**Identifying club convergence of regional wage in Indonesia and their influencing factors**

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**A B S T R A C T**

Empirically testing for convergence across regions within a country has become a central topic in the regional growth literature. Unlike national economies, the administrative territories within a country are more likely to converge since they share common preferences, technologies and institutions. For Indonesia, concern about regional inequality and convergence has been raised decades ago and became greater since the implementation of decentralization policy in 2000. A large body of research has investigated regional inequality of socio-economic outcomes across provinces using various convergence approaches (see for example Esmara 1975; Akita and Lukman 1995; Garcia and Soelistianingsih 1998; Hill et al 2008; Kurniawan et al 2019, Mendez and Kataoka 2020, Aginta et al 2021). Most of the studies argue that the large socio-economic disparities among regions in Indonesia are due to larger unequal economic activities, public infrastructure availability as well as resource endowment.

Despite numerous studies on regional income convergence, little is known about regional wage convergence in Indonesia. In fact, as predicted by theory, spatial differences in relative factor endowments are likely to exist in highly diverse nation like Indonesia, which in turn explains spatial disparities in wages and prices. Moreover, regional labor regulation might be partially controlled by local government agencies since the state authorities and budget are more distributed to provincial government following the decentralization policy. Departing from these backgrounds, this paper aims to empirically evaluate regional wage convergence of 34 Indonesian provinces. To achieve this goal, we implement a two-step procedure. First, we identify groups of regions that converge to the same steady state level using the club convergence approach developed by Phillips and Sul (2007, 2009). Second, following previous literature, we apply an ordered logit model to investigate the influencing factors of club formation. As a proxy of regional wage, we use provincial average of net nominal income per month (in thousand rupiahs) of employee and laborer data over the period of 2005-2020 published by Indonesian Central Bureau of Statistics. By using nominal wage, we find two significant convergence clubs. Then we remove the effect of inflation on regional wage by converting the data from nominal into real term using provincial Consumer Price Index (CPI) of 2005 as the base. With real wage data, we find three significant convergence clubs of regional wage. Interestingly, the composition of the clubs by using real wage is very similar to the one we obtained by using nominal wage, implying the existence of price-adjusted mechanism in regional wages. The presence of convergence clubs in regional wages suggests that Indonesian provinces form separate groups converging to their own steady state paths. Furthermore, we explain the influencing factors of club convergence formation. Estimates from ordered logit model inform that the formation of club convergence is significantly explained by the following variables: initial level of wage, share of employment on manufacturing sector, investment share to GDP and labor force participation rate. Our findings support the evidence from most of club convergence studies that emphasize the role of initial condition and regional characteristics on the formation of club convergence.

JEL Classifications:

E24, J31, J58, R11

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1. **Introduction**

Based on some modern economics theories, the rapid development of technology, infrastructure, and education in this era potentially make income disparity could be lower due to amount of wage which move more convergent. There is famous theory which called ‘the law of one price’ stated that the price of an identical asset or commodity will have the same price globally, regardless of location, when certain factors are considered and that theory frequently used in research on convergence in commodity prices (Federico, 2012) is also a useful metaphor for the labour market (Caruana Galizia, 2015; Rosenbloom, 1998, 2002). Furthermore, there is another study find that the convergence in country wages was not caused by the mechanism attributable to ‘the law of one price’ alone, rather, it was caused by markets and institutions interchangeably (Svante Prado, Christer Lundh , Kristoffer Collin & Kerstin Enflo ,2021). In the other hand, another study also find that labour markets of the past have failed to confirm the theory which predict small wage differentials among workers and geographic locations, provided that human capital does not vary much because there is consistent evidence that large wage differentials across space were commonplace (Kristoffer Collin, Christer Lundh & Svante Prado 2019).

In Indonesia, topic about wage convergence or income disparity is quite relevance because it often becomes the main factor for many people do the migration which increased in the last few years. Based on theory, economy is one aspect that could influence migration and everal theories that underlie this among them were delivered by Mantra (1992) and Todaro (2003). Both agree that economic motives are one's reasons do the migration, especially migration from rural to urban areas. Work as a sources of economic livelihoods become a push factor if there is no work with feasible wages available in origin area. Indonesia Central Bureau of Statistics recorded that the percentage of population in urban areas on 2020 is 56.7% increase from 2010 which only 49.8%. Furthermore, that percentage projected to increase up to 66.6% in 2035, due to massive development in urban area which requires a lot of workers. Another study from Central Bureau of Statistics show that the number of lifetime migrants on 2019 in Indonesia is up to 29.8 million people with migrant workers of 5.4 million people. Java Island dominates the population of migrants in Indonesia, with around 51.2% of lifetime migrants and 56.5% of migrant workers residing in Java Island. The high number of migrants in java is mainly influenced by wage condition, living cost, and the availability of living facilities. Other than that, depth analysis about wage convergence is supposed to be an answer from the high number of gini ratio in Indonesia.

Examining wage convergence across regions in Indonesia is also appealing for at least two following reasons. First, it can enrich the literature by providing a comparative study on wage convergence in a developing country like Indonesia with a large diversity and unique geographical condition compared to the other countries. Second, wage convergence analysis often unveils some hidden patterns and is thus useful in understanding critical issues such as the degree of market integration among regions and the role of spatial factors especially in diverse archipelago country like Indonesia (Aginta, H 2020)

The focus of this paper lies on the long-run behaviour of regional wages in Indonesia and its influenced factors. Despite numerous studies on regional income convergence, little is known about regional wage convergence in Indonesia. Furthermore, in this paper we use average net income per month of employee and laborer in 34 provinces from 2005-2020 as main indicator instead of regional minimum wage (UMR). In many cases, regional minimum wage usually influenced by local government policy and other unconditional factors, so it hasn’t optimally reflect the real market situation. We also remove the effect of inflation on regional wage by converting the data from nominal into real term using provincial Consumer Price Index (CPI) of 2005 as the base. With real wage data, we find three significant convergence clubs of regional wage. Interestingly, the composition of the clubs by using real wage is very similar to the one we obtained by using nominal wage, implying the existence of price-adjusted mechanism in regional wages. Club 1 & Club 2 consist of 12 provinces which are Jakarta, Riau Island, Banten, Papua, East Kalimantan, North Kalimantan, West Java, West Papua, North Sulawesi, Bali, Central Kalimantan and South Sulawesi. Based on our rough assumption, those area have similar characteristic where there are many nasional strategic projects are being built and have high traffic of migrant workers.

After we get the result of wage convergence club, we also try to examine which factor significantly determine the club formation. Estimates from ordered logit model inform that the formation of club convergence is significantly explained by the following variables: initial level of wage, share of employment on manufacturing sector, investment share to GDRP and labor force participation rate. Our findings reveal that investment and manufacturing share to GDRP have significant role to determine the club formation. That findings also confirm the assumption of similar characteristics from those are as mentioned above. Moreover, from our findings we also can conclude that the increasing of gini ratio in Indonesia is not directly caused by wage condition because our wage quite convergent with only three clubs existed.