

Risk Management by Gold-Mining Firms

Peter Tufano

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Why Risk Management?

- Is it for Shareholder Profit Maximization,
 - Financial Distress
 - Investment Policy
 - Taxes
- Or is it an Agency Cost?
 - Managerial Risk Aversion
 - Managerial Signaling (disentangle luck/talent).

Tuf Dataset

- 50 publicly US/Canadian publicly trading gold-mining firms
- Frequent disclosure of hedging data
- All have same exposure

Risk Management Mechanisms

- Hedging
- Diversification
- Insurance

- To control for alternatives, introduce firm leverage and cash balances.
 - Endogeneity problems...

A Proxy f

- Summary Measure “Delta”, proxy for “short sales”: Percentage of future production sold forward.
- Table 1
- Δ = Change in Firm Value after a 1US\$ Drop in the Price of Gold

A Proxy f

- Other studies use dummy endogenous variables :
- Firm Hedges=1, 0 otherwise
(Nance, Smith and Smithson, 1993)
- Δ is much more precise

A Proxy f

- But Δ is a limited dependent variable (see table 2): cluster at 0.
- One-sided Tobit analysis
- (Why not two-sided?)

1-sided Tobit MLE

$$\ln L = \sum_{y_i > 0} \left[-\frac{1}{2} (\ln 2\mathbf{p} - \ln \mathbf{q}^2 + (\mathbf{q}y_i - \mathbf{g}'x_i)^2) \right] + \sum_{y_i = 0} [\ln(1 - \Phi(\mathbf{g}'x_i))]$$

Conclusions

- Table 5: Shareholder Maximization does not seem to be the reason to hedge (convex tax schedule, investment opportunity, etc).
- Table 5: Firms with greater managerial stock ownership hedge more, with greater outside ownership blocks hedge less.

Need to convert estimates

- Slopes not directly obtained
- Intuitively: a change in x has an effect on the mean of y , given it is >0 , and an effect on the probability of $y=0$
- OLS yields inconsistent results, if censored data are observed. But otherwise...

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