

Theory of expediting payments June 29 2020

Notebook: vladbabich's notebook

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Quick Pay

①

Part - 2

Theories for why reduction in payment delays would cause delays in project completion.

① "Variance is good"

Two customers: A & B.

Supplier controls invoice dates: t_A, t_B

Customers control distribution of payment delays: τ_A, τ_B

$$\tau_i \sim \mathcal{N}(\mu_i, \sigma_i^2)$$

Supplier's cost of capital = r (contin. compounded)

Benchmark: everything is equal

$t_A = t_B, \tau_A \sim \tau_B, \text{payment}_A = \text{payment}_B$

$$V_A = E \left[e^{-r(t_A + \tau_A)} \right] = E \left[e^{-r(t_B + \tau_B)} \right] = V_B$$

$$e^{-rt_A} E \left[e^{-r\tau_A} \right] = e^{-rt_B} E \left[e^{-r\tau_B} \right]$$

$$e^{-rt_A} e^{-r(\mu_A - \frac{r}{2}\sigma_A^2)} = e^{-rt_B} e^{-r(\mu_B - \frac{r}{2}\sigma_B^2)}$$

Part - 2

Observe that the effects of reducing μ_A and σ_A are different

As $\mu_A \downarrow$, V_A becomes more sensitive to changes in t_A

As $\sigma_A \downarrow$, V_A becomes less sensitive to changes in t_A

Suppose customer A changed τ_A so that

$$(*) \quad \left(\mu_A - \frac{r}{2} \sigma_A^2 \right)' > \left(\mu_A - \frac{r}{2} \sigma_A^2 \right)$$

Supplier can exert effort to change either t_A or t_B

Given (*) supplier should reduce t_B .

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Quick Pay!

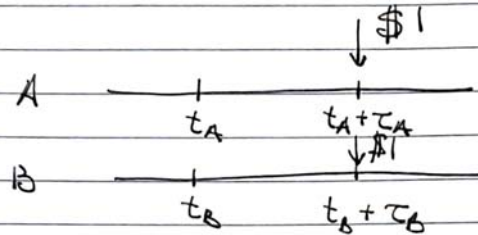
③

Part - 2.

② "Fixed cost of loans"

There is a fixed cost of obtaining loans

E.g.



Both customers will pay at $t + \tau$ \$1 each.
It is better for the supplier to obtain one \$2 loan to finance the company than two \$1 loans.

Next customer A reduces τ_A .

Because of the fixed cost, it is still better for the supplier to obtain one loan that is paid off at $t_B + \tau_B$.

If the supplier can reduce project time, reducing t_B reduces interest on the loan. Reducing t_A does not.

Smaller firms are more likely to be sensitive to fixed costs of obtaining loans.