Financing mix in gas transport projects: some empirical evidences

Objective

Provide new empirical insights on the financing mix of project-financed LNG infrastructures and gas pipeline projects.

Motivation

- Provide new empirical insights on the financing mix of project-financed LNG infrastructures and gas pipeline projects.
- Project finance : Specialized form of debt finance involves lending to a project company set up for the sole purpose of developing an individual project.
- LNG infrastructures and gas pipeline projects are usually funded through project finance.
- However projects' financing mix is susceptible to substantially vary with respect to project characteristics.

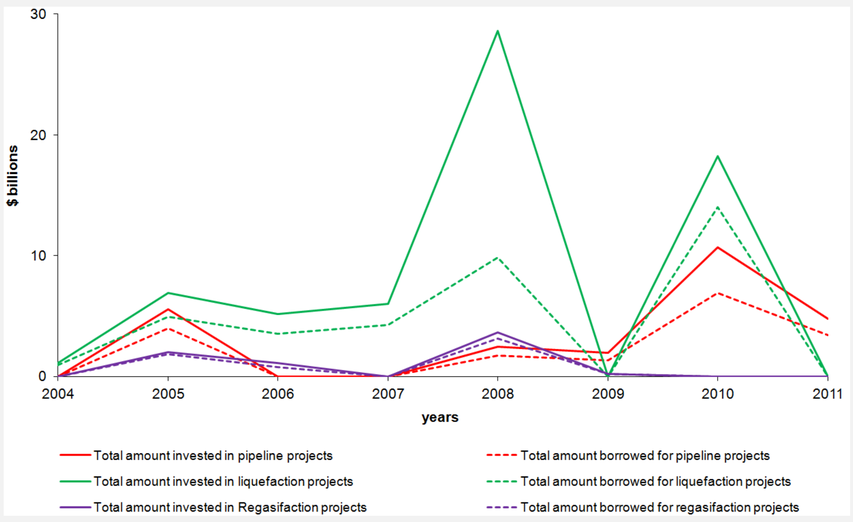
Methodology

- Using data related to 26 LNG or gas pipeline projects financed through project finance.
- Financial close between June 2004 and March 2011.
- Considering the following variables: Debt ratio, Concentration of equity ownership, Date of financial close, Country risk, Size of the project, Type of infrastructure, Expansion versus Greenfield.

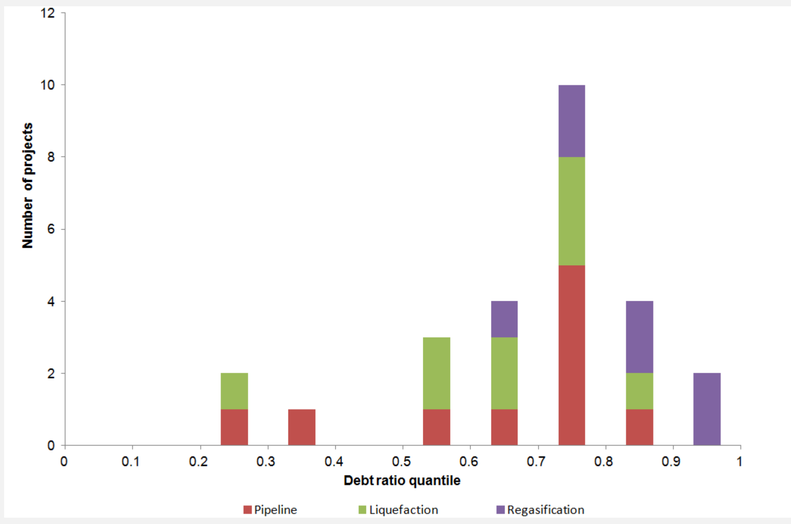
Number of projects (total investment cost in brackets, in billion US dollars)

	Pre-crisis		Post-crisis	
	Greenfield	Expansion	Greenfield	Expansion
Pipeline	3 (5.6)	0 (0)	6 (15.0)	1 (4.8)
Liquefaction	4 (14.9)	4 (32.9)	1 (18.2)	0 (0)
Regasification	6 (6.8)	0 (0)	0 (0)	1 (0.2)

Evolution of invested and borrowed amounts



Projects classified by quantile of debt ratio



- Average debt ratio by type of infrastructure
  - Pipeline projects: 0.68
  - Liquefaction projects: 0.57
  - Regasification projects: 0.84
- Regression of debt ratio in function of the variables.
- The more risky is the country where the project is located, the smaller is the project's debt ratio.
- The more concentrated the equity ownership, the lower the debt ratio. By studying Asian project finance in general, Vaaler et al. (2008) however find the opposite result.
- Various alternative regressions for post-crisis, expansion or LNG projects, however they never appeared significant at a 5% level.

Debt ratio in function of linear regression coefficients and standard errors (in parentheses)

Coefficient	Value
Constant	0.94*** (0.09)
Country risk	-0.04** (0.02)
Ownership concentration	-0.31** (0.12)
Adjusted R-squared	0.23
Durbin- Watson statistics	2.2

* p<0.10, ** p<0.05, *** p<0.01

Conclusions and further work

- Projects located in risky countries tend to exhibit lower debt ratios which is consistent with the basic view of risk-averse funds suppliers.
- Surprisingly enough, a more concentrated equity ownership is associated with a lower debt ratio
- Precautions : Expansion and the 2008 crisis variables may not have a significant effect because of the small number of projects considered (and not because they really have no effect).
- The size of LNG projects has nevertheless increased, the projects undertaken being more and more large and complex, a trend that might continue in the future.
- Further work : Investigate on factors which influence the ownership concentration.

Vaaler et al. (2008). Risk and capital structure in Asian project finance. Asia Pacific Journal of Management (25), 25-50.

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