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From Low Income, High Poverty to High Income, No Poverty?

An Optimistic View of the Long-Run Evolution of Poverty in Indonesia by International Poverty Lines, 1984–2030

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Peter Edward

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Toward Pro-poor Policy through Research

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ABSTRACT

From Low Income, High Poverty to High Income, No Poverty? An Optimistic View of the Long-Run Evolution of Poverty in Indonesia by International Poverty Lines, 1984–2030

Andy Sumner and Peter Edward

Indonesia has achieved well-documented and drastic improvements in average incomes and in the reduction of poverty. Much research has discussed this progress. This paper adds to the literature with a new perspective. We discuss poverty in Indonesia using the international poverty lines ($1.25, $2 and we add $10 per day). We generate historic estimates of poverty and to make projections based on various growth and inequality trends. We find that Indonesia has the potential to attain high-income country status in a decade or so and at the same time the potential to end $1.25 per day and $2 per day poverty, but this would require favorable changes in distribution. Looking ahead, the end of poverty in Indonesia may be accompanied by a large proportion of the population vulnerable to poverty for some considerable time to come, suggesting public policy priorities may need to balance insurance and risk management mechanisms with more "traditional" poverty policy. We also find, in contrast to national poverty line analysis, that poverty by the various international poverty lines, is considerably more urbanized, with more than half the poor residing in urban areas currently and the urban proportion of total poverty likely to rise further in the years ahead.

Keywords: Indonesia, poverty, inequality

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LIST OF ABBREVIATIONS

BPS	:	Statistics Indonesia
CGE	:	computable general equilibrium model
GDP	:	gross domestic product
GNI	:	gross national income
GrIP	:	Growth, Inequality, and Poverty model
HFC	:	household final consumption
HIC	:	high-income country
IFLS	:	Indonesian Family Life Survey
IMF	:	International Monetary Fund
LIC	:	low-income country
LMIC	:	lower middle-income country
NA	:	national accounts
ODA	:	official development assistance
pc	:	per capita
PPP	:	purchasing power parity
RPJM	:	National Medium-Term Development Plan
SME	:	small- and medium-sized enterprise
TPG	:	total poverty gap
UMIC	:	upper middle-income country
UNU	:	United Nations University
WDI	:	World Development Indicators
WEO	:	World Economic Outlook
WIID	:	World Income Inequality Database

I. INTRODUCTION

Indonesia has achieved well-documented and drastic improvements in average incomes and in the reduction of poverty. Much research has discussed this progress. However, in recent years the context for poverty reduction in Indonesia has increasingly become a discussion of slowing rates of poverty reduction (see Suryahadi, Hadiwidjaja, and Sumarto, 2012) and how to maintain rates of reduction to meet the National Medium-Term Development Plan (RPJM) national poverty (LHS) target of 8–10% by 2014.[1] Further, vulnerability to poverty remains an issue with almost 40% of the population living in the range of 1.5 times the national poverty line (World Bank, 2012c).

This paper adds to the literature with an alternative and complementary perspective, discussing trends and patterns of poverty reduction by using international poverty lines ($1.25, $2 and we add $10 per day). We use a model of growth, inequality, and poverty for historic estimates and project forward poverty reduction patterns by various growth and inequality trends in order to ascertain the possible future levels for poverty based on different assumptions.

We are, of course, not the first to consider the long-run evolution of poverty in Indonesia. Indeed, a number of studies we review have considered the evolution of poverty by the national poverty line (see discussion below). However, to the authors' knowledge, no paper has yet considered the evolution of poverty by the international poverty lines, for headcount and gap measures for total, urban, and rural components, nor made poverty projections on various scenarios. We also discuss trends in inequality and the distribution pattern of growth.

The paper is structured as follows: Section 2 provides an overview of Indonesian development since 1984 and reviews the literature relating to the long-run evolution of poverty (and inequality) in Indonesia. Section 3 outlines our methodology and section 4 our findings. Section 5 concludes.

II. INDONESIAN DEVELOPMENT SINCE 1984

2.1 Economic Development

Gross national income (GNI) per capita (using the Atlas method—exchange rate conversion applied to categorize countries' income status) in Indonesia grew from US$540 in 1984 to US$2,940 per capita in 2011 (see figure 1). Gross domestic product (GDP) per capita based on purchasing power party (PPP) (2005 constant $) grew from US$1,500 to almost US$4,100 per capita (see Figure 1) during the same period.[2] In short, GNI per capita (using the Atlas method) increased almost six-fold and average incomes by PPP are just a few years away from tripling. Average PPP income stood at about US$11 per day per capita in 2011. Few countries have achieved such a drastic change. In fact, the Commission on Growth and Development (2008: 20) identified just 13–15 countries which had achieved average growth rates of 7% a year or more for 25 years or longer at which the speed of the economy doubles in size every ten years. The group

[1] As of March 2012, the national poverty line headcount was 12% (World Bank, 2012c).

[2] WDI (2013) data.

includes four countries in Southeast Asia—Indonesia, Thailand, Malaysia and Vietnam.[3] That said, there was a noticeable dip following the 1997–1998 financial crisis and the long-run poverty impact of the crisis has been contentious.

Not surprisingly, official development assistance (ODA), indicators of development, as both a proportion of GNI and gross capital formation has been on a downward trajectory from what was a relatively low point by the early 1990s (albeit with a rise around the 1997–1998 crisis) (see Figure 2). Moreover, indicators of structural change in terms of economic development also show major shifts since the 1980s (and the process of transformation can be traced to before) (see figures 3 and 4). These shifts included the increasing importance of non-agricultural sectors to GDP and the labor force (although noticeable reverse trends emerged around the 1997–1998 crisis).

Services have increased as a share of employment but fallen as a share of GDP value added. In contrast, employment growth in industry is flat whilst industry's share of GDP value added has risen. Several studies (see section 2.2) have argued that this economic growth in the services sector is more beneficial to the poor than economic growth in the agriculture sector.

However, in spite of major structural changes, export dependency on primary commodities remains significant and has even risen over the period to around 10% of merchandise exports. In short, despite its economic development, Indonesia retains some characteristics of poorer nations—notably primary export dependency and high $2 poverty levels.

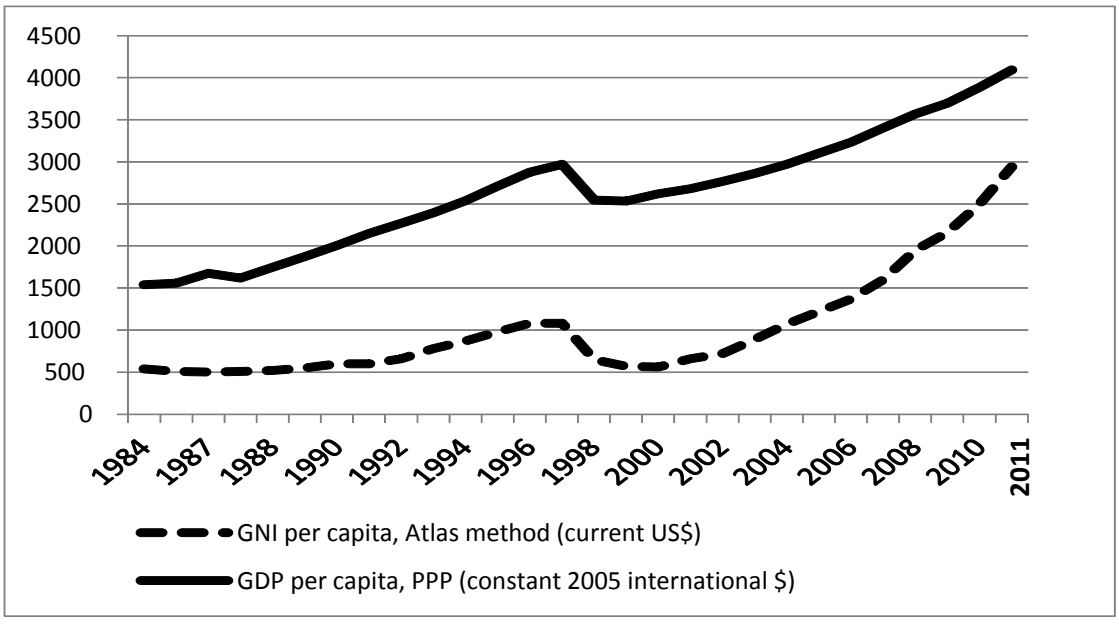

Figure 1. Indonesia: Income per capita, 1984–2011

Source: WDI (2013).

[3]Booth (1999) argued that initial conditions were crucial in differentiating this more recent Southeast Asian miracle from the older East Asian 'miracle'.

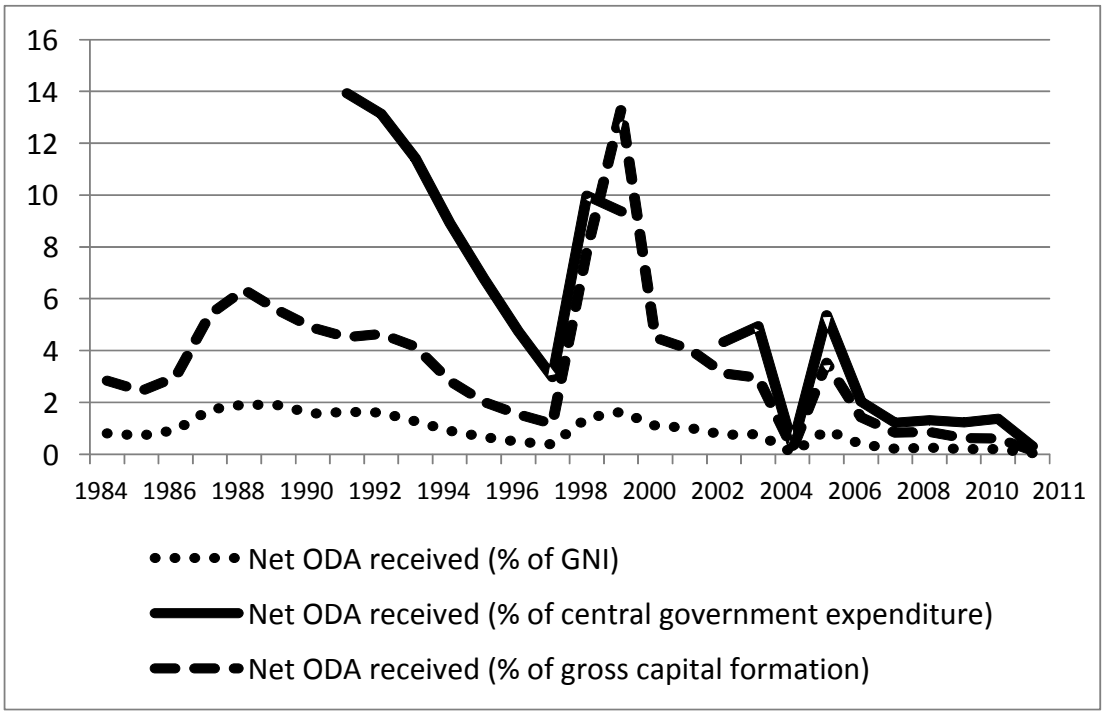

Figure 2. Indonesia, ODA indicators, 1984–2011

Source: WDI (2013).

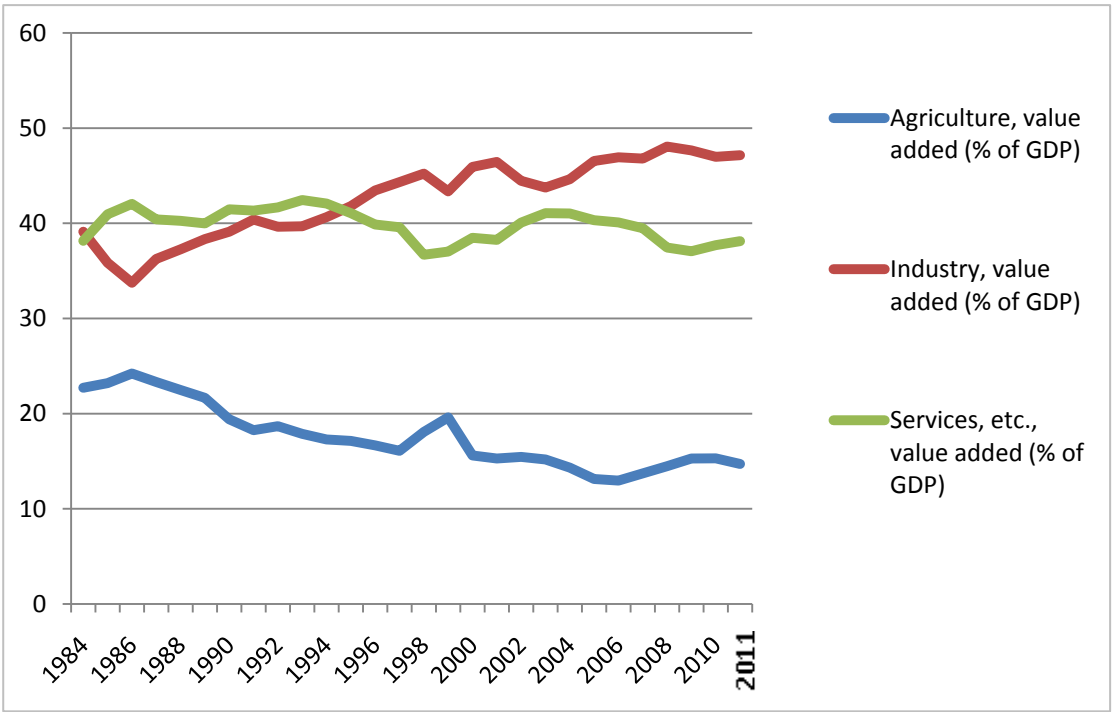

Figure 3. Indonesia, sectoral proportion of GDP, 1984–2011

Source: WDI (2013).

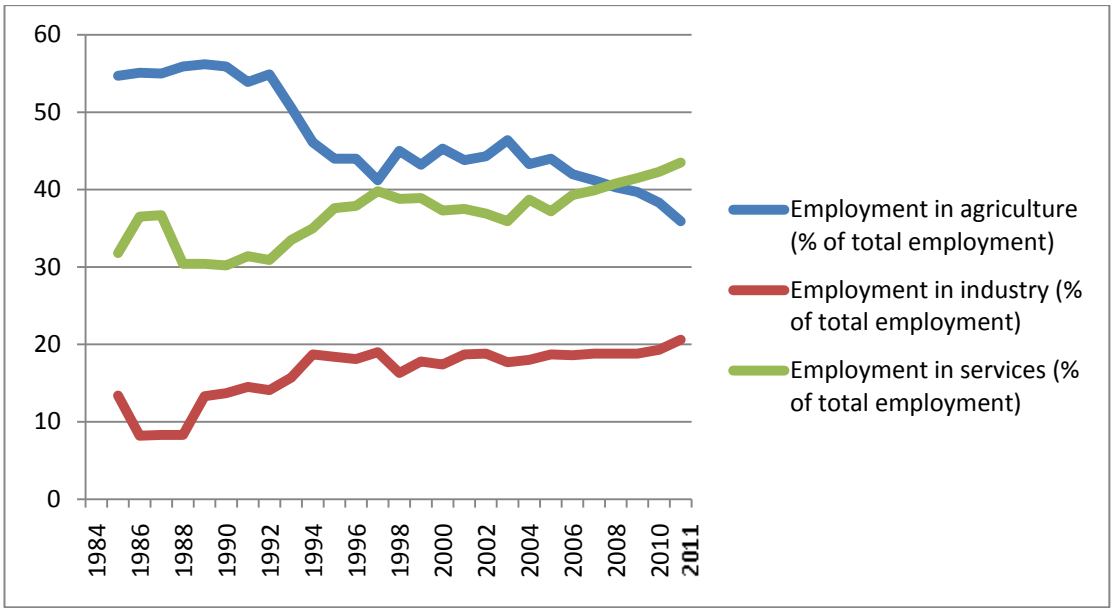

Figure 4. Indonesia, sectoral proportion of labor force, 1984–2011

Source: WDI (2013).

Indonesia, though, fares reasonably well in relative assessments to other countries. Although Indonesia's $2 poverty rate is surprisingly higher than poorer Southeast Asian neighbors such as Vietnam (Table 1), when Indonesia is compared to the averages of each income group (see Table 2 and Suryahadi, Hadiwidjaja, and Sumarto, 2012; Sumner, 2012d), Indonesia is certainly much closer to the upper middle-income group average in terms of ODA indicators. However, Indonesia is closer to the lower middle-income group weighted mean in terms of the proportional increase in GDP PPP per capita since 1990, the contribution of agriculture to GDP, and closer to the low-income group weighted mean in terms of primary export dependency.

If one compares income per capita in Indonesia and the country groups as a percentage of OECD high-income countries (HICs), in PPP terms, income per capita in Indonesia in 1990 was 18% of OECD high-income countries' weighted average and only slightly rose to 19% in 2008 (above the low-income countries' weighted mean and some distance from the upper middle-income country average).

Table 1. Indonesia: Economic Indicators Relative to Cambodia and Vietnam

Country	Poverty rate (% poor at $2 PPP a day)		GDP per capita, PPP (constant 2005 $)		GDP in non-agricultural sectors (% of GDP)		Exports of primary commodities (% of GDP)	
	1995-2000	2005-2010	1995-2000	2005-2010	1995-2000	2005-2010	1995-2000	2005-2010
Indonesia	66.97	54.36	2,710.42	3,480.90	82.85	85.88	13.16	14.68
Cambodia	70.79	53.24	898.65	1,783.78	55.15	66.30	7.66	3.37
Vietnam	68.71	43.33	1,424.50	2,527.13	73.95	79.10	18.60	28.58

Table 2. Indonesia: Economic Indicators Relative to Country Groupings, Population Weighted

Economic Indicators, 2010 (or nearest year)	Indonesia	LICs	LMICs	UMICs
Net ODA received (% of GNI)	0.2	12.6	1.0	0.1
Net ODA received (% of gross capital formation)	0.6	53.1	3.5	0.4
GDP of agriculture (%)	15.3	30.8	17.3	8.8
Agriculture as a % of total employment	38.3	n.a.	11.8	17.9
Urban population (% of total)	49.9	27.9	39.2	56.8
Agricultural raw materials (% of merchandise exports)	6.6	9.7	1.9	1.1
Ores and metals exports (% of merchandise exports)	9.9	7.4	5.9	4.3
Convergence with High-Income OECD				
GDP pc (PPP 2005 $) as a % HIC OECD, 1990	18	7	16	37
GDP pc (PPP 2005 $) as a % HIC OECD, 2008	19	6	16	43
GDP pc (PPP 2005 $) (1990 = 100)	178	138	188	355

Source: Sumner (2012d) based on data processed from World Bank (2012b).

2.2 Empirical Studies of the Evolution of Income Poverty (and Distribution) in Indonesia

There have been a large number of studies on poverty in Indonesia published since the Asian financial crisis that make use of data from the 1980s, 1990s, and onwards. Our review of the literature using Thomson Reuter's (ISI) Web of Knowledge online database and working papers of research institutes found almost 60 articles.[4]

Not surprisingly, many of the included studies are based on time series analyses of the national socioeconomic survey (Susenas) by Statistics Indonesia (BPS) which are available for every three years from 1984 to 2002, and every year from 2002 onwards. There are also a few studies that draw on data from the National Labor Force Survey (Sakernas), which has annual data from 1986 onwards, and the Indonesian Family Life Survey (IFLS—produced by the RAND Corporation and partners) that can be used to estimate expenditure poverty and have been particularly used to study chronic and transient poverty.

The studies identified can be grouped into three themes relevant to the current discussion of this paper on the evolution of poverty over time: first, there are studies focused on long-run trends in expenditure poverty. Second, studies focused on the long-run relationship between expenditure poverty and economic growth. Third, studies which are focused on long-run inequality trends.

Studies focused on long-run trends in expenditure poverty typically use Susenas survey data over a long period of time, and use either BPS's national monetary poverty lines or a variation of the poverty lines calculated by Pradhan (2001). The consensus from these studies is as follows: consistent with the data provided in Section 2.1, absolute poverty declined in Indonesia during the Suharto years (Asra 2000; Booth 2000; Friedman 2005). However, poverty was still significant

[4]See Sumner (2012c). The selected studies were found in the Thomson Reuter's (ISI) Web of Knowledge online database using the keywords: "Indonesia AND (poverty OR inequality)". There is, of course, a bias that only studies published in English are included. That said, a large number of these studies identified are written by Indonesian scholars.

before the 1997–1998 financial crisis, and may have been underestimated due to national poverty lines being set too low (Asra 2000). Further, welfare improvements slowed in the period after the 1997–1998 crisis (Friedman 2005; Friedman and Levinsohn 2002; Lanjouw et al. 2001; Skoufias et al. 2000; Suryahadi et al., 2012). Much of this was due to an increase in chronic long-run poverty (Suryahadi and Sumarto 2001, 2003a, 2003b). Furthermore, vulnerability to poverty has also increased, resulting in a large number of households experiencing transient or short-term poverty (Suryahadi and Sumarto, 2001, 2003a, 2003b; Pritchett et al., 2000; Widyanti, Sumarto, Suryahadi, 2001). For example, using IFLS data, Dartanto and Nurkholis (2013) argue that, between 2005–2007, 28% of the poor in Indonesia were chronically poor and 7% of the nonpoor were vulnerable to poverty.[5]

There is some disagreement in the literature over how quickly Indonesia recovered from the financial crisis in terms of poverty levels. Those arguing that it recovered quickly or that the social consequences were less severe than anticipated include Suryahadi and Sumarto (2003a, 2003b). In contrast, those arguing that the consequences were more significant and/or long term include Dhanani and Islam (2002) and Ravallion and Lokshin (2007). To a certain extent, use of different poverty indicators plays a part in the different findings. However, research suggests Indonesia coped with the more recent global financial crisis of 2008–2009 relatively well in terms of poverty due to its moderate economic impact on the country (McCulloch and Grover, 2010).

Indeed, Suryahadi, Hadiwidjaja, and Sumarto (2012) note poverty has only risen twice in Indonesia: during the 1996–1999 economic crisis due to job losses and hyperinflation and again in 2005–2006 due to inflation caused by domestic fuel price rises and the rises in the cost of rice (which were caused by the 2004 ban on rice imports—see McCulloch, 2008).

Susenas data, and either the national BPS monetary poverty lines or a variation of the poverty lines calculated by Pradhan et al. (2001) are typically used in studies focused on the long-run relationship between expenditure poverty and economic growth. These studies share the following consensus: overall, economic growth in Indonesia has benefited the poor, with a high and stable growth elasticity of poverty even after the 1997–1998 crisis (Baliscan, Pernia, Asra, 2003; Friedman, 2005; Suryahadi, Hadiwidjaja, and Sumarto, 2012; Timmer, 2004). However, economic growth in different sectors is associated with quite different impacts on poverty, notably economic growth in the services sector, as noted above, is found to be more beneficial to the incomes of the poor than economic growth in agriculture (Fane and Warr, 2002; Suryahadi et al., 2006 and Suryahadi, Hadiwidjaja, and Sumarto, 2012). This is significant as rural poverty dominates the poverty count in Indonesia when the national poverty line is used (see later discussion). Suryahadi, Hadiwidjaja, and Sumarto (2012: 216) estimate rural poverty as two-thirds of total poverty in 2010 as do Dartanto and Nurkholis (2013).

Studies focused on long-run inequality again typically use the Susenas and compute the Gini coefficient or the Theil index. The findings are as follows: before the 1997–1998 crisis, there is general agreement that inequality was relatively low or declining (Akita, Kurniawan, and Miyata, 2011), and inequality had not increased drastically as a result of economic growth (van der Eng, 2009), and was offset by gains from this growth (Cameron, 2000). However, there are some detractors from this, arguing that inequality was high or increasing pre-crisis (Frankema and Marks, 2009; Leigh and van der Eng, 2010; van Leeuwen and Foldvari, 2012) and overall, growth has been largely distributionally neutral, although areas such as Java have grown slightly faster than the national average (Hill, 2008; Hill et al., 2008) and inequality has increased post-crisis—

[5]They link poverty to educational attainment, number of household members, physical assets, employment status, health shocks, the microcredit programs, access to electricity, and changes in employment sector, and employment status.

mainly intra-group and urban-rural inequality (Akita, 2002; Akita and Miyata, 2008; Skoufias, 2001; Sumarto, Vothknecht, and Wijaya, 2014; Suryadarma et al., 2005, 2006; Yusuf and Rum, 2013).

The causes of recent changes in inequality are complex. Five possible inter-related reasons are: (i) although high-income groups are missing in the data (see Leigh and van der Eng, 2010: 173), BPS recently sought to make efforts to address this (Cornwell and Anas, 2013: 27), meaning that recorded inequality may have risen as a result; (ii) there are large differences in provincial-level Ginis (and the highest Ginis are in the more developed provinces) (Sumarto et al., 2014); (iii) Indonesia is experiencing a commodity boom in coal and palm oil in particular (Burke and Resosudarmo, 2012) and this is impacting on inequality; (iv) relatedly, Suryahadi, Hadiwidjaja, and Sumarto, (2012) note changing sectoral contributions to growth are associated with slowing poverty reduction, and thus potentially with changes in inequality; and (v) Yusuf et al., (2013) propose one more hypothesis on labor market rigidity in the formal labor market including inter-related changes in labor market regulation—an increase in the severance payment rate, the strengthening of labor unions, rising minimum wages, reduced demand for unskilled labor, and an increase in informality in lower wage employment.

III. INDONESIA AND INTERNATIONAL POVERTY LINES: METHODOLOGY

The Growth, Inequality and Poverty (GrIP) model is a global model developed to compare trends in poverty and inequality over time across countries and across different input assumptions, and make projections. The GrIP model was developed from an earlier model described in Edward (2006) and is described in-depth in Edward and Sumner (2013a; 2013b). The main objective of the GrIP model is to construct a truly global model of consumption distribution that allows ready comparison of different assumptions (such as the use of survey means or national account [NA] means). Survey distributions (quintile and upper and lower decile data) are taken (in the following order of preference) from the World Bank's online analysis poverty tool PovcalNet, World Development Indicators (WDI), or the United Nations University's (UNU) World Income Inequality Database (WIID) Version 2.0c database (May 2008). Survey means are taken from PovcalNet and NA means are taken from WDI (all analysis and results are in 2005 PPP $). This approach enables the model to cover more countries than just those in PovcalNet.[6]

In terms of Indonesia, the data extracted from the GrIP model is as follows:

- Decile values and survey means are taken from PovcalNet which provides data at three-yearly intervals from 1984–2005 and annually thereafter up to 2011 (values for intermediate years are determined by interpolation).
- Household final consumption (HFC) data are taken from WDI which provides annual data throughout the 1984–2011 period; and

[6]This feature, which is predominantly introduced so that the model can be used to look at the entire global consumption (or income) distribution and not just at the lowest income regions, is particularly useful when investigating issues such as the emergence of a global middle-class and identifying winners and losers in the globalization process.

- We take population data for the urban and rural from Povcalnet for all the survey years except 2011 which is not presented. For 2011 we estimate from the trends for the urban-rural shares from earlier years. The urban-rural split in the forecast populations (see appendix) is based on a linear extrapolation of the change in the shares from 1990–2010 which is then applied to the UN total population forecast.

We treat pre-1990 data with some caution and supply figures in the appendix based on different base years.[7] In order to produce future projections of income and poverty we use somewhat similar assumptions to those in Karver, Kenny, and Sumner (2012) but derive the forecast rates from more recent International Monetary Fund (IMF) World Economic Outlook (WEO) figures. This means the estimates are based on the average growth rate from 2010–2017. We therefore use the following three scenarios for GDP PPP growth estimates as the forecast growth rate for 2010–2030:[8]

- "Optimistic economic growth scenario": a scenario that assumes the average national growth rate in the WEO is sustained to any point in the future (this produces an average of 6.7% per annum for Indonesia);
- "Moderate economic growth scenario": a scenario that is the same as "optimistic growth" but minus 1% (based on the historic error of IMF projections—see Aldenhoff, 2007) (this produces an average of 5.7% per annum for Indonesia); and
- "Pessimistic economic growth scenario": a scenario that is 50% of "optimistic growth" (this produces an average of 3.4% per annum for Indonesia).

It is worth noting that the actual growth rates in comparison to these scenarios (see Figure 5) as such comparison would suggest the growth rates of the 1987–1997 period would be required. Growth rates for the more recent period of 2000–2011 are closer to 3–5% per annum, which is closer to the pessimistic scenario. That said growth rates over the last five years have typically been about 5% per annum, which may suggest the moderate growth scenario is more plausible (and presumably the basis of the IMF's projections to some considerable extent).

[7]There are some questions about the use of Susenas data pre-1990. The expansion of Susenas to 200,000 households took place in 1993.

[8]When selecting these scenarios we also considered similar scenarios used by others: (a) assume the IMF's furthest out WEO forecast rate (2016–2017 in our case) is the best estimate of medium-term growth rate and apply this to all years post-2017; (b) use WEO forecasts up to 2017 but beyond those cut long-term growth rates in half (i.e. to 50% of the 2016–2017 rate); (c) subtract 1% from the growth forecast for all years from current year; (d) use historical averages from the last 15 years (1995–2010) as the growth forecast for the next 15 years. We do not use these on the following basis: (a) and (b) both rely on forecasts for single years being sustained subsequently over the next two decades. Where those forecasts yield growth rates higher than our optimistic model then we would be concerned that they could not be sustained over such a long period. Where the forecasts show lower growth rates then our optimistic model would over-estimate growth and hence provide an 'upper-bound' estimate—which is what we consider an optimistic model should be aiming to provide. With reference to (d), while historical averages may be interesting we are inclined to presume that these have already been taken into account in forming the IMF's WEO forecasts. We do not therefore think that there is any reason to suppose that forecasts based on the historical averages are any more justifiable than those derived, as ours are, from the WEO forecasts.

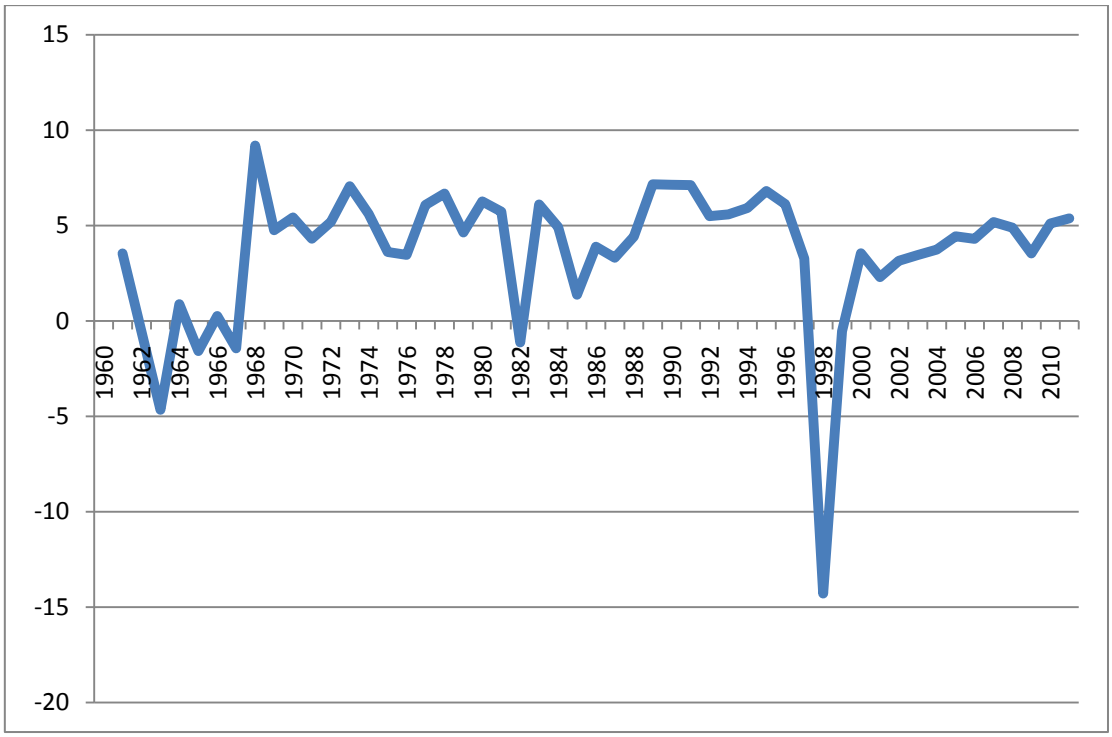

Figure 5. Indonesia's historical GDP per capita growth rates, 1960–2011
Source: World Bank (2012b).

We explore the impact that a dynamic inequality estimate might have on future poverty. We use three inequality scenarios to illustrate the impact of different inequality assumptions as follows:

- "Static inequality": a scenario with static inequality from 2011 onwards;
- "Dynamic inequality": a scenario with dynamic changes in distribution. Future changes are estimated by linear extrapolation of the trends calculated from 1990 to 2010 (see Table 3); and
- "Best-ever distribution": a scenario representing a return to the lowest-inequality historical distribution in the PovcalNet dataset for Indonesia (which is 1999 for rural Indonesia and 1987 for urban Indonesia).

The main purpose of this dynamic inequality analysis is *illustrative* and to investigate whether the assumption of static distribution introduces a significant difference in the calculations. Because the dynamic inequality assumption introduces even more uncertainty into the forecasts, we prefer only to extend those forecasts out to 2030. Recognizing that within-country inequality can decrease, we explore the significance of the impact of this by providing forecasts calculated using a "best" (i.e. most equal) historical distribution for Indonesia. The "best distribution" is the survey distribution that had the lowest ratio of the highest quintile to the lowest quintile (Q5/Q1).

Table 3. Percentage Share of Consumption, 2015–2030, Extrapolated Inequality on Current Trends

	Lowest 10%	Lowest 20%	20% to 40%	40% to 60%	60% to 80%	Top 20%	Top 10%
	D1	Q1	Q2	Q3	Q4	Q5	D10
2015							
Urban	3.65	8.08	11.55	15.96	22.66	41.75	25.64
Rural	3.03	6.96	10.78	15.58	22.92	43.76	26.86
2020							
Urban	3.46	7.53	10.75	15.5	23.1	43.12	26.08
Rural	3.06	7.01	10.91	16.06	24.05	41.97	24.01
2025							
Urban	3.27	6.98	9.95	15.04	23.54	44.49	26.52
Rural	3.09	7.06	11.04	16.54	25.18	40.18	21.16
2030							
Urban	3.08	6.43	9.15	14.58	23.98	45.86	26.96
Rural	3.12	7.11	11.17	17.02	26.31	38.39	18.31

Source: Author's estimates.

Again, if we compare the historical record, we would be more likely to err towards caution on likely changes in inequality, noting the causes of inequality in Indonesia are complex and relate to spatial inequality in particular (see earlier discussion). Figures 6 to 8 show the Gini and Theil measures and decile groupings for 1984–2011 based on the GrIP data. The graphs show rising inequality over the period in Indonesia in several waves with a clear spike in inequality in 2005 that fell back before rising quickly again. The graphs are consistent with the story of the density curves and fractile graphs below, in that although poverty fell and growth was broad-based at the lower end of the distribution, there were more significant gains in the middle and at the top end of the distribution and thus inequality rose.

Of concern to policy makers is that rising inequality will slow the rate of poverty reduction but also it may slow growth too or the length of the growth episode. Cornia, Addison, and Kiiski (2004), who use a dataset of 73 countries to identify critical threshold levels of inequality. They conclude that rising inequality can assist growth but only up to a Gini value of 0.30 and above 0.45 inequality impedes GDP growth (Indonesia's Gini is moving close to this level). In short, they find a distinct nonlinear relationship between initial income inequality and economic growth. They argue that a low level of inequality is bad for growth (free-riding, high supervision costs), but also that too high levels of inequality can have serious negative consequences.

The conclusion above is consistent with the global literature. There is substantial empirical evidence that high or rising inequality has a negative effect on the rate of growth or the length of growth spells (e.g. Berg and Ostry, 2011; Easterly, 2005). There is some evidence that this depends on level of economic development (GDP per capita) and "openness" (Agénor, 2002; Barro, 2000; Milanovic, 2002) and assets rather than income (Deininger and Olinto, 2000) with an emphasis on human capital in particular. Further, that a higher level of inequality leads to less poverty reduction at a given level of growth (Deininger and Squire, 1998; Hanmer and Naschold, 2001; Kraay, 2004; Ravallion, 1995; 1997; 2001; 2004; 2005; Son and Kakwani, 2003; Stewart, 2000). This is, though, not given as there is a high level of heterogeneity of country experience (see Fosu, 2011; Kalwij and Verschoor, 2007; Ravallion, 2001) which points towards the role of

policy in influencing the sectoral and geographical pattern of economic growth, as well as the composition of public expenditure, especially social spending and labor market policies (Fields, 2001; Kraay, 2004; Ravallion, 1995).

There is further a question of whether to use survey or national accounts means. In this paper we use survey means because this most closely replicates the method used by the World Bank. Elsewhere we have used the GrIP model to compare poverty estimates by both survey and NA means (see Edward and Sumner, 2013a and 2013b). When NA means are used lower poverty estimates are generated compared to survey means (see Table 4). We would therefore anticipate that estimates of global poverty that use NA means would understate Indonesian poverty when compared to estimates from Povcal (in fact, many of those estimates would understate Indonesian poverty by more than Table 4 because in general they use HFC means without the global adjusting that GrIP includes to allow for the fact that HFC means are generally higher than survey means). Table 4 shows the differences between poverty counts (millions of people) for each poverty line by survey and NA means.

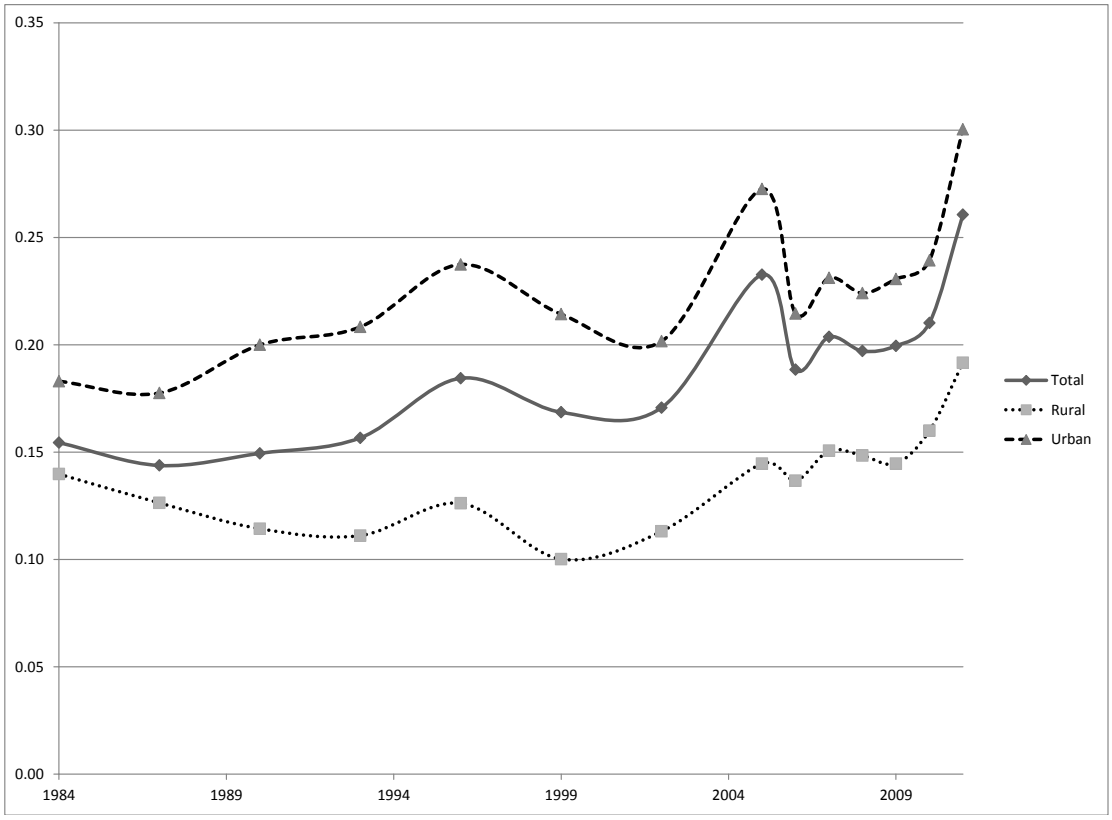

Figure 6. Theil, 1984—2011

Source: Author's estimates.

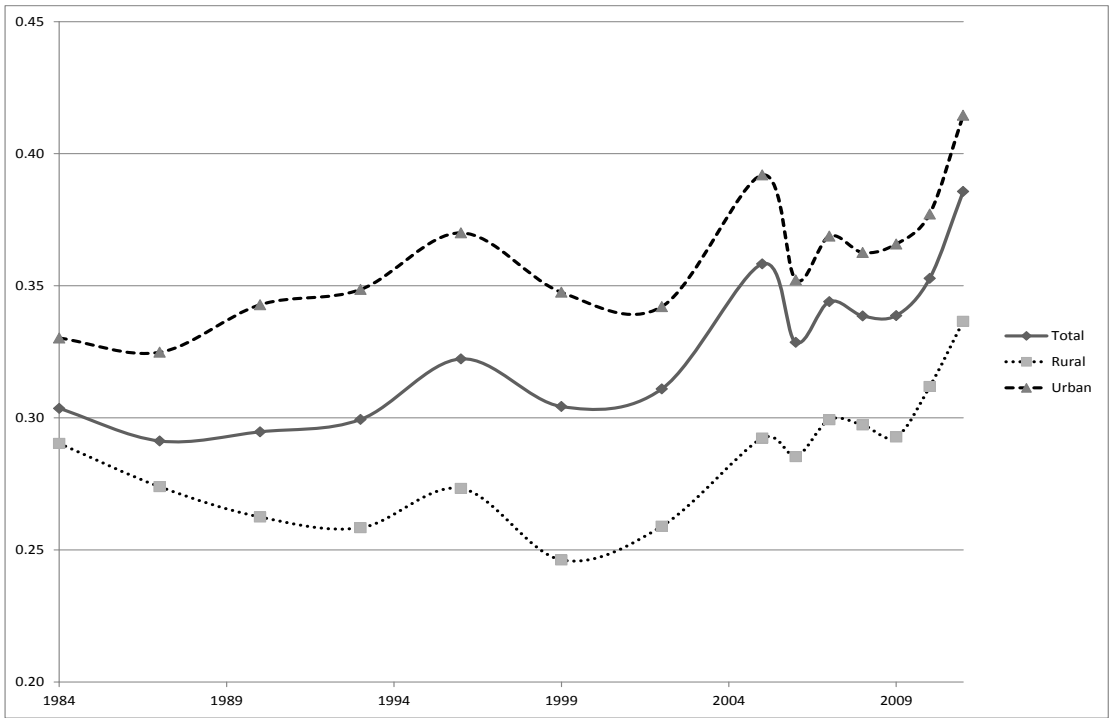

Figure 7. Gini, 1984–2011

Source: Author's estimates.

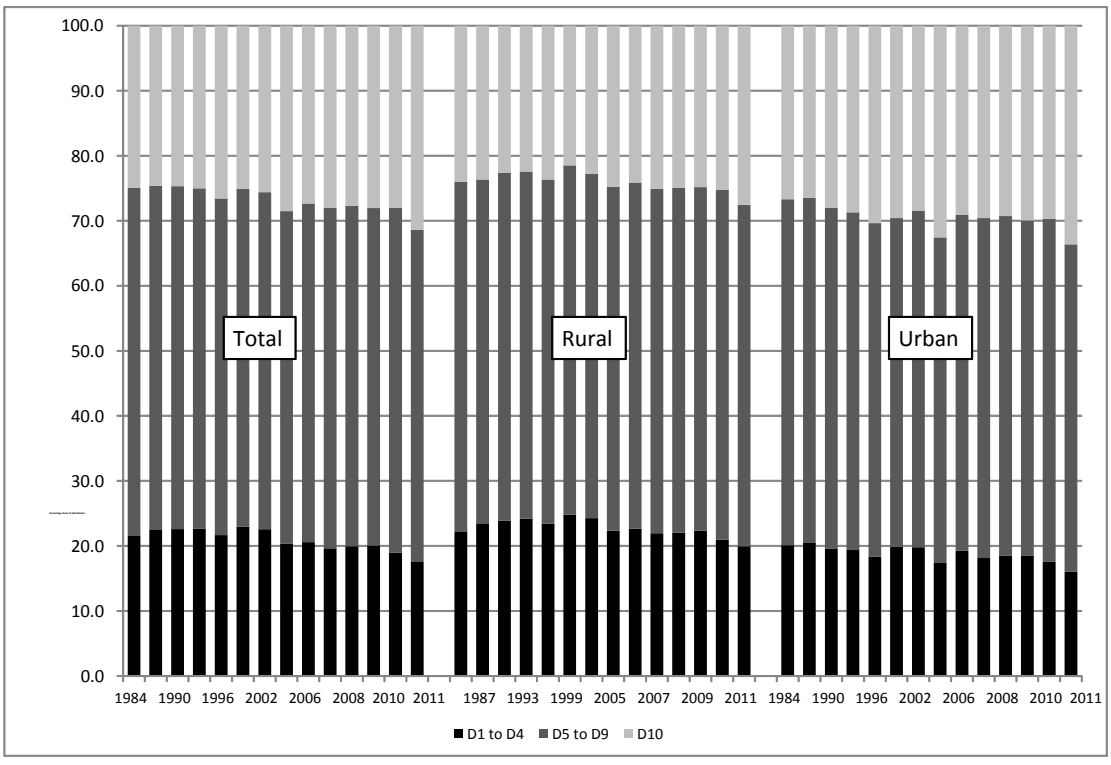

Figure 8. Share of GNI to poorest 40%, middle 50%, and top 10%, 1984–2011

Source: Author's estimates.

Table 4. Indonesia, Poverty Headcount (millions), 2010, Survey and NA Means

	$1.25		$2		$10	
	Survey mean	NA mean	Survey mean	NA mean	Survey mean	NA mean
Total	43.2	2.4	108.7	49.7	236.8	225.2
Urban	23.5	2.2	55.1	26.6	125.7	117.0
Rural	19.7	0.2	53.7	23.0	111.1	108.1

Source: Author's estimates.

Finally, we make use of international poverty lines of $1.25, $2 and add a $10 poverty line. The logic for this is as follows. First, the $1.25 line is, as Yusuf et al. (2013) notes, approximately equivalent to the current PPP $ value of the national poverty line (see Table 5). In fact, the national poverty line has been close to the $1.25 international poverty line over the last five years.[9]

We include the $2 poverty line because it is well established as the World Bank moderate international poverty line, which is close to the median poverty line across all developing countries ($2.36 per capita [pc] in 2008) as well as the regional mean poverty line in sub-Saharan Africa, South Asia, and China collectively, where many of the world's poor live (Ravallion, 2012: 25). The global mean for developing country poverty lines is $4.64 pc which is significantly higher than the median because poverty lines can be around $11–$12 pc. The mean in Latin America, the Caribbean, and Eastern Europe is close to $4, which also is the mean in East Asia and Pacific (Ravallion, 2012: 25). In short, $2 pc seems reasonable because, from an international perspective, it is close both to the global median and to the mean poverty line in the countries where most of the world's poor live (Sub-Saharan Africa, South Asia, and China).

We also use a $10 per day per capita poverty line on the basis that this threshold broadly separates those living "rich-world" lifestyles from those living "developing world" lifestyles.[10] Given that there is an inevitable degree of arbitrariness in the precise location of these thresholds the $10 level seems a reasonable point of separation, and $10 has been identified as an approximate "security" from the poverty line: an interesting study in Chile, Mexico and Brazil suggests that the risk of falling into poverty was as low as approximately 10% at an initial income of $10 per day per capita in all three countries. The authors refer to this as a 'vulnerability approach to identifying the middle classes' (López-Calva and Ortiz-Juarez, 2011). Further, Birdsall, Lustig, and Meyer (2013) noted that $10 is the mean per capita income of those who have completed secondary school across Latin America suggesting such completion of schooling can be associated with some kind of greater security.[11] We have proposed that those living above $2 per day but below the $10 per day level might be referred to as the "global insecure", while those above it would be the "global secure" (see discussion in Edward and Sumner, 2013b).

[9]The national poverty line was revised in 1998. The national poverty line is based on the cost of 2,100 calories and essential non-food items (see for discussion, Sumner, 2002).

[10]This is discussed in-depth in Edward and Sumner (2013b). From GrIP, 87% of the HIC population lives above $10 pc a day. 98% of LIC and LMIC populations are below this level. If we wished to exactly balance out the LIC/HIC separation we would need a threshold of $7, which would position 94% of the HIC population above the threshold and 94% of the LIC and LMIC population below it.

[11]Ravallion (2012) uses a higher threshold, the US poverty line of $13 pc.

Table 5. National Poverty Line Versus $1.25 PPP Poverty Line, 2007–2012

	Poverty Line Rp/month per person			PPP 2005 (Rp/$)	CPI	PPP (Rp/$)	Poverty Line $PPP/month per person			Poverty Line $PPP/day		
	Urban	Rural	Urban+ Rural				Urban	Rural	Urban+ Rural	Urban	Rural	Urban+ Rural
1996	42,032	31,366		4193	30	1,278	32.9	24.5		1.08	0.81	
1997				4193	32	1,358						
1998	96,959	72,780		4193	51	2,150	45.1	33.8		1.48	1.11	
1999	92,409	74,272		4193	62	2,591	35.7	28.7		1.17	0.94	
2000	91,632	73,648		4193	64	2,687	34.1	27.4		1.12	0.90	
2001	100,011	80,382		4193	71	2,996	33.4	26.8		1.10	0.88	
2002	130,499	96,512		4193	80	3,352	38.9	28.8		1.28	0.95	
2003	138,803	105,888		4193	85	3,573	38.8	29.6		1.28	0.97	
2004	143,455	108,725		4193	91	3,796	37.8	28.6		1.24	0.94	
2005	150,799	117,259		4193	100	4,193	36.0	28.0		1.18	0.92	
2006	174,290	130,584		4193	113	4,743	36.7	27.5		1.21	0.91	
2007	187,942	146,837	166,697	4193	120	5,047	37.2	29.1	33.0	1.22	0.96	1.09
2008	204,896	161,831	182,636	4193	132	5,540	37.0	29.2	33.0	1.22	0.96	1.08
2009	222,123	179,835	200,262	4193	138	5,806	38.3	31.0	34.5	1.26	1.02	1.13
2010	232,989	192,354	211,726	4193	146	6,105	38.2	31.5	34.7	1.25	1.04	1.14
2011	253,016	213,395	233,740	4193	153	6,432	39.3	33.2	36.3	1.29	1.09	1.19
2012	277,382	240,441	259,520	4193	160	6,708	41.3	35.8	38.7	1.36	1.18	1.27

Source: Yusuf et al. (2013).

Table 6. Comparison of Ginis from GrIP, BPS, and Povcal

Year	1984	1987	1990	1993	1996	1999	2002	2005	2006	2007	2008	2009	2010	2011
BPS	0.33	0.32	0.32	0.34	0.36	0.31	0.33	0.36	0.33	0.36	0.35	0.37	0.38	0.41
Povcal	0.305	0.293	0.292	0.293	0.313	0.290	0.297	0.340			0.341		0.356	
GrIP	0.304	0.291	0.295	0.299	0.322	0.304	0.311	0.358	0.329	0.344	0.339	0.339	0.353	0.386

In terms of validating our data, we take the Gini ratio from GrIP and compare with those of BPS (and Povcal). We find a reasonably close correlation (see Table 6). The GrIP model tends to underestimate Ginis in individual countries due to the way that the model extrapolates and interpolates across the distribution. GrIP uses a method for estimating fractile shares of income from ventiles and deciles. It is extremely difficult to estimate from this data the detail distribution across (particularly) the top 5% of the distribution. The method in GrIP is designed to be inherently conservative in this region (see Edward, 2006: 1692) so that GrIP tends to slightly underestimate Gini coefficients for individual countries. With access to the full survey data we expected the Indonesian Government numbers would be slightly higher, which they are. Interestingly, Povcal also underestimates the national Gini while GrIP's estimate seems to be very close to Povcal. Maybe, if anything, Povcal is slightly better in that it is often closer to the government figures.

As is well known, expenditure survey data (namely data from Indonesia's Susenas and thus Povcal too) understates income inequality since it ignores savings (for example), whilst top incomes largely escape surveys (see for details: Leigh and van der Eng, 2010). Those are inherent shortcomings of all such surveys, not just Indonesia's. Therefore, in general, the decile data in Povcal on which GrIP is based is widely recognized as likely to underestimate inequality and the incomes of the rich—so it is unsurprising that the GrIP results reflect these shortcomings in the underlying data. One very interesting recent study by Nugraha and Lewis (2013) argues that when using Susenas data the different forms of non-market income should be taken into account. We find (see below) that in the GrIP data that the $10 poverty line calls into question the capture of information on higher incomes.

A slight difference between GrIP and Povcal arises because Povcal uses a kernel distribution method and GrIP uses a linear distribution method to estimate the distribution detail from the decile or quintile data. This leads to slightly different estimates of the Lorenz curve and hence of the Gini.

IV. HISTORICAL PATTERNS AND PROJECTIONS, 1984–2030

In figures 9–21 presented below we can consider growth, distribution and poverty from 1984–2011 and make projections to 2030 where appropriate. The graphs are grouped by: (a) income per capita trends; (b) historical patterns of growth; and (c) trends in poverty overall.

4.1 Income per Capita Trends, 1984–2030

The first set of graphs show income per capita. Figures 9 and 10 respectively show GNI per capita by the Atlas method and GDP per capita by PPP. Indonesia is compared to a set of populous and fast growing economies, namely, China, Brazil, India and Nigeria. The graphs show that Indonesia may cross the threshold in the next 1–2 years into the upper middle-income country (UMIC) classification and could attain high-income country (HIC) status around 2025. These estimates are based on the 'optimistic' economic growth scenario (meaning the IMF WEO forecast extrapolated out to 2030 at 6.7% a year which is clearly an optimistic scenario).

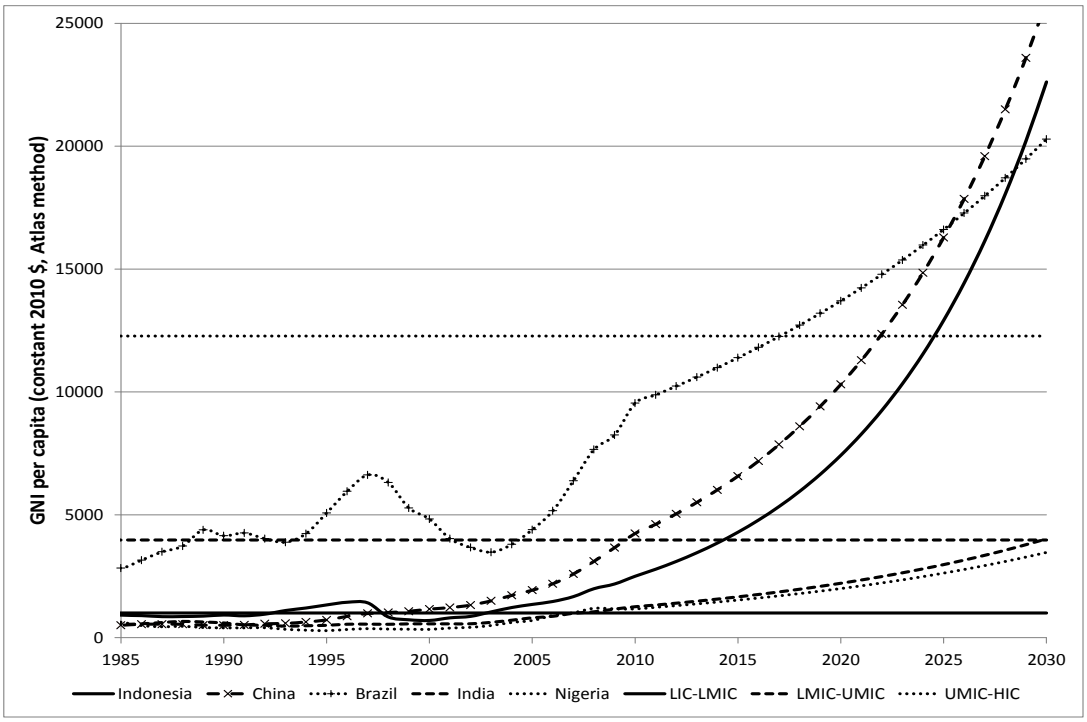

Figure 9. GNI per capita, 1984–2030 (optimistic growth from 2011), Indonesia, China, Brazil, India and Nigeria

Source: Author's estimates.

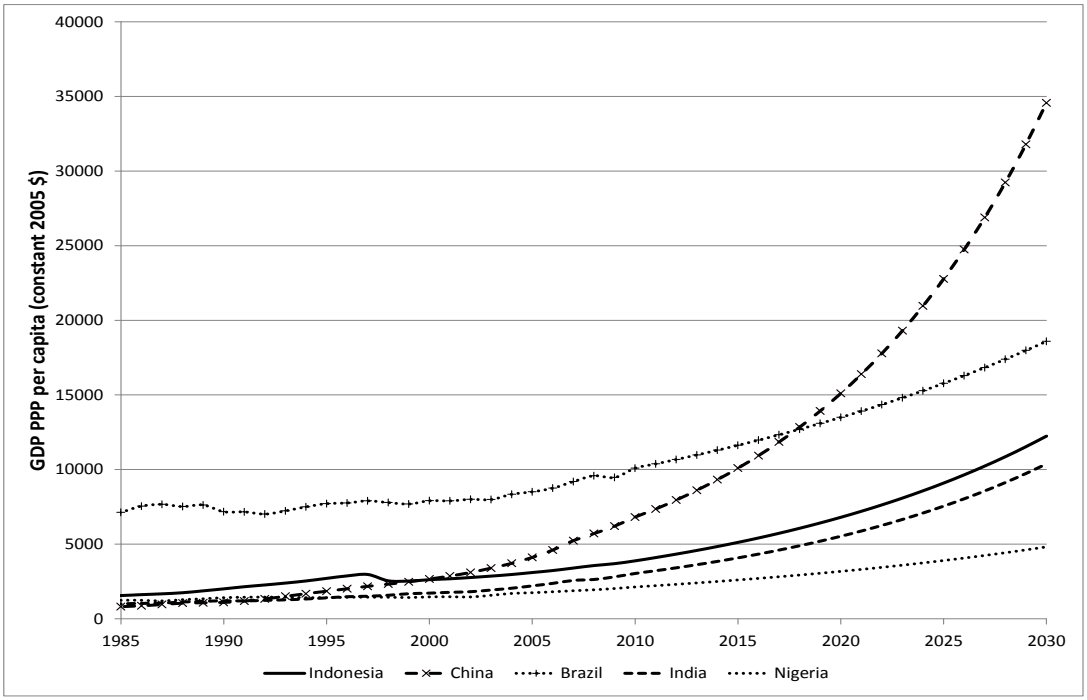

Figure 10. GDP (PPP) per capita, 1984–2030 (optimistic growth from 2011), Indonesia, China, Brazil, India and Nigeria

Source: Author's estimates.

4.2 Historical Patterns of Growth, 1984–2011

A second set of graphs show growth distribution trends over the 1984–2011 period. Figures 11 and 12 show the pattern of that growth in a density curve and a fractile chart. Additional charts are included in the appendix with different base years and urban and rural density curves. These graphs show the gradual shift of the poverty peak (and decline in size of the peak) between 1984 and 2011 and thus the emergence of those in the $2–$10 per day group (arguably, between day-to-day poverty and security from poverty). The rise in consumption is particularly visible in the middle and at the top end of the distribution (the bottom half of the graph). The change between 2000 and 2011 is quite striking.

The growth incidence graph explains further (Figure 12) and shows both the broad base to economic growth over the period at the lower end of the distribution and the benefits accruing to the top 15–25% of the population over the period (various other graphs by different time periods are in the appendix for reference). Further, comparison to Brazil, China, India, and Nigeria is largely favorable to Indonesia as the pattern of growth is somewhat similar to China's (see Figure 13).

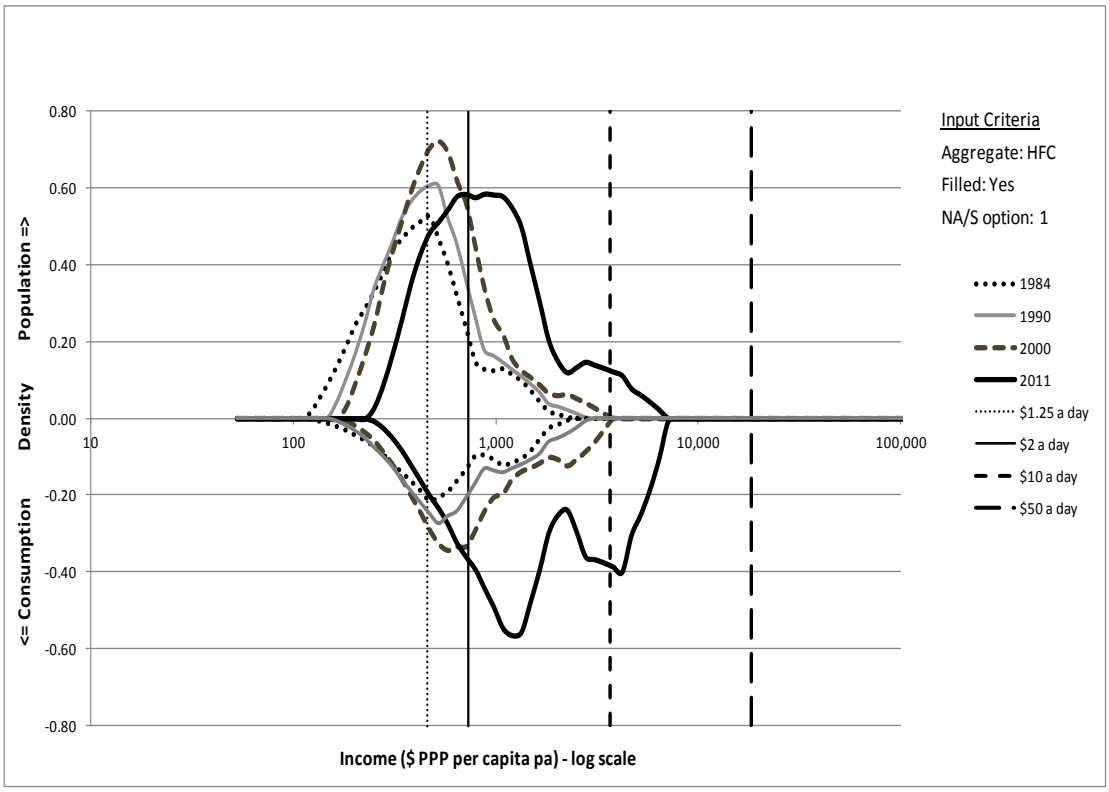

Figure 11. Density curve, 1984–2011

Source: Author's estimates.

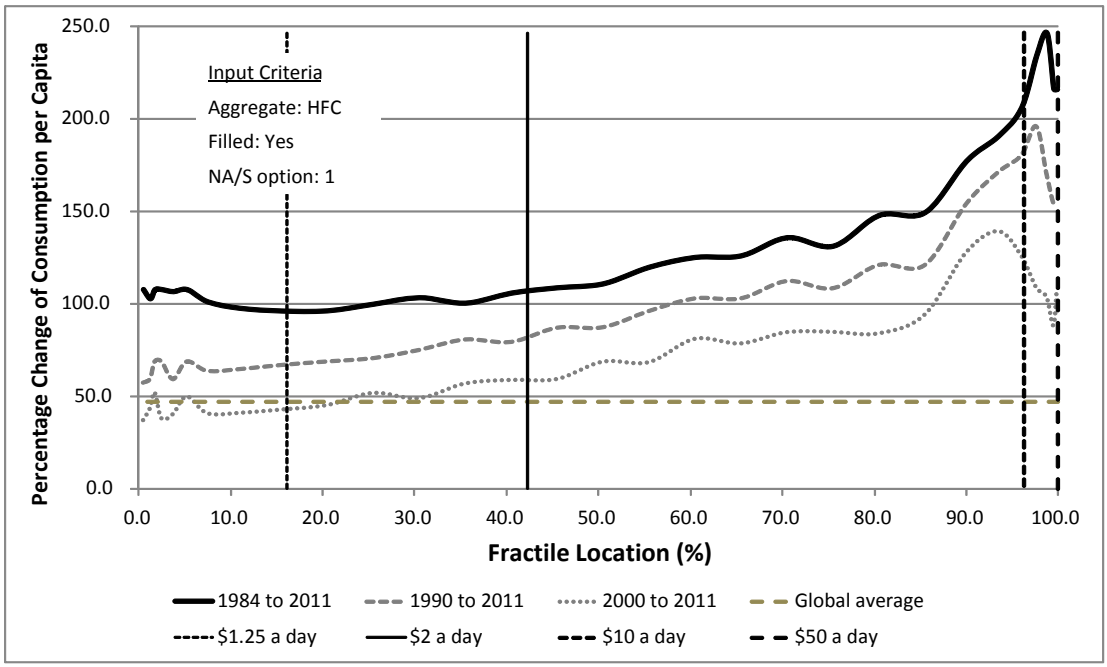

Figure 12. Indonesia, fractile chart, 1984–, 1990–, 2000–2011

Source: Author's estimates.

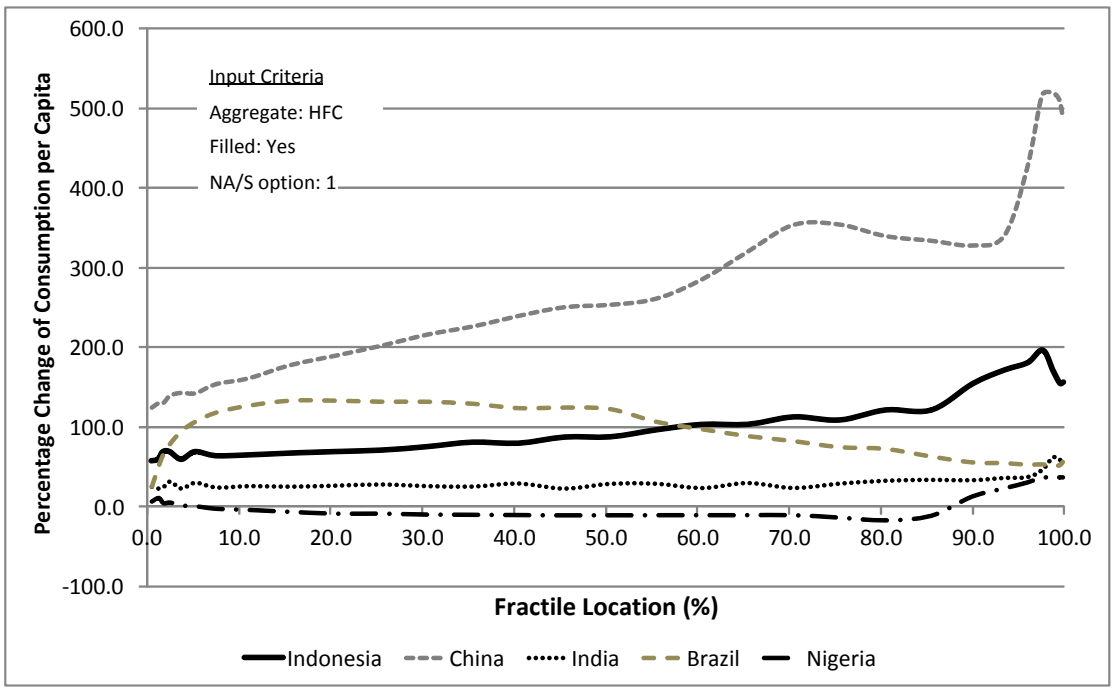

Figure 13. Fractile chart, 1990–2011: Indonesia, China, India, Brazil, and Nigeria

Source: Author's estimates.

4.3 Trends in Poverty Reduction Overall, 1984–2030

Finally, poverty trends are presented. Figures 14 to 20 show total, rural and urban poverty headcounts in millions of people from 1984–2030 and the total poverty gap in US$bn (2005 PPP$) and estimates of urban and rural proportions of poverty by $1.25, $2 and $10 poverty lines.

In considering the historical trends on poverty in Indonesia it is evident that there is a rather fluctuating curve for poverty reduction in that the curve is not very smooth. The two spikes in poverty are clearly visible Suryahadi, Hadiwidjaja, and Sumarto (2012).

The data suggests the end of $1.25 and $2 poverty is plausible in the 2015–2025 period if growth meets the "optimistic" forecast and distribution returned to "best ever". Surprisingly perhaps, $10 poverty will only start to fall in 2025. One should note this "end of $1.25 or $2 poverty" scenario is *unequivocally* an optimistic scenario and simply illustrates what is possible (see discussion below). And if one accepts the basis of a $10 per capita, "security from poverty" poverty line, the end of extreme and moderate poverty could be accompanied by a large potentially insecure group (possibly 200 million in 2030) of those between $2 and $10 for some time to come with the urban proportion rising notably over time (note the $10 urban line on Figure 17). On the other hand one might argue that the fact that high incomes are not well captured in the data gravitates against the use of this higher poverty line. Although here in the text, "optimistic economic growth" is used, all the data for all other scenarios is presented in the appendix. The emergence of a substantial group of the population in between $2–$10 for some time to come raises questions for evolving public policy priorities and the balance between insurance and risk management mechanisms versus "traditional" poverty policy. One interesting policy taxonomy is the Dartono and Nurkholis (2013: 62) grouping of chronic and transient poverty programs.[12]

A further issue of note is that the rural component of total poverty by each poverty line is falling drastically and poverty by international poverty lines is far more urbanized than by the national poverty line. In fact, rather than two-thirds of the poor being rural, it is less than half of the poor in Indonesia who are rural when one uses international poverty lines. It is commonly thought international poverty lines *underestimate* urban poverty for methodological reasons (see Mitlin and Satterthwaite, 2003; Satterthwaite, 2004). Figure 20 shows the urban-rural proportions of total poverty. The precise reasons for such differences in the urban-proportion of poverty by national and international poverty lines may be due to clustering near the international poverty lines.

[12]Chronic poverty programs include School Operational Assistance (BOS), scholarships, conditional cash transfers, the National Program for Community Empowerment (PNPM), credits to SMEs (microfinance) and the *Kecamatan* (Subdistrict) Development Program (PPK). Transient poverty policies, in contrast, include social safety nets—subsidized rice (Raskin), Direct Cash Transfers (BLT) and health insurance for the poor (Askeskin). There are others taxonomies of course too (see detailed policy review of Suryahadi et al., 2010).

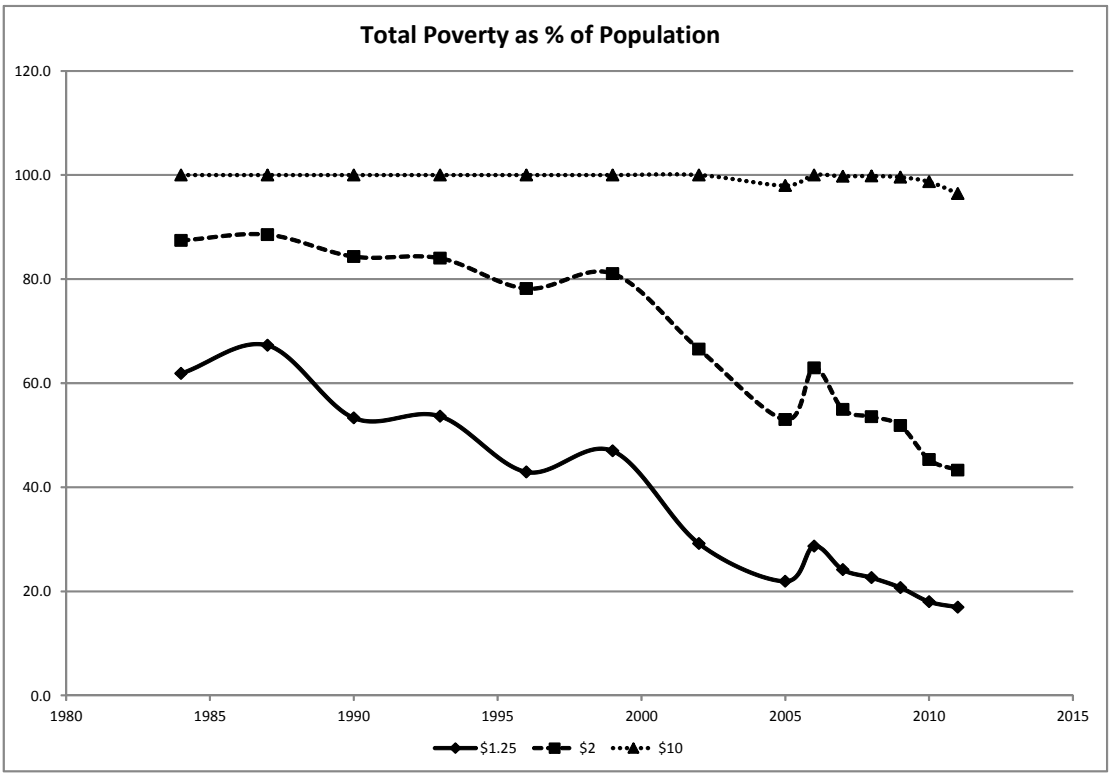

Figure 14. Poverty, total, millions, 1984–2011

Source: Author's estimates.

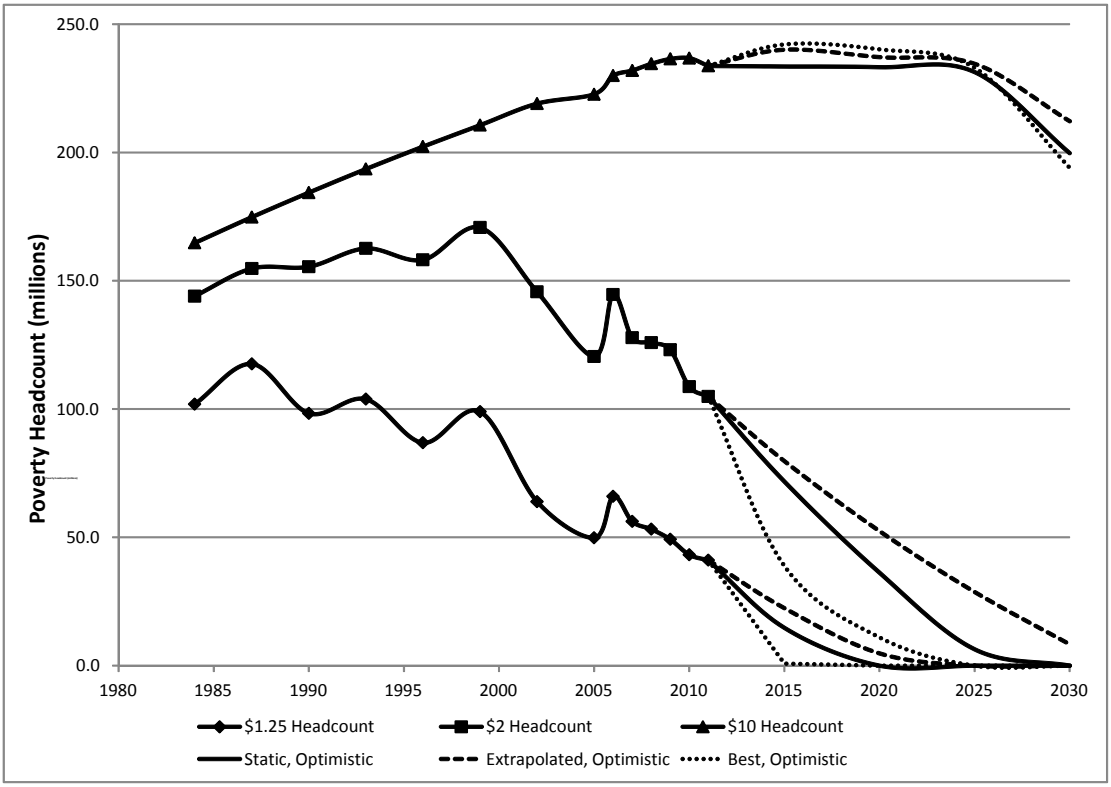

Figure 15. Poverty headcount, total, millions, 1984–2030 (optimistic growth, three distribution scenarios)

Source: Author's estimates.

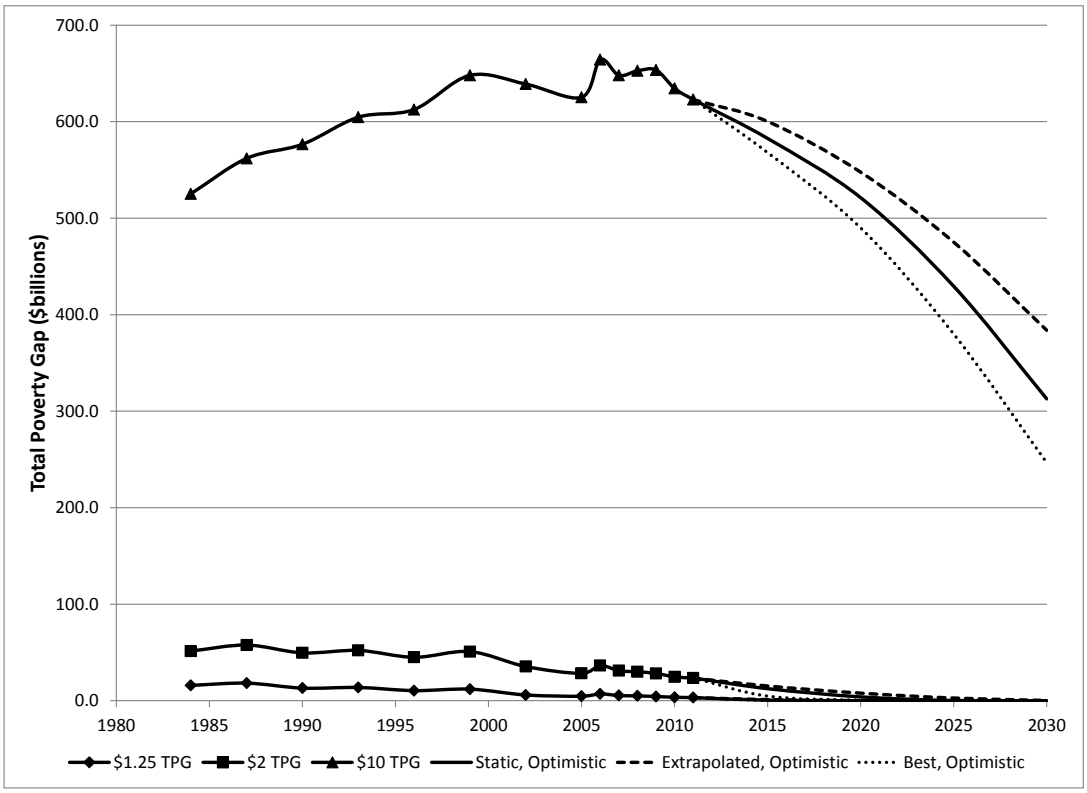

Figure 16. Total Poverty Gap (TPG), US$bn (PPP), 1984–2030 (optimistic growth, three distribution scenarios)

Source: Author's estimates.

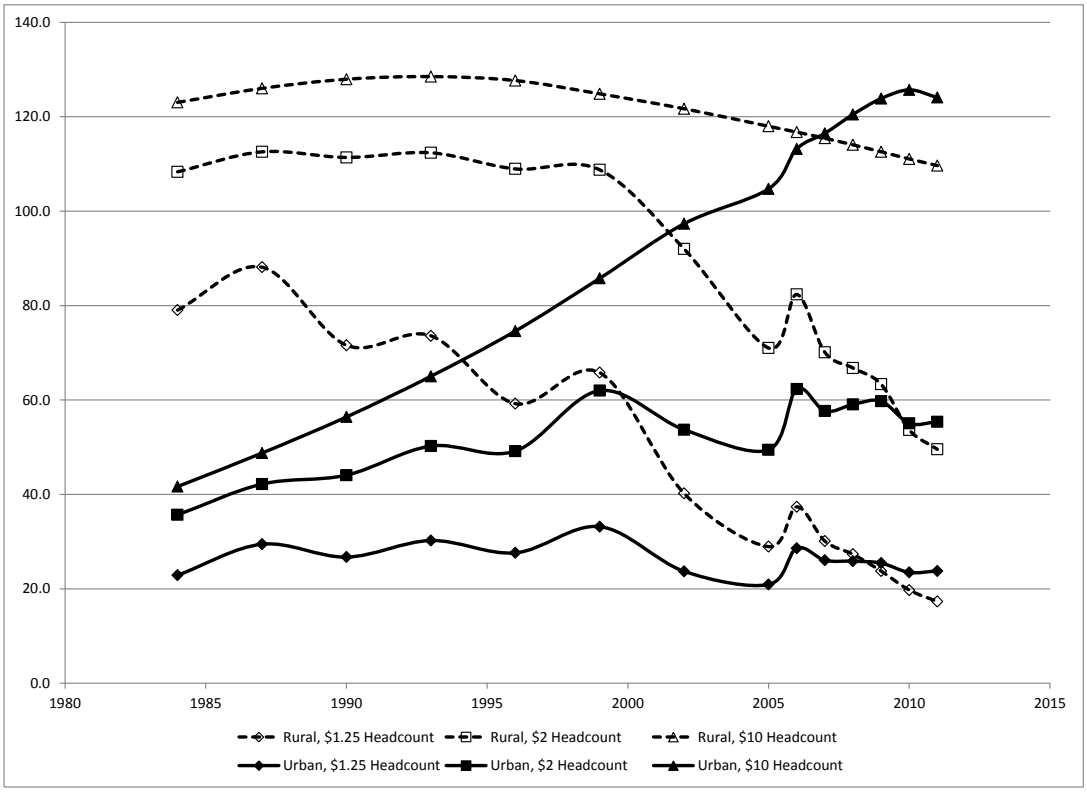

Figure 17. Rural and urban poverty, millions, 1984–2011

Source: Author's estimates.

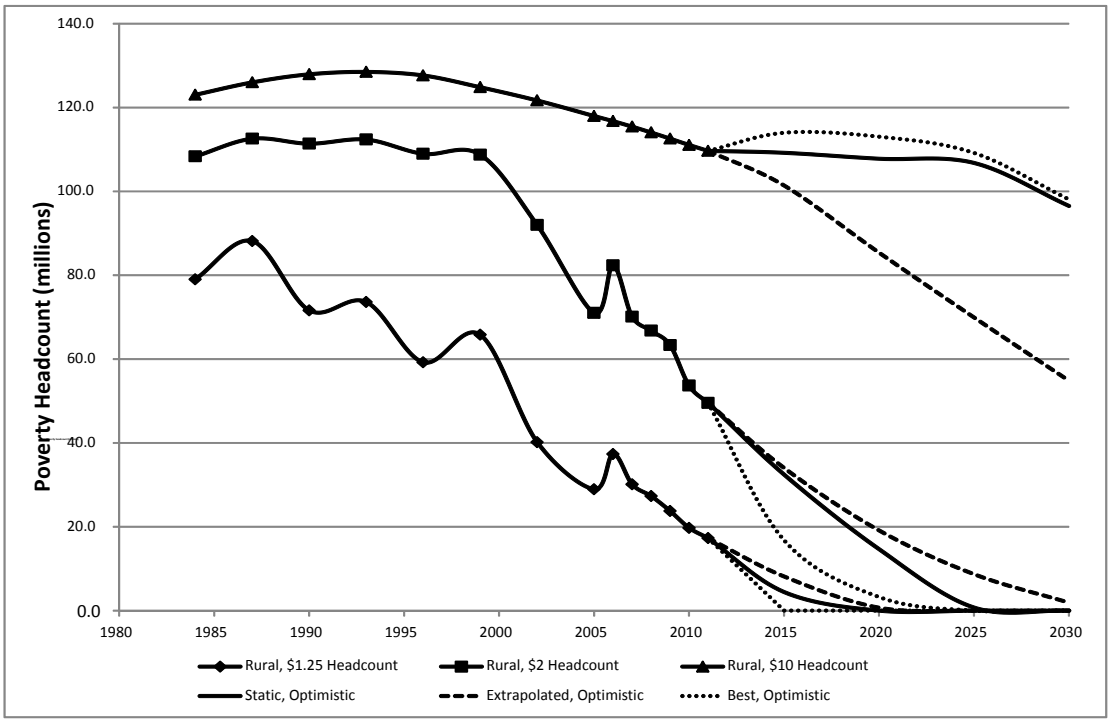

Figure 18. Income poverty, rural, millions, 1984–2030 (optimistic growth, three distribution scenarios)

Source: Author's estimates.

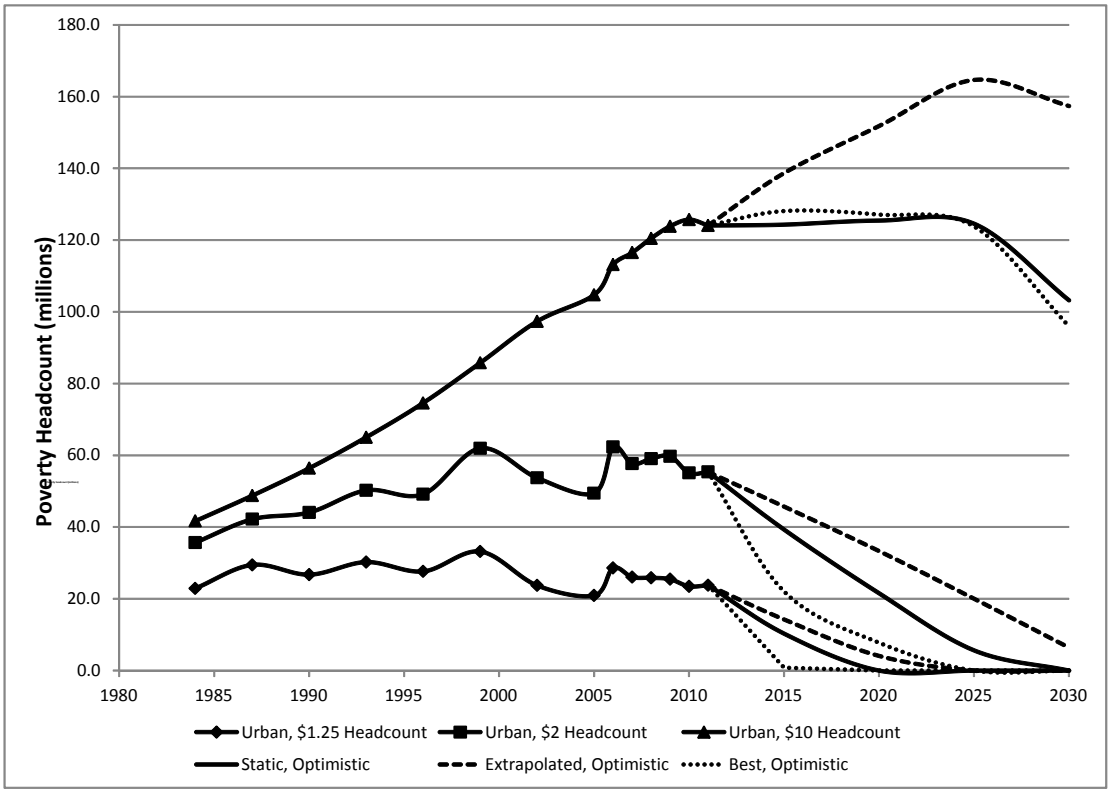

Figure 19. Income poverty, urban, millions, 1984–2030 (optimistic growth, three distribution scenarios)

Source: Author's estimates.

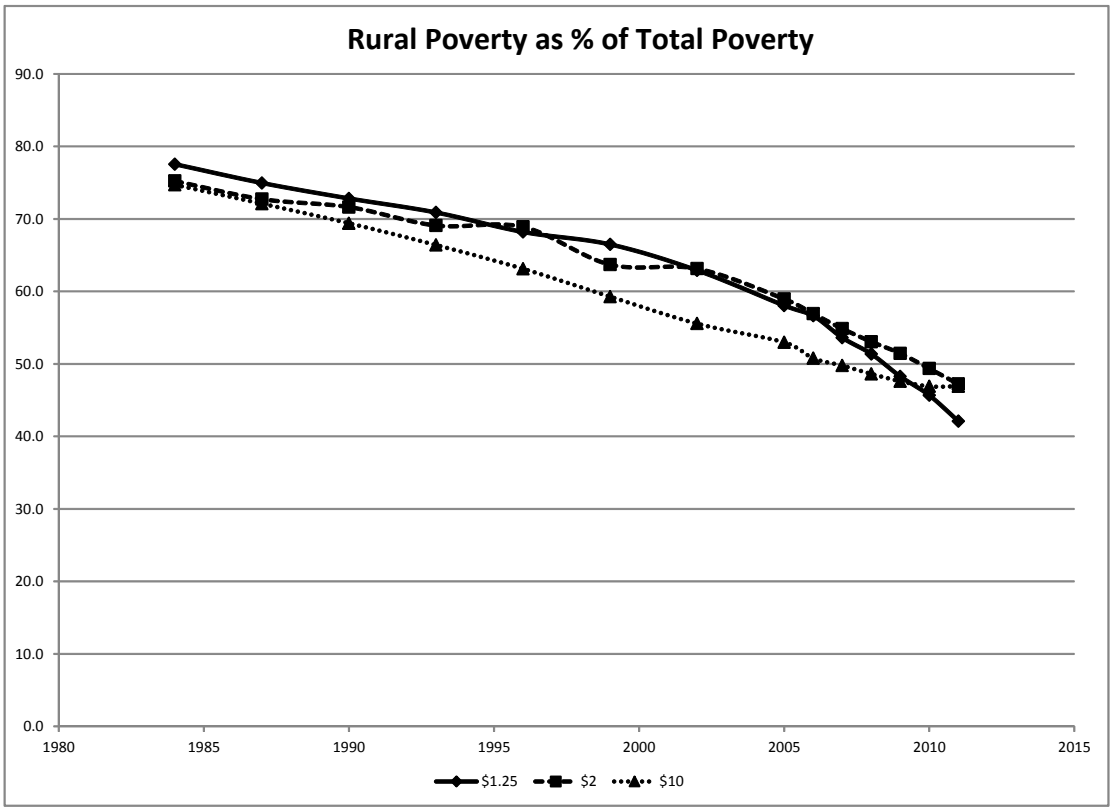

Figure 20. Rural poverty as a % total

Source: Author's estimates.

An important question to ask is what are the historical comparisons for Indonesia? In short, is there any country that had, at some point in the past, the same level of $1.25 per day or $2 per day poverty incidence as Indonesia today, and managed to reduce it to near zero in such a short time frame? We have noted earlier that the economic growth rates and distribution trends would suggest some considerable caution is needed in relation to this data. However, one can make comparisons to Thailand's growth, inequality and poverty trends.[13]

Thailand, in 1988, had similar levels of $2 poverty as Indonesia today: Thailand in 1988, had a $2 per day poverty headcount of 41.0% of the population, which fell to just 4.1% of population in 2010. Even including the 1997–1998 Asian financial crash (and severe contraction accompanying this), Thailand's GDP per capita growth rate for 1988–2011 was 3.8% and inequality was largely static between 1988–2006, before it fell in 2006–2011 (the Gini fell from 43.8 in 1988 to 42.4 in 2006 to 39.4 in 2010).

Thus to make the comparison more robust we can take the higher poverty line of $2 per day (rather than the $1.25 per day) and the moderate growth scenario (5.7% pc per annum) and static inequality (rather than falling inequality which would all speed up the end of poverty). Making such assumptions we can compare Indonesia, 2010–2030 and Thailand, 1990–2010 (see Figure 21). In short, the historical comparison to Thailand is of interest because two decades of growth at 3.8% per capita per annum and largely static inequality, Thailand reduced $2 poverty to under 4% of the population. A somewhat similar pattern of such 'moderate' growth and static inequality could mean the end of poverty in Indonesia in 2030, especially so if the 1997–

[13]We are indebted to Arief Yusuf for his comments as discussant at the Padjadjaran seminar for the proposal to compare Thailand and Indonesia in this way.

1999 crisis period is removed from Thailand's curve. It is worth noting though that the poverty curve slowed drastically in Thailand when the $2 poverty headcount reached less than 5% (see Figure 21).

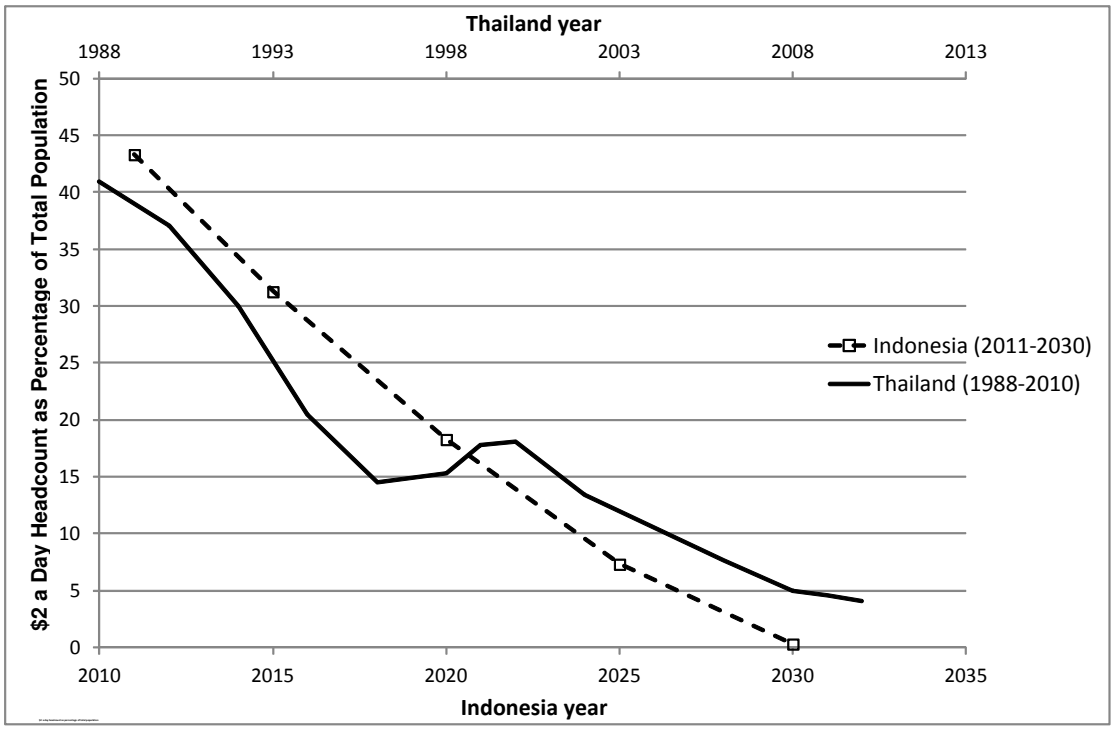

Figure 21. Poverty by $2 per day in Thailand, 1988–2011 (historical actual) versus poverty by $2 in Indonesia 2011–2030 based on moderate growth scenario and static inequality

V. CONCLUSION

Indonesia certainly experienced rapid economic development and poverty reduction between 1984 and 2011. What does historical and forecast analysis of Indonesia's growth, inequality, and poverty using international PPP poverty lines tell us? First, it is plausible that Indonesia may attain high-income country status in a decade or so. However, historical growth rates indicate a more cautious forecast could be necessary—with 15 years perhaps being a more likely time frame.

Second, it is also mathematically plausible that Indonesia could end $1.25 per day and $2 per day poverty in the same time frame if growth meets IMF WEO forecasts and there is a favorable movement in distribution. Again, current and historic trends suggest this is highly optimistic. An alternative way of looking at this is that the opportunity cost of current inequality trends indicate poverty in Indonesia could end within a period of 10–20 years. In terms of comparison, the historical "moderate" growth and static inequality achieved by Thailand may be of interest to policy makers in Indonesia.

Third, however, we note that a large proportion of the population may find themselves between day-to-day poverty and security from poverty (defined here as the $10 per day line). Fourth, we also note that poverty by international poverty lines seems to be far more urban and on a steep trend to a greater urban proportion of poverty.

How different are our findings when using the international poverty lines compared to the national poverty line? There were three areas reviewed in this paper: first, studies focused on long-run trends in expenditure poverty. Second, studies focused on the long-run relationship between expenditure poverty and economic growth. Third, studies focused on long-run inequality.

In the first, we noted research using national poverty lines—meaning non-$PPP lines—has concluded that absolute poverty declined during the Suharto years. However, poverty was still significant before the 1997–1998 financial crisis, and may have been underestimated. Further, welfare improvements slowed in the period after the 1997–1998 crisis. Using consistent international poverty lines at $1.25 and $2 (recalling the former of which is close now to the national poverty line), we find over the 1984–2011 period that $1.25 per day poverty significantly declined during the Suharto era. However, the substantial decline of $2 poverty per day seems to largely date to the post-Suharto era and the $10 per day poverty count appears to have changed surprisingly little in 25 years, according to the data. It is true that even before the 1997–1998 crisis poverty was still at high levels (more than 40% of population by the $1.25 per day poverty line and 80% of population by the $2 per day poverty line). We find the rate of poverty reduction by $1.25 per day and $2 per day was particularly fast in the period of 2000–2005, indeed faster than in the pre-crisis time and possibly reflects the range of social programs introduced or extended in the post-crisis period. However, that rate of poverty reduction is slower since the 2005–2006 rice price induced poverty spike, notably for the $1.25 poverty count and somewhat for the $2 poverty count.

In the second area, studies focused on the long-run relationship between expenditure poverty and economic growth, we noted that research based on national poverty line(s) found that overall, economic growth in Indonesia has benefited the poor. We find over the 1984–2011 period that the benefits of growth to those under $2 have been substantial. Indeed, economic growth certainly appears to have benefited the poor substantially using the $1.25 or $2 poverty lines. Overall growth has been broad-based with regard to the lower end of the distribution and Indonesia compares well to other populous countries.

Finally, with regard to long-run trends in inequality, research findings to date have been somewhat conflicting. Some have found that before the 1997–1998 crisis, inequality was relatively low or declining and that inequality did not increase drastically as a result of economic growth, whilst others have found inequality was high or increasing pre-crisis. Further, many have noted that inequality has increased post-crisis. We find that total inequality (measured by the Gini coefficient and Theil index) fell in the early 1990s (although this masked rising urban inequality as it was rural inequality that fell substantially). However, after the 1997–1998 crisis inequality has risen in two waves in particular: one wave visible in the data for 1999–2005 and a more recent wave 2009–2011. This is alarming in the sense that Indonesia's rising inequality could slow further not only poverty reduction but the rate and longevity of future economic growth.

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APPENDICES

APPENDIX 1

Table A1. Gini and Theil, 1984–2011

Year	1984	1987	1990	1993	1996	1999	2002	2005	2006	2007	2008	2009	2010	2011
Total														
Gini	0.304	0.291	0.295	0.299	0.322	0.304	0.311	0.358	0.329	0.344	0.339	0.339	0.353	0.386
Theil	0.154	0.144	0.149	0.157	0.184	0.169	0.171	0.233	0.188	0.204	0.197	0.199	0.210	0.261
Rural														
Gini	0.290	0.274	0.262	0.258	0.273	0.246	0.259	0.292	0.285	0.299	0.297	0.293	0.312	0.337
Theil	0.140	0.126	0.114	0.111	0.126	0.100	0.113	0.145	0.137	0.151	0.148	0.145	0.160	0.192
Urban														
Gini	0.330	0.325	0.343	0.349	0.370	0.348	0.342	0.392	0.352	0.369	0.363	0.366	0.377	0.415
Theil	0.183	0.178	0.200	0.208	0.237	0.214	0.202	0.273	0.215	0.231	0.224	0.231	0.239	0.300

Source: Author's estimates.

APPENDIX 2

Table A2. Share of GNI by Decile Groups, 1984–2011

	1984	1987	1990	1993	1996	1999	2002	2005	2006	2007	2008	2009	2010	2011
Total														
D1 to D4	21.6	22.5	22.6	22.6	21.7	22.9	22.6	20.4	20.6	19.6	19.9	20.1	18.9	17.6
D5 to D9	53.5	52.9	52.7	52.4	51.8	52.0	51.9	51.1	52.1	52.4	52.4	51.9	53.1	51.0
D10	24.9	24.6	24.7	25.0	26.6	25.1	25.6	28.5	27.3	28.0	27.7	28.0	28.0	31.4
Rural														
D1 to D4	22.2	23.4	23.9	24.2	23.4	24.8	24.3	22.3	22.7	22.0	22.1	22.4	21.0	20.0
D5 to D9	53.8	53.0	53.5	53.4	52.9	53.8	53.0	52.9	53.2	53.0	53.1	52.8	53.8	52.5
D10	24.0	23.6	22.6	22.4	23.6	21.5	22.8	24.8	24.1	25.1	24.9	24.8	25.2	27.6
Urban														
D1 to D4	20.1	20.4	19.6	19.4	18.3	19.9	19.8	17.4	19.3	18.1	18.5	18.5	17.6	16.1
D5 to D9	53.2	53.1	52.4	51.9	51.3	50.6	51.7	50.1	51.6	52.3	52.2	51.6	52.7	50.3
D10	26.7	26.5	28.0	28.7	30.4	29.6	28.5	32.6	29.1	29.6	29.3	30.0	29.7	33.6

Source: Author's estimates.

APPENDIX 3

Table A3. Headcount (millions) and Total Poverty Gap (US$bn 2005 PPP), 1984–2011

Year	1984	1987	1990	1993	1996	1999	2002	2005	2006	2007	2008	2009	2010	2011
Total														
$1.25 Headcount	101.9	117.6	98.3	103.8	86.8	99.0	63.9	49.8	66.0	56.2	53.2	49.2	43.2	41.1
$1.25 TPG	15.9	18.2	13.1	13.7	10.5	12.0	6.0	4.6	7.0	5.4	5.0	4.4	3.6	3.2
$2 Headcount	144.0	154.8	155.5	162.6	158.1	170.7	145.7	120.4	144.7	127.8	125.8	123.1	108.7	104.9
$2 TPG	51.5	57.6	49.6	52.1	45.0	50.9	35.4	28.3	36.5	31.1	29.9	28.3	24.7	23.6
$10 Headcount	164.7	174.8	184.3	193.5	202.3	210.6	219.0	222.7	229.9	231.9	234.5	236.4	236.8	233.7
$10 TPG	525.2	562.0	576.6	604.6	612.6	648.0	639.0	625.3	664.3	648.0	652.7	653.6	634.4	622.9
GDP	253.6	292.8	370.2	463.8	581.9	533.5	606.2	705.2	743.9	791.2	838.7	877.6	931.9	992.1
Population	164.7	174.8	184.3	193.5	202.3	210.6	219.0	227.3	229.9	232.5	235.0	237.4	239.9	242.3
Rural														
$1.25 Headcount	79.0	88.1	71.6	73.6	59.2	65.8	40.2	28.9	37.4	30.1	27.3	23.8	19.7	17.3
$1.25 TPG	12.3	13.4	9.3	9.5	6.9	8.0	3.7	2.7	4.0	2.8	2.4	1.9	1.5	1.2
$2 Headcount	108.3	112.6	111.4	112.4	108.9	108.8	92.0	71.0	82.4	70.1	66.8	63.3	53.7	49.6
$2 TPG	39.6	42.5	36.0	36.8	30.7	33.6	22.3	16.7	20.8	16.9	15.6	14.1	11.7	10.5
$10 Headcount	123.0	126.0	127.9	128.5	127.7	124.9	121.7	118.0	116.7	115.4	114.0	112.6	111.1	109.7
$10 TPG	394.7	407.2	404.6	407.4	395.2	393.7	367.2	341.5	348.6	334.1	327.8	320.8	304.3	291.3
Population	123.0	126.0	127.9	128.5	127.7	124.9	121.7	118.0	116.7	115.4	114.0	112.6	111.1	109.7
Urban														
$1.25 Headcount	22.9	29.5	26.7	30.2	27.6	33.2	23.7	20.9	28.6	26.1	25.9	25.5	23.5	23.8
$1.25 TPG	3.6	4.8	3.7	4.2	3.6	4.0	2.2	1.9	3.0	2.6	2.6	2.4	2.1	2.1
$2 Headcount	35.7	42.2	44.1	50.2	49.2	62.0	53.7	49.4	62.3	57.7	59.1	59.8	55.1	55.4
$2 TPG	11.9	15.1	13.6	15.3	14.4	17.3	13.1	11.7	15.7	14.2	14.3	14.2	13.0	13.1
$10 Headcount	41.7	48.8	56.4	65.0	74.6	85.8	97.3	104.7	113.2	116.5	120.5	123.8	125.7	124.1
$10 TPG	130.6	154.7	172.0	197.3	217.4	254.3	271.8	283.8	315.7	313.9	324.9	332.8	330.2	331.6
Population	41.7	48.8	56.4	65.0	74.6	85.8	97.3	109.3	113.2	117.0	120.9	124.8	128.8	132.7

Source: Author's estimates.

APPENDIX 4

Table A4. Headcount (millions) and Total Poverty Gap (US$bn 2005 PPP), Static Inequality, 2015–2030

	Survey mean, static inequality, pessimistic growth				Survey mean, static inequality, moderate growth				Survey mean, static inequality, optimistic growth			
Year	2015	2020	2025	2030	2015	2020	2025	2030	2015	2020	2025	2030
Total												
$1.25 Headcount	31.7	19.1	7.3	0.8	19.5	2.0	0.0	0.0	14.7	0.0	0.0	0.0
$1.25 TPG	2.0	0.8	0.2	0.0	0.9	0.0	0.0	0.0	0.6	0.0	0.0	0.0
$2 Headcount	94.6	80.4	63.1	45.5	78.7	48.0	19.9	0.9	71.8	36.2	6.4	0.0
$2 TPG	19.6	14.6	9.7	5.5	14.4	6.4	1.4	0.0	12.5	4.0	0.2	0.0
$10 Headcount	240.1	244.9	248.2	250.2	235.4	236.3	237.0	228.2	233.5	233.2	231.4	199.7
$10 TPG	624.2	617.4	600.8	573.2	595.1	551.4	485.9	394.4	582.6	521.3	429.5	312.7
Population	251.9	262.6	271.9	279.7	251.9	262.6	271.9	279.7	251.9	262.6	271.9	279.7
Rural												
$1.25 Headcount	12.6	6.4	1.2	0.0	6.7	0.0	0.0	0.0	4.4	0.0	0.0	0.0
$1.25 TPG	0.6	0.2	0.0	0.0	0.2	0.0	0.0	0.0	0.1	0.0	0.0	0.0
$2 Headcount	44.1	36.6	27.9	19.0	35.9	20.5	6.7	0.0	32.4	14.7	0.7	0.0
$2 TPG	8.5	6.1	3.8	2.0	6.1	2.3	0.3	0.0	5.1	1.3	0.0	0.0
$10 Headcount	113.0	114.7	115.6	115.9	110.3	109.6	108.9	108.2	109.2	107.8	106.8	96.5
$10 TPG	291.6	288.1	280.1	267.6	277.7	257.3	227.9	187.1	271.7	243.6	203.1	146.9
Population	114.0	118.8	123.0	126.5	114.0	118.8	123.0	126.5	114.0	118.8	123.0	126.5
Urban												
$1.25 Headcount	19.1	12.7	6.1	0.8	12.8	2.0	0.0	0.0	10.3	0.0	0.0	0.0
$1.25 TPG	1.4	0.7	0.2	0.0	0.7	0.0	0.0	0.0	0.5	0.0	0.0	0.0
$2 Headcount	50.5	43.8	35.3	26.5	42.8	27.5	13.2	0.9	39.3	21.6	5.6	0.0
$2 TPG	11.1	8.5	5.9	3.6	8.4	4.0	1.1	0.0	7.3	2.6	0.2	0.0
$10 Headcount	127.1	130.2	132.6	134.3	125.1	126.7	128.1	120.0	124.3	125.4	124.6	103.2
$10 TPG	332.6	329.3	320.7	305.6	317.4	294.1	258.0	207.3	311.0	277.6	226.4	165.8
Population	137.9	143.8	148.8	153.1	137.9	143.8	148.8	153.1	137.9	143.8	148.8	153.1

Source: Author's estimates.

APPENDIX 5

Table A5. Headcount (millions) and Total Poverty Gap (US$bn 2005 PPP), Extrapolated Current Trends on Inequality, 2015–2030

	Survey mean, extrapolated current trends of inequality, pessimistic growth				Survey mean, extrapolated current trends of inequality, moderate growth				Survey mean, extrapolated current trends of inequality, optimistic growth			
Year	2015	2020	2025	2030	2015	2020	2025	2030	2015	2020	2025	2030
Total												
$1.25 Headcount	39.5	35.1	29.8	24.2	27.2	12.2	1.4	0.0	22.4	4.8	0.0	0.0
$1.25 TPG	3.1	2.5	1.9	1.3	1.6	0.4	0.0	0.0	1.2	0.1	0.0	0.0
$2 Headcount	102.5	95.4	88.0	79.2	86.1	64.5	44.5	26.1	79.7	52.4	28.7	8.3
$2 TPG	22.8	20.6	18.2	15.6	17.3	10.9	6.0	2.4	15.2	7.8	2.8	0.3
$10 Headcount	245.1	251.1	254.0	254.7	241.8	241.2	239.7	234.2	240.1	237.2	234.6	212.2
$10 TPG	642.5	642.2	633.9	618.2	613.0	576.9	526.6	457.8	600.2	547.7	475.1	383.9
Population	251.9	262.6	271.9	279.7	251.9	262.6	271.9	279.7	251.9	262.6	271.9	279.7
Rural												
$1.25 Headcount	15.8	12.2	9.1	6.6	10.3	3.2	0.0	0.0	8.1	0.7	0.0	0.0
$1.25 TPG	1.1	0.8	0.5	0.3	0.5	0.1	0.0	0.0	0.3	0.0	0.0	0.0
$2 Headcount	44.7	36.1	28.4	21.8	37.0	23.9	14.0	7.1	34.0	19.1	8.7	1.9
$2 TPG	9.5	7.5	5.7	4.3	7.1	3.8	1.7	0.6	6.1	2.6	0.7	0.1
$10 Headcount	102.1	91.1	77.5	62.3	101.9	87.2	71.8	56.9	101.4	85.4	69.9	54.8
$10 TPG	271.6	234.6	195.1	155.4	259.5	211.1	164.0	119.9	254.0	200.8	149.8	102.3
Population	102.1	91.2	78.8	64.9	102.1	91.2	78.8	64.9	102.1	91.2	78.8	64.9

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Year	Survey mean, extrapolated current trends of inequality, pessimistic growth				Survey mean, extrapolated current trends of inequality, moderate growth				Survey mean, extrapolated current trends of inequality, optimistic growth			
	2015	2020	2025	2030	2015	2020	2025	2030	2015	2020	2025	2030
Urban												
$1.25 Headcount	23.7	22.8	20.7	17.6	16.9	9.0	1.4	0.0	14.2	4.1	0.0	0.0
$1.25 TPG	2.0	1.7	1.4	0.9	1.1	0.3	0.0	0.0	0.8	0.1	0.0	0.0
$2 Headcount	57.8	59.3	59.6	57.4	49.1	40.6	30.5	18.9	45.7	33.3	20.0	6.4
$2 TPG	13.3	13.1	12.5	11.3	10.3	7.1	4.2	1.8	9.1	5.2	2.0	0.2
$10 Headcount	143.0	160.0	176.5	192.4	139.9	153.9	167.9	177.2	138.7	151.8	164.7	157.4
$10 TPG	370.9	407.6	438.8	462.8	353.6	365.8	362.6	337.9	346.2	346.8	325.3	281.5
Population	149.8	171.3	193.1	214.8	149.8	171.3	193.1	214.8	149.8	171.3	193.1	214.8

Source: Author's estimates.

APPENDIX 6

Table A6. Headcount (millions) and Total Poverty Gap (US$bn 2005 PPP), Extrapolated Current Trends on Inequality, 2015–2030

	Survey mean, 'best-ever' distribution, pessimistic growth				Survey mean, 'best-ever' distribution, moderate growth				Survey mean, 'best-ever' distribution, optimistic growth			
Year	2015	2020	2025	2030	2015	2020	2025	2030	2015	2020	2025	2030
Total												
$1.25 Headcount	8.6	1.8	0.0	0.0	2.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0
$1.25 TPG	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
$2 Headcount	62.1	45.3	30.6	16.8	45.0	19.8	1.6	0.0	38.9	11.0	0.0	0.0
$2 TPG	9.5	5.9	3.1	1.1	6.0	1.5	0.0	0.0	4.8	0.6	0.0	0.0
$10 Headcount	246.4	253.3	258.1	258.6	243.3	245.1	241.5	226.8	242.1	240.2	233.0	194.0
$10 TPG	615.6	603.7	579.7	542.8	582.4	525.6	444.7	337.8	567.9	489.9	380.0	246.6
Population	251.9	262.6	271.9	279.7	251.9	262.6	271.9	279.7	251.9	262.6	271.9	279.7
Rural												
$1.25 Headcount	2.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
$1.25 TPG	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
$2 Headcount	28.5	19.8	12.6	5.9	19.8	7.5	0.1	0.0	16.8	3.3	0.0	0.0
$2 TPG	4.0	2.3	1.1	0.2	2.3	0.4	0.0	0.0	1.8	0.1	0.0	0.0
$10 Headcount	114.0	118.8	122.3	122.1	114.0	116.0	112.7	109.8	114.0	113.0	109.2	98.1
$10 TPG	292.0	287.3	276.4	259.3	277.2	250.7	214.0	165.7	270.5	234.2	185.0	119.6
Population	114.0	118.8	123.0	126.5	114.0	118.8	123.0	126.5	114.0	118.8	123.0	126.5

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Year	Survey mean, 'best-ever' distribution, pessimistic growth				Survey mean, 'best-ever' distribution, moderate growth				Survey mean, 'best-ever' distribution, optimistic growth			
	2015	2020	2025	2030	2015	2020	2025	2030	2015	2020	2025	2030
Urban												
$1.25 Headcount	6.3	1.8	0.0	0.0	2.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0
$1.25 TPG	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
$2 Headcount	33.6	25.5	18.0	10.9	25.2	12.3	1.4	0.0	22.1	7.8	0.0	0.0
$2 TPG	5.5	3.6	2.0	0.8	3.6	1.1	0.0	0.0	3.0	0.5	0.0	0.0
$10 Headcount	132.4	134.5	135.8	136.5	129.3	129.1	128.8	117.0	128.1	127.1	123.8	96.0
$10 TPG	323.6	316.4	303.4	283.6	305.2	274.9	230.7	172.1	297.4	255.7	194.9	127.0
Population	137.9	143.8	148.8	153.1	137.9	143.8	148.8	153.1	137.9	143.8	148.8	153.1

Source: Author's estimates.

APPENDIX 7

Table A7. Povcal Urban and Rural Estimates

Country	Year	Data type	Pov. line (PPP$/mo)	Mean ($)	Headcount (%)	Pov. gap (%)	Squared pov. gap	Watts index	Gini index	MLD index	Population (mil.)	Survey year
Indonesia	1984	C	38	38.26	62.84	21.36	9.57	0.29	30.47	0.15	164.71	weighted
Indonesia	1987	C	38	36.08	68.16	23.14	10.11	0.31	29.27	0.14	174.77	weighted
Indonesia	1990	C	38	43.36	54.27	15.62	6.01	0.21	29.19	0.14	184.35	weighted
Indonesia	1993	C	38	43.61	54.4	15.67	6.03	0.2	29.31	0.14	193.52	weighted
Indonesia	1996	C	38	51.55	43.38	11.44	4.13	0.15	31.33	0.16	202.25	weighted
Indonesia	1999	C	38	47.6	47.7	12.52	4.56	0.16	28.99	0.14	210.61	weighted
Indonesia	2002	C	38	60.79	29.31	6.03	1.78	0.07	29.74	0.15	219.03	weighted
Indonesia	2005	C	38	75.45	21.44	4.56	1.46	0.06	34.01	0.19	227.3	weighted
Indonesia	2008	C	38	72.22	22.64	4.73	1.41	0.06	34.11	0.19	234.96	weighted
Indonesia	2010	C	38	83.33	18.06	3.3	0.81	0.04	35.57	0.21	239.87	weighted

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Country	Year	Data type	Pov. line (PPP$/mo)	Mean ($)	Headcount (%)	Pov. gap (%)	Squared pov. gap	Watts index	Gini index	MLD index	Population (mil.)	Survey year
Indonesia--Rural	1984	C	38	36.72	65.2	22.15	9.88	0.3	29.22	0.14	123.04	1984
Indonesia--Rural	1987	C	38	34.75	70.54	23.67	10.18	0.32	27.73	0.13	126.01	1987
Indonesia--Rural	1990	C	38	40.5	57.12	16.02	6.03	0.21	26.46	0.11	127.94	1990
Indonesia--Rural	1993	C	38	39.84	58.14	16.36	6.18	0.21	25.97	0.11	128.5	1993
Indonesia--Rural	1996	C	38	46.05	46.75	11.9	4.2	0.15	27.56	0.13	127.66	1996
Indonesia--Rural	1999	C	38	41.24	53.42	14.05	5.12	0.18	24.73	0.1	124.85	1999
Indonesia--Rural	2002	C	38	52.52	33.37	6.76	1.99	0.08	26.07	0.11	121.69	2002
Indonesia--Rural	2005	C	38	62.79	24.01	5.03	1.61	0.06	29.52	0.14	117.97	2005
Indonesia--Rural	2006	C	38	55.13	32.12	7.56	2.66	0.1	28.73	0.14	116.75	2006
Indonesia--Rural	2007	C	38	62.67	26.07	5.36	1.58	0.06	30.17	0.15	115.44	2007
Indonesia--Rural	2008	C	38	64.33	23.81	4.7	1.35	0.06	29.94	0.15	114.05	2008
Indonesia--Rural	2009	C	38	66.4	20.69	3.82	1.06	0.04	29.53	0.14	112.58	2009
Indonesia--Rural	2010	C	38	75.36	17.75	2.93	0.65	0.04	31.45	0.16	111.06	2010
Indonesia--Rural	2011	C	38	83.65	14.97	2.13	0.4	0.03	34.02	0.19	0	2011

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Continued

Country	Year	Data type	Pov. line (PPP$/mo)	Mean ($)	Headcount (%)	Pov. gap (%)	Squared pov. gap	Watts index	Gini index	MLD index	Population (mil.)	Survey year
Indonesia--Urban	1984	C	38	42.82	55.88	19.03	8.64	0.26	33.29	0.18	41.67	1984
Indonesia--Urban	1987	C	38	39.53	62.02	21.76	9.92	0.31	32.78	0.18	48.76	1987
Indonesia--Urban	1990	C	38	49.85	47.8	14.71	5.97	0.2	34.66	0.2	56.41	1990
Indonesia--Urban	1993	C	38	51.07	47.01	14.32	5.74	0.19	35.34	0.2	65.02	1993
Indonesia--Urban	1996	C	38	60.95	37.6	10.66	4.01	0.14	37.54	0.23	74.59	1996
Indonesia--Urban	1999	C	38	56.85	39.37	10.29	3.74	0.13	35.33	0.21	85.76	1999
Indonesia--Urban	2002	C	38	71.12	24.24	5.12	1.53	0.06	34.7	0.2	97.34	2002
Indonesia--Urban	2005	C	38	89.11	18.67	4.06	1.29	0.05	39.93	0.27	109.33	2005
Indonesia--Urban	2006	C	38	71.35	25.02	5.89	2.01	0.07	35.7	0.21	113.17	2006
Indonesia--Urban	2007	C	38	80.04	22.36	4.96	1.47	0.06	37.32	0.23	117.02	2007
Indonesia--Urban	2008	C	38	79.66	21.53	4.75	1.47	0.06	36.68	0.22	120.91	2008
Indonesia--Urban	2009	C	38	81.54	20.18	4.33	1.33	0.05	37.11	0.23	124.83	2009
Indonesia--Urban	2010	C	38	90.21	18.33	3.63	0.96	0.04	38.13	0.24	128.81	2010
Indonesia--Urban	2011	C	38	101.05	17.4	3.22	0.79	0.04	42.15	0.29	0	2011

APPENDIX 8

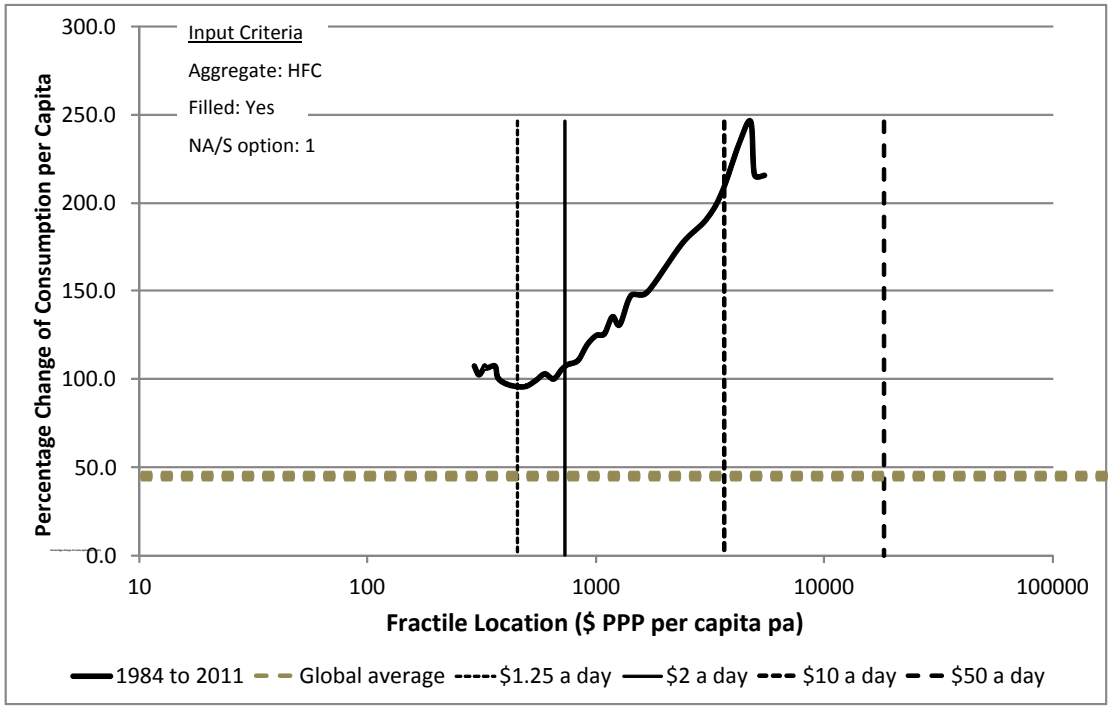

Figure A1. Fractile chart by $ PPP per capita per annum, 1984–2011

Source: Author's estimates.

APPENDIX 9

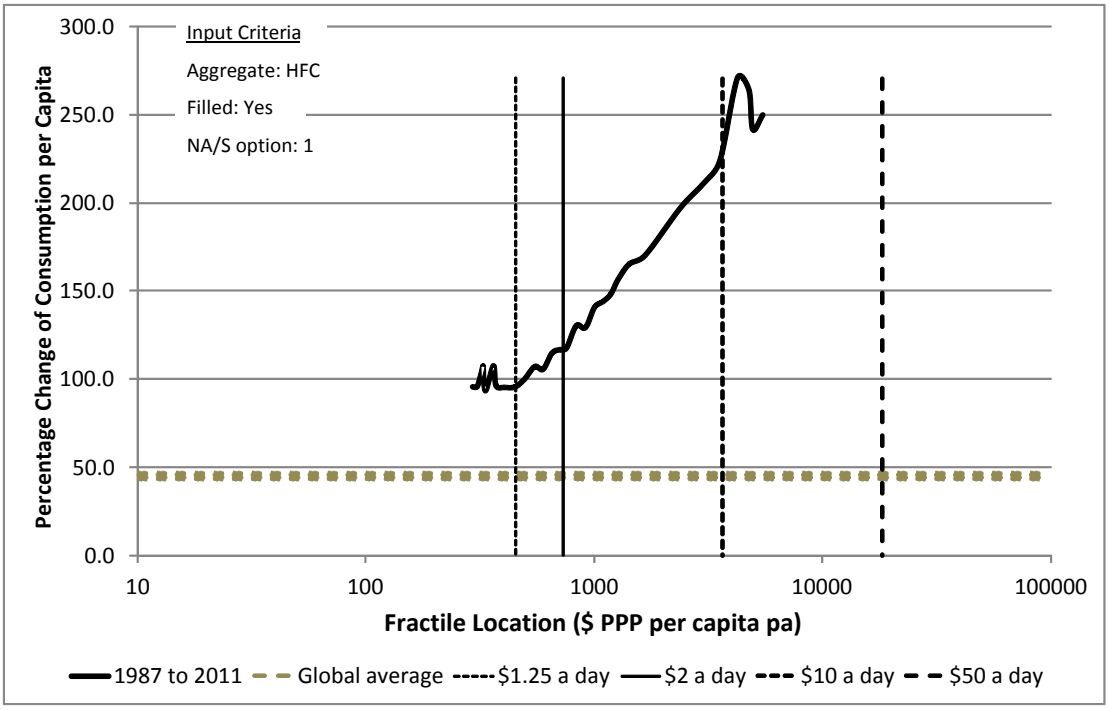

Figure A2. Fractile chart by $ PPP per capita per annum, 1987–2011

Source: Author's estimates.

APPENDIX 10

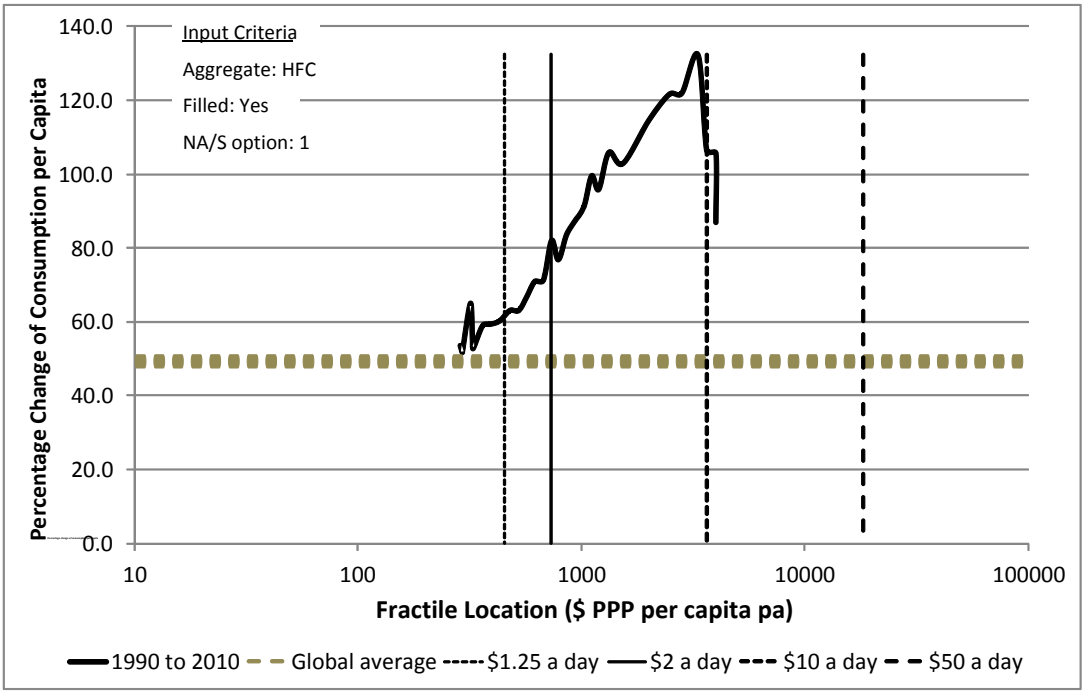

Figure A3. Fractile chart by $ PPP per capita per annum, 1990–2010

Source: Author's estimates.

APPENDIX 11

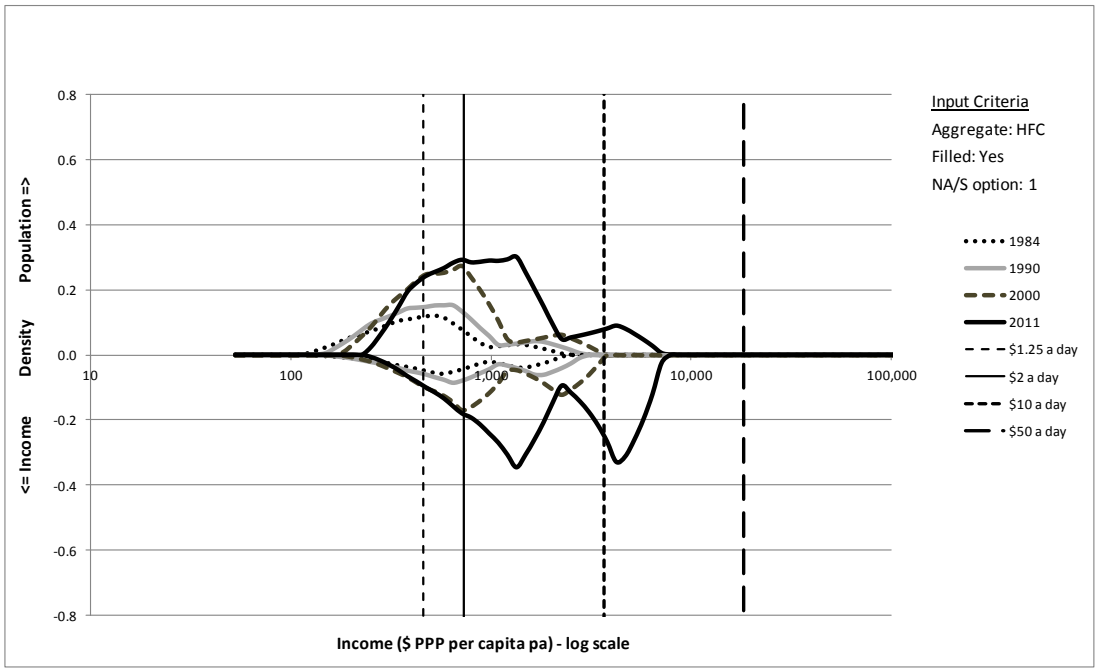

Figure A4. Density curve, 1984–2011, Indonesia urban

Source: Author's estimates.

APPENDIX 12

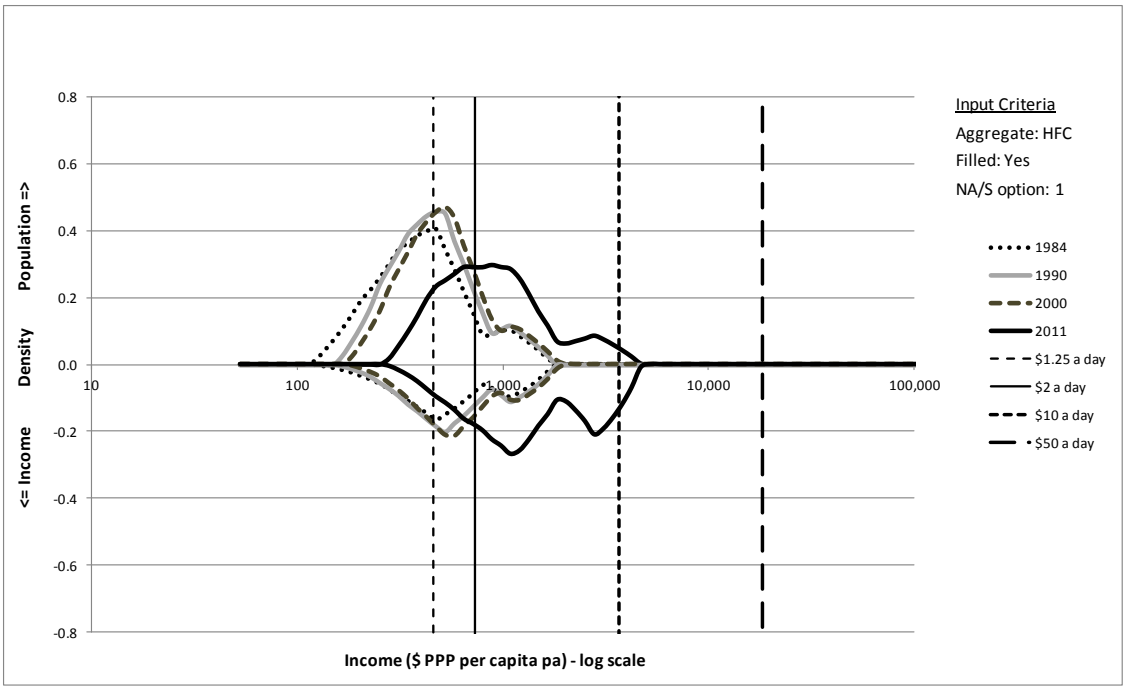

Figure A5. Density curve, 1984–2011, Indonesia rural

Source: Author's estimates.

APPENDIX 13

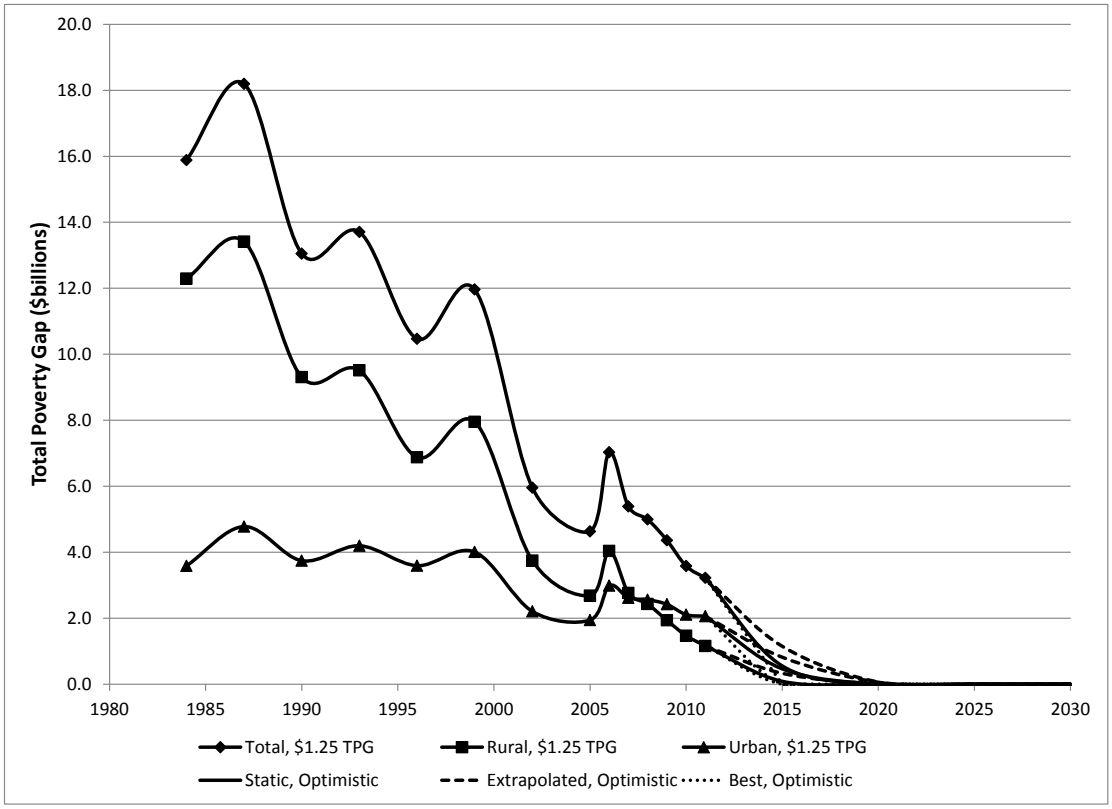

Figure A6. Total poverty gap (TPG), $1.25 US$bn (PPP)

Source: Author's estimates.

APPENDIX 14

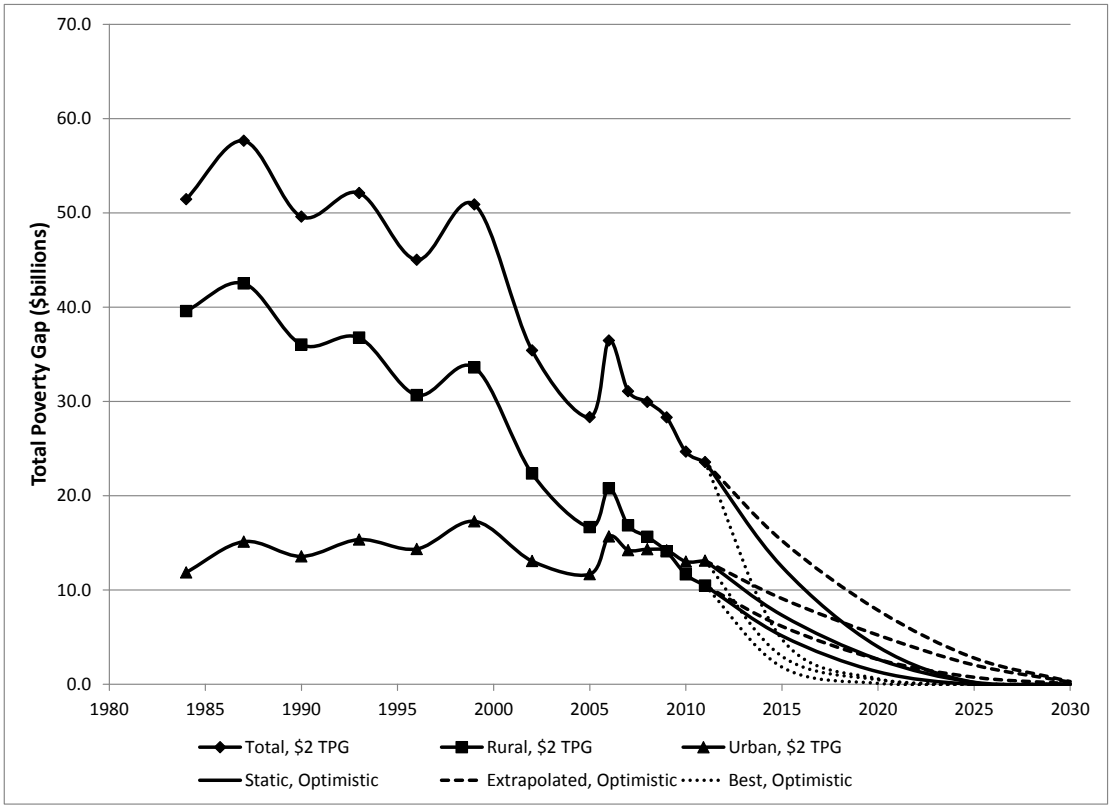

Figure A7. Total poverty gap (TPG), $2 US$bn (PPP)

Source: Author's estimates.

APPENDIX 15

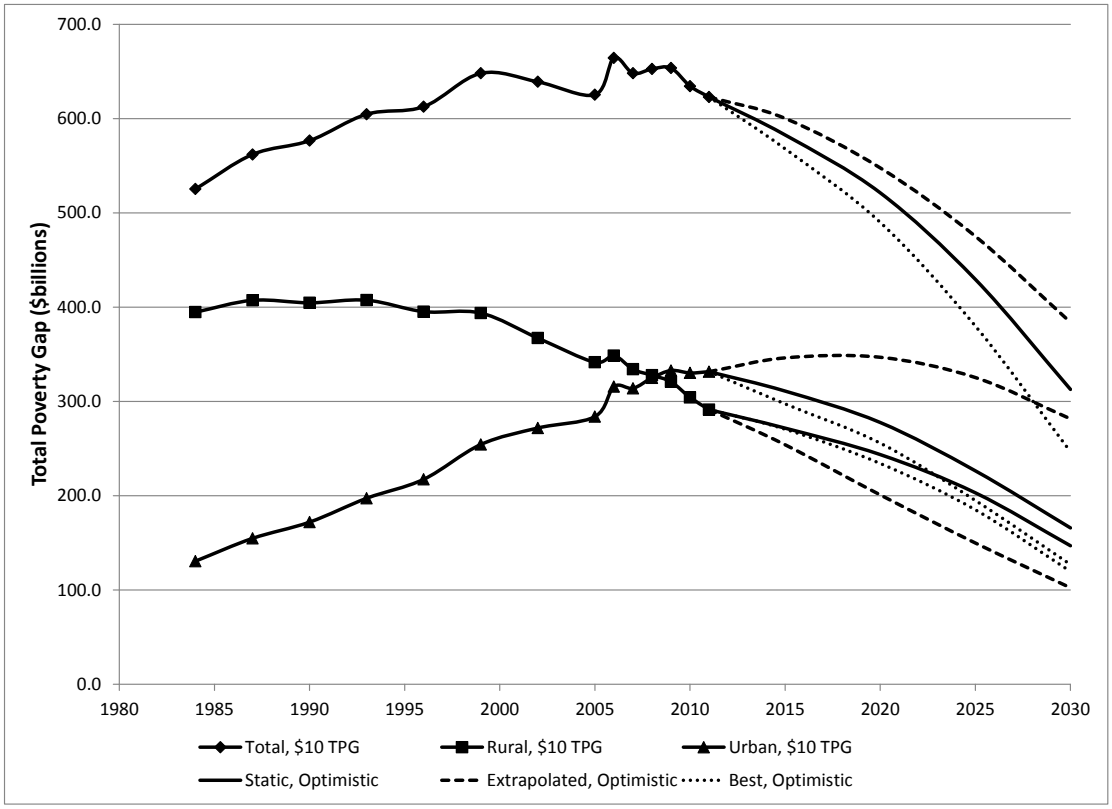

Figure A8. Total poverty gap (TPG), $10 US$bn (PPP)

Source: Author's estimates.

APPENDIX 16

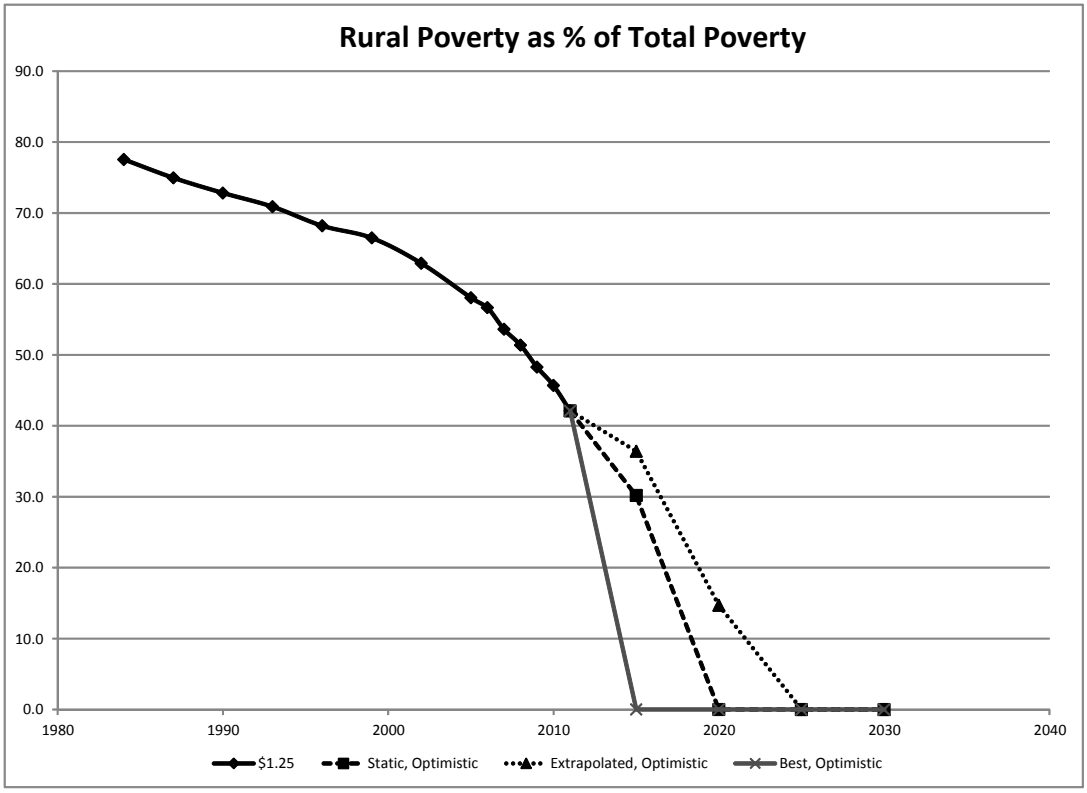

Figure A9. Rural poverty as a % total, $1.25

Source: Author's estimates.

APPENDIX 17

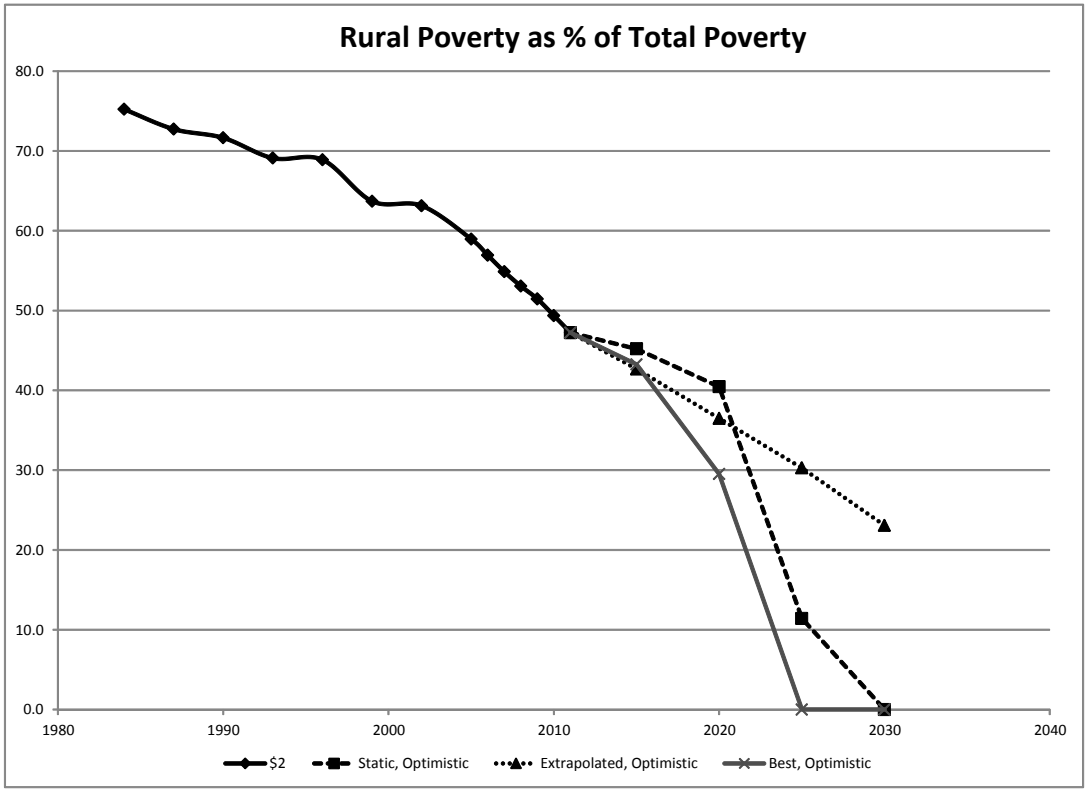

Figure A10. Rural poverty as a % total, $2

Source: Author's estimates.

APPENDIX 18

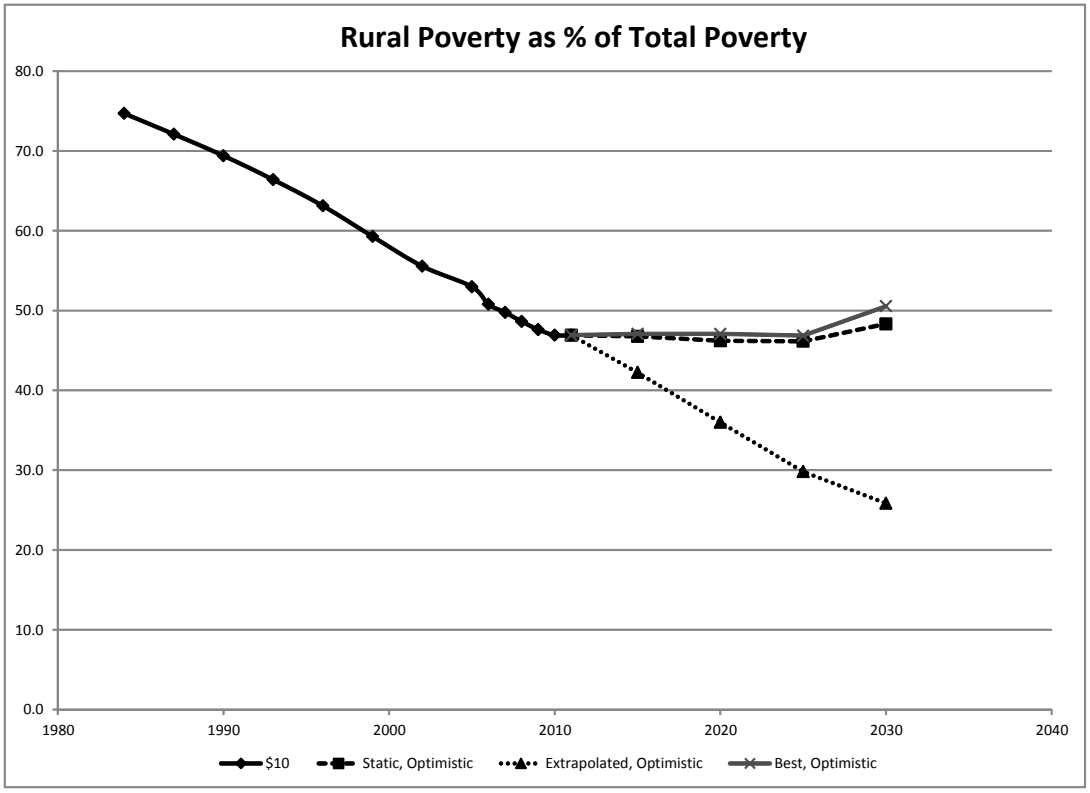

Figure A11. Rural poverty as a % total, $10

Source: Author's estimates.

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