The Hong Kong University of Science and Technology

Dept of Information Systems, Business Statistics and Operations Management
Dept of Industrial Engineering & Decision Analytics
Joint Seminar Announcement

When the Dust Settles: Financing the Future of Land Reclamation

by

Professor Qi WU

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Date : **19 September 2025 (Friday)**
Time : **10:30 – 11:45 AM**
Venue : **Room 4047, 4/F, LSK Business Building**

Abstract:
Ensuring that mining and oil companies restore land after operations is crucial for environmental sustainability. In enforcing these practices, it's necessary to understand the economic impact of regulations. A common regulatory approach involves requiring these companies to make regular payments into trust accounts dedicated to funding land rehabilitation post-operations. Using a continuous-time stochastic game model, this study examines the economic impacts of four widely used regulatory payment schemes: constant annual fees, fees based on production volume, and royalty fees tied to revenue or profit. Each scheme is evaluated based on its fair pricing, taking into account anticipated firm responses. Our findings reveal that fee structures alter cash flow affecting firm value through three channels: operational choices, the degree of conflicts of interest between equity and debt holders, and bankruptcy risk. These effects vary depending on the mining technology, firm's capital structure and the scale of cleanup costs. Our analysis shows that constant fee and revenue-based schemes result in lower firm value compared to profit-based schemes, regardless of the technology or capital structure in place. For a broad range of mining technologies and capital structures, profit-based schemes can achieve optimal outcomes, maximizing firm value while fully internalizing cleanup costs. However, when profit-based schemes fail to achieve these first-best outcomes, volume-based regulations may provide a more effective alternative. Our study highlights the importance of tailoring regulatory policies to different industries with specific production characteristics. This approach ensures that firms can meet their land rehabilitation obligations while minimizing adverse impacts on financial performance.

Bio: Qi Wu is an Associate Professor at the Weatherhead School of Management, Case Western Reserve University. She is visiting the ISOM department at HKUST during the 2025–2026 academic year. Her research lies at the intersection of finance and operations management, where she employs both stochastic modeling and empirical methods to study how risks and financial factors shape operational decisions and supply chain relationships. Dr. Wu received her Ph.D. in Information, Risk, and Operations Management from the University of Texas at Austin. Her work has been published in Management Science, Manufacturing & Service Operations Management, Production & Operations Management, and Mathematics of Operations Research.

All interested are welcome!
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