

THE EFFECT OF INVESTMENT SIZE AND RISK OF CREEPING EXPROPRIATION TOWARD PROPENSITY TO PROJECT FINANCE IN INFRASTRUCTURE SECTOR IN INDONESIA

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***Abstract:** This paper empirically examines an off balance sheet financing mechanism called project finance. This mechanism involves creation of a legally independent project firm financed with equity from sponsors and is characterized by limited or no recourse lending, long-term contractual agreements, and vertical integration. Paiton Energy, Ras Laffan LNG, and London Underground are few examples of project finance use. Theoretical framework suggests that project finance mechanism can mitigate transaction cost in large investment and risk of creeping expropriation that might entail. This paper uses a dataset of 43 corporate finance and project finance investments in mining, oil and gas, power, water utility, waste treatment, transportation, and storage sector in Indonesia within 2007-2012 period. The result suggests that the propensity to use project finance is high and statistically significant when there is concentrated supplier/buyer and presence of State-owned Enterprises as concentrated supplier/buyer in the project. The effect is amplified when sponsoring firm has low debt service coverage ratio.*

***Keywords:** project finance, investment, infrastructure, foreign direct investment, expropriation, state-owned enterprise, Indonesia*

A. INTRODUCTION

Foreign Direct Investment (FDI) has come under spotlight among other topics researched since the financial world is now no longer limited by country borders. According to Organization for Economic Cooperation and Development (OECD) report, in 2012 the global FDI flows reach US\$ 1.4 trillion where China became the first FDI destination. The world has seen how FDI holds an important position as it watched China transformed into a new world power. It uses FDI as leverage to create job opportunities and make possible technology transfer that help their economy grow. In 2007-2012, there are 13,781 projects realized with total capital expenditure of \$95,623

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million dollars worth of foreign direct investment in Indonesia (BKPM, 2014). According to Indonesia Investment Coordinating Board (BKPM), FDI in Indonesia has been growing at more than 20 percent a year (Jakarta Post, 2014). However, the FDI inflow to Indonesia is still limited to sectors such software and IT services, business services, textiles, financial services, and communication (FDI Markets, 2014). Multinational Companies (MNCs) seem to have less interest in a critical sector that still needs much improvement in Indonesia, namely infrastructure.

Indonesia's infrastructure sector had suffered from low investment after the 1998 Asian financial crisis despite the rising demand. To close the gap, Indonesian government offers facilities in the form of tax income reduction, exemption or relief on import duty, and accelerated depreciation or amortization through Law of The Republic of Indonesia Number 25 of 2007 concerning Investment Elucidation of Article 18. However, despite all the incentives offered by the government, infrastructure projects by their very nature present formidable financial challenges due to massive capital funding and long completion times (Chen, 2002). In addition to that, infrastructure assets are also highly location-specific and are entitled with large sunk costs that are recovered over long periods of time through productive use of the assets (Sawant, 2010). Large investment size combined with the critical use of infrastructure often result in risk of creeping expropriation and transaction cost.

Expropriation is a common form of political risk where a host-country government seizes a firm's assets without fair compensation and is a frequently cited barrier to foreign investment in many developing countries as foreign firms are more vulnerable to expropriation (Hajzler, 2012). Risk of expropriation may rise when firm are forced to partner with state-owned enterprise (SOE) as concentrated supplier or buyer (Sawant, 2010). SOE is granted special rights by the government, therefore it could increase or decrease the price at which it sells or buys from a project without restraint (Sawant, 2010).

One of the biggest expropriation case that happened Indonesia was the cancellation of a 500-megawatt gas-fired, combined cycle power plant in Pasuruan, East Java, sponsored by America's Enron. In 2000, two years after Soeharto resigned amid massive anti-government protest, Indonesian government cancelled the power plant project which never reached the construction phase. The decision was made in the midst of the Asian economic crisis (Asia Times Online, 2002). Luckily for Enron, the project was insured by the World Bank's Multilateral Investment Guarantee Agency (MIGA). MIGA insures foreign investors in emerging markets against political risk. Its guarantee covers the risks of expropriation, transfer restriction, and war and civil disturbance. MIGA paid the company US\$15 million for the losses it suffered on the project and negotiated a settlement agreement with Indonesia by which the loss will be salvaged over a three-year period (MIGA, 2014).

Another issue faced by infrastructure firms is high transaction cost due to large investment size. It may occur due to lack of information on possible capital allocations,

insufficient enforcement of corporate governance, and inability to mobilize a pool of savings (Kleimeier and Versteeg, 2010). When an asset could not be converted for other use, its acquiring cost become unrecoverable sunk cost. In other words, size of investment within a project is a proxy for transaction cost. Asset specificity could also trigger supplier/buyer to take advantage of the situation (Sawant, 2010). This opportunistic threat is amplified when supplier/buyer are concentrated because it means that they have even bigger bargaining power.

The importance of the subject has led to a number of researches conducted to find the most effective capital structure that could mitigate risk of creeping expropriation and investment size in infrastructure projects. One of the modes that could help MNCs bargain its position in post-contractual negotiations with host country governments is project finance (Sawant, 2010).

Project finance is commonly known as “the creation of a legally independent project firm financed with equity from one or more sponsoring firms and non-recourse debt for the purpose of investing in a capital asset” (Esty, 2007). Habib (1996) and Kim and Yoo (2008) as cited in Sawant (2010) characterize project finance as these conditions: separate incorporation, high debt levels, non- or limited recourse debt; detailed long-term contract, and the use of incorporated entity to fund a single-purpose capital asset with finite life. Project finance often comes into use in sectors such as oil and gas, mining, power and utility and transportation that have particular characteristics which are captive market (comprise of long-term contracts involving off-takers) and low level of technological risk in plant construction (Gatti, 2008). Paiton Energy, Hong Kong Western Harbour Crossing, The London Underground, Dabhol Power Project and Ras Laffan Liquefied Natural Gas Company are few examples of project finance use.

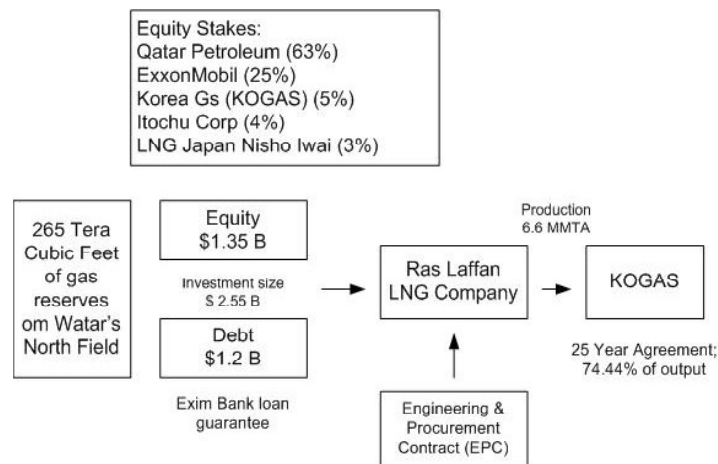


Figure 1: Typical project finance transaction: Ras Laffan LNG Company

Source: Sawant (2010)

Despite the growing need for further research, project finance is still a rare topic discussed by researchers in Indonesia, possibly due to the difficulty of data acquisition. Currently there are no papers in this topic published in Indonesian Scientific Journal Database (ISJD) and there is only one paper in 2009 by Deddy Supriady of Universitas Indonesia which explores the model of risk-based project financing in a property project in Indonesia.

The purpose of this paper is to investigate the impact of size of investment size, presence of concentrated supplier/buyer, and presence State-owned Enterprise (SOE) as concentrated supplier/buyer toward the propensity to project finance in Indonesia during 2007-2012 period. Foreign investors could take this research into consideration upon deciding the mode of direct investment they would like to pursue in Indonesia.

B. LITERATURE REVIEW

Project Finance

Traditionally, a firm could choose to finance its activities through internal and external funding. There are two fundamental sources of external financing, which are equity and debt (Pretorius *et al.*, 2008). Project finance is one aspect of corporate finance.

In funding a project, a sponsor could choose between using corporate finance or project finance (Gatti, 2007). The difference lies primarily in whether the financing will be on or off the balance sheet. If the firm chooses to finance it using corporate finance (on balance sheet financing), it will be responsible for debt repayment of the project in case of credit default. In other words, firm will have to cover both firm's existing debt plus new project's debt using its cash flows and assets. A firm may borrow money in its own name, without shareholders generally being liable to repay such loans in the event of later corporate finance distress. This condition applies mainly to large public companies but not small and medium scale enterprises (SMEs). SMEs managers are required to guarantee repayment of loans. This does not violate the principle of limited liability but confirms that lenders often look for collateral that is simpler to value when lending to a small company.

However, if a firm chooses to use project finance (off balance sheet financing) instead, the lenders will have no or limited recourse to the firm if the project fails. The existing firm's shareholders can then benefit from the structure since the new project's debt repayment is strictly the new SPV's responsibility (Gatti, 2007).

Investment Size

Market economies are concerned with the exchange of goods and services and the efficiency with which such exchanges take place (Pretorius, 2008). This concept is especially true in infrastructure projects. Large-scale projects could involve transactions as simple as buying goods and services to the most intricate process of acquiring another firm. Pretorius (2008) describes a single project as standing in place of an

infinite number of contracts and characterizes that project with large investment size as being associated with high transaction cost. Inability to manage these costs could affect the SPV's cash flow tremendously.

When a firm invests largely in a market that's dominated by one party, higher transaction cost is more likely to happen because firm has to follow the dominant players; otherwise the asset has no value. The initial investment would turn into sunk cost in the case of project failure due to asset specificity that makes it impossible for firm to recover cost (Sawant, 2010). This case happens a lot within large infrastructure projects as most of the assets are immovable and exclusively designed to function in a certain way. Investors will have to bear the consequence of having fewer options in case of project failure. For sponsoring firms, larger investment size means higher risk to bear. Stakeholders will need to put extra effort to ensure that transaction within the investment will not harm any party. Information-complex transaction requires extensive due diligence and other legal and official requirements (Pretorius, 2008). Those efforts could prompt transaction cost. Pretorius (2008) further states the importance of transaction cost consequences to the way in which a project comes to fruition.

Project finance that comprises non-recourse debt, separation of the new assets in legally distinct entity and off-balance sheet financing can help shelter sponsoring firms invest largely from potential transaction cost. Therefore Sawant (2010) expects positive relationship between size of investment and the propensity to project finance.

Risk of Creeping Expropriation

Creeping expropriation is a form of political risk and it is most closely related to private infrastructure investment. Creeping expropriation risk consists of regulatory risks, the risks of being surprised by new rules and regulations and the risk that returns on investment are reduced by red tape and corruption or more generally through non-enforcement of rules by the government (Schiffer and Wedder, 2000). OPIC (2007) defines risk of nationalization, confiscation or expropriation as "unlawful government acts (or a series of acts) that deprive the investor of its fundamental rights (including ownership or control) in a project". The form of expropriation itself can range from impairment of contract, including forced renegotiation of contract terms, confiscation of funds and/or tangible assets, and outright nationalization of a project (OPIC, 2014).

Smith (1997) as cited in Heinz and Kelimeier (2012) includes risk of expropriation as part of traditional political risk which also addresses risks related to the convertibility and transferability of currency and political violence. Heinz and Kleimeier (2012) argues that project finance structure could help mitigate the political risks. The separate incorporation of the project makes government intervention becomes highly visible to financial market participants since commercial banks and multilateral development institutions are part of the lending syndicate. A bad move could cost the government its reputation. Additionally, highly leveraged structure reduces free cash flow so the temptation for the government to expropriate the project is reduced (Esty, 2003).

In a lot of cases, government uses State-owned Enterprise (SOE) as a medium in expropriating an asset. SOE is quasi-sovereign enterprise owned by government that is granted monopoly to operate in intermediate product markets. It usually has special legal rights and is itself extension of government with government minister as its head (Sawant, 2010). The existence of SOE often discourages firms to enter market due to the special legal rights and political power within the country. SOEs can roughly be divided into the following three sub-types: (a) SOEs in the traditional sense, namely those that maintain the old, pre-reform enterprise structure; (b) solely state-funded corporations: this new type of SOEs was established in accordance with a modern corporate governance system, and set up a complete set of corporate governance mechanisms such as a board of directors, board of supervisors, and so on; and (c) state-owned share-holding firms with state-owned and non-state-owned shares (Xiaozuan, 2010).

Previous Researches

Latest research regarding project finance is done by Byoun and Xu (2014). Using sample of project finance transaction data in 1990-2012 in 151 countries, they analyze the relationship between political risks, concession grants, and off take agreements with contract choice and public-private governance structure of a project. The paper finds that political risks have negative relationship with the likelihood of obtaining government's concession or off take agreements, while financially motivated projects have positive relationship with the likelihood of involving government concessions. It also finds that basically project firms exchange their financial security with government control.

Hainz and Kleimeier (2012) links political risks with the involvement of development banks in project finance. Their paper utilizes 4,978 loans made to borrowers in 64 countries as sample and loan type, bank choice, and political risk and variables. Using logit and multinomial logit model, it finds that greater political risk in a country triggers more project finance that involves development banks as part of syndicated lending.

Brealey *et al.* (1996) explores possible rationales for using project finance in funding infrastructure investments from the viewpoint of both project sponsor and host government in Paiton Energy project in Indonesia. They argue that the reason behind the significance of project finance compared to other financing mechanism such as privatization, service contract, leases and nationalizations is its ability to address agency problems. There are numerous parties such as project sponsors, contractors, suppliers, major customers and host governments involved in project finance. Each of these parties has different, and possibly conflicting, interests that may lead to agency problems. Therefore, a company that successfully chooses an appropriate financial structure will be able to provide incentive for the parties to work together for common good.

Sawant (2010) in his paper, "The economics of large-scale infrastructure FDI: The case of project finance", develops theoretical framework to explain why multinational firms prefer investing in foreign market through the mode of project finance over conventional corporate finance. The paper tests this framework by assembling a database of 200 investments in oil and gas projects worth \$159.97 billion, by 167 firms, in 128 countries over 17 years, analyzed using Probit regression. It hypothesizes that project finance could help mitigate the risk of large infrastructure investment for multinational firms. The result suggests that project finance mitigates transaction costs arising from concentrated buyer/supplier. However, it shows limited support for hypotheses that project finance could help mitigate country risk. This paper is based on Sawant's (2010) former research with limitation to Indonesian market only.

C. METHODS

Firms often face underinvestment issue by equity-holders upon making decision on large investment due to equity's inferior position terms of claims on future cash flow. Although debt-holders and equity-holders bear the risk of new project together, incremental positive NPV from the project transfers wealth to debt-holders. This condition causes equity-holders tend to avoid a too risky project (under invest). However, by having the investment structured as project finance, equity-holders will not be held liable when project fails, thus reducing the incentive of underinvestment by equity-holders.

Infrastructure projects generally involve specific assets. Asset specificity is present when transaction requires certain specialized investments which have small or no value to alternative users or uses (Sawant, 2010). Asset specificity results in unrecoverable sunk cost, making sponsoring firm more susceptible to financial distress. However, structuring the project as project finance by separating assets in a new legal entity will shelter the sponsoring firm from asset specificity risk. More detailed contracts, such as those reinforced in project finance, are needed to secure the risky transaction. The relationship-based enforcement mechanism is one way to ensure the project will continue as planned.

In conclusion, larger investment size will increase propensity to project finance. Following Sawant (2010), this research hypothesizes that:

H1 : An increase in the size of an investment leads to an increase in the propensity to project finance

Since MNCs cannot redeploy the assets, it depends heavily on suppliers and buyers. Opportunistic suppliers and buyers can change the price of inputs supplied or output bought, therefore increase the transaction cost.

Project finance structure that requires the creation of new business entity for the project allows vertical integration between suppliers and buyers (Klein *et al.*, 1978). Suppliers and buyers can be equity-holders in the project, discouraging the two parties

to act opportunistically. Long-term contracts that shape project finance structure relies on legal remedies from the courts for breach of contract also help prevent opportunistic behavior (Sawant, 2010). Therefore following Sawant (2010), this paper hypothesizes that:

H1 : Concentrated suppliers and buyers result in a high propensity to project finance

Risk of creeping expropriation is the key concern for private sponsor as it affects project's revenue stream tremendously (Byoun and Xu, 2014). After the construction phase is completed, infrastructure projects have low variable cost without having to rely on growth options (Esty, 2003) and thus they are at greater risk of creeping expropriation.

Project finance that features high debt structure forces a firm to prioritize debt repayment over any other payments (Gatti, 2007). This structure allows only limited free cash flow after debt repayment, making the project less favorable for the government to expropriate.

In a lot of cases, project finance also involves syndicated lending. Finnerty (2007) as cited in Sawant (2010) notes that lending syndicate which include commercial banks, export credit agencies, insurance firms, pension funds, equipment vendors and multilateral development institutions, made up about 90% of project finance debt. The involvement of these resourceful stakeholders makes it riskier for the government to expropriate as it should be careful not to deteriorate its reputation. In other words, project finance helps improve investors' bargaining position against the government.

Government by and large uses quasi-sovereign State-owned Enterprise (SOE) that is granted special legal rights during the process of expropriation. The threat of opportunistic behavior of SOE increases when an SOE is concentrated supplier or buyer from an investment (Sawant, 2010). Investor is expected to mitigate this risk by utilizing project finance structure, and thus:

H1 : The presence of a State-owned Enterprise (SOE) as a concentrated buyer increases the propensity to project finance.

This paper will answer the question of whether or not project finance could effectively mitigate risk arising from large investment size and risk of creeping expropriation by using a model that was first developed by Sawant (2010). In Model I, I regress proxies of investment size (investment size and concentrated supplier/buyer) against probability of investment structured as project finance. Model II regress proxy of risk of creeping expropriation (presence of SOE) against probability of investment structured as project finance.

Statistical procedure utilized in this model is logistic regression as follows:

$$\text{Ln} \left[\frac{P}{1-P} \right] = \beta_0 + \beta_1(\text{conc}) + \beta_2(\text{size}) + \beta_3(\text{bookval}) + \beta_4(\text{debtcov}) + \beta_5(\text{leverage}) + \varepsilon_i \quad (1)$$

$\text{Ln} [P/(1-P)] = \beta_0 + [\beta_1 (\text{soe}) + \beta_2 (\text{bookvalue}) + \beta_3 (\text{35 sed in this research is})]$ (2)

where P is probability of using project finance (dichotomous with project finance or corporate finance). Size of investment is recorded in millions of US\$ while presence of concentrated supplier/buyer and presence of SOE as concentrated supplier/buyer are dichotomous with presence or absence. The set of chosen controls follows Sawant (2010) and comprises book value of sponsoring firm (US\$), debt service coverage ratio (DSCR), and leverage ratio. All three variables are critical in controlling regression as firms with similar book value, DSCR, and leverage ratio are likely to have similar financing options, making comparison of such firms relevant in the analysis.

Alkhatib (2012) measures book value as total assets. Book value represents operating assets (Belmonte, 2002). Ohlson (1989) as cited in Belmonte (2002) calculates book value for present period as last period's beginning book value plus retained earnings of the subsequent period. Larger book value suggests firm's ability to carry out large-scale projects (Sawant, 2010). Large firms can use their plentiful assets to initiate projects, underlie debt, or partner with other firms. Compared to smaller firms, larger firms have better chance at realizing large-scale projects

The business's debt service coverage ratio (DSCR) is one of the key ratios that reflect borrower's ability to repay debt. DSCR calculations are also used to estimate the borrower's ability to service long-term debt in the future (particularly when new borrowings are involved) (Grady, 2010). Debt coverage measures a property's cash flow relative to debt obligations (Fibley, 2010). For lenders, high DSCR justifies loans. For investors, high DSCR reassures them that despite firm's debt there will be enough cash for equity-holders, hence lowers underinvestment incentive. When project is financed externally through corporate financing, lenders scrutinize over firm's historical and current DSCR as the basis of calculating interest rate (cost of debt). If a firm doesn't have good track record, cost of debt *ex-ante* could rise up no matter how sound the project is. However, if firm decides to use project finance instead, lenders would overlook sponsor's DSCR and consider the soundness and profitability of project's contractual agreement and counterparty instead.

Leverage refers to the extent to which firms make use of their money borrowings (debts financing) to increase profitability and is measured by total liabilities to equity (Alkhatib, 2012). Being a highly leveraged firm could have two main consequences: higher financial distress risk and lower free cash flow (Sawant, 2010; Alkhatib, 2012, Khan, A. *et al.*, 2012). When economic situation takes a downturn, debt puts pressure on the firm because interest and principal payments are obligation (Ross *et al.*, 2010). Unlike stock dividend, firm is legally responsible to repay debt-holders whether they have cash or not. In the ultimate case of bankruptcy, firm might be forced to repay debt-holders by legally transferring ownership of firm's assets to bondholders. The risk of going bankrupt is known as financial distress risk. Capital structure that includes a large amount of debt/equity tends to increase the risk of bankruptcy (Khan, A. *et al.*, 2012).

As implied previously, debt is senior to shares in terms of claims on future cash flow. Upon obtaining cash flow from operations, firm's first responsibility is to repay its debt plus agreed interest to debt-holders. This situation leaves firm with less free cash flow for dividends. Modigliani and Miller Proposition II states that risk to equity-holders raises with leverage, thus equity-holders expect a higher rate of return to compensate the risk (Ross *et al.*, 2010).

Firm's level of leverage highly affects its source of financing and is closely related to capital budgeting decisions. Capital budgeting decisions rely on two major sets of theories namely; the trade-off theory and the pecking order theory (Alkhatib, 2012). Trade off theory views capital budgeting decision as a process of balancing debt and equity by evaluating the cost and benefit of each type of finance. After assessing the cost and benefit of different optional leverage strategy, management aims for a certain level of debt depends on establishing the balance debt tax shields and costs of bankruptcy (Myers, 1984). The pecking order theory is when firms have preference over its source of funding. It argues that firms favor internal funding to external funding due to its low cost. According to the theory, there are three different sources from which financing can be obtained; first is internal funding which is the least expensive alternative, second is debt, and last is external equity financing that is perceived to be the most expensive of all (Myers, 1984). The cost of external financing of firm depends on its financial situation and under certain circumstances; lenders could adjust interest rates according to the particular situation of each firm (Soumaya, 2012).

Population in this research is all foreign direct investments in mining, oil and gas, power, water utility, waste treatment, transportation and storage sector commenced in 2007-2012 in Indonesia. Data regarding infrastructure project in Indonesia is derived from Indonesia Coordinating Board for Investment (BKPM). Based on BKPM database, there were 1,303 projects worth US\$ 12,521 billion initiated in infrastructure sector in Indonesia during periods of 2007-2012. Sectors included in the initial observations are mining, oil and gas, power, water utility, waste treatment, transportation and storage. Out of 1,303 projects, only 179 cost over US\$ 10 million. This dataset includes both corporate financed investments and project financed investments. However, BKPM report does not include project's detail except for its size of investment which is not enough information to decide the project's financing mechanism. I counter this issue by cross-referencing data in BKPM report with data from Thomas-SDC Database, PPI reports, and IFX reports.

Thomson-Reuters SDC provides database of project finance deals in Indonesia. This database, along with additional information from World Bank's PPI and IFX reports, provides details of 309 project finance investments during 2007-2012 periods. The details provided, among others, are the name of project company, project sponsor, dollar amount of investment and location of investment. Out of 309 investments, 101 are investments in infrastructure comprising mining, oil and gas, power, water utility, waste treatment, and transportation and storage sector. We eliminated nine projects

that were invested by local companies. 81 project-financed investments with disclosed project cost of over US\$ 10 million are included in the next step of sampling.

For the reason that book value, debt service coverage ratio and leverage are utilized as control variables in this research, only investments sponsored by firms with complete balance sheet and income statement report are included as samples. During this phase, we discovered that most investing Chinese and Arabian firms in Indonesia are not publicly traded; therefore, they do not publish their annual report. I continued to explore each investment and filter only samples with complete financial information. Lack of data in this phase leaves total sample of 43 investment observations, comprising of 31 project finance investments and 12 corporate finance investments.

D. RESULTS AND DISCUSSIONS

The sample for the study comprises investments in infrastructure sector, structured as corporate and project finance investments. This section will discuss the process of selecting and obtaining samples. As some of the data are sensitive, firms name are not to be disclosed. Table 1 shows that corporate finance seems to be more preferred for large investment in this data sample. The median size of project finance investment is US\$ 525 million compared to corporate finance investments US\$ 585 million. Average size of project finance investment is US\$ 665 million, larger than corporate finance investment average of US\$ 1,226 million. The largest corporate finance investment included in the observation is US\$ 2.2 billion, invested by British Petroleum in its Gendalo-Gehem LNG project, together with other sponsors such as Mitsubishi Corp and Inpex Corp. The smallest project finance investment is US\$ 45 million Jakarta Petroleum Storage Terminal invested by Russia’s Vopak.

Table 1
Project Finance vs. Corporate Finance Investments

	<i>Project finance (US\$ mil)</i>	<i>Corporate Finance (US\$ mil)</i>
Median	525	585
Mean	665	1226
Max	2222.9	4,000
Min	45	16.8

These rough estimates show that project financed investments in Indonesia are relatively smaller than those of corporate finance are. This finding is the opposite of Pretorius’ (2008) findings that states project finance could help companies invest in larger projects that otherwise its balance sheet would not allow. However, this difference probably arises because we took outliers out of the sample data.

Table 2
Descriptive statistics of sample

	<i>N</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Mean</i>	<i>Std. Deviation</i>
PF	43	.00	1.00	.7674	.42746
SIZE	43	16.80	4000.00	711.7009	795.91771
CONC	43	.00	1.00	.7907	.41163
SOE	43	.00	1.00	.6279	.48908
BOOKVAL	43	137.45	350294.00	54987.0773	77221.59619
DEBCOV	43	-.15	2.03	.4959	.57062
LEVERAGE	43	.11	3.99	1.4884	1.04135

Before analyzing the data using logistic regression, we first analyze the degree to which two variables are related by running a correlation test. Table 3 showed the correlation between variables.

Table 3
Correlation between variables

		<i>PF</i>	<i>SIZE</i>	<i>CONC</i>	<i>SOE</i>	<i>BOOKVAL</i>	<i>DEBCOV</i>	<i>LEVERAGE</i>
PF	Pearson Correlation	1	-.360*	.393**	.601**	-.192	-.396**	.400**
	Sig. (2-tailed)		.018	.009	.000	.218	.009	.008
SIZE	Pearson Correlation	-.360*	1	-.350*	-.338*	.604**	.273	-.225
	Sig. (2-tailed)	.018		.021	.026	.000	.077	.146
CONC	Pearson Correlation	.393**	-.350*	1	.668**	-.184	.047	.133
	Sig. (2-tailed)	.009	.021		.000	.236	.764	.397
SOE	Pearson Correlation	.601**	-.338*	.668**	1	-.067	-.223	.297
	Sig. (2-tailed)	.000	.026	.000		.668	.150	.053
BOOKVAL	Pearson Correlation	-.192	.604**	-.184	-.067	1	.111	-.147
	Sig. (2-tailed)	.218	.000	.236	.668		.477	.348
DEBCOV	Pearson Correlation	-.396**	.273	.047	-.223	.111	1	-.348*
	Sig. (2-tailed)	.009	.077	.764	.150	.477		.022
LEVERAGE	Pearson Correlation	.400**	-.225	.133	.297	-.147	-.348*	1
	Sig. (2-tailed)	.008	.146	.397	.053	.348	.022	

Notes: * Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Table 3 shows that SOE and CONC have strong positive relationship with Pearson's correlation coefficient of 0.668 at 1% level. This strong relationship is probably derived from the nature in which concentrated supplier/buyer variable and presence of SOE interacts in the research. Concentrated supplier/buyer is a binary variable that records whether any supplier/customer supplies/buys more than 10% input/output of the project. Presence of SOE is also a binary variable that record if any government SOE is a concentrated supplier/buyer in the project. Therefore, if an investment involves SOE as concentrated supplier buyer (SOE), it will automatically have concentrated supplier buyer (CONC). It is also possible for an investment to have concentrated supplier (CONC) without having SOE presence (SOE). The relationship between SIZE and BOOKVAL is also significantly positive at 1% level. Pearson correlation value of

0.604 shows that a firm’s capacity to invest in a project is positively related to its book value. This pattern arises because although a project finance investment involves a large proportion of debt, the initial equity invested still depends on sponsoring firm’s available resource for investment. Asset is used as proxy to resource available; therefore, firm’s investment size is proportional to its total asset.

PF and LEVERAGE shows significant relationship with Pearson correlation value of 0.400. This positive relationship is in accordance with Sawant’s (2010) prediction. Highly leveraged firms have limited debt capacity left; therefore, it is difficult for them to obtain more debt through their current balance sheet. By structuring their investment as project finance, they could continue their expansion without contradicting their existing debt holders’ interest. Parallel with discussion in descriptive statistics analysis, PF and SIZE have negative correlation significant at 5% level. This finding is the opposite of Sawant’s (2010) hypothesis that predicts larger investment size will increase propensity to project finance. Finally, we employed logistic regression to analyze each model. The dependent variable of this study is probability of project finance as a method of structuring an investment. The decision makers are firms. The variables that proxy for the holdup theory are, size of the project (SIZE), concentration of buyers/suppliers (CONC), and presence of state owned enterprises (SOE). There are two model utilized in this research. Model I regress investment size against propensity to project finance and Model II regress risk of creeping expropriation against propensity to project finance. The result of Model I is shown in (Table 4).

Table 4
Logistic regression result of Model I

		<i>B</i>	<i>S.E.</i>	<i>Wald</i>	<i>df</i>	<i>Sig.</i>	<i>Exp(B)</i>
Step 1 ^a	SIZE	.000	.001	.069	1	.792	1.000
	CONC	2.586	1.215	4.531	1	.033	13.271
	BOOKVAL	.000	.000	.000	1	.993	1.000
	DEBCOV	-1.603	.860	3.478	1	.062	.201
	LEVERAGE	1.172	.721	2.641	1	.104	3.229
	Constant	-.841	1.385	.369	1	.544	.431

The result does not support the relationship that ‘an increase in the size of investment (SIZE) leads to an increase in the propensity to project finance’. Possible explanation for this result is that the model lacks variable proxying for the additional costs of structuring project financed investment. Klein, So, and Shin (1996) as cited in Sawant (2010) find that total transaction cost for infrastructure project in pioneering development such as Indonesia is 10-12%. The finding is different with that of Sawant probably due to different scope of research. Sawant (2010) observes project finance in 67 countries, while this research observes Indonesian market only. Any discrepancy in transaction cost regarding large investment size that might arise due to country effect is observed insignificant in this research.

Concentrated supplier/buyer (CONC) shows significantly positive effect toward propensity to project finance as the *b* coefficient is positive. This finding supports the initial hypothesis that 'concentrated supplier and buyers increases the propensity to project finance'. Negative relationship between debt service coverage ratio and propensity to project finance shows that a firm with high debt service ratio has lower propensity to structure its investment as project finance. Conversely, leverage has positive relationship with propensity to project finance. The combination of high debt service coverage ratio and low leverage yield lower cost of borrowing as investors perceive the firm less risky. Due to its network of contracts, structuring a project finance investment is relatively more expensive, as found in previous study by Kleimeier and Megginson (2000). They found that project finance loans have a spread of 130 basis points over LIBOR (London Interbank Offer Rate), whereas fixed-asset-based loans have a spread of 86 basis points over LIBOR. Therefore it is more cost-effective for firms with high debt service coverage ratio and low leverage to structure their debt as fixed-asset-based. Logistic regression result of Model II can be found in (Table 5).

Table 5
Logistic regression result of Model II

	<i>B</i>	<i>S.E.</i>	<i>Wald</i>	<i>df</i>	<i>Sig.</i>	<i>Exp(B)</i>
SOE	3.325	1.266	6.894	1	.009	27.788
BOOKVAL	.000	.000	.381	1	.537	1.000
DEBCOV	-1.312	.979	1.797	1	.180	.269
LEVERAGE	.735	.673	1.195	1	.274	2.086
Constant	-.050	1.206	.002	1	.967	.951

The result supports the relationship that 'a decrease in presence of SOE (SOE) increases the propensity to project finance. Propensity to project finance increases by 3.325 for a unit increase in the presence of SOE. Control variables of book value, debt service coverage ratio, and leverage seem to be insignificant in emphasizing the relationship between concentration of SOE and propensity to project finance.

The strong positive relationship between PF and SOE is probably due to the fact that infrastructure is a strategic sector which requires heavy regulation and involvement of quasi-government entities such as SOEs. In mining sector, PT Bukit Asam Tbk. is a major player that operates in Tanjung Enim and other locations (Bukit Asam, 2014) while PT Pertamina and its subsidiaries largely dominate oil and gas sector. Although in 2001 the government brings the Pertamina monopolization on oil to an end (Tempo, 2014), Pertamina still owns the most extensive distribution system in the country. As for power, President Regulation No. 71 of 2006 that targets faster power growth assigned PT Perusahaan Listrik Negara (PLN) only to build coal-fired steam power plants with a total capacity of 10,000 Mw of the first phase (FTP I); although later the job is often subcontracted to other firms. Transportation is dominated by PT Pelabuhan Indonesia that operates most airports and ports while PT Jasa Marga builds most high ways in Indonesia. This condition causes frequent involvement of SOE as concentrated supplier/

buyer from infrastructure projects in Indonesia. Most project companies that produce power (Independent Power Producer/IPP) have Energy Sales Contract (ESC) with SOE PT Perusahaan Listrik Negara (PLN) as it monopolizes power distribution in Indonesia. For example, Sarulla Operations Ltd., the project company of Sarulla Geothermal Power Plant, signed a 30-years power purchase agreement with PT PLN and PT Pertamina Geothermal Energy (PGE) prior to its operation.

(Table 6) shows classification table of predicted project financed investment by Model I. Six cases are observed to be 0 and are correctly predicted to be 0; 31 cases are observed to be 1 and are correctly predicted to be 1. Four cases are observed to be 0 but are predicted to be 1; 2 cases are observed to be 1 but are predicted to be 0. The overall rate of correct classification is estimated as 86%. It shows that 86% of outcome is predicted correctly by the model.

Table 6
Classification Table of Model I

	<i>Observed</i>		<i>Predicted</i>	
			<i>PF</i>	<i>Percentage Correct</i>
		.00	1.00	
PF	.00	6	4	60.0
	1.00	2	31	93.9
Overall Percentage				86.0

Note: The cut value is .500

Classification table of predicted project financed investment by Model II can be found in (Table 7). Seven cases are observed and correctly predicted to be 0 and 32 cases are observed and correctly predicted to be 1. It shows that 90.7% of outcome is predicted correctly by Model II.

Table 7
Classification Table

	<i>Observed</i>		<i>Predicted</i>	
			<i>PF</i>	<i>Percentage Correct</i>
		.00	1.00	
PF	.00	7	3	70.0
	1.00	1	3	97.0
Overall Percentage				90.7

Note: The cut value is .500

Classification table shows result that could be easily understood, however Hosmer *et al.* (2013) identifies the disadvantage of using it as a criterion. It reduces a probabilistic model, where outcome is measured on a continuum, to a dichotomous model where

predicted outcome is binary. For practical purposes there is little difference between the values of $\hat{\delta} = 0.47$ and $\hat{\delta} = 0.51$, yet use of a 0.5 cut point would establish these two individuals as markedly different.

Table 8
Model I Summary

<i>Step</i>	<i>-2 Log likelihood</i>	<i>Cox & Snell R²</i>	<i>Nagelkerke R²</i>
1	28.318 ^a	.347	.524

Nagelkarke R Square of 0.524 suggests that model can predict 52.4% of data.

Table 9
Model II Summary

<i>Step</i>	<i>-2 Log likelihood</i>	<i>Cox & Snell R²</i>	<i>Nagelkerke R²</i>
1	23.973 ^a	.410	.619

Nagelkarke R Square of 0.619 suggests that model can predict 61.9% of data.

There are a number of different measures of goodness of fit for logistic regression models. Goodness of fit refers to how well a model predicts data. Common measure that is widely used in logistic regression to determine whether a model is sufficient to explain the data is Pseudo R-Squared. These measures are based on various comparisons of the predicted values from the fitted model to those from Model (0) (Hosmer et al., 2013). The measure is consistent with the character of logistic regression (i.e., not being changed by a linear transformation of model covariates). In SPSS, there are two Pseudo R Square in logistic regression namely Cox and Snell's and Nagelkerke's. Nagelkerke's measure was a correction of Cox and Snell's, allowing the measure to use the full 0-1 range. Therefore, Nagelkerke's will normally produce higher value than Cox and Snell's Pseudo R²measure (Strath, 2014).

Table 4.16
Result Summary

<i>Sample</i>	<i>Dependent Variable</i>	<i>Explanatory Variable</i>	<i>Relationship</i>	<i>Significance</i>
MODEL I	Project Finance	Investment size	+	No
		Concentrated supplier/buyer	+	Yes
		Book value	+	No
		Debt service coverage ratio	-	Yes
MODEL II	Project Finance	Leverage	+	No
		Presence of SOE	+	Yes
		Book value	+	No
		Debt service coverage ratio	-	No
		Leverage	+	No

The overall result table above shows that in Model I, investment size and concentrated supplier/buyer show positive relationship with propensity to project

finance. However, only concentrated supplier/buyer is significant in the model. Among all the control variables, book value is the only variable that is insignificant, while debt service coverage ratio and leverage is shown to be significant in the model. Book value and leverage have positive relationship while debt service coverage ratio has negative relationship with propensity to project finance.

In Model II, presence of SOE as proxy for risk of creeping expropriation has positive and significant relationship with propensity to project finance. Book value and leverage have positive relationship while debt service coverage ratio has negative relationship. The sign of relationship in control variables is the same with that of Model I, however all control variables are deemed insignificant in Model II.

E. CONCLUSION

The use of project finance in various large-scale investments has proved its critical role in realizing key infrastructure projects in Indonesia. For MNCs, the choice of how its investment is going to be structured is very critical as there are certain formidable challenges attributable to infrastructure investments, such as high asset specificity, MNC needs to mitigate potential transaction cost arising from large investment size and risk of creeping expropriation.

The purpose of this research is to test for propensity to project finance structure against country risk and investment size in infrastructure sectors comprising of power, transport, oil and gas and mining in Indonesia. This research finds that there is a positive and significant relationship between concentrated supplier/buyer and presence of SOE as concentrated supplier/buyer with propensity to project finance. The presence of concentrated supplier/buyer (especially when it is an SOE) increases project's exposure to external environment. In order to manage the risk, firms should consider taking advantage of various forms of guarantees and assistance to firms investing in infrastructure sector offered by governments and other multinational agencies.

In order to promote investment, Indonesian government through PT Penjaminan Infrastruktur Indonesia (Indonesia Infrastructure Guarantee Fund, IIGF) are now offering guarantee facility while World Bank's Multinational Investment Guarantee Fund (MIGA) provides political risk insurance and credit enhancement to investors and lenders against losses caused by non-commercial risk. Another entity that has been established by Indonesian Ministry of Finance is PT Sarana Multi Infrastruktur (PT SMI) that offers lending to projects considered suitable with government's development program. Although the government is mainly promoting investment in connectivity and power sector, PT SMI does not have inclination toward the type of project it is financing. Firms could explore these various options and see if any of them is suitable with firm's and project's need. While planning the investments, firms should keep in mind that main criterion used by the previous entities in choosing projects is based on sponsor's risk rating and debt service coverage ratio, as well as

project's feasibility. On the other side, government could use this knowledge to understand challenges that MNEs face and further promote a better investment atmosphere.

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