IDENTIFICATION OF LOCAL LABOR MARKET IN THE CONTEXT OF DEMOGRAPHIC DIVIDEND IN INDONESIA'S URBAN AREAS

Febry Wijayanti,
febry.ie008@gmail.com

Ural Federal University,
19, Mira street, Yekaterinburg, 620002, Russia

Febry Wijayanti, researcher, Ural Federal University.

Demographic dividend has essential relationship with the economic performance, and it can be a source of both opportunities and challenges in terms of economic growth. Moreover, the demographic transition has causal effect in labor market and society. Meanwhile, Indonesia has a demographic dividend and follows the digital era, but in the labor market in Indonesia low educated workforce dominates that will facing several challenges. Therefore, this study identifies the problems of urban labor market in Indonesia, assesses the current policies and prospect of new policy related to labor in cities. The study conducted is based on data obtained from many professional reports and studies carried out by government institutions, enterprises, consortia, journals, and previous research, systemized and calculated by author, as well as literature related to this research. The result showed the significant effect of demographic factors in forming labor policies and the labor market in Indonesia. However, to harness the benefits of demographic dividend and a labor surplus, there is a need for significant investment in enhancing the capabilities, skills, and education of the workforce. In current labor structure in Indonesia only 10 % of employees have high education. Hence, the urban areas are facing the poverty and high disparity caused by the low educated labor that migrate to urban for getting high salary.

Keywords: *local labor market, demographic dividend, knowledge spillover, urban premium wage, poverty, inequality.*

Introduction

According to　Puga [1], massive population and dense area trigger the economy and become a gem in a nation. Thus, Indonesia, with the highest population in ASEAN and fourth in the world, has a great chance with a vast population. Based on the report of the BPS census 57 % of Indonesian population lives in Java, and 50 % – in cities. Inevitably, Firman [2] called Java the island of mega-urban regions. Maryaningsih et al. [3] asserted that the Java economic corridor is legitimately dominant among other provinces, and Jakarta has become the center of it. Demographically, Indonesia has a demographic dividend, so that it will affect the labor market. Bohm et al. [4] underlined that demographic transition has a causal effect on the labor market and society. Gribble and Bremner [5] formed that demographic dividend refers to accelerated economic growth that begins with changes in the age structure of a country's population as its transitions from high to low birth and death rates. In addition, BPS [6] projected that by 2030 Indonesia's labor supply will increase due to the demographic dividend, and most are living in cities. Prognostically, in 2030, the share of young people in the workforce will be 34,26 %, or 69,130 thousand people. Nevertheless, the population share living in cities will increase to 63,4 %. Hence, the changing demographic structure in Indonesia could impact the labor market and simultaneously economic growth, particularly the surplus labor market and imbalance labor market will not be avoided.

In line with studies of Gribble and Bremner [5], the surplus labor market is like two sides of a knife; it can be a burden or an advantage, particularly in dense areas. As a bowl of immense labor gathered, a lush area or city has attractive things, such as high salaries, economy, and education. As a consequence of magnificent things, people migrate, creating causal effects and agglomeration in that area. On the one hand, the enormous labor in the city can create an agglomeration that rapidly boosts economic activity, urbanization, high productivity, and knowledge transfer [1, 7–10]. On the other hand, this circumstance could be a disaster if the labor demand can't balance it and the available labor has an insufficient qualification required by the demand side [8, 11, 12]. Moreover, several studies claimed that cities in developed countries benefited from dense areas. But how about the developing countries, such as Indonesia, with a demographic dividend? Hence, it is necessary to understand the possibility of urban benefits occurring or not in Indonesia's cities.

Yet, if the population dynamics are not followed by condition of current knowledge (e.g., STEM education) or skill, undeniable, some countries can experience calamity, such as unemployment and under-skilled labor. Henceforward, Indonesia, as a place of 270 million people and the fourth most populous country in the world with a demographic dividend, will face the advantages or disadvantages. Hence, managing the dense area is essential because it can impact the national economy and society. Based on those several things, the objectives of this study are: 1) to confirm the theoretical and methodological approach to the study of high-density labor markets of the largest cities; 2) to comprehensively reflect the specifics of the demographic transition; 3) to discover the position of the labor market density for the development of the national economy; 4) to reveal a demographic dividend with an abundant of working-age young workers and composition of under-educated and unskilled labor in cities; 5) to identify the premium wages and growing differentiation level of payment and labor productivity both in urban and rural areas and within the boundaries of the urban labor market.

Research methodology

The quantitative analysis of the methods used in this investigation was carried out. According to Creswell [13. P. 183; 14. P. 234], data analysis is a descriptive assessment of the scale of reporting patterns and significant deviations. The inferential analysis to evaluate confidence intervals, measure effect sizes, and test hypotheses was used. Tables, figures, discussion of the major conclusions, and interpretation of the data analysis results are all included in the results. Creswell [14. P. 175] gives the examples of how the data is organized, changed, and rearranged to offer descriptive information and convert raw data into easily grasped and analyzed formats. These statistics and their descriptions can provide valuable details about the traits of specific social groups. The research is based on secondary data gathered from a wide range of expert reports and studies undertaken by government organizations, groups, or businesses.

Furthermore, this study has several stages of identifying numerous aspects, such as labor market and economic characteristics, the relation of wage premium and knowledge spillover in labor density, the poverty and disparity in dense areas, and the policies related to those problems. Based on Fig. 1, on the first identification, we analyze the situation of the metropolitan area regarding the economy and labor. This stage includes analysis of the economic growth and contribution of the metropolitan regions, the labor market, and the demographic structure to urban and the essential relation of the economic and labor situation there. Therefore, we can confirm that the labor structure supports the economy in urban area.

Next, to recognize the relation between wage premium and knowledge spillover in labor density observations of the trend of existing wages by education were made. This stage aims

to reveal the relationship between wages, productivity, and education in urban, how personal background, particularly education, influences the salary in metropolitan area. Further, to acknowledge the poverty and disparity in labor density areas were calculated the Gini ratio and the poverty rate. This step is observing whether the existence of urban and premium wage lead to the advantage or not. Hence, in this stage we observed Gini ratio and poverty rate in urban. The last phase identifies the policies related to these problems in urban areas. Therefore, all those stages are summarized in Fig. 1 as follows:
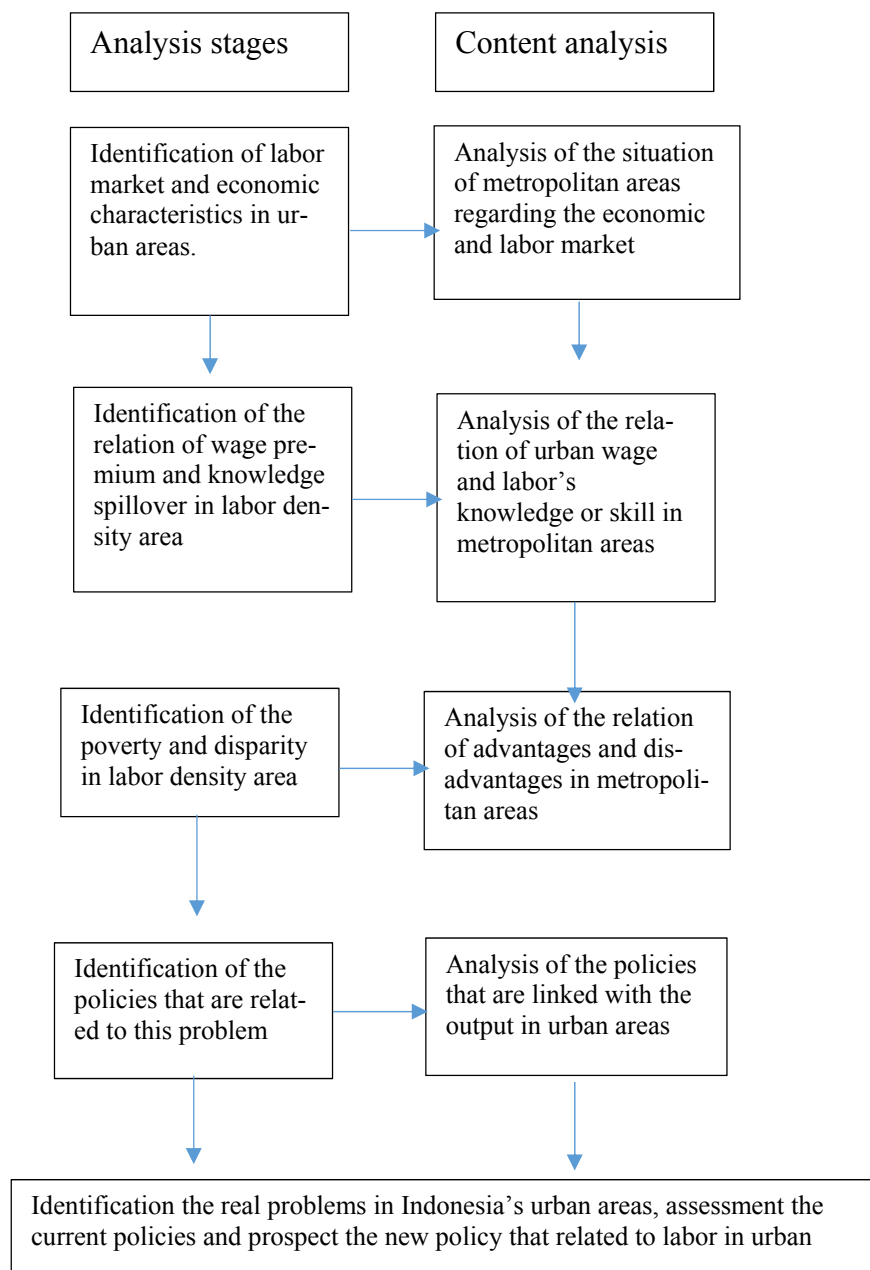
Analysis stages	Content analysis
Identification of labor market and economic characteristics in urban areas.	Analysis of the situation of metropolitan areas regarding the economic and labor market
Identification of the relation of wage premium and knowledge spillover in labor density area	Analysis of the relation of urban wage and labor's knowledge or skill in metropolitan areas
Identification of the poverty and disparity in labor density area	Analysis of the relation of advantages and disadvantages in metropolitan areas
Identification of the policies that are related to this problem	Analysis of the policies that are linked with the output in urban areas

Identification the real problems in Indonesia's urban areas, assessment the current policies and prospect the new policy that related to labor in urban

Fig. 1. *Conceptual scheme for analyzing the labor markets of the largest cities in Indonesia*
Рис. 1. *Концептуальная схема анализа рынков труда крупнейших городов Индонезии*

Demographic transition and labor market in Indonesia

According to Donkin [8. P. 54], having a solid understanding of demographics is crucial when creating labor policy. Employees can use this knowledge to find employment opportunities, and economists and the government can generate labor laws and systems. Consequently, the demographic shift in Indonesia is a crucial process. Current indicators of the change include declining birth rates and mortality rates (Fig. 2). We can infer from Fig. 2 that the population's continuing transformation slowly altered the age composition of the Indonesian population. Hence, Fig. 3 demonstrates that the ratio of young people is decreasing, the proportion of people of working age is multiplying, and the portion of people over 65 is steadily increasing. Indonesia's population is unquestionably relatively young and enjoys a favorable demographic situation. The resulting labor surplus will have a good effect, but it also needs a lot of investments.
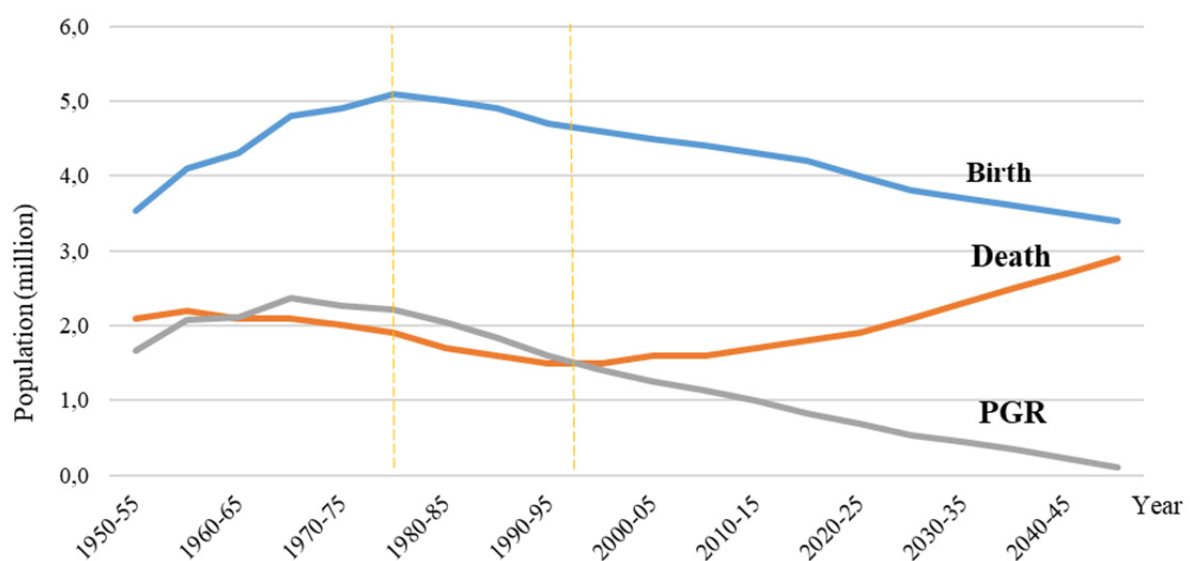

Fig. 2. *Indonesia's demographic shifting [15]*
Рис. 2. *Демографический сдвиг в Индонезии [15]*

According to McKinsey reported by Das et al. [16], the future workforce should be capable of meeting demand and technological requirements. Protecting the expanding sector is a crucial component of the economy's future, according to San Francisco Planning and Urban Research (SPUR) [17]. Indonesia's demographic dividend could be a blunder in the automated digital era. According to Das et al. [16], this catastrophe occurs whenever human resources lack the skills to support the digital age, worsening disparities between Indonesian districts. A demographic revolution in Indonesia was established with the family planning act of 1970 to combat the rising birth rate, as shown in Fig. 2. The population growth in Indonesia then saw a downward trend over several years. However, since 1990, the death rate has increased (Fig. 2). As a result, Indonesia's high rate of productive age affects this issue. People of productive age (15–64) reach 65 % and higher in 2030 [18]. It referred to a window of opportunity that can increase economic growth and societal welfare.

In addition, Indonesia will benefit significantly from the fact that 190 million of its 297 million people are in the productive age group, or 64 % of the population (Fig. 3). However, the surplus of working-age people requires symmetry with better capabilities, including high skills and education, and is supported by labor market openness [12, 17, 19. P. 76]. In the USA, young people are enrolling in college in more significant numbers to meet the demand

for high-skill workers, according to Karoly [19. P. 76]. Conversely, if Indonesia's youthful population does not act quickly, the demographic dividend could become dangerous, leading to technological unemployment. Numerous economists, including Donkin [8], Keynes, Frey, and Osborne [20], and Bührer and C. Hagist [21], recognized this situation. Demographic dividends are important assets if people, especially in metropolitan areas, have the necessary skills for industry revolution 4.0. Urban areas produce the newest, fastest-growing technology and information, agglomeration economies, developing regions, high salaries, etc. [7–10, 16, 17, 19, 20]. As a result, the skills gap in the job market can persist in a cosmopolitan city. Owing to the city's facilitation of expanding knowledge, predictably, possible for new period with many entrepreneurs, particularly in urban areas.
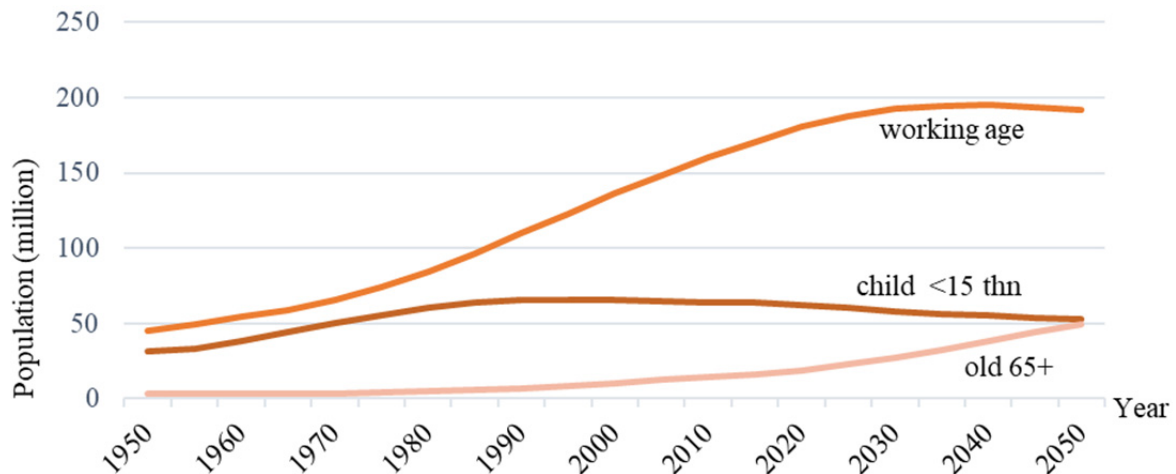

Fig. 3. *Working-age, old and children population in Indonesia, 1950–2050 [15]*
Рис. 3. *Численность населения Индонезии трудоспособного возраста, детей и подростков и старшего поколения, 1950–2050 [15]*

Fig. 4 depicts the evolution of the labor force or labor market condition by province in Indonesia. In 2008, more than 3,276 million workers were available, most of whom were concentrated on the island of Java and various regions of Sumatra. Areas with a large workforce have remained the same after 11 years. As North Kalimantan was founded only in 2012, the data for this region was unavailable in 2008. Nonetheless in 2019, this region contributed 356,282 to the labor force. Overall, there has been a tremendous improvement in the workforce's development during the past 11 years. West Papua, the youngest province, now occupies the lower limit side, which increased from 344,205 to 356,282, while the upper limit climbed from 20,117,245 to 23,835,770. The increase in the labor force reflects workers' potential resources for boosting economic activity on the labor supply side or supply effect.

Undisputedly, compared to other islands, Java Island has the highest density – 1,055 persons per km^2. In addition, most of Indonesia's economic activity and population have been centered on Java Island since 1985, according to Akita [23]. Furthermore, Firman [2] identified Java as an island of megacities with Jakarta as the hub of the Java economic corridor [3]. Legitimately, Jakarta is ruling among other provinces, Resosudarmo and Vidyattama [24] added that provinces outside Java are behind other areas in per capita income. In an idealized world, Indonesia's population density creates a disparity between the provinces and increased economic activity.
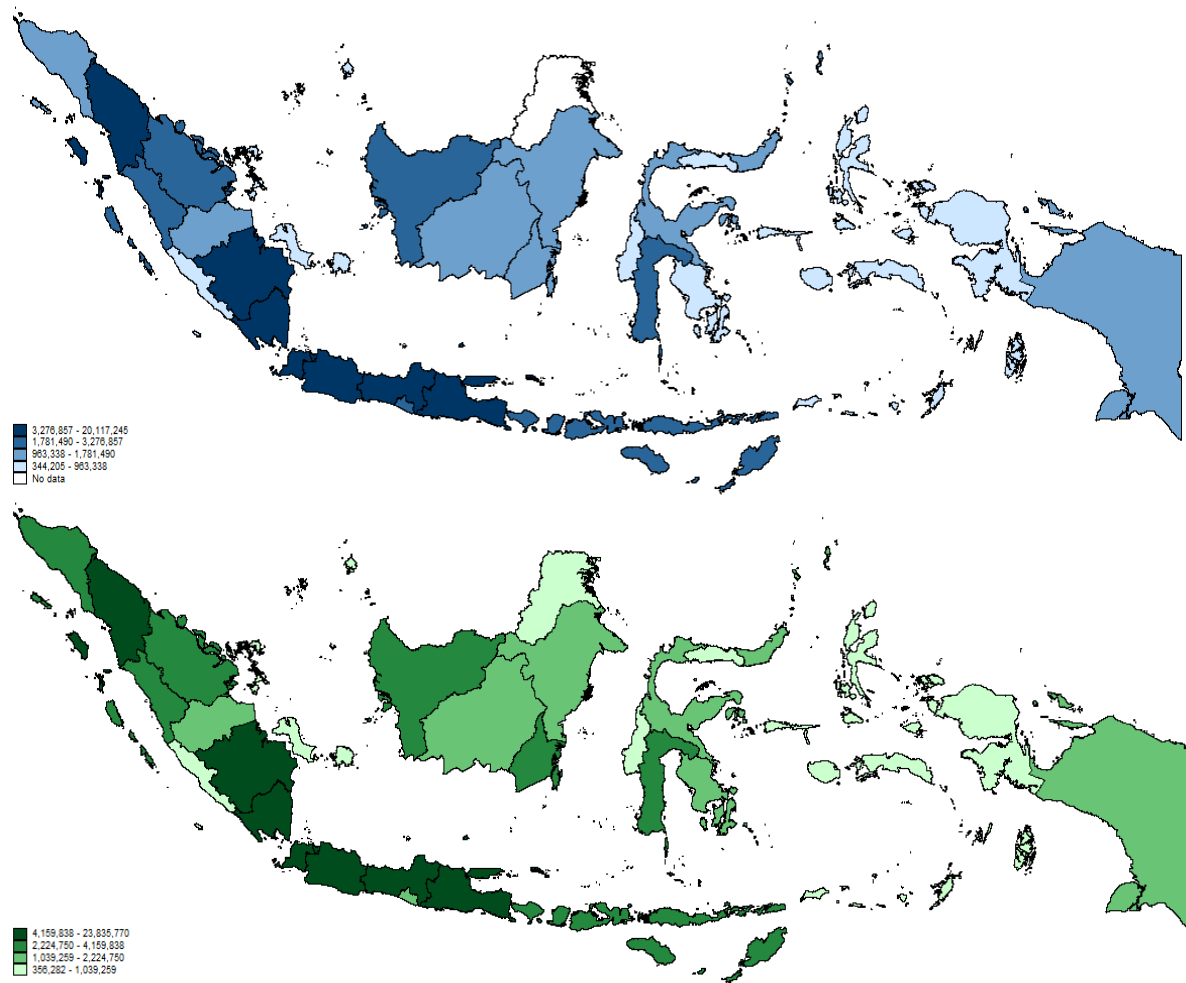
Fig. 4. *Indonesia labor workforce, spatial distribution, 2008 and 2019 [22]*
Рис. 4. *Пространственное распределение рабочей силы Индонезии, 2008 и 2019 гг. [22]*

According to BPS data, the working-age population in Indonesia, in 2022, reached 143,72 million people, or 52,12 % of the country's population. The number increased by 18,28 million, related to the 2016 position of approximately 125,44 million people. The labor force participation rate increased from 66,34 % in 2016 by 2,29 % (Fig. 5). In other words, there is a large pool of resources in Indonesia's workforce. If the government misses this chance, it will be a waste of time. Therefore, Indonesia must invest in human capital and implement the proper strategies, policies, and laws to raise the standard of living to compete in the new industrial era.

However, education that resonates with all facets of the industrial revolution ecosystem is required to accomplish these objectives. Indonesia is referred to with the demographic dividend presence as a valuable market for industry players. However, if human resources are not ready, Indonesian society will become observers or consumers in the new era, not actors, and will be helpless to fight globally. As a result, urban labor has a significant impact on strengthening Indonesia's economic sustainability and helping the country escape poverty. Furthermore, the state of the labor market also affects how well an urban area is doing. The market size will determine how productive, creative, and sustainable an urban area is.

Additionally, Indonesia's urbanization skyrocketed during the 1970s, boosting the country's active development [24]. Since that time, rural-urban migration has intensified Indone-

sia's rapid urbanization rate. Around 36,1 % of Indonesia's population lived in cities in 1995. This figure has nearly doubled to 55,99 % in the subsequent 25 years (Fig. 6). According to the BPS forecast, Indonesia's urban population will reach 66,6 % [26] in just another 16 years, or by 2035.
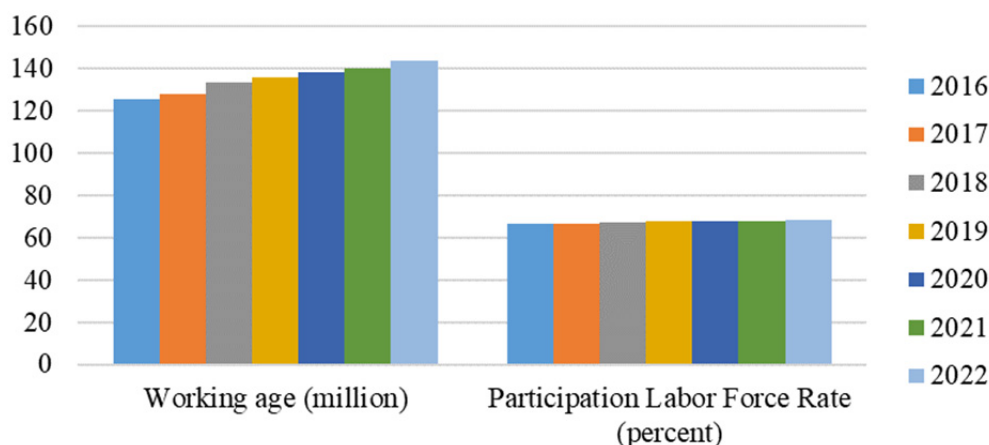

Fig. 5. *Working-age and participation labor force rate, 2016–2022 [25]*
Рис. 5. *Трудоспособный возраст и уровень участия населения в составе рабочей силы, 2016–2022 [25]*
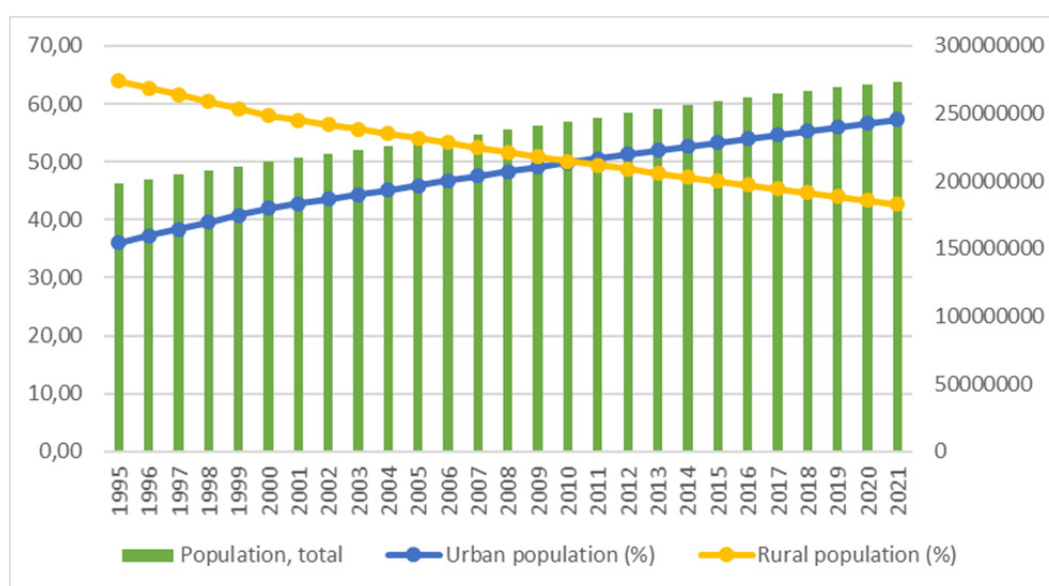

Fig. 6. *Population in rural and urban, 1995–2021 [27]*
Рис. 6. *Сельское и городское население, 1995–2021 [27]*

In the meantime, according to World Bank data (2022), Indonesia's population increased from 196,9 to 273,75 million over the course of the past 25 years, while the number of urban residents increased from 71,48 to 156,83 million over the same period, with an annual growth rate of 0,8 %. In addition, the rate of urbanization increased significantly over that time, from 36,1 to 57,29 %. In other words, metropolitan areas are home to about half of Indonesia's population. The fact that Java is home to 56,82 % of Indonesia's population, or around 145,14 million people, while the remaining population is spread throughout other islands causes the strikingly unequal distribution of the urban population [6]. Investments from

both local and foreign sources are a significant driver of urban development, particularly in large cities like Jakarta, Surabaya, and Bandung.

With over 70 % of its population living in cities, Java is undoubtedly the most urbanized region. Kalimantan, Bali and Kep. Nusa Tenggara are next with 48,43 and 47,47 %, respectively [6]. Scientists predicted that Java becomes the Cities Island in the meantime, and nowadays it is expanding with enormous metropolitan zones connecting major cities. The population growth rate fell from 1,38 % between 2010 and 2015 to 1,19 % between 2015 and 2020. However, the annual growth rate of urban residents, which peaked at 4,40 % from 1990 to 2000, dramatically decreased to 2,41 % from 2015 to 2019 [6, 28]. The trend of urban population growth is declining, from 2000 to 2010, Java reached point of 3,17 % of urban population growth, while other islands slightly higher – 3,66 %. Additionally, the BPS reported that city population growth from 2010 to 2021in Java reached 3,06 % and on the outer islands – 3,54 %. The number of cities with more than a million population has increased significantly.

Furthermore, cities are essentially labor marketplaces. Undoubtedly, resisting the temptations offered by a city's amenities is impossible. As a result, the urban labor market consists of people looking for work and firms looking for employees. According to Idson and Oi [29], significant labor competition makes workers in big businesses more productive. This reasoning is akin to the idea that workers in big cities are more productive[30–32]. In their study, Melitz and Ottaviano [33] employed variable price-cost markups to demonstrate how more significant marketplaces draw in more businesses and strengthen competition. Therefore, the concentration of businesses and employees in one location increases their productivity [1, 34]. As a result, the enormous productivity of more expansive labor markets promotes urban expansion.

The significance of demographic factors in shaping labor policies and the labor market in Indonesia. Furthermore, Indonesia relatively young population and favorable demographic situation offer a demographic dividend and a labor surplus. However, to harness the benefits of this surplus, there is a need for significant investment in enhancing the capabilities, skills, and education of the workforce.

Local labor market, wage and skill in demographic dividend circumstance Indonesia

Following the idea of some scientists, dense area produce premium wages [7–10, 17, 34–37]. Table clarifies that urban areas in Indonesia have premium salary. In 2015, the urban pay was 12,776 rupiah/hour, while the rural wage was 8,785 rupiah/hour, or a 45,43 % difference. The following year, the variety slightly drop to 44,31 %, or 4,803 rupiah/hour. In 2017 it was getting bigger by 53,37 %, or 5,869 rupiah/hour and in 2018 50,44 %, or 5,830 rupiah/hour. The global economic crisis is to blame for this phenomenon. Additionally, it affects 2019–2020, decreasing the wage difference between urban and rural areas to 46,05 % and 37,97 %, respectively. The disparity between urban and rural areas is greater than 40–50 % from 2015 to 2018, although it has been gradually declining since 2018 due to the global financial crisis. The statement made by Glaeser and Maré [7] regarding firms' propensity to pay high wages in cities is relevant in this circumstance. The policy project in Indonesia named *KebijakanPembangunan Desa* (Rural Development Policy) is also responsible for lowering the gap in rural area. The objective of this policy was to increase rural areas' welfare. This policy encouraged people to return to their hometowns since they could not cope with the high levels of competition in cities.

Table. *Average wage per hour in urban and rural in Indonesia, 2015–2020 [38]*
Таблица. *Средняя почасовая оплата труда в городах и сельской местности Индонезии, 2015–2020 гг. [38]*

Location Расположение	Average wage per hour (Rupiah/hour) Средняя заработная плата в час (рупий/час)					
	2015	2016	2017	2018	2019	2020
Urban/Городской	12,776	15,643	16,865	17,389	17,825	19,651
Rural/Деревенский	8,785	10,840	10,996	11,559	12,205	14,242

Cities have always been acknowledged as densely inhabited areas. Local productivity using knowledge-based resources, was always included in urban growth models, proves a city's competitive advantage. Local productivity typically depends on regional knowledge since it is a strong link between the primary human capital in an area and the economy's expansion. The abundance of skills in a place is one of the best predictors of where metropolitan area will prosper, especially in the old communities. Indirect evidence has made it difficult for economists to conclude that disparities in locational productivity are likely related to the benefits that competent individuals derive from interacting with and learning from one another [7, 9, 39, 40].

Additionally, according to BPS [41, 42], the ratio of gross university enrollment is more prominent in rural than in urban areas, but the rate of ICT (Information and Communications Technology) skill is higher in urban than in rural areas (Fig. 7). A need for more ICT infrastructure and the disparity between urban and rural perceptions brings on this situation. However, this supports the claim in some studies [7–9, 16, 20, 40] that metropolitan areas promote advanced technological expertise. Theoretically, the higher expense of attending a university in an urban region results in a lower enrolment rate than in a rural area. Presumably, the migration flows to urban areas attract more under-educated people, hence, suppress the rate of university enrollment.
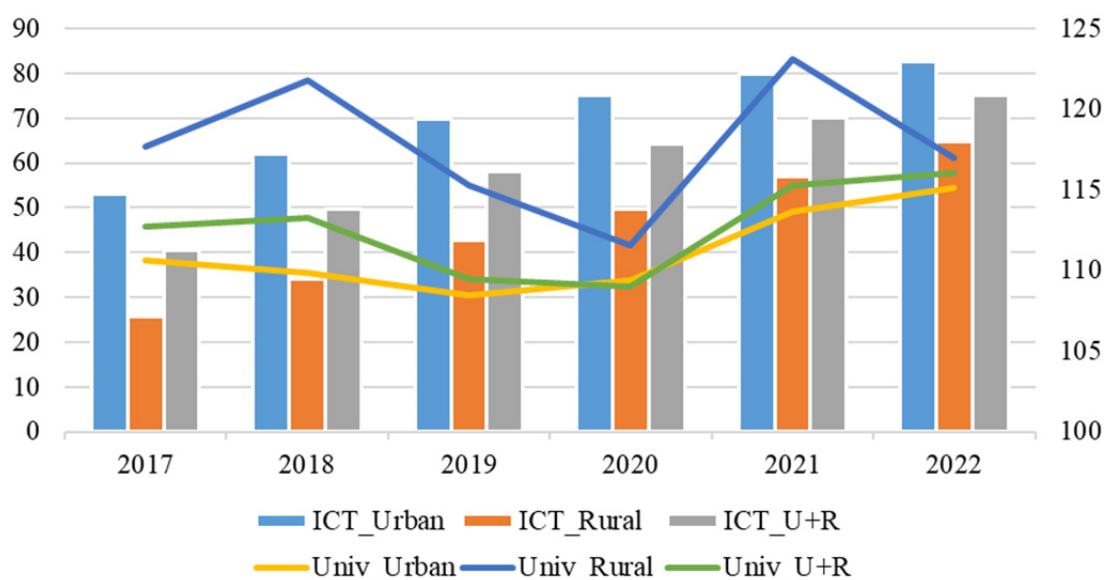

Fig. 7. *ICT skill and university gross enrollment rate by living area, 2017–2022 [41, 42]*
Рис. 7. *Навыки в области ИКТ (Информационные и Коммуникационные Технологии) и общий показатель поступления в университеты в зависимости от места проживания, 2017–2022 [41, 42]*

More competent or educated workers are typically drawn to larger, more prominent urban areas. In the meantime, a factor like schooling and other observable characteristics (wage, experience, marriage status, etc.) affect productivity, but unobservable factors of labor attributes can also influence the productivity, might change orderly outside of communities. Also, unobservable factors of labor attributes can also influence the productivity. According to Glaeser and Maré [7] and Combes et al. [34], the conventional method is to carry labor fixed-effects when relating personal incomes to density. Density has a productivity advantage, evident in wage changes associated with changing vocations and labor expertise. Higher unobserved abilities may be fundamental to a laborer because of upbringing or innate aptitude, but they may also progressively develop over time as the laborer gains work experience.

Establishing Indonesia's human resources concerning labor abilities (experience and knowledge) is a crucial problem for which the government is responsible. Therefore, improving healthcare and education can help increase regional human resources' quality. Since investors like to invest in states with exceptional labor quality, strong human capital may attract investors. Therefore, the Indonesian government should be worried about our human development to maintain the opportunities for job creation, particularly in the demographic dividend period.

Miserably, the level of education among Indonesian employees is low. According to BPS (Fig. 8), approximately 90 % of Indonesian workers don't have a university degree. Exacerbated in 2019, 56,47 % of Indonesian workers lack a high school diploma. Since 2017 labor that under or graduated from elementary school is declining, yet, after the pandemic in 2022 is growing up. At that moment, the vocational graduated is improving, while in 2022 is diminishing by 1,2 %. In other words, the country employs many people who lack the necessary education and skills. Undoubtedly, this situation has contributed to Indonesia's under-educated labor market. Furthermore, about 10 % of laborers have a university education level. The major challenge when sustaining investment in school is how much time spent is used to study. Overestimating one's degree might increase the likelihood of landing a fantastic future job while posing significant financial risks to investors.
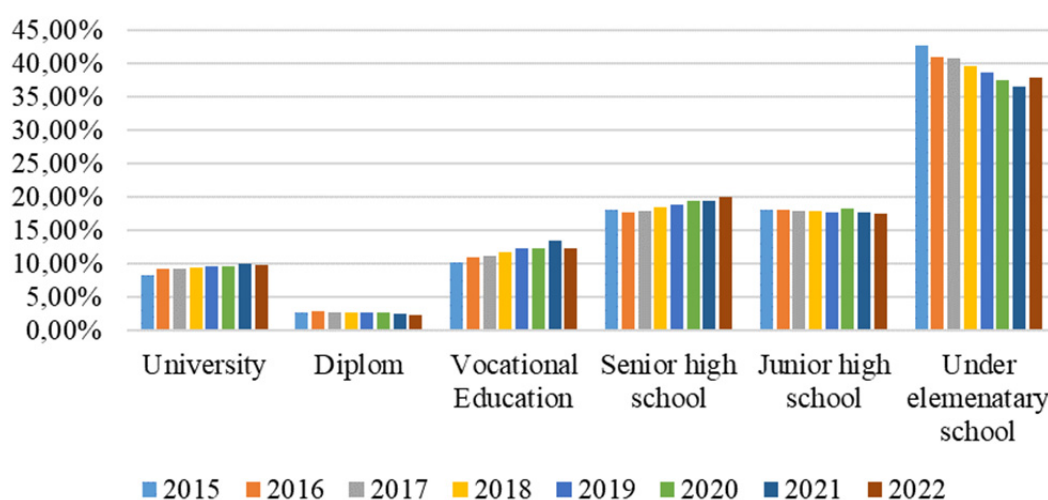

Fig. 8. *Worker education level in Indonesia, 2015–2022 [43]*
Рис. 8. *Уровень образования работников в Индонезии, 2015–2022 [43]*

Unavoidably, the exceptional collaboration between the commercial sector and educational institutions is required to guarantee that graduates meet labor market requirements. Significantly, Indonesia is undergoing a severe skills gap, with most workers needing to catch

up on the necessities of their professions and the job market. Despite this, between 2015 and 2019, there has been an improvement in educational achievement (Fig. 8), despite many older workers, particularly those who have not yet completed secondary school. The inability of Indonesian youngsters to obtain appropriate skill education to compete in the domestic job market is another vulnerability. As a result, the authorized action is reviving the student talent for responsiveness and adjusting the educational policy. Meanwhile, there is a significant income disparity between those with a high level of education and those with no education (Fig. 9). Supposedly, one factor in pay determination is education.
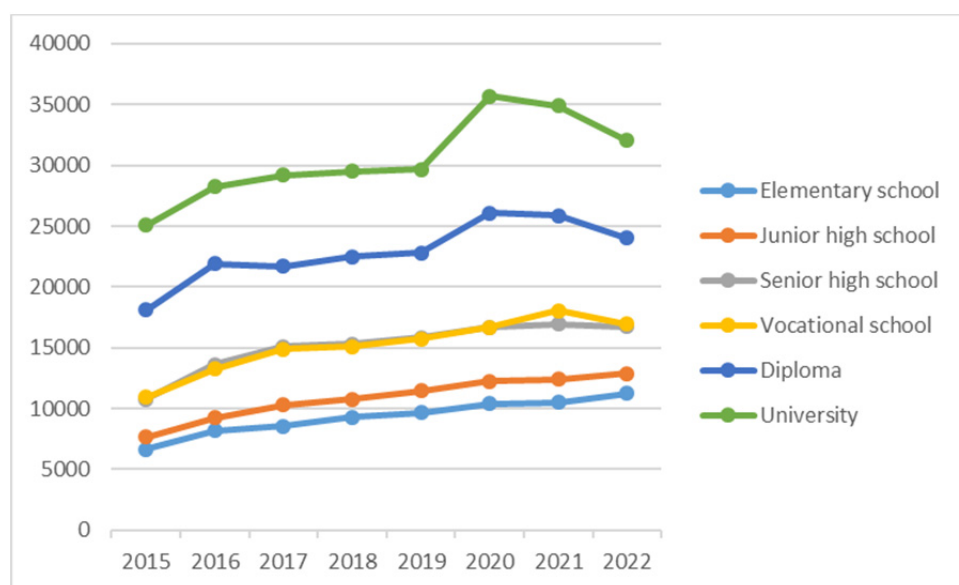

Fig. 9. *Average wage per hour based on education level in Indonesia, 2015–2022 [44]*
Рис. 9. *Средняя почасовая оплата в зависимости от уровня образования*
в Индонезии, 2015–2022 [44]

The local labor market is established by the collaboration of firms and labor with heterogeneous abilities in several areas [35]. Likewise, Barufi and Haddad, Wheaton and Lewis [45] demonstrate the role of the local labor market as the foundation for rising returns. Salaries must be competitive if employees are very productive. Additionally, they discussed how workers choose to deepen rather than increase their human capital, which leads to productivity and innovation when there are more workers in a given industry or vocation, and the matching is higher.

Beyond increased productivity in large cities, Duranton and Puga [1] defined three systems: quicker learning and better dimensions of knowledge, compatibility between enterprises and workers, and sharing facilities and hazards. According to Duranton and Puga [1] better compatibility is a crucial component of economic agglomeration. The matching of labor and firm quality proved higher compatibility in urban regions. This phenomenon, according to Glaeser and Maré [7] and Glaeser and Resseger [9], is the result of skilled workers being drawn to urban areas, making them better at making personal relationships and contributing to a more rapid and productive increase in human capital. They emphasize that in all cosmopolitan areas, individual abilities (measured by education) account for one-third of the variation in income inequality (proxied by the Gini index) [1, 5]. Subsequently, there is a positive association between the employee's educational level and the likelihood of moving. Because highly educated workers are likely to be more systematic in examining employment prospects in al-

ternative labor, the enormous impact of education on migration may become even more pronounced [7–9, 35, 40, 46–48]. Notwithstanding, it caused the brain-drain phenomenon in the rural area, but improved the cities' gains.

There are various aspects related to urban and rural areas in Indonesia, focusing on factors such as wages, productivity, education, and the labor market. This highlights that densely populated urban areas tend to offer higher wages compared to rural areas. Undeniable, the importance of local productivity conducted by knowledge-based resources and the connection between human capital and economic expansion in urban areas. Skilled individuals tend to benefit from interacting and learning from one another in metropolitan areas, fostering the development of advanced technological expertise. However, it notes that there are disparities in terms of education and skills, with a lower enrollment rate in universities in urban areas compared to rural areas.

Local labor market, poverty and inequality in Indonesia

The rapid urbanization and increased population density in Indonesia have resulted in numerous challenges and hazards, including poverty, inequality, unemployment, slum areas, pollution, congestion, overcrowding, high costs of renting, limited green spaces, and other disadvantages [1, 9, 10, 47, 49–51]. As a result, community or labor density is often used as a concise measure to indicate the spatial concentration of economic activity. The population density in Java, for example, demonstrates a significant concentration of economic activity, particularly in urban areas.

Specifically, the imbalanced labor market in urban areas contributes to higher unemployment rates. Unemployment is significantly more prevalent in urban areas compared to rural ones. This disparity is evident in the unemployment rate, which is ±2 % higher in urban areas than in rural areas (Fig. 10). In line with Davis et al. [47], jobless poor is happening in thick labor market. However, the unemployment rate in rural areas has been decreasing since 2015, reflecting the positive impact of the government's rural human empowerment program (*Pemberdayaan Masyarakat Desa*) in reducing unemployment. Over the past four years, the gap in unemployment between urban and rural areas has widened due to a more rapid decline in rural unemployment. One explanation for this trend is that many people from rural areas migrate to urban areas in search of employment opportunities. However, these individuals often struggle to compete with others due to lower levels of education or skills, compounded by the higher cost of living in urban areas. Consequently, urban areas in Indonesia are also grappling with the threats of inequality and poverty.

Simultaneously, the Indonesian government is concerned about the labor issue, especially considering the large population, particularly in urban areas. However, population density also offers significant advantages in the labor market [1, 54]. On the demand side, firms can easily access highly qualified labor. On the supply side, households face challenges such as competition, high cost of living, and congestion in urban areas. Thus, Indonesia's demographic transition and dividend present a massive opportunity for the labor market, particularly on the supply side. However, to achieve equilibrium, Indonesia needs to stimulate the demand side. Excess labor supply can have positive effects if appropriately managed but can also be detrimental if not managed well. Urbanization is characterized by self-organization, collectivity, informality, illegality, and social struggles [50]. It is gradually developed through the steady growth of residences and communities [50]. Unfortunately, this urban process and the migration of labor to cities have led to the emergence of slum areas [49, 50]. The term «slum» typically describes neighborhoods with poor living conditions but fails to encompass the progressive aspects of urbanization [49]. Instead, it has become

synonymous with precarity and poverty, contributing to the marginalization of these areas and obscuring the diversity of urban experiences [1, 37, 47–51]. In essence, the combination of urbanization, rapid population growth, and high employment density may hinder sustainable economic development in metropolitan areas.
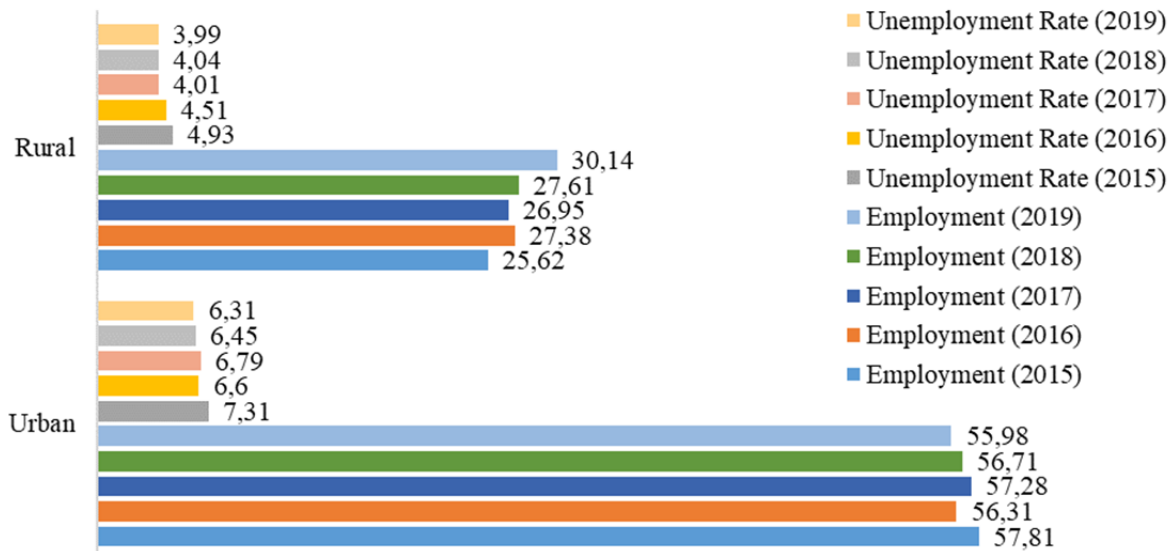

Fig. 10. *Employment and unemployment rate in urban and rural (2015–2019) [52, 53]*
Рис. 10. *Уровень занятости и уровень безработицы в городской и сельской местности (2015–2019) [52, 53]*

Hereinafter, based on Sugiyarto et al. [55], most provincial governments have overlooked crucial aspects such as human resource development and poverty reduction agendas. Fig. 11 shows that pre-pandemic poverty rate in urban was declining from 8,22 to 6,56, and similar with rural trends. Meanwhile the post-pandemic level is increasing and becomes stable in point 7,5. Nevertheless, the Gini ratio in urban is higher than in rural area, hence, the disparity in urban is so wide and following by the relatively stable poverty (Fig. 11). Thus, the rapid development of cities coupled with limited resources creates significant challenges in meeting the increasing demand for services, job opportunities, and other essential human needs [55–57]. In cities like Jakarta, for example, the rapid population growth has led to the emergence of slum districts due to housing shortages [49, 51, 55–58]. The residents of these slums are often economically and socially marginalized within the thriving city economy. It is widely recognized that high levels of absolute poverty are associated with urbanization [55–58]. The impact of urbanization on city employment also raises concerns. In response, the Indonesian government has plans to relocate the capital city to Borneo.

Undeniably, urban areas have problems, such as disequilibrium labor market, poverty and inequality [37, 50, 55]. Hence, those complexities create the difference of productivity in each area. Therefore, it is inevitable that urban can facilitate the adjustment speed between labor readiness and the developing era to ensure a sustainable economy.Furthermore, several studies demonstrate a positive relationship between productivity, economic growth, the proportion of highly educated individuals in a society, and population density [1, 7–9, 39]. Hence, based on Glaeser [7] human capital, measured by educational attainment, plays a significant role in productivity and contributes to population density. However, this density is also associated with negative externalities such as poverty and inequality [47]. Several studies

indicate that one of the side effects of urban agglomeration is the proliferation of sprawl areas that attract unskilled workers [9, 39, 47, 49, 50]. This leads to increased inequality within cities and poverty among individuals who struggle to compete in the labor market and expansion of sprawl areas [39, 47, 49]. Therefore, Indonesia government is creating a large-scale «Kampus Merdeka» program. This program aims to integrate education and business so graduates have theoretical knowledge and practical skills that can be useful in workplace.
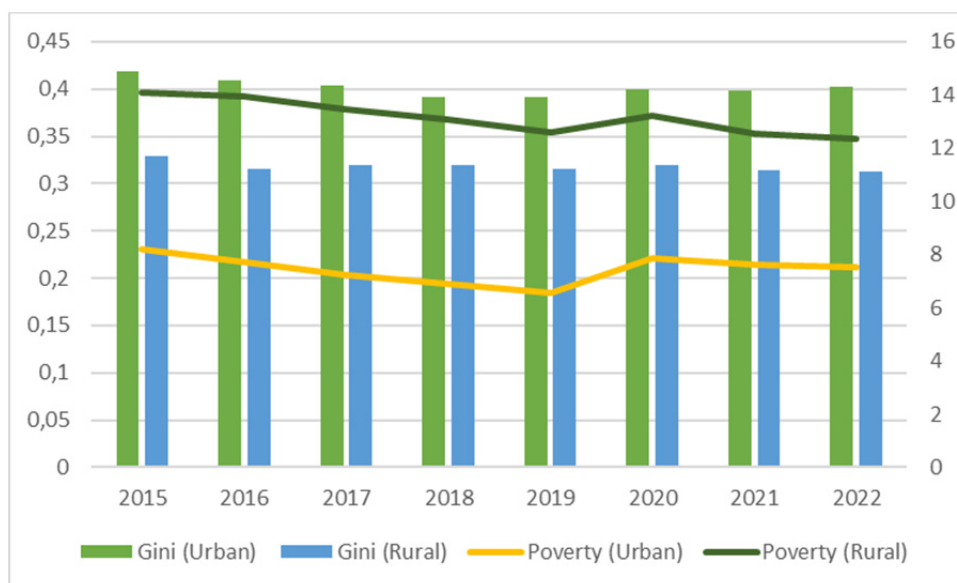

Fig. 11. *Gini ratio and poverty rate in Indonesia, 2015–2022 [59, 60]*
Рис. 11. *Коэффициент Джини и уровень бедности в Индонезии, 2015–2022 [59, 60]*

Conclusion

Indonesia makes significant economic and societal contributions to ASEAN. The rapid urbanization, especially in Java Island, supports the economy's growth rate. This island is also home to several major cities, including Jakarta and Surabaya. The significance of demographic factors consists in two factors: 1) shaping labor policies and the labor market in Indonesia, 2) restructuring the education policy for creating the skillful labor. Indonesia relatively young population and favorable demographic situation offer a demographic dividend and a labor surplus. However, to harness the benefits of this surplus, there is a need for significant investment in enhancing the capabilities, skills, and education of the workforce. Nevertheless, Indonesia's endowment might be disastrous if it is poorly managed and poor quality. Regarding the labor market structure in Indonesia, only 10 % of employees have degrees from colleges or universities, while nearly half have only completed kindergarten or elementary school. Therefore, educated workers are lacking in the Indonesian labor market.

Several aspects are relevant to urban and rural areas in Indonesia and focus on factors such as wages, productivity, education and the labor market. This underlined that densely populated urban areas tend to have higher wages than rural areas. The importance of local productivity driven by knowledge-based resources and the link between human capital and economic growth in urban areas cannot be denied. Qualified individuals tend to benefit from interacting and learning from each other in metropolitan areas, which facilitates the development of advanced technical expertise. However, it has been pointed out that there are disparities in terms of education and skills, such as the university enrollment rate being lower in urban areas than in rural ones.

The challenges and complexities related to urbanization, population density, demographic transition and the labor market in Indonesia are inventible. Poor management and decision-making can have adverse implications for labor market outcomes. Hence, government is emphasizing the need for effective management and policies to address issues of poverty, inequality, and unemployment. In order to provide sustainable economic goals, metropolitan areas will inevitably be able to speed up the adjustment process between the labor ready and the developing age.

REFERENCES

1. Duranton G., Puga D. The Economics of Urban Density. *Journal of economic perspectives*, 2020, vol. 34, no. 3, pp. 3–26. DOI: 10.1257/jep.34.3.3
2. Firman T. The urbanisation of Java, 2000–2010: towards 'the island of mega-urban regions'. *Asian Population Studies*, 2017, vol. 13, Iss. 1, pp. 50–66. DOI: 10.1080/17441730.2016.1247587
3. Maryaningsih N., Hermansyah O., Savitri, M. The role of infrastructure on economic growth in Indonesia. *Bulletin of Monetary, Economics and Banking*, 2014, no. 17 (1), pp. 55–88.
4. Böhm M.J., Gregory T., Qendrai P., Siegel C. *Demographic change and regional labour markets*. Bonn, Institute of Labor Economics, 2020. 24 p.
5. Gribble J.N., Bremner J. Achieving a demographic dividend. *Population Bulletin*, 2012, vol. 67, pp. 1–13.
6. *Proyeksi penduduk Indonesia. Indonesia population projection. 2010–2035.* Jakarta-Indonesia, Badan Pusat Statistik, BPS, 2013. 468 p. Available at: https://perpustakaan.bappenas.go.id/e-library/file_upload/koleksi/migrasi-data-publikasi/file/Policy_Paper/Proyeksi_Penduduk_Indonesia_2010-2035.pdf (accessed: 21 February 2023).
7. Glaeser E.L., Maré D. Cities and skills. *Journal of Labor Economics*, 2001, vol. 19, Iss. 2, pp. 316–342. DOI: http://dx.doi.org/10.1086/319563
8. Donkin R. *The future of work*. London, Palgrave Macmillan, 2010. 280 p.
9. Glaeser E.L., Resseger M.G. The complementarity between cities and skills. *Journal of regional science*, 2010, vol. 50, no. 1, pp. 221–244. DOI: 10.1111/j.1467-9787.2009.00635.x
10. De La Roca J., Puga D. Learning by working in big cities. *Review of Economic Studies*, 2017, no. 84, pp. 106–142. DOI: 10.1093/restud/rdw031
11. Wijayanti F., Turgel I.D. Industrial revolution 4.0: is Indonesia labor market ready or not? *XIV International Conference «Russian Regions in the Focus of Changes»*. Yekaterinburg, Ural Federal University, 2019. pp 18–27.
12. Wijayanti F., Turgel I.D. The consequences of digitalization of the labor market in developing countries: case study in Indonesia. *Proceedings of the XV International Conference. Russian Regions in the Focus of Changes (ICRRFC 2020)*. Yekaterinburg, Atlantis Press, 2021. pp. 96–105.
13. Creswell J.W. *Research Design: qualitative, quantitative and mixed methods approaches research*. Thousand Oaks, SAGE Publications, 2014. 273 p.
14. Creswell J.W. *Educational research: planning, conducting and evaluating quantitative and qualitative research*. Boston, Pearson, 2012. 650 p.
15. Indonesia's intergovernmental transfer: response on future demographic and urbanization shifts. *World Bank*, 2011. Available at: https://documents.vsemirnyjbank.org/ru/publication/documents-reports/documentlist?qterm=P119420 (accessed: 21 February 2023).
16. Das K., Gryseels M., Sudhir P., Tan K.T. *Unlocking Indonesia's digital opportunity*.Jakarta, McKinsey, 2016. 28 p.
17. *The Urban Future of Work. How denser, more urban workplaces will strengthen the Bay Area's economic competitiveness*. SPUR Report, 2012. Available at: https://www.spur.org/publications/spur-report/2012-01-09/urban-future-work (accessed: 21 February 2023).
18. *Siaran Pers-Peer Learning and Knowledge Sharing Workshop.* Available at: https://www.google.ru/url?sa=i&rct=j&q=&esrc=s&source=web&cd=&ved=0CAIQw7AJahcKEwio_vH4g dT_AhUAAAAAHQAAAAAQAg&url=https%3A%2F%2Fwww.bappenas.go.id%2Ffiles%2F6b5d7b3b-4896-4a9e-9bc3-8cc7721a4a39%2Fdownload&psig=AOvVaw3E_dkKczFJ5YkrNUakBN6o&ust=1687424936609302&opi=89978449(accessed: 21February 2023).
19. Karoly L.A., Panis C. *The 21st Century at Work: Forces Shaping the Future Workforce and Workplace in the United States*. California, RAND Corporation, 2004. Available at: https://www.rand.org/pubs/monographs/MG164.html (accessed: 21 February 2023).
20. Frey C.B., Osborne M. The future of employment: how susceptible are jobs to computerisation? *Technological Forecasting and Social Change*, 2017, vol. 114, pp. 254–280. DOI: https://doi.org/10.1016/j.techfore.2016.08.019

21. Bührer C., Hagist C. The effect of digitalization on the labor market. *The Palgrave Handbook of Managing Continuous Business Transformation*. Eds. H. Ellermann, P. Kreutter, W. Messner. London, Palgrave Macmillan UK, 2017. pp. 115–137

22. Labor Force (LF) by Age Group 2008 and 2019. *Statistics Indonesia*.Available at: https://www.bps.go.id/indicator/6/698/1/angkatan-kerja-ak-menurut-golongan-umur.html (accessed 21 February 2023).

23. Akita T. Regional development and income disparities in Indonesia. *Journal of the East Asian Economic Association*, 1988, vol. 2, Iss. 2, pp. 165–191. DOI: https://doi.org/10.1111/j.1467-8381.1988.tb00131.x

24. Resosudarmo Budy P., Yogi Vidyattama. Regional income disparity in Indonesia: a panel data analysis. *ASEAN Economic Bulletin*, 2006, vol. 23, no. 1, pp. 31–44.

25. *Penduduk Berumur 15 tahun ke atas menurut jenis kegiatan 2016–2022* [Residents aged 15 and above according to the type of activity 2016–2022]. *Statistics Indonesia*. Available at: https://www.bps.go.id/ indicator/6/529/1/penduduk-berumur-15-tahun-ke-atas-menurut-jenis-kegiatan.html (accessed 21February 2023).

26. Percentage of Urban Population by Province, 2010–2035. *Statistics Indonesia*.Available at: https://www.bps.go.id/statictable/2014/02/18/1276/persentase-penduduk-daerah-perkotaan-hasil-proyeksi-penduduk-menurut-provinsi-2015---2035.html (accessed 21 February 2023).

27. World Development Indicators. *The World Bank*. Available at: https://databank.worldbank.org/ indicator/SP.POP.TOTL/1ff4a498/Popular-Indicators (accessed 21 February 2023).

28. Pravitasari A.E. *Study on Impact of Urbanization and Rapid Urban Expansion in Java and Jabodetabek Megacity, Indonesia*. Available at: https://www.researchgate.net/profile/Andrea-Pravitasari-2/publication/303859966_STUDY_ON_IMPACT_OF_URBANIZATION_AND_RAPID_URBAN_EXPANSION_IN_JAVA_AND_JABODETABEK_MEGACITY_INDONESIA/links/575909720 8aed88462068475/STUDY-ON-IMPACT-OF-URBANIZATION-AND-RAPID-URBAN-EXPANSION-IN-JAVA-AND-JABODETABEK-MEGACITY-INDONESIA.pdf (accessed 21February 2023).

29. Idson T.L., Oi W.Y. Workers are more productive in large firms. *American Economic Review*, 1999, no. 89 (2), pp. 104–108. DOI: 10.1257/aer.89.2.104

30. Harmon N.A. *Are workers better matched in large labor markets?* Princeton University, 2013. pp. 1–58. Available at: https://web.econ.ku.dk/nharmon/docs/harmon2013areworkers.pdf (accessed 21 February 2023).

31. McGowan M.A., Andrews D. *Labour market mismatch and labour productivity: evidence from PIAAC data.ECO/WKP*, 2015, no. 27, pp. 1–51. Available at: https://www.oecd.org/economy/growth/Labour-Market-Mismatch-and-Labour-Productivity-Evidence-from-PIAAC-Data.pdf (accessed 21 February 2023).

32. Henrekson M. How labor market institutions affect job creation and productivity growth. *IZA World Labor*. 2020. Available at: https://wol.iza.org/articles/how-labor-market-institutions-affect-job-creation-and-productivity-growth/long (accessed 21 February 2023).

33. Melitz M.J., Ottaviano G.I. Market size, trade, and productivity. *Review of Economic Studies*, 2008, no. 75, pp. 295–316.

34. Combes P., Duranton G., Gobillon L., Puga D., Roux S. The productivity advantages of large cities: distinguishing agglomeration from firm selection. *Econometrica*, 2012, no. 80 (6), pp. 2543–2594. DOI: http://dx.doi.org/10.3982/ECTA8442

35. Barufi A.M.B., Haddad E.A. Spatial mismatch, wages and unemployment in metropolitan areas in Brazil. *Region: the journal of ERSA*, 2017, no. 4 (3), pp. 175–200. DOI: https://doi.org/10.18335/region.v4i3.171

36. Di Addario S., Patacchini E.*Wages and the City. Evidence from Italy*. DOI: http://dx.doi.org/ 10.2139/ssrn.1002632. Available at: https://ssrn.com/abstract=1002632 (accessed 21 February 2023).

37. Prasertsoong N., Puttanapong N. Regional wage differences and agglomeration externalities: micro evidence from thai manufacturing workers. *Economies*, 2022, no. 10 (12), 319. DOI: https://doi.org/10.3390/economies10120319

38. Average working hour rate by area of residence (Rupiah/Hour), 2015–2020. *Statistics Indonesia*. Available at: https://www.bps.go.id/indicator/19/1173/1/upah-rata---rata-per-jam-pekerja-menurut-daerah-tempat-tinggal.html (accessed 21 February 2023).

39. Li H., Cai H., Chakraborty S. Market access, labor mobility, and the wage skill premium: new evidence from Chinese cities. *Open Economies Review*, 2019, vol. 30, pp. 947–973. DOI: 10.1007/s11079-019-09546-6

40. Kijek A., Kijek T. Knowledge spillovers: an evidence from the European regions. *Journal of Open Innovation Technology Market and Complexity*, 2019, vol. 5, Iss. 3, 68. DOI: https://doi.org/10.3390/joitmc5030068

41. Proportion of adolescents and adults aged 15–59 years with the Information and Computer Technology Skills (ICT) by area (percent), 2017–2022. *Statistics Indonesia*. Available at: https://www.bps.go.id/indicator/28/1449/1/proporsi-remaja-dan-dewasa-usia-15-59-tahun-dengan-keterampilan-teknologi-informasi-dan-komputer-tik-menurut-daerah-tempat-tinggal.html. (accessed 21 February 2023).

42. Ratio of Crude Participation Rate (APK) female/male in university level by living area 2017–2022. *Statistics Indonesia*. Available at: https://www.bps.go.id/indicator/28/1526/1/rasio-angka-partisipasi-kasar-apk-perempuan-laki-laki-di-tingkat-perguruan-tinggi-menurut-daerah-tempat-tinggal.html. (accessed 21 February 2023).

43. Penduduk Berumur 15 Tahun Ke Atas Menurut Pendidikan Tertinggi yang Ditamatkan dan Jenis Kegiatan Selama Seminggu yang Lalu, 2008–2022 [Population aged 15 and over according to highest education completed and type of activity during the past week, 2008–2022]. *Statistics Indonesia*. Available at: https://www.bps.go.id/statictable/2016/04/05/1909/penduduk-berumur-15-tahun-ke-atas-menurut-pendidikan-tertinggi-yang-ditamatkan-dan-jenis-kegiatan-selama-seminggu-yang-lalu-2008-2022.html. (accessed 21 February 2023).

44. Average working hours rate by education level (Rupiah/hour), 2015–2022. *Statistics Indonesia*. Available at: https://www.bps.go.id/indicator/19/1175/1/upah-rata---rata-per-jam-pekerja-menurut-tingkat-pendidikan.html. (accessed 21 February 2023).

45. Wheaton W.C., Lewis M.J. Urban wages and labor market agglomeration. *Journal of Urban Economics*, 2002, vol. 51, Iss. 3, pp. 542–562.

46. Lee B.S., Hong S.H., Wohar M.E. City Size, labor productivity and wages in Korea. *The Singapore Economic Review*, 2020, vol. 65, no. 04, pp. 1073–1098. DOI: https://doi.org/10.1142/S0217590817500138

47. Davis E.E., Connolly L.S., Weber B.A. Local labor market conditions and the jobless poor: how much does local job growth help in rural areas? *Western Journal of Agricultural Economics*, 2002, no. 28 (3), pp. 503–518.

48. Rees P. Education and demography: a review of world population and human capital in the 21st century. *Vienna Yearbook of Population*, 2019, no. 16, pp. 37–53. Available at: https://eprints.whiterose.ac.uk/142989/8/VYPR%202018%20Rees%203.pdf (accessed 21 February 2023).

49. Rao V. Slum as theory: the South/Asian city and globalization. *International Journal of Urban and Regional Research*, 2006, no. 30, pp. 225–232. DOI: https://doi.org/10.1111/j.1468-2427.2006.00658.x

50. Abdurakhmanov K.K., Zokirova N.K. New challenges and priorities of the labor market development in Uzbekistan. *Espacios*, 2019, vol. 40, no. 10, p. 14.

51. Miranti R. Examining the interdependencies between urbanization, internal migration, urban poverty, and inequality: evidence from Indonesia. *Internal Migration, Urbanization and Poverty in Asia: Dynamics and Interrelationships*. Eds. K. Jayanthakumaran, R. Verma, G. Wan, E. Wilson. Singapore, Springer Open, 2019. pp 47–75. DOI: https://doi.org/10.1007/978-981-13-1537-4

52. Unemployment rate by area of residence 2015–2019. *Statistics Indonesia*. Available at: https://www.bps.go.id/indicator/6/1178/2/tingkat-pengangguran-terbuka-berdasarkan-daerah-tempat-tinggal.html. (accessed 21 February 2023).

53. Percentage of formal workers by area of residence (percent), 2015–2019. *Statistics Indonesia*. Available at: https://www.bps.go.id/indicator/6/1169/2/persentase-tenaga-kerja-formal-menurut-daerah-tempat-tinggal.html. (accessed 21 February 2023).

54. Bleakley H., Lin J. Thick-market effects and churning in the labor market: Evidence from US cities. *Journal of Urban Economics*, 2012, no. 72 (2–3), pp. 87–103. DOI: 10.1016/j.jue.2012.04.003

55. Sugiyarto G., Oey-Gardiner M., Triaswati N. Labor markets in Indonesia: key challenges and policy issues. *Labor Markets in Asia: Issues and Perspectives*. Eds. J. Felipe, R. Hasan. London, Palgrave Macmillan, 2006. pp. 301–366.

56. Sukamdi. Urbanization and the structure of urban employment in Indonesia. *Journal of Social Issues in Southeast Asia*, 1996, vol. 11, no. 1, pp. 52–75.

57. Tadjoeddin M.Z., Mercer-Blackman V. Urbanization and labor productivity in Indonesia. *Indones. Enhancing Productivity through Quality Jobs*. Eds. E. Ginting, C. Manning, K. Taniguchi. Manila, Asian Development Bank, 2018. pp. 130–169. Available at: https://www.adb.org/sites/default/files/publication/400586/indonesia-enhancing-productivity-quality-jobs.pdf (accessed 21 February 2023).

58. Martinez R., Masron I.N. Jakarta: a city of cities. *Cities*, 2020, vol. 106, 102868. DOI: https://doi.org/10.1016/j.cities.2020.102868

59. Gini ratio Menurut Provinsi dan Daerah 2015–2022 [Gini Ratio by Province and Region 2015–2022]. *Statistics Indonesia*. Available at: https://www.bps.go.id/indicator/23/98/2/gini-ratio-menurut-provinsi-dan-daerah.html. Accessed 14 Jun 2023 (accessed 21 February 2023).

60. Percentage of Poor Population (P0) by Province and Area 2015–2022. *Statistics Indonesia*. Available at: https://www.bps.go.id/indicator/23/192/1/persentase-penduduk-miskin-p0-menurut-provinsi-dan-daerah.html. (accessed 21 February 2023).

ИССЛЕДОВАНИЕ ЛОКАЛЬНОГО РЫНКА ТРУДА В УСЛОВИЯХ ДЕМОГРАФИЧЕСКОГО ДИВИДЕНДА В ГОРОДСКИХ РАЙОНАХ ИНДОНЕЗИИ

Фебри Виджаянти,
febry.ie008@gmail.com

Институт экономики и управления,
Уральский федеральный университет, Екатеринбург, Россия, 620002, ул. Мира, 19

Фебри Виджаянти, инженер-исследователь, Уральский федеральный университет.

Демографический дивиденд имеет существенную связь с экономическими показателями и может быть источником как возможностей, так и проблем с точки зрения экономического роста. Более того, демографический переход оказывает глубокое причинно-следственное воздействие на рынок труда и общество в целом. Сегодня Индонезия обладает демографическим дивидендом и стремится развиваться в русле приоритетов новой цифровой эпохи, однако на рынке труда страны доминирует малообразованная рабочая сила, что может стать причиной серьезных проблем. Таким образом, данное исследование выявляет проблемы городского рынка труда в Индонезии, оценивает текущую и рассматривает перспективы новой политики в отношении рабочей силы, сконцентрированной в крупнейших городах. Проведенное исследование основано на данных из различных профессиональных отчетов и исследований, выполненных государственными учреждениями, предприятиями, консорциумами, журналами, систематизированных и обработанных автором, а также литературе, связанной с анализируемой тематикой. Результаты исследования показали значительное влияние демографических факторов на формирование трудовой политики и рынка труда в Индонезии. Однако, чтобы воспользоваться преимуществами демографического дивиденда и избытка рабочей силы, необходимы значительные инвестиции в повышение квалификации и уровня образования работников. В нынешней структуре рабочей силы в Индонезии только 10 % работников имеют высшее образование. Следовательно, городские районы сталкиваются с бедностью и высоким неравенством, вызванными наличием малообразованной рабочей силы, которая мигрирует в города за более высокой зарплатой.

Ключевые слова: локальный рынок труда, демографический дивиденд, «переток» знаний, городская надбавка к заработной плате, бедность, неравенство.