

Joskow (AER 1987)

- More of a test for Williamson's ideas.

- When will I see long-term contracts? Short-term?

Three types of specificity

1] Site specificity

- electricity plant located at mouth of mine

⇒ long-term contract optimal

2] Physical asset specificity

- specific type of coal

3] Dedicated assets

- quantity that contract specifies

Regression:

contract duration = $\sum \beta + \text{controls}$

$\sum =$ $\left[\begin{array}{l} \text{mine mouth} \\ \text{quantity} \\ \text{West} \\ \text{Midwest} \\ \text{East} \end{array} \right]$

Types of coal

↓ in sulfur content
→ can put on spot mkt if not much sulfur

Expect $\beta = \left[\begin{array}{l} \beta_1 \\ \beta_2 \\ \beta_3 \\ \beta_4 \end{array} \right] \begin{array}{l} > 0 \\ > 0 \end{array}$

Duration_i = $\alpha + \beta_1 \text{Quantity}_i + \beta_2 \text{Quantity}_i^2 + \beta_3 \text{minemouth}$
 $+ \beta_4 \text{Midwest} + \beta_5 \text{West} + u_i$

$u_i \sim N(0, \sigma^2)$

Other specifications: $\beta_2 = 0$

◦ log duration: as LHS variable

Mine mouth \rightarrow increases contract length by 16.33 years

Midwest \rightarrow 3.43 years

West \rightarrow 5.35 years

Quantity \rightarrow 0.43

Quantity \rightarrow -0.0024

To satisfy referees, includes contract date-signed dummies

◦ MLE to deal with censoring

Alternative measures of specificity

◦ fraction of a plant's requirements

◦ fraction of utility's requirements

Baker-Hubbard (2003) handouts will be posted

◦ Shipper's decision - use private fleet of trucks or for-hire carriers?

◦ Single industry - some cross-sectional variation + time series variation

◦ Three facts:

1] Economies of scale

◦ complementary hauls (backhauls) easier for large fleet

2] Some shippers require services

◦ non-driving service S.

3] OBC adoption

- trip recorders (monitoring) → incentives
- EVMS → improve coordination → might also affect incentives

Predictions:

- Trip recorders should lead to more shipper ownership (ie more private fleets)
- EVMS should lead to less-ownership (ie more for-hire carriers.)

Model:

$$V = \underbrace{V}_{\text{value of using truck}} + m \underbrace{S}_{\text{scope or service}} - \underbrace{M(CS, \sigma)}_{\text{agency costs}} + (g_1 - \theta S) e_1 \quad \sigma \uparrow \Rightarrow M \downarrow$$

◦ σ is not variance

◦ $M_1 > 0, M_2 < 0, M_{12} < 0$

FOC:

(S): $m = M_1 (CS^*, \sigma)$

$\Rightarrow S^* = \psi(m, \sigma)$

if assume M_1 invertible
const. > 0 search effort

Value added of search for backhauls = $(\overline{g_1} - \overline{\theta} S) \overline{e_1}$

◦ cost of searching $C_1(e_1) = \frac{e_1^2}{2}$

$$P = \underbrace{g_2 e_2}_{\text{value from alternative shipper's haul}} + \underbrace{(g_1 - \theta S) e_1}_{\text{search effort}} + ms - M(s, \sigma)$$

$$C(e_2) = \frac{e_2^2}{2}$$

For-hire carrier: chooses e_1, e_2 and maximizes

$$\frac{V+P}{2} - \frac{1}{2} e_1^2 - \frac{1}{2} e_2^2$$

$$\text{Solutions: } e_1^F = g_1 - \theta S \Rightarrow TV^F$$

$$e_2^F = \frac{1}{2} g_2$$

$$\text{Private fleet: } \max \left\{ \frac{V}{2} - \frac{1}{2} e_1^2 - \frac{1}{2} e_2^2 \right\}$$

$$e_1^P = \frac{1}{2} (g_1 - \theta S) \Rightarrow TV^P$$

$$e_2^P = 0$$

$$TV = \underline{V} + \frac{1}{2} (3 + \theta) (g_1 - \theta S)^2 - \frac{1}{8} \delta g_2^2 + ms - M(s, \sigma)$$

$$S \in \underbrace{\{0, 1\}}_P \underbrace{\{1\}}_F$$

Use supermodularity

• S and δ are inversely correlated

• δ high when g_1 high

• $g_1 \uparrow \Rightarrow S \uparrow$

EVMS $\Rightarrow g_1 \uparrow \Rightarrow S \uparrow$

• $\sigma \uparrow \Rightarrow \delta \downarrow$

Trip recorders $\Rightarrow \sigma \uparrow \Rightarrow \delta \downarrow$