

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

Jan 02, 2022

1 Logistic Regressions (Positive Delay)

2 Contract Financing

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

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

3.1.2 Four-way interaction

	$I(\text{Delay}_{it} > 0)$				
	(1)	(2)	(3)	(4)	(5)
Constant	-2.19*** (0.02)	-0.99*** (0.02)			
$Treat_i$	-0.41*** (0.02)	-0.27*** (0.02)	-0.27*** (0.02)	-0.18*** (0.03)	-0.20*** (0.03)
$Post_t$	0.09*** (0.02)	-0.30*** (0.03)			
CF_i	0.78*** (0.03)	0.62*** (0.03)	0.60*** (0.03)	0.08** (0.03)	0.06* (0.03)
$Treat_i \times Post_t$	0.13*** (0.03)	0.16*** (0.03)	0.16*** (0.03)	0.12*** (0.03)	0.13*** (0.03)
$Post_t \times CF_i$	0.01 (0.04)	-0.06 (0.04)	-0.05 (0.04)	0.05 (0.04)	0.06 (0.04)
$Treat_i \times Post_t \times CF_i$	0.29*** (0.04)	0.08** (0.04)	0.09** (0.04)	0.02 (0.04)	-0.01 (0.04)
Duration, Budget, Bids	No	Yes	Yes	Yes	Yes
$Post_t \times$ (Duration, Budget, Bids)	No	Yes	Yes	Yes	Yes
Year-Quarter FE	No	No	Yes	Yes	Yes
Task FE	No	No	No	Yes	Yes
Industry FE	No	No	No	No	Yes
AIC	188883.22	168397.79			
BIC	188957.20	168534.05			
Log Likelihood	-94434.61	-84185.89			
Deviance	188869.22	168371.79	167397.17	154961.96	154227.35
Num. obs.	287530	263488	263488	260905	260857

Each observation is a project-quarter. SEs are robust and clustered at the project level.

Table 1: Contract Financing

	$I(Delay_{it} > 0)$				
	(1)	(2)	(3)	(4)	(5)
Constant	-1.98*** (0.02)	-0.90*** (0.02)			
$Treat_i$	-0.55*** (0.02)	-0.31*** (0.02)	-0.31*** (0.03)	-0.17*** (0.03)	-0.20*** (0.03)
SA_i	-0.41*** (0.02)	-0.53*** (0.02)	-0.79*** (0.03)	-0.70*** (0.03)	-0.69*** (0.03)
$Post_t$	0.35*** (0.02)	0.01 (0.03)			
$Treat_i \times SB_i \times Post_t$	0.07** (0.03)	0.15*** (0.03)	0.17*** (0.04)	0.14*** (0.04)	0.15*** (0.04)
$Treat_i \times SA_i \times Post_t$	0.24*** (0.03)	0.17*** (0.04)	0.16*** (0.04)	0.21*** (0.04)	0.20*** (0.04)
Duration, Budget, Bids	No	Yes	Yes	Yes	Yes
$Post_t \times$ (Duration, Budget, Bids)	No	Yes	Yes	Yes	Yes
Year-Quarter FE	No	No	Yes	Yes	Yes
Task FE	No	No	No	Yes	Yes
Industry FE	No	No	No	No	Yes
AIC	158229.54	139557.11			
BIC	158291.74	139680.42			
Log Likelihood	-79108.77	-69766.56			
Deviance	158217.54	139533.11	138121.15	126129.81	125545.81
Num. obs.	234573	214421	214421	212123	212084

Each observation is a project-quarter. SEs are robust and clustered at the project level. Sample restricted to fully competed projects.

Table 2: Full Competition

	$I(Delay_{it} > 0)$				
	(1)	(2)	(3)	(4)	(5)
Constant	-2.40*** (0.04)	-0.92*** (0.21)			
$Treat_i$	0.27*** (0.05)	0.17*** (0.06)	0.19*** (0.06)	-0.16** (0.07)	-0.14** (0.07)
SA_i	-0.14*** (0.05)	-0.29*** (0.05)	-0.49*** (0.06)	-0.53*** (0.07)	-0.51*** (0.07)
$Post_t$	-0.02 (0.05)	0.03 (0.22)			
$Treat_i \times SB_i \times Post_t$	0.28*** (0.07)	0.28*** (0.08)	0.28*** (0.08)	0.29*** (0.08)	0.28*** (0.08)
$Treat_i \times SA_i \times Post_t$	0.11 (0.08)	0.04 (0.08)	0.05 (0.08)	0.08 (0.09)	0.05 (0.09)
Duration, Budget, Bids	No	Yes	Yes	Yes	Yes
$Post_t \times$ (Duration, Budget, Bids)	No	Yes	Yes	Yes	Yes
Year-Quarter FE	No	No	Yes	Yes	Yes
Task FE	No	No	No	Yes	Yes
Industry FE	No	No	No	No	Yes
AIC	32508.38	28815.35			
BIC	32561.64	28920.97			
Log Likelihood	-16248.19	-14395.68			
Deviance	32496.38	28791.35	28610.62	26220.54	26010.75
Num. obs.	52957	49067	49067	47130	47114

Each observation is a project-quarter. SEs are robust and clustered at the project level. Sample restricted to non-competed projects.

Table 3: Non-competitive projects

	$I(Delay_{it} > 0)$				
	(1)	(2)	(3)	(4)	(5)
Constant	-2.40*** (0.04)	-1.09*** (0.04)			
$Treat_i$	0.27*** (0.05)	0.16*** (0.06)	0.17*** (0.06)	-0.17*** (0.06)	-0.21*** (0.06)
$StartedAfterQP_i$	-0.14*** (0.05)	-0.27*** (0.05)	-0.55*** (0.06)	-0.54*** (0.06)	-0.52*** (0.06)
$Competitive_i$	0.42*** (0.04)	0.18*** (0.04)	0.20*** (0.05)	-0.08 (0.05)	-0.07 (0.05)
$Post_t$	-0.02 (0.05)	-0.26*** (0.06)			
$Treat_i \times Competitive_i$	-0.82*** (0.06)	-0.48*** (0.06)	-0.49*** (0.06)	-0.01 (0.07)	0.01 (0.07)
$Post_t \times Competitive_i$	0.37*** (0.06)	0.31*** (0.06)	0.31*** (0.06)	0.14** (0.06)	0.15** (0.06)
$StartedAfterQP_i \times Competitive_i$	-0.27*** (0.06)	-0.26*** (0.06)	-0.24*** (0.06)	-0.16** (0.07)	-0.17*** (0.06)
$Treat_i \times Post_t$	0.28*** (0.07)	0.29*** (0.08)	0.29*** (0.08)	0.19** (0.08)	0.21** (0.08)
$Treat_i \times Post_t \times Competitive_i$	-0.21*** (0.08)	-0.13 (0.08)	-0.12 (0.09)	-0.05 (0.09)	-0.06 (0.09)
$Treat_i \times Post_t \times StartedAfterQP_i$	-0.17** (0.07)	-0.25*** (0.08)	-0.23*** (0.08)	-0.20** (0.09)	-0.23*** (0.09)
$Treat_i \times Post_t \times StartedAfterQP_i \times Competitive_i$	0.34*** (0.08)	0.27*** (0.08)	0.22** (0.09)	0.26*** (0.09)	0.28*** (0.09)
Duration, Budget, Bids	No	Yes	Yes	Yes	Yes
$Post_t \times$ (Duration, Budget, Bids)	No	Yes	Yes	Yes	Yes
Year-Quarter FE	No	No	Yes	Yes	Yes
Task FE	No	No	No	Yes	Yes
Industry FE	No	No	No	No	Yes
AIC	190737.92	168464.56			
BIC	190864.75	168653.23			
Log Likelihood	-95356.96	-84214.28			
Deviance	190713.92	168428.56	166855.10	153931.94	153205.56
Num. obs.	287530	263488	263488	260905	260853

Each observation is a project-quarter. SEs are robust and clustered at the project level.

Table 4: Competition: Four-way Interaction