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The Effect of Indonesian Government Rationalization Policy on the Investment Feasibility of the Solo-Mantingan-Ngawi Toll Road

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Abstract---*The government policy to reduce rates for the Solo-Mantingan-Ngawi toll road from Rp 1,300/km to Rp 1,000/km was stipulated in the Decree of the Minister of Public Works and Public Housing Number: 56/KPTS/M/2019 on January 14, 2019. This decree concerns the determination of motor vehicle classes and toll rates on the Solo-Mantingan-Ngawi Toll Road. This study analyzed the relationship between government policy for determining toll rates and its effect on investment feasibility.The analysis revealed that by changing toll rates, the investment feasibility of the Solo-Mantingan-Ngawi toll road was adversely affected. The Internal Rate of Return (IRR) value decreased from 15.73% to 13.58%, and the Net Present Value (NPV) decreased from Rp 5,495,247 million to Rp 1,357,181 million, with a cash flow deficit that increased from Rp 3 trillion to Rp 10.38 trillion. The payback period also increased from 14 years 5 months to 15 years. A review of the literature regarding the applicable rules revealed that the Indonesian government policy of reducing the Solo-Mantingan-Ngawi toll rate from Rp 1,300/km to Rp 1,000/km significantly affected the investment feasibility of the Solo-MantinganNgawi toll road. This policy reduced the initial cash flow for business entities involved in the project as they experienced a large cash deficit. By understanding the conceptual model, this study provided insights into the effects of government policy, especially in determining the Solo-Mantingan-Ngawi toll road rate and the investment feasibility of the toll road. Additionally, the conceptual model developed in this study is expected to provide an overview of the application of government policy for toll road investment businesses and other fields of investment.*

Keywords--- *Government Policy, Rate Rationalization, Investment Feasibility*.

I. INTRODUCTION

Recently, the government of the Republic of Indonesia has been focusing on infrastructure development, including toll roads. According to Government Regulation No. 15/2005, toll roads are public roads that are part of the national road network system and which require users to pay tolls to use them. Most of the funding for toll road infrastructure projects in Indonesia is under the Public-Private Partnership (PPP) scheme. The business entity invests in funding the toll road project. This funding is derived from two sources: business entities as equity investors and creditors or third-parties as debt investors or loan-fund suppliers.

The Indonesian government's plan, publicized on detik.com on April 27, 2018, was to reduce the toll rate on the

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Solo-Ngawi toll road from Rp 1,300/km to Rp 1,000/km. At this lower rate, it would cost Rp 90,000 to travel the whole length of the 90 km Solo-Ngawi toll road. To reduce the toll rate, the concession period was extended, vehicle classes were simplified and large vehicles paid cheaper toll rates. Vehicles were grouped into three classes: I, II, and III. The rate for class I was unchanged, but classes II and III were given the same rate and classes IV and V were given the same rate. The rates for classes II and III and for classes IV and V were indexed at 1.5 and 2 times the class I rate, respectively.

The Indonesian Government's plan was stipulated in the Decree of the Minister of Public Works and Public Housing No. 306/KPTS/M/ 018 on April 23, 2018, which concerns the determination of motor vehicle classes and toll rates on the Solo-Mantingan-Ngawi toll road, Ngawi-Ngawi IC Segment. The determination of the 91 km Solo-Mantingan-Ngawi toll road was stipulated in the Decree of the Minister of Public Works and Public Housing No. 56/KPTS/M/2019 on January 14, 2019, which concerned the determination of motor vehicle classes and toll rates on the Solo-Mantingan-Ngawi toll road. The basic toll rate on class I vehicles was Rp 1,000/km, classes II and III were Rp 1,500/km, and classes IV and V were Rp 2,000/km. These toll rates are shown in Table 1.

Table 1. Initial Toll Rates

Class	Initial Toll Rates (Rp/km)	
	2017	**2018**
I	1,300	1,000
II	1,950	1,500
III	2,600	1,500
IV	3,250	2,000
V	3,900	2,000

The focus of this study was the effect of the government policy of reducing toll rates on the investment feasibility of the Solo-Mantingan-Ngawi toll road. The analysis used the Internal Rate of Return (IRR), Net Present Value (NPV), and Payback Period (PP) as parameters. This conceptual model can be used to inform governmentpolicy decisions that reduce toll rates for the Solo-Mantingan-Ngawi toll road.

II. METHODOLOGY

In the change of scope report for the Solo-Mantingan-Ngawi toll road on August 8, 2017, this 90.4315 km stretch of road was treated as a part of the Trans-Java toll road. PT. Jasamarga Solo Ngawi (JSN) holds the concession, which was granted by the government for 40 years.

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Figure 1. A Map of the Solo-Mantingan-Ngawi Toll Road

The concession agreement was signed in 2011 with a PPP funding scheme. The toll road is economically viable but financially improper. The land acquisition was funded by the government, while the construction was a joint venture between the government and business entities, with one segment built by the government using the state budget.

In 2011, 20.9 km of the toll road was built by the government, and the business entity built the other 69.10 km. The total length was 90.10 km. According to the Change of Business Plan reports for 2017, the investment costs for this toll road were Rp 11,341 trillion, a large increase from the Rp 5,341 trillion in the 2011 Toll Road Concession Agreement (*Penandatanganan Perjanjian Pengusahaan Jalan Tol* or PPJT), see Table 2.

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Table 2. Investment Costs

Description	PPJT 2011 (Rp million)	PPJT 2017 (Rp million)
a. Construction cost	3,200,744	7,294,147
b. Toll equipment	27,482	91,946
c. The design	152,330	167,091
d. Supervision	200,222	263,527
e. Land acquisition costs	0	0
f. Escalation	0	899,816
g. 10% VAT	402,124	925,803
h. Overhead Cost	440,464	541,501
i. IDC	547,497	941,725
j. Financial Cost	167,399	216,297
Total Investment Cost	**5,138,262**	**11,341,853**

Table 2 shows that the investment feasibility for the Solo-Mantingan-Ngawi toll road was an Internal Rate of Return (IRR) of 15.73%, a Net Present Value(NPV) of Rp 5,495,247 million, a cash flow deficit of Rp 3 trillion, and a payback period of 14 years 5 months.

Toll Rates

Article 48 of Law No. 38 of 2004 concerns roads and regulates toll rates. Toll rates are calculated from the road users' ability to pay, the profitability of the vehicle operating costs, and the feasibility of investment. The toll rate is stated in the toll road concession agreement and is applied concurrently with the determination of the toll road operation. Evaluation and adjustment of toll rates are carried out biennially based on the inflation rate.

The vehicle operating costs profit is calculated from the difference in vehicle operating costs and the time on the toll road compared with the alternative public road. The investment appropriateness is calculated from the estimated exposure and the accuracy of all costs during the term of the concession agreement allowing the business entity to obtain an adequate return on its investment.

P1: Toll rates are determined based on the operational and maintenance costs and the toll revenues.

The basic principle of determining toll rates is to consider the financial situation of the government, investors, and road users. Toll rates must meet the requirements for investors so that they can return loans used to build the toll roads, finance operations, and maintain the toll roads. Toll rates must also be affordable for road users so that they can generate adequate revenue. If toll rates are too high, toll roads become less attractive and will not be used. Conversely, if the toll rate is too low, the investment cannot be recovered adequately and will affect the investment

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and development of other toll road projects (Prasetyanto, 2013).

P2: Toll rates determine the level of investment feasibility.

Investment Feasibility

Toll road investment is a substantial infrastructure investment. In addition to having sedentary (sunk) assets, toll road investment needs high levels of funding that must be provided at the beginning of the project (high up-front capital requirements). On average, these up-front costs are Rp 50–70 billion per km, excluding the cost of land acquisition, for a road structure at ground level (at grade), and a long (slow) payback period that lasts between 20 to 30 years. Costs increase for toll road structures that are above ground level (elevated) and can reach Rp 150 billion per km. In this period, the investment risk profile is constantly changing, following the project life cycle. Because of their natures and characteristics, the government and prospective toll road business entities are required to conduct an in-depth financial feasibility analysis even for different interests (Wibowo, 2012).

The appropriate investment is calculated from an estimation of all costs over the term of the concession agreement, which allows the business entity to obtain an adequate return on its investment. The investment method is based on financial analysis. The two main factors in this approach are the costs incurred (for road construction, road operation, and maintenance) and the costs derived from toll road traffic.

The financial analysis largely affects decision making about the level of the toll rates. Financial analysis for toll road projects usually involves four main indices: the Financial Net Present Value (FNPV), the Financial Internal Rate of Return (FIRR), the Financial Benefit-Cost Ratio (FBCR), and the time of return (Prasetyanto, 2013).

P3: Investment feasibility is influenced by the projected operating and maintenance costs and toll revenues.

Government Policy Factors

From the perspective of investors, an investment will be attractive if it generates a reasonable profit and provides a guarantee of comfort in investing. Nevertheless, investing in toll road infrastructure projects always involves elements of uncertainty and risk. This is because the investment requires very high initial funding that is embedded (sunk), hasuncertain income streams in the early years, and has long-term investment returns (cost recovery) between 25 and 35 years (Pratiwi, 2005).

P4: Government policy is one of the uncertainty factors affecting investment feasibility.

According to the Technical Guidelines 01-2005 regarding Toll Road Investment Risk Analysis, the risk is a matter of varying degrees of uncertainty, for instance, project performance risk, project credit risk, governance risk (including legal and regulatory risks), and the risk of force majeure. One of the risks that occurs during the post-construction operational and maintenance periodconcerns the toll revenue. This revenue is put at risk by the mechanisms for determining the initial toll rates and for adjusting the toll rates.It has been reported that the determination of the initial rates and the adjustment mechanism are not transparent and consistent, resulting in

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revenue that does not conform to the business plan.

In addition to the risk of toll revenues being insufficient, it has been suggested that the high level of political intervention in the toll roadoperation results in high-costs, reducing the revenue. Thus, it appears that government policies, as outlined in the rules and regulations for determining initial rates and adjusting rates, have an impact on the level of revenue.

P5: Government policy is a factor in determining toll rates.

The value of the investment feasibility was determined using the following valuation methods:

1. Internal Rate of Return Method (IRR)

$$IRR = \frac{I - \Sigma\, CFt}{(1+i)\text{^}t}$$

In which:

I = present value of the project cost

CFt = cash inflows received in period t

i = requested rate of return

t = time

The IRR assessment criteria are:

If IRR > the interest rate that has been set, the investment is accepted.

If the IRR < the interest rate that has been set, then the investment is declined.

2. Net Present Value Method (NPV)

$$NPV = \frac{\Sigma\, CFt}{(1+i)\text{^}t} - I$$

$$NPV = (\Sigma\, CFt\ dft) - I$$

$$NPV = P - I$$

In which:

I = present value of the project cost

CFt = cash inflows received in period t

i = requested rate of return

t = time

P = present value of future project cash inflows

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dft = discount factor

The NPV assessment criteria are:

If NPV > 0, the investment is accepted.

If NPV < 0, the investment is declined.

3. Payback Period Method (PP)

$$PP = \frac{Initial\ Investment}{Annual\ Operating\ Cash\ Flow\ Amount}$$

The evaluation criteria for the payback period are:

If the payback period < maximum time, the project proposal is accepted.

If the payback period > maximum time, the proposed project is declined.

This study used the financial plan calculation model for the 2017 Solo-Mantingan-Ngawi toll road but applied rate changes and the simplified vehicle classes shownin Table 1. The analysis used the 2017 investment cost (Rp 11,341 trillion), and the calculation parameters (for example, interest rates, inflation) taken from the 2017 business model.The results of the investment feasibility analysis were: the IRR (Internal Rate of Return) was 13.58%, the NPV (Net Present Value) wasRp 1,357,181 million with a cash flow deficit amounting to Rp 10.38 trillion, and a 15 yearpayback period.

III. RESULTS

The financial model analysis indicated that the feasibility of the Solo-Mantingan-Ngawi toll road investment had a decreasing IRR and NPV, a large cash-flow deficit, and an extended payback period.Consideration of previous studies on the rules and theories regarding investment in toll road concessions together with the conceptual model led us to conclude that the Indonesian government's policy of reducing the Solo-Mantingan-Ngawi toll road rate from Rp 1,300/km to Rp 1,000/km greatly affects the investment feasibility of the toll road.The initial cash flow for the business entities involved in the project becomes problematic as they experience a large cash deficit.

IV. CONCLUSION

Understanding the conceptual model developed in this study is expected to provide insights into the effects of government policies on the feasibility of investing in the toll roads. It is especially relevant to the Solo-Mantingan-Ngawi toll road rate but can also be applied to other toll roads. Finally, the business investment climate, especially for toll roads in Indonesia, is expected to conform to the regulations set by the previous government.

Further studies should analyze the application of government policies to the toll road investment business, in particular, but also in other fields of investment, accompanied by a more detailed analysis of the toll road business plan.

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