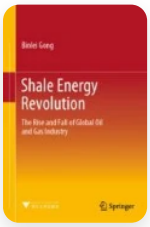
SPRINGER NATURE Link

Log in

Different Behaviors in Natural Gas Production Between National and Private Oil Companies: Economics-Driven or Environment-Driven?

Chapter | First Online: 02 June 2020

pp 131–149 | Cite this chapter



Shale Energy Revolution

Binlei Gong

428 Accesses

Abstract

This chapter investigates firm-level efficiency in the petroleum industry during the period 2009–2015. A Jackknife model averaging method and two stochastic frontier models are utilized to estimate the input-output relation more accurately. The derived efficiency is then decomposed to predict the effect of various efficiency determinants with an emphasis on gas ratio and ownership. A significantly negative effect of natural gas ratio (in production portfolio) on efficiency is found for both National Oil Companies (NOCs) and privately-owned International Oil Companies (IOCs). This finding implies that the decline in natural gas ratio for IOCs is economics-driven, and the incline in gas ratio for NOCs is environment-driven. Therefore, the environmental objective is the NOCs' third non-commercial objective, alongside subsidizing below-market energy prices and offering excessive employment, as found in the literature. Governments may

consider the transfer of subsidies from low energy prices to clean energy promotion, which leads to energy saving and emissions reduction.

This is a preview of subscription content, log in via an institution to check access.

Access this chapter

Log in via an institution

Subscribe and save

Springer+ from €37.37 /Month

- Receive 10 units per month
- Download 1 article/chapter for 1 unit
- Get selected eBooks for 7 units
- Cancel anytime

View plans

Buy Now

Chapter EUR 29.95
Price includes VAT (Poland)

- Available as PDF
- Read on any device
- Instant download
- Own it forever

Buy Chapter

eBook EUR 85.59
Price includes VAT (Poland)

- Available as EPUB and PDF
- Read on any device
- Instant download
- Own it forever

Buy eBook

Softcover Book EUR 106.99
Price includes VAT (Poland)

Hardcover Book EUR 106.99
Price includes VAT (Poland)

- Compact, lightweight edition
- Free shipping worldwide - view details

Buy Softcover Book →

- Durable hardcover edition
- Free shipping worldwide - view details

Buy Hardcover Book →

Tax calculation will be finalised at checkout

Purchases are for personal use only

Institutional subscriptions →

Explore related subjects

Discover the latest articles, books and news in related subjects, suggested using machine learning.

Political Economy of Energy | Energy Ethics | Environmental Economics | Resource and Environmental Economics | Natural Resource and Energy Economics | Energy Policy, Economics and Management

Notes

1. Popular criteria include, but not limited to, the Akaike information criterion (AIC), the Bayesian information criterion (BIC), and the Focused information criterion (FIC).

References

Ackerberg D.A., Caves K., and Frazer G. Identification Properties of Recent Production Function Estimators. Econometrica. 2015, 83 (6):2411–2451.

Aigner D., Lovell C.A., and Schmidt P. Formulation and Estimation of Stochastic Frontier Production Function Models. Journal of Econometrics. 1977, 6 (1):21–37.

Al-Obaidan A.M., and Scully G.W. Efficiency Differences between Private and State-Owned Enterprises in the International Petroleum Industry. Applied Economics. 1992, 24 (2):237–246.

Amsler C., Prokhorov A., and Schmidt P. Endogeneity in Stochastic Frontier Models. Journal of Econometrics. 2016, 190 (2):280–288.

Battese G.E., and Coelli T.J. Frontier Production Functions, Technical Efficiency and Panel Data: With Application to Paddy Farmers in India: Springer Netherlands, 1992.

Bertoldi P., Rezessy S., and Vine E. Energy Service Companies in European Countries: Current Status and a Strategy to Foster Their Development. Energy Policy. 2006, 34 (14):1818–1832.

Bilgin M. New Prospects in the Political Economy of Inner-Caspian Hydrocarbons and Western Energy Corridor through Turkey. Energy Policy. 2007, 35 (12):6383–6394.

Buckland S.T., Burnham K.P., and Augustin N.H. Model Selection: An Integral Part of Inference. Biometrics. 1997, 53 (2):603–618.

Conway J.E. The Risk Is in the Relationship (Not the Country): Political Risk Management in the Uranium Industry in Kazakhstan. Energy Policy. 2013, 56:201–209.

Cornwell C., Schmidt P., and Sickles R.C. Production Frontiers with Cross-Sectional and Time-Series Variation in Efficiency Levels. Journal of Econometrics. 1990, 46 (1):185–200.

Eller S.L., Hartley P.R., and Medlock K.B. Empirical Evidence on the Operational

Efficiency of National Oil Companies. Empirical Economics. 2011, 40 (3):623–643.

Fontaine G. The Effects of Governance Modes on the Energy Matrix of Andean Countries. Energy Policy. 2011, 39 (5):2888–2898.

Gong B. Multi-Dimensional Interactions in the Oilfield Market: A Jackknife Model Averaging Approach of Spatial Productivity Analysis (Forthcoming). Energy Economics. 2017.

Gong B. The Shale Technical Revolution—Cheer or Fear? Impact Analysis on Efficiency in the Global Oilfield Service Market. Energy Policy. 2018, 112 (1):162–172.

Hansen B.E., and Racine J.S. Jackknife Model Averaging. Journal of Econometrics. 2012, 167 (1):38–46.

Hartley P., and Medlock K.B. A Model of the Operation and Development of a National Oil Company. Energy Economics. 2008, 30 (5):2459–2485.

Hartley P.R., and Medlock III K.B. Changes in the Operational Efficiency of National Oil Companies. The Energy Journal. 2013, 34 (2):27–57.

Hawdon D. Efficiency, Performance and Regulation of the International Gas Industry—a Bootstrap Dea Approach. Energy Policy. 2003, 31 (11):1167–1178.

Hekkert M.P., Hendriks F.H.J.F., Faaij A.P.C., and Neelis M.L. Natural Gas as an Alternative to Crude Oil in Automotive Fuel Chains Well-to-Wheel Analysis and Transition Strategy Development. Energy Policy. 2005, 33 (5):579–594.

Jacobsen H.K., Fristrup P., and Munksgaard J. Integrated Energy Markets and

Varying Degrees of Liberalisation: Price Links, Bundled Sales and Chp Production Exemplified by Northern European Experiences. Energy Policy. 2006, 34 (18):3527–3537.

Kneip A., Sickles R.C., and Song W. A New Panel Data Treatment for Heterogeneity in Time Trends. Econometric Theory. 2012, 28 (3):590–628.

Levinsohn J., and Petrin A. Estimating Production Functions Using Inputs to Control for Unobservables. The Review of Economic Studies. 2003, 70 (2):317–341.

Managi S., Opaluch J.J., Jin D., and Grigalunas T.A. Stochastic Frontier Analysis of Total Factor Productivity in the Offshore Oil and Gas Industry. Ecological Economics. 2006, 60 (1):204–215.

Managi S., Opaluch J.J., Jin D., and Grigalunas T.A. Technological Change and Depletion in Offshore Oil and Gas. Journal of Environmental Economics and Management. 2004, 47 (2):388–409.

Meeusen W., and Van den Broeck J. Efficiency Estimation from Cobb-Douglas Production Functions with Composed Error. International Economic Review. 1977, 18 (2):435–444.

Olley G.S., and Pakes A. The Dynamics of Productivity in the Telecommunications Equipment Industry. Econometrica. 1996, 64 (6):1263–1297.

Robinson A.P., Blythe P.T., Bell M.C., Hübner Y., and Hill G.A. Analysis of Electric Vehicle Driver Recharging Demand Profiles and Subsequent Impacts on the Carbon Content of Electric Vehicle Trips. Energy Policy. 2013, 61 (8):337–348.

Schmidt P., and Sickles R.C. Production Frontiers and Panel Data. Journal of

Business and Economic Statistics. 1984, 2 (4):367–374.

Seeto D.Q., Woo C.-K., and Horowitz I. Finessing the Unintended Outcomes of Price-Cap Adjustments: An Electric Utility Multi-Product Perspective. Energy Policy. 2001, 29 (13):1111–1118.

Shang C. 2015. “Essays on the Use of Duality, Robust Empirical Methods, Panel Treatments, and Model Averaging with Applications to Housing Price Index Construction and World Productivity Growth.” Rice University.

Simsek H.A., and Simsek N. Recent Incentives for Renewable Energy in Turkey. Energy Policy. 2013, 63 (4):521–530.

Thompson R.G., Dharmapala P., Rothenberg L.J., and Thrall R.M. Dea/Ar Efficiency and Profitability of 14 Major Oil Companies in U.S. Exploration and Production. Computers and Operations Research. 1996, 23 (4):357–373.

Wei M., Patadia S., and Kammen D.M. Putting Renewables and Energy Efficiency to Work: How Many Jobs Can the Clean Energy Industry Generate in the Us? Energy Policy. 2010, 38 (2):919–931.

Wolf C. Does Ownership Matter? The Performance and Efficiency of State Oil Vs. Private Oil (1987–2006). Energy Policy. 2009, 37 (7):2642–2652.

Author information

Authors and Affiliations

Zhejiang University, Hangzhou, Zhejiang, China

Binlei Gong

Corresponding author

Correspondence to Binlei Gong.

Rights and permissions

Reprints and permissions

Copyright information

© 2020 Zhejiang University Press

About this chapter

Cite this chapter

Gong, B. (2020). Different Behaviors in Natural Gas Production Between National and Private Oil Companies: Economics-Driven or Environment-Driven?. In: Shale Energy Revolution. Springer, Singapore. https://doi.org/10.1007/978-981-15-4855-0_7

.RIS .ENW .BIB

DOI	Published	Publisher Name
https://doi.org/10.1007/978-981-15-4855-0_7	02 June 2020	Springer, Singapore

Print ISBN	Online ISBN	eBook Packages
978-981-15-4854-3	978-981-15-4855-0	Economics and Finance Economics and Finance (R0)

Keywords

Oil and gas companies | Efficiency analysis | Stochastic frontier | Natural gas ratio | Ownership structure

Publish with us

Policies and ethics

Search

Search by keyword or author

Navigation

Find a journal

Publish with us

Track your research