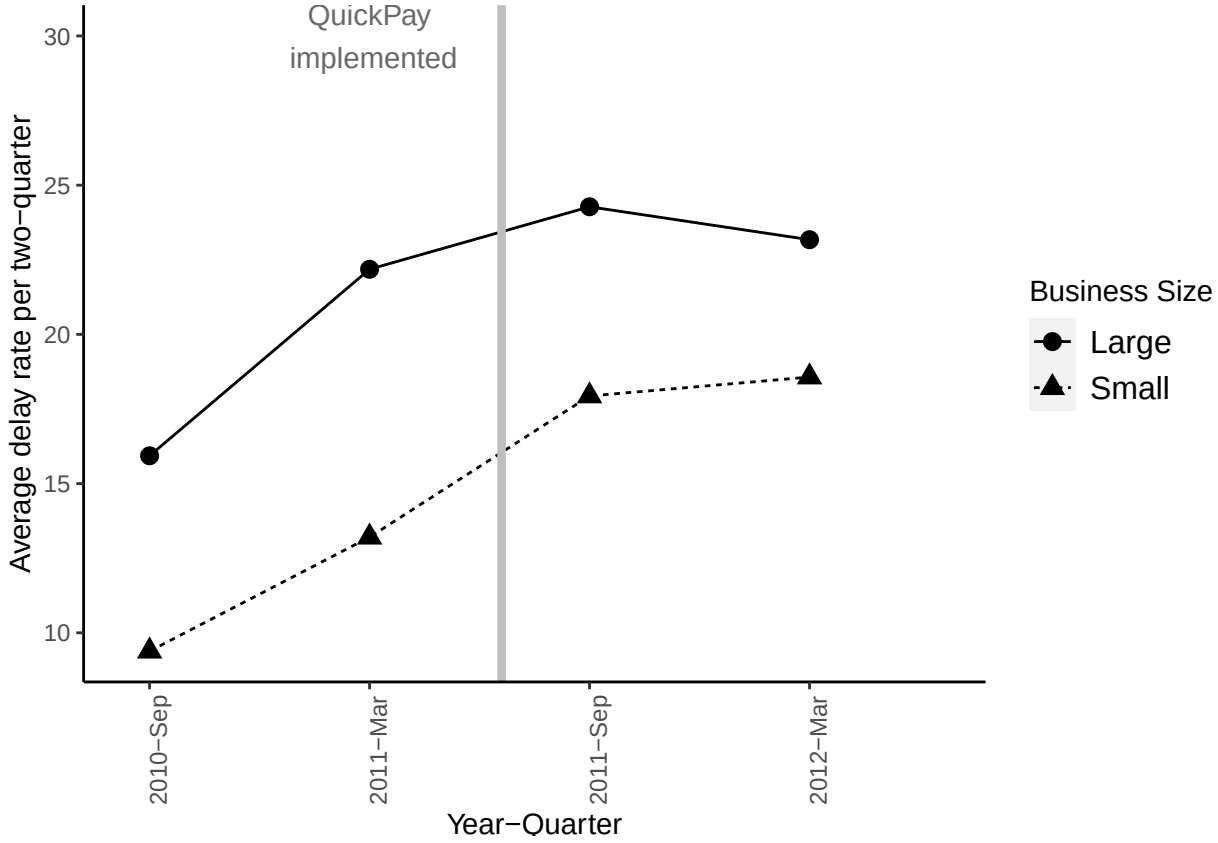
# Delay Rate (Two Quarters): QuickPay (2009-2012)

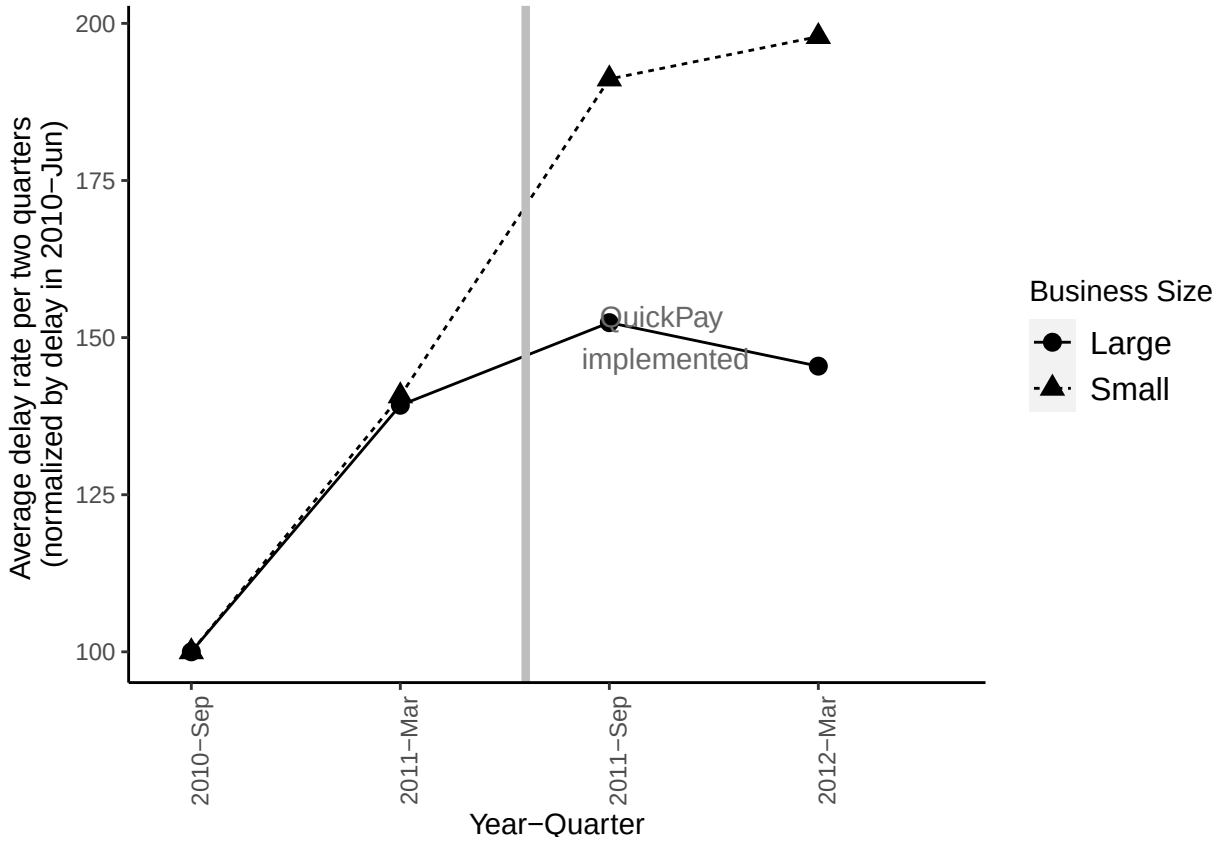
Nov 17, 2021

## 1 Delays over time

- Sample restricted to projects for which start dates matches the one in API
  - This is done by using first reported "action_date" and "date_signed"



### 1.1 Normalized delay rate




## 2 Full Sample Regressions

### 2.1 5% Winsorization

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

### 2.1.1 One Quarter

Table 1: Effect of QuickPay on project delay rates

| | $DelayRate_{it}$ | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| $Treat_i$ | $-3.34^{***}$ | $-2.72^{***}$ | $-2.70^{***}$ | $-2.07^{***}$ | $-1.81^{***}$ |
| | (0.15) | (0.15) | (0.15) | (0.15) | (0.35) |
| $Post_t$ | $1.02^{***}$ | $-1.01^{***}$ | | | |
| | (0.15) | (0.31) | | | |
| $Treat_i \times Post_t$ | $1.34^{***}$ | $1.62^{***}$ | $1.62^{***}$ | $1.33^{***}$ | $1.51^{***}$ |
| | (0.19) | (0.20) | (0.20) | (0.19) | (0.21) |
| Constant | $8.35^{***}$ | $16.93^{***}$ | | | |
| | (0.12) | (0.24) | | | |
| Duration, Budget, Bids | No | Yes | Yes | Yes | Yes |
| $Post_t\times$ (Duration, Budget, Bids) | No | Yes | Yes | Yes | Yes |
| Year-Quarter fixed effects | No | No | Yes | Yes | Yes |
| Task fixed effects | No | No | No | Yes | Yes |
| Contractor fixed effects | No | No | No | No | Yes |
| Observations | 287,530 | 263,488 | 263,488 | 263,488 | 263,488 |
| $R^2$ | 0.004 | 0.05 | 0.06 | 0.09 | 0.17 |
| Adjusted $R^2$ | 0.004 | 0.05 | 0.06 | 0.09 | 0.12 |

*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.

### 2.1.2 Two-Quarters

Table 2: Effect of QuickPay on project delay rates

| | $DelayRate_{it}$ | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| $Treat_i$ | $-7.99^{***}$ | $-6.23^{***}$ | $-6.24^{***}$ | $-4.40^{***}$ | $-4.00^{***}$ |
| | (0.42) | (0.43) | (0.43) | (0.44) | (1.15) |
| $Post_t$ | $4.05^{***}$ | $-1.52$ | | | |
| | (0.45) | (0.93) | | | |
| $Treat_i \times Post_t$ | $2.57^{***}$ | $3.36^{***}$ | $3.37^{***}$ | $2.64^{***}$ | $3.25^{***}$ |
| | (0.56) | (0.59) | (0.60) | (0.59) | (0.66) |
| Constant | $19.65^{***}$ | $36.57^{***}$ | | | |
| | (0.34) | (0.67) | | | |
| Duration, Budget, Bids | No | Yes | Yes | Yes | Yes |
| $Post_t\times$ (Duration, Budget, Bids) | No | Yes | Yes | Yes | Yes |
| Year-Quarter fixed effects | No | No | Yes | Yes | Yes |
| Task fixed effects | No | No | No | Yes | Yes |
| Contractor fixed effects | No | No | No | No | Yes |
| Observations | 122,172 | 111,681 | 111,681 | 111,681 | 111,681 |
| $R^2$ | 0.01 | 0.06 | 0.06 | 0.12 | 0.26 |
| Adjusted $R^2$ | 0.01 | 0.06 | 0.06 | 0.11 | 0.16 |

*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.

## 2.2 2.5% Winsorization

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

### 2.2.1 One Quarter

Table 3: Effect of QuickPay on project delay rates

| | $DelayRate_{it}$ | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| $Treat_i$ | $-5.22^{***}$ | $-4.32^{***}$ | $-4.30^{***}$ | $-3.21^{***}$ | $-2.64^{***}$ |
| | (0.23) | (0.24) | (0.24) | (0.24) | (0.56) |
| $Post_t$ | $2.22^{***}$ | $-0.48$ | | | |
| | (0.24) | (0.49) | | | |
| $Treat_i \times Post_t$ | $2.08^{***}$ | $2.64^{***}$ | $2.64^{***}$ | $2.18^{***}$ | $2.53^{***}$ |
| | (0.30) | (0.32) | (0.32) | (0.31) | (0.34) |
| Constant | $12.26^{***}$ | $23.63^{***}$ | | | |
| | (0.19) | (0.37) | | | |
| Duration, Budget, Bids | No | Yes | Yes | Yes | Yes |
| $Post_t\times$ (Duration, Budget, Bids) | No | Yes | Yes | Yes | Yes |
| Year-Quarter fixed effects | No | No | Yes | Yes | Yes |
| Task fixed effects | No | No | No | Yes | Yes |
| Contractor fixed effects | No | No | No | No | Yes |
| Observations | 287,530 | 263,488 | 263,488 | 263,488 | 263,488 |
| $R^2$ | 0.004 | 0.04 | 0.04 | 0.07 | 0.14 |
| Adjusted $R^2$ | 0.004 | 0.04 | 0.04 | 0.07 | 0.09 |

*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.

### 2.2.2 Two-Quarters

Table 4: Effect of QuickPay on project delay rates

| | $DelayRate_{it}$ | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| $Treat_i$ | $-10.70^{***}$ | $-8.44^{***}$ | $-8.46^{***}$ | $-5.53^{***}$ | $-5.31^{***}$ |
| | (0.59) | (0.62) | (0.62) | (0.63) | (1.73) |
| $Post_t$ | $6.48^{***}$ | $-1.54$ | | | |
| | (0.64) | (1.32) | | | |
| $Treat_i \times Post_t$ | $3.59^{***}$ | $4.99^{***}$ | $5.01^{***}$ | $3.84^{***}$ | $4.82^{***}$ |
| | (0.80) | (0.86) | (0.87) | (0.87) | (0.97) |
| Constant | $25.60^{***}$ | $44.93^{***}$ | | | |
| | (0.49) | (0.94) | | | |
| Duration, Budget, Bids | No | Yes | Yes | Yes | Yes |
| $Post_t \times$ (Duration, Budget, Bids) | No | Yes | Yes | Yes | Yes |
| Year-Quarter fixed effects | No | No | Yes | Yes | Yes |
| Task fixed effects | No | No | No | Yes | Yes |
| Contractor fixed effects | No | No | No | No | Yes |
| Observations | 122,172 | 111,681 | 111,681 | 111,681 | 111,681 |
| $R^2$ | 0.01 | 0.04 | 0.05 | 0.10 | 0.23 |
| Adjusted $R^2$ | 0.01 | 0.04 | 0.05 | 0.09 | 0.13 |

*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.

## 2.3 2.5% Truncation

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

### 2.3.1 One Quarter

Table 5: Effect of QuickPay on project delay rates

| | $DelayRate_{it}$ | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| $Treat_i$ | $-13.85^{***}$ | $-13.95^{***}$ | $-14.13^{***}$ | $-12.74^{***}$ | $-12.31^{***}$ |
| | (1.17) | (1.17) | (1.16) | (1.23) | (4.26) |
| $Post_t$ | 1.56 | $-2.00$ | | | |
| | (1.04) | (1.44) | | | |
| $Treat_i \times Post_t$ | $8.57^{***}$ | $8.55^{***}$ | $8.79^{***}$ | $9.27^{***}$ | $7.36^{***}$ |
| | (1.47) | (1.47) | (1.46) | (1.48) | (1.92) |
| Constant | $81.92^{***}$ | $84.50^{***}$ | | | |
| | (0.83) | (1.10) | | | |
| Duration, Budget, Bids | No | Yes | Yes | Yes | Yes |
| $Post_t \times$ (Duration, Budget, Bids) | No | Yes | Yes | Yes | Yes |
| Year-Quarter fixed effects | No | No | Yes | Yes | Yes |
| Task fixed effects | No | No | No | Yes | Yes |
| Contractor fixed effects | No | No | No | No | Yes |
| Observations | 22,936 | 22,928 | 22,928 | 22,928 | 22,928 |
| $R^2$ | 0.01 | 0.01 | 0.02 | 0.11 | 0.37 |
| Adjusted $R^2$ | 0.01 | 0.01 | 0.02 | 0.08 | 0.17 |

*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.

### 2.3.2 Two-Quarters

Table 6: Effect of QuickPay on project delay rates

| | $DelayRate_{it}$ | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| $Treat_i$ | $-19.48^{***}$ | $-19.26^{***}$ | $-19.25^{***}$ | $-17.02^{***}$ | 1.95 |
| | (2.12) | (2.10) | (2.09) | (2.21) | (9.19) |
| $Post_t$ | $9.12^{***}$ | $-4.09$ | | | |
| | (1.93) | (2.80) | | | |
| $Treat_i \times Post_t$ | $12.77^{***}$ | $12.55^{***}$ | $12.76^{***}$ | $12.77^{***}$ | $10.77^{***}$ |
| | (2.78) | (2.77) | (2.76) | (2.79) | (3.69) |
| Constant | $118.27^{***}$ | $130.96^{***}$ | | | |
| | (1.48) | (2.06) | | | |
| Duration, Budget, Bids | No | Yes | Yes | Yes | Yes |
| $Post_t \times$ (Duration, Budget, Bids) | No | Yes | Yes | Yes | Yes |
| Year-Quarter fixed effects | No | No | Yes | Yes | Yes |
| Task fixed effects | No | No | No | Yes | Yes |
| Contractor fixed effects | No | No | No | No | Yes |
| Observations | 15,315 | 15,308 | 15,308 | 15,308 | 15,308 |
| $R^2$ | 0.01 | 0.02 | 0.02 | 0.14 | 0.46 |
| Adjusted $R^2$ | 0.01 | 0.02 | 0.02 | 0.09 | 0.22 |

*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.

# 3 Sample with Non-Zero Delays

## 3.1 5% winsorization on full sample

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

### 3.1.1 One Quarter

Table 7: Effect of QuickPay on project delay rates

| | $DelayRate_{it}$ | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| $Treat_i$ | $-9.22^{***}$ | $-9.34^{***}$ | $-9.38^{***}$ | $-7.62^{***}$ | $-5.47^{***}$ |
| | (0.69) | (0.69) | (0.68) | (0.70) | (2.11) |
| $Post_t$ | $2.29^{***}$ | $-0.51$ | | | |
| | (0.54) | (0.78) | | | |
| $Treat_i \times Post_t$ | $6.78^{***}$ | $6.62^{***}$ | $6.67^{***}$ | $6.25^{***}$ | $4.84^{***}$ |
| | (0.82) | (0.82) | (0.81) | (0.80) | (0.99) |
| Constant | $73.51^{***}$ | $73.36^{***}$ | | | |
| | (0.45) | (0.61) | | | |
| Duration, Budget, Bids | No | Yes | Yes | Yes | Yes |
| $Post_t\times$ (Duration, Budget, Bids) | No | Yes | Yes | Yes | Yes |
| Year-Quarter fixed effects | No | No | Yes | Yes | Yes |
| Task fixed effects | No | No | No | Yes | Yes |
| Contractor fixed effects | No | No | No | No | Yes |
| Observations | 30,138 | 30,130 | 30,130 | 30,130 | 30,130 |
| $R^2$ | 0.01 | 0.02 | 0.03 | 0.14 | 0.39 |
| Adjusted $R^2$ | 0.01 | 0.02 | 0.03 | 0.11 | 0.21 |

*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.

### 3.1.2 Two Quarters

Table 8: Effect of QuickPay on project delay rates

| | $DelayRate_{it}$ | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| $Treat_i$ | $-16.47^{***}$ | $-16.73^{***}$ | $-16.59^{***}$ | $-12.45^{***}$ | $-4.57$ |
| | (1.60) | (1.60) | (1.59) | (1.64) | (5.65) |
| $Post_t$ | $9.03^{***}$ | $-0.10$ | | | |
| | (1.33) | (2.00) | | | |
| $Treat_i \times Post_t$ | $11.55^{***}$ | $11.12^{***}$ | $11.09^{***}$ | $10.11^{***}$ | $7.81^{***}$ |
| | (1.97) | (1.97) | (1.96) | (1.95) | (2.51) |
| Constant | $119.88^{***}$ | $122.61^{***}$ | | | |
| | (1.08) | (1.53) | | | |
| Duration, Budget, Bids | No | Yes | Yes | Yes | Yes |
| $Post_t\times$ (Duration, Budget, Bids) | No | Yes | Yes | Yes | Yes |
| Year-Quarter fixed effects | No | No | Yes | Yes | Yes |
| Task fixed effects | No | No | No | Yes | Yes |
| Contractor fixed effects | No | No | No | No | Yes |
| Observations | 18,616 | 18,609 | 18,609 | 18,609 | 18,609 |
| $R^2$ | 0.02 | 0.03 | 0.03 | 0.18 | 0.48 |
| Adjusted $R^2$ | 0.02 | 0.02 | 0.03 | 0.14 | 0.26 |

*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.

## 3.2 2.5% winsorization on non-zero sample

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

### 3.2.1 One Quarter

Table 9: Effect of QuickPay on project delay rates

| | $DelayRate_{it}$ | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| $Treat_i$ | $-24.72^{***}$ | $-24.71^{***}$ | $-24.59^{***}$ | $-15.28^{***}$ | $-16.40^{*}$ |
| | (2.43) | (2.44) | (2.42) | (2.49) | (8.45) |
| $Post_t$ | $15.46^{***}$ | 3.48 | | | |
| | (2.15) | (2.95) | | | |
| $Treat_i \times Post_t$ | $25.24^{***}$ | $24.34^{***}$ | $24.07^{***}$ | $22.04^{***}$ | $18.45^{***}$ |
| | (3.07) | (3.07) | (3.05) | (3.03) | (3.87) |
| Constant | $118.01^{***}$ | $124.90^{***}$ | | | |
| | (1.72) | (2.22) | | | |
| Duration, Budget, Bids | No | Yes | Yes | Yes | Yes |
| $Post_t \times$ (Duration, Budget, Bids) | No | Yes | Yes | Yes | Yes |
| Year-Quarter fixed effects | No | No | Yes | Yes | Yes |
| Task fixed effects | No | No | No | Yes | Yes |
| Contractor fixed effects | No | No | No | No | Yes |
| Observations | 32,707 | 32,699 | 32,699 | 32,699 | 32,699 |
| $R^2$ | 0.01 | 0.02 | 0.02 | 0.14 | 0.40 |
| Adjusted $R^2$ | 0.01 | 0.02 | 0.02 | 0.12 | 0.23 |

*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.

### 3.2.2 Two Quarters

Table 10: Effect of QuickPay on project delay rates

| | $DelayRate_{it}$ | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| $Treat_i$ | $-26.92^{***}$ | $-26.68^{***}$ | $-26.37^{***}$ | $-16.57^{***}$ | $-9.57$ |
| | (3.28) | (3.27) | (3.25) | (3.35) | (12.35) |
| $Post_t$ | $19.70^{***}$ | 3.33 | | | |
| | (2.95) | (4.34) | | | |
| $Treat_i \times Post_t$ | $24.39^{***}$ | $23.17^{***}$ | $23.12^{***}$ | $21.01^{***}$ | $18.96^{***}$ |
| | (4.26) | (4.24) | (4.22) | (4.20) | (5.58) |
| Constant | $145.54^{***}$ | $164.54^{***}$ | | | |
| | (2.29) | (3.14) | | | |
| Duration, Budget, Bids | No | Yes | Yes | Yes | Yes |
| $Post_t \times$ (Duration, Budget, Bids) | No | Yes | Yes | Yes | Yes |
| Year-Quarter fixed effects | No | No | Yes | Yes | Yes |
| Task fixed effects | No | No | No | Yes | Yes |
| Contractor fixed effects | No | No | No | No | Yes |
| Observations | 20,072 | 20,065 | 20,065 | 20,065 | 20,065 |
| $R^2$ | 0.01 | 0.02 | 0.02 | 0.17 | 0.47 |
| Adjusted $R^2$ | 0.01 | 0.02 | 0.02 | 0.13 | 0.25 |

*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.

## 3.3 2.5% truncation on non-zero sample

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

### 3.3.1 One Quarter

Table 11: Effect of QuickPay on project delay rates

| | $DelayRate_{it}$ | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| $Treat_i$ | $-21.36^{***}$ | $-21.92^{***}$ | $-21.86^{***}$ | $-12.74^{***}$ | $-11.93$ |
| | (2.22) | (2.23) | (2.21) | (2.24) | (7.45) |
| $Post_t$ | $14.90^{***}$ | $-0.49$ | | | |
| | (1.88) | (2.59) | | | |
| $Treat_i \times Post_t$ | $20.83^{***}$ | $19.85^{***}$ | $19.74^{***}$ | $17.79^{***}$ | $13.93^{***}$ |
| | (2.73) | (2.72) | (2.71) | (2.67) | (3.27) |
| Constant | $116.26^{***}$ | $112.31^{***}$ | | | |
| | (1.55) | (2.02) | | | |
| Duration, Budget, Bids | No | Yes | Yes | Yes | Yes |
| $Post_t \times$ (Duration, Budget, Bids) | No | Yes | Yes | Yes | Yes |
| Year-Quarter fixed effects | No | No | Yes | Yes | Yes |
| Task fixed effects | No | No | No | Yes | Yes |
| Contractor fixed effects | No | No | No | No | Yes |
| Observations | 31,069 | 31,061 | 31,061 | 31,061 | 31,061 |
| $R^2$ | 0.01 | 0.03 | 0.04 | 0.18 | 0.46 |
| Adjusted $R^2$ | 0.01 | 0.03 | 0.04 | 0.15 | 0.30 |

*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.

### 3.3.2 Two Quarters

- 2.5% truncation done after calculating 2Q delays

Table 12: Effect of QuickPay on project delay rates

| | $DelayRate_{it}$ | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| $Treat_i$ | $-23.80^{***}$ | $-24.32^{***}$ | $-24.05^{***}$ | $-13.92^{***}$ | $-9.25$ |
| | (2.93) | (2.91) | (2.90) | (2.93) | (11.08) |
| $Post_t$ | $18.68^{***}$ | $-2.33$ | | | |
| | (2.52) | (3.68) | | | |
| $Treat_i \times Post_t$ | $21.79^{***}$ | $20.65^{***}$ | $20.61^{***}$ | $18.79^{***}$ | $15.81^{***}$ |
| | (3.67) | (3.66) | (3.64) | (3.61) | (4.64) |
| Constant | $142.46^{***}$ | $148.21^{***}$ | | | |
| | (2.03) | (2.79) | | | |
| Duration, Budget, Bids | No | Yes | Yes | Yes | Yes |
| $Post_t \times$ (Duration, Budget, Bids) | No | Yes | Yes | Yes | Yes |
| Year-Quarter fixed effects | No | No | Yes | Yes | Yes |
| Task fixed effects | No | No | No | Yes | Yes |
| Contractor fixed effects | No | No | No | No | Yes |
| Observations | 19,065 | 19,058 | 19,058 | 19,058 | 19,058 |
| $R^2$ | 0.01 | 0.03 | 0.03 | 0.20 | 0.51 |
| Adjusted $R^2$ | 0.01 | 0.03 | 0.03 | 0.17 | 0.31 |

*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.