
Investment strategy development: does public service serve the investor well?

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Abstract: This study aimed to determine the investment index and its development strategies in Malang City, Indonesia. A descriptive quantitative approach was carried out using the ICOR formula. The results showed that the ICOR of Malang City had not reached the optimal index yet. Therefore, long-term investment is necessary to be done in Malang, considering that an additional lag in the ICOR causes the ICOR number to get closer to one. The results of this study could be utilised by the local government in developing a more comprehensive policy on investment in Malang. Furthermore, this research result also can be used by society to enlarge their knowledge before doing investment in Malang City.

Keywords: incremental capital-output ratio; ICOR; investment; Malang City.

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1 Research background

Regional development, at the macro level, is inseparable from the development of investment distribution and allocation between regions. As a consequence, competition between regencies/cities arises. In the era of autonomy, district/city governments should deal with both external and internal problems.

The economy of Malang City, directly and indirectly, is significantly influenced by the development of the external and internal environment. As one of the second-largest city in the province of East Java, Malang does not has any information about the investment index by regency/city is available so that no information on the position of the Malang City Investment Index for regencies/cities in East Java province is accessible (Situmorang et al., 2019). In case, this index is very useful for the investor as well as for the government to know their area investment competitiveness (LM, 2017). As time goes by, and for the dynamic competition in various fields, the Government of Malang City is required to create an investment climate. To find out data and information related to investment, in 2019, the Regional Investment Index Document was prepared to provide information on Malang City investment index position. This research was expected to be useful for the formulation of cross-sector investment policy in accelerating economic development in Malang. The arrangement of the Malang Regional Investment Index needs to identify investments competitiveness in Malang City and determine what strategies and programs are needed to improve the Malang Regional Investment Index itself. In addition, this research result also can be used by society as additional consideration and knowledge before deciding to invest their capital in Malang city.

2 Literature study

2.1 Investment

Investment is a term with several meanings related to finance and economics. It relates to the accumulation of an asset in the form of an expectation of future profits. In-Law No. 25 of 2007 concerning Investments explains that investment is all forms of investment activities, both by domestic and foreign investors to do business in the territory of the Republic of Indonesia.

According to Hou et al. (2015) and Kvon et al. (2017), investment is intended for one or more assets owned and usually for a long period in the hope of earning profits in the future Based on economic theory, investment means the purchase (and production) of capital goods for future production, not consumption (production goods).

2.2 *Role of investment for regional development*

a Capital source

Any business activities, including the development carried out by the regions, requires capital. Capital is a very significant factor in every business activity as its source of energy, both for continuity, development, and business growth (Zhang, 2018). For this reason, investment activities require sources of capital for development activities.

b Employment

Investment also has a notable meaning in employment, because it, both national and foreign, can increase activities or revive the real sector that can absorb labour, thereby reducing unemployment. The government directs foreign investment towards employing local workers, opening new jobs, and not encouraging capital-intensive economic activities rivalling labour-intensive economic activities (Alfaro, 2017; Long et al., 2015). In addition, investment growth also will higher the amount of corporate social responsibility (CSR) that will help society welfare improvement (Karundeng et al., 2020).

c Technology transfer

Investments, especially foreign investment, are also expected to provide technology transfer (Salim et al., 2017; Sarkodie and Strezov, 2019). In general, developing countries, including Indonesia, in the mastery of technology, are left behind developed countries. Investments generally by investors from developed countries are also expected to bring advanced technology to Indonesia that can be mastered by Indonesian workers.

d Original local government revenue

Investment can develop the real economic sector, which can encourage the community's income to increase. In line with the Regional Autonomy Policy, in which each region has the right to explore sources of income, local governments explore all economic potentials they own. Investment can be a source of regional revenue with its multi-effects in economic development (Kristiana et al., 2020). Investors, when entering an area and establishing factories, provide benefits in the form of, first, wages, salaries, and benefits received by workers, employees, and factory entrepreneurs; secondly, payments from factory entrepreneurs to suppliers of various input requirements required in plant operations; and, thirdly, the increase in payments received by the consumer goods industries in the regions brought by expenditures from new income (Taek et al., 2020). The contribution of the investment sector to the original regional revenue can, at least, be obtained from the increase in incomes from regional levies, land and building tax (PBB), foreign exchange, and personal income tax (PPh), as well as the community income.

2.3 *Investment: affecting factors*

A healthy business environment is needed to attract domestic and foreign investors. Many surveys have proven that the main factors affecting the business environment are

labour and productivity, the regional economy, physical infrastructure, socio-political conditions, and institutions. Igwe et al. (2018) showed that several indicators influence an investment climate to be conducive, including:

- 1 regional infrastructure
- 2 access to land
- 3 business licensing
- 4 transaction fee
- 5 private business development program
- 6 local regulation
- 7 the capacity and integrity of regional heads
- 8 interaction between entrepreneurs and regional governments
- 9 security and resolution of business conflicts.

Regional infrastructure becomes the dominant factor in attracting investment (Hu et al., 2018). Besides the nine factors above, institutions are more prioritised because good institutions can support economic transactions to be more efficient, smooth, guaranteed, orderly, and stable. Jibao et al. (2017) also reveals that some business actors must pay unofficial fees/illegal levies when distributing goods between regions. Illegal levies make the cost they expend become higher, which can hamper the trade between regions, as one of the business activities of investors. Investors can take this issue as a consideration before investing in an area. Furthermore, based on Balasubramanian (2020) found that policymaker plays a big role in creating a good environment for investment. It is in line with Terziev and Georgiev (2020) that program created by government has a fundamental effect on society.

3 Research method

3.1 Incremental capital-output ratio

Simply put, incremental capital-output ratio (ICOR) constitutes a measure that states the amount of additional capital needed to increase one unit of expenditure. The data used in the preparation of the ICOR analysis is sourced from the gross regional domestic product (GRDP) based on the constant prices of 2010 while the gross fixed capital formation (GFCF) or the investment used in the calculation of ICOR is GFCF or investment based on the constant prices of 2010 because the economic growth is measured using GDP at the constant prices of 2010.

The calculation of output in the ICOR preparation should consider the gross value added (there is still an intermediate cost) because the value of the increase in output is reflected in the increase in value-added. The value-added used in calculating ICOR is that of GRDP calculated at the constant prices of 2010. The increase in output of a business field is calculated by the difference of the output (value-added) of each business field in the GRDP of the year y from that of the previous year $y-1$.

In practice, investment takes a long time to show its results. The period needed to obtain feedback from the investment is referred to as 'Lag'. Considering this period, and because the data used is time-series data, to obtain a representative ICOR value, a simple average calculation is performed (Li, 2016). The ICOR calculation formula can be expanded to be as follows:

- ICOR Lag-0 (with no lag)

where:

$$n = y_2 - (y_1 - 1)$$

The ICOR Lag-0 formula is interpreted that the investment in year y (I_y) will generate output in year y itself. Therefore, no time lag is needed for an investment to generate additional output.

- ICOR Lag-1

where:

$$n = y_2 - (y_1 - 1)$$

The ICOR Lag-1 formula is interpreted that investment in year y (I_y) will only generate additional output in the year $y + 1$. Thus, there is a one-year lag until the investment generates additional output.

- ICOR with Lag-2

where:

$$n = y_2 - (y_1 - 1)$$

The ICOR Lag-2 formula is interpreted that investment in year y (I_y) will only generate additional output in the year $y + 2$. Thus, there is a two-year lag until the investment generates additional output.

- ICOR with Lag-3

where:

$$n = y_2 - (y_1 - 1)$$

The ICOR Lag-3 formula is interpreted that investment in year y (I_y) will only generate additional output in the year $y + 3$. Thus, there is a three-year lag until the investment generates additional output. Seeing the fact that the output generated by an investment requires different time, the calculation of the ICOR coefficient will be more representative if it is calculated in a certain period.

4 Results and discussion

4.1 A general overview of the economy of Malang City

As an important aspect that determines the status of a city, in terms of developed or developing, economic growth is very crucial. The characteristic of an advanced city is its

significant economic growth (Van den Berg, 2016). Several factors can affect the rate of economic growth (Wuri, 2018), the most influential of which is the gross domestic product (GDP), which is depicting the total goods and services produced in one period. It will then be used as a benchmark in calculating the rate of economic growth. One of the causes of the declining economy is the total production that decreases from year to year.

From the analysis, it can be seen that the growth of economic sectors in Malang City tended to decrease from 2011 to 2017. Nevertheless, several sectors have increased growth since 2016, including:

- processing industry
- water supply, waste management, and waste recycling
- construction
- transportation and warehousing
- provision of accommodation and food and drink
- others.

Table 1 provides information to find out the growth of other sectors in the GRDP.

The number of unemployed people in Malang City in the past three years has been quite volatile. There was a decline from 2015 (32,444) to 2016 (30,383), followed by an increase in 2017 by 33,715. These conditions were following the absorption of labour in the industrial sector, in which in 2015, there was a growth of employment of 3.29%, which increased to 207.93% in 2016 and decreased in 2017 to -27.30%. So, in 2017, there was an increase in unemployment by 33,715 people.

Inflation, in general, is defined as general and continuous price increases (Hansen, 2016). Bank Indonesia's monetary policy is aimed at managing price pressures originating from the aggregate demand relative to supply. Several reasons cause inflation in a country. In Malang, it has a volatile journey. Here are data of inflation in Malang City for the last three years:

The data in Table 2 shows that inflation in Malang City reached 7.71% in 2017. This high rate was estimated to be caused by the reduction of fuel subsidies at the end of 2014, which led to price changes. Relatively high prices are one of the causes of rising inflation in an area (Latumaerissa, 2011). In 2016, inflation in Malang City decreased significantly to 3.27% after the Government of Malang City managed to control prices, leading to good control of inflation. But in 2017, the inflation rate of Malang City increased slightly to 3.39%.

In GRDP, the industrial sector is strategic and has the second-largest contribution value after wholesale and retail trade, repair of motor vehicles and motorcycles. In 2016, this sector experienced rapid growth in the number of businesses, especially in large industries (by 220% from the previous year) and industrial centres (by 306.23% from the previous year). In terms of business unit growth from 2011 to 2018, it can be seen that the number of large industries, including Small and Medium Industries, tended to decline. Meanwhile, industrial centres and non-formal industries, although there was a decline in number until 2017, experienced significant growth in 2018. Overall, the number of labour force in Malang City increased along with the increasing population. In 2017, it reached 443,035 people, 411,042 of which were already employed and 33,715 of which were still unemployed and looking for work. The results of the analysis show that the labour force

participation rate in 2017 reached 64.77%, while the unemployment participation rate was 4.93%.

Table 1 Economic sector growth analysis for 2011–2017

<i>No.</i>	<i>Sector</i>	<i>Year</i>						
		<i>2011</i>	<i>2012</i>	<i>2013</i>	<i>2014</i>	<i>2015</i>	<i>2016</i>	<i>2017</i>
1	Agriculture, forestry, and fisheries	1.90	0.21	−0.94	1.86	2.23	0.08	−0.04
2	Mining and excavation	−2.10	−2.68	−4.04	−1.87	−3.58	−5.58	−0.35
3	Processing industry	2.69	2.78	1.93	2.81	2.51	1.95	3.67
4	Electricity and gas procurement	8.15	10.24	1.59	4.23	−0.01	4.73	3.84
5	water supply, waste Management, and waste recycling	5.18	4.63	8.24	3.09	3.71	4.92	7.02
6	Construction	7.62	8.14	8.69	8.84	5.18	6.74	7.24
7	Wholesale and retail trade; repair of motor vehicles and motorcycles	7.51	7.60	7.09	5.48	6.56	6.31	5.60
8	Transportation and warehousing	5.31	7.46	7.34	7.17	6.83	7.47	9.25
9	Provision of accommodation and food and drink	7.50	9.27	8.01	10.46	8.12	7.89	8.34
10	Information and communication	8.48	10.33	11.96	8.14	8.14	9.09	8.02
11	Financial services and insurance	7.82	9.33	12.72	6.72	7.13	7.89	2.77
12	Real estate	7.63	7.80	7.45	7.25	7.25	7.41	4.01
13	Company services	5.66	5.74	6.97	8.77	8.77	7.13	5.03
14	Government administration, defense, and compulsory social security	4.68	1.54	.82	0.11	3.72	1.71	3.24
15	Educational services	7.62	7.20	8.76	8.31	8.31	7.92	7.50
16	Health services and social activities	13.87	10.62	9.18	9.07	9.95	8.27	7.57
17	Other services	4.03	3.07	3.93	4.55	3.88	4.37	4.28

Table 2 Inflation rates in Malang City for 2015–2017 (%)

<i>No.</i>	<i>Year</i>	<i>Inflation rate</i>
1	2015	7.71%
2	2016	3.27%
3	2017	3.39%

Table 3 Total workers and labour force participation rate

No.	Main activity	Number (inhabitant)		
		2015	2016	2017
A	Labour force	409,773	407,712	443,035
1	Working	377,329	377,329	411,042
2	Open unemployment and job seekers	32,444	30,383	33,715
		409,773	407,712	443,035
B	Non-labour force	265,002	265,002	240,980
	SUM (A+B)	674,775	672,714	684,015
	Labour force participation rate	60.73	60.61	64.77
	Unemployment rate	4.81	4.52	4.93

In terms of education level, 40.94% (dominant) of the total job seekers graduated from Bachelor/S1, followed by 29.33% of high school/ vocational high school graduates. Thus, in terms of quality, Malang City's human resources workforce is categorised as moderate.

4.2 ICOR analysis

Calculation of ICOR of Malang can be done through four approaches, namely, first, an approach seeing that investment will directly generate output in the same year where it is invested, referred as to Lag-0. Secondly, an approach referred as to Lag-1 viewing that investment will generate output in the next year after being invested. Thirdly, an approach called Lag-2, in which investments in a particular year will produce output in the next two years. Fourthly, an approach called Lag-3, in which the investment in a certain year will generate output in the next three years. An investment can be said to be efficient if the ICOR value is close to 0 (zero).

4.2.1 ICOR Lag-0

ICOR Lag-0 is calculated using the following formula

$$ICOR = \frac{I_t}{(Y_t - Y_{t-1})}$$

where I is the investment value in year y while $Y y$ is the value of output in year y , the value of $Y y - 1$ is the value of output in the year before year y . So, by calculating the ICOR Lag-0 formula above, the values of ICOR Lag 0 in Malang are as follows

Table 4 Calculation of ICOR with Lag-0

Year	Y	GFCF	ICOR
2012	35,355,741,000		
2013	37,547,739,000	12,007,693,000	5.48
2014	39,724,700,000	12,505,079,000	5.74
2015	41,952,126,000	13,456,211,000	6.04
2016	44,303,901,000	14,330,201,000	6.09
2017	46,824,751,000	15,226,797,000	6.04

ICOR Lag-0 values for the period of 2013 to 2017 are available. In 2013, it was 5.48, meaning that, to get an increase in output on GRDP by 1 unit, the investment must be 5.48 times greater than the total output desired. ICOR Lag-0 in 2014 was 5.74 or decreased, followed by a drastic decrease in 2015 and 2016 to 6.04 and 6.09, in line with the increase in capital in 2016 and 2017. The fluctuation in the values of ICOR Lag-0 that occurred from 2013 to 2017 indicates that investment in Malang at the period was still inefficient, which caused the economic growth to slow.

4.2.2 ICOR Lag-1

Not all investments increase their output in the same year. Medium and long-term investments have an impact on output in the next one year. Therefore, ICOR calculations require a long-range of annual data to see the effectiveness and efficiency of investments. Relating to the calculation of the ICOR of Malang City, the data that can be obtained were from 2013 to 2017. Therefore, the calculation of the ICOR of Malang City was only done up to Lag 1. However, for periodic comparison, the ICOR of Malang City was counted until Lag-3. ICOR Lag-1 calculation formula is as follows:

$$ICOR = \frac{I_t}{(Y_{t+1} - Y_t)}$$

where I_y is the value of investments in year y , Y_{y+1} is the value of output in 1 year after y , and Y_y is the value of output in year y . The values resulted from the calculation of the ICOR Lag-1 components are shown in Table 5.

Based on Table 5, the value of ICOR Lag-1 in 2017 cannot be known because of the unknown changes in the values of output and GFCF in 2018. The values of the ICOR Lag-1 of Malang City show a trend fluctuating but not significant, and are less efficient. From 2014 to 2015, there was an increase in the value of ICOR Lag 1 in Malang City. ICOR Lag-1 was better than ICOR Lag-0, meaning that in Malang City, an investment cannot generate its output in the same year when it is done.

Table 5 Calculation of ICOR Lag-1

<i>Year</i>	<i>Y</i>	<i>GFCF</i>	<i>ICOR</i>
2013	37,547,739,000	12,007,693,000	5.52
2014	39,724,700,000	12,505,079,000	5.61
2015	41,952,126,000	13,456,211,000	5.72
2016	44,303,901,000	14,330,201,000	5.68
2017	46,824,751,000	15,226,797,000	

4.2.3 ICOR Lag-2

Definitively, the impact of short-term investments can be perceived in a maximum of one year, while that of long-term investments can be realised after more than one year. ICOR Lag-2 explains that investment in a certain year has an impact in the next two years. It is certainly influenced by several things such as licensing bureaucracy, socio-cultural conditions, public infrastructure and facilities, inflation rates, exchange rates, legislation,

and, even, the price level. The following equation is used to find out the value of ICOR Lag-2 in Malang City:

$$ICOR = \frac{I_t}{(Y_{t+2} - Y_t)}$$

where I_y is the value of investments in year y , Y_{y+2} is the value of output in 2 years after y , and Y_y is the value of output in year y . The values resulted from the calculation of the ICOR Lag-2 components are as follows:

Table 6 Calculation of ICOR Lag-2

<i>Year</i>	<i>Y</i>	<i>GFCF</i>	<i>ICOR</i>
2013	37,547,739,000	12,007,693,000	2.73
2014	39,724,700,000	12,505,079,000	2.73
2015	41,952,126,000	13,456,211,000	2.76
2016	44,303,901,000	14,330,201,000	
2017	46,824,751,000	15,226,797,000	

Based on ICOR Lag-2 calculation, it can be seen that the values of the ICOR of Malang City in 2013 to 2015 increased and it can be said that investment had been efficient. This trend is better than that of the values of ICOR Lag 0 and ICOR Lag 1. In 2013, the ICOR Lag-2 value of Malang City was 2.73, so was that in 2014, due to the insignificant increase in GFCF. In 2015, the ICOR Lag-2 value reached 2.76, decreased by 0.46. This shows that for investment in Malang City to achieve its efficiency and effectiveness, a long-term investment (more than one year) is needed.

4.2.4 ICOR Lag3

The calculation of the ICOR Lag-3 of Malang City was carried out to give a stronger picture that Malang City investment is efficient if the period is extended. To find out the value of ICOR Lag-3 of Malang City, the following equation is used:

$$ICOR = \frac{I_t}{(Y_{t+3} - Y_t)}$$

where I_y is the value of investments in year y , Y_{y+3} is the value of output in three years after y , and Y_y is the value of output in year y . The values resulted from the calculation of the ICOR Lag-3 components are as follows:

Table 7 Calculation of ICOR Lag-3

<i>Year</i>	<i>Y</i>	<i>GFCF</i>	<i>ICOR</i>
2013	37,547,739,000	12,007,693,000	1.78
2014	39,724,700,000	12,505,079,000	1.76
2015	41,952,126,000	13,456,211,000	-
2016	44,303,901,000	14,330,201,000	-
2017	46,824,751,000	15,226,797,000	-

Table 7 shows that the ICOR Lag-3 value of Malang City increased insignificantly from 2013 to 2014. The calculation for that in 2015-2018 was impossible to do due to data limitations. However, the ICOR Lag-3 value is found to reach 1.76 (efficient), as the smallest amount, compared to the previous Lags in 2014. This shows that investment in Malang could be efficient if the period is more than one year. The smaller the value of ICOR, the more efficient investment; and vice versa.

The implication of these findings is the government of Malang city suggested to focus on a long-term investment regulation and planning in order to reach investment competitiveness. As ICOR calculation result shows that the longer the investment period, the more competitive the investment (ICOR index is 1). Igwe et al. (2018) also found that the government has the responsibility to provide the infrastructure to boost the investment. In this case, needed by Malang city to increase Malang city infrastructure to improve all investment aspect especially investment efficiency and competitiveness.

5 Conclusions

Malang City is friendly to new things, making it dynamic and sensitive to change. The number of education centres it has attracts many outsiders to come, both as consumers and investors. In this regard, its value of ICOR in 2017 reached 6.04%, meaning that increasing one unit of GRDP needs investment as much as 6.04 times greater than GRDP, revealing that investment in the city had not reached an efficient level because it still needed a large amount of capital. Based on the data of Malang City's GRDP and investment, investments increased every year in 2013–2017, but no significant increase in the GRDP occurred. It means that there was ineffective capital usage in investment activities in Malang. Government of Malang city need to improve the investment regulation and planning so that in future Malang city will able to have efficient and competitive investment climate. In addition, society can use this research result to enlarge their consideration before investing in Malang city.

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