

## Abstract

Total factor productivity (TFP) has emerged as an essential source of agricultural growth. This study assesses the level and drivers of TFP in livestock production systems in Indonesia by applying the Malmquist index. The contribution of technical and efficiency change to productivity growth is explored empirically. This approach was involved in 33 provinces in Indonesia from 2007 to 2019 by taking several livestock commodities as variables in it. As input, data aggregation of workers in the livestock sector and animal stock were used as proxy labor and capital. As output, the productions of meat, eggs, and milk were aggregated. The results showed that, in Indonesia, livestock productivity decreased with a TFP Malmquist Index score of 0.948. Productivity growth was due more to the change of efficiency than to technical change. The study also found that the primary source of efficiency change was pure efficiency rather than scale efficiency. The results found that among the three periods studied, 2007-2011, 2011-2015, and 2015-2019, the highest TFP index value occurred in the second period of 1.035, which showed an increase in TFP. Even though in the first and third periods, there was a decrease in TFP. The cause of TFP can be seen from its decomposition. The first period showed that both EC and TC were worth less than one, thus reducing TFP. Whereas, in the second period, TC played a role in increasing TFP. In the last period, the opposite happened; EC played a critical role in forming the TFP value. However, according to the province level results, the index value of each province will vary. The findings suggest the approach and cooperation between the central and regional governments must be improved. Then, the government must carry out continuous improvement while maintaining balance in adopting new technologies and the efficient use of production resources.

*Keywords:* livestock total factor productivity; Malmquist index; efficiency change; technical change; Indonesia