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Measuring the Pro-Poorness of Urban and Rural Economic Growth in Indonesia, 2004–2014[*]

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Abstract: *This study measures the pro-poorness of urban and rural economic growth by region from 2004 to 2014 in Indonesia using pro-poor growth indexes, with data from the National Socio-Economic Survey (Susenas). It also conducts a probit analysis to explore the determinants of poverty. All regions (Sumatra, Java–Bali, Kalimantan, Sulawesi, and East Indonesia) experienced a substantial increase in expenditure inequality in both urban and rural areas; thus, the change in poverty incidence due to redistribution effects is positive. Apart from East Indonesia, they reduced the incidence of poverty in both areas, but their growth was not pro-poor in the strict sense. According to the pro-poor growth indexes, urban areas performed better than rural areas; in most regions, the growth of urban areas was moderately pro-poor, while that of rural areas was weakly pro-poor or anti-poor. The government needs to take urban–rural and regional differences into account when formulating poverty alleviation policies and programs since these differences would affect economic growth and changes in inequality.*

Keywords: pro-poor growth, urban and rural economic growth, poverty, inequality, Indonesia

JEL classifications: I32, O15, O18

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1. Introduction

Indonesia has realised a substantial reduction in poverty over the last 3 decades; the incidence of poverty declined notably from 40% in the 1980s to around 10% in the early 2010s (BPS, various issues).[3] In the 1980s and 1990s, before the 1997/1998 Asian financial crisis, Indonesia grew at an annual average rate of 6% (World Bank, 2020). Thanks to relatively stable inequality, this brought a substantial reduction in the incidence of poverty (Akita, Lukman, and Yamada, 1999; Akita and Miyata, 2008; Yusuf, Sumner, and Rum, 2014; BPS, various issues). The economic growth in this period is considered pro-poor (Timmer, 2004; Grabowski, 2011).[4] The economy, however, was hit hard by the financial crisis. In 1998, the country experienced large negative growth, and the incidence of poverty rose conspicuously (BPS, various issues; World Bank, 2020). Though it recovered from the crisis within a few years, the economic growth in the post-crisis period appears to have been slower than in the pre-crisis period (World Bank, 2020). On the other hand, the country saw a prominent increase in inequality (Yusuf, Sumner, and Rum, 2014; Akita, 2017). The incidence of poverty declined, but the speed of poverty reduction was slower than in the pre-crisis period (BPS, various issues). The economic growth in this period before the mid-2010s was not pro-poor in the strict sense, since it was accompanied by rising inequality, i.e. it benefitted the rich more than the poor (footnote 2).

Drawing on data from the National Socio-Economic Survey (Susenas), De Silva and Sumarto (2014) examined the pro-poorness of economic growth during the post-crisis period from 2002 to 2012 in Indonesia by using several pro-poor growth concepts and indexes. According to them, the economic growth contributed to the reduction in poverty incidence, but the poverty-reducing growth effect was mitigated by rising inequality. If inequality had remained constant, the incidence of poverty could have decreased by 17.6 percentage points from 18.2%, but the rise in

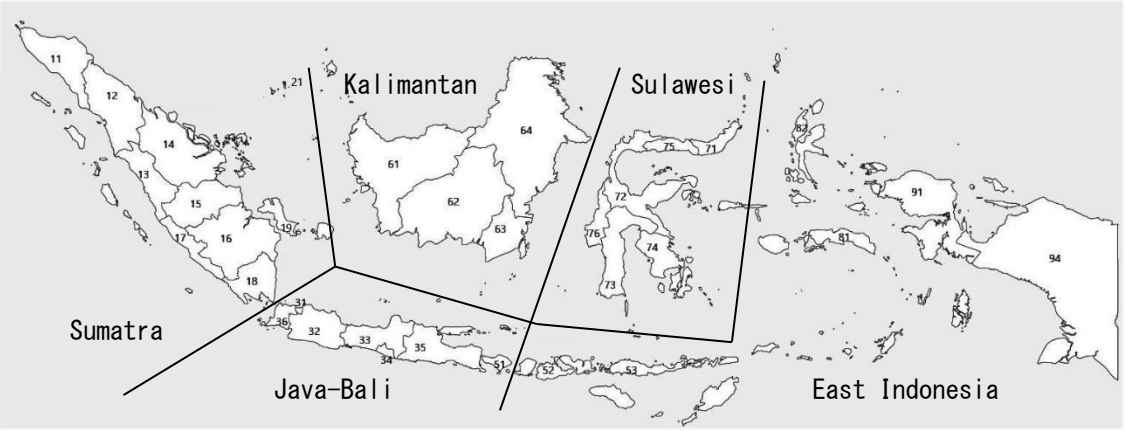
[3] The incidence of poverty (or headcount ratio) is defined as the proportion of people below the poverty lines to the total number of people.

[4] In the strict sense, pro-poor growth refers to growth that is accompanied by changes in inequality in favour of the poor, so that a substantial reduction in poverty incidence is achieved (Kakwani and Pernia, 2000). As Kakawani and Pernia argued, however, this is too stringent for the growth to be pro-poor; thus, they introduced pro-poor growth indexes which could assess the pro-poorness of economic growth (see Section 3.2 for details).

inequality offset the reduction in poverty incidence by 11.4 percentage points. De Silva and Sumarto (2014) contributed a lot to our understanding of the pro-poorness of economic growth in the post-crisis period, but they assessed the pro-poorness at the national level. As the world's largest archipelagic and Muslim country, with more than 13,000 islands and 260 million people, Indonesia is spatially diverse in terms of its ecology, natural resource endowments, economy, ethnicity, and culture. Due to its spatial diversity, there is a large variation in the incidence of poverty between urban and rural areas and amongst regions. In rural areas, 17.4 million people were living below the national poverty lines in 2014, compared with 10.4 million in urban areas, implying that 63% of the poor were in rural areas (BPS, various issues). This is much larger than the rural population share of 47%. The incidence of poverty in rural areas was 1.75 times that of urban areas in 2014. When Indonesia is divided into five island regions (Sumatra, Java–Bali, Kalimantan, Sulawesi, and East Indonesia), 59% of the poor were living in Java–Bali in 2014, followed by 21% in Sumatra, 10% in East Indonesia, 7% in Sulawesi, and 3% in Kalimantan (see Figure 1 for the map of Indonesia).[5] However, East Indonesia had the highest incidence of poverty at 17%, followed by Sumatra, Sulawesi, Java−Bali, and Kalimantan. These observations indicate a large variation in the pro-poorness of economic growth between urban and rural areas and amongst regions.

[5] Indonesia has 34 provinces, eight of which were established since 1999 when the two decentralisation laws (Law 22/1999 on Regional Government and Law 25/1999 on the Fiscal Balance between the Central Government and the Regions) were promulgated. In most studies on regional development in Indonesia, these provinces are usually classified into five island regions as follows: Sumatra (Sumatra provinces); Java–Bali (Java provinces and Bali); Kalimantan (Kalimantan provinces); Sulawesi (Sulawesi provinces); and East Indonesia (West and East Nusa Tenggara, Maluku, North Maluku, West Papua, and Papua). See, for example, Hill, Resosudarmo, and Vidyattama (2008); Akita, Kurniawan, and Miyata (2011); and Alisjahbana and Akita (2020).

Figure 1: Map of Indonesia



Region	Province code
Sumatra	11–19, and 21
Java–Bali	31–36, and 51
Kalimantan	61–64
Sulawesi	71–76
East Indonesia	52, 53, 81, 82, 91, and 94

Note: North Kalimantan, which was separated from the province of East Kalimantan (provincial code: 64). in 2012, was not shown in this map.
Source: BPS, 2015

Against this background, this study attempts to measure the pro-poorness of urban and rural economic growth by region over 2004–2014 using pro-poor growth indexes with expenditure data from the 2004 and 2014 rounds of Susenas. It also conducts a probit analysis to explore the determinants of poverty in urban and rural areas using the 2014 round of Susenas, where we focus on education as one of the main determinants of poverty (Haughton and Khandker, 2009) and investigate the roles of education in poverty reduction in urban and rural areas. Specifically, this study addresses the following research questions.

(1) Did urban and rural economic growth benefit the poor more than the rich?

(2) To what extent was urban and rural economic growth pro-poor?

(3) Were there any differences in the pro-poorness of economic growth between urban and rural areas and amongst regions?

(4) Was education an important determinant of poverty in urban and rural areas?

(5) Were there differences in the incidence of poverty and expenditure inequality between educational groups in urban and rural areas?

The 2004–2014 period corresponds to the Yudhoyono presidency, when a number of poverty alleviation programs were implemented in line with general guidelines set out in the Medium-Term National Development Plans, such as unconditional cash transfers (BLT), conditional cash transfers (PKH), scholarships for poor students (BSM), school operational support funds (BOS), rice subsidies (*Raskin*), social health insurance (*Jamkesmas*), and community and microenterprise empowerment programs (Sumarto and Suryahadi, 2010; Suryahadi et al., 2010; World Bank, 2012; Nazara and Rahayu, 2013; Howes and Davies, 2014; Vujanovic, 2015; Dwiputri, 2017). Thanks partly to these programs, poverty incidence declined over the period. However, the government was not able to reduce the incidence of poverty to the target value of 8% set out in the 2009–2014 Medium-Term National Development Plan. While evaluation of the effectiveness of these poverty alleviation programs in achieving their stated objectives is beyond the scope of this study, we hope to contribute to our understanding of the determinants of poverty changes and help policymakers to formulate effective poverty reduction policies and programs from a spatial perspective.

This paper consists of five sections, including this introduction. Section 2 provides a review of the literature on the nexus between growth, changes in inequality, and poverty reduction. Section 3 presents the data and methods used. Section 4 discusses the main findings, while the final section concludes.

2. Literature Review

A number of studies have been conducted to examine the relationship between economic growth, income redistribution, and poverty reduction.[6] Amongst them are Datt and Ravallion (1992); Kakwani (1993, 1997); Kakwani and

[6] In our paper, the term 'redistribution' is used to refer to 'changes in income or expenditure inequality'.

Pernia (2000); Ravallion and Chen (2003); Son (2003, 2004); Essama-Nssah (2005); Kakwani and Son (2008); Nissanov and Silber (2009); Deutsch and Silber (2011); Kang and Imai (2012); Zaman et al. (2012); Gimenez, Jolliffe, and Sharif (2014); Fuwa, Balisacan, and Bresciani (2015); and De Silva (2016). Most of these studies analysed whether economic growth contributed to the reduction in poverty after controlling for changes in income inequality – whether economic growth was pro-poor. Here, we will review some of the pioneering articles on pro-poor growth that are relevant to our study.

Datt and Ravallion (1992) proposed a method that decomposes changes in poverty measures into growth, income redistribution, and residual components; and applied the method to India and Brazil. The study found that both economic growth and income redistribution contributed to a reduction in poverty in India, though economic growth was much more important than income redistribution. On the other hand, it found that economic growth in Brazil contributed significantly to a reduction in poverty, but an increase in income inequality lowered the poverty-reducing growth effect. The study acknowledged, however, that the residual term emerges in the decomposition formula and can be very large since the decomposition is sensitive to the selection of the reference period. To overcome this drawback, Kakwani (1997) proposed an alternative method, which decomposes changes in poverty measures into the growth and income redistribution components without the residual term.[7] By using socio-economic surveys in Thailand from 1988 to 1994, the study found that the poverty-reducing growth effect dominated over the poverty-increasing redistribution effect, thus the country achieved a substantial reduction in poverty.

Kakwani and Pernia (2000) introduced an index called the pro-poor growth index (PPGI) to assess the pro-poorness of economic growth in the Lao People's Democratic Republic, Thailand, and the Republic of Korea. The study found that while economic growth in the Republic of Korea has been highly pro-poor, economic growth in the Lao People's Democratic Republic and Thailand has not been strictly pro-poor though it has brought about a considerable reduction in

[7] Our study uses the poverty decomposition method developed by Kakwani (1997) to analyse the extent to which growth and redistribution effects contribute to the reduction in poverty incidence (see Section 3.2 for the decomposition method).

poverty. Meanwhile, Kakwani and Son (2008) introduced a new type of growth rate, called the poverty equivalent growth rate (PEGR), to examine the pro-poorness of economic growth in Brazil from 1995 to 2005.[8] The study found that the growth was mostly pro-poor for the period, as the PEGR was greater than the actual growth rate except during 1995–1996.

Ravallion and Chen (2003) introduced the growth incidence curve (GIC) to analyse the whole distribution of income growth across quantiles in the initial distribution.[9] By estimating the GIC for China from 1990 to 1999, they found that the GIC is upward sloping over all quantiles, but despite rising inequality, poverty incidence fell no matter where the poverty line was drawn. They also found that the pattern was reversed for the sub-period from 1993 to 1996, so the distributional shifts were more pro-poor than for the entire period. Deutsch and Silber (2011) provided a summary of the different approaches that have appeared in the literature to measure pro-poor growth, including the ones discussed above. Using several alternative approaches for pro-poor growth, they examined whether growth in Israel was pro-poor or not during 1990–2006.

Amongst the empirical studies that employed the methods developed by the studies discussed above, Kang and Imai (2012) examined the nexus between economic growth, redistribution, and change in poverty in rural Viet Nam using the 2002, 2004, and 2006 rounds of the Living Standard Surveys. They also investigated the roles played by ethnicity during the post-transition period. Using GIC and some inequality measures, they found that the impact of economic growth on poverty incidence varied across ethnic groups because the growth had differential effects on the distribution of consumption expenditure. Using the 2000, 2005, and 2010 rounds of the Household Income and Expenditure Surveys, Gimenez, Jolliffe, and Sharif (2014) investigated changes in poverty incidence in Bangladesh during 2000–2010. Employing the poverty decomposition method proposed by Kakwani (1997), they found that both growth and redistribution effects contributed to the reduction in poverty incidence during the period, though growth

[8] Our study uses the PEGR together with the PPGI to evaluate the pro-poorness of urban and rural growth (see Section 3.2 for the PPGI and the PEGR).

[9] Our study employs the GIC to assess the pro-poorness of urban and rural economic growth (see Section 3.2 for the GIC).

had a much larger effect than redistribution. Using the 1990 and 2010 rounds of the Household Income and Expenditure Surveys, De Silva (2016) analysed the pro-poorness of economic growth during 1990–2010 in Sri Lanka. Employing the poverty decomposition method proposed by Kakwani (1997), the author found that the growth effect contributed to a reduction in poverty incidence of 22 percentage points, but rising inequality notably offset the poverty-reducing growth effect, so the incidence of poverty actually declined from 26% to 9%.

In Indonesia, recent studies on the nexus between economic growth, income redistribution, and poverty reduction include Balisacan, Pernia, and Asra (2003); Timmer (2004); Miranti and Resosudarmo (2005); Suryahadi, Suryadarma, and Sumarto (2009); Miranti (2010, 2017); Grabowski (2011); Suryahadi, Hadiwidjaja, and Sumarto (2012); De Silva and Sumarto (2014); and Miranti, Duncan, and Cassells (2014).

Using a panel data set of eight Asian countries (including Indonesia) from the 1960s to the 1990s, Timmer (2004) investigated patterns of economic growth and changes in income inequality across countries and over time by conducting a panel data regression analysis. The study found that Indonesia's economic growth benefited the poor during the two decades before the 1997/1998 Asian financial crisis, while its record on pro-poor growth was not quite as good as that of China, Malaysia, or Thailand, but better than that of the India, Pakistan, and the Philippines. He argued that the simultaneous and balanced interaction between economic growth and distribution processes that generated pro-poor growth in Indonesia during the Suharto regime was based on a conscious strategy of integrating the macroeconomy with the household economy. He then proposed a pro-poor growth model encompassing the three levels of growth processes: improving the capabilities of the poor; lowering transaction costs, particularly between rural and urban areas; and increasing demand for goods and services produced by the poor. Grabowski (2011) also analysed Indonesia's growth process during the Suharto era from the early 1970s to the 1990s before the crisis with respect to its pro-poorness. He argued, based on a theoretical framework, that access to agricultural technology (e.g. green revolution varieties of rice) – combined with incentives via market prices and with infrastructure development in the agricultural sector – provided a powerful

mechanism for the pro-poor growth of the period, where Indonesia has grown very rapidly at an average rate of 7%, with a significant reduction in poverty.

Balisacan, Pernia, and Asra (2003) conducted a two-stage least squares fixed effects regression analysis to examine the key determinants of poverty reduction in the 1990s based on a panel data set for 285 districts, constructed from the core National Socio-Economic Survey (core Susenas) and the Village Potential Statistics (*Podes*) for 1993, 1996, and 1999.[10] They found that the growth elasticity of poverty reduction was around 0.7, indicating that 10% growth in mean per capita expenditure would increase mean per capita expenditure by 7% amongst the poor. They found also that the growth elasticity of 0.7 in Indonesia during the late Suharto era was significantly larger than 0.5 in the Philippines; and argued that this may be attributable to the higher growth rate of agriculture, which is likely to have generated more employment. Based on the panel data regression analysis, they observed that besides growth, terms of trade, mean years of schooling amongst the poor, the availability of paved roads, and access to technology appear to have affected, directly or indirectly, the reduction in poverty. They claimed that while fostering economic growth is crucial, a more comprehensive poverty reduction strategy must consider various redistribution-mediating and institutional factors. Miranti and Resosudarmo (2005) explored, using a provincial panel data set for the period from 1993 to 1996 constructed from various publications of Statistics Indonesia (BPS), the determinants of poverty during the late Suharto regime but before the 1997/1998 crisis and found a significant difference between the East and West regions in the poverty headcount ratio.[11] By conducting a panel data regression analysis, they found that economic growth and income inequality were the significant determinants of the headcount ratio after controlling for various socio-economic variables.

Skoufias, Suryahadi, and Sumarto (2000) examined the initial impacts of the 1997/1998 Asian financial crisis on household welfare using a panel data set for

[10] Susenas consists of a core survey and several modules; the core is administered in each round of Susenas and to all sampled households. In contrast, the module questions change from round to round and in some Susenas rounds are administered to only a subsample of households (Priebe, 2014). The core Susenas has been conducted every year since 1992 (Priebe, 2014).

[11] The West includes Sumatra and Java–Bali, while the East includes Kalimantan, Sulawesi, and East Indonesia.

8,140 households constructed from the May 1997 and August 1998 rounds of the 100 village surveys conducted by BPS, where 100 villages were purposively (not randomly) selected from 10 rural districts in eight provinces. Using consumption expenditure data from a panel of 8,140 households, they found a considerable drop in household welfare during the first year of the crisis, i.e. the poverty headcount ratio doubled from 12.4% to 24.5%, while expenditure inequality, as measured by the Theil indexes and the Gini coefficient, increased.

Using a provincial panel data set constructed from the consumption module National Socio-Economic Survey (module Susenas), regional gross domestic product data, and the national labour force survey (*Sakernas*) for 1984–2002, Suryahadi, Suryadarma, and Sumarto (2009) investigated the relationship between economic growth and poverty reduction by differentiating growth and poverty into their sectoral components and urban and rural locations. They found that growth in the urban services sector had the largest effect on reducing poverty in both rural and urban areas, while growth in the rural agricultural sector strongly reduced poverty in rural areas. They argued that while growth in the rural agricultural sector plays a major role in reducing poverty, policies that promote growth in the services sector in both urban and rural areas would expedite poverty reduction. By extending the study period until 2008, Suryahadi, Hadiwidjaja, and Sumarto (2012) analysed the relationship between economic growth and poverty reduction after the 1997/1998 crisis. They found that after the crisis, the rate of poverty reduction slowed significantly, but there was no evidence that the growth elasticity of poverty declined. They also found that growth in the urban services sector remained the largest contributor to poverty reduction in both rural and urban areas, and while agricultural growth remained important in reducing poverty in rural areas, industrial growth became almost irrelevant for poverty reduction.

Using a provincial panel data set constructed from the consumption module Susenas from 1984 to 2002, Miranti (2010) analysed the growth and inequality elasticities of poverty reduction for three development periods: the first liberalisation period from 1984 to 1990; the second liberalisation period from 1990 to 1996; and the crisis recovery period from 1999 to 2002. She observed unexpectedly that the growth elasticity of poverty reduction was very stable across

the three periods, at around −2.4. She found, however, that the inequality elasticity of poverty varied across the three periods, with the change between the first and second periods particularly noticeable; and in the second and third periods, rising expenditure inequality appeared to have offset the poverty-reducing growth effect. Miranti, Duncan, and Cassells (2014) extended the study period until 2010 and compared the elasticities of poverty reduction in the decentralisation period (2002–2010) with those in the pre-decentralisation period (1983–2002) by conducting a panel data regression analysis. They found that, although the growth effect of poverty reduction was very large in the decentralisation period, rising inequality offset, to a greater extent, the reduction of poverty induced by growth.

As discussed in the introduction, De Silva and Sumarto (2014) investigated the pro-poorness of economic growth in Indonesia from 2002 to 2012. Our study is similar to their study in that it employs pro-poor growth indexes and methods developed by Kakwani (1997), Kakwani and Pernia (2000), Ravallion and Chen (2003), and Kakwani and Son (2008) to explore the nexus between economic growth, income redistribution, and poverty reduction. Unlike their study, which examined pro-poor growth at the national level, however, our study analyses the pro-poorness of urban and rural economic growth by region. To the best of our knowledge, no previous studies have investigated the pro-poorness of urban and rural economic growth by region in Indonesia. As Miranti (2017) acknowledged, given the uneven distribution of natural resources, economic activities, and public infrastructure, large disparities exist in economic growth, inequality, and poverty between urban and rural areas and amongst regions in Indonesia; thus, it is imperative to examine the pro-poorness of economic growth by region at the subnational level in Indonesia.

3. Data and Method

3.1. Data

To measure the pro-poorness of urban and rural economic growth from 2004 to 2014, this study uses expenditure data from the 2004 and 2014 rounds of the core National Socio-Economic Surveys (Susenas), conducted by BPS. The total sample size is 264,100 households in 2004 and 285,400 households in 2014. The sample

sizes are large enough to estimate the incidence of poverty and inequality for urban and rural areas in each region. To identify the poor, per capita expenditure – obtained by dividing household consumption expenditure by the number of household members – is compared with the poverty lines.[12] The poverty line is the sum of the food and non-food poverty lines, constructed by using the basic needs approach; it is available for urban and rural areas in each province.[13] People below the poverty lines are considered poor. The incidence of poverty (or headcount ratio) is, thus, obtained by dividing the number of people below the poverty lines by the total number of people.

It should be noted that our estimates of poverty incidence in 2004, based on the official poverty lines obtained from the Statistical Yearbook of Indonesia 2005–2006, are larger than those reported in the Statistical Yearbook of Indonesia – while our estimate for Indonesia is 27.1% (21.3% in urban areas and 30.9% in rural areas), the one reported in the Statistical Yearbook of Indonesia is 16.7% (12.1% in urban areas and 20.1% in rural areas). According to Priebe (2014), to construct urban and rural province-specific poverty lines in 2004, BPS used data from a subsample of 10,000 households from the core Susenas of 264,100 households (step 1); and using these poverty lines, it estimated the incidence of poverty at the national level (step 2). However, since the sample size of 10,000 households is too small to estimate poverty incidence at the provincial level, BPS used the core Susenas (264,100 households) to estimate province-level poverty incidence, where it adjusted urban and rural province-specific poverty lines obtained from the subsample by the same scaling factor so that the sum of poor people by province would produce the number of poor people for the whole country obtained under step 2. This may be one of the reasons why our estimates are larger than those reported in the Statistical Yearbook of Indonesia 2005–2006. We should note also that many people are clustered near the poverty lines, both above and below; thus, a small change in the poverty lines would change the incidence of poverty substantially.

[12] Some studies use consumption expenditure per adult equivalence scale to account for differences in needs amongst household members, where children are given much smaller weights than adult household members. According to Haughton and Khandker (2009), however, adult equivalence scales are controversial and may not be estimated satisfactorily; thus, this study uses consumption expenditure per capita as a measure of welfare.

[13] Miranti (2010) and Priebe (2014) provided a detailed account of the construction of the province-specific urban and rural poverty lines.

To rectify the problem, we re-estimate the incidence of poverty for urban and rural areas in 2004 by scaling down the urban and rural poverty lines, so that our estimates are sufficiently close to those reported in the Statistical Yearbook of Indonesia. Our revised poverty lines in 2004 and the official poverty lines in 2004 and 2014 are presented in the Appendix (Table A1). Our revised estimates of poverty incidence for urban and rural areas in 2004 are 13.2% and 22.2%, respectively, compared with 12.1% and 20.1% reported in the Statistical Yearbook of Indonesia. In this study, like Miranti (2010), expenditures in 2014 are converted to expenditures at constant 2004 prices using the revised poverty lines in 2004 (at 2004 current prices) and the official poverty lines in 2014 (at 2014 current prices).

3.2. Methods

Decomposition of Change in Poverty Incidence

To examine the extent to which growth and income redistribution have reduced or raised poverty incidence, a decomposition method developed by Kakwani (1997) is used. It decomposes the change in the incidence of poverty between 2004 (year 1) and 2014 (year 2), ΔP, into the growth and redistribution effects (*GE* and *RE*, respectively) as follows.

$$\Delta P = P(z, \mu_2, L_2) - P(z, \mu_1, L_1) = GE + RE, \quad (1)$$

where

$$GE = \frac{1}{2}\left[\left(P(z, \mu_2, L_1) - P(z, \mu_1, L_1)\right) + \left(P(z, \mu_2, L_2) - P(z, \mu_1, L_2)\right)\right]$$

$$RE = \frac{1}{2}\left[\left(P(z, \mu_1, L_2) - P(z, \mu_1, L_1)\right) + \left(P(z, \mu_2, L_2) - P(z, \mu_2, L_1)\right)\right]$$

In equation (1), $P(z, \mu, L)$, z, μ, and L are, respectively, the incidence of poverty, poverty line, mean per capita expenditure, and the Lorenz curve, where the Lorenz curve measures relative inequality. The growth effect (*GE*) presents the change in poverty incidence due to the change in mean per capita expenditure provided that relative inequality remains constant. Meanwhile, the redistribution effect (*RE*) presents the change in poverty incidence due to the change in inequality (redistribution) provided that mean per capita expenditure remains constant.

Pro-Poor Growth Indexes and Growth Incidence Curve

This study employs two pro-poor growth indexes to measure the pro-poorness of economic growth: the PPGI of Kakwani and Pernia (2000) and the PEGR of Kakwani and Son (2008). It also uses the GIC introduced by Ravallion and Chen (2003), which visualises the whole distribution of economic growth across quantiles in the initial distribution of per capita expenditures.

Pro-Poor Growth Index

One of the most well-known pro-poor growth indexes is the PPGI, which is defined by

$$\text{PPGI} = \frac{\varepsilon}{\varepsilon_G} \tag{2}$$

In equation (2), $\varepsilon = \frac{P_{12}}{G_{12}}$ and $\varepsilon_G = \frac{GE_{12}}{G_{12}}$ are, respectively, the growth elasticity of total poverty reduction and the growth elasticity of poverty reduction, provided that relative inequality remains constant, where P_{12}, GE_{12}, and G_{12} are, respectively, the proportional change in total poverty incidence, the proportional change in poverty incidence due to the change in mean per capita expenditure provided that relative inequality remains constant, and the proportional change in mean per capita expenditure, which are defined, respectively, by $P_{12} = \ln\left(\frac{P(z,\mu_2,L_2)}{P(z,\mu_1,L_1)}\right)$, $GE_{12} = \frac{1}{2}\left[\ln\left(\frac{P(z,\mu_2,L_1)}{P(z,\mu_1,L_1)}\right) + \ln\left(\frac{P(z,\mu_2,L_2)}{P(z,\mu_1,L_2)}\right)\right]$, and $G_{12} = \ln\left(\frac{\mu_2}{\mu_1}\right)$. Hereafter, we assume that G_{12} is positive (i.e. growth of mean per capita expenditure is positive). Then $\varepsilon_G < 0$ since GE_{12} is always negative.[14]

The larger the PPGI is, the more pro-poor the growth tends to be. When $\varepsilon < \varepsilon_G < 0$, we have $\text{PPGI} > 1$, indicating that the growth of mean per capita expenditure has been associated with the change in inequality in favour of the poor. Such growth is pro-poor in the strict sense (Kakawani and Pernia, 2000). When $\varepsilon_G < \varepsilon < 0$, we have $0 < \text{PPGI} < 1$, indicating that even though the change in inequality is against the poor, total poverty declines. According to Kakawani and Pernia (2000), this situation is characterised as trickle-down. Finally, when $0 < \varepsilon$,

[14] GE_{12} is the proportional change in poverty incidence due to the change in mean per capita expenditure provided that relative inequality, as measured by the Lorenz curve, is kept constant. Thus, it is always negative when the poverty line *z* remains constant where *z* is measured at constant prices.

we have $\text{PPGI} < 0$, showing that the growth has led to an increase in poverty incidence since the change in inequality has badly hurt the poor. This occurs when the poverty-reducing growth effect is wholly offset by the negative impact of increasing inequality on the reduction of poverty incidence.

Poverty Equivalent Growth Rate

Another pro-poor growth index, the PEGR, considers both the magnitude of growth and the degree to which the poor benefited from the growth (Kakwani and Son, 2008). The PEGR is defined by

$$\text{PEGR} = G_{12}\text{PPGI} \tag{3}$$

If $\text{PEGR} > G_{12} > 0$, then the growth is pro-poor in the strict sense. If $0 < \text{PEGR} < G_{12}$, then even though the change in inequality is against the poor, total poverty declines. Finally, $\text{PEGR} < 0$ indicates that the growth raises total poverty. This occurs when the poverty-reducing growth effect is wholly offset by the negative impact of increasing inequality on the reduction of poverty incidence.

Growth Incidence Curve

The GIC presents the growth rates of per capita expenditure across all quantiles. Suppose that $p = F_t(y)$ $(0 \le p \le 1)$ is the cumulative distribution function, showing the proportion of the population with per capita expenditure smaller than *y* at time *t*, then the frequency density function is given by $f_t(y) = F_t{}'(y)$. Using this frequency density function, the Lorenz curve can be given by $L_t(p) = \frac{1}{\mu_t}\int_0^{y_t(p)} z f_t(z)\mathrm{d}z$, where $y_t(p) = F_t^{-1}(p)$. With some derivations, we can obtain $y_t(p) = \mu_t L_t{}'(p)$, where $L_t'(p) \ge 0$ is the slope of the Lorenz curve. The growth rate of per capita expenditure at the *p*th quantile between years 1 and 2 is thus given by

$$g_{12}(p) = \frac{y_2(p)}{y_1(p)} - 1 = \frac{\mu_2}{\mu_1}\frac{L_2'(p)}{L_1'(p)} - 1 \tag{4}$$

Letting *p* vary from 0 to 1, equation (4) presents the GIC.

4. Empirical Results

4.1. Changes in Poverty Incidence and Expenditure Inequality and the Growth of Mean per Capita Expenditure, 2004–2014

Table 1 presents changes in the incidence of poverty and expenditure inequality and the growth of mean per capita expenditure from 2004 to 2014, where changes are measured at constant 2004 prices. If we look at the whole country, the incidence of poverty declined from 22.2% to 12.8% in rural areas, while in urban areas it declined from 13.2% to 7.3%.[15] Except in East Indonesia, the incidence of poverty declined in both urban and rural areas. In East Indonesia, while the poverty incidence decreased in urban areas, it rose in rural areas. From 2004 to 2014, inequality in per capita expenditure (hereafter referred to as expenditure inequality or inequality) increased in both urban and rural areas in all regions. If we look at the whole country, expenditure inequality, as measured by the Gini coefficient, rose from 0.35 to 0.42 in urban areas, while in rural areas, it increased from 0.27 to 0.33.[16] In the period, all regions realised positive growth in mean per capita expenditure in both areas, but the poverty-reducing effects of the growth were mitigated by rising inequality. If the rise in expenditure inequality was smaller, the incidence of poverty could have declined more.

[15] The incidence of poverty in 2004 is estimated based on the revised poverty lines in 2004 discussed in the previous section.

[16] The Gini coefficient can be obtained from the following formula: $G = \frac{2}{n\mu}\mathrm{cov}(i, y_i)$, where n is total number of households, μ is mean per capita expenditure, and y_i is per capita expenditure of household i. The Gini coefficient ranges between 0 (perfect equality) and 1 (perfect inequality). It satisfies several desirable properties as a measure of relative inequality, such as anonymity, mean independence, population-size independence, and the Pigou-Dalton condition (Anand, 1983).

Table 1: Changes in Poverty Incidence and Expenditure Inequality and the Growth of Mean Per Capita Expenditure, 2004–2014

(constant 2004 prices)

Region		Poverty incidence (%)			Inequality (Gini coefficient)		Mean per capita expenditure (Rp1,000/month)		
		2004	2014	Change 2004–2014 (%)	2004	2014	2004	2014	Annual average growth rate 2004–2014 (%)
Indonesia		18.6	10.0	−46.1	0.337	0.423	217	327	4.1
	Urban	13.2	7.3	−45.2	0.351	0.424	288	436	4.1
	Rural	22.2	12.8	−42.3	0.268	0.327	170	220	2.6
Sumatra		15.3	10.2	−33.6	0.308	0.386	213	290	3.1
	Urban	13.2	8.2	−38.0	0.313	0.399	275	402	3.8
	Rural	16.4	11.4	−30.5	0.272	0.312	181	219	1.9
Java−Bali		20.7	9.7	−52.8	0.347	0.431	222	346	4.4
	Urban	13.4	7.3	−45.5	0.361	0.431	292	458	4.5
	Rural	26.5	13.2	−50.3	0.260	0.319	166	218	2.7
Kalimantan		11.2	5.7	−48.7	0.340	0.385	248	347	3.3
	Urban	9.2	3.6	−60.8	0.345	0.380	330	466	3.4
	Rural	12.3	7.3	−40.7	0.293	0.327	203	261	2.5
Sulawesi		15.3	9.9	−35.4	0.308	0.440	196	327	5.1
	Urban	11.0	4.6	−57.7	0.313	0.429	263	501	6.5
	Rural	17.1	12.6	−26.4	0.273	0.370	168	238	3.5
East Indonesia		16.6	16.9	1.8	0.295	0.422	173	249	3.6
	Urban	18.8	10.6	−43.6	0.323	0.416	242	402	5.1
	Rural	16.1	19.8	23.1	0.257	0.339	155	181	1.6

Notes: Poverty incidence in 2004 is estimated using revised poverty lines, where the revised poverty line for urban areas in 2004 = 0.86 × official poverty lines for urban areas in 2004, while the revised poverty line for rural areas in 2004 = 0.88 × official poverty lines for rural areas in 2004. Poverty incidence in 2014 is estimated using the official poverty lines in 2014. The revised and official poverty lines are in the Appendix (Table A1). The growth rate is the annual average growth rate for 2004–2014.
Sources: Calculated based on data from Susenas 2004 and 2014; for the official poverty lines in 2004, *Statistical Yearbook of Indonesia*, 2005/2006 (BPS, 2006); for the official poverty lines in 2014, *Statistical Yearbook of Indonesia 2015* (BPS, 2015).

4.2. Pro-Poorness of Urban and Rural Economic Growths in Indonesia, 2004–2014

Table 2 presents the result of a poverty decomposition analysis for urban and rural areas in Indonesia from 2004 to 2014.[17] As discussed above, the incidence of poverty has declined in both urban and rural areas in Indonesia as a whole. As shown in Table 1, however, expenditure inequality has increased conspicuously in both areas. Upward-sloping GICs, depicted in Figure 2, indicate this rising inequality;[18] economic growth has benefited richer groups more than poorer groups in both areas. The growth rate of the poorest quintile was 1.6% and 0.7%, respectively, in urban and rural areas, which was much smaller than their mean growth rates of 4.1% and 2.6%. As shown in the decomposition result, the rise in expenditure inequality has offset the poverty-reducing growth effect considerably as indicated by positive redistribution effects (*RE* in equation (1)). Although the incidence of poverty has decreased in both urban and rural areas, their economic growth was not pro-poor in the strict sense (see footnote 2).

[17] This result is obtained by using the revised poverty lines in 2004. As a comparison, the result based on the official poverty lines in 2004 is presented in the Appendix (Table A2).

[18] The GIC is constructed by using the STATA command, *gicurve*, developed by the World Bank. In the figures presenting GIC, 95% ci is the 95% confidence interval and the y-axis presents annual average growth rates.

Table 2: Decomposition of Change in Poverty into Growth and Redistribution Effects based on Revised Poverty Lines, 2004–2014

(%)

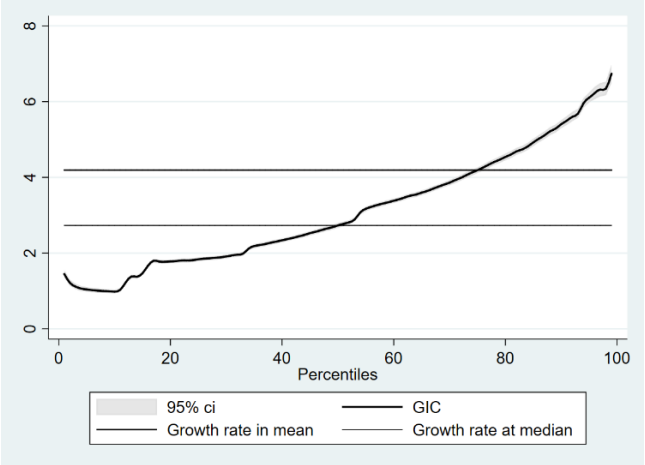
Region		Poverty in 2004 (1)	Poverty in 2014 (2)	Change in poverty = (2) − (1) = (GE) + (RE)	Change in poverty due to growth (GE)	Change in poverty due to redistribution (RE)
Indonesia		18.6	10.0	−8.6	−20.5	11.9
	Urban	13.2	7.3	−6.0	−15.9	9.9
	Rural	22.2	12.8	−9.4	−24.3	14.9
Sumatra		15.3	10.2	−5.1	−19.6	14.5
	Urban	13.2	8.2	−5.0	−16.6	11.6
	Rural	16.4	11.4	−5.0	−21.4	16.4
Java–Bali		20.7	9.7	−10.9	−21.5	10.5
	Urban	13.4	7.3	−6.1	−13.1	7.0
	Rural	26.5	13.2	−13.3	−26.8	13.5
Kalimantan		11.2	5.7	−5.5	−14.6	9.1
	Urban	9.2	3.6	−5.6	−11.7	6.1
	Rural	12.3	7.3	−5.0	−16.5	11.5
Sulawesi		15.3	9.9	−5.4	−18.3	12.9
	Urban	11.0	4.6	−6.3	−13.4	7.1
	Rural	17.1	12.6	−4.5	−20.6	16.1
East Indonesia		16.6	16.9	0.3	−20.7	21.0
	Urban	18.8	10.6	−8.2	−17.8	9.6
	Rural	16.1	19.8	3.7	−22.1	25.8

GE = growth effect, RE = redistribution effect.

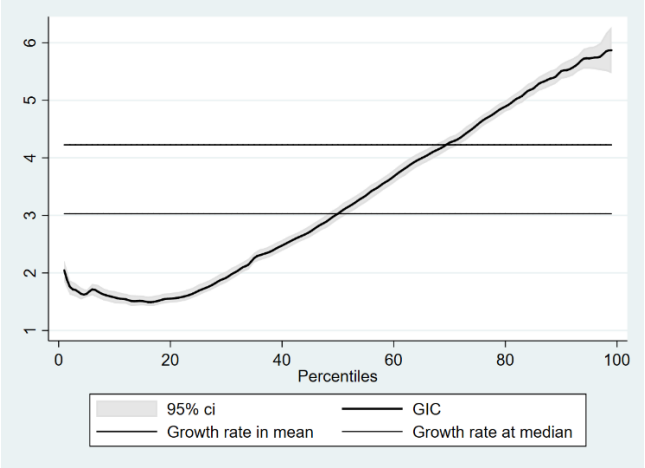
Notes: Poverty incidence in 2004 is estimated using revised poverty lines, where the revised poverty line for urban areas in 2004 = 0.86 × official poverty lines for urban areas in 2004, while the revised poverty line for rural areas in 2004 = 0.88 × official poverty lines for rural areas in 2004. Poverty incidence in 2014 is estimated using the official poverty lines in 2014. The revised and official poverty lines are in the Appendix (Table A1). The growth rate is the annual average growth rate for 2004–2014.

Sources: Calculated based on data from Susenas 2004 and 2014; for the official poverty lines in 2004, *Statistical Yearbook of Indonesia*, 2005–2006; for the official poverty lines in 2014, *Statistical Yearbook of Indonesia 2015*.

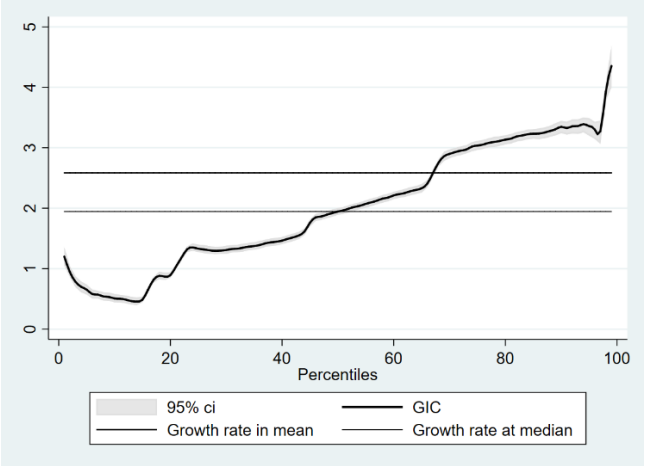
Figure 2: Growth Incidence Curve for Indonesia



Urban Areas



Rural Areas



Notes: GIC is the growth incidence curve, 95% ci is the 95% confidence interval, and the y-axis presents annual average growth rates for 2004–2014.
Source: Calculated based on data from Susenas (2004 and 2014), https://mikrodata.bps.go.id/mikrodata/index.php/catalog/651 and other quarters (accessed 30 August 2020).

Table 3 presents the PPGI and the PEGR.[19] Using the PPGI, Kakwani and Pernia (2000) proposed the following classification with respect to the pro-poorness of economic growth.

(1) PPGI < 0, growth is antipoor;

(2) 0 < PPGI ≤ 0.33, growth is weakly pro-poor;

(3) 0.33 < PPGI ≤ 0.66, growth is moderately pro-poor;

(4) 0.66 < PPGI < 1.0, growth is pro-poor; and

(5) PPGI ≥ 1.0, growth is highly (or strictly) pro-poor.

Kakwani and Pernia argued that imposing a PPGI value of greater than 1 is too stringent for the growth to be pro-poor since poverty incidence could decline even if the growth is accompanied by rising inequality. They also claimed that the PPGI measures the degree of pro-poorness and should be used as a tool to minimise any adverse distributional effects.

According to this classification, economic growth was moderately pro-poor in urban Indonesia, whereas it was weakly pro-poor in rural Indonesia. Rural areas grew less rapidly; thus the PEGR (0.8%) was much smaller than that of urban areas (1.5%), where the PEGR is defined by PPGI times the growth rate of mean per capita expenditure (see equation (3)). As discussed above, both urban and rural areas have reduced their poverty incidence, but the speed of poverty reduction was smaller in rural than in urban areas (see Table 1 for the percentage change in poverty incidence). In 2014, the poverty incidence of rural areas was 1.75 times that of urban areas, which is comparable to 1.68 in 2004.[20]

[19] This result is obtained by using the revised poverty lines in 2004. As a comparison, the result based on the official poverty lines in 2004 is presented in the Appendix (Table A3).

[20] We should note that, although the speed of the reduction in poverty incidence was smaller in rural than urban areas, the absolute difference in poverty incidence between urban and rural areas decreased from 9.0% in 2004 to 5.5% in 2014.

Table 3: Pro-Poor Growth Indexes, 2004–2014

Region		G12 (%) (1)	ε (2)	ε_G (3)	PPGI (4) = (2) / (3)	PEGR (%) (5) = (4) × (1)
Indonesia		4.1	−1.51	−4.08	0.37	1.5
	Urban	4.1	−1.45	−3.89	0.37	1.5
	Rural	2.6	−2.15	−6.66	0.32	0.8
Sumatra		3.1	−1.34	−5.00	0.27	0.8
	Urban	3.8	−1.26	−3.93	0.32	1.2
	Rural	1.9	−1.90	−8.07	0.24	0.5
Java-Bali		4.4	−1.69	−3.98	0.43	1.9
	Urban	4.5	−1.35	−3.40	0.40	1.8
	Rural	2.7	−2.58	−6.69	0.39	1.0
Kalimantan		3.3	−2.00	−4.94	0.41	1.4
	Urban	3.4	−2.73	−5.02	0.54	1.9
	Rural	2.5	−2.10	−6.49	0.32	0.8
Sulawesi		5.1	−0.85	−3.05	0.28	1.4
	Urban	6.5	−1.33	−2.75	0.49	3.1
	Rural	3.5	−0.88	−4.36	0.20	0.7
East Indonesia		3.6	0.05	−3.69	−0.01	0.0
	Urban	5.1	−1.13	−2.62	0.43	2.2
	Rural	1.6	1.32	−8.54	−0.15	−0.2

G12 = proportional change in mean per capita expenditure, PEGR = poverty equivalent growth rate, PPGI = pro-poor growth index.

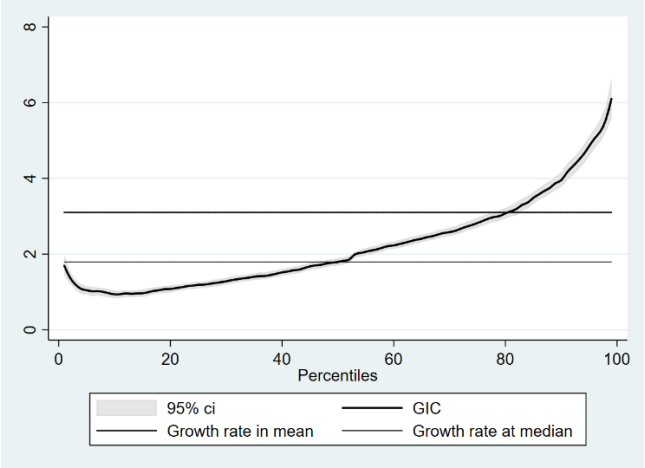
Notes: Poverty incidence in 2004 is estimated using revised poverty lines, where the revised poverty line for urban areas in 2004 = 0.86 × official poverty lines for urban areas in 2004, while the revised poverty line for rural areas in 2004 = 0.88 × official poverty lines for rural areas in 2004. Poverty incidence in 2014 is estimated using the official poverty lines in 2014. The revised and official poverty lines are in the Appendix (Table A1). The growth rate is the annual average growth rate for 2004–2014.

Sources: Calculated based on data from Susenas 2004 and 2014; for the official poverty lines in 2004, *Statistical Yearbook of Indonesia 2005/2006* (BPS, 2006); for the official poverty lines in 2014, *Statistical Yearbook of Indonesia 2015* (BPS, 2015).

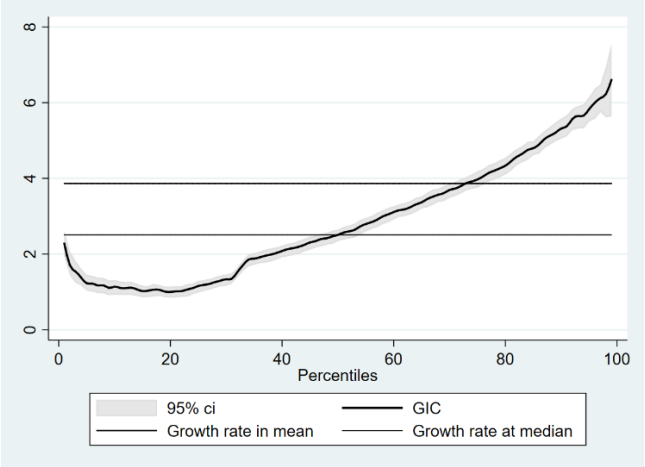
4.3. Pro-Poorness of Urban and Rural Economic Growths by Region, 2004–2014

Table 2 also presents the result of a poverty decomposition analysis for urban and rural areas by region. All regions except East Indonesia reduced poverty incidence in both urban and rural areas. However, they experienced a substantial increase in expenditure inequality in both areas (Table 1), so the change in poverty incidence due to redistribution effects is positive (Table 2). As shown in Figures 3–6, Sumatra, Java–Bali, Kalimantan, and Sulawesi have an upward-sloping GIC in both areas, indicating that their economic growths benefited richer groups more than poorer groups. We should note, however, that there are some variations in the pattern of GIC amongst regions and between urban and rural areas. In urban Sumatra, except in the poorest two percentiles, growth rates in the poorest 30% of the population were almost constant across quantiles, at 1.2%, but in rural Sumatra, the GIC has a U-shaped pattern in the poorest 30%. In rural Sumatra, the poorest 2% registered a relatively high growth rate of 1.3%, which is almost the same as the median growth rate. Urban Java–Bali has a similar GIC to urban Sumatra, where growth rates in the poorest 30% of the population were almost constant across quantiles. On the other hand, rural Java–Bali has a unique GIC, where growth rates between the 25th percentile and the 65th percentile were almost constant at around the median growth rate of 2.1%, indicating that its growth benefited the middle-income group uniformly across quantiles.

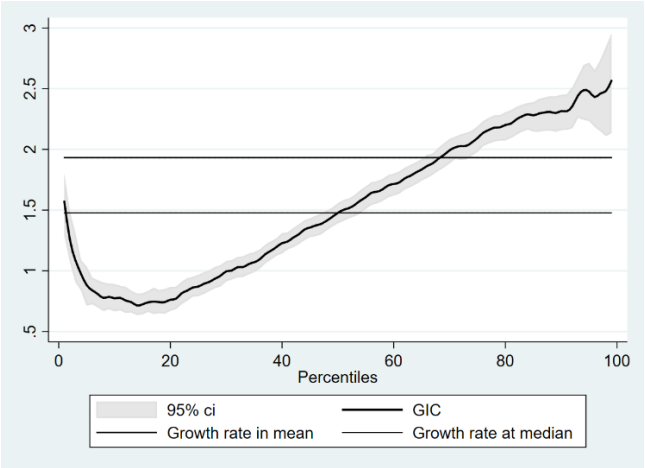
Figure 3: Growth Incidence Curve for Sumatra



Urban Areas

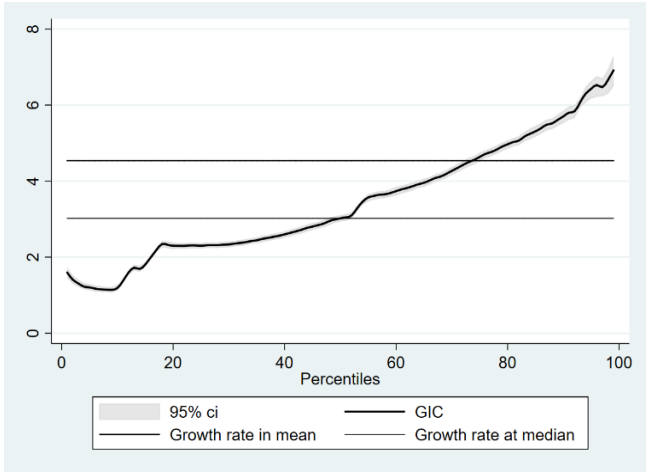


Rural Areas

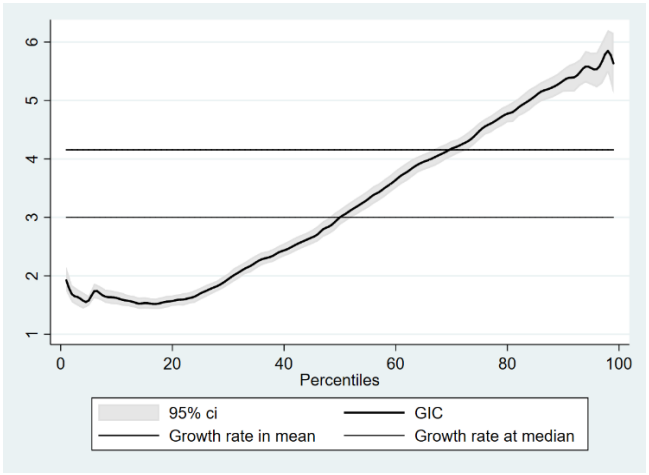


Notes: GIC is the growth incidence curve, 95% ci is the 95% confidence interval, and the y-axis presents annual average growth rates for 2004–2014.
Source: Calculated based on data from Susenas (2004 and 2014), https://mikrodata.bps.go.id/mikrodata/index.php/catalog/651 and other quarters (accessed 30 August 2020).

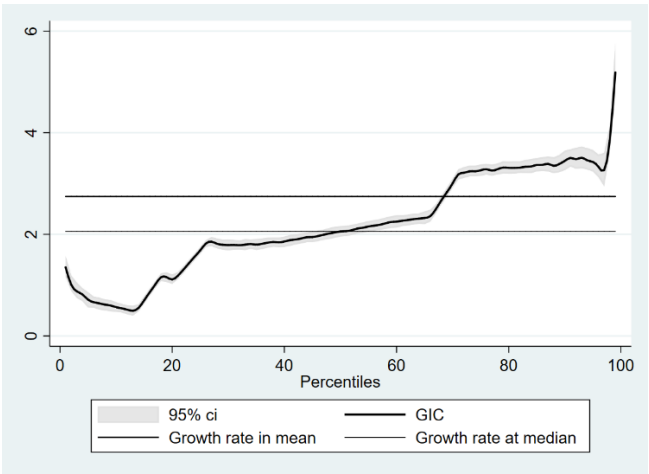
Figure 4: Growth Incidence Curve for Java–Bali



Urban Areas

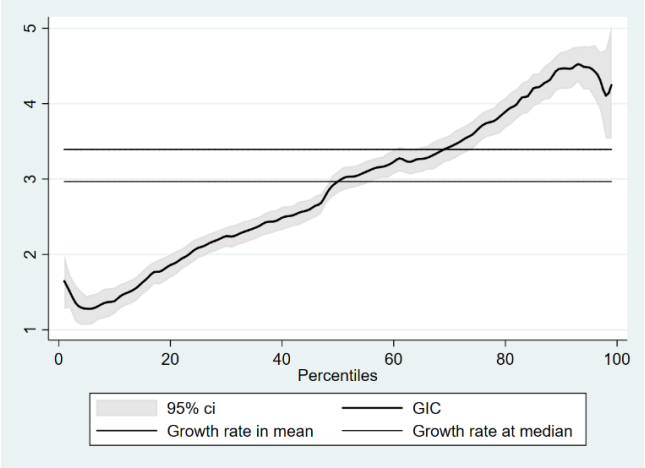


Rural Areas

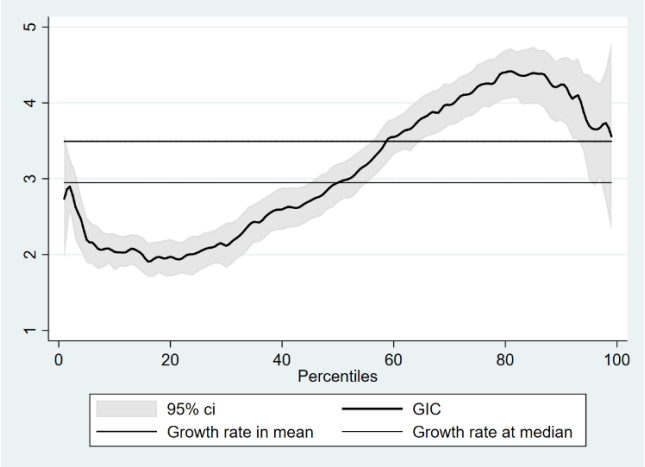


Notes: GIC is the growth incidence curve, 95% ci is the 95% confidence interval, and the y-axis presents annual average growth rates for 2004–2014.
Source: Calculated based on data from Susenas 2004 and 2014. https://mikrodata.bps.go.id/mikrodata/index.php/catalog/651 and other quarters (accessed 30 August 2020).

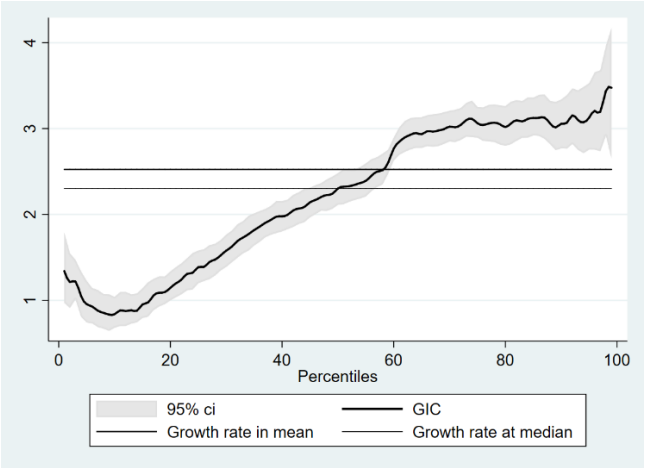
Figure 5: Growth Incidence Curve for Kalimantan



Urban Areas

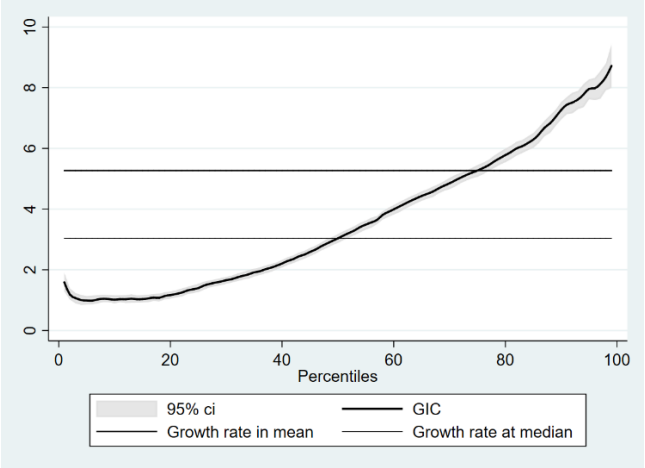


Rural Areas

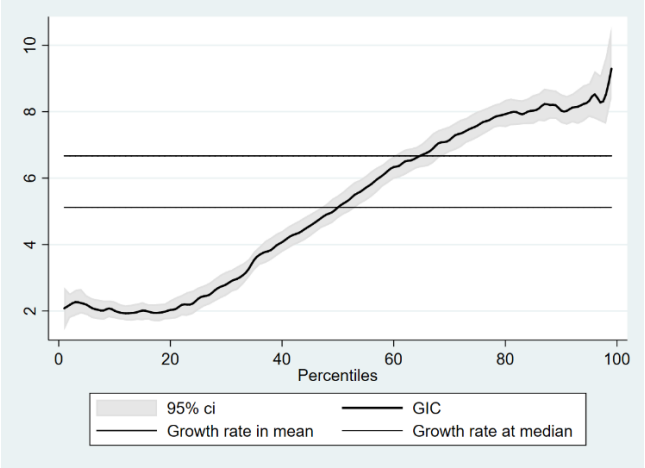


Notes: GIC is the growth incidence curve, 95% ci is the 95% confidence interval, and the y-axis presents annual average growth rates between 2004 and 2014.
Source: Calculated based on data from Susenas (2004 and 2014), https://mikrodata.bps.go.id/mikrodata/index.php/catalog/651 and other quarters (accessed 30 August 2020).

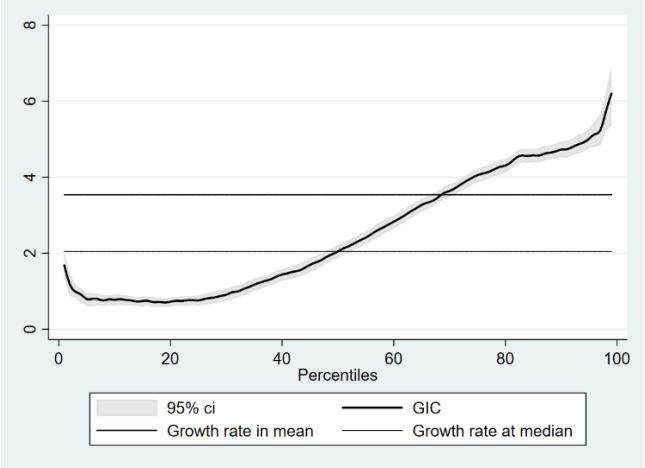
Figure 6: Growth Incidence Curve for Sulawesi



Urban Areas

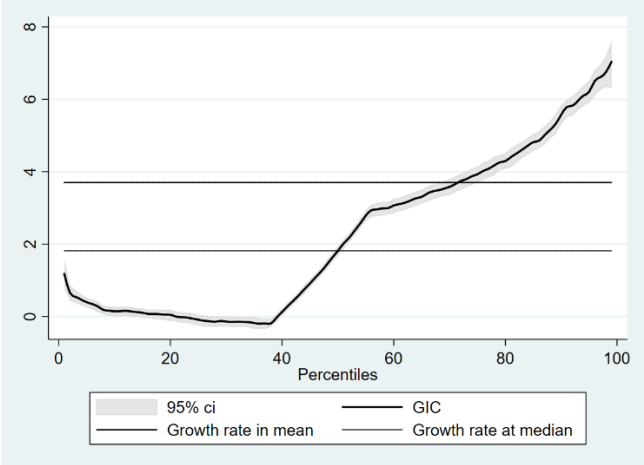


Rural Areas

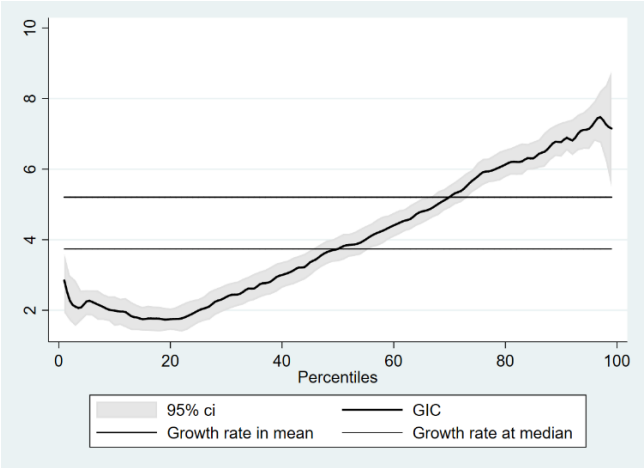


Notes: GIC is the growth incidence curve, 95% ci is the 95% confidence interval, and the y-axis presents annual average growth rates between 2004 and 2014.
Source: Calculated based on data from Susenas (2004 and 2014), https://mikrodata.bps.go.id/mikrodata/index.php/catalog/651 and other quarters (accessed 30 August 2020).

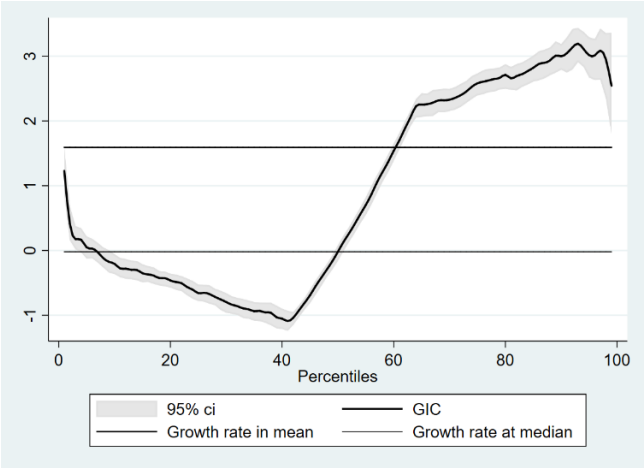
Figure 7: Growth Incidence Curve for East Indonesia



Urban Areas



Rural Areas



Notes: GIC is the growth incidence curve, 95% ci is the 95% confidence interval, and the y-axis presents annual average growth rates between 2004 and 2014.
Source: Calculated based on data from Susenas (2004 and 2014), https://mikrodata.bps.go.id/mikrodata/index.php/catalog/651 and other quarters (accessed 30 August 2020).

In urban Kalimantan, while the GIC has a U-shaped pattern in the poorest 40%, it has an inverted U-shaped pattern in the richest 40%. This resulted in a relatively small increase in expenditure inequality; as measured by the Gini coefficient, expenditure inequality rose from 0.35 in 2004 to 0.38 in 2014 (Table 1). On the other hand, rural Kalimantan has a similar GIC to rural Sumatra; its GIC has a U-shaped pattern in the poorest 20%. In urban Sulawesi, growth rates varied substantially across quantiles, ranging from 2% for the poorest decile to 9% for the richest decile; this resulted in a substantial increase in expenditure inequality from 0.31 in 2004 to 0.43 in 2014 (Table 1). Urban Sulawesi grew very rapidly, at 6.5%, but the growth was accompanied by a large increase in expenditure inequality (Table 1). On the other hand, rural Sulawesi had a similar GIC to urban Sumatra, where growth rates in the poorest 30% of the population were almost constant across quantiles, at 0.9%. It should be noted that while East Indonesia reduced poverty incidence in urban areas, it raised poverty incidence in rural areas. According to Table 2, in rural East Indonesia, the rise in the incidence of poverty due to redistribution effects (*RE* in equation (1)) was very large, at 25.8 percentage points, wholly offsetting the fall in poverty incidence due to growth effects (*GE* in equation (1)). Urban East Indonesia had a similar GIC to urban Sumatra, though its mean growth rate was much larger, at 5.1% (Table 1 and Figure 7). On the other hand, rural East Indonesia had a unique GIC (Figure 7). In the first 60% of the population, the GIC had a V-shaped pattern, i.e. the growth rate declines monotonically up to the 40th percentile, but after reaching the lowest point, it started to increase monotonically. In rural East Indonesia, the average growth rate of the poorest half was negative, while that of the richest quintile was positive, at around 3%.

We should note that the poorest 5% had a relatively high growth rate in most regions. This may be due to the conditional cash transfer program (PKH) launched in 2007 (Nazara and Rahayu, 2013; Howes and Davies, 2014). The PKH, which is the first conditional cash transfer program in Indonesia, is a quarterly program targeting the extreme poor who participate in health and education programs. In 2007, it covered only seven provinces, but it has expanded gradually and covered all provinces by 2014. According to the 2014 round of Susenas, the proportion of

households in rural Indonesia which received the PKH was 8.4% amongst the poorest 5%, which is larger than 6.8% and 5.6%, respectively, amongst the second and third poorest 5%. On the other hand, in urban Indonesia, the proportion was 8.4% amongst the poorest 5%, followed by 7.8% and 5.7%, respectively, amongst the second and third poorest 5%. Particularly, in East Indonesia, the proportion amongst the poorest 5% was very large, at 12.7% and 14.1%, respectively, in rural and urban areas; and these proportions were much larger than the proportions amongst the second and third poorest 5%. These observations suggest that a relatively high growth rate amongst the poorest 5% is due in part to a higher proportion of households receiving conditional cash transfers amongst the poorest 5% than the proportions amongst the second and third poorest 5%.

By differentiating urban and rural areas, regions can be classified as follows according to the Kakawani and Pernia classification described above:

(1) PPGI < 0, growth is antipoor
East Indonesia (rural areas)

(2) 0 < PPGI ≤ 0.33, growth is weakly pro-poor
Sumatra (urban and rural areas), Sulawesi (rural areas), Kalimantan (rural areas)

(3) 0.33 < PPGI ≤ 0.66, growth is moderately pro-poor
Java–Bali (urban and rural areas), Kalimantan (urban areas), Sulawesi (urban areas), East Indonesia (urban areas)

(4) 0.66 < PPGI < 1.0, growth is pro-poor
No region

(5) PPGI ≥ 1.0, growth is highly pro-poor
No region

Table 3 shows that in all regions, the PPGIs are smaller than 0.66 in both urban and rural areas, meaning that according to the classification, their growths were moderately pro-poor or less. It also shows that urban areas performed better than rural areas in terms of the pro-poorness of economic growth, as measured by the PPGI. Urban areas grew faster than rural areas; thus, the PEGR of urban areas was much larger than that of rural areas.

In all regions except Sumatra, the growth of urban areas was moderately pro-poor, with the PPGI ranging from 0.33 to 0.66. In urban areas, Kalimantan has the highest PPGI, at 0.54, followed by Sulawesi and East Indonesia. Urban Kalimantan registered a relatively small increase in expenditure inequality (Table 1); thus, the rise in poverty incidence due to redistribution effects was small, at 6.1 percentage points (Table 2). Although urban Kalimantan grew relatively slowly, at 3.1%, it reduced its poverty incidence from 9.2% to 3.6%, the smallest in 2014. On the other hand, urban Sulawesi grew very rapidly at 6.5%; thus, the PEGR exceeded 3%, the highest amongst the regions. Although its expenditure inequality rose notably from 0.31 to 0.43 by the Gini coefficient (Table 1), urban Sulawesi reduced its poverty incidence from 11.0% to 4.6%. Urban East Indonesia also grew rapidly at 5.1%. Although its expenditure inequality rose from 0.32 to 0.42 by the Gini coefficient (Table 1), it reduced its poverty incidence from 18.8% to 10.6%. However, its poverty incidence was the largest in urban areas in 2014. We should note that, though the growth of urban Sumatra was weakly pro-poor, its PPGI was slightly smaller than 0.33.

In all regions except Java–Bali, the growth of rural areas was weakly pro-poor or anti-poor – with a PPGI smaller than 0.33. In rural areas, Java–Bali has the highest PPGI, at 0.39, followed by Kalimantan. Rural Java–Bali registered a relatively small increase in expenditure inequality (Table 1). Although it grew at 2.7%, rural Java–Bali decreased its poverty incidence substantially from 26.5% to 13.2%. Like rural Java–Bali, rural Kalimantan registered a relatively small increase in expenditure inequality (Table 1); thus, the rise in poverty incidence due to redistribution effects was small, at 11.5 percentage points (Table 2). Rural Kalimantan reduced its poverty incidence from 12.3% to 7.3%, which was the lowest in rural areas in 2014. Rural Sulawesi grew relatively rapidly, at 3.5%. However, it raised expenditure inequality substantially from 0.27 to 0.37; thus, the rise in poverty incidence due to redistribution effects was large, at 16.1 percentage points (Table 2). Although rural Sulawesi decreased its poverty incidence, its PPGI is the second smallest in rural areas, at 0.2. We should note that rural East Indonesia has a negative PPGI; thus, its economic growth was anti-poor according to the Kakwani and Pernia classification. It grew very slowly, at 1.6%, while it raised its

inequality notably from 0.26 to 0.34 (Table 1). As discussed previously, the fall in poverty incidence due to growth effects was wholly offset by the rise in poverty incidence due to redistribution effects (Table 2). Rural East Indonesia thus raised its poverty incidence from 16.1% to 19.8%.

4.4. Determinants of Poverty in Urban and Rural Areas

Although the incidence of poverty declined over the study period in Indonesia, many people were still under the poverty lines in 2014. To reduce poverty, we need to know the determinants of poverty. To explore the determinants, a *probit* analysis is conducted using data from the 2014 round of Susenas, where we focus on education since education is considered one of the major determinants of poverty (Haughton and Khandker, 2009). Specifically, we estimate the following *probit* model using the maximum likelihood estimator

$$P(poor = 1|\boldsymbol{x}) = F\left(\beta_0 + \beta_1 edyear + \beta_2 hsize + \beta_3 age + \beta_4 age^2 + \beta_5 gender + \beta_6 married + \sum \gamma_i (industrial\ dummy)_i + \sum \delta_j (provincial\ dummy)_j\right) \quad (5)$$

where $\boldsymbol{x}$ is a vector of independent variables and F is the standard normal cumulative distribution function. In this model, *poor* is the binary dependent variable (*poor* = 1 when per capita expenditure is below the poverty line). The independent variables are *edyear*, *hsize*, *age*, age^2, *gender*, and *married*, where *edyear* refers to the years of education of the household head, *hsize* is the household size, *age* is the age of the household head, *gender* is a dummy variable which equals 1 for male-headed households, and *married* is a dummy variable for a marital status of the household head (*married* = 1 if the household head is married). In addition to these independent variables, to account for differences in poverty across industrial sectors in which household heads work, dummy variables designating industrial sectors are included, where industrial sectors include agriculture; mining; manufacturing; electricity, gas, and construction; retail and wholesale trade; hotels and restaurants; transportation; information, communication, and finance; education, health, and government services; and others (including unemployed). To account for provincial differences in poverty, we also include provincial dummy variables.

Since the number of years of education (*edyear*) is likely to be endogenous, we also conduct an instrumental variable (IV) probit analysis for urban and rural areas, where we use district-specific mean years of education (*mean_edyear*) as an instrumental variable,[21] since *mean_edyear* is correlated with *edyear* to some extent but does not directly explain individual poverty.[22]

Table 4 presents the descriptive statistics of the dependent and independent variables, while Table 5 presents the results of the maximum likelihood estimation, where estimates for industrial sector dummies and provincial dummies are not presented. According to the Wald test of exogeneity, we can reject the null hypothesis that *edyear* is exogenous (i.e. the correlation coefficient between the error term of the structural equation (5) and the error term of the reduced form equation for *edyear* is zero) since the chi-squared statistic is 154.5 and 1,262.0, respectively, for rural and urban areas. In other words, *edyear* is endogenous in the probit model (equation (5)) for urban and rural areas; thus, the coefficient associated with *edyear* is neither unbiased nor consistent.

[21] A district (regency or city) refers to a second-level administrative division below a province. Currently, Indonesia has 416 regencies and 98 cities.

[22] The correlation coefficient between *edyear* and *mean_edyear* is 0.43, while the correlation coefficient between the dependent variable and *mean_edyear* is −0.15.

Table 4: Descriptive Statistics of Dependent and Independent Variables, 2014

	Rural areas					Urban areas				
Variable	**No. of observations**	**Mean**	**Standard Deviation**	**Min**	**Max**	**No. of observations**	**Mean**	**Standard Deviation**	**Min**	**Max**
poor	163,344	0.1	0.3	0	1	122,056	0.1	0.3	0	1
edyear	163,344	6.6	3.9	0	18	122,056	9.3	4.3	0	18
hsize	163,344	3.9	1.7	1	22	122,056	3.8	1.7	1	19
age	163,344	48.1	13.7	13	98	122,056	48.1	13.5	12	98
gender	163,344	0.9	0.3	0	1	122,056	0.8	0.4	0	1
married	163,344	0.8	0.4	0	1	122,056	0.8	0.4	0	1

Source: Estimated based on data from Susenas (2014), https://mikrodata.bps.go.id/mikrodata/index.php/catalog/651 (accessed 30 August 2020).

Table 5: Probit and IV Probit Estimates of the Likelihood of Poverty in 2014

Rural areas

Variable	Probit estimates		IV probit estimates	
	Coefficient	Robust standard errors	Coefficient	Robust standard errors
Edyear	−0.0650***	0.0013	−0.1239***	0.0047
Hsize	0.2754***	0.0028	0.2697***	0.0029
Age	−0.0518***	0.0019	−0.0517***	0.0019
age2	0.0004***	0.0000	0.0004***	0.0000
Gender	−0.1898***	0.0210	−0.1067***	0.0217
Married	0.0623***	0.0199	0.1004***	0.0198
Provincial dummies	Yes		Yes	
Industrial sector dummies	Yes		Yes	
Number of observations	163,344		163,344	
Wald chi-squared	17,289***		18,291	
Log pseudolikelihood	−54,239		−475,033	
Pseudo R-squared	0.1683			
Wald test of exogeneity: chi-squared			154.5***	

Urban areas

Variable	Probit estimates		IV probit estimates	
	Coefficient	Robust standard errors	Coefficient	Robust standard errors
Edyear	−0.0961***	0.0017	−0.2543***	0.0027
Hsize	0.2295***	0.0035	0.1597***	0.0041
Age	−0.0491***	0.0027	−0.0313***	0.0023
age2	0.0004***	0.0000	0.0001**	0.0000
Gender	−0.1883***	0.0294	0.1786***	0.0247
Married	0.1565***	0.0282	0.1863***	0.0223
Provincial dummies	Yes		Yes	
Industrial sector dummies	Yes		Yes	
Number of observations	122,056		122,056	
Wald chi-squared	9,724***		30,278***	
Log pseudolikelihood	−25,967		−353,545	
Pseudo R-squared	0.1781			
Wald test of exogeneity: chi-squared			1,262***	

Note: *** significant at 1% level; ** significant at 5% level.
Source: Estimated based on data from Susenas (2014), https://mikrodata.bps.go.id/mikrodata/index.php/catalog/651 and other quarters (accessed 30 August 2020).

All the coefficients are significant at the 1% significant level and have the expected signs. Due to the endogeneity of *edyear*, there is a large difference in the estimated coefficient of *edyear* between the ordinary probit and IV probit models; in rural areas, the estimated coefficient of *edyear* is −0.065 and −0.124, respectively,

for the ordinary probit and IV probit, while in urban areas, it is −0.096 and −0.254. In any case, the number of years of education is significantly negatively associated with the likelihood of being poor after controlling for other independent variables. In other words, the higher the level of education the head of household has attained, the lower the likelihood that the household is poor. Education appears to have played an important role in reducing the probability of being poor in both rural and urban areas.

We now examine the incidence of poverty by educational group using the 2014 round of Susenas, where households are classified into the following groups in accordance with the highest level of education the household head has attained: (i) no or incomplete primary education, (ii) primary education, (iii) junior secondary education, (iv) senior secondary education, and (v) tertiary education.[23] Table 6 presents the poverty incidence by educational group in rural and urban areas. Using the Theil *L* index, it also presents expenditure inequality by educational group and the decomposition of overall expenditure inequality by educational group, where overall inequality is decomposed additively into the within- and between-group inequality components (L_W and L_B, respectively) as follows (Bourguignon, 1979; Shorrocks, 1980).[24]

$$L = \frac{1}{n}\sum_{i=1}^{m}\sum_{j=1}^{n_i}\ln\left(\frac{\mu}{y_{ij}}\right) = \sum_{i=1}^{m}\left(\frac{n_i}{n}\right)L_i + \sum_{i=1}^{m}\left(\frac{n_i}{n}\right)\ln\left(\frac{\mu}{\mu_i}\right) = L_W + L_B,$$

where n, n_i, m, y_{ij}, μ, μ_i, and L_i, are, respectively, the total number of households, the number of households in educational group *i*, the number of educational groups, per capita expenditure of household *j* in educational group *i*, mean per capita expenditure, mean per capita expenditure of educational group *i*, and the Theil *L* for educational group *i*.

[23] Tertiary education refers to college and university education including bachelor's, master's, and doctoral degrees.

[24] Larger values of the Theil *L* index indicate larger levels of inequality. Like the Gini coefficient, the Theil *L* index satisfies anonymity, mean independence, population-size independence, and the Pigou-Dalton condition (Anand, 1983).

Table 6: Poverty Incidence and Expenditure Inequality by Educational Group, 2014

Item	Population share (%)	Poverty incidence (%)	Theil *L*		Mean per capita expenditure (Rp1,000/month)
			Value	Contribution (%)	
Rural					
No or incomplete primary	31.0	17.3	0.150	26.7	218
Primary	35.8	14.0	0.152	31.4	231
Junior secondary	16.2	9.6	0.157	14.6	257
Senior secondary	13.7	5.9	0.185	14.6	315
Tertiary	3.3	2.9	0.215	4.1	450
Within-group			0.159	91.4	
Between-group			0.015	8.6	
Total	**100.0**	**12.8**	**0.174**	**100.0**	**250**
Urban					
No or incomplete primary	15.3	14.7	0.195	10.1	312
Primary	21.9	12.2	0.200	14.9	339
Junior secondary	16.7	7.5	0.213	12.1	409
Senior secondary	31.7	3.2	0.238	25.6	552
Tertiary	14.4	0.5	0.244	11.9	980
Within-group			0.220	74.6	
Between-group			0.075	25.4	
Total	**100.0**	**7.3**	**0.295**	**100.0**	**506**

Source: Calculated based on data from Susenas (2014), https://mikrodata.bps.go.id/mikrodata/index.php/catalog/651 and other quarters (accessed 30 August 2020).

As expected, poverty incidence decreases with the level of education in both urban and rural areas. The Indonesian government extended compulsory education to nine years (junior secondary) in 1994 (Kristiansen and Pratikno, 2006).[25] However, in rural areas, more than 65% of household heads completed only primary education or less in 2014. It is thus essential to promote and strengthen junior secondary education to reduce poverty in rural areas. Even in urban areas, 37% of household heads had only primary education or less in 2014. While improving the quality of junior secondary education is imperative, it is important to promote senior secondary and tertiary education in urban areas since urban jobs require higher

[25] Indonesia made 6 years of primary education compulsory in 1984.

levels of skills and knowledge (di Gropello, Kruse, and Tandon, 2011). It should be noted that, as shown in Table 6, there is a large expenditure disparity between those who have completed primary education or less and those with secondary and tertiary education in urban areas − the expenditure disparity between educational groups accounts for 25% of overall inequality. This observation also suggests the importance of the expansion of secondary and tertiary education in urban areas to reduce poverty. However, within-group expenditure inequality rises with the level of education. It is thus important to reduce expenditure inequality amongst those with senior secondary and tertiary education in urban areas.

5. Conclusions

This study measured the pro-poorness of urban and rural economic growth by region from 2004 to 2014 in Indonesia using pro-poor growth indexes with expenditure data from the National Socio-Economic Survey (Susenas). It also conducted a probit analysis to explore the determinants of poverty in urban and rural areas using the 2014 round of Susenas. Major findings are summarised as follows. First, in Indonesia as a whole, expenditure inequality increased conspicuously in both urban and rural areas. A poverty decomposition analysis shows that the rise in expenditure inequality offset the poverty-reducing growth effect considerably in both areas. Although the incidence of poverty declined, the economic growth was not pro-poor in the strict sense. Second, according to the classification of Kakwani and Pernia (2000), economic growth was moderately pro-poor in urban Indonesia, while weakly pro-poor in rural Indonesia. Rural Indonesia grew less rapidly; thus, its poverty equivalent growth rate was much smaller than that of urban areas.

Third, all regions (Sumatra, Java−Bali, Kalimantan, Sulawesi, and East Indonesia) experienced a substantial increase in expenditure inequality in both urban and rural areas; thus, the change in poverty incidence due to redistribution effects is positive. Except in East Indonesia, they reduced the incidence of poverty in both areas, but their growth was not pro-poor in the strict sense. Fourth, in East Indonesia, the incidence of poverty declined in urban areas, but it increased in rural

areas. A poverty decomposition analysis shows that, in rural East Indonesia, the rise in expenditure inequality wholly offset the poverty-reducing growth effect. Fifth, according to the pro-poor growth indexes, urban areas performed better than rural areas in all regions. In most regions, the growth of urban areas was moderately pro-poor, while that of rural areas was weakly pro-poor or anti-poor. Since urban areas grew faster than rural areas, the poverty equivalent growth rate of urban areas was much higher than that of rural areas.

Sixth, according to probit analyses, in both urban and rural areas, education is significantly negatively associated with the likelihood of being poor after controlling for other household characteristics, meaning that the higher the level of education the household head has attained, the lower the likelihood that the household is poor. Education appears to have played an important role in the reduction of poverty in both areas. Seventh, if households are classified into the five educational groups in terms of the highest level of education the household head has attained (no or incomplete primary, primary, junior secondary, senior secondary, and tertiary), the incidence of poverty decreases with the level of education in both urban and rural areas.

These findings suggest that the government should pay attention to urban–rural and regional differences in factors that would affect economic growth and changes in inequality when formulating poverty alleviation policies and programs. In rural areas, the incidence of poverty was still high. Since the rural sector is based mainly on agricultural activities, it may not be easy to promote its economic growth. On the other hand, it had a much smaller level of expenditure inequality than urban areas; thus, policies that could at least maintain the current level of inequality are recommended to facilitate the pro-poorness of the economic growth. In 1994, the government extended compulsory education to junior secondary education; but in 2014, more than 65% of household heads had completed only primary education or less in rural areas. Although expenditure inequality was not high amongst them, the incidence of poverty was much larger than those with secondary education. It is thus essential to promote and strengthen junior secondary education to reduce poverty in rural areas.

Urban areas had a much smaller incidence of poverty than rural areas; thus, a

further reduction of poverty incidence may not be easy. Accelerating economic growth could potentially reduce the incidence of poverty if inequality remained constant. According to our Susenas data, however, the simple correlation coefficient between growth rate and the change in expenditure inequality across provinces is very high, at 0.75 in urban areas, meaning that the higher the rate of economic growth, the larger the increase in inequality tends to be. In urban areas, therefore, poverty-reducing growth effects will likely be mitigated by rising inequality. Urban areas had a higher level of education than rural areas. However, even in urban areas, a large proportion of households had completed only primary education or less in 2014, and they had a much larger incidence of poverty than those with secondary or tertiary education. Furthermore, there was a large expenditure disparity between those who have completed primary education and those with secondary and tertiary education. While improving the quality of junior secondary education is imperative, it is important to promote senior secondary and tertiary education to reduce the incidence of poverty in urban areas since urban jobs require higher levels of skills and knowledge.

This study is not without limitations. First, it measured the pro-poorness of urban and rural growth from 2004 to 2014, but it did not analyse the pro-poorness for the sub-periods. It would be interesting to analyse changes in the pro-poorness of urban and rural economic growth between sub-periods, particularly between the first and second terms of the Yudhoyono presidency. Second, this study did not examine the pro-poorness of economic growth after 2014. In October 2014, Joko Widodo (Jokowi) replaced Yudhoyono as the president of Indonesia. During his first term from 2014 to 2019, the country grew at an annual average rate of 4.9% (at 2010 constant prices), while its expenditure inequality declined slightly from 0.41 to 0.38 by the Gini index (BPS, various issues). At the national level, the incidence of poverty has declined, but the speed of poverty reduction was slower than in the Yudhoyono period (BPS, various issues). It would be interesting to analyse the pro-poorness of economic growth at the subnational level during the first term of the Jokowi presidency.

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Appendix

Table A1: Poverty Lines, 2004 and 2014

		2004				2014	
		Official poverty lines		Revised poverty lines		Official poverty lines	
	Province	Urban	Rural	Urban	Rural	Urban	Rural
11	Aceh	141,926	124,857	122,056	109,874	396,939	369,232
12	North Sumatera	142,966	114,214	122,951	100,508	349,372	312,493
13	West Sumatera	181,506	128,610	156,095	113,177	390,862	349,824
14	Riau	198,075	164,921	170,345	145,131	408,218	378,567
15	Jambi	160,203	117,428	137,775	103,337	390,931	302,162
16	South Sumatera	154,768	108,457	133,101	95,442	346,238	285,791
17	Bengkulu	148,156	102,335	127,414	90,055	378,881	346,395
18	Lampung	146,566	108,611	126,047	95,578	350,024	307,818
19	Bangka Belitung	162,288	143,114	139,568	125,940	458,055	481,226
31	Jakarta	197,306	-	169,683		459,560	-
32	West Java	152,144	122,475	130,844	107,778	294,700	285,076
33	Central Java	140,391	116,998	120,736	102,958	286,014	277,802
34	Yogyakarta	148,247	114,671	127,492	100,911	333,561	296,429
35	East Java	138,792	119,405	119,361	105,076	293,391	286,798
36	Banten	150,384	115,988	129,330	102,069	324,902	296,241
51	Bali	158,639	136,166	136,430	119,826	316,235	279,140
52	West Nusa Tenggara	144,001	99,686	123,841	87,724	315,470	285,205
53	East Nusa Tenggara	142,351	94,886	122,422	83,500	340,459	251,040
61	West Kalimantan	160,491	103,400	138,022	90,992	307,789	294,044
62	Central Kalimantan	148,964	128,382	128,109	112,976	316,683	338,130
63	South Kalimantan	148,413	111,821	127,635	98,402	336,782	313,954
64	East Kalimantan	163,976	170,296	141,019	149,861	459,004	420,427
71	North Sulawesi	148,343	132,207	127,575	116,342	269,212	264,321
72	Central Sulawesi	154,043	116,373	132,477	102,408	349,978	321,009
73	South Sulawesi	136,222	107,309	117,151	94,432	246,364	224,086
74	South East Sulawesi	140,925	108,260	121,196	95,269	254,015	238,745
75	Gorontalo	126,612	94,889	108,886	83,502	250,157	246,290
81	Maluku	152,194	123,769	130,887	108,917	369,738	355,478
82	North Maluku	174,000	107,142	149,640	94,285	339,561	307,374
94	Papua	160,866	130,649	138,345	114,971	420,795	358,551

Notes:

1. Poverty lines for Riau are the average value of the poverty lines for Riau and Riau islands; poverty lines for South Sulawesi are the average value of the poverty lines for South Sulawesi and West Sulawesi; poverty lines for Papua are the average value of the poverty lines for Papua and West Papua.
2. Revised poverty lines for urban areas in 2004 = 0.86 × official poverty lines for urban areas in 2004; revised poverty lines for rural areas in 2004 = 0.88 × official poverty lines for rural areas in 2004.

Sources: *Statistical Yearbook of Indonesia*, 20052006 (BPS, 2006) for the official poverty lines in 2004; *Statistical Yearbook of Indonesia 2015* (BPS, 2015) for the official poverty lines in September 2014.

Table A2: Decomposition of Change in Poverty into Growth and Redistribution Components based on Official Poverty Lines in 2004 and 2014 (%)

Region		Poverty in 2004 (1)	Poverty in 2014 (2)	Change in poverty = (2) − (1) = (GE) + (RE)	Change in poverty due to growth (GE)	Change in poverty due to redistribution (RE)
Indonesia		27.1	10.0	−17.1	−29.2	12.1
	Urban	21.3	7.3	−14.0	−23.6	9.6
	Rural	30.9	12.8	−18.1	−33.8	15.7
Sumatra		24.0	10.2	−13.8	−29.0	15.2
	Urban	21.0	8.2	−12.8	−24.5	11.7
	Rural	25.6	11.4	−14.2	−31.7	17.5
Java–Bali		29.2	9.7	−19.4	−30.0	10.5
	Urban	21.5	7.3	−14.2	−23.8	9.5
	Rural	35.3	13.2	−22.1	−36.3	14.2
Kalimantan		18.2	5.7	−12.4	−22.7	10.3
	Urban	15.8	3.6	−12.2	−19.1	6.9
	Rural	19.4	7.3	−12.2	−25.1	12.9
Sulawesi		24.1	9.9	−14.2	−26.5	12.3
	Urban	18.4	4.6	−13.8	−19.9	6.1
	Rural	26.4	12.6	−13.8	−29.6	15.7
East Indonesia		24.7	16.9	−7.7	−29.2	21.5
	Urban	28.4	10.6	−17.8	−26.1	8.3
	Rural	23.7	19.8	−3.9	−30.9	26.9

GE = growth effect, RE = redistribution effect

Sources: Calculated based on data from Susenas 2004 and 2014 https://mikrodata.bps.go.id/mikrodata/index.php/catalog/651 and other quarters and year of 2014 (accessed 30, August, 2020); for the official poverty lines in 2004, *Statistical Yearbook of Indonesia*, 2005–2006 (BPS, 2006); for the official poverty lines in 2014, *Statistical Yearbook of Indonesia 2015* (BPS, 2015).

Table A3: Pro-Poor Growth Indexes based on Official Poverty Lines, 2004 and 2014

Region		G12 (%) (1)	ε (2)	ε_G (3)	PPGI (4) = (2) / (3)	PEGR (%) (5) = (4) × (1)
Indonesia		5.5	−1.79	−3.60	0.50	2.8
	Urban	5.6	−1.91	−3.45	0.55	3.1
	Rural	3.8	−2.30	−5.26	0.44	1.7
Sumatra		4.5	−1.93	−4.25	0.45	2.0
	Urban	5.3	−1.77	−3.44	0.51	2.7
	Rural	3.2	−2.53	−6.03	0.42	1.3
Java–Bali		5.9	−1.86	−3.50	0.53	3.1
	Urban	5.6	−1.94	−3.56	0.55	3.0
	Rural	4.0	−2.47	−5.26	0.47	1.9
Kalimantan		4.7	−2.43	−4.36	0.56	2.6
	Urban	4.9	−2.99	−4.35	0.69	3.4
	Rural	3.8	−2.60	−5.40	0.48	1.8
Sulawesi		6.5	−1.36	−2.94	0.46	3.0
	Urban	8.0	−1.73	−2.66	0.65	5.2
	Rural	4.8	−1.56	−3.94	0.39	1.9
East Indonesia		5.0	−0.75	−3.29	0.23	1.1
	Urban	6.6	−1.49	−2.47	0.60	4.0
	Rural	2.9	−0.63	−5.85	0.11	0.3

G12 = proportional change in mean per capita expenditure, PEGR = poverty equivalent growth rate, PPGI = pro-poor growth index..

Sources: Calculated based on data from Susenas 2004 and 2014 https://mikrodata.bps.go.id/mikrodata/index.php/catalog/651 and other quarters and year of 2014 (accessed 30, August, 2020); for the official poverty lines in 2004, Statistical Yearbook of Indonesia 2005−2006 (BPS, 2006); for the official poverty lines in 2014, Statistical Yearbook of Indonesia 2015 (BPS, 2015).

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