

Indonesia's Demographic Future

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Some empirical evidence advocates that large population size, especially with a high proportion of working age population, played a significant part in creating economic growth. The typical long-run demographic scenario for an emerging economy like Indonesia is that an increase in the number of working-age persons will lead to an increase in the labor force, thereby boosting potential economic growth. The central objective of this paper is to better understand the challenges of Indonesian future's population profiles. This paper serves to highlight the fact that policy decisions in Indonesia need to be made with an eye to the longer term. Two questions to be discussed in this paper are what will be Indonesian future demographic profile look like in the future and what types of policies can Indonesia undertake to fully achieve its demographic potential. Several scenarios will be presented later on before the last section that summarizes and provide some policy commentaries. The different scenario results suggest that the Indonesian dependency ratio will reverse in the next 20 years, suggesting a time-limited window for Indonesia to reap the positive condition of the demographic dividend.

Keywords: demographic dividend; Indonesia; population; projection.

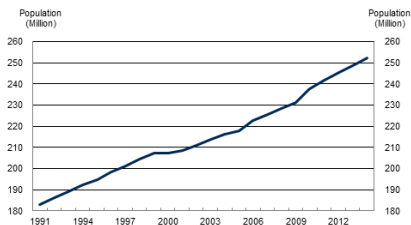
1 Introduction

A typical scenario in growth economics shows that there is a strong association between population and economic growth. Looking at the East Asian region, Bloom & Williamson (1998) empirically show that young demographic condition was an important feature in explaining the East Asian economic miracle in the 70s to late 90s. They advocate that the East Asian economic miracle happened because the working-age population at that time was growing at a much faster rate than the dependent population which, in turn, help the region to expand the per capita productive capacity. The relation between population and economic growth relation was also proven bi-direction. Barro and Becker (1989) suggest that higher economic growth is often balanced with a decline in fertility through altruism factor and utility maximizing efforts of parents. Becker et. al. (1999) further adds that an improvement in economic condition leads to a higher return on investments for a child. Accordingly, the rates of population growth would eventually decrease with the improvement of economic condition. The relation between demographic and economic growth lead Bloom & Williamson (1998) to suggest that demographic profile not only postulates the current condition of the population but also provides clues as to the likely direction for future economic development. This opens a wide range for further discussion on the role of demographic development in shaping economic growth.

The choice of Indonesia as a case in this paper is because, not only, Indonesia is currently the world's fourth most populous nation but also because Indonesia's economic profile is also important in the South-East Asia (SEA) region. With an average of 5.5 percent economic growth per year, Indonesia is one of the fast-growing economies in the world. This has led Indonesia's economy to accounts for a third of SEA's GDP. The latest population census of Indonesia in 2010 reported that the Indonesian population reached more than 230 million people. This number has been estimated to

reach 265 Million in 2017. Accordingly, understanding on the trajectory of Indonesia's economic and demographic profile will be beneficial for policymaker and futurologist not only in the region but also in the world.

Figure 1 shows the historical population of Indonesia as published by the Indonesian Bureau of Statistic (BPS). As pictured in the graph, Indonesia's population roughly grew by more than 50 million between 1990 and 2010. Moreover, Indonesia's large population also conveyed a large number of working-age populations. The number of Indonesians aged 15 to 64 years, generally considered the traditional working age group, has significantly increased over the last ten years. This profile is obvious through the larger bulge in the lower part of the population pyramid. Theoretically, this productive population is the ones expected to encourage economic growth through economic activity creation, create a source for consumption, provide the capital in the financial market, and act as a strong supporter for tax revenue. With the right approach, Indonesian productive population can be the key factor for Indonesia to be one of the world's biggest economic power. Therefore, Indonesian policymakers need to develop policies that could, not only, provide decent employment opportunities but also trigger productivity improvement. Failing to do, however, so could push Indonesia's demographic bonus into what so-called demographic burden.



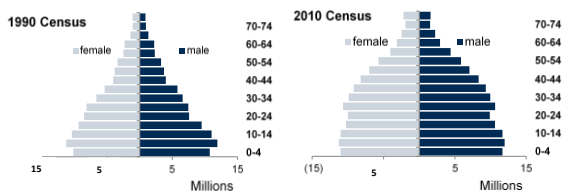


Fig. 1. Indonesian Population Historical Estimation & Population Pyramids.

2 Methodology

This paper uses the cohort-component method in the projection of population with 2050 as the end or projection period. The demographic components, (births, deaths, and migration) are estimated from available historical data while migration rate followed a constant value of zero. Due to more widespread availability, this paper focuses on Indonesia's national data rather than regional. This paper employs three scenarios which incorporate possible demographic trends of fertility and life expectancy (mortality) in Indonesia. Table 1 shows the summary of these scenarios. The objective of the scenario analysis is to understand the effect of different challenges and opportunities which may emerge in Indonesian demographic development. The choice of a deterministic assumption rather than probabilistic was driven mostly by the fact that there are some limitations in the historical data for Indonesia to support a robust probabilistic model.

Table 1. Scenario Summary.

	Total Fertility Rate Improvement	Life Expectancy Improvement
Series A	Lower	Moderate
Series B	Base	Moderate
Series C	Higher	Elevated

The fertility scenarios (Base, Lower and Higher) are developed under the movement of Indonesia's "Replacement Level", which is The Total Fertility Rate (TFR) at which a population exactly replaces itself from one generation to the next without migration component. The Indonesian National Population and Family Planning suggest that Indonesia replacement level is reached when the TFR equal to 2.1. Series B (Base) will utilize this 2.1 TFR to be reached in 2025. Series A uses estimation that the replacement level is reached earlier (2020) while series C assumes that the replacement level is reached farther (2035). Indonesia's increasing focus on industrial improvement could play a potential factor of an accelerated decline in the fertility rate. As more jobs are created, the labor participation rate of women is likely to increase. This could generate tendencies of women marrying and bearing children later in life. In addition, an increase in incomes could also leads to a higher opportunity cost of having children. These last two factors were seen in South Korea's Industrial revolution in the early 1990s. The third scenario, Series C, assess a longer reduction of fertility. A rationale for this scenario is based on internal conditions within Indonesia where several regions still have a high fertility rate. Data from the Indonesian Bureau of Statistic (BPS) shows that in 2012 there were ten provinces that have a TFR of three or above.

The development of the life expectancy scenario starts with the assumption that without any short-term shocks (i.e. war, natural disasters, and epidemics), life expectancy should improve. The rate of improvement in life expectancy, however, could vary depending on several influencing factors. The basic premise in developing the life expectancy scenarios in this paper leans more on infant mortality rates as an age-independent component. Series A and B will use a moderate infant mortality improvement while Series C will use a higher (elevated) improvement estimation. The premises in assuming a moderate improvement in infant mortality level is that health service exposures, especially in the remote area of Indonesia,

are still limited. The UN reports that Indonesia's Infant Mortality in 2016 reached 22 per 1000 live birth, well above its peers. In the moderate life expectancy scenario (Series A & B), Infant Mortality for Indonesia in 2050 are projected to improve to reach 10 per 1000 live birth. Using mortality table, this condition results to a life expectancy calculation of roughly 68 years (Male) and 72 years (Female). On the other hand, higher level of education of mothers, easier health access and overall progress in health technology are some factors that motivate faster improvement of infant mortality development thus lead to higher life expectancy scenario used in Series C. For Series C, Infant mortality projection of 8 per 1000 live birth in 2050 will be used, suggesting a life expectancy of roughly 70 years (Male) and 72.5 years (Female). A large reduction of child and infant mortality has happened before in China in the early years of its industrialization era.

The assumption of zero net overseas migration in Indonesia used in all scenarios. With the current low quality of data on international migration and the uncertainty of the pattern and direction of international migration in Indonesia, it is difficult to know and estimate the real number of international migration. Therefore, this paper will use zero as the net overseas migration assumption.

3 Model Result

The model suggests that a 300 million population mark for Indonesia will be reached between 2036 and 2039. Figure 2 shows the population projection of Indonesia to 2050 under the different scenarios. The average annual rate of growth in population projection is projected to be 0.89 percent in the next 20 years. The UN population projection medium-variant scenario under the World Population Prospect is used as a key comparison.



Fig. 2. Indonesian Population and Dependency Ratio Estimation.

All scenarios show a similar trend of declining dependency ratio profile. As expected, this declining profile then reverts to an increasing trend. In all scenarios, a low fertility rate and/or a high life expectancy will lead to older citizen gaining more share of the population. Series B, which uses 2025 as the year where replacement level is reached, provides 2031 as the turning point for the dependency ratio. A lower fertility scenario indicates that the turning point happens earlier (2030) while the higher fertility scenario suggests an extended turning point (2033). This condition is self-explanatory since a low fertility rate means that there are fewer children, creating an accelerated reversal of the dependency ratio. Nevertheless, Figure 2 shows a convergence of the dependency ratio for series A and B which use similar life expectancy assumption. The convergence suggests that the fertility rate will be influential in the medium term for the population while life expectancy will have a longer-term influence.

All scenarios suggest population in the productive age (15 – 64) in 2030 are high, demonstrating the potential of a large consumer base and a huge source of labor for Indonesia. Nevertheless, the model result also shows the risks for Indonesia in term of a consistent increase in the number of older population. The proportion of population above 64, which is estimated to be around 5 percent of the total population in 2014 will rise to around 9 percent in 2035. In Series B, with a population estimation of 296 Million in 2035, the 9 percent portion of the population above 64 constitutes of more than 23 million people. From a policymaker perspective, this condition could create some risks. A poorly manage fiscal management, such as social and health spending, could lead to a non-sustainable budget spending, as well as, uncovered health risks.

Using the population projection, we can also construct an estimation of labor force for Indonesia. One key element in the labor force estimation is that, without extending the pension age policy, as the population ages, a declining profile in labor force participation follows. Using the population projection number, a stable age-specific participation rate estimation, and the Non-Accelerating Inflation rate of Unemployment (NAIRU) projection from OECD we calculate Indonesia employment number projection. Using scenario B as the selected scenario, the estimation suggests that there will be more than 153 million workers in Indonesia in 2050. These results should help answer the question of how big the labor force potential for Indonesia in the future. This, of course, assuming the NAIRU and other assumptions prevail.

4 Analysis

The UN describes the declining profile of the dependency ratio as the “window of opportunity” when a “demographic dividend” may be reaped. The potential within this demographic dividend includes an increase in labor supply, increase in personal saving,

higher potential from tax revenue, a low health and social cost and high domestic demand. The model suggests that Indonesia's dependency ratio trend is still declining and is predicted to reach its lowest level in 2030-2035. The different scenarios show that fertility is a central component for Indonesian demographic profile. However, a reduction of fertility rate without supportive policies, such as migration, could create a distortion that results in a significantly reduced share of young people in the population. Following the idea of Bloom & Williamson (1998), a low portion of young productive population could lead Indonesia to miss the golden opportunity of growth. This loss of potential could lead to some serious economic consequences in a longer term. The improvement in life expectancy, on the other hand, provide a moderate influence on the dependency ratio profile. Nevertheless, there are still risks coming from an increasing life expectancy, particularly from a fiscal perspective. As happened in many high-income countries, the health and social cost of an increasing older people's proportion is not negligible. Additionally, a rising dependency ratio shows an increased risk to the economy as more of the population become more reliant on others, be it family or the government.

Capitalizing on the demographic dividend opportunity has challenges. Unfortunately, the efforts of managing these demographic challenges, including preparing the necessary budget plan, are more prevalent in advanced economies compared to the emerging economies, including Indonesia. As mentioned earlier in the paper, a policy question to be answered in the paper is what strategy Indonesia should adopt in maximizing the potential from a large number of population. It is easy to understand that Indonesia's large population could lead to a large productive labor force potential. However, one should also understand that this relation is not strongly written. A supportive and aligned education policy also needed to make sure that the population is ready and prepared to be in the labor force thus creates economic growth.



Indonesia's economy is said to be in the process of transitioning to industrial-based. Therefore, it is more likely that the future engines of output growth will be the industrial and value-added sectors. The Indonesian government has been moving in this direction by building mass infrastructures such as roads, airports and other forms of connectivity. Coupled with the high allocation for education, this infrastructure spending will surely help create more opportunities for Indonesians to improve their productivity and accelerate the economic transformation. Nevertheless, the economic transition will also mean that Indonesia could no longer rely on traditional, resource-based, industries for labor absorption. This type of Industries is traditionally acted as the main labor absorber. In the effort of economic transformation, Indonesia's industrial and value-added sector need to be developed as an important part of labor absorber. Additionally, preparing workers to move into and participate in the modern sectors of the economy should also be a priority. Human capital development to create high-quality labor is a critical factor.

For Indonesia, the needs of maximizing the labor force potential to participate and create added value for the economy is gaining importance. This includes a greater focus of policymakers in creating a match between the skills required in the job market and the skills of the working age population. The 20 percent budget allocation for education signals a positive commitment of the government to improve the quality of the country's workforce. Nevertheless, in the long run, this percentage will need to be reviewed as the profile of the Indonesian economy and population evolves. Additionally, maximizing the population potential also related to addressing the challenges associated with a rising share of the dependent population. These challenges include slowing economic development as there are potentially fewer labor force participants and potentially higher budget expenditures. The current

low exposure of the Indonesian population to private health insurance could increased government expenditures on health services. As Indonesia's demographic profile moves to an aging population the proportions of the young population in the population, available for employment, will gradually decrease. Accordingly, with the current retirement age of 58 years, the aging process will lead to an increase of people outside the labor force. Smaller portion of the labor force will reduce potential economic output and tax revenue. Therefore, the importance of addressing the barriers in labor force participation will increase.

5 Summary

This paper hopes that understanding Indonesia's current and projected demographic profile can help policymakers better prepare for the future. The Indonesian population projections model has several key findings (1) the Indonesian demographic dividend will end within the next 20 years (2030 – 2035), suggesting a limited window of opportunity for strong productive age population (2) the Indonesian high population growth rate is projected to continue, creating a large potential market and labor force (3) higher life expectancy and lower fertility rate and are key factors in Indonesia's expanding demographic profile, with the latter provides higher influence. Specifically, the model shows that fertility rate is influential in the medium term for the population projection while life expectancy will have a longer-term influence. The model shows that Indonesia is currently walking on a positive demographic momentum. Moreover, as more working-age population is provided by the population, support for human capital improvement is needed. It would be beyond the scope of this paper to prescribe specific policies in each of these areas. However, this paper tries to highlight the fact that policy decisions related to demography (health, education) need to be made with an eye to the longer term this policy also need to be followed by a sustainable financing

source. Providing health service, investing to promote skills, and preparing workers to move into and participate in the modern sectors of the economy should be a priority that be kept sustainable.

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