

Price Risk Management and Capital Structure of Oil and Gas Project Companies: Difference between Upstream and Downstream Industries

Bongseok Choi^a, Seon Tae Kim^b

^a Leading author, Department of International Trade, Daegu University.

Postal address: 201, Daegudae-ro, Gyeongsan-si, Gyeongsangbuk-do, South Korea (38453)

Tel: +82-53-850-6225

Fax: +82-53-850-6229

E-mail: bchoi4@daegu.ac.kr

^b Corresponding author. Department of Economics, Management School, University of Liverpool.

Postal address: Chatham Building, Chatham Street, University of Liverpool, L69 7ZH, UK.

Tel: +44-(0)151-794-9878.

E-mail: Seon.Kim@liverpool.ac.uk

Abstract

We estimate the causal effect of hedging the future price risk on the debt-to-equity ratio of oil and gas project companies. In particular, we examine how such an effect differs between the upstream and downstream industries, given that relative to downstream projects, upstream projects are exposed to the price risk to magnitude greater. With a sample of 230 loans made to oil and gas projects in 32 countries over the period 1997-2017, we investigate the determinants of the debt-to-equity ratio of oil and gas project loans. To identify the causal effect of the project company's hedging decision that is endogenous, we use the sponsor company's oil (or gas) risk exposure as the instrumental variable for the oil (or gas) project company's hedging decision. Our IV/2SLS regression results show that hedging the future price risk increases disproportionately the upstream project's debt-to-equity ratio relative to that of the downstream project. This suggests that hedging the price risk is an important way to increase lenders' funding amount to the upstream oil (or gas) project but not so much for a downstream oil (or gas) project. We also find the substantial differences in the hedging likelihood between upstream and downstream projects: (i) the upstream company is more likely to adopt the hedging contract; and (ii) the upstream company owned by a sponsor company with the smaller oil exposure is more likely to adopt the hedging contract, whereas the opposite is the case for a downstream company. Taken together, our findings suggest that between upstream and downstream oil (or gas) projects, there are substantial differences in both likelihood and effect of hedging the price risk.

Keywords: Risk management; Capital structure; Oil risk exposure; Project finance.

JEL: F3, G3, Q4.