ABSTRACT

This study examines the effects of the Human Development Index (HDI), population growth, and investment (PMDN+PMA) on economic growth across regencies/cities in Central Java Province over 2016-2024, while controlling for the COVID-19 shock using a time dummy (2020 = 1; other years = 0). The dataset is a balanced panel consisting of 35 regencies/cities observed for nine years (315 observations), compiled primarily from official statistics and related government sources for investment data. Panel-data regression is conducted after model selection using the Chow Test and the Hausman Test, which indicate that the Fixed Effect Model (FEM) is the most appropriate specification. Since heteroscedasticity and autocorrelation are detected, the regression uses cluster-robust standard errors at the regency/city level to ensure valid inference.

The regression results show that HDI has a positive yet insignificant coefficient in Model 1, suggesting that improvements in human development do not translate into measurable short-run growth effects at the local level, potentially due to delayed impacts and labor-market absorption constraints. In Model 2 (with one-year lagged investment), HDI is negative and statistically significant. Population growth is statistically insignificant in both specifications, with a positive coefficient direction. The investment is not statistically significant in either specification, although the sign reverses from negative (Model 1) to positive (Model 2), consistent with the Augmented Solow prediction of delayed effects. The COVID-19 dummy is negative and highly significant in both models, confirming that the pandemic constituted a major external shock. Model 2 provides a better fit with Within R-squared of 0.8823. These findings highlight the importance of improving investment quality and spatial distribution, aligning human capital with labor market needs, and addressing demographic pressures through productive employment creation.

Keywords: HDI, population growth, investment, economic growth, Central Java, Fixed Effect Model, panel data