# The Impact Of Special Economic Zones On Dropout Rates At The Junior And Senior High School Levels In Indonesia

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**ABSTRACT**

This study aims to analyze the impact of the presence of Special Economic Zones (SEZs) on dropout rates at the junior and senior high school levels in Indonesia. SEZs are place-based policies designed to increase investment, create job opportunities, and stimulate economic growth. However, the increase in job opportunities due to the presence of SEZs may encourage individuals to prioritize working over continuing their education. This study uses panel data from districs/cities in 14 provinces with special economic zones. The study employs the Difference-in-Differences method to estimate differences in school dropout rates between regencies with SEZs and those without. The findings indicate that the presence of special economic zones does not have a significant impact on dropout rates at the junior and senior high school levels in Indonesia.Additionally, this study applies the Propensity Score Matching method to minimize selection bias in determining the control group. The estimation results also indicate that the presence of special economic zones does not have a significant impact on dropout rates at the junior and senior high school levels in Indonesia.

## INTRODUCTION

Education is one of the strategies that can be used to reduce poverty and improve welfare (Weber et al., 2007). Education can also enhance economic growth and reduce inequality (Barro, 1991; UNICEF, 2020). Quality education is one of the seventeen Sustainable Development Goals (SDGs), with its main indicators including the percentage of education completion at the primary school, junior high school, and senior high school levels.

**Table 1 Percentage of School Dropouts in Several Countries in 2022**

| No | Negara | Total School-Age Population | Total School Dropouts | School Dropouts Percentage |
|---|---|---|---|---|
| 1. | Indonesia | 70.759.825 | 3.514.462 | 4,97% |
| 2. | Malaysia | 8.459.211 | 843.242 | 9,97% |
| 3. | Thailand | 12.315.620 | 346.065 | 2,81% |
| 4. | Vietnam | 23.493.394 | 291.394 | 1,24% |
| 5. | Kamboja | 4.987.031 | 689.555 | 13,83% |
| 6. | Laos | 2.263.549 | 505.568 | 22,34% |
| 7. | Filipina | 34.359.637 | 3.148.369 | 9,16% |

Data shows the school dropout rate in seven Southeast Asian countries, including Indonesia, with the largest school-age population totaling 70,759,825. There are 3,514,462 children who dropped out of school, which accounts for 4.97% of school dropouts. This percentage is relatively low compared to Malaysia (9.97%), the Philippines (9.16%), and Cambodia (13.83%), but higher compared to Vietnam (1.24%) and Thailand (2.81%). Although the dropout rate in Indonesia is lower than that of Malaysia and the Philippines, the number of children dropping out of school in Indonesia is higher compared to other countries.

Employment opportunities are one of the factors that drive individuals to leave a certain education system (Stearns & Glennie, 2006). Increased employment opportunities can lead to a higher school dropout rate, especially when students perceive work as more rewarding than continuing their education (Cai et al., 2024). Several previous studies have found that special economic zones can increase job opportunities for the community (Brussevich et al., 2020; Hornok & Raeskyesa, 2024; Zhao & Qu, 2024). Research conducted in Cambodia shows that increased job opportunities with the presence of special economic zones shift the community's priorities from education to employment, thereby increasing the school dropout rate (Brussevich et al., 2020).

A special economic zone is an area with specific boundaries within the Unitary State of the Republic of Indonesia, aimed at the development of growth centers, national economic equity, industrialization enhancement, and labor absorption. According to the Special Economic Zone Development Report published by the Special Economic Zone Council of the Republic of Indonesia, by 2023, there were 331 companies operating in special economic zones, employing 117,492 workers. This indicates that the presence of special economic zones in Indonesia creates job opportunities for the community. Research on the impact of special economic zones in Indonesia is generally related to issues of poverty, economic growth, income inequality, as well as productivity and business growth (Aritenang & Chandramidi, 2020; Hornok & Raeskyesa, 2024; Taufiqurrahman & Khoirunurrofik, 2023; Widianto, 2021). However, research on the impact of special economic zones on school dropout rates in Indonesia is still limited. Therefore, this study aims to examine the impact of special economic zones on the school dropout rate in Indonesia.

## LITERATURE REVIEW

Human capital theory states that education is a crucial investment for increasing individual productivity and income potential, thus contributing to economic growth and development (Keep et al., 2022; Marginson, 2019). Individuals consider two factors when deciding to continue their education: the cost of education and the returns or benefits they expect to gain from it (McNeal, 1997; Simson, 2015; Zuilkowski et al., 2019). Individuals who choose to stay in school hope that, in the future, this investment will lead to higher productivity, higher wages, and lower unemployment risks (Giziene et al., 2012). The demand for education is assumed to increase when the benefits of education rise and decrease when the costs of education increase,

suggesting that one of the strongest determinants of the demand for education is the expected economic benefits of education (Kingdon & Theopold, 2008).

Improving the quality of education and encouraging students to stay in school are strategies that can be used to reduce poverty and improve welfare, as a more educated workforce is expected to have higher incomes (Weber et al., 2007). Education can also enhance economic growth, reduce inequality, and improve individuals' ability to lead a healthy life, participate in society, and restore peace and stability (Barro, 1991; UNICEF, 2020). However, according to data from the Ministry of Education, Culture, Research, and Technology in 2023, there were 85,946 school dropouts in Indonesia. School dropout refers to the percentage of children in the school-age group who are no longer attending school or have not completed a certain level of education, with the age groups in question being 7-12 years, 13-15 years, and 16-18 years (Statistik, 2005).

Several studies have found that economic problems and the cost of education that families must bear are factors contributing to school dropouts in Indonesia (Parker & Sudibyo, 2024; Zuilkowski et al., 2019). Research conducted in the cities of Serang in Banten Province and Banda Aceh in Aceh Province concluded that the costs associated with schooling were the main reason for school dropouts in these cities. According to this study, additional costs such as books, uniforms, food, and transportation were factors that forced them to leave school (Zuilkowski et al., 2019). A study conducted in Papua showed that unattractive education quality and economic problems were reasons why children and teenagers dropped out of school (Parker & Sudibyo, 2024). However, besides economic problems and education costs, other research has found that employment opportunities are also one of the factors that drive individuals to leave an education system (McNeal, 1997). This can happen because students perceive work as more beneficial than continuing their education (Cai et al., 2024).

Other research shows that employment opportunities can be one of the factors influencing a person's decision to continue their education (Stearns & Glennie, 2006). The presence of job opportunities can lead students to leave school early to take advantage of available employment (Cascio & Narayan, 2022). A study in Vietnam indicated that the increase in job opportunities due to a surge in investment in the manufacturing sector reduced the incentive for some students to continue their education (Coxhead et al., 2023). Another study in China also found that the increase in job opportunities in the secondary industrial sector due to export tariff reductions led to a rise in school dropout rates among adolescents aged 16 to 18 (Cai et al., 2024). The demand for education decreases because the community perceives work as more rewarding than continuing education (Cai et al., 2024; Coxhead et al., 2023). This is supported by the pull-out theory, which suggests that people weigh the economic benefits and drawbacks when deciding whether to stay in school or drop out. According to this theory, family responsibilities and work outside of school can lead people to choose to work (McNeal, 1997).

Place-based policies are policies that target areas with poor performance, such as declining business districts and less fortunate regions, by creating more job opportunities and increasing wages (Neumark & Simpson, 2015). One form of place-based policy that has been implemented in Indonesia is the special economic zone. A special economic zone is a strategic government policy aimed at developing economic growth centers, ensuring national economic equity, enhancing industrialization, and absorbing labor, as regulated in Government Regulation Number 2 of 2011 on the Implementation of Special Economic Zones, and most recently amended through Government Regulation of the Republic of Indonesia Number 40 of 2021.

Several studies show that special economic zones in Indonesia impact poverty, economic growth, income inequality, and the productivity and growth of companies (Aritenang & Chandramidi, 2020; Hornok & Raeskyesa, 2024; Moeis et al., 2024; Taufiqurrahman & Khoirunurrofik, 2023; Widianto, 2021). However, in addition to poverty, economic growth, income inequality, and productivity, special economic zones also impact the increase in job opportunities, both direct and indirect. A study in India found that the establishment of special

economic zones increased job opportunities in the manufacturing and local service sectors, with the impact extending up to 10 km from the special economic zone area (Gallé et al., 2024). Additionally, this study found that the presence of special economic zones stimulated job transitions from the primary sector to manufacturing and services, thereby increasing job opportunities for women and contributing to women's empowerment. Another study in China also found that special economic zones significantly increased job opportunities through the creation of new companies and the expansion of existing large companies (Zheng, 2021).

Research shows that special economic zones can create indirect job opportunities due to cooperation with local suppliers. Companies operating in special economic zones that require various raw materials and services, which can be obtained from local suppliers, create demand that allows these local businesses to grow and open new job opportunities for the community (Frick, 2022). A study in India found that special economic zones have an impact up to 10 km from the zone area, indicating that special economic zones not only create jobs within the zone but also stimulate indirect job opportunities in the surrounding areas (Gallé et al., 2024).

In addition to impacting the increase in job opportunities, special economic zones also have an effect on education. Several studies have found that special economic zones significantly impact school dropout rates. This happens because special economic zones influence family income, which in turn affects how parents support their children's development, providing more opportunities, especially for girls, to pursue education (Hu et al., 2024; Zhao & Qu, 2024).

A study in China found that the presence of special economic zones significantly reduced the probability of school dropout by more than 4%, with this reduction having a greater impact on girls (Zhao & Qu, 2024). Another study found that individuals exposed to special economic zone programs during their secondary school years gained an additional 0.14 years of education, and this had a significant impact on women and higher secondary education (Hu et al., 2024). In addition to reducing dropout rates, the presence of special economic zones can also increase dropout rates. A study in Cambodia found that there was an increase in dropout rates at the upper secondary education level in districts bordering special economic zone locations (Brussevich et al., 2020). This increase in dropout rates may occur because the presence of special economic zones increases job opportunities for the community, making employment an attractive option for youth outside of the education system, leading them to choose work over continuing their education.

However, there are other studies that state that special economic zones do not have a significant impact on school dropout rates in the region. A study in Cambodia found that the percentage of school dropouts, defined as the percentage of individuals aged 18 who are neither attending school nor holding a high school diploma, did not change in districts with special economic zones, indicating that special economic zones did not have a direct impact on dropout rates (Brussevich et al., 2020). According to the study, this is because the impact of special economic zones on school dropout rates remains somewhat ambiguous. On one hand, special economic zones lead to higher average educational attainment if the jobs within the special economic zone require higher skills, encouraging young people to stay in school longer. On the other hand, if jobs in the special economic zone mostly require low skills, the introduction of special economic zones may provide an incentive for school dropout in favor of low-wage jobs. Therefore, in this case, the dropout rate could either decrease or remain unchanged.

**METHODS**

This study uses secondary data obtained from various official sources covering the period from 2013 to 2023. The data used is panel data, with the unit of analysis being 247 regencies/cities across 14 provinces that have special economic zones in Indonesia. The study found that job opportunities can lead to an increase in school dropout rates among adolescents

aged 16 to 18 years (Cai et al., 2024). The ILO Convention No. 138 on the Minimum Age for Admission to Employment, adopted in 1973 and ratified by 161 countries, states that the minimum age for employment should not be less than 15 years, and light work may be allowed from the age of 13 years (Edmonds & Shrestha, 2012). Therefore, the scope of this study includes individuals in the age range of 13 to 18 years. This study compares the total number of individuals within the age range of 13 to 18 years and the number of school dropouts in that age group to obtain the school dropout percentage at the regency/city level. Data related to special economic zones was obtained from reports from the National Special Economic Zones Council. This study includes a number of relevant variables as follows:

**Table 2. Variabel Penelitian**

| Variabel Name | Defenition | Source |
|---|---|---|
| Dependent Variable | | |
| School Dropout | Percentage of school dropouts in the age range of 13 to 18 years per regency | National Socio-Economic Survey (Susenas) |
| Independent Variable | | |
| Special Economic Zone (SEZ) | Regencies/cities with Special Economic Zones<br>1 : Regencies/cities with SEZ<br>0 : Regencies/cities without SEZ | National Special Economic Zone Council |
| Control Variables | | |
| Industrial Zone | Regencies/cities with Industrial Zones<br>1 : Regencies/cities with industrial zones<br>0 : Regencies/cities without industrial zones | Ministry of Investment and Capital Investment Coordinating Agency (BKPM) |
| Provincial Minimum Wage | Regional minimum wage for each province | Central Bureau of Statistic, Ministry of Labour |
| Number of Schools | Number of junior high schools (SMP) and senior high schools (SMA) (public and private) under the Ministry of Education, Culture, Research, and Technology, and Ministry of Religious Affairs | Central Bureau of Statistic |
| Poverty | Percentage of the population living below the poverty line (P0) | Central Bureau of Statistic |

This study uses a quantitative method with the difference-in-difference approach. Data processing in this study is carried out using the following econometric model:

$$Y_{it} = \beta_0 + \beta_1 KEK_{it} + \beta_2 Post_t + \beta_3 (KEK_{it} \times Post_t) + B_4 X_{it} + \mu_i + \emptyset_t + \delta_{pt} + \epsilon it \quad (1)$$

In equation (1), Yit is the outcome variable that explains the school dropout percentage in district i and year t. KEKit is a dummy variable that takes the value of 1 for districts with special economic zones that have been operating in year t and the following years, and 0 for other district categories. Postt is a dummy variable that takes the value of 1 for period t when the special economic zone has been operational and 0 for other years. The change in the school dropout percentage due to the presence of special economic zones is expressed in $\beta_3$, which measures the average treatment effect of the outcome variable between the treatment group of districts and the control group of districts. Meanwhile, Xit represents a set of control variables that may affect individual decisions to drop out of school, including the presence of industrial zones, provincial minimum wages, the number of schools, and poverty. This study also adds year

fixed-effects, district fixed-effects, and provincial fixed-effects to accommodate the differences in characteristics across regions and time.

## RESULTS

The characteristics of each variable used in this study are presented in the descriptive statistics table.

**Tabel 3. Descriptive Statistic**

| Variable | Group | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Treatment | | | | | Control | | | | |
| | Obs | Mean | Std.Dev | Min | Max | Obs | Mean | Std. Dev | Min | Max |
| Junior High School Dropout | 86 | 3.047 | 2.469 | 0 | 11.09 | 2631 | 4.028 | 3.319 | 0 | 24.92 |
| Senior High School Dropout | 86 | 16.46 | 10.26 | 3.31 | 43.66 | 2631 | 19.02 | 9.83 | 0 | 58.58 |
| Provincial Minimum Wage | 86 | 2617806 | 547015 | 1600000 | 3498479 | 2631 | 1948864 | 679012 | 830000 | 3498479 |
| Number of School | 86 | 318.23 | 334.99 | 36 | 1824 | 2631 | 231.34 | 229.06 | 8 | 1737 |
| Poverty | 86 | 10.461 | 5.318 | 5.02 | 28.61 | 2631 | 11.608 | 6.001 | 1.67 | 40.33 |

Based on the table above, it can be seen that the treatment group has 86 observations, while the control group has 2,631 observations. The average school dropout rate at the junior high school level in the treatment group is 3.047%, which is lower than the dropout rate in the control group at 4.028%. Meanwhile, the average dropout rate at the senior high school level in the treatment group is 16.46%, which is lower compared to the dropout rate in the control group at 19.02%. The table also shows the average provincial minimum wage, average number of schools, and poverty in both the treatment and control groups.

The average minimum wage in the treatment group is IDR 2,617,806, which is higher than the control group at IDR 1,948,864. The average number of schools in the treatment group is 318 schools, which is also higher than the average number of schools in the control group at 231 schools. However, poverty in the treatment group is lower compared to the control group. The average poverty rate in the treatment group is 10.46%, while the average poverty rate in the control group is 11.60%.

This study uses the difference-in-differences method to examine the impact before and after the implementation of special economic zones on the school dropout rate in Indonesia.

**Table 4. Estimation Results of the Impact of Special Economic Zones on School Dropout Rates**

| | Dropout | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Junior High School | | | | | Senior High School | | | | |
| | (1) | (2) | (3) | (4) | (5) | (1) | (2) | (3) | (4) | (5) |
| Special Economic Zones | -1.48*** (0.32) | 0.07 (0.32) | 0.11 (0.45) | -0.16 (0.45) | -0.17 (0.44) | -3.86*** (0.82) | 0.22 (0.73) | -0.29 (0.89) | -0.12 (0.89) | -0.46 (0.84) |
| Control : | | | | | | | | | | |
| Industrial Zones | NO | 0.10 (0.347) | 0.48 (0.31) | 0.22 (0.31) | 0.27 (0.49) | NO | -1.19 (0.86) | -1.09 (1.39) | -1.64 (1.39) | -1.87 (1.48) |
| Ln_UMP | NO | -3.43*** (0.157) | -3.17*** (0.441) | -3.03* (1.66) | 24.21 (63.86) | NO | -9.11*** (0.37) | -8.01*** (0.89) | -6.82*** (3.55) | 455.6 (285.6) |
| LN_Number of School | NO | -0.251 (0.160) | -1.32 (0.97) | -0.71 (0.82) | -2.36*** (1.16) | NO | 1.77*** (0.47) | -1.12 (1.69) | -0.76 (1.59) | -4.39** (1.89) |
| Poverty | NO | 0.06*** (0.0230) | 0.104 (0.08) | 0.16* (0.09) | 0.29*** (0.097) | NO | 0.28*** (0.06) | 0.40*** (0.15) | 0.49*** (0.16) | 0.46** (0.21) |
| Regency Fixed Effect | NO | NO | YES | YES | YES | NO | NO | YES | YES | YES |
| Time Fixed Effect | NO | NO | NO | YES | YES | NO | NO | NO | YES | YES |
| Province Fixed Effect | NO | NO | NO | NO | YES | NO | NO | NO | NO | YES |
| Observation | 2717 | 2717 | 2717 | 2717 | 2717 | 2717 | 2717 | 2717 | 2717 | 2717 |
| R2 | 0.0075 | 0.2196 | 0.222 | 0.0355 | 0.406 | 0.0090 | 0.259 | 0.262 | 0.293 | 0.361 |

Robust standard errors in parentheses*** $p<0.01$, ** $p<0.05$, * $p<0.1$

The results of the first regression (1) show that without using control variables, special economic zones (SEZ) have an impact on reducing the school dropout rate by 1.48% at the junior high school level and 3.86% at the senior high school level, with a significance level of 10%. In the next regression (2), after adding control variables such as industrial zones, provincial minimum wages, the number of schools, and poverty, the treatment coefficient is obtained with a very low significance level (above 10%). Similarly, the results of the following regressions, with the

inclusion of district fixed effects (3), year fixed effects (4), and provincial fixed effects (5), also show the same outcome, with the SEZ coefficient having very low significance (above 10%).

**Table 5. Estimation Results of the Impact of Special Economic Zones on School Dropout DID-PSM**

| | Dropouts | | | |
|---|---|---|---|---|
| | DID | | DID-PSM | |
| | Junior High School | Senior High School | Junior High School | Senior High School |
| Special Economic Zones | -0.17 (0.44) | -0.46 (0.84) | 0.20 (0.58) | 0.23 (2.21) |
| Control : | | | | |
| Industrial Zones | 0.27 (0.49) | -1.87 (1.48) | 0.73 (0.60) | 2.96 (2.99) |
| Ln_UMP | 24.21 (63.86) | 455.6 (285.6) | 28.02 (28.91) | -33.12 (32.08) |
| LN_Number of School | -2.36** (1.16) | -4.39** (1.89) | 0.63 (3.21) | 8.23 (6.97) |
| Poverty | 0.29*** (0.097) | 0.46** (0.21) | -0.15 (0.38) | 0.15 (1.66) |
| Regency Fixed Effect | YES | YES | YES | YES |
| Time Fixed Effect | YES | YES | YES | YES |
| Province Fixed Effect | YES | YES | YES | YES |
| Observation | 2717 | 2717 | 2717 | 2717 |
| R2 | 0.406 | 0.361 | 0.865 | 0.824 |

Robust standard errors in parentheses*** p<0.01, ** p<0.05, * p<0.1

Based on the table above, it can be seen that both the DID and DID-PSM methods show the same result, where the treated post coefficient has very low significance (above 10%).

**Table 6. Heterogenity**

| | Dropout | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | Java | | Outside Java | | SEZ Manufacture | | SEZ Service | |
| | Junior High School | Senior High School | Junior High School | Senior High School | Junior High School | Senior High School | Junior High School | Senior High School |
| Special Economic Zones | -0.60 (0.96) | 1.70 (1.32) | -0.028 (0.50) | -1.19 (0.96) | 0.27 (0.49) | -1.27 (1.01) | -0.99 (0.82) | 1.49 (1.06) |
| Control : | | | | | | | | |
| Industrial Zones | 1.19 (0.98) | -4.89*** (1.44) | -0.11 (0.51) | -0.65 (1.73) | -0.13 (0.48) | -0.64 (1.74) | 1.14 (0.99) | -4.82*** (1.44) |
| Ln_UMP | 28.07 (25.41) | -11.64 (118.6) | 10.22 (60.84) | 410.7 (289.3) | 29.84 (62.62) | 428.9 (288.3) | -39.98 (118.2) | -699.7* (375.4) |
| LN_Number of School | -8.41*** (2.7) | -7.12 (7.21) | -1.21 (1.22) | -3.60* (1.93) | -2.02* (1.19) | -3.94** (1.93) | -8.16*** (2.591) | -8.10 (6.45) |

| Poverty | 0.47** (0.18) | 0.99* (0.55) | 0.20* (0.12) | 0.27 (0.22) | 0.30*** (0.10) | 0.39* (0.23) | 0.32* (0.17) | 1.28*** (0.39) |
|---|---|---|---|---|---|---|---|---|
| Regency Fixed Effect | YES | YES | YES | YES | YES | YES | YES | YES |
| Time Fixed Effect | YES | YES | YES | YES | YES | YES | YES | YES |
| Province Fixed Effect | YES | YES | YES | YES | YES | YES | YES | YES |
| Observation | 1177 | 1177 | 1540 | 1540 | 2156 | 2156 | 1056 | 1056 |
| R2 | 0.449 | 0.344 | 0.391 | 0.385 | 0.378 | 0.368 | 0.474 | 0.361 |

Robust standard errors in parentheses*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Based on the table above, it can be concluded that the estimation results comparing Java Island and outside Java Island, as well as the special economic zones (SEZ) in the manufacturing sector and the SEZ in the services sector, also yield the same result as the main regression, which is that special economic zones do not have a significant impact on the school dropout rate at the junior high school and senior high school  levels in Indonesia.

## DISCUSSION

The estimation results show that special economic zones do not have a significant impact on the school dropout rate at the junior high school and senior high school levels in Indonesia. This is consistent with a study in Cambodia, which found that the dropout rate for upper secondary education, defined as the number of people over the age of 18 who are no longer in school and do not hold a high school diploma, remained unchanged in areas with special economic zones. Therefore, it can be concluded that there is no direct impact of special economic zones on the school dropout rate (Brussevich et al., 2020). The estimation results using the DID and DID-PSM methods, along with heterogeneity, show the same outcome, where the coefficient for treated post has very low significance (above 10%). This further indicates that special economic zones do not have a significant impact on the school dropout rate at the junior high and senior high school levels in Indonesia.

This indicates that the community is not interested in shifting their priorities from education to work. This is most likely because the educational incentives provided by the government are more attractive than the job opportunities arising from the presence of special economic zones. This study attempts to present trends in the provision of facilities and educational assistance provided by the government in two districts with special economic zones, namely Gresik Regency and Central Lombok Regency.

**Table 7. Educational Facilities and Incentives in Gresik Regency**

| Year | Number of School | Indonesia Smart Program Budget | School Operational Assistance Realization |
|---|---|---|---|
| 2019 | 450 | 17.675.500.000,00 | - |
| 2020 | 454 | 15.862.875.000,00 | 87.938.240.000,00 |
| 2021 | 459 | 16.510.875.000,00 | 127.652.799.000,00 |
| 2022 | 471 | 16.900.000.000,00 | 126.103.305.438,00 |
| 2023 | 480 | 18.020.500.000,00 | 128.696.922.660,00 |

Based on the table above, it can be seen that the Gresik Regency Government continues to make efforts to improve their educational facilities by increasing the number of schools each year. This increase in the number of schools is expected to make it easier for the community to access education. In addition to school facilities, the Gresik Regency Government has also increased the education budget through the Indonesia Smart Program and the School Operational Assistance funds

**Table 8. Educational Facilities and Incentives in Lombok Tengah Regency**

| Year | Number of School | Indonesia Smart Program Budget | School Operational Assistance Realization |
|------|------------------|-------------------------------|-------------------------------------------|
| 2019 | 450 | 17.675.500.000,00 | - |
| 2020 | 454 | 15.862.875.000,00 | 87.938.240.000,00 |
| 2021 | 459 | 16.510.875.000,00 | 127.652.799.000,00 |
| 2022 | 471 | 16.900.000.000,00 | 126.103.305.438,00 |
| 2023 | 480 | 18.020.500.000,00 | 128.696.922.660,00 |

Based on the table above, it can be seen that the Gresik Regency Government continues to make efforts to improve their educational facilities by increasing the number of schools each year. This increase in the number of schools is expected to make it easier for the community to access education. In addition to school facilities, the Gresik Regency Government has also increased the education budget through the Indonesia Smart Program and the School Operational Assistance funds.

One of the goals of Special Economic Zones (SEZ) is labor absorption. However, according to data from the Central Statistics Agency (BPS), unemployment still exists in both regencies. In 2023, the open unemployment rate in Gresik Regency was 6.82%, and in Central Lombok Regency, it was 2.78%.

The mismatch between jobs and the education level of the community can be one of the causes of unemployment. Research shows that there is a phenomenon of mismatch between the job and the education received, particularly among vocational high school  graduates. According to the study, 13.58% of SMK graduates work in positions that actually require lower education, and 61.58% work in jobs that do not match the education and skills they possess (Paramitasari et al., 2024).

According to this research, this mismatch between jobs and education can have a negative impact, where individuals prefer to remain unemployed longer until they find a job that matches their education. Therefore, the government is expected to adjust the education curriculum received by the community to align with the skills needed for jobs in each special economic zone. This aims to reduce the unemployment rate, especially in special economic zone areas.

**CONCLUSION**

This study aims to analyze the impact of the presence of Special Economic Zones (SEZ) on the school dropout rates at the junior high school  and senior high school  levels in Indonesia. Based on the research findings, there are several estimated impacts of the presence of SEZs in 14 provinces that have Special Economic Zones.

The estimation results using the Difference-in-Difference method indicate that the presence of SEZs does not have a significant impact on the dropout rates at the junior high school and senior high school levels in the 14 provinces that have SEZs in their areas. Additionally, the estimation results using a combination of the Propensity Score Matching method and Difference-in-Difference with Staggered Implementation also show the same result, indicating that the presence of SEZs does not have a significant impact on the school dropout rates at the junior high school and senior high school levels.

This study also conducted a heterogeneity test by comparing the effects across subgroups, specifically between provinces in Java and outside Java, as well as between Special Economic Zones in the manufacturing and services sectors. The estimation results also show the same finding, that the presence of Special Economic Zones does not have a significant impact on dropout rates at the junior high school and senior high school levels, both in Java and outside Java, in the manufacturing and services sectors.

Based on the qualitative analysis conducted in two districts with Special Economic Zones, namely Gresik and Mandalika, it shows that the government in both districts continues to improve educational facilities. This is evident from the increase in the number of schools in both districts every year. In addition to school facilities, educational assistance through the Indonesia Smart Program and School Operational Assistance funds in both districts has also increased every year.

## SUGGESTION

The research findings show that the presence of Special Economic Zones in Indonesia does not have a significant impact on dropout rates at the junior high school and senior high school levels. Based on these results, the government can continue to implement policies related to Special Economic Zones as one of the efforts to support economic growth in these regions. However, the government must also continue efforts to improve educational facilities, such as expanding access to and availability of schools.

Additionally, support for education through educational assistance programs, such as the School Operational Assistance and Indonesia Smart Program, should continue. Furthermore, the government is expected to enhance the quality of education, including school facilities, educational curricula, and teacher competence, in line with the job requirements in Special Economic Zones. This aims to reduce the unemployment rate in these areas. Future research is recommended to combine qualitative and quantitative methods to gain a deeper understanding of the reasons behind school dropout, particularly in Special Economic Zones.

## REFERENCES

Aritenang, A. F., & Chandramidi, A. N. (2020). The Impact of Special Economic Zones and Government Intervention on Firm Productivity: The Case of Batam, Indonesia. *Bulletin of Indonesian Economic Studies*, *56*(2), 225–249. https://doi.org/10.1080/00074918.2019.1643005

Barro, R. J. (1991). Economic growth in a cross section of countries. In *Quarterly Journal of Economics* (Vol. 106, Issue 2). https://doi.org/10.2307/2937943

Brussevich, M., Turunen, J., Scott, A., & Furceri, D. (2020). The Socio-Economic Impact of Special Economic Zones: Evidence from Cambodia The Socio-economic Impact of Special Economic Zones: Evidence from Cambodia Prepared by. *IMF Working Paper*.

Cai, S., Shi, X., & Xu, Z. (2024). Migration networks, export shocks, and human capital acquisition: Evidence from China. *Journal of Comparative Economics*, *52*(2), 568–589. https://doi.org/10.1016/j.jce.2024.04.001

Caliendo, M., & Kopeinig, S. (2008). Some practical guidance for the implementation of propensity score matching. *Journal of Economic Surveys*, *22*(1), 31–72. https://doi.org/10.1111/j.1467-6419.2007.00527.x

Cascio, E. U., & Narayan, A. (2022). Who Needs a Fracking Education? The Educational Response to Low-Skill-Biased Technological Change. *ILR Review*, *75*(1), 56–89. https://doi.org/10.1177/0019793920947422

Coxhead, I., Vuong, N. D. T., & Nguyen, P. (2023). Getting to Grade 10 in Vietnam: does an employment boom discourage schooling? *Education Economics*, *31*(3), 353–375. https://doi.org/10.1080/09645292.2022.2068138

Edmonds, E. V, & Shrestha, M. (2012). The impact of minimum age of employment regulation on child labor and schooling *. *Journal of Labor Policy*, 1–28.

Frick, S. A. & A. R.-P. (2022). Special Economic Zones and Sourcing Linkages with the Local Economy: Reality or Pipedream? *European Journal of Deveopment Research*, *34(2)*, 655–676. https://doi.org/10.1057/s41287-021-00374-4

Gallé, J., Overbeck, D., Riedel, N., & Seidel, T. (2024). Place-based policies, structural change and female labor: Evidence from India's Special Economic Zones. *Journal of Public Economics*, *240*(November), 105259. https://doi.org/10.1016/j.jpubeco.2024.105259

Giziene, V., Simanaviciene, Z., & Palekiene, O. (2012). Evaluation of Investment in Human Capital Economical Effectiveness. *Engineering Economics*, *23*(2), 106–116. https://doi.org/10.5755/j01.ee.23.2.1541

Hornok, C., & Raeskyesa, D. G. S. (2024). Economic zones and local income inequality: Evidence from Indonesia. In *Journal of Economic Inequality* (Vol. 22, Issue 1). Springer US. https://doi.org/10.1007/s10888-023-09581-x

Hu, W., Huang, W., Wu, J., & Zhang, C. (2024). Place-based policies and local human capital accumulation: Evidence from China's special economic zone program. *China Economic Review*, *85*(February), 102163. https://doi.org/10.1016/j.chieco.2024.102163

Keep, E., Tomlinson, M., & Mann, A. (2022). The death of human capital? Its failed promise and how to renew it in an age of disruption,. *British Journal of Sociology of Education*, *43*(8), 1288–1296. https://doi.org/10.1080/01425692.2022.2124942

Kingdon, G. G., & Theopold, N. (2008). Do returns to education matter to schooling participation? Evidence from India. *Education Economics*, *16*(4), 329–350. https://doi.org/10.1080/09645290802312453

Marginson, S. (2019). Limitations of human capital theory*. *Studies in Higher Education*, *44*(2), 287–301. https://doi.org/10.1080/03075079.2017.1359823

McNeal, R. B. (1997). Are students being pulled out of high school? The effect of adolescent employment on dropping out. *Sociology of Education*, *70*(3), 206–220.

https://doi.org/10.2307/2673209

Moeis, A. O., Gita, A. A., Destyanto, A. R., Rahman, I., Hidayatno, A., & Zagloel, T. Y. (2024). Policy Analysis of Coastal-Based Special Economic Zone Development Using System Dynamics. *International Journal of Technology*, *15*(1), 195–206. https://doi.org/10.14716/ijtech.v15i1.5498

Neumark, D., & Simpson, H. (2015). Place-Based Policies. In *Handbook of Regional and Urban Economics* (1st ed., Vol. 5). Elsevier B.V. https://doi.org/10.1016/B978-0-444-59531-7.00018-1

Paramitasari, N., Khoirunurrofik, K., Mahi, B. R., & Hartono, D. (2024). Charting vocational education: impact of agglomeration economies on job–education mismatch in Indonesia. In *Asia-Pacific Journal of Regional Science* (Vol. 8, Issue 2). Springer Nature Singapore. https://doi.org/10.1007/s41685-024-00333-x

Parker, L., & Sudibyo, L. (2024). Why young people leave school early in Papua, Indonesia, and education policy options to address this problem. *Compare*, *54*(1), 146–162. https://doi.org/10.1080/03057925.2022.2084037

Rothenberg, A. D., & Temenggung, D. (2019). Place-Based Policies in Indonesia: a critical review. *Background Paper. Urbanization Flagship Report. Time to ACT: Realizing Indonesia's Urban Potential*, *September*, 1–43. http://elibrary.worldbank.org/doi/book/10.1596/32593 (akses tanggal 23 Oktober 2022)

Simson, K. von. (2015). Explaining upper secondary school dropout: new evidence on the role of local labor markets. *Empirical Ecoomics*, *48*, 1419–1444. https://link.springer.com/article/10.1007/s00181-014-0829-3

Statistik, B. P. (2005). *Angka Putus Sekolah*. Badan Pusat Statistik. https://sirusa.web.bps.go.id/metadata/indikator/4282

Stearns, E., & Glennie, E. J. (2006). When and why dropouts leave high school. *Youth and Society*, *38*(1), 29–57. https://doi.org/10.1177/0044118X05282764

Taufiqurrahman, T., & Khoirunurrofik, K. (2023). Special Economic Zones (SEZs) Impact on Poverty in Indonesia. *Jurnal Perencanaan Pembangunan: The Indonesian Journal of Development Planning*, *7*(2), 231–249. https://doi.org/10.36574/jpp.v7i2.473

UNICEF. (2020). *Education in emergencies*. UNICEF. https://www.unicef.org/education/emergencies

Weber, B., Marre, A., Fisher, M., Gibbs, R., & Cromartie, J. (2007). Education's effect on poverty: The role of migration. *Review of Agricultural Economics*, *29*(3), 437–445. https://doi.org/10.1111/j.1467-9353.2007.00358.x

Widianto, Y. W. (2021). Kawasan Ekonomi Khusus Dan Pertumbuhan Ekonomi Daerah: Bukti Empiris Kek Sei Mangkei. *Jurnal Anggaran Dan Keuangan Negara Indonesia (AKURASI)*, *3*(2), 1–15. https://doi.org/10.33827/akurasi2021.vol3.iss2.art130

Zhao, C., & Qu, X. (2024). Place-based policies, rural employment, and intra-household resources allocation: Evidence from China's economic zones. *Journal of Development Economics*, *167*(October 2023). https://doi.org/10.1016/j.jdeveco.2023.103210

Zheng, L. (2021). Job creation or job relocation? Identifying the impact of China's special economic zones on local employment and industrial agglomeration. *China Economic Review*, *69*(June), 101651. https://doi.org/10.1016/j.chieco.2021.101651

Zuilkowski, S. S., Samanhudi, U., & Indriana, I. (2019). 'There is no free education nowadays': youth explanations for school dropout in Indonesia. *Compare*, *49*(1), 16–29. https://doi.org/10.1080/03057925.2017.1369002