

# Development of institutional funding model of deep discount bond and land lease on a toll road project

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**Abstract.** Toll road is one of the most important parts of connectivity infrastructure. However, the current length of the existing toll roads is still not sufficient compared to the increasing number of vehicles in Indonesia. Nevertheless, the needs for infrastructure funding including for toll roads are not comparable to the availability of state budget. Innovations in funding schemes were required to meet such needs such as Deep Discount Bond (DDB) and Land Lease (LL). To ensure these schemes are running appropriately, an institutional funding model is needed to organize the stakeholders involved. Therefore, five institutional funding models were developed based on the conditions of the DDB issuer (project or corporate finance), LL executor [State Assets Management Institutions (LMAN) or Special Purpose Company (SPC)], and the number of SPC in the models. In addition, ten institutional success factors were identified. Data was collected using in-depth interviews consisting of three parts and analyzed using the Relative Importance Index to rank the institutional success factors found and using the Multi Criteria Analysis to choose the most effective institutional funding model. The institutional success factors that were found to have great values were those related to Government. At the same time, the most effective funding model is a corporate finance scheme, where LL is executed by LMAN, and a single SPC is used.

## 1 Introduction

The World Economic Forum in its 2016 Global Competitiveness Report revealed that the existence of efficient and growing infrastructure within a country can ensure economic activities in various sectors that can develop that country. One part of the infrastructure with a large portion of development plan is toll roads. Nevertheless, many countries are experiencing a serious gap between their needs and the availability of funding for that purpose [1]. There are alternative schemes that can be applied, i.e. DDB and LL. Bonds is one of the most popular infrastructure debt finance instruments in developed economies such as the UK and the USA [2]. Other cases showed that the USA leased lands to gain income to fund their transportation infrastructure [3]. DDB and LL are two financing schemes that have not been implemented in Indonesia. Therefore, each stakeholder involved has to be educated on their role to ensure that the schemes succeed, meaning that

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guidelines are required [4]. The institutional model must be made based on the success factors to ensure DDB and LL schemes are running well. Therefore, this research aims to identify the role of the stakeholders for DDB and LL joint funding schemes and the institutional success factors, and to determine the most effective institutional model by involving private parties.

## **2 Literature review**

### **2.1 Institutional**

Institutional is a condition required to govern the relationship pattern between the stakeholders involved [5]. In other words, it is a human relationship pattern set with regulations and a combination of law, politics, and management [6]. Some said that it is an important factor for innovation [7]. Based on those definitions, it can be concluded that the institutional model will represent stakeholder relationships based on law, politics, and management in order to be able to innovate. Therefore, DDB and LL schemes as innovative funding should be based on institutional models as a guide for stakeholders to be involved in order to ensure the success of the schemes. Based on the literature review, ten institutional success factors were identified as the basis to develop the institutional funding models, i.e.: Effectiveness of Government (X1) [8]; Ease to Start a Business (X2) [8]; Protection of Investors (X3) [8]; Stakeholder Dialogue (X4) [9]; Sustainability of Financial Condition (X5) [10]; Complexity of Project Financing (X6) [11]; Adequate Financial Package (X7) [12]; Reliable Consortium (X8) [12]; Local Financing (X9) [13]; Effective Management (X10) [14].

### **2.2 Deep Discount Bond**

Bond is fixed income securities issued in relation to debt agreements [15]. Based on this definition, bonds are able to provide fixed income periodically via bond coupon or bond interest rate. The four essential components of a bond are coupon, maturity date, bond liquidity, and bond price [16]. DDB was first issued in America in early 1980s. DDB has only one cash in its cash flow, i.e. at the time of maturity. DDB is said to be typical with the Zero Coupon Bond, defined as cheap bond price listed by the issuer of the discount [17]. The advantage for the bond holder is the difference between the purchased price when the bonds are issued and the price of bond par value on its maturity date.

### **2.3 Land Lease**

The fundamental definition of land lease is leasing land for business affairs to obtain an income. Land lease income is obtained from businesses such as properties or utilities [18]. Land lease deployment would involve a complicated process because there is a lag time between the leased land and the development of infrastructure [19]. An incomplete infrastructure will inhibit the market from rent the land. This condition will encourage land owners to hold their land until the infrastructure is complete so that the land value increases in line with their earnings [20]. In this research, the land leased is beside the toll roads. The land is acquired not only for the use of toll road itself, but also to be leased after the toll road is completed.

## 2.4 Alternatives of institutional funding model

Five alternatives of institutional funding model of DDB and LL for the toll road project were developed, from which the most effective institutional model will be selected. Afterwards, it will be compared with the existing condition of toll roads in order to identify the gap. The main stakeholders in this funding model are sponsor company; SPC, a subsidiary of sponsor company; and LMAN, a government institution on land stewardship. Each alternative institutional model is developed based on three conditions: issuer of DDB (SPC or sponsor company); executor of LL (SPC or LMAN); and the number of SPC (one or two). If the issuer of DDB is SPC, then the model will become project finance. However, if the issuer is a sponsor company itself, then it becomes corporate finance. Specifically for the third alternative, it is a model that consists of two SPC. The first SPC has a duty to fund projects by issuing DDB while the second SPC has a duty to execute LL and build the toll roads. The conditions of each model are listed in Table 1.

**Table 1.** Institutional Model Alternatives

Condition	Alternatives				
	1 <sup>st</sup>	2 <sup>nd</sup>	3 <sup>rd</sup>	4 <sup>th</sup>	5 <sup>th</sup>
<b>Number of SPC</b>					
One SPC (*) or Two SPC (**)	*	*	**	*	*
<b>DDB Issuer</b>					
Project Finance (*) or Corporate Finance (**)	*	*	*	**	**
<b>LL Executor</b>					
SPC (*) or LMAN (**)	**	*	*	**	*

## 3 Research Method

Each variable will represent each of the research objectives. This research uses three stage in-depth interviews to answer these three research objectives. The terms of reference will be a guide during each stage of the in-depth interview and contain questions to experts according to the context of each research objective. The first in-depth interview is aimed at learning the roles stakeholders involved in DDB and LL schemes and analyzing them using the qualitative analysis. The second in-depth interview is aimed at identifying the institutional success factors and ranking them using the Relative Importance Index (RII) analysis. The results of this RII rank will be used as the basis for the Multi Criteria Analysis (MCA) on the results of the third in-depth interview to select the most effective alternative institutional model.

The experts invited for the in-depth interview are ten professionals with experience in infrastructure, especially toll roads. These experts are required to have a minimum of 10 years of experience and master degrees, and they come from diverse backgrounds including academia, government, toll road companies, infrastructure company guarantor, and financing company for infrastructure. Each institutional success factor will be assessed by experts in the second in-depth interview based on their importance. Ranks are calculated by using the following formula.

$$RII = \frac{5.n5 + 4.n4 + 3.n3 + 2.n2 + 1.n1}{5N} \tag{1}$$

The symbols n5, n4, n3, n2, and n1 represent the following: number of respondents answering very important, important, moderately important, slightly important, and not important, respectively, while ‘N’ notation is the total number of respondents.

The institutional success factors based on the RII will be converted into weights at the MCA. Higher RII ranks mean greater weights on the MCA. Each alternative institutional model will then be assessed based on these institutional success factors. In turn, each institutional success factor will be valued in its pages with institutional scale 1-10 on any alternative models. The average results of the expert's answers will be multiplied by the weighting of MCA which is then aggregated into a final value on each model. The institutional model with the highest content of success factors based on the MCA or MCA's highest-value model will be the model selected.

## 4 Results

### 4.1 Rank of institutional success factors

Based on the results of RII calculation, the factor that gets the first rank is 'Effective Management' with a score of 0.9143. The second rank is occupied by 'Effectiveness of Government' with a score of 0.8857. The third rank is occupied by 'Protection of Investors' with a score of 0.8571. The three lowest factors are by 'Adequate Financial Package', 'Complexity of Project Financing', and 'Local Financing' with a RII score of 0.6857; 0.6000; and 0.5714 respectively.

**Table 2.** Rank and Weights of Institutional Success Factors

Factors	RII Value	Rank	Weight	Factors	RII Value	Rank	Weight
X1	0.8857	2	16%	X6	0.6000	9	4%
X2	0.7143	7	7%	X7	0.6857	8	5%
X3	0.8571	3	15%	X8	0.7714	5	11%
X4	0.8000	4	13%	X9	0.5714	10	2%
X5	0.7429	6	9%	X10	0.9143	1	18%

### 4.2 Scoring of institutional funding model of DDB and LL

The scoring of the institutional funding model using MCA based on their weighting results from the RII calculation is shown in Table 2. From these results, the fourth alternative is a model with the highest score of 7.0479. This model uses the corporate finance scheme, a single SPC and LMAN as LL executor. The institutional model with the second highest score is the fifth alternative with a score of 6.8993. We can see that models with corporate finance scheme get higher score than models with project finance. It means that project finance is still not suitable to be implemented in Indonesia. The third highest score is obtained by the second alternative with a score of 6.6571. These results indicate that LMAN is better than SPC in executing LL scheme. The institutional model with the lowest score is the third alternative with a score of 6.4536. This indicates that the use of two SPC is not effective to be implemented.

## 5 Discussions

### 5.1 Stakeholder analysis for DDB and LL schemes

Issuing DDB with corporate finance scheme is needed to get the guarantee of bonds from the government. The guarantee is an advantage as it will increase DDB rating as rated by

the Credit Rating Agency before it is marketed in Indonesia Stock Exchange through securities companies. The research results show that LMAN is a government agency stakeholder best to execute LL scheme. Not only tasked to manage the land assets to be leased in LL scheme, LMAN also has another role in accordance with the objectives of this institution establishment. On toll road development, LMAN can reimburse bailouts issued by SPC to accelerate the process of acquiring land. According to Indonesian regulations, land acquisition is the government's responsibility (National Land Agency) using State Budget which requires a lengthy procedural bureaucracy before those funds can be used. Therefore, the SPC can fund the land acquisition before they are reimbursed by LMAN as a state instrument. Another LMAN role in supporting LL execution is that this institution can deposit funds without being influenced by State Budget periodization. Funds in LMAN should not be returned to the state at the end of December as per State Budget deadline. This role can be very helpful for stakeholders related to the development of toll roads, considering that the construction of toll roads is a project that exceeds one year in its implementation.

## **5.2 Institutional success factors**

Three institutional success factors with the highest value, namely 'Effective Management', 'Effectiveness of Government', and 'Protection of Investors', are factors that focus on the government. The results are in line with the concept that infrastructure development in Indonesia is the responsibility of the government. Therefore, the government is the most important stakeholder in infrastructure development especially toll roads.

## **5.3 Most effective institutional funding model**

Based on MCA results, the institutional funding model selected as the most effective model is the 4<sup>th</sup> alternative using corporate finance for issuing DDB, LMAN as the LL executor, and consisting of a single SPC. Corporate finance means that the project is funded by a sponsor company. The use of corporate finance schemes does not eliminate the presence of SPC on the project, which becomes important to maintain the project from a technical point of view. On the other side, project finance scheme is still difficult to apply in Indonesia, making it less commonly used because of the mismatch of regulations as one of the reasons. Based on the Financial Service Authority regulations, DDB issuance needs an enterprise financial reporting terms during the last three years. However, SPC are on average new companies and therefore would not be able to meet this requirement.

Only one of the five alternatives consists of two SPC. Based on MCA results, this alternative gets the lowest score. Higher score of corporate finance than project finance makes the use of two SPC no longer effective. In addition, higher score of LMAN than SPC as LL executor reduces SPC's responsibilities. Based on these two reasons, the presence of one SPC is enough to manage the project though it has a large scale. It is worth noting that despite the positive sides of having two SPC in terms of management and coordination, their ineffectiveness is greater than their benefits.

According to Article 11 (1) of Indonesian Law No. 2 of 2012, land acquisition for public interest must be held by the government and will be owned by government itself. On the other hand, paragraph (2) stated that State-owned Enterprises are able to own the land acquired by the government. Based on this law, SPC is not allowed to acquire land for public interest. Basic regulations for executing LL are the Regulations issued by the Head of National Land Authority No. 9 of 1999 and Minister of Finance Regulation No. 68 of 2014. Based on the first regulation, state owned lands are able to give their ownership and few of its authority to government banks, religious affairs agencies, or social agencies

selected by the government. In addition, according to the Minister of Finance regulations, state-owned property, which one of them is lands, can be used by the government to gain revenue by leasing them to other parties. Therefore, by taking this research's context, the lands beside toll roads can be used to gain revenue from leaser's mortgage payments. Because SPC cannot meet the required regulations, LMAN gets higher score in executing LL. In reverse, LMAN has a good position because of its status as part of the government and enables it to own lands. In addition, LMAN is an agency under the authority of the Directorate General of State Assets Management in Ministry of Finance. State-owned properties are also managed by the same directorate general. Therefore, this will give an advantage to LMAN in executing LL.

## 6 Conclusions

Every stakeholder has its own roles in DDB and LL scheme. The roles become the basic for developing the institutional funding model to ensure the DDB and LL schemes are running as expected. The institutional success factors were identified as parameters to score the five alternative models. Factors with the highest score are those related to the government, which shows that the government is the key stakeholder to develop infrastructure especially toll roads. The most effective institutional funding model is a model using corporate finance for issuing DDB, LMAN as the LL executor, and consisting of a single SPC.

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