

Investment Efficiency Analysis in Tangerang Regency Using The Incremental Capital Output Ratio (ICOR)

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Abstract

This study explores investment efficiency in Tangerang Regency through the lens of the Incremental Capital Output Ratio (ICOR). ICOR acts as a key indicator to assess how effectively additional investments contribute to economic growth in the region. As a vital industrial and economic center in Banten Province, Tangerang Regency has seen rapid industrial development and improvements in infrastructure. However, it is essential to evaluate investment efficiency to ensure that these investments positively impact economic growth. The research employs a descriptive quantitative approach, utilizing secondary data from the Central Bureau of Statistics (BPS), regional financial reports, and other official sources. The findings reveal that ICOR values in Tangerang Regency have experienced fluctuations over the past few years. Prior to the COVID-19 pandemic, the ICOR value hovered around 4, indicating relatively efficient investment. However, in 2020, the pandemic's effects resulted in a negative ICOR of -6.04, highlighting ineffective investment in generating additional output. In the post-pandemic period, the ICOR rose to above 5, signaling a need for investment optimization to improve efficiency.

Keywords: *Investment Efficiency, ICOR, Economic Growth, Tangerang Regency, Infrastructure.*

INTRODUCTION

Economic development is one of the main focuses in efforts to improve people's welfare in various regions. In this context, investment plays a very important role as the

458

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main driver of economic growth. When investment is carried out efficiently and on target, it can accelerate economic growth, create new jobs, and increase people's income and welfare. However, to find out how much investment contributes to economic growth, we need an indicator that can evaluate how efficient the investment is. One indicator that is often used is the Incremental Capital Output Ratio (ICOR).

ICOR is a ratio that describes the relationship between additional investment and additional output produced. In other words, ICOR measures how much investment is needed to produce one additional unit of output. The smaller the ICOR value, the more efficient the use of capital in driving economic growth. Conversely, a high ICOR value indicates that investment is less efficient. High ICOR values can be caused by various factors, such as inefficiency in allocating resources, inadequate infrastructure quality, or regulations that hinder the investment process. Therefore, ICOR analysis is very important to assess the effectiveness of development and investment policies in a region. By understanding ICOR, we can be better at planning and implementing investments that are truly beneficial to the community.

Tangerang Regency, as a buffer zone for the capital city and also an industrial center in Banten Province, has enormous economic potential. This regency is known for its rapid industrial development, covering various sectors, such as manufacturing, services, and trade. In addition, infrastructure support such as toll roads, ports, and airports also strengthen the attractiveness of Tangerang Regency as an investment destination. In recent years, the local government has made great efforts to encourage as much regional investment as possible. This effort is realized through a series of policies and various infrastructure development programs. However, the fundamental question that really needs to be answered is about the level at which such investment is able to drive economic growth efficiently.

This study has a specific objective to analyze the efficiency of investment in Tangerang Regency using an ICOR approach. This analysis is important to evaluate the ability of additional investment in Tangerang Regency to drive economic output. In addition, this study intends to identify various factors that influence the ICOR value in this region, such as investment climate, infrastructure quality, regulations, and labor market conditions.

In the policy scope, the results of a particular ICOR analysis can be used as a consideration by local governments. Thus, local governments can formulate a development strategy that is much more effective and much more efficient. Local governments can use information on ICOR values to identify sectors with great potential



in driving economic growth, and design policies to support the development of these sectors. In addition, a deep understanding of the factors that influence investment efficiency can help the government overcome various obstacles that reduce investment effectiveness.

Through this study, we hope to provide a clear and comprehensive picture of investment efficiency in Tangerang Regency. The findings of this study will not only be useful for local governments in formulating development policies, but also for investors and other stakeholders in making better investment decisions. By improving investment efficiency, we hope that economic growth in Tangerang Regency can continue to accelerate, which in turn will improve people's welfare.

In this study, we will use quantitative methods by relying on secondary data obtained from the Central Bureau of Statistics (BPS), regional financial reports, and other sources. We will conduct an ICOR analysis by calculating the ratio between additional investment and additional output in Tangerang Regency during a certain period. In addition, we will also compare the ICOR value of Tangerang Regency with other regions to assess its relative level of efficiency.

LITERATURE REVIEW

ICOR (Incremental Capital Output Ratio) is an indicator used to measure the efficiency of investment in driving output growth. This concept was first introduced in economic growth theory to show how much additional capital is needed to produce one additional unit of output. Mathematically, ICOR is calculated by comparing changes in investment with changes in output (GDP or GRDP) in a certain period.

$$ICOR = \frac{\Delta K}{\Delta Y} = \frac{I}{\Delta Y} = \frac{I_t}{Y_t - Y_{t-1}}$$

Explanation:

I_t = PMTB year t

Y_t = Output year t

Y_{t-1} = Output year t-1

If the calculation results show a lower ICOR value, it means that the investment made is more efficient in producing output. Conversely, if the ICOR value is higher, it indicates that the investment is less efficient in creating output. In the context of regional



development, ICOR serves as an important tool to evaluate the effectiveness of investment policies from both the government and the private sector.

There are several factors that influence the ICOR value in a region. First, the quality of infrastructure such as roads, electricity, and communication facilities plays a major role in increasing investment efficiency. Second, a conducive investment climate, supported by regulations that facilitate licensing and political and security stability, is an important factor in making investment decisions. Third, the availability of skilled and productive workers can increase the efficiency of capital use. Fourth, the use of advanced technology also contributes to increasing productivity and investment efficiency. Finally, the characteristics of the dominant economic sector in a region also affect investment efficiency.

Several studies have been conducted to evaluate investment efficiency based on ICOR values in various regions. For example, research by Daryanto (2019) in West Java Province shows that the manufacturing sector has a lower ICOR than the agricultural sector, indicating higher efficiency. On the other hand, a study by Handayani and Putri (2020) found that ICOR values in several regions in Indonesia tend to be high, especially in areas with inadequate infrastructure and an unfavorable investment climate. Kuncoro's (2018) research also highlights the importance of regulatory reform and improving the quality of human resources (HR) as the main factors in reducing ICOR values and increasing investment efficiency.

Tangerang Regency has great economic potential, especially with the presence of rapidly developing industrial areas. Industrial areas such as Cikupa and Balaraja have become significant centers of economic activity. In addition, infrastructure developments such as the Jakarta-Merak toll road and access to Soekarno-Hatta Airport have further increased the attractiveness of Tangerang Regency as an investment destination. The local government also continues to encourage investment through various pro-investment policies. However, it is important to evaluate the efficiency of these investments so that the resulting economic growth is comparable to the capital invested. Therefore, ICOR analysis is very relevant to measure the effectiveness of investment in this region.

ICOR plays an important role in development planning, especially in determining investment needs to achieve economic growth targets. The government can use it to identify priority sectors, where sectors with low ICOR values can be the main focus of investment because they are more efficient in generating economic growth. By knowing the ICOR value, the government can also determine the investment targets needed to achieve the expected growth rate. ICOR analysis also serves as a policy evaluation tool,

461



helping the government assess the effectiveness of investment policies that have been implemented and make adjustments if necessary to improve investment efficiency.

This study is based on the theory of economic growth that emphasizes the importance of investment efficiency in driving growth. One of the theories used is the Harrod-Domar theory, which states that economic growth is influenced by the level of savings and investment efficiency, as measured by ICOR. In the context of Tangerang Regency, this theory is used to evaluate the extent to which additional investment is able to drive economic growth efficiently. By referring to the literature and these theories, this study aims to analyze the ICOR value in Tangerang Regency, identify the factors that influence it, and provide policy recommendations to improve investment efficiency in this area.

RESEARCH METHOD

This study uses a descriptive quantitative approach to analyze the Incremental Capital Output Ratio (ICOR) value in Tangerang Regency. This approach was chosen because it allows us to measure investment efficiency based on quantitative data, such as the amount of investment and economic growth in the region. With descriptive analysis, we will be able to describe the pattern and trend of ICOR values over a certain period, thus providing a clearer picture of investment efficiency in an area.

The research location is Tangerang Regency, which has a strategic role as an industrial and economic center in Banten Province. The research objects include investment data and economic output, especially Gross Regional Domestic Product (GRDP), with a focus on the main economic sectors. The data used in this study come from various official agencies, such as the Central Statistics Agency (BPS), the Investment and One-Stop Integrated Service Office (DPMPTSP), as well as local government financial reports and relevant policy documents.

Data collection is done through documentation studies by accessing available official reports and statistics. We collect data on investment and economic output over a certain period of time (e.g., 5-10 years) to ensure accurate analysis results. Data analysis is done by calculating the ICOR value through a comparison between changes in investment (ΔK) and changes in economic output (ΔY). In addition, we also use trend analysis to see the development of investment efficiency from year to year, as well as comparing the ICOR value of Tangerang Regency with other regions or national standards.



To understand the factors that influence ICOR, this study links the results of ICOR calculations with infrastructure conditions, regulations, labor quality, and regional policies. Investment efficiency is measured based on the ICOR standard, where a value below 4 is considered to reflect good efficiency. We maintain the accuracy of the study by ensuring the validity and reliability of the data through verification from official sources. However, this study also has limitations, such as limited data availability for a certain period and external factors that are difficult to measure directly. Nevertheless, we hope that this study can provide comprehensive insights for policy makers in an effort to improve investment efficiency in Tangerang Regency.

RESULTS AND DISCUSSION

Based on data obtained from BPS, the ICOR calculation in Tangerang Regency was carried out for the period 2017-2024. The calculation results show variations in ICOR values between years, which reflect fluctuations in investment efficiency in this region.

Table 1: Incremental Output Ratio of Tangerang Regency Year 2017 - 2024

Year	PDRB ADHK 2010 (Rp. Trillion)	Change (Rp. Trillion)	PMTB ADHK 2010 (Rp. Trillion)	ICOR
2017	86,96	4,78	19,53	4,08
2018	92,01	5,05	20,78	4,12
2019	97,13	5,12	22,28	4,35
2020	93,48	- 3,65	22,06	- 6,04
2021	97,87	4,39	23,15	5,27
2022	103,22	5,35	24,36	4,55
2023	108,57	5,35	26,53	4,96
2024	114,00	5,43	27,46	5,06

Source: BPS Tangerang Regency

The results of the ICOR calculation for Tangerang Regency in Table A. show that investment efficiency has fluctuated in the last eight years. In the period 2017 to 2019, the ICOR value was in the range of 4, indicating relatively good investment efficiency. However, in 2020 there was an economic contraction due to the COVID-19 pandemic which caused the ICOR value to become negative (-6.04), this indicates that the



investment made could not produce additional output due to the impact of the pandemic which hampered overall economic activity.

After the pandemic, the ICOR value increased in 2021 to 2024, reaching a figure above 5. This indicates an increase in investment, but with lower efficiency compared to the years before the pandemic. The main causes of this increase in ICOR are most likely the increase in investment costs due to rising raw material prices, limited skilled labor, and regulatory barriers that slow down investment effectiveness. In addition, although infrastructure in Tangerang Regency continues to develop, there are still challenges in terms of resource distribution and industry readiness to adopt new technologies.

When compared to the standard of good investment efficiency, namely ICOR below 4, the condition of Tangerang Regency after the pandemic shows the need for improvements in various aspects of investment. Sectors that have high potential in investment efficiency, such as manufacturing and services, need more attention in the form of policy incentives and improving the quality of human resources. In addition, improving infrastructure connectivity and ease of licensing are also important factors in reducing investment costs and increasing regional economic competitiveness.

Based on these findings, several recommendations that can be implemented to improve investment efficiency in Tangerang Regency are optimizing investment incentive policies, increasing workforce capacity through skills training, and encouraging technology adoption to increase productivity. With the implementation of the right strategy, it is expected that the ICOR value can return to a lower level, reflecting higher investment efficiency and more sustainable economic growth.

CONCLUSION

Investment efficiency in Tangerang Regency has fluctuated in recent years. Before the COVID-19 pandemic, the ICOR value showed a fairly good level of efficiency. However, the pandemic had a significant impact, causing a sharp economic contraction and even recording a negative ICOR value in 2020. After the pandemic, although investment continued to increase, the ICOR value was still above 5, indicating that investment efficiency needs to be improved in order to provide an optimal impact on regional economic growth.

To improve investment efficiency, local governments need to focus on several important aspects, such as strengthening infrastructure, improving the quality of the workforce, and improving investment regulations. Adequate infrastructure will facilitate the distribution of goods and services, while skilled workers can increase productivity. In

464



addition, policies that support investment, including incentives for strategic sectors, can attract more quality investment that is oriented towards increasing economic output.

Compared to the national ICOR average of 6.93, Tangerang Regency shows better investment efficiency, with values ranging from 4.08 to 5.27 in recent years (2017 - 2024). This shows that investment in Tangerang Regency is more productive in generating economic output compared to other regions in Indonesia. However, the increasing trend in ICOR post-pandemic indicates that there are challenges that need to be overcome to maintain this efficiency.

With an ICOR condition lower than the national average, Tangerang Regency has great potential to become a more competitive investment center. To maintain investment efficiency, a strategy is needed that includes strengthening infrastructure, improving the quality of the workforce, and reforming investment policies. If these steps are implemented effectively, Tangerang Regency can continue to drive sustainable economic growth and increase its competitiveness as an investment center in Indonesia.

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465



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