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Measurements of Poverty in Indonesia: 1996, 1999, and Beyond

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Measurements of Poverty in Indonesia: 1996, 1999, and Beyond

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Abstract: The economic crisis has caused a clear deterioration in the welfare of the people of Indonesia. While there are many dimensions to individual and family welfare, here we focus on only one: a consumption expenditures based measure of "poverty." Even within the measurement of poverty we address only two issues.

The first issue is how to produce regionally consistent poverty lines, i.e. how to define a level of money expenditures for each region that produces the same material standard of living. We use an internally consistent method to set the reference population yielding weights for a Laspeyres price index used to deflate prices across regions and over time. Choosing the "reference population" is important because dietary patterns vary systematically as households get richer. To address this circularity we use an iterative approach to defining the poverty lines that produce consistent results across regions. We then use these poverty lines to examine the common "poverty profiles" (e.g. by location, sector, etc.)

The second issue is more conceptual and discusses possible extensions to the very narrow measurement of poverty based on consumption by considering extensions which pursue the goal of making consistent comparisons of welfare levels between individuals.

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* This report is based on the full SUSENAS sample of 65,000 households. We update the same methodology previously applied to the accelerated sample of 10,000 households. We thank Wenefrida Dwi Widyanti and Yusuf Suharso for their research assistance. We are grateful to BPS for providing access to the data.

Introduction

Counting the poor is both complex and straightforward at the same time. If one accepts a narrow definition of poverty line as consumption at a certain level, then poverty measurement is straightforward: those with consumption below the line are considered "poor" and the rest are "non-poor." However, setting the poverty line is a complex exercise as it requires answer to many questions: what mix of food commodities are to be included in the food basket? What level of calorie intake should that food produce? What is the level of non-food purchases that is essential? The answers, however, are subject to social conventions.

More over, poverty is even more complicated as it has many faces. Consumption is just one dimension of it. Security, access to health facilities, educational attainment, physical well being, and social status are examples of other dimensions of welfare which can be incorporated into a definition of poverty.

This paper is divided into two parts. The first part discusses setting a regionally consistent poverty line in the standard current consumption expenditures deficit (CCED) definition of poverty. Using these poverty lines we report poverty incidence across regions of Indonesia. We also present the usual poverty profiles.

The second part is a prognosis of the future of measurements of poverty profile, taking into account other dimensions of poverty.

I. Poverty Measurements and Poverty Profile

The level of poverty is more or less arbitrary as the level of household welfare that is chosen to be the threshold for "poverty" is simply a social convention. Fortunately what is typically relevant for policy discussions ¾ the targeting resources or design of programs ¾ is the "poverty profile," i.e. the differences in poverty across households, social or economic groups, or regions.

The following discussion is grouped into six sections. The first section discusses the methodology for the construction of a poverty line across regions with different but unobserved price levels. The second section emphasizes the importance of a "reference population" in poverty line calculations. The third section introduces an iterative method as a way to remove subjectivity in choosing the reference population. The fourth and fifth sections discuss the distribution and the changes of poverty incidence across regions (provinces by urban and rural). Finally, the sixth section discusses poverty profiles across various household characteristics.

A) Poverty line: Basic description

The common starting point of many poverty calculations is a food energy intake requirement of 2,100 calories per person per day (Ravallion, 1994). A food poverty line (FPL) is the expenditures necessary to achieve this caloric intake. However, this same caloric intake could be achieved in an infinite variety of ways with a corresponding array of expenditures. If a person were to only eat the cheapest possible source of calories, dried cassava flour (see Table A1 in the appendix), the FPL would be only around 20,790 rupiah per person per month. Meanwhile, a "rice only" diet to achieve 2,100 calories would cost 45,990 rupiah per month and a diet of only chicken would cost 273,420 rupiah per month. Obviously diet of only rice or cassava flour is unrealistic and

unpalatable and is not consumed, even by the very poor. People are quite willing to sacrifice calories for variety and taste in a diet. In addition, calories are just a proxy for an overall nutritional adequacy, which requires proteins and micronutrients as well as calories, and hence a varied diet is important for other reasons. While the total amount of calories in food poverty basket is fixed "absolutely," the basket and quality of those foods used to reach that level is ultimately a social convention. That is, the basket must be fixed, but the fixing of the basket, while based on reasonable criteria, is ultimately a social choice.

The method we use to choose the basket is common: use a basket of foods actually consumed by a "reference population" to fix the mix of foods and their prices, then the total is fixed by scaling the mix of foods up to achieve the level of 2,100 calories. More formally, let $\bar{q}_k$ denote the average quantities consumed of commodity k by the reference population, which is chosen on the basis of its level or real expenditures. The food poverty line basket is defined as the set $q_k = \theta \bar{q}_k$, k = 1, …, K, where $\theta = 2{,}100 \Big/ \sum_{k=1}^{K} \bar{q}_k c_k$ and ck is the unit calorie value of commodity k.

Estimated food poverty lines can be rather sensitive to the choice of the commodity basket (Chesher, 1998). In order to make our estimates as directly comparable as possible to those constructed by BPS, we use 52 commodity items following the practice adopted by BPS (BPS and UNDP, 1999). The list of these 52 commodities is given in table A1 in the appendix. Once the food basket has been chosen, the food poverty line in each

region is then established using the basket of quantities of the national reference group, but region specific commodity prices.[1]

We use unit values for our food price estimates obtained from dividing expenditures by reported quantities. Bidani and Ravallion (1993) and Ravallion and Bidani (1994) use separately collected price data. The main advantage of using unit price estimates is that they can be derived from the survey. Especially in a period of high inflation, it is important that the price and expenditure data correspond to the same reference time. A disadvantage is that products may not be homogenous within a commodity category. Wealthier household can consume more luxurious varieties of a commodity and therefore pay higher unit prices.

We attempt to correct for the product heterogeneity problems that arise from using unit prices instead of separate price data by using predicted prices at the poverty line. If households indeed switch to more luxurious varieties as they get richer, this would result in a positive significant estimate of per capita consumption in the unit price regression. By taking the predicted price at the poverty line, we use the unit prices that are relevant for the poor. We use quantile (median) regression methods because ¾ since a regression is performed for each commodity in each region ¾ sample sizes are small and median regression is less sensitive to outliers.[2]

Using a reference population with total expenditures $\tilde{e}$, the food poverty line (FPL) for region j is defined as:

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[1] One could set multiple nutritional intake targets for the consumption basket to achieve with the gain of realism about nutritional adequacy with the loss of symphony.

[2] A similar procedure in the construction of poverty line in Indonesia is used by Alatas (1997). A quantile regression using the results to median is the same as the LAD (Least Absolute Deviations) estimate.

$$1)\ FPL_j = \sum_{k=1}^{52} \bar{q}_k(\tilde{e}) * \hat{p}_{kj}(\tilde{e}) * \left(\frac{2100}{\sum_{k=1}^{K} \bar{q}_k(\tilde{e}) * c_k} \right).$$

Choosing the allowance made for the non-food expenditures is ever more difficult, as there is no equivalent of a nutritional standard to provide even a weak anchor to the amount. We adopt the rationale of Ravallion (1994) and others that one plausible way of setting a non-food amount that is "essential" to word poverty is to use those households who only have the total expenditures equal to the food poverty line spend on non-food. This produces a low estimate. Meanwhile, the non-food component of the poverty line is calculated by estimating an Engel curve for food consumption. The non-food component of the poverty line is set at the expected non-food consumption for those whose total consumption equals the food poverty line.

The estimated Engel curve is estimated using all household (i) for each region j is specified as:

$$2)\ \omega_{i,j} = \omega_j + \beta * \log(e_{i,j} / FPL_j) + error\,term_j$$

The poverty line (PL) for region j that follows equals the FPL plus the non-food allowance (NFA) of those households with total expenditures just equal to the FPL:

$$3)\ PL_j = FPL_j + NFA_j = FPL_j + (1-\omega_j) * FPL_j = FPL_j * (2-\omega_j)$$

B) The (unexpected) importance of the reference group

An arbitrary but, as it turns out, crucial decision in implementing any method of fixing the poverty line is the initial choice of the reference population. The consumption pattern of this group determines the weights of the commodities in the food basket that form the basis of the food poverty line. Generally, one wants the reference group to reflect the consumption patterns of the poor. Most researchers therefore start of with a prior belief about the level of poverty and use this population group as the reference group. This method could lead, to some extent, to *self-fulfilling prophecies*.

Two researchers working on the same country with exactly the same data using exactly the same method but simply having different prior beliefs on headcount poverty will produce different poverty estimates. The one who believes poverty is high will choose a wealthier reference population. This richer reference group will consume a more luxurious food basket. Hence the calories per rupiah will be lower so the cost of obtaining a fixed amount of calories will be higher. Both the food and non-food component through two effects as (2-w)*FPL will be higher because w is lower and FPL is higher, so that the poverty line will turn out higher as a result. This researcher will most likely get a higher estimated headcount poverty compared to the researcher who started off with a low prior. The relation of the poverty line with respect to expenditures of the reference group is shown in figure 1.

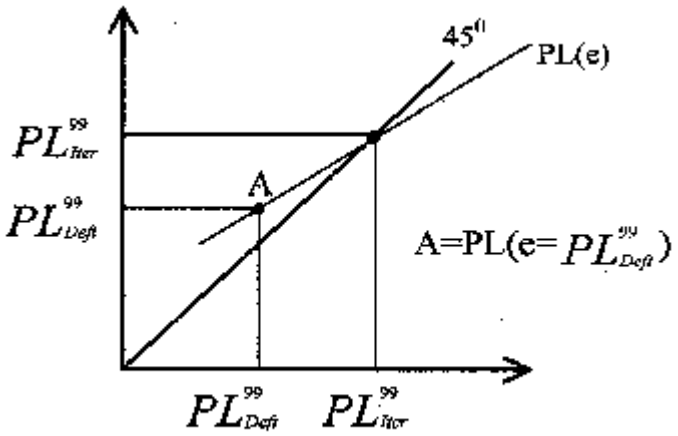

Figure 1: Poverty Line and Food Poverty Line

This means that the "standard" poverty methodology is incomplete and not well specified. Without a procedure for fixing the reference group, the "standard" method applied to the same country with the same data can produce different outcomes. As the next section shows, the difference is not a minor theoretical curiousem but are potentially enormous.

C) An iterative method

To overcome this circularity problem between determining reference population and the resulting headcount poverty, we use an iterative method. This method estimates the poverty line using an initial reference group. The poverty line that emerged from these initial steps is used as the center of the reference group for the next step. The iteration converges and the process stops when the reference group yields a poverty line that is the same as the midpoint of the reference group. This point corresponds to the intersections of the two curves in figure 1.

We start with a prior of what the poverty lines are (such as point A). This determines the reference group. Next, we determine the food basket typical for households whose total consumption equals this poverty line. We price this basket using unit prices typically paid by households who are at this poverty line (obtained as predicted prices that follow from a quantile (median) regression of unit prices on real per capita consumption). The non-food component of the poverty line is obtained using the usual Engel curve approach. The resulting poverty lines then serve as the prior for the next iteration. This method appeared robust with respect to the choice of the initial value of the poverty line. The precise steps involved in calculating the poverty line are outlined in the appendix.

Since an increase in the FPL line increases the PL more than proportionally (since with a higher FPL the share of non-food at that line is even higher, so that the NFA is a higher proportion of a larger number), it is important to understand the increase in FPL as a higher level of expenditures in the reference group chosen. Since higher expenditures affect all three terms of the FPL: prices per unit, mix of units consumed amongst various food items, and total caloric value, the derivative of FPL with respect to expenditures is complex. The most intuitive way of expressing the derivative is:

$$4)\ \frac{\partial FPL}{\partial e} = \left(\frac{2{,}100}{TC}\right) * \left[\sum_{k=1}^{K} \varepsilon_k * \sigma_k + \left(\overline{\kappa}\right) \sum_{k=1}^{K} \sum_{l=1}^{l<k} \left(\kappa_k - \kappa_l\right) * \left(\eta_k - \eta_l\right)\right]$$

Where, for each commodity the:

ε's are the "elasticities of price with respect to total expenditures," this is the increase in within commodity quality as expenditures,

σ's are the shares in expenditure of each commodity,

η's are the usual (Marshallian) income elasticities, which determine the income expansion paths,

κ's are the rupiah per calorie of each commodity.

This within commodities is the "quality upgrading" term, the expression for the derivative breaks the total into two parts. The first term is an increase in price for a fixed commodity basket as, for a given mix of goods, consumers move to higher qualities. This is simply the expenditure weighted sum of the "quality" elasticities.

The second term is the "quality upgrading across commodities" and is also quite intuitive, particularly using the simple example of two goods, say rice and eggs. The rupiah per calorie of rice is 0.73 while the income elasticity is also low, only 0.063 (see table A1). In contrast, the rupiah per calorie from eggs is 6.07 and the income elasticity is a high 0.582. So as the expenditure of the reference group increases, consumers shift to a basket of proportionally more eggs, which are a higher cost source of calories, with the contribution to increasing the poverty line in this case of (0.73-6.07)*(0.063-0.582) = 2.77. Since there is a general tendency for higher income elasticities to be associated with higher rupiah per calorie, as the income level of the reference group increases the FPL increases because the mix of commodities chosen increases.

Note that changes in total calories with respect to expenditure, which are shown in figure 2, plays no role at all in setting the FPL.[3] Since by formula in equation (1) calories are re-scaled up (or down) to remain constant all that matters is the rupiah per calorie. The estimated relationship between rupiah per calories and expenditures is shown in

3 The calculations in this figure are based on the 52 commodities in the poverty basket only. The average caloric intake from these 52 commodities is 1,513 calories per person per day, while the average total caloric intake is 1,850 calories per person per day.

figure 3 in two ways – either as semi-log (rupiah per calorie on natural log expenditures) or using a flexible functional form (a quartic). In either case the relationship is quite steep. This implies the poverty rate will be quite sensitive to the choice of reference group.

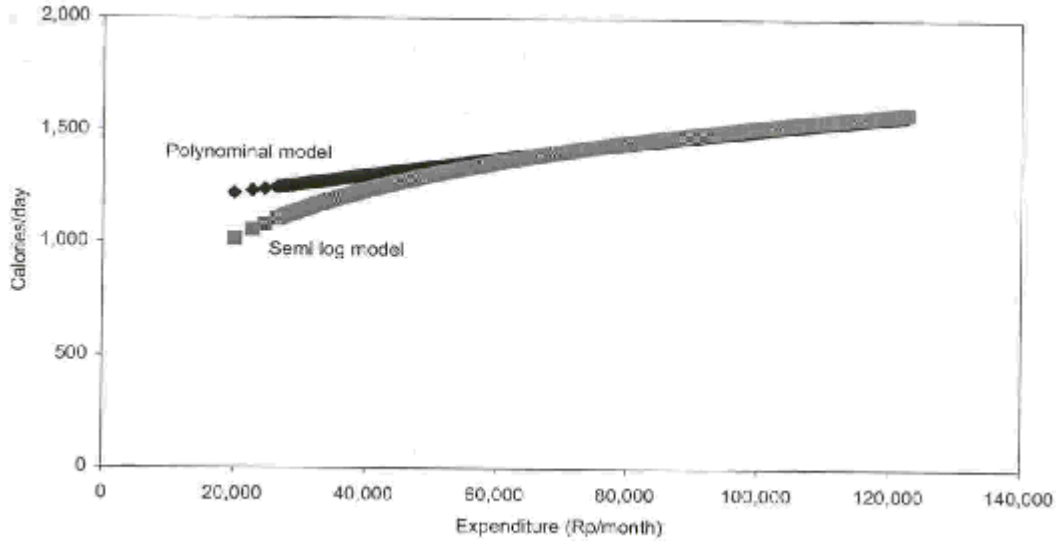

Figure 2: Relationship between Calories Consumed and Expenditures

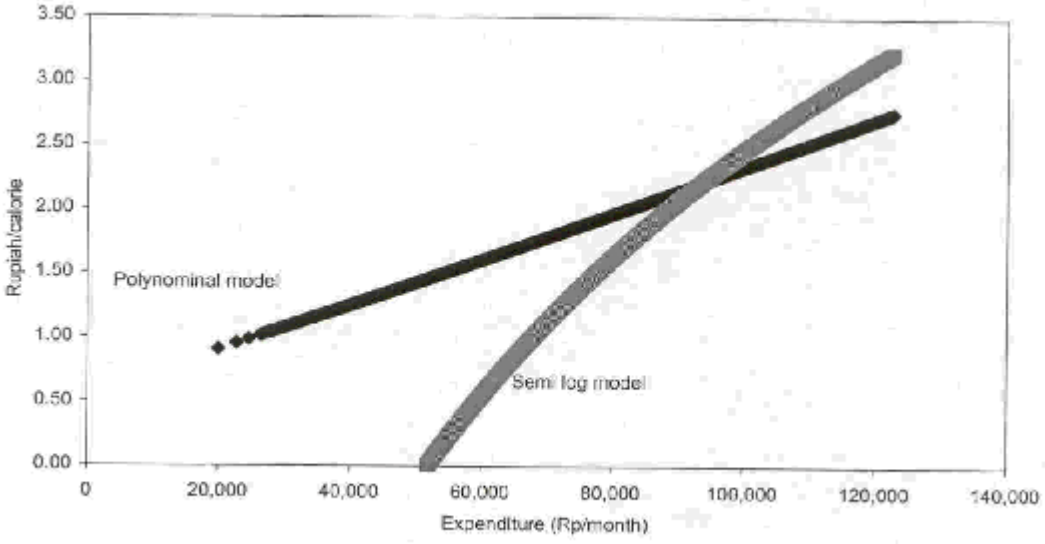

Figure 3: Relationship between Price of Calories Consumed and Expenditures

Suppose one researcher believed the poverty rate was 15 percent and hence began with a reference group of the 15th percentile, while another believed poverty was 30 percent. They then estimate the poverty rate without iterating. Table 1 shows that the resulting poverty rates from the two researchers, using exactly the same method on exactly the same data and differing only in their prior (and not unreasonable) beliefs about the appropriate reference group, would produce estimates of the poverty rate that differed by 6.7 percentage points (more than 30 percent).

Table 1: Illustration of the Sensitivity of the Estimated Poverty Rate to Assumptions about the Reference Group

Assumption	Mid point of reference (Rp/month)	Poverty line (Rp/month)	Poverty Rate (%)
Reference group centered on 15th percentile	69,645	77,265	21.78
Reference group centered on 30th percentile	86,159	84,550	28.48

D) Poverty incidence across regions

Our approach for the inter-regional comparison has been to keep the quantities in the food basket constant. Theoretically, we want the poverty line to represent the same level of utility. This single basket approach guarantees that the poverty line suffices to purchase this national basket in each region. A disadvantage is that the applied basket is not necessarily optimal for every region. In a region with a very different set of relative prices compared to the national average, the same welfare (in utility terms) can generally be reached with a lower total expenditure than the poverty line would imply. This is the

argument in favor of using region specific food bundles.[4] Chesher (1998) finds that moving to regional poverty baskets increases the extremes in measured poverty, raising provinces that are already high and lowering provinces that are already low.

Using Susenas February 1999 data, the resulting regional poverty rates from our iterative method are presented in table 2, while the associated poverty lines are presented in table A2 in the appendix and the number of poor people are in table A3. For comparison, table 2 also shows the regional poverty rates according to BPS's approach.

[4] There are a number of compelling arguments against, which are discussed in length in Ravallion and Bidani (1994) or Ravallion (1994).

Table 2: Regional Poverty Incidence (%) and Rank in February 1999												
Province	Iterative Method						BPS Method					
	Urban		Rural		Total		Urban		Rural		Total	
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank
Jakarta	2.82	1	-	-	2.82	1	6.59	1	-	-	6.59	1
Bali	10.67	11	15.61	5	13.62	6	9.80	3	9.89	1	9.85	2
Riau	8.53	7	9.62	1	9.21	2	11.43	4	14.98	2	13.65	3
Aceh	5.43	3	15.41	4	12.89	5	13.76	6	17.38	5	16.47	4
West Sumatera	8.78	9	9.74	2	9.47	3	17.43	12	16.48	3	16.75	5
Central Kalimantan	5.00	2	13.43	3	11.15	4	7.16	2	20.41	6	16.83	6
North Sumatera	10.81	12	18.91	6	15.27	7	17.50	13	16.64	4	17.03	7
East Kalimantan	8.74	8	35.06	15	21.67	10	12.65	5	22.83	9	17.65	8
North Sulawesi	11.70	13	26.83	11	22.47	12	14.23	7	24.60	13	21.61	9
West Java	20.82	22	31.87	13	26.60	15	20.96	17	22.32	8	21.67	10
South Sulawesi	17.42	18	24.94	8	22.63	13	20.50	16	22.20	7	21.68	11
South Kalimantan	7.99	6	26.38	10	20.64	9	16.37	11	25.03	15	22.33	12
Yogyakarta	22.12	23	36.78	16	26.95	16	20.13	15	27.68	18	22.62	13
Bengkulu	10.41	10	24.55	7	20.44	8	20.02	14	24.55	12	23.23	14
West Nusa Tenggara	30.17	27	44.71	22	41.78	23	25.94	23	23.42	10	23.93	15
Jambi	15.41	16	25.25	9	22.18	11	23.27	21	24.63	14	24.24	16
South Sumatera	14.47	15	27.93	12	23.81	14	24.77	22	24.27	11	24.42	17
Central Sulawesi	16.72	17	32.69	14	28.52	17	21.69	20	25.87	16	24.78	18
Southeast Sulawesi	13.74	14	44.44	21	36.61	21	14.28	8	29.34	20	25.50	19
East Java	19.51	20	40.87	20	33.31	20	21.55	19	28.80	19	26.24	20
Central Java	23.72	25	37.76	17	32.78	19	26.06	24	27.52	17	27.01	21
West Kalimantan	6.17	5	38.04	18	30.76	18	14.43	10	34.25	22	29.72	22
Lampung	19.90	21	40.57	19	36.80	22	21.14	18	32.92	21	30.77	23
Maluku	18.64	19	59.90	24	48.40	24	28.52	25	41.50	23	37.88	24
East Timor	23.37	24	59.38	23	55.49	26	39.35	27	44.07	24	43.56	25
East Nusa Tenggara	28.67	26	66.11	25	61.18	27	30.43	26	47.15	25	44.95	26
Papua	6.07	4	72.19	26	54.89	25	14.31	9	59.30	26	47.53	27
Indonesia	16.34		34.10		27.13		19.98		25.85		23.55	
Note: Sorted by average provincial poverty by BPS method												

The results show that in February 1999, the poverty rate in Indonesia was 27.13 percent, implying around 55.8 million poor people. This poverty rate is modestly higher than the BPS poverty rate of 23.55 percent. The ranking of provinces from least to most poor by our iterative method and BPS's method are quite consistent with a Spearman rank correlation of 0.92.

While at the national level the difference in poverty rates between the two methods is only around 4 percentage points, the two methods differ wildly in the range of differences

in poverty rates across urban and rural areas. The rank correlation is also lower at 0.84 for urban areas and 0.88 for rural areas. The BPS method implies a difference of less than 6 percentage points in the difference between urban and rural poverty rates. The iterative method, meanwhile, has a much, much, wider range of almost 18 percentage points (34 versus 16). Table 3 demonstrates the reason for this.

Table 3: Urban-Rural Differences in Iterative and BPS Methods, February 1999

	Reference population (Rp/month)		Poverty line (Rp/month)	Poverty Incidence (%)
	Lower limit	Upper limit		
Iterative Method:				
Urban	72,392	108,588	90,490	16.34
Rural	64,947	97,421	81,184	34.10
Ratio	1.11	1.11	1.11	0.48
BPS Method:				
Urban	80,000	100,000	93,869	19.98
Rural	60,000	80,000	73,898	25.85
Ratio	1.33	1.25	1.27	0.77

The iterative method, which chooses the reference groups to reflect equivalent real incomes of urban and rural groups in the reference basket, produces much lower differences in the poverty lines in urban versus rural areas. The method fixes a poverty line only 11 percent higher in urban than rural areas. As a result, the poverty incidence in urban areas, which is 16.3 percent, is less than a half of the poverty rate in rural areas, which is 34.1 percent.

The BPS method, meanwhile, uses references groups that are chosen reflecting an assumption of higher costs of living in urban than rural areas. They choose a reference group range that is non-overlapping (the lower limit of urban is Rp. 80,000, which is the same as the upper limit of rural) and which is between 25 and 33 percent higher for urban areas. The result is a poverty line that is 27 percent higher in urban than in rural areas. Not surprisingly, the poverty rate in urban areas by this method, which is around

20 percent, is 77 percent of that in rural areas, which is 25.9 percent. So, in spite of much lower nominal expenditures, the cost of attaining the poverty basket is assumed to be much lower in rural areas. This implies that the differences in poverty rate between urban and rural areas are possibly as much an artifact of method and assumptions as they are a finding of "fact" ¾ the poverty line is higher because it is assumed to be higher.[5] However, there is no double check within the BPS method on the initial assumptions about the appropriate reference groups.

E) Changes in regional poverty during the crisis

During the crisis, there has been a significant deterioration in household welfare (Skoufias et al, 2000). If this is true, we can expect that this will be reflected in poverty incidence. We examine this by comparing Susenas February 1999 and Susenas February 1996 –one and a half years before the crisis started. Specifically, the question we want to answer is that given the level of welfare implied by the iterative method results on Susenas February 1999, what was the poverty incidence in February 1996 and, hence, what is the change in headcount poverty during this period.

Crucial in these comparisons over time is the choice of deflator to convert the February 1999 regional poverty lines to those of February 1996. Suryahadi et al (2000) recommend a price deflator where the share of food in the deflator uses the share of food in the poverty basket (0.8).

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[5] Asra (1999) shows that headcount poverty estimates in Indonesia are sensitive to the choice of inflation rates and cost of living differences between urban and rural areas.

They admit that this deflator overstates poverty changes because it does not allow substitution and does not use the actual consumption bundle of the poor. But they argue that this deflator is defensible as the price index shares represent the actual consumption pattern of some group in poverty, although the group is considerably below the poverty line.

The regional headcount poverty rates in February 1996 and the percentage changes between February 1996 and February 1999 are shown in table 4 using this deflator and food price inflation from Susenas unit prices and non-food price inflation from CPI.[6] Meanwhile, the associated poverty lines and number of poor people in February 1996 are shown respectively in tables A4 and A5 in the appendix.

[6] The 1996 Susenas unit prices are also obtained from iterating to convergence on the 1996 data.

Table 4: Poverty Rates in February 1996 and Changes 1996-99 (Food share of poverty basket, Susenas unit prices)						
Province	Poverty Incidence (%) February 1996			Percentage point change Feb 1996 - Feb 1999		
	Urban	Rural	Total	Urban	Rural	Total
Jakarta	0.78	-	0.78	2.04	-	2.04
North Sulawesi	6.83	23.69	19.22	4.87	3.14	3.25
Riau	2.53	7.20	5.59	6.00	2.42	3.63
Papua	6.94	64.97	50.04	-0.87	7.22	4.85
Bali	4.98	10.63	8.67	5.69	4.98	4.95
West Nusa Tenggara	20.60	39.78	36.16	9.57	4.93	5.62
Aceh	3.25	8.32	7.27	2.18	7.09	5.63
West Sumatera	2.40	4.01	3.60	6.39	5.73	5.87
North Sumatera	3.68	11.51	8.27	7.13	7.40	7.00
Central Kalimantan	2.27	4.39	3.91	2.74	9.03	7.24
South Sulawesi	5.84	18.74	15.07	11.57	6.20	7.56
West Kalimantan	5.72	25.65	21.32	0.45	12.39	9.44
East Nusa Tenggara	21.70	56.48	51.59	6.97	9.63	9.59
Bengkulu	4.62	12.22	10.25	5.79	12.33	10.19
Yogyakarta	13.10	20.11	16.64	9.02	16.67	10.31
Central Java	12.28	25.18	21.03	11.44	12.58	11.75
South Kalimantan	4.95	9.99	8.46	3.04	16.39	12.18
Southeast Sulawesi	11.61	27.29	23.73	2.13	17.15	12.87
Central Sulawesi	5.74	16.97	14.49	10.98	15.72	14.03
Jambi	7.32	8.27	8.01	8.09	16.98	14.18
East Java	9.40	23.57	18.99	10.10	17.30	14.32
Maluku	10.47	41.51	33.81	8.17	18.39	14.59
West Java	8.41	14.59	11.93	12.41	17.28	14.67
South Sumatera	2.00	11.70	8.75	12.47	16.23	15.05
East Kalimantan	0.75	12.36	6.52	7.99	22.71	15.15
Lampung	7.50	19.01	17.18	12.40	21.56	19.62
Indonesia	7.22	20.54	15.74	9.12	13.55	11.39

Table 4 shows that all provinces experienced an increase in poverty incidence between February 1996 and February 1999, but the variation of these increases is very large. The highest increase in poverty incidence occurred in Lampung with almost 20 percentage points increase. This is almost double of national increase, which is around 11.4 percentage points. Table A5 indicates that there were 30.8 million poor people in February 1996. This means that there were additional 25 million people who fell to below poverty line during the period of February 1996 to February 1999.

The percentage point increase for rural areas, which is 13.6 percentage points, is higher than in urban areas, which experienced an increase of 9.1 percentage points. In relative terms, however, the increase in poverty incidence is much higher in urban areas than in rural areas. In urban areas, the poverty rate increased by 126 percent, while in rural areas it increased by 66 percent.

F) Poverty profile: Household characteristics

In making use of the poverty line discussed above, we can also examine some of the characteristics of poor households. These characteristics will help in identifying the poor even though these characteristics are far too broad to be directly useful for targeting purposes.

Poverty and sector of occupation. Poverty profile across sectors is important to identify the poor. Table 5 shows the poverty incidence across sectors as well as the contribution of each sector to total poverty in both February 1996 and February 1999.[7]

[7] These and hereafter are based on the regional poverty lines presented in tables A2 and A4.

Table 5. Poverty Incidence and Contribution to Total Poor by Main Sector of Occupation, February 1996 and February 1999 (%)				
Sector	February 1996		February 1999	
	Poverty incidence	Contribution to total poor	Poverty incidence	Contribution to total poor
Agriculture	26.29	68.54	39.69	58.38
Trade, hotel, and restaurant	7.96	8.10	17.63	11.13
Manufacturing industry	10.69	5.71	22.92	7.71
Civil, social, and private services	5.73	5.72	13.13	7.36
Transport and communication	8.85	3.32	24.02	5.58
Construction	14.04	5.42	28.97	5.52
Receiving transfer	6.58	1.86	15.57	2.65
Mining and quarrying	15.34	1.01	29.81	1.00
Others	13.29	0.10	32.00	0.27
Finance, insurance, and leasing	1.24	0.06	5.23	0.23
Electricity, gas, and water	6.10	0.16	14.48	0.17
Note: Sorted by contribution to total poor in February 1999				

Table 5 indicates that all sectors uniformly experienced an increase in poverty incidence during the period. This implies that there is no single sector which was spared from the negative impact of the crisis. In relative terms, the finance, insurance, and leasing sector had the highest increase in poverty incidence, which was more than quadrupled from 1.2 to 5.2 percent. This probably reflects the financial nature of the origin of the crisis, so it is not surprising this sector was the hardest hit. The table also indicates that other modern sectors such as trade, manufacturing, and services were also proportionately hard hit by the crisis.

Nevertheless, the agriculture sector consistently had the highest poverty incidence as well as the highest contribution to the total number of poor people during the period. This reflects two things. First, people in the agriculture sector have always been relatively poorer than those in other sectors. Therefore, even though this sector was not hit by the crisis as hard as the modern sectors, in the end the poverty incidence in this sector still the highest of all sectors. Second, the agriculture sector remains the largest sector in terms of employment. In fact, during the crisis many workers who were laid

off in modern sectors returned to agriculture, so that between 1997 and 1998 the employment share of agriculture increased from 40.8 percent to 45 percent (Feridhanusetyawan, 1999). The combination of these two factors explains the persistence of agriculture sector as the largest contributor to the number of poor people, even though its importance has declined markedly from 68.5 percent in February 1996 to 58.4 percent in February 1999.

Poverty and educational attainment. Education level is presumably highly correlated with welfare. Those who can achieve a higher level of education will have greater opportunities to get better jobs, and hence improve the welfare of their families. This is clearly indicated by table 6, which shows poverty profile across the education level of head of households. The higher the education level, the lower the poverty incidence. Even after the educational progress that has occurred, 87 percent of the poor have a primary school education or less in 1999.

Table 6. Poverty Profile by Education Level of Household Head, February 1996 and February 1999 (%)

Education level of household head	February 1996		February 1999	
	Poverty incidence	Contribution to total poor	Poverty incidence	Contribution to total poor
Not completed primary and illiterate	31.23	27.67	47.51	19.84
Not completed primary but literate	21.63	35.09	36.68	31.82
Completed primary	15.03	30.15	29.66	35.34
Completed junior secondary	7.04	4.80	16.85	7.61
Completed senior secondary	2.44	2.19	8.59	5.05
Completed tertiary	0.41	0.11	1.98	0.34

The table shows that even just removing illiteracy has a large impact on reducing poverty incidence, i.e. by almost 10 percentage points. The table also shows that by the level of junior secondary education, the poverty incidence is already lower than the national average. This implies that poverty incidence at the national level is very much affected by high poverty incidence among those who have only primary education or less. At the tertiary level, the poverty incidence is indeed very small, less than 2 percent in February 1999. Before the crisis, it was almost non-existent at 0.4 percent.

All of this points to the fact that improving the education level of the people in general is one of the best long-run strategies in reducing poverty. However, this is not as straightforward as it seems. There is an endogeneity between welfare and education. So it is not only education level affects welfare, but also the initial level of welfare affects educational achievement. Hence, if education is left entirely as a private decision of families, there will be a cycle between being in poverty and low levels of education. Therefore, there is obviously a role for the government to play in breaking this cycle.

It is also clear that more and better formal schooling is not likely to affect aggregate poverty in the very short run. Those household head that currently have "no schooling" or "incomplete primary" or "primary" schooling are not going to return for additional formal schooling. The sheer fact of demographic persistence means that even if starting today all students complete a full nine years of basic education, this will take time until these newly educated graduates enter the labor market full time, and have their earnings reflected in the poverty figures.

Table 6 also shows that poverty incidence has increased for all levels of education between February 1996 and February 1999. This implies that the crisis has hit everyone, those with low level of education as well as the educated ones. In relative terms, however, there is an indication that the higher level of education the greater the increase

in poverty incidence. While among the illiterate poverty incidence has increased by 52 percent (from 31.2 to 47.5 percent), among those with tertiary education the poverty rate has increased by almost four-fold (from 0.4 to 2 percent). This again probably reflects the urban and modern sector nature of the crisis.

II. Future Directions for Poverty Measurements

There are two large issues in the future directions for poverty measurement: expanding regional measures and broadening the concept of poverty measured. We discuss each in turn.

A) Regional comparisons

As we have seen even, coming to consensus on estimates by urban and rural areas of provinces was difficult. However the process of decentralization and of expenditure targeting already demand more, and more frequent, data. For expenditure allocation decision making, both for targeted safety net programs and for the fiscal decentralization of general revenues the "Daerah Tingkat II" (level two) (or kabupaten/kotamadya) will be the relevant jurisdiction. There are certainly large variations in poverty within provinces. As we move toward district level of aggregation there will be two major problems:

- *Regionally comparable prices*. As seen above, the lack of directly comparable price indices leads to enormous difficulties. Even now the best that can be done for non-food prices is to assume they are the same in an entire province as in the CPI surveyed city. There are efforts underway to create meaningful rural price indices.
- *Sample sizes*. Even with 65,000 observations, the imprecision of estimating poverty levels for over 300 kabupaten/kotamadya will raise concerns, particularly if these estimates actually become part of the expenditure allocation process, in which case all issues of measurement are likely to become (even more) hotly political.

These issues will be important because there is a significant amount of variation within provinces. Table 7 shows the amount of total household variation in poverty associated with each administrative level. In spite of the enormous differences across provinces in average levels of poverty illustrated in table 2, this only explains 5 percent

of the variance. Moving to the level of the kabupaten/kotamadya explains another 9 percent.

Table 7: Variance of Poverty Rates across Different Unit of Analysis

Unit of analysis	Number	Variance of poverty rates across different units	Percent of total variance explained by variance across	The additional "explanation" of moving from higher to lower level
Province	27	0.0090	5.0%	5.0%
Kabupaten/ kotamadya	306	0.0256	14.1%	9.1%
Kecamatan	2,396	0.0587	32.4%	18.3%
Households (Total)	62,212	0.1813	100.0%	

B) (Re)defining poverty

Like many words, the meaning of "poverty" is a social convention. The standard definition that applied so far captures only "current consumption expenditures deficit" (CCED) poverty. This does not capture all of the phenomena covered by "poverty." An adequate definition of poverty would recognize the above definition is just one element of a complex phenomena with at least six, intertwined, dimensions. These expanded definitions do not contradict standard welfare economics, but rather are integral components of a rigorous economic definition of poverty in terms of welfare levels. We would argue these are usually ignored, not because they are analytically unsound or because of evidence they are less important, but simply because they are "too hard" to measure with the usual data at hand. Of course, having just seen how hard it is to make consistent inter-temporal and inter-spatial comparisons of even standard CCED poverty, there is some justification to this approach. However, ultimately economic analysis should expand to reflect the reality rather than attempting to restrict social phenomena to what can be easily quantified.

The six dimensions of poverty are:

Current consumption expenditure deficit (CCED) poverty. This is the usual definition.

We think a fruitful way to think about poverty is the expenditure function, which is the indirect function that is the result of the solution to the dual of consumer welfare maximization. The expenditure function gives, for any set of prices and a level of utility, the amount of money necessary (that is, the lowest amount) to achieve that level of utility at the given prices. In this formulation the social convention is choosing a level of utility below which people are "poor" ¾ call at upoverty. Then the poverty line for the ith household is defined as:

$$5)\ PL^i = e_i(p^i, u^{poverty})$$

This formulation is useful in three ways.

First, it clarifies the role of nutritional standards in poverty line calculations. Some might believe that nutritional standards eliminate the arbitrariness in settling on a social convention for what CCED poverty ought to be and do so by introducing a technical, physiological given "necessary" level of consumption. This, while a convenient function, is a fiction. Rather, nutritional standards merely give us a way to discuss and settle on a level of utility below which a household is poor.

Second, as we have shown in on earlier paper (Suryahadi et al, 2000) the expenditure function is convenient in thinking about the inter temporal comparisons of poverty as there is a well developed literature on price deflation using the expenditures function.

Third, as we show below, this is a useful way to approach extensions to the definition of poverty.

Insecurity poor or vulnerability. A first additional dimension of poverty is that people who may enjoy current expenditures above the poverty line but have a high likelihood of experiencing episodes of poverty. Both quantitative data and people's responses in focus groups of participatory, open-ended approaches indicate that the dynamic of poverty vulnerability is a crucial aspect of how many people experience poverty. Panel data sets indicate a very high variability of the poverty level at the individual level. A recent study on the 100 villages data indicates that of the poor in 1998, over a quarter were more than 50 percent above the poverty line in 1997.[8] While some of this must represent measurement error, nevertheless since in agriculture and informal occupations the variability of income is often very high, there is no question that over a period of 5 to 10 years many households which are not CCED poor will experience one or more episodes of CCED poverty.

The question is how to measure this vulnerability, beyond merely pointing out that those near the poverty line are "vulnerable." There are two possible ways forward, both of which require measuring expenditure variability at the household level, or at least amongst types of households (e.g. urban-rural, formal-informal, education level, sector of occupation, etc.). One is to regard households expenditures as a dynamic process, with both the mean (μ) and variability (σ):

$$6)\ e_i(t) = e_i(\mu_t^i, \sigma_t^i)$$

Then the probability of at least one episode of CCED poverty in the next, say, five years is:

[8] See Skoufias et al (2000).

7) $P(\{\exists t\, E\{t, t+5\}: e_i(t) < PL(t)\})$

With additional assumptions one could define a household as "vulnerable" if the probability of an episode of poverty is higher then some threshold value, say 0.5.[9] The second approach would be to define a poverty line that incorporates both the mean and variability of expenditures directly into the utility function. Then, the reference utility level that defines the expenditures necessary to be out of poverty can be fixed by this expenditure uncertainty inclusive utility level:

8) $PL = e(\mathbf{p}, V^{poverty}(\mu, \sigma))$

This is not merely a matter of moving the poverty line up or down, as this would also affect the poverty profile as almost certainly different groups have different income variability. For instance, in a given year a farmer may have an exceptionally good harvest and have expenditures equal to that of a person with a steady formal sector occupation. However, the farmer's income is almost certainly more variable. Hence, seen in an inter-temporal perspective (which is after all, how people live, not a series of snapshots), even if the farmers current expenditures are the same, the farmer's "real uncertainty adjusted utility" may still be lower.

Prospects poor. A second additional dimension of poverty is that those who may or may not be above the current poverty line in expenditures, but who are not making

[9] This is discussed further and applied to Indonesian data in Pritchett et al (2000).

adequate investments in their own and their children's future. A household which is above the consumption defined poverty line because their 12 year old has dropped out of school to contribute to household income is *poor*. This approach would bring investments in human capital — basic schooling, adequate investments in health and nutrition — directly into the definition of poverty.

In addition to human capital investments, there are also some families who are not in CCED poverty, but only at the expense of their future financial prospects. Households become trapped in exploitative cycles of credit, pawning assets, taking on very short term, high interest credit, etc. Even if these households escape temporarily CCED poverty by such means, they are actually still in poverty.

A formalization of "prospect" poverty would emphasize future expected utility of all household members, which depends on their current net investments (which could of course be negative). So if a poverty level is set for that forward looking utility: $V^{poverty} = V(e_t, I_t)$ then the poverty line will depend not only on expenditures but also on net investments:

9) $PL^i = PL(e_t^i, I_t^i)$

This inter-temporal dimension to poverty requires information in human capital investments and also on the accumulation (or decumulation) of assets and, preferably, some information about credit.

Access poor. A third additional dimension of poverty is that there are certain goods that most people believe are "necessities" or "merit goods" that everyone should have access to — such as education, clean water, some basic types of health care, and

perhaps, depending on social conditions, additional infrastructure (e.g. electricity, transport). One approach is to simply define that people are access poor if they do not have feasible access to these goods.

Since what is meant by "access" is usually that the "true" cost includes non-price dimensions, the more consistent approach is to build access into the expenditure function. Take the case of electricity. A household that is far removed from the grid faces a much higher cost for electricity than a household in an urban area, which is, near the grid. The cost may be sufficiently high that there will be no consumption of electricity as the household uses substitutes (lanterns). In this case:

$$10)\quad PL(no\ access) = e(\mathbf{p}^{no\ access}, U^{poverty}) > e(\mathbf{p}^{with\ access}, U^{poverty}) = PL(Access)$$

The obvious question is how much higher should the poverty line be? What is the money income that would just compensate in utility terms for access to the grid? Or having a clinic or school 1 km closer? Or having access to piped water? Fortunately, there has been a great deal of analytical and empirical work on these issues.[10] This work could inform the relationship of access and poverty lines.

Physically disadvantaged poor. The fourth additional dimension of poverty are the mentally or physically disadvantaged. These who may be living in households with adequate consumption levels but may themselves have low welfare levels. Their "material standard of living" may be lower than those with equivalent money income.

[10] This essentially the question of "willingness to pay" from the literature on consumer surplus. There has been a resurgence of interest in these questions in connection with adjustments to the US CPI for introduction of new goods, leading to a heightened interest (in one of those delightful intellectual twists that make being an economist such a pleasure) in the market for cold cereal.

This dimensions leads to the enormously tricky problem of interpersonal comparisons of utility. However, there are again two relevant literatures. First, the dealing with compensation for various injuries which establishes conventional valuation of a cash wide variety of morbidity conditions. Second, there is the literature on injured valuation of various morbidity conditions inferred from avoidance behaviors. For instance, hedonic wage regression contains implied valuations of various health risks.

Socially disadvantaged poor. The fifth additional dimension to poverty are people who, for various reasons, are disadvantaged due to their social condition. This includes those who within a household suffer (e.g. women who suffer from domestic violence) or those whose household status leaves them at social disadvantage (e.g. widows, ethnic minorities in certain areas). This now gets very complicated, as while it is easy to compare poverty lines across the conditions households face (e.g. access to goods, income shocks) the conceptual grounding is much more subtle in allowing welfare levels to vary across households themselves, and even more difficult to allow welfare levels to vary directly by *individual* characteristics. Nevertheless, in qualitative assessments and focus group type activities, certain social groups are (correctly) identified which the standard CCED misses.

Summary

It is impossible to say a *priori* how incorporation of these additional dimensions of poverty would affect the level or profile of poverty. Many of the features of poverty would overlap — so many of those who are "prospect poor" are also already "CCED" poor *and* vulnerable poor, so an inclusive poverty rate would not be the simple sum of the individual poverty rates. In addition, the pattern of other dimensions of poverty will likely differ from the pattern of CCED poverty.

This is obviously a challenging agenda of broadening the definition of poverty in a consistent way. There are of course short-cut approaches being used, such as the "HDI" (Human Development Index) popularizes by agencies such as the UNDP. While this approach is useful in drawing attention to non-consumption expenditure aspects of human welfare, it has two serious weaknesses (openly acknowledged even by its proponents).

First, to add incommensurate items, there must either be a broader class of which both are members (table plus chair or pieces of furniture) or there must be a set of scaling factors that transform the separate items into common units (table times dollars per table plus chair times dollars per chair dollars of furniture). In a "human development" index, items like "poverty" and "literacy" and "infant mortality" are added together. However, the weights used to add them up are just completely arbitrary. Equal weight has no more rationale then any other weights.

Second, suppose the purpose is to compare two areas. Then, with an expanded definition of poverty that included two criteria A and B. Then the total "poverty" is not households that meet criteria A plus all those that meet criteria B as this double counts households that meet both A *and* B. If the overlap of criteria A and B is not exactly the same in the two areas to be compared (and there is absolutely no reason it should be), then a simple sum of A and B will not produce valid comparisons of an expanded definition of poverty.

C) An example: Prospect poor

To give an illustration of an expanded definition of poverty, we use easily measured indicator in a possibly expanded definition of poverty, i.e. the prospect poor. In this case, we define a household as "prospect poor" if it has at least one child older

than 6 but less than 18 years, who is currently not enrolled in school, and has not completed lower secondary education level (SLTP). Table 8 shows a headcount of poverty if this is used in addition to the usual CCED definition.

Table 8: Headcount of Consumption and Prospect Poor

	February 1996		February 1999	
	Headcount (%)	Relative to CCED	Headcount (%)	Relative to CCED
Consumption poor	15.74	100	27.10	100
Prospect poor	15.70	100	12.49	46
Consumption or prospect poor	26.80	170	33.52	124

The table shows that in February 1996, the prospect poor at 15.7 percent is quite sizable, they are as large as the consumption poor with only less than 30 percent of households overlapping and in both categories. Therefore if "broad poverty" is defined as being either CCED or prospect poor (or both) then this was of 26.8 percent of the population.

However, while the crisis has increased the consumption poor significantly to 27.1 percent, it did not eliminate the progress in education achieved during the period due to its more permanent nature, resulting in the reduction of headcount prospect poor to 12.5 percent. The overall poverty using either concept, however, still increased significantly by around a quarter to reach 33.5 percent in February 1999.

Conclusions

There are three major methodological suggestions that emerge from this study that deserve further consideration.

First, the quality of the food basket consumed, as measured by rupiahs spent per calories, is strongly responsive to the level of expenditures. Hence, the essentially standard method for setting poverty lines is not robust to arbitrary choices about reference groups. Only by interacting will the reference group and poverty line be consistent.

Second, regional comparisons should be based on an iterative methodology for setting the reference groups. Given the high sensitivity of regional poverty comparisons to reference groups, and given these reference groups are often chosen without any methodological justification, this makes a substantial difference to the poverty profile.

Third, the concept of poverty can be expanded to incorporate additional dimensions beyond the present current consumption expenditure deficit definition of poverty. But to do so in a consistent way with empirically grounded basis will require much additional work.

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Appendix

Construction of poverty line using iterative method

This appendix outlines the steps involved in the iterative approach to calculating poverty lines. The actual Stata program that implements this description is available from the authors on request.

1. Start with a prior on the poverty line in region *j*. Denote this by z_j.
2. Calculate real per capita consumption for household *i* in region *j* by dividing nominal capital consumption by the poverty line. $c_{ij} = c_{ij}^n / z_j$
3. Regress for each product *k* in the food basket the per capita quantity consumed on real per capita income. Sampling weights should be used in this regression. $q_{ijk} = \alpha_{0k} + \alpha_{1k} c_{ij} + \varepsilon_{ik}$. Only use households near the poverty line for this regression. We used only households for which $0.8<c_{ij}<1.2$.
4. Predict the quantity consumed for each product at the poverty line ($\hat{q}_k$). $\hat{q}_k = \alpha_{0k} + \alpha_{1k}$
5. Calculate the calorie content of this basket $cal = \sum_k \hat{q}_k u_k$, , where uk is the unit calorie content of product k.
6. Scale the quantities in the basket so that the basket yields 2,100 calories. $\bar{q}_k = \hat{q}_k (2{,}100/cal)$. This is the food basket for the poverty line.
7. For each region *j* and for each product *k*, do a quantile regression of unit prices on real per capita consumption. Do not apply weights in this regression. $p_{ijk} = \beta_{0jk} + \beta_{1jk} c_{ij} + \upsilon_{ij}$ where p_{ijk} is the unit price paid by household *i* in region *j* for product *k*. Median(υ_{ij})=0.
8. Calculate the predicted unit price paid for product k in region j at the poverty line. $\hat{p}_{jk} = \beta_{0jk} + \beta_{1jk}$.
9. Price the food basket for each region. This is the food poverty line $z_j^f = \sum_j \bar{q}_k \hat{p}_{jk}$
10. Estimate an Engel curve for the food share (*s*). $s_j = \alpha_j + \beta_j \log(y_j / z_j^f) + error\,term_j$ and calculate the poverty line as $z_j = z_j^f (2 - \alpha_j)$
11. Start at step 1 using the new z_j as priors.

Table A1: Various Parameters of Food Items in Poverty Basket							
No.	Commodity	Unit	Quantity Expansion of Income	Price Expansion of Income	Calories per Quantity	Rupiah per Calorie	Expenditure Share
1	Dried cassava flour	Kg	-0.701	0.076	3630	0.33	0.001
2	Dried cassava	Kg	-0.174	0.129	3380	0.37	0.001
3	Dryshelled corn	Kg	-0.694	0.163	3200	0.45	0.010
4	Cassava	Kg	-0.040	0.246	1309	0.48	0.009
5	Sweet potatoes	Kg	-0.037	0.235	1252	0.63	0.003
6	Coconut / cooking oil	Litre	0.590	-0.010	6960	0.64	0.024
7	Rice	Kg	0.063	0.103	3622	0.73	0.435
8	Brown sugar	Ounce	0.234	0.099	377	0.84	0.005
9	Glutinous rice	Kg	-0.065	0.236	3605	0.94	0.001
10	Cane sugar	Ounce	0.415	-0.013	364	1.00	0.045
11	Wheat flour	Kg	0.370	-0.006	3330	1.04	0.003
Average rupiah/calorie of poverty basket						**1.08**	
12	Coconut	Unit	0.213	0.164	1335	1.28	0.021
13	Candle-nut	Ounce	0.310	0.049	636	1.38	0.004
14	Peanuts without shell	Kg	0.356	0.062	4520	1.64	0.003
15	Crisps	Ounce	0.335	0.147	453	1.72	0.006
16	Cassava leaf	Kg	0.020	0.147	635	1.80	0.007
17	Boil or steam cake	Unit	0.434	0.332	138	1.80	0.012
18	Zalacca	Kg	0.541	0.260	1351	1.96	0.003
19	Fermented soybean cake	Kg	0.281	0.018	1430	2.17	0.029
20	Instant noodle	80 gr	0.688	0.019	356	2.18	0.019
21	Cookies	Ounce	0.682	0.131	426	2.48	0.005
22	Ambon banana	Kg	0.335	0.168	644	2.93	0.006
23	Sweet canned liquid milk	397 gr	0.376	-0.001	1334	3.02	0.007
24	Young jack-fruit	Kg	0.159	0.219	408	3.11	0.002
25	Papaya	Kg	0.328	0.186	345	3.25	0.005
26	Pork	Kg	0.285	0.264	4165	3.37	0.003
27	Other bread	Unit	0.583	0.252	162	3.47	0.008
28	Tofu, soybean curd	Kg	0.344	0.037	800	3.49	0.022
29	Fish paste	Ounce	0.114	0.029	250	4.02	0.005
30	Broiler meat	Kg	0.590	0.023	3020	4.09	0.016
31	Local chicken meat	Kg	0.437	0.071	3020	4.34	0.008
32	Powdered coffee	Ounce	0.320	0.156	352	4.85	0.017
33	Canned powder milk	Kg	0.497	0.063	5090	5.23	0.006
34	Duck egg	Unit	0.570	0.104	125	5.54	0.003
35	Broiler egg	Kg	0.582	0.021	1371	6.07	0.031
36	String bean	Kg	0.143	0.144	276	7.85	0.009
37	Beans	Kg	0.021	0.227	306	7.89	0.002
38	Mango	Kg	0.373	0.450	365	7.93	0.001
39	Anchovies	Kg	0.348	0.090	740	8.35	0.004
40	Eastern tuna / skipjack tuna	Kg	0.214	0.274	904	8.94	0.012
41	Milk fish	Kg	0.333	0.124	1032	8.96	0.007
42	Indian mackerel	Kg	0.183	0.224	824	9.07	0.012
43	Trimmings	Kg	0.410	0.074	1280	9.79	0.001
44	Tea	Ounce	0.306	0.080	132	9.90	0.009
45	Beef	Kg	0.513	0.126	2070	10.55	0.010
46	Spinach	Kg	0.246	0.117	114	13.53	0.008
47	Tomato	Ounce	0.421	0.043	19	18.52	0.005
48	Cayenne pepper	Ounce	0.243	0.097	88	19.21	0.022
49	Onion	Ounce	0.553	0.037	35	31.94	0.023
50	Chillies	Ounce	0.500	0.132	26	71.51	0.021
51	Salt	Ounce	0.112	0.120	0	-	0.006
52	Cigarettes	Unit	0.712	0.199	0	-	0.069

Table A2: Poverty Lines in February 1999, in Rp/month (Results of iterative method)			
Province	Urban	Rural	Total
Aceh	74,087	70,199	71,008
North Sumatera	83,462	74,460	78,186
West Sumatera	85,361	78,499	80,227
Riau	92,643	82,033	85,693
Jambi	85,216	77,004	79,260
South Sumatera	85,579	79,962	81,667
Bengkulu	86,026	77,966	80,056
Lampung	88,877	78,637	80,265
Jakarta	102,814	-	102,814
West Java	94,405	86,024	89,635
Central Java	85,009	78,461	80,566
Yogyakarta	92,644	83,304	87,933
East Java	85,024	80,020	81,637
Bali	97,794	94,405	95,580
West Nusa Tenggara	87,783	84,718	85,296
East Nusa Tenggara	84,144	77,856	78,739
East Timor	97,017	90,621	91,235
West Kalimantan	93,380	87,982	89,155
Central Kalimantan	95,514	85,587	87,842
South Kalimantan	86,921	82,932	84,139
East Kalimantan	96,070	92,977	94,533
North Sulawesi	87,474	82,179	83,581
Central Sulawesi	81,251	76,802	77,784
South Sulawesi	84,561	74,376	77,274
Southeast Sulawesi	86,630	80,279	81,718
Maluku	102,797	100,169	100,821
Papua	88,486	97,129	94,906
Indonesia	90,490	81,184	84,537

Table A3: Number of Poor People in February 1999 (Results of iterative method)			
Province	Urban	Rural	Total
Aceh	55,983	470,401	526,384
North Sumatera	572,722	1,225,916	1,798,638
West Sumatera	114,432	315,504	429,936
Riau	134,446	253,719	388,165
Jambi	122,013	441,684	563,697
South Sumatera	341,459	1,493,688	1,835,147
Bengkulu	46,209	266,087	312,296
Lampung	254,381	2,321,018	2,575,399
Jakarta	268,179	-	268,179
West Java	4,210,930	7,075,401	11,286,331
Central Java	2,586,788	7,496,727	10,083,515
Yogyakarta	448,455	366,091	814,546
East Java	2,408,028	9,218,412	11,626,440
Bali	129,632	281,861	411,493
West Nusa Tenggara	235,570	1,383,319	1,618,889
East Nusa Tenggara	143,674	2,185,343	2,329,017
East Timor	22,766	478,403	501,169
West Kalimantan	54,711	1,139,976	1,194,687
Central Kalimantan	23,486	170,420	193,906
South Kalimantan	76,310	556,054	632,364
East Kalimantan	112,374	434,927	547,301
North Sulawesi	93,416	530,185	623,601
Central Sulawesi	91,204	504,834	596,038
South Sulawesi	426,454	1,379,038	1,805,492
Southeast Sulawesi	59,972	566,337	626,309
Maluku	114,182	949,300	1,063,482
Papua	33,296	1,118,298	1,151,594
Indonesia	13,181,072	42,622,943	55,804,015

Table A4: Poverty Lines in February 1996, in Rp/month (Food share of poverty basket, Susenas unit prices)			
Province	Urban	Rural	Total
Aceh	31,234	28,096	28,749
North Sumatera	34,295	29,867	31,700
West Sumatera	34,911	29,971	31,215
Riau	37,828	33,301	34,863
Jambi	36,946	32,033	33,383
South Sumatera	33,203	29,544	30,655
Bengkulu	34,530	30,289	31,389
Lampung	32,842	28,768	29,416
Jakarta	41,860	-	41,860
West Java	39,070	33,675	35,999
Central Java	35,532	31,712	32,940
Yogyakarta	37,213	33,298	35,238
East Java	33,774	30,413	31,499
Bali	37,525	35,502	36,204
West Nusa Tenggara	34,854	32,483	32,931
East Nusa Tenggara	36,780	33,653	34,092
East Timor	43,012	38,181	38,645
West Kalimantan	37,966	34,112	34,949
Central Kalimantan	37,816	31,089	32,617
South Kalimantan	36,983	32,482	33,844
East Kalimantan	38,277	35,599	36,946
North Sulawesi	35,924	30,508	31,943
Central Sulawesi	32,286	29,069	29,779
South Sulawesi	32,235	27,441	28,805
Southeast Sulawesi	33,747	29,281	30,293
Maluku	42,163	37,598	38,731
Papua	42,872	44,702	44,231
Indonesia	36,887	31,645	33,534

Table A5: Number of Poor People in February 1996 (Food share of poverty basket, Susenas unit prices)			
Province	Urban	Rural	Total
Aceh	26,125	254,669	280,794
North Sumatera	170,098	752,394	922,492
West Sumatera	26,163	129,781	155,944
Riau	34,409	185,617	220,026
Jambi	48,028	143,154	191,182
South Sumatera	44,062	590,293	634,355
Bengkulu	17,001	128,436	145,437
Lampung	79,847	1,070,059	1,149,906
Jakarta	71,692	-	71,692
West Java	1,427,043	3,272,548	4,699,591
Central Java	1,171,987	5,073,686	6,245,673
Yogyakarta	189,435	295,951	485,386
East Java	1,030,108	5,409,618	6,439,726
Bali	50,144	201,685	251,829
West Nusa Tenggara	142,112	1,180,365	1,322,477
East Nusa Tenggara	109,317	1,741,661	1,850,978
East Timor	10,991	452,691	463,682
West Kalimantan	45,454	734,519	779,973
Central Kalimantan	8,458	55,788	64,246
South Kalimantan	43,452	202,083	245,535
East Kalimantan	8,886	143,701	152,587
North Sulawesi	48,019	462,176	510,195
Central Sulawesi	24,751	258,152	282,903
South Sulawesi	126,198	1,018,046	1,144,244
Southeast Sulawesi	41,973	336,671	378,644
Maluku	54,468	654,517	708,985
Papua	35,063	948,090	983,153
Indonesia	5,085,284	25,696,351	30,781,635