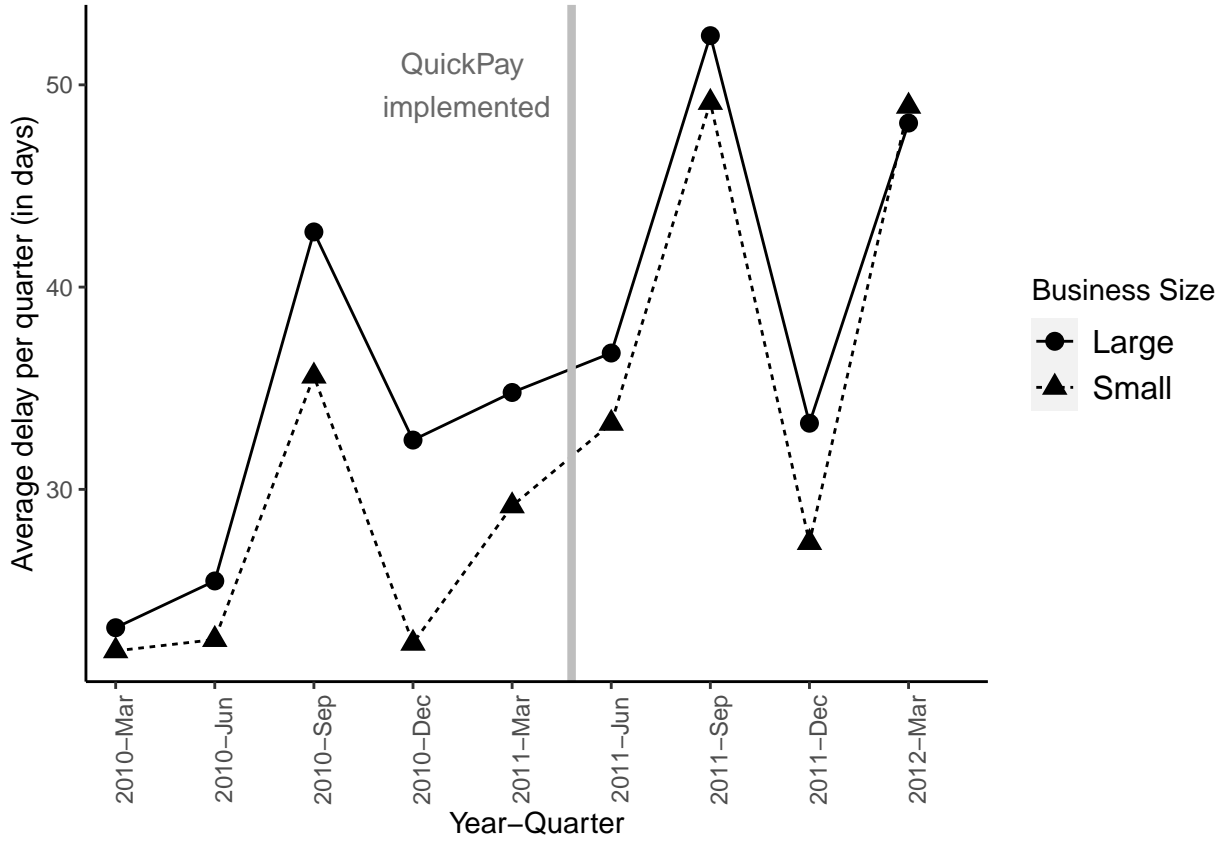


First Implementation of QuickPay (2009-2012)

Feb 22, 2021

1 Delays over Time



2 Notation

- Project i , Year-Quarter t
- X_i denotes project level controls: initial duration, initial budget, number of offers received
- $\mu_t, \theta_{firm}, \lambda_{task}$: Year-Quarter, Firm, and Product/Service code Fixed effects
- All continuous variables are winsorized at the 5% level

$$Treat_i = \begin{cases} 1, & \text{if project } i \text{ is a small business} \\ 0, & \text{otherwise} \end{cases}$$

$$Post_t = \begin{cases} 1, & \text{if year-quarter } t > \text{April 27, 2011} \\ 0, & \text{otherwise} \end{cases}$$

3 Parallel Trends Test

Let $Time$ denote q -th quarter since the beginning of time horizon. For $Post_t = 0$, we run the following regression:

$$Delay_{it} = \alpha + \beta_0 Treat_i + \beta_1 (Treat_i \times Time) + \beta_2 X_i + \mu_t + \theta_{firm} + \lambda_{task} + \epsilon_{it}$$

The coefficient of interest is β_1 . If this is significant, we would find evidence of a linear time trend before quickpay implementation – violating the parallel trends assumption.

Table 1: Linear Time Trend Before QuickPay

<i>Dependent variable:</i>	
<i>Delay_{it}</i> (in days)	
<i>Treat_i</i>	−1.10 (2.98)
<i>Treat_i × Time</i>	−0.01 (0.49)
Fixed effects	Firm, Task, and Year-Quarter
Controls	Budget, Duration, Bids
Observations	74,677
R ²	0.14
Adjusted R ²	0.03

Note: *p<0.1; **p<0.05; ***p<0.01
Each observation is a project-quarter.
SEs are robust and clustered at the project level.
Observations are for quarters before quickpay.

4 Baseline Regressions

$$Delay_{it} = \alpha + \beta_0 Treat_i + \beta_1 Post_t + \beta_2 (Treat_i \times Post_t) + \epsilon_{it}$$

$$\begin{aligned}
Delay_{it} = & \alpha + \beta_0 Treat_i + \beta_1 Post_t + \beta_2 (Treat_i \times Post_t) \\
& + X_i + (Post_t \times X_i) + \mu_t + \theta_{firm} + \lambda_{task} + \epsilon_{it}
\end{aligned}$$

Table 2: Quickpay 2009-2011

	<i>Delay_{it}</i> (in days)		
	(1)	(2)	(3)
<i>Treat_i</i>	-6.19*** (0.50)	-3.58** (1.55)	-3.09* (1.59)
<i>Post_t</i>	13.04*** (0.52)		
<i>Treat_i × Post_t</i>	3.35*** (0.73)	6.88*** (0.91)	6.83*** (0.92)
Constant	33.00*** (0.36)		
Year-Quarter Fixed Effects	No	Yes	Yes
Firm Fixed Effects	No	Yes	Yes
Task Fixed Effects	No	No	Yes
Duration, Budget, Bids	No	Yes	Yes
<i>Post_t × (Duration, Budget, Bids)</i>	No	Yes	Yes
Observations	173,900	155,638	155,638
R ²	0.01	0.11	0.12
Adjusted R ²	0.01	0.05	0.05

Note:

*p<0.1; **p<0.05; ***p<0.01

Each observation is a project-quarter.

SEs are robust and clustered at the project level.

5 Contract Financing

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

$$\begin{aligned} Delay_{it} = & \alpha + \beta_0 Treat_i + \beta_1 Post_t + \beta_2 (Treat_i \times Post_t) \\ & + \beta_3 CF_i + \beta_4 (CF_i \times Post_t) + \beta_5 (Treat_i \times Post_t \times CF_i) \\ & + X_i + (Post_t \times X_i) + \mu_t + \theta_{firm} + \lambda_{task} + \epsilon_{it} \end{aligned}$$

Table 3: Effect of Contract Financing: Quickpay 2009-2011

	<i>Delay_{it}</i> (in days)		
	(1)	(2)	(3)
<i>Treat_i</i>	-6.12*** (0.50)	-3.37** (1.55)	-2.89* (1.59)
<i>Post_t</i>	13.00*** (0.57)		
<i>Treat_i × Post_t</i>	1.53** (0.78)	5.89*** (1.00)	5.90*** (1.01)
<i>CF_i</i>	-3.97*** (0.61)	-4.68*** (0.81)	-4.76*** (0.82)
<i>Post_t × CF_i</i>	0.72 (1.13)	-0.20 (1.31)	-0.37 (1.32)
<i>Post_t × CF_i × Treat_i</i>	9.24*** (1.38)	3.94** (1.65)	3.70** (1.67)
Constant	33.64*** (0.38)		
Year-Quarter Fixed Effects	No	Yes	Yes
Firm Fixed Effects	No	Yes	Yes
Task Fixed Effects	No	No	Yes
Duration, Budget, Bids	No	Yes	Yes
<i>Post_t × (Duration, Budget, Bids)</i>	No	Yes	Yes
Observations	173,900	155,638	155,638
R ²	0.01	0.11	0.12
Adjusted R ²	0.01	0.05	0.05

Note:

*p<0.1; **p<0.05; ***p<0.01

Each observation is a project-quarter.

SEs are robust and clustered at the project level.

6 Receives Financial Aid

$$FinancialAid = \begin{cases} 1, & \text{if firm receives grants or is a c8A participant} \\ 0, & \text{otherwise} \end{cases}$$

$$\begin{aligned} Delay_{it} = & \alpha + \beta_0 Treat_i + \beta_1 Post_t + \beta_2 (Treat_i \times Post_t) + \beta_3 FinancialAid \\ & + \beta_4 (FinancialAid \times Post_t) + \beta_5 (Treat_i \times Post_t \times FinancialAid) \\ & + X_i + (Post_t \times X_i) + \mu_t + \theta_{firm} + \lambda_{task} + \epsilon_{it} \end{aligned}$$

Table 4: Effect of Grants or C8A Participant: Quickpay 2009-2011

	<i>Delay_{it}</i> (in days)		
	(1)	(2)	(3)
<i>Treat_i</i>	-6.96*** (0.51)	-3.15** (1.55)	-2.63* (1.59)
<i>Post_t</i>	12.89*** (0.53)		
<i>Treat_i × Post_t</i>	3.43*** (0.77)	5.65*** (0.98)	5.57*** (0.99)
<i>FinancialAid</i>	5.72*** (0.70)	1.36 (1.39)	0.45 (1.42)
<i>Post_t × FinancialAid</i>	1.94 (1.61)	4.06* (2.10)	3.93* (2.12)
<i>Post_t × FinancialAid × Treat_i</i>	-1.80 (1.73)	2.51 (2.46)	2.75 (2.50)
Constant	32.42*** (0.37)		
Year-Quarter Fixed Effects	No	Yes	Yes
Firm Fixed Effects	No	Yes	Yes
Task Fixed Effects	No	No	Yes
Duration, Budget, Bids	No	Yes	Yes
<i>Post_t × (Duration, Budget, Bids)</i>	No	Yes	Yes
Observations	173,900	155,638	155,638
R ²	0.01	0.11	0.12
Adjusted R ²	0.01	0.05	0.05

Note:

*p<0.1; **p<0.05; ***p<0.01

Each observation is a project-quarter.

SEs are robust and clustered at the project level.

7 Receives Contracts and Financial Aid

$$CFA = \begin{cases} 1, & \text{if firm receives "contracts and grants"} \\ & \text{or grants or is a c8A participant} \\ 0, & \text{otherwise} \end{cases}$$

$$\begin{aligned} Delay_{it} = & \alpha + \beta_0 Treat_i + \beta_1 Post_t + \beta_2 (Treat_i \times Post_t) + \beta_3 CFA \\ & + \beta_4 (CFA \times Post_t) + \beta_5 (Treat_i \times Post_t \times CFA) \\ & + X_i + (Post_t \times X_i) + \mu_t + \theta_{firm} + \lambda_{task} + \epsilon_{it} \end{aligned}$$

Table 5: Effect of Contracts, Grants, or C8A Participant: Quickpay 2009-2011

	<i>Delay_{it}</i> (in days)		
	(1)	(2)	(3)
<i>Treat_i</i>	-6.68*** (0.51)	-3.19** (1.55)	-2.71* (1.59)
<i>Post_t</i>	12.17*** (0.55)		
<i>Treat_i × Post_t</i>	4.19*** (0.79)	5.71*** (1.02)	5.84*** (1.03)
<i>CFA</i>	4.90*** (0.62)	-5.44*** (1.78)	-5.92*** (1.80)
<i>Post_t × CFA</i>	3.91*** (1.21)	5.00*** (1.60)	5.83*** (1.64)
<i>Post_t × CFA × Treat_i</i>	-4.04*** (1.38)	2.60 (2.12)	1.61 (2.16)
Constant	32.18*** (0.37)		
Year-Quarter Fixed Effects	No	Yes	Yes
Firm Fixed Effects	No	Yes	Yes
Task Fixed Effects	No	No	Yes
Duration, Budget, Bids	No	Yes	Yes
<i>Post_t × (Duration, Budget, Bids)</i>	No	Yes	Yes
Observations	173,900	155,638	155,638
R ²	0.01	0.11	0.12
Adjusted R ²	0.01	0.05	0.05

Note:

*p<0.1; **p<0.05; ***p<0.01

Each observation is a project-quarter.

SEs are robust and clustered at the project level.

8 Treatment Intensity

Table 6: Effect of Treatment Intensity: Quickpay 2009-2011

	<i>Delay_{it}</i> (in days)		
	(1)	(2)	(3)
θ_i	-0.72 (0.93)	-4.36 (3.33)	-4.43 (3.59)
$Post_t$	14.80*** (0.96)		
$\theta_i \times Post_t$	4.85*** (1.40)	6.16*** (1.72)	6.23*** (1.75)
Constant	27.62*** (0.64)		
Year-Quarter Fixed Effects	No	Yes	Yes
Firm Fixed Effects	No	Yes	Yes
Task Fixed Effects	No	No	Yes
Duration, Budget, Bids	No	Yes	Yes
$Post_t \times (\text{Duration, Budget, Bids})$	No	Yes	Yes
Observations	71,753	63,216	63,216
R ²	0.01	0.11	0.12
Adjusted R ²	0.01	0.04	0.04

Note:

*p<0.1; **p<0.05; ***p<0.01

Each observation is a project-quarter.

SEs are robust and clustered at the project level.