

Appendix A

Macro versus micro data

Table 4 displays the average incomes for seven income groups (D_1 to D_7) calculated from the micro Susenas (Indonesia) and NSS (India) data sets (columns A and D). We calculated the incomes in columns B and E by aggregating total household incomes from the micro data and applying the WDI income distributions for 2005 (i.e. as in Table 1). Finally, for comparison, columns C and F in Table 4 present the same incomes that are listed in Table 1.

The results presented in Table 4 clearly show that the average incomes obtained from the macro data are much higher (by a factor 1.5 to 2.5) than the ones obtained from the micro data. This can explain the low poverty estimates obtained when calculations are based on macro data.

Macro methods applied to micro data

To further investigate whether the different results could be reflecting methodological differences, we applied macro methods to the aggregate incomes as computed from micro data (columns A, B, D, E in Table 4) to calculate the proportion of the population below the PL (I_{pre}), the rates of impoverishment ($I_{post} - I_{pre}$) and the proportion at risk of facing catastrophic payments (X_{cat}) (Table 5). To see if the income distribution (D) used caused the results to differ, we calculated D with both micro and macro data sets.

When we applied macro methods to micro data (both Y and D), the proportion of the population living below the PLs (I_{pre}) in both India and Indonesia was found to be lower than when we applied micro methods to micro data (Table 1). In Indonesia, I_{pre} was 28.8% and 60.0% respectively. In India I_{pre} was 51.9% and 78.3%, respectively (Table 5, Panel A).

Impoverishment rates ($I_{post} - I_{pre}$; see table 5 Panel B) in Indonesia (5.7% and 3.5%, respectively, for the US\$ 1.25 and US\$ 2.00 PLs) were lower than when we applied micro methods to micro data (Table 1). In India, Impoverishment rates ($I_{post} - I_{pre}$) are only lower at the US\$ 1.25 USD PL (i.e. 4.4% compared to 5.1% in Table 1). However, at the US\$ 2.00 PL we find $I_{post} - I_{pre}$ to be higher (i.e. 2.2% compared to 1.9% in Table 1) when applying the macro methods. The explanation for

this is that a parallel shift downwards of the linear function in Fig. 1 (macro methods) causes a larger shift over the income distribution (D) than when using the real D with a convex curve (micro methods), because the latter is steeper between higher income groups. Thus, whereas the macro methods cause the proportion below the poverty line (I_{pre}) to be lower, this is not necessarily the case for the impoverishment rate ($I_{\text{post}} - I_{\text{pre}}$), especially in higher income regions where the convex curve likely will be steeper. The proportion of the populations in Indonesia and India at risk of catastrophic expenditures drops to 63.9% and 76.4%, respectively (compared to 65.9% and 78.6% in Table 1).

Using the income distribution (D) from the macro data shows the results to be slightly different. In Indonesia the proportion below the poverty line (I_{pre}) increases slightly to 34.4% and 63.4% and the impoverishment rates ($I_{\text{post}} - I_{\text{pre}}$) drop further to 5.4% and 3.2%. In India I_{pre} also increases to 55.0% and 80.6% below the PLs of US\$ 1.25 and US\$ 2.00, respectively. However, $I_{\text{post}} - I_{\text{pre}}$ for the two poverty lines increases to 4.6% and 2.3%. For both Indonesia and India, up to income group D_6 , (apart from D_1 in India) all the average incomes in columns B and E are lower than those in columns A and D. For income group D_7 it is the other way around. Thus, compared to the micro income distribution (D), in this case D from the WDIs is more skewed in favour of the rich. As a result the proportion below the PLs (I_{pre}) and the proportion confronted with catastrophic payments (X_{cat}) are higher. For the impoverishment rates ($I_{\text{post}} - I_{\text{pre}}$) on the other hand, this does not matter much as this figure does not depend on the absolute level of the income (but a shift over the same income distribution). The reasons for $I_{\text{post}} - I_{\text{pre}}$ to be higher for the 2.00 USD PL in India is the same as explained in the previous paragraph, i.e. the parallel shift equal to the price of a medicine (P) over a linear line takes up a larger portion of the income distribution D than the same shift over a convex curve.

The proportion of the populations in Indonesia and India at risk of catastrophic expenditures increases to 68.1% and 78.8% respectively (compared to 65.9% and 78.6% in Table 1).

Table 4. Average incomes (Indonesia and India) per income group for micro & macro level data with both micro and macro income distributions

Income group	Indonesia (IDR)				India (INR)	
	Income source (Y)		Micro ^a	Macro	Micro ^b	Micro ^b
	Distribution (D)	Micro ^a	Macro	Macro	Macro	Macro
		A	B	C	D	E
D ₁ - Poorest decile		2,876	2,556	6,649	7.96	8.13
D ₂ - Second poorest 10%		3,908	3,540	9,209	10.63	9.91
D ₃ - Second 20%		5,008	4,580	11,914	13.46	12.58
D ₄ - Third 20%		6,666	6,131	15,949	17.58	16.68
D ₅ - Fourth 20%		9,073	8,720	22,683	23.95	22.74
D ₆ - Second richest 10%		12,755	12,752	33,172	33.33	31.73
D ₇ - Richest 10%		24,407	27,554	71,679	60.78	69.51
						112.96

Macro: World Development Indicators.

^a Susenas.

^b NSS.

Table 5. macro methods on micro data

Panel A: Proportion below PL

Distribution (D) from	Year	country / PLs	below PL (Ipre)			
			micro		macro	
			<u>IDR 4918</u>	<u>IDR 7869</u>	<u>IDR 4918</u>	<u>IDR 7869</u>
	2005	Indonesia ^a	28.8%	60.0%	34.4%	63.4%
	2000	India ^b	<u>INR 18.20</u>	<u>INR 29.12</u>	<u>INR 18.20</u>	<u>INR 29.12</u>
			51.9%	78.3%	55.0%	80.6%

^a Susenas.

^b NSS.

Panel B: impoverishment rates (Ipost - Ipre) & catastrophic expenditure (X_{cat}) at 5% of an individual's total resources

Distribution (D) from	Year	Country /PLs	Impoverished (Ipost - Ipre)			
			Micro		Macro	
			<u>IDR 4918</u>	<u>IDR 7869</u>	<u>IDR 4918</u>	<u>IDR 7869</u>
	2005	Indonesia ^a	5.7%	3.5%	5.4%	3.2%
			<u>INR 18.20</u>	<u>INR 29.12</u>	<u>INR 18.20</u>	<u>INR 29.12</u>
	2000	India ^b	4.4%	2.2%	4.6%	2.3%
			catastrophic expenditure (X _{cat}) at 5%			
	2005	Indonesia ^a	63.9%		68.1%	
	2000	India ^b	76.4%		78.8%	

^a Susenas.

^b NSS.