

Logistic regression: Positive Delay Rate – QuickPay (2009-2012)

Apr 15, 2022

1 Logistic Regressions (Negative Delay)

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## NOTE: 242,688 observations removed because of NA values (LHS: 242,688).  
## NOTE: 266,784 observations removed because of NA values (LHS: 242,688, RHS: 266,784).  
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## NOTES: 266,784 observations removed because of NA values (LHS: 242,688, RHS: 266,784).  
##          961/0 fixed-effects (25,727 observations) removed because of only 0 (or only 1) outcomes.  
## NOTES: 266,784 observations removed because of NA values (LHS: 242,688, RHS: 266,784).  
##          19/961/0 fixed-effects (26,447 observations) removed because of only 0 (or only 1) outcomes.
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2 Contract Financing

$$CF_i = \begin{cases} 1, & \text{if project } i \text{ receives contract financing} \\ 0, & \text{otherwise} \end{cases}$$

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3 Competition

3.1 Impact on delays

Define

$$SA_i = \begin{cases} 1, & \text{if project was signed after QuickPay} \\ 0, & \text{otherwise} \end{cases}$$

$$SB_i = \begin{cases} 1, & \text{if project was signed before QuickPay} \\ 0, & \text{otherwise} \end{cases}$$

3.1.1 Subsample model

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## NOTE: 202,813 observations removed because of NA values (LHS: 202,813).  
## NOTE: 224,438 observations removed because of NA values (LHS: 202,813, RHS: 224,438).  
## NOTE: 224,438 observations removed because of NA values (LHS: 202,813, RHS: 224,438).
```

Table 1: Logit model: Effect of QuickPay

Dependent Variable: Model:	$I(Delay < 0)$				
	(1)	(2)	(3)	(4)	(5)
<i>Variables</i>					
(Intercept)	-4.83*** (0.06)	-9.70*** (0.39)			
$Treat_i$	-0.32*** (0.08)	0.01 (0.09)	0.02 (0.09)	-0.09 (0.09)	-0.09 (0.09)
$Post_t$	0.11 (0.07)	1.56*** (0.49)			
CF_i	0.68*** (0.12)	0.16 (0.13)	0.18 (0.13)	-0.07 (0.13)	-0.09 (0.13)
$Treat_i \times Post_t$	-0.21* (0.11)	-0.27** (0.11)	-0.28** (0.11)	-0.24** (0.11)	-0.23** (0.11)
$Treat_i \times CF_i$	0.53*** (0.16)	0.30* (0.17)	0.30* (0.17)	0.28* (0.17)	0.29* (0.17)
$Post_t \times CF_i$	-0.02 (0.15)	0.02 (0.16)	0.00 (0.16)	0.04 (0.16)	0.05 (0.16)
$Treat_i \times Post_t \times CF_i$	-0.21 (0.21)	-0.15 (0.21)	-0.14 (0.21)	-0.17 (0.22)	-0.17 (0.22)
Controls		Yes	Yes	Yes	Yes
Controls $\times Post_t$		Yes	Yes	Yes	Yes
<i>Fixed-effects</i>					
Time			Yes	Yes	Yes
Task code				Yes	Yes
NAICS code					Yes
<i>Fit statistics</i>					
Observations	260,211	236,115	236,115	210,388	209,668
Squared Correlation	0.002	0.007	0.007	0.02	0.02
Pseudo R ²	0.01	0.05	0.06	0.12	0.12
BIC	24,028.8	22,778.2	22,841.1	25,312.8	25,820.0

Clustered (Project ID) standard-errors in parentheses

*Signif. Codes: ***: 0.01, **: 0.05, *: 0.1*

NOTES: 224,438 observations removed because of NA values (LHS: 202,813, RHS: 224,438).
905/0 fixed-effects (23,186 observations) removed because of only 0 (or only 1) outcomes.
NOTES: 224,438 observations removed because of NA values (LHS: 202,813, RHS: 224,438).
23/905/0 fixed-effects (23,898 observations) removed because of only 0 (or only 1) outcomes.

Table 2: Logit model: Effect of QuickPay on Competitive Projects

Dependent Variable: Model:	$I(Delay < 0)$				
	(1)	(2)	(3)	(4)	(5)
<i>Variables</i>					
(Intercept)	-4.70*** (0.06)	-10.37*** (0.43)			
$Treat_i$	-0.28*** (0.08)	0.10 (0.09)	0.11 (0.09)	-0.00 (0.09)	0.00 (0.09)
SA_i	-0.10 (0.08)	-0.33*** (0.09)	-0.51*** (0.10)	-0.44*** (0.10)	-0.44*** (0.10)
$Post_t$	0.27*** (0.08)	2.43*** (0.53)			
$Treat_i \times Post_t \times SB_i$	-0.45*** (0.12)	-0.46*** (0.13)	-0.46*** (0.13)	-0.38*** (0.12)	-0.38*** (0.12)
$Treat_i \times SA_i \times Post_t$	-0.30** (0.12)	-0.39*** (0.13)	-0.40*** (0.13)	-0.27** (0.12)	-0.27** (0.12)
<i>Fixed-effects</i>					
Time			Yes	Yes	Yes
Task code				Yes	Yes
NAICS code					Yes
<i>Fit statistics</i>					
Observations	214,460	192,835	192,835	169,649	168,937
Squared Correlation	0.0006	0.007	0.008	0.02	0.03
Pseudo R ²	0.006	0.06	0.06	0.13	0.13
BIC	19,896.8	18,591.3	18,646.6	20,647.9	21,099.7
<i>Clustered (Project ID) standard-errors in parentheses</i>					
<i>Signif. Codes: ***: 0.01, **: 0.05, *: 0.1</i>					

NOTE: 39,875 observations removed because of NA values (LHS: 39,875).
NOTE: 42,346 observations removed because of NA values (LHS: 39,875, RHS: 42,346).
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NOTES: 42,346 observations removed because of NA values (LHS: 39,875, RHS: 42,346).
678/0 fixed-effects (14,826 observations) removed because of only 0 (or only 1) outcomes.
NOTES: 42,346 observations removed because of NA values (LHS: 39,875, RHS: 42,346).
22/678/0 fixed-effects (15,239 observations) removed because of only 0 (or only 1) outcomes.

3.1.2 Four-way interaction

NOTE: 242,744 observations removed because of NA values (LHS: 242,688, RHS: 242,744).
NOTE: 266,784 observations removed because of NA values (LHS: 242,688, RHS: 266,784).
NOTE: 266,784 observations removed because of NA values (LHS: 242,688, RHS: 266,784).
NOTES: 266,784 observations removed because of NA values (LHS: 242,688, RHS: 266,784).

Table 3: Logit model: Effect of QuickPay on Non-Competitive Projects

Dependent Variable:	$I(Delay < 0)$				
Model:	(1)	(2)	(3)	(4)	(5)
<i>Variables</i>					
(Intercept)	-4.75*** (0.12)	-6.50*** (1.05)			
$Treat_i$	0.26 (0.17)	0.30* (0.18)	0.33* (0.17)	0.13 (0.20)	0.10 (0.21)
SA_i	0.26 (0.18)	0.04 (0.19)	0.04 (0.22)	-0.12 (0.24)	-0.14 (0.25)
$Post_t$	-0.42** (0.18)	-1.98 (1.34)			
$Treat_i \times Post_t \times SB_i$	-0.01 (0.27)	0.04 (0.28)	0.02 (0.28)	-0.07 (0.29)	-0.13 (0.30)
$Treat_i \times SA_i \times Post_t$	0.06 (0.24)	-0.04 (0.25)	-0.05 (0.25)	-0.14 (0.27)	-0.12 (0.28)
<i>Fixed-effects</i>					
Time			Yes	Yes	Yes
Task code				Yes	Yes
NAICS code					Yes
<i>Fit statistics</i>					
Observations	45,751	43,280	43,280	28,454	28,041
Squared Correlation	0.0004	0.005	0.005	0.06	0.07
Pseudo R^2	0.004	0.04	0.04	0.16	0.17
BIC	4,366.2	4,257.5	4,335.6	5,015.9	5,353.7

Clustered (Project ID) standard-errors in parentheses

Signif. Codes: ***: 0.01, **: 0.05, *: 0.1

0/961 fixed-effects (25,727 observations) removed because of only 0 (or only 1) outcomes.
NOTES: 266,784 observations removed because of NA values (LHS: 242,688, RHS: 266,784).
0/961/19 fixed-effects (26,447 observations) removed because of only 0 (or only 1) outcomes.

Table 4: Logit model: Effect of QuickPay on Non-Competitive Projects

Dependent Variable: Model:	$I(Delay < 0)$				
	(1)	(2)	(3)	(4)	(5)
<i>Variables</i>					
(Intercept)	-5.27*** (0.12)	-9.89*** (0.42)			
$Treat_i$	0.26 (0.17)	0.33* (0.17)	0.35** (0.17)	0.04 (0.18)	0.05 (0.18)
SA_i	0.02 (0.18)	0.07 (0.18)	-0.09 (0.19)	-0.08 (0.20)	-0.07 (0.20)
$Competitive_i$	0.06 (0.13)	-0.09 (0.14)	-0.09 (0.14)	-0.14 (0.15)	-0.10 (0.15)
$Post_t$	-0.19 (0.18)	1.38*** (0.53)			
$Treat_i \times Competitive_i$	-0.57*** (0.19)	-0.26 (0.19)	-0.27 (0.19)	-0.07 (0.20)	-0.07 (0.20)
$Competitive_i \times Post_t$	0.72*** (0.20)	0.66*** (0.20)	0.67*** (0.20)	0.41** (0.20)	0.40* (0.20)
$SA_i \times Competitive_i$	-0.41** (0.20)	-0.41** (0.20)	-0.40** (0.20)	-0.37* (0.21)	-0.38* (0.21)
$Treat_i \times Post_t$	0.03 (0.27)	-0.03 (0.28)	-0.03 (0.28)	-0.11 (0.28)	-0.11 (0.28)
$Treat_i \times Competitive_i \times Post_t$	-0.49 (0.30)	-0.40 (0.30)	-0.40 (0.30)	-0.27 (0.31)	-0.26 (0.30)
$Treat_i \times SA_i \times Post_t$	0.02 (0.29)	-0.07 (0.29)	-0.06 (0.29)	0.01 (0.29)	0.01 (0.29)
$Treat_i \times SA_i \times Competitive_i \times Post_t$	0.16 (0.32)	0.14 (0.31)	0.12 (0.32)	0.10 (0.32)	0.09 (0.32)
<i>Fixed-effects</i>					
Time			Yes	Yes	Yes
Task code				Yes	Yes
NAICS code					Yes
<i>Fit statistics</i>					
Observations	260,155	236,115	236,115	210,388	209,668
Squared Correlation	0.002	0.007	0.007	0.02	0.03
Pseudo R ²	0.02	0.05	0.06	0.12	0.12
BIC	24,029.2	22,810.1	22,863.7	25,334.2	25,842.1

Clustered (Project ID) standard-errors in parentheses

Signif. Codes: ***: 0.01, **: 0.05, *: 0.1