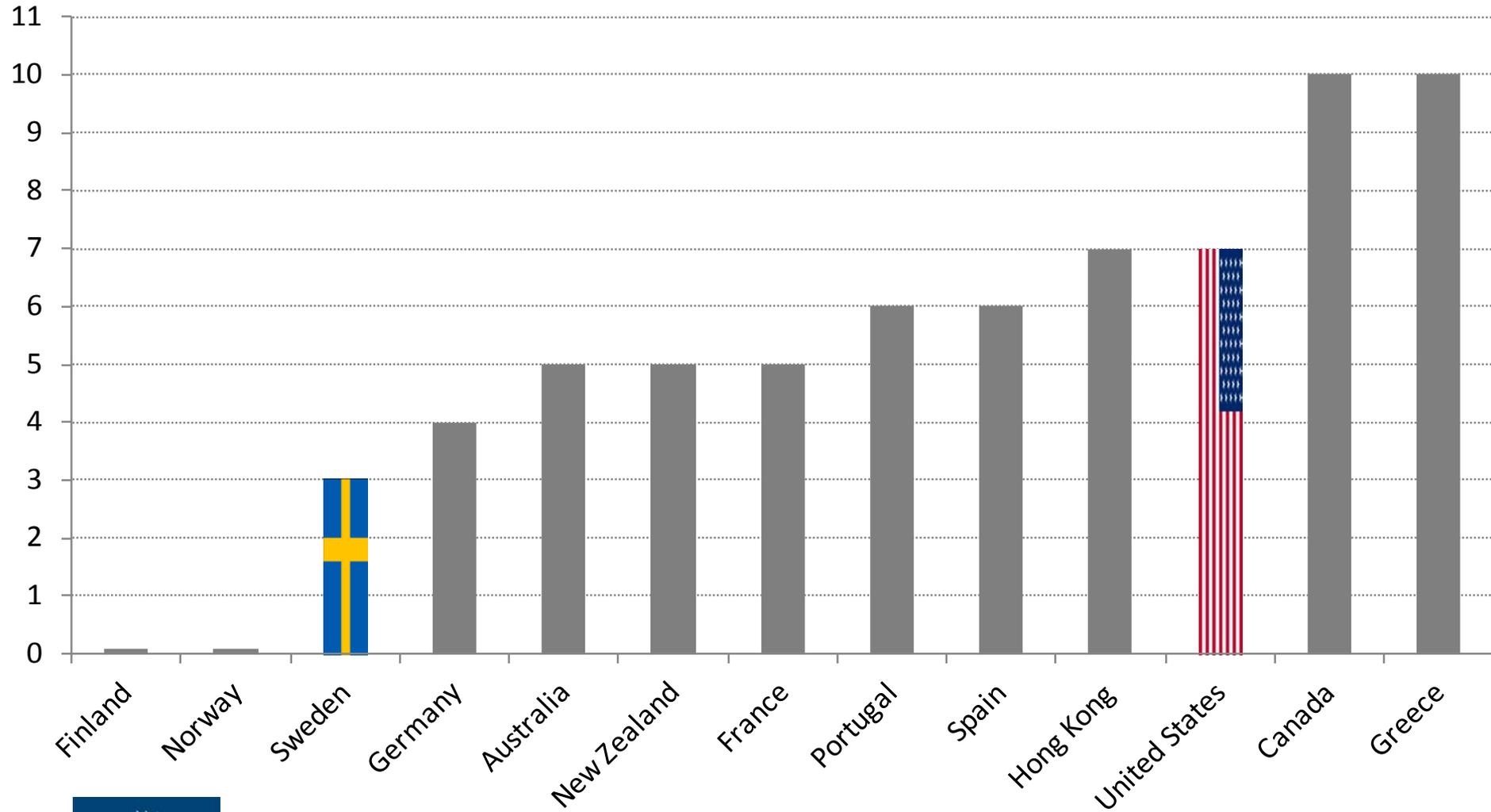
[Marieke.Bos@sofi.su.se](mailto:Marieke.Bos@sofi.su.se)

## The effect of a legally mandated removal of credit information

- "credit remarks" are delinquencies
- In Sweden removal occurs after 3 years
- of the 113 countries with credit bureaus in 2007  
90% restrict some reporting of adverse information



# Motivation: Credit Remarks' Retention period varies across countries (time in years)



The design of credit bureaus is an important policy issue

Screening effect

Access to credit

The optimal "memory" of a bureau is not known



As Elul and Gottardi (2007) point out:

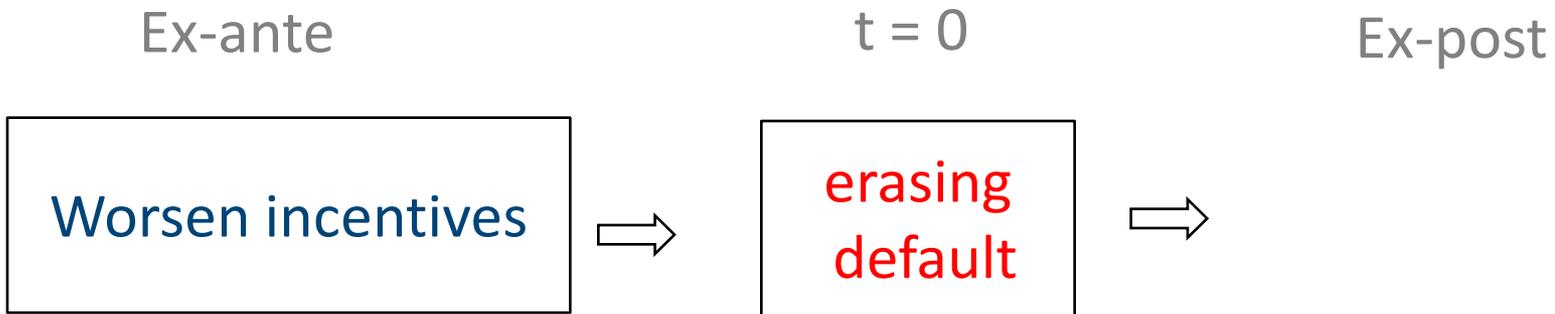
Ex-ante

$t = 0$

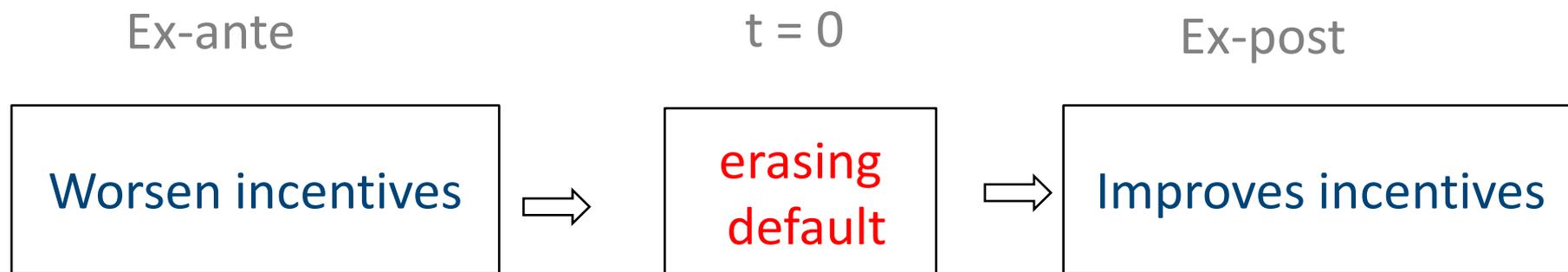
Ex-post



As Elul and Gottardi (2007) point out:



As Elul and Gottardi (2007) point out:



## Distinction between bankruptcies and delinquencies

Bankruptcies >> deliberate

Delinquencies >> deliberate, forgetfulness, accidents



Unique dataset allows to examine the demand & supply effects  
limited (3-year) memory

Panel data from the leading credit bureau in Sweden

Random sample Swedish population: 18,600 individuals

- 2000-2005
- bi-monthly
- complete credit report (including income)
- 1,179 observe remark removal within the window panel

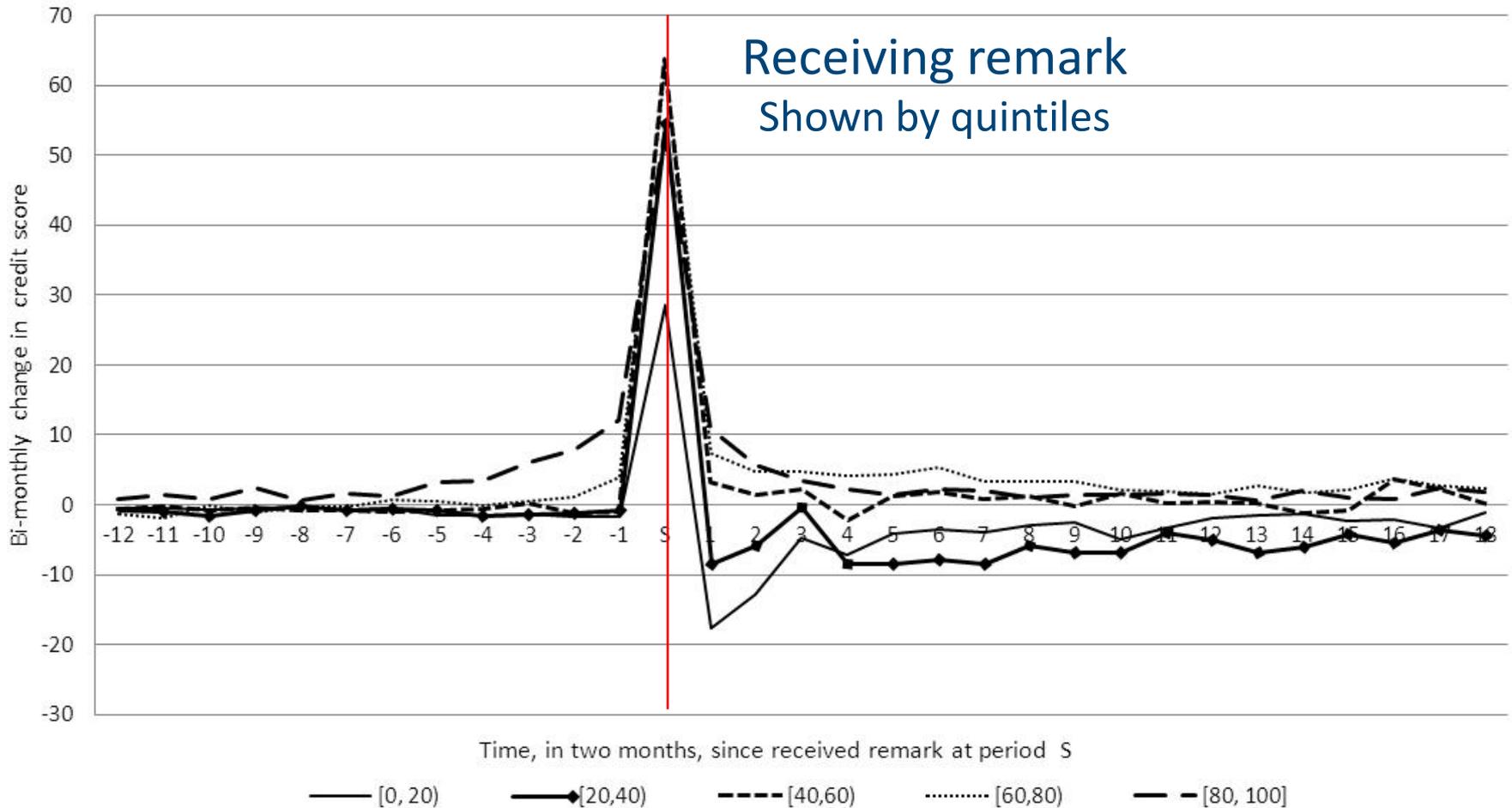


### The effects of removing credit remarks

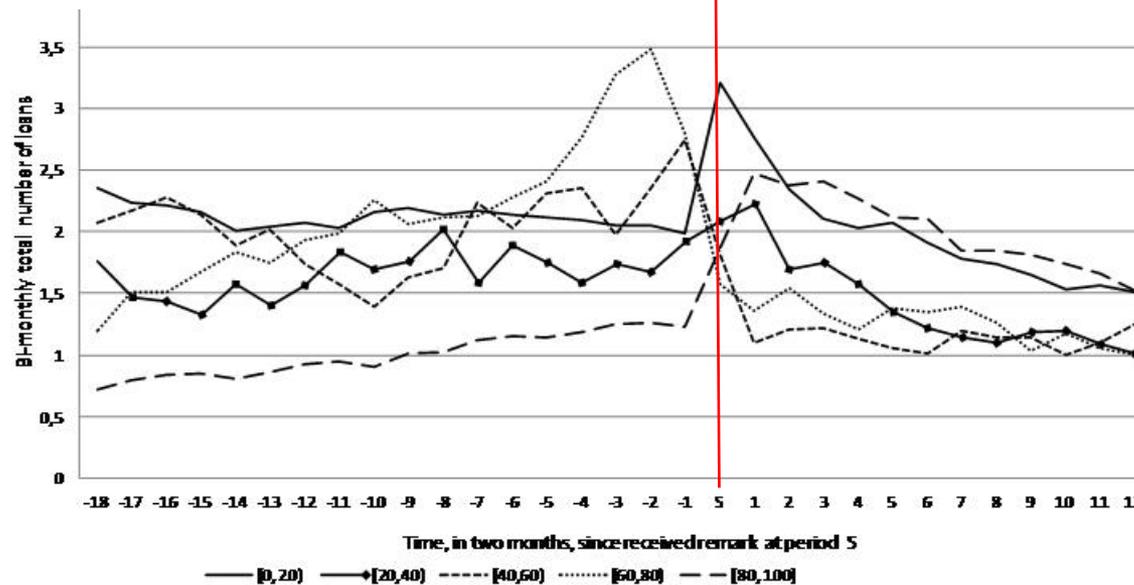
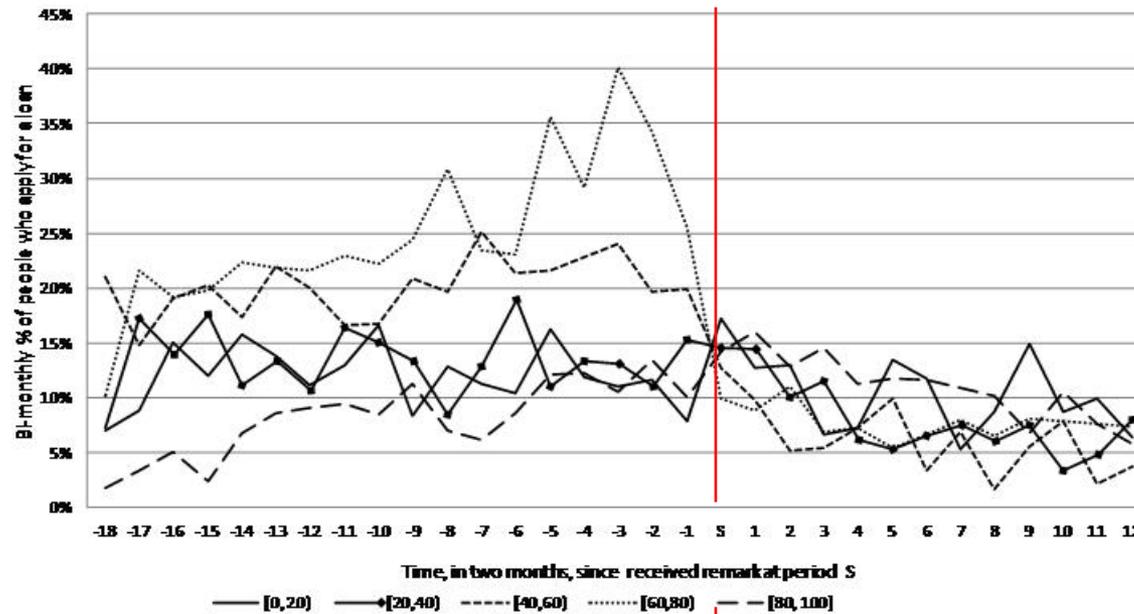
- credit scores
- loan applications
- credit access
- Delinquencies
  
- Is this unusual behavior?



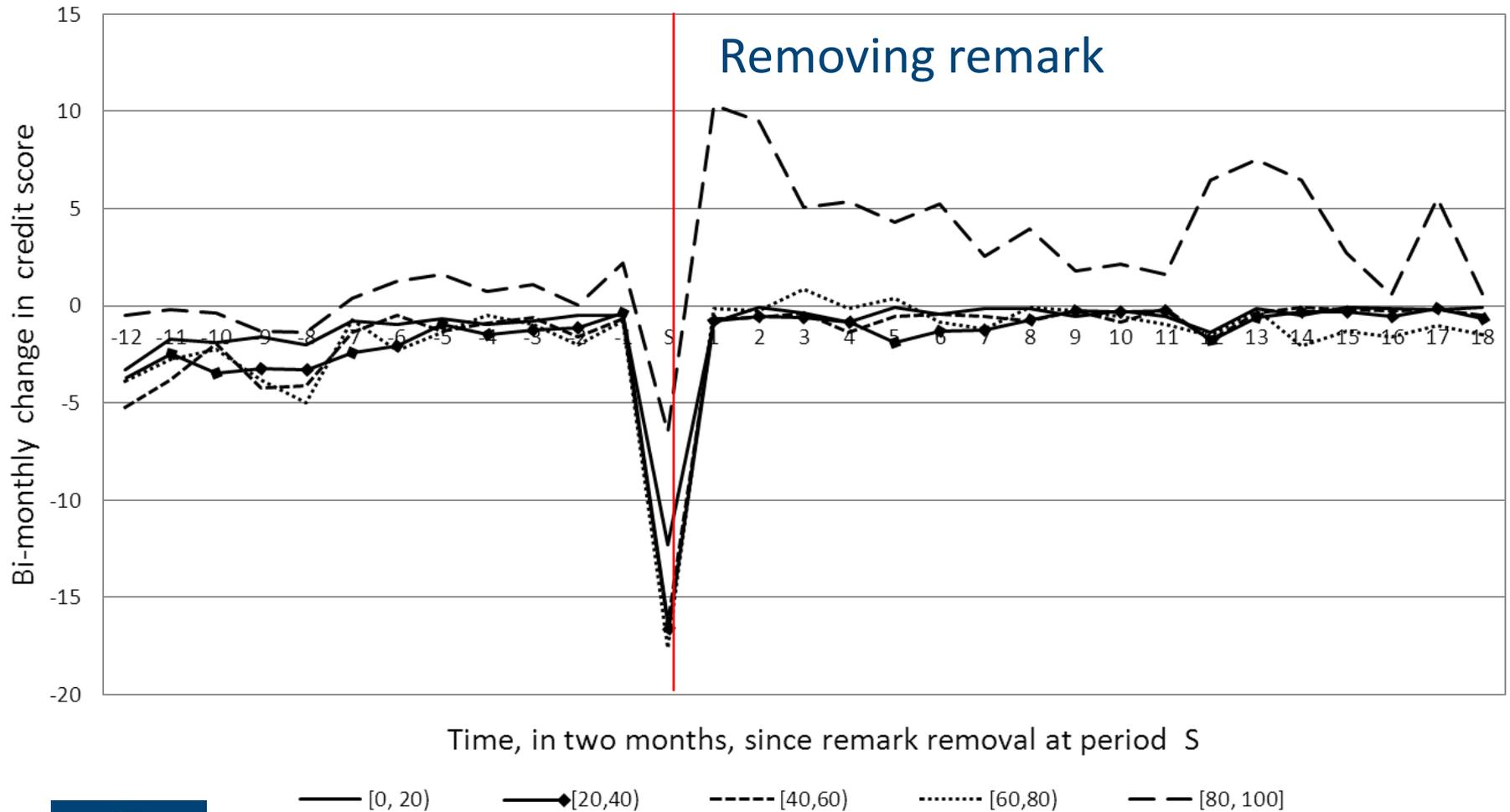
# Results: Short run effect on credit scores



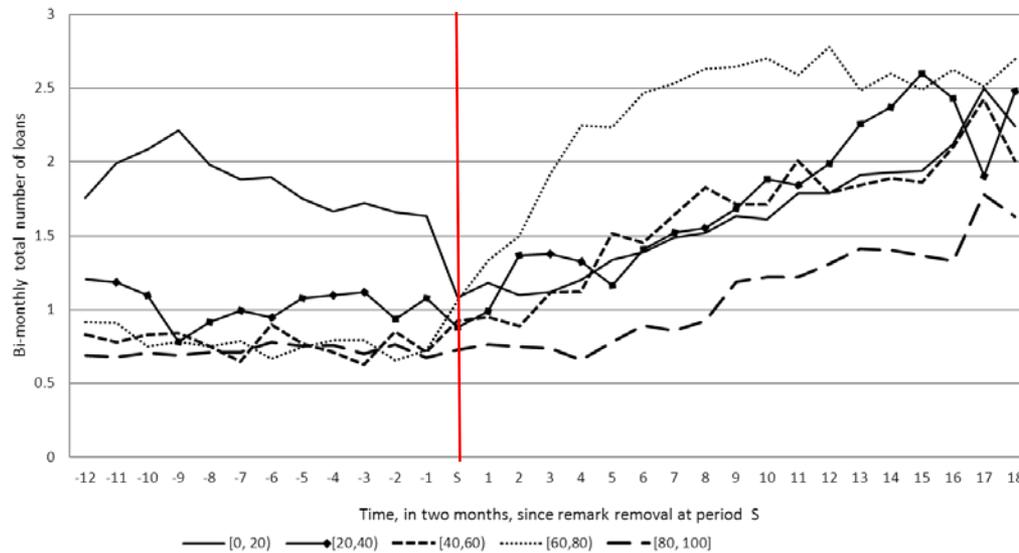
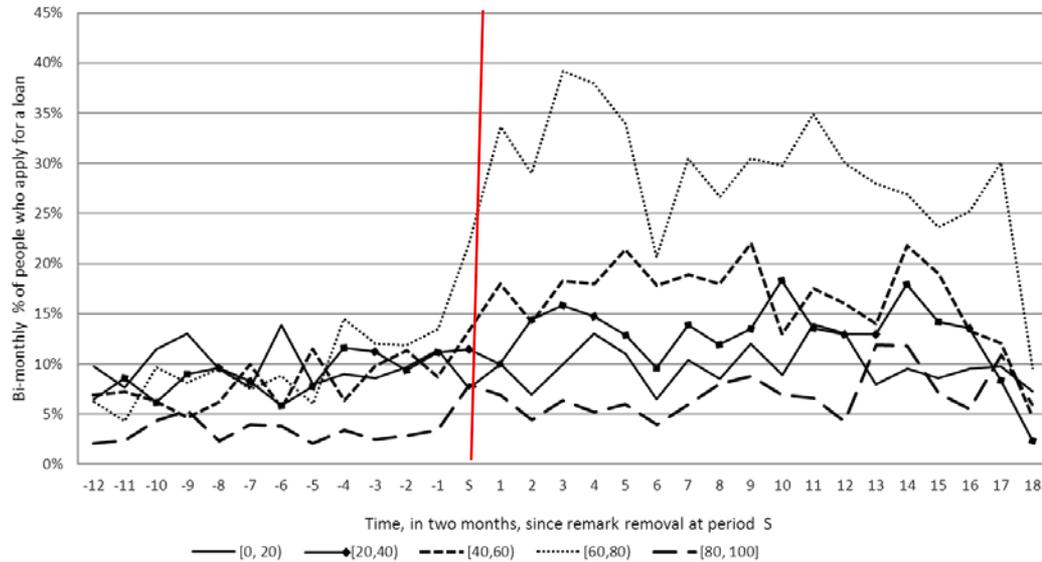
# Results: Reception effect on loan applications and credit obtainment



# Results: Short run effect on credit scores



# Results: Short run effect on loan applications



Study if this behavior is out of the ordinary?

Ideal: natural experiment

1. total contrast group
2. propensity score matching before remark **removal**
3. propensity score matching before remark **receipt**



## Propensity score matching, before **removal**

### Credit score

- Boost credit score, 2 ½ year

### Loan applications:

- Extra increase loan applications, 3 ½ year

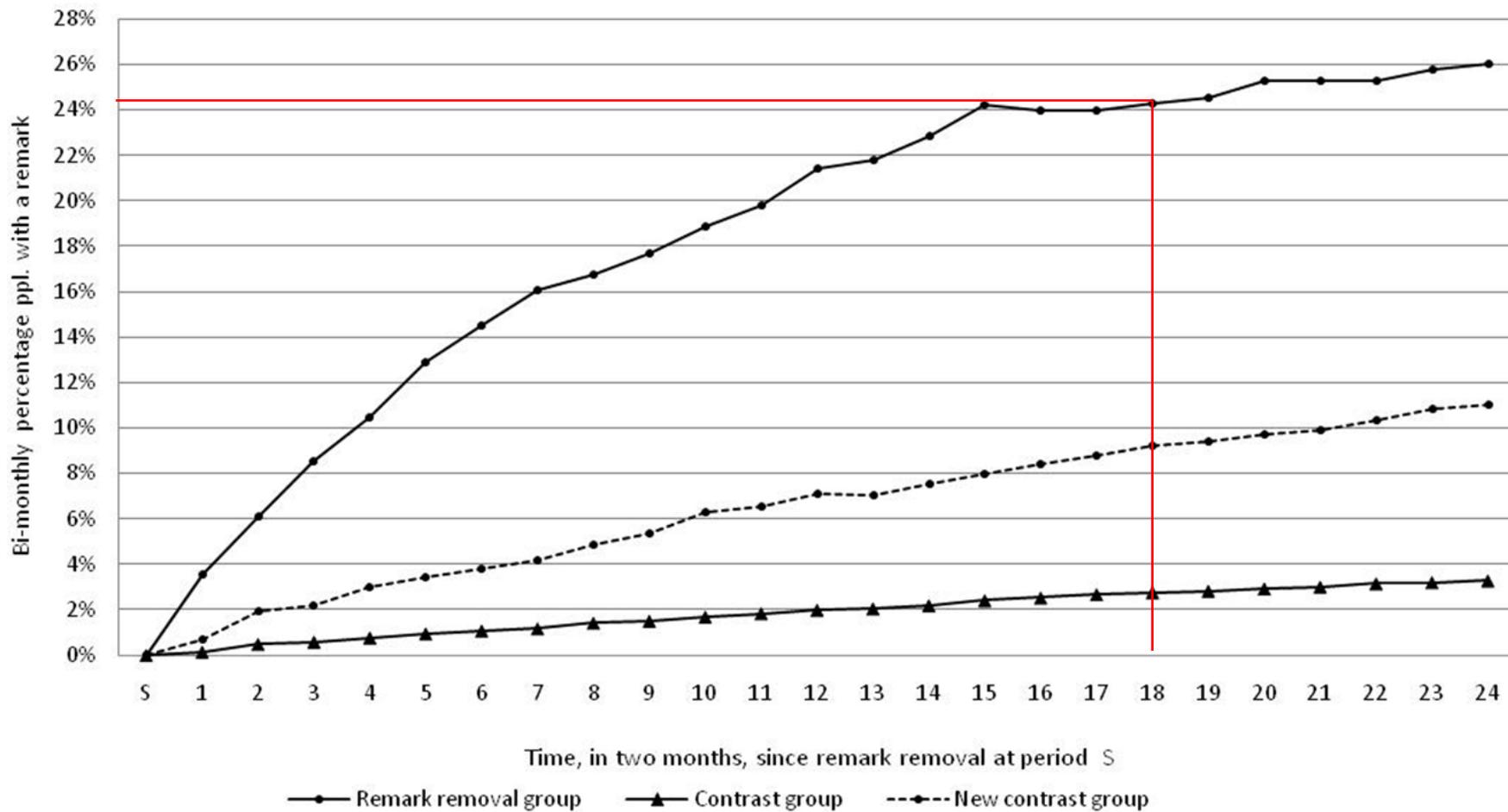
### Access to new credit:

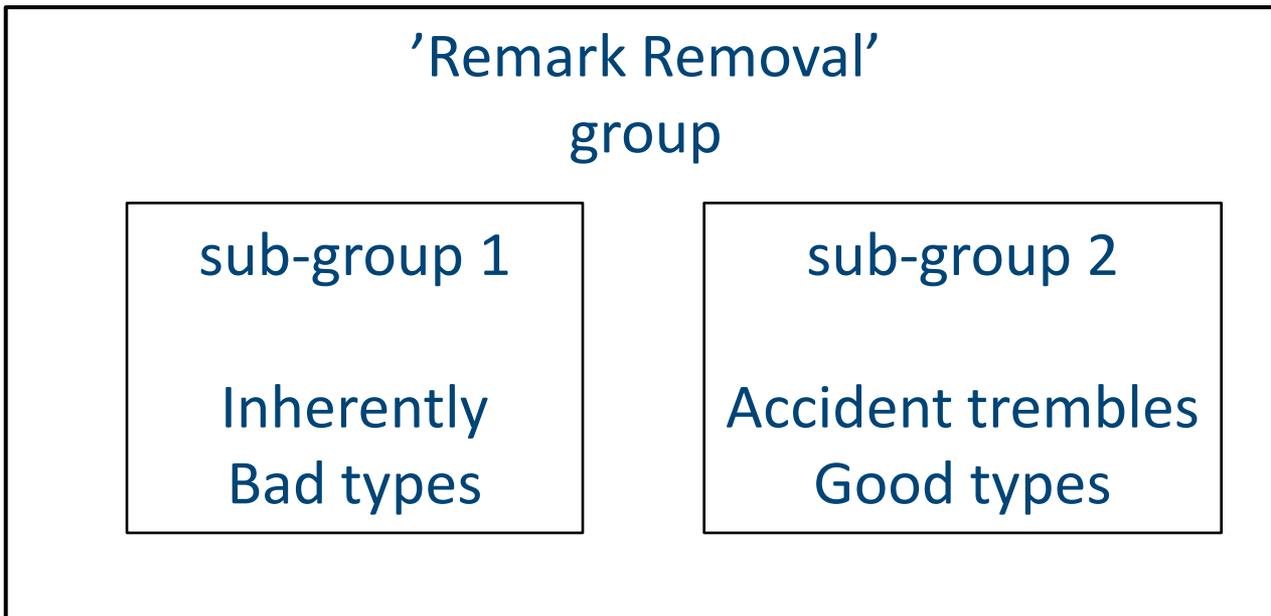
- significant new credit, average SEK 21 000

### Delinquencies

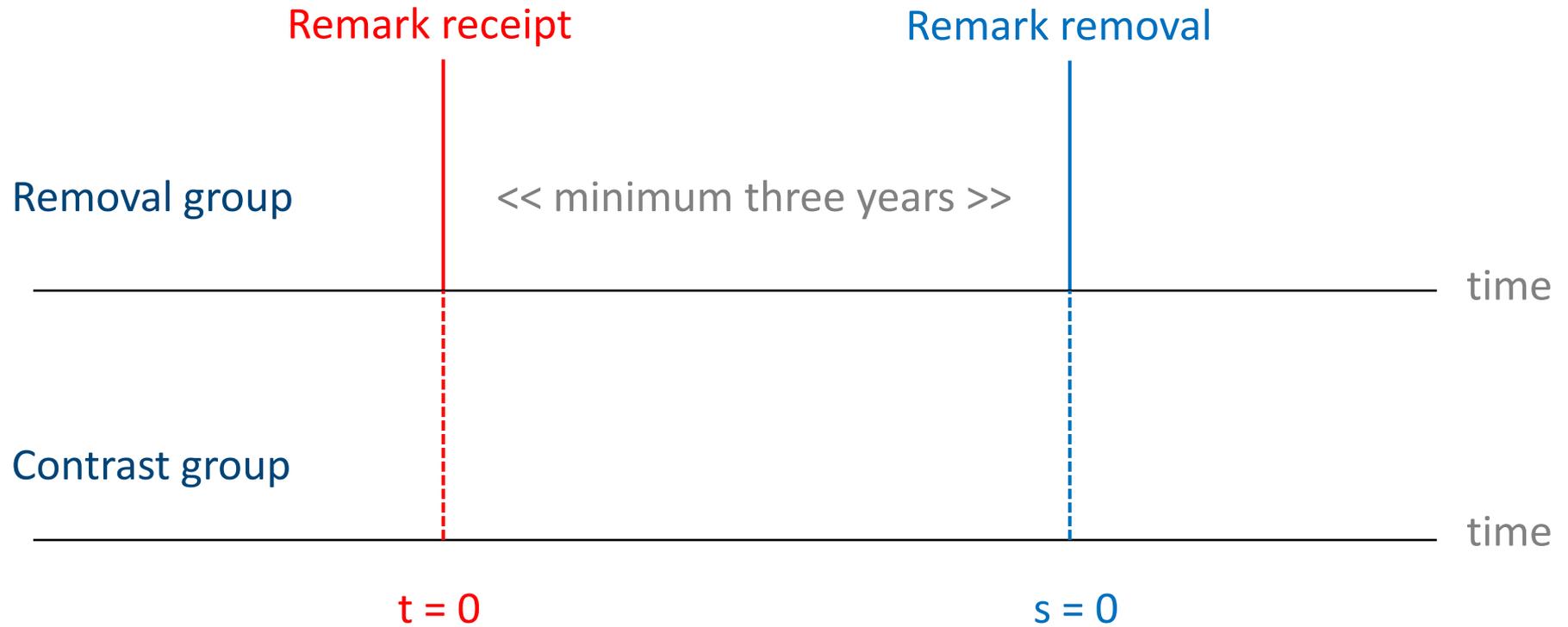
- More delinquencies, but majority do not become delinquent



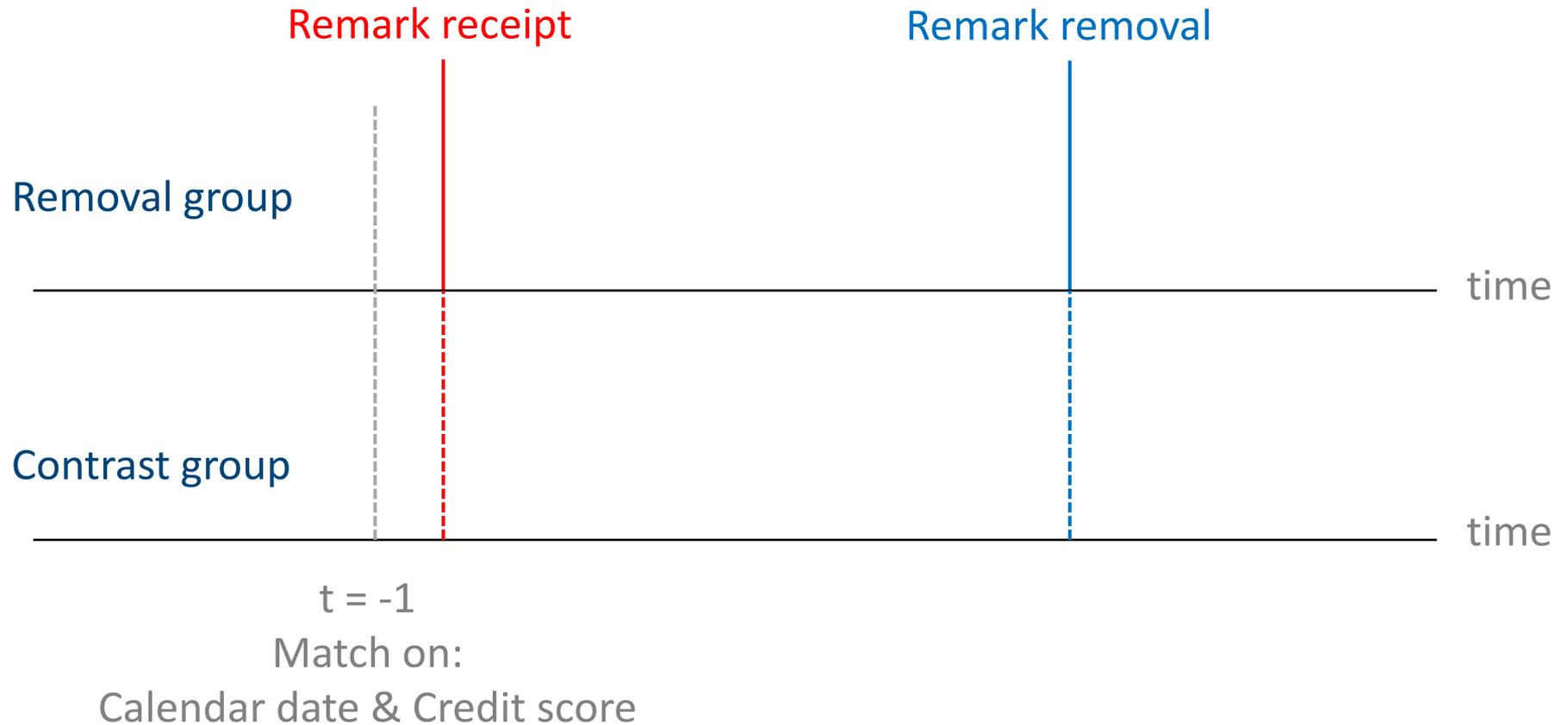




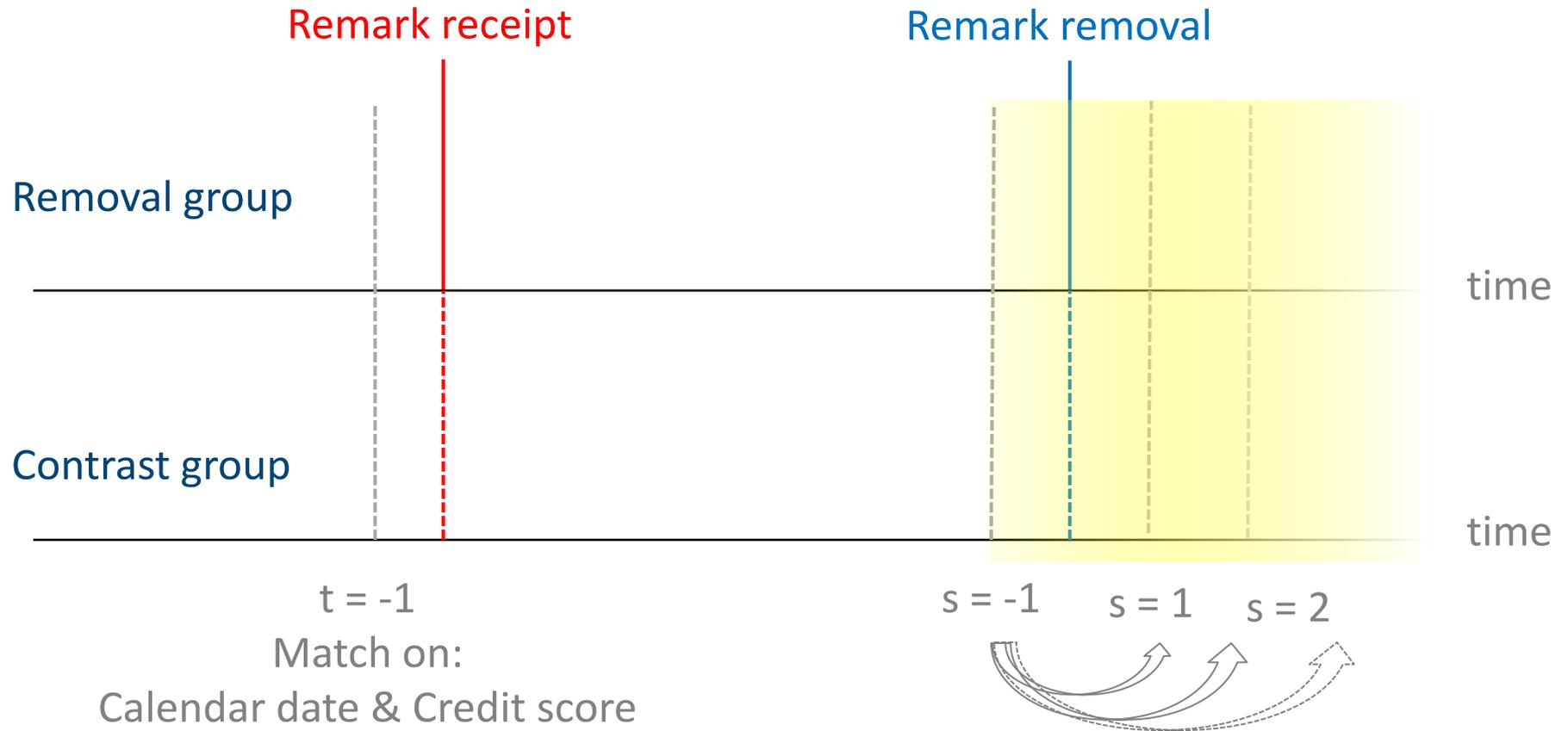
# out of the ordinary?



# out of the ordinary?



# out of the ordinary?



Group of propensity score before remark **receipt**

Regressions:

- we lose significance but qualitatively the results hold

Delinquency Hazard :

Holding fixed credit score after removal of credit remark

- before **removal** group: do as well as their comparison group
- before **receipt** group: do at least as well as their comparison group



- Borrowers react to improvements in credit scores
- These lead to new access to credit
- Credit scores worsen after new access
- But  $\frac{3}{4}$  remain significantly better over 18 month period and not significantly worse after four years
- Not clear cut if score before removal accurately reflect type
  - Some proportion remark was a tremble

or

- Removal provide incentives to exert more effort

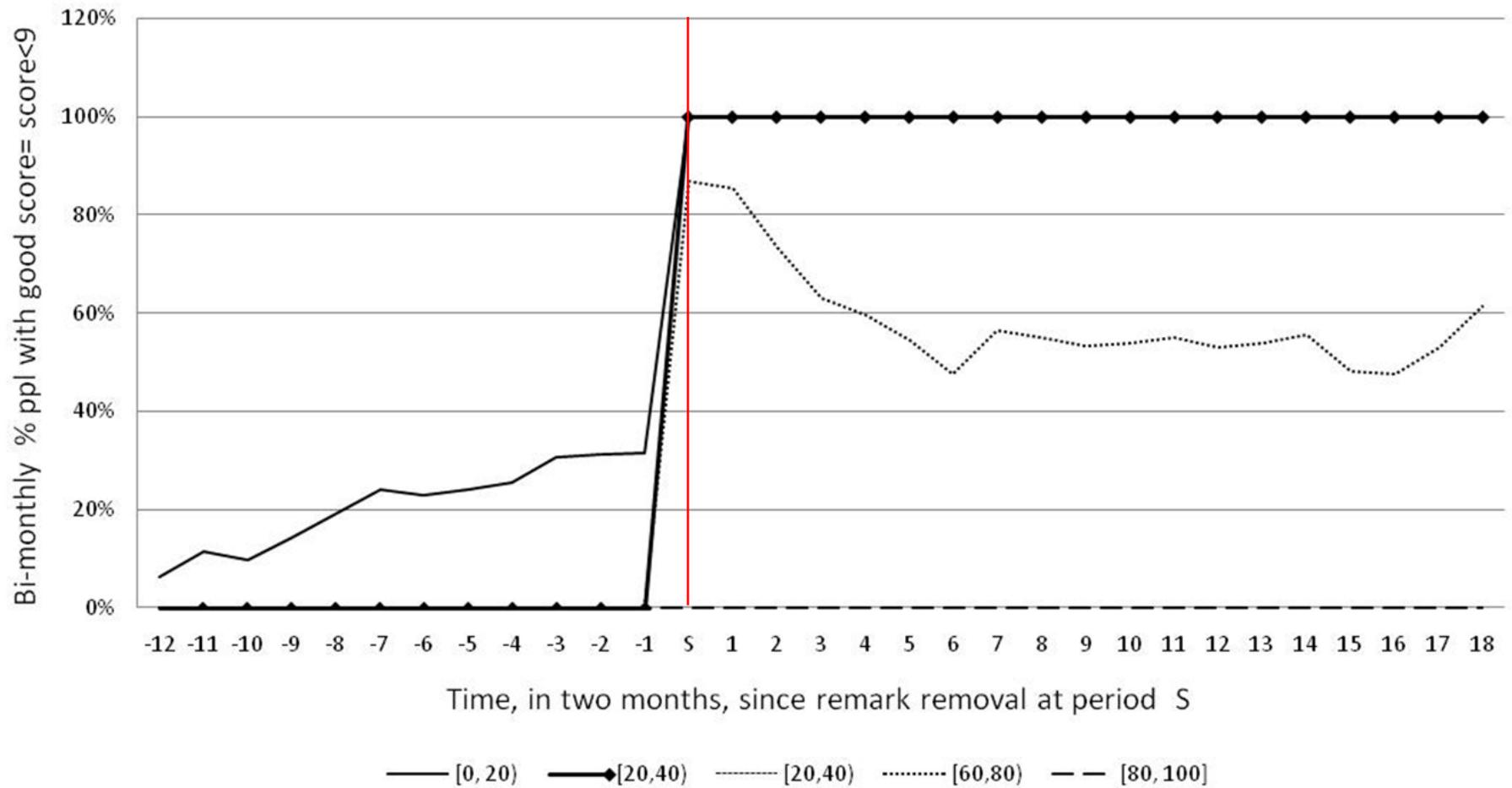




thank you

[Marieke.bos@sofi.su.se](mailto:Marieke.bos@sofi.su.se)

# Results: Short run effect on credit scores

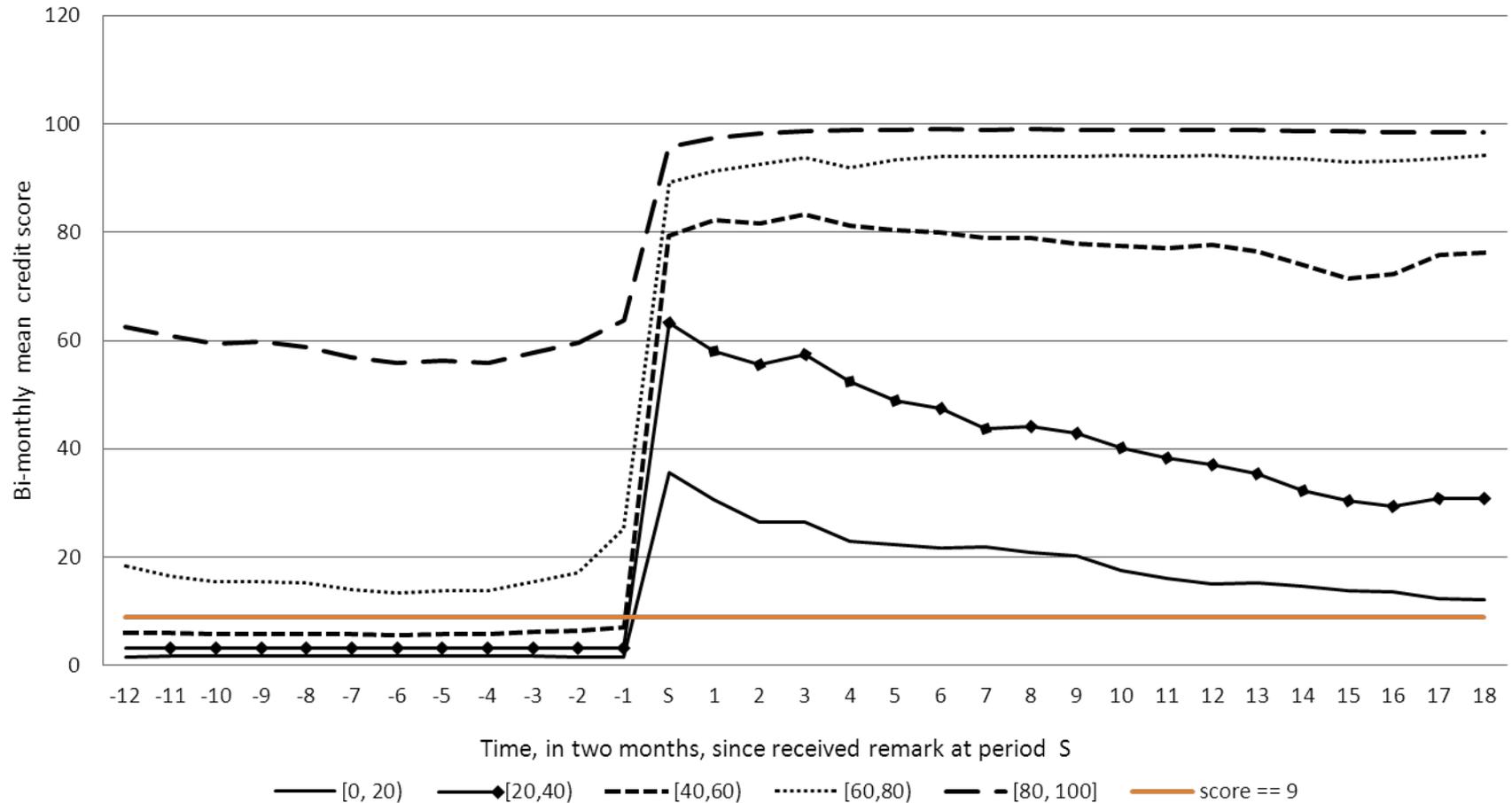


## Results: Short run effect on credit scores

Credit-Score range at t = -1	Intercept	Time Trend	Remark removal	Number Obs <i>Individuals</i>
[0, 20)	-0.97 ***	0.03 ***	-8.49 ***	7,900
	-6.19	3.03	-68.49	235
[20, 40)	-1.48 ***	0.04 ***	-11.18 ***	7,569
	-8.72	4.63	-31.68	223
[40, 60)	-1.29 ***	0.04 ***	-13.95 ***	7,627
	-6.72	3.58	-31.58	228
[60, 80)	-1.25 ***	0.05 ***	-18.00 ***	8,607
	-5.56	4.46	-30.89	258
[80, 100]	0.15 ***	-0.02 ***	-14.96 ***	7,919
	0.78	-2.01	-11.15	235

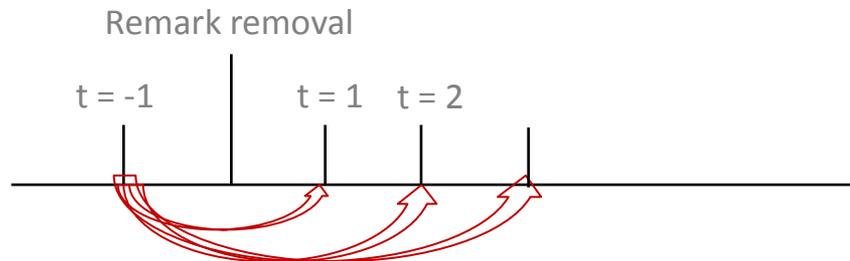


# getting a remark



For each variable of interest:

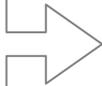
- Nine OLS regressions explaining expanding time periods
- $n = [0, 3, 6, \dots, 24]$  so the final period considers four years



## Results: Longer run effect on credit scores

Dependent Variable	Intercept	Loseremark $S_{c,t=0}$
Score c,t= 0 -Score c,t=-1	0.08 * 1.75	-11.21 *** -30.31
Score c, t=3 -Score c,t=-1	0.41 *** 5.70	-5.57 *** -6.99
Score c, t=6 -Score c,t=-1	0.81 *** 9.15	-2.55 *** -2.64
Score c, t=9 -Score c,t=-1	1.01 *** 10.17	-3.03 *** -2.85
Score c, t=12 -Score c,t=-1	1.23 *** 11.35	-2.03 * -1.71
Score c, t=15 -Score c,t=-1	1.37 *** 11.47	-0.15 -0.10
Score c, t=18 -Score c,t=-1	1.51 *** 11.71	-1.05 -0.59
Score c, t=21 -Score c,t=-1	1.60 *** 12.04	-1.10 -0.61
Score c, t=24 -Score c,t=-1	1.40 *** 9.89	-2.99 -0.91

One and  
half years



## Defaulting

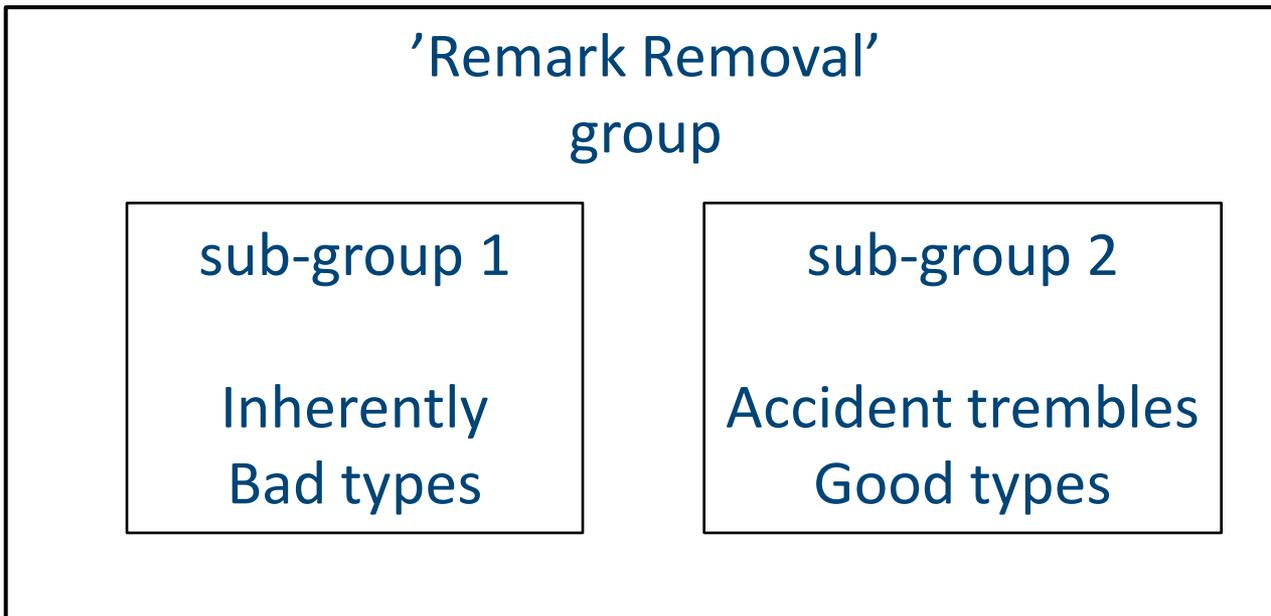
- Nine probit regressions expanding time periods
- four years



## Results: Longer run effect on defaults

Dependent Variable	Intercept	Loseremark $S_{c, t=0}$
Default c, t= 1	-3.05 *** -46.63	0.57 *** 3.64
Default c, t= 3	-2.61 *** -68.19	0.39 *** 3.59
Default c, t=6	-2.40 *** -78.53	0.46 *** 5.08
Default c, t= 9	-2.28 *** -84.05	0.39 *** 4.40
Default c, t= 12	-2.18 *** -88.01	0.37 *** 4.21
Default c, t= 15	-2.11 *** -88.99	0.32 *** 3.50
Default c, t= 18	-2.06 *** -89.05	0.18 * 1.67
Default c, t= 21	-2.03 *** -89.30	0.19 * 1.80
Default c, t= 24	-2.03 *** -85.23	-0.16 -0.83





proportion  $p$  = inherently bad types

Probability bad types to obtain remark =  $\rho$  (in every period)

Probability good types to obtain remark = 0

After  $n$  periods total expected no of types with remarks:

Fit the data:  $\rho = 0.125$ ,  $p = (0.25-0.29)$

