

Thailand's Official Poverty Lines*

National Economic and Social Development Board

ABSTRACT

Thailand uses poverty line and head count ratio in measuring its poverty incidence. Current poverty line, using methodology proposed by Nanak Kakwani and Methi Krongkaew with financial support from ADB, comprises of food and non-food components. Household that has average per capita income below poverty line was considered as income poor. Food poverty line is calculated from cost of food basket in obtaining recommended calorie intake of each individual taking into account age and sex. While Engle's Law is applied for calculating non-food poverty line, a country uses estimated ratio of food poverty line to total expenditure. Presently, there is ongoing process, with technical assistance from UNDP and Thailand Development Research Institute, to revise official poverty line in three aspects: First is to update spatial price index which used to adjust for regional price differences from 1992 price to 2002 price. Second is to fine-tune food and non-food ratio, using utility concept. Calculation of non-food poverty line will be based on nine basic items, i.e., clothing and footwear, shelter, fuel and light, household goods, medical, personal care, transport, communication, and education. To which, cost of consumption of these nine items would yield the same utility as obtained from food poverty line. Finally, it will update consumption pattern and recommended dietary allowance, reflecting post crisis and current dietary practice of Thai population.

* National Economic and Social Development Board with technical assistance from UNDP and Thailand Development Research Institute.

Poverty is chronic social problem, and is one of national development agenda. The current government set ambitious target aiming to eradicate poverty problem within 5 years period. The Office of Economic and Social Development is among public agencies that issue policy response to poverty problem. While recognizing complex dimension of poverty, it uses poverty line as a tool to monitor and to measure poverty incidence.

I. Estimating Current Thailand's Official Poverty Lines.

Methodology for calculating the official poverty line was developed by Kakwani and Krongkeaw (1998). The official poverty line is considered an absolute concept, based on cost of basic needs, which is the sum of food and non-food items. A household is classified as poor if its per capita income is less than the household specific poverty line.

1.1 Defining Food Poverty Lines

The food poverty line is derived from estimation cost of food baskets—in obtaining calorie requirements of individual household. To which, per capita household calorie requirement is defined by aggregating a required calories per day of each household member with respect to their age and sex. This household calorie requirement is converted into money metric terms, i.e., amount of calories that can be bought with one baht.

$$\text{Step (1)} \quad CAL_h = \sum_{i \in h} CAL_i$$

$$\text{Step (2)} \quad CALBHT_r(rural) = \left[\sum_{s=rural} \left(\frac{cq_s}{E_{rs}} \right) \right] / 5$$

Where, c is conversion vector used to translate the amount of each food items consumed into calorie numbers; q_s is the quantity vector of food (non-food) basket in region s ; and, E_{rs} is thus food (non-food) total expenditure in region s using price of region r .

- Cost of calories was constructed, using food baskets and spatial price indices in 1992. It is noted that the spatial price indices were constructed for the year 1992. The updating for the other year is done using the food and non-food CPI.

- Cost of calories was based on average sanitary baskets in different regions (since the sanitary baskets are more cost efficient than the municipal baskets).

- Cost of calories for other year is updated using the food price indices.

These will yield food poverty line: Food Poverty line = [calorie requirement (from step 1) * 30days] / calories obtained per Baht (from step 2)

$$\text{Step (3)} \quad FPL_h = \frac{CAL_h}{CALBHT_r}$$

1.2 Calculating Non-Food Poverty Lines

Engle's Ratio is applied for calculating non-food poverty line. The non-food poverty line is calculated by using the estimated food to total expenditure ratio. Assuming, food consumption accounts for 60 % of total consumption at the poverty lines, then adjusted for regional price differences.

1.3 Calculate the Total Poverty Lines

Household specific poverty line is sum of food and non-food poverty line. To which, non-food poverty line is two-third of food poverty line.

$$\begin{aligned} \text{Step (4)} \quad PL_h &= FPL_h + NFPL_h \\ &= FPL_h \cdot \left(1 + \frac{2}{3} \cdot \frac{SPInf_r}{SPIf_r} \right) \end{aligned}$$

Where, $NFPL_h$ is non-food poverty line for household h , $SPInf_r$ is non-food spatial price index for region/area r , and $SPIf_r$ is food spatial price index for region/area r .

1.4 Poverty Line and Poverty Incidence: Using Current Method

Using the official method for the year 1988-2002, poverty lines in Thailand were equivalent to an average of 473 baht/person/month in 1988, and 922 baht/person/month in 2002. In this connection, poverty incidence in Thailand gradually declined from 32.6 percent of total population or 17.9 million people, in 1988, to 11.4 percent or 6.8 million people, in 1996. However, economic crisis in 1997 resulted in an increasing of poverty incidence to 13 percent in 1998 with additional 1.2 million of new poor. Then, it deepened further to 14.2 percent in 2000. As poverty reduction has always been of high priority to government. Various interventions has been undertaken to strengthen grass root economy as well as reduce poverty incidence. As a result, poverty incidence declined to 9.8 percent in 2002, a comparable level that had been achieved before economic crisis. Table 1 and 2 present the poverty lines and poverty incidences for period 1988-2002.

II. Some Considerations on Current Thailand's Official Poverty Lines.

Current method in developing poverty line was criticized by many scholars of its appropriateness in reflecting current situation. Since Thailand faced with economic crisis in July 1997 which resulted in significant change in consumption pattern of Thais. Some of its weakness could be summarized as follows:

2.1 Data Used

Data required for calculating poverty line, especially the food baskets, the spatial price indices, and the calories cost obtained per Baht were constructed using 1992 consumption pattern and commodities' price as the base year. Because of changes in Thai society and economy and in government policies since 1992, the poverty measure may not reflect the current consumption patterns and the differences in current costs of living between regions. Therefore, the base year should be changed.

Moreover, there have been changes in classification of areas used in Social-Economic Survey of Household (SES). In 2001, Ministry of Interior re-classified administrative areas, from three areas (municipal, sanitary, and villages) to two areas (municipal and rural). In previous survey, there was no "actual" rural price. Thus, the sanitary baskets were used as the representative of the poor bundles. Therefore, such changes in the survey affected food baskets representing the consumption pattern of the poor.

2.2 Technique Used

Furthermore, there were criticisms regarding technique used in calculating the official poverty line. Jitsuchon and Plangpraphan (2001) argued that the current method with the assumption that the ratio of food consumption is 60 percent of total expenditure does not allow for the adjustment in consumption behavior especially in the case of the aftermath of the 1997 economic crisis where the relative price of food to non-food changes substantially. Some suggestions were to use the actual share of food expenditure of the poorest 20 percent of population to calculate poverty line instead of the current method (with the assumption that the ratio of food consumption is 60 percent of total expenditure). Other suggests using the actual expenditure data. Other debates such as the use of proper baskets as representing the least cost consumption pattern and the use of income versus consumption deprivation as a measurement of poverty still remain.

III. Revising Official Poverty Lines*

Recently, a country has revised methodology in developing new poverty line with technical assistance from UNDP and Thailand Development Research Institute. Though, both the current poverty line and the proposed new poverty line apply common concept of absolute poverty, based on cost of basic needs—the sum of food and non-food consumption. However, poverty incidence will be measured both household income

* Note: Proposed new methodology developed by Dr.Somchai Jitsuchon, Director of Macroeconomic Policy Program, Thailand Development Research Institute, in closed consultation with Prof.Nanak Kakwani, Director, Institute of Poverty Studies, UNDP.

as well as household consumption expenditure against household poverty line. Relative poverty will also be introduced. The proposed poverty line will be improved on the following aspects.

3.1 Calculating Food Poverty Line

3.1.1 Change in Nutritional Requirement

However, in 2003, Nutrition Division, Department of Health, updated a recommended nutritional requirement per day for Thais, as shown in Table 3. Thus, poverty line should capture this change whether to update the whole series, or, to begin in 2002, as to reflect this change in dietary practice of the Thais.

3.1.2 Change in Spatial Price Index

Current poverty line used consumption pattern and price of commodities in 1992 as base year, with which ten years differences may be inappropriate to reflect consumption, life style, and living standard of this new millennium. Therefore, consumption pattern and commodities price of 2002 was employed, using consumption pattern of 1st income quintile as reference.

Calculating food cost

Price normalization:

$$P_{ri} = \frac{P_i}{P_r} \cdot P_r$$

$$P_i = \frac{\sum_{r=1}^9 P_{ri}}{\sum_{r=1}^9 P_r} \cdot P_r$$

Calorie cost by household quintile:

$$Cal_{qE} = \sum_i P_{ri} \cdot E_{qi} \cdot C_{qi} \cdot H_{ri} / P_r$$

$$B_{qC} = \sum_i C_{qi} \cdot H_{ri} / P_r$$

Food spatial price by quintile and region:

$$S_{Pq} = \frac{\sum_i P_{ri} \cdot E_{qi} \cdot C_{qi} \cdot H_{ri}}{\sum_i H_{ri}}$$

Using calorie cost of households in 1st quintile by region:

$$B_{qC} = B_{qC} \cdot S_{P1} \cdot H_{r1} \cdot 0.0$$

Where:

i =food item; P_r =Prices; r =region; q =HH quintile; f_r =regional population;
 E_{qi} =Expenditure; C_{qi} =calorie contents

Calculating Food Poverty Line

$$Cal_{req} = \sum_{m \in h} r_{eq} \cdot H_h \cdot S_h$$

$$FL_{req} = Cal_{req} \cdot B_{qC} \cdot H_h \cdot S_h^* \quad (\theta_f = 0)$$

Where:

h =Household; m =household members; HS_h =Household size; $\theta_f = 0$.

3.2 Using Economy of Scale Concept

$$EE_{hn} = E_{hn} * HS_h^{(\theta_n - 1)}$$

Where:

EE_{hn} : per capita expenditure (n) with economy of scale

E_{hn} : per capita expenditure (n)

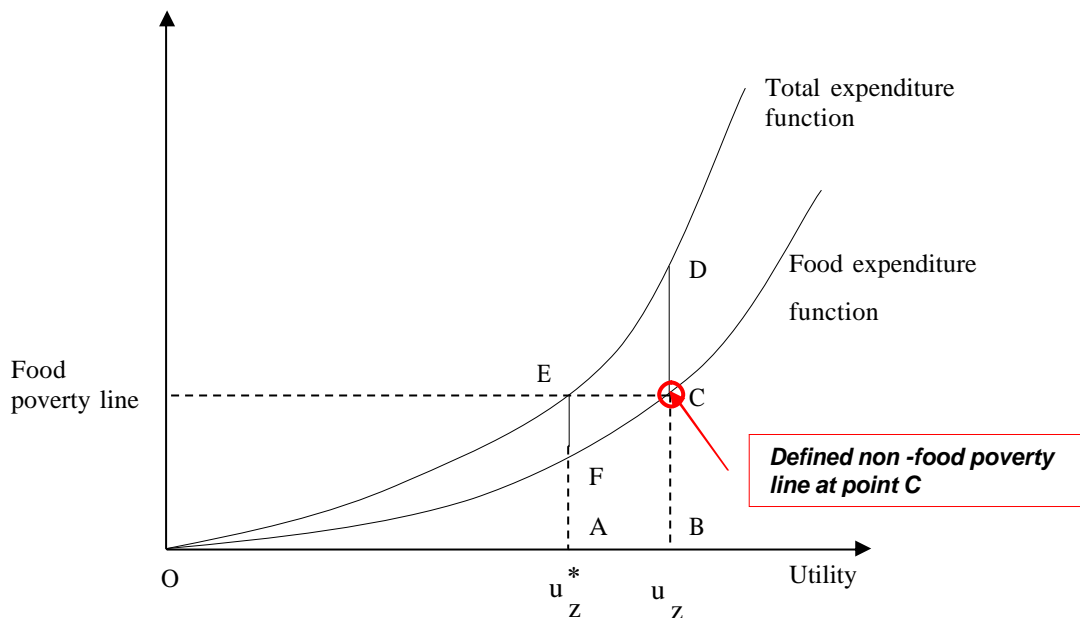
HS_h : household size

θ_n : economy of scale parameter for (n)

3.3 Change Technique in Calculating Non-food poverty line

Current method applies Engel's law by using fixed ratio of food poverty line and non-food poverty line. The proposed new poverty line adopts utility approach in calculating non-food poverty line. Calculation of non-food poverty line will be based on nine basic items, i.e., clothing and footwear, shelter, fuel and light, household goods, medical, personal care, transport, communication, and education. To which, cost of consumption of these nine items would yield the same utility as obtained from food poverty line.

Determining non-food poverty lines



$$F_{wel} = F_{Exp} + F_{line} = 100$$

$$MNFPL_{hnr} = \text{Average} \sum_{h \in \Psi} MNFPL_{hnr} = 9$$

Where:

- F_{Exp} =total food expenditure;
- n = non-food item;
- $MNFPL_{hnr}$ =non- food expenditure;
- Ψ is a set of HH with $9 \leq F_{wel} \leq 100$

Applying Economy of Scale in Non-food Poverty Line

$$NFP L_{hnr} = \sum_{n=1}^9 MNF P L_{hnr} \quad (0,1-)$$

3.4 Total Poverty Line

Poverty line is sum of food and non-food poverty line.

$$P L i_{hnr} = F L i_{hnr} + N f L i_{hnr}$$

IV. Comparing Results of Current Official Poverty Lines and Proposed New Poverty Line and Next Steps.

As results of proposed changes, Thailand's poverty line, average for whole kingdom, in 2002 shifted from 922 baht/person/month to 1,163 baht/person/month. This raised poverty incidence from 9.97 percent to 15.33 percent, when compared with household per capita income, and to 14.38 percent, when compared with household per capita consumption expenditure. Table 4 and 5 showed proposed new poverty line as outcome of revised methodology. Figure 1 compared current official poverty lines with proposed new poverty lines, while, figure 2 presented poverty incidences deriving from these different methods. Currently, NESDB in collaboration of TDRI are in a process of fine-tune technique and of disseminating public information, for better understanding about the newly proposed methodology for developing national poverty line. This technique will be applied for calculating 2004 poverty line. To which, its products—poverty incidence, profile of the poor and etc.—will be presented to Board of NESDB and reported to cabinet, respectively.

References

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Table 1: Thailand's Official Poverty Lines 1988-2002

Region/Areas	Poverty Lines (baht per capita per month)								
	1988	1990	1992	1994	1996	1998	2000	2001	2002
Central	476	526	599	622	714	876	882	925	930
Rural/Non-Municipal	462	509	581	601	691	864	856	862	866
Urban/Municipal								1,082	1,089
Old Municipal	592	659	744	784	895	968	1,059		
Old Sanitary District	466	508	585	603	698	871	861		
North	459	498	563	581	702	791	777	828	830
Rural/Non-Municipal	448	486	549	566	696	779	758	781	783
Urban/Municipal								1,011	1,009
Old Municipal	585	626	706	752	846	938	996		
Old Sanitary District	445	485	555	569	662	781	766		
Northeast	443	477	577	611	698	880	864	890	898
Rural/Non-Municipal	435	469	570	599	687	869	850	856	864
Urban/Municipal								1,059	1,068
Old Municipal	597	641	734	773	883	1,064	1,057		
Old Sanitary District	439	472	571	607	696	871	857		
South	466	518	582	624	716	843	841	879	890
Rural/Non-Municipal	441	492	553	593	684	804	797	806	819
Urban/Municipal								1,123	1,129
Old Municipal	620	682	763	829	951	1,108	1,100		
Old Sanitary District	446	496	559	596	706	812	805		
Bangkok	587	684	752	835	950	1,019	1,101	1,109	1,112
Bangkok Vicinity	506	604	666	658	774	935	972	1,027	1,021
Rural/Non-Municipal	474	537	596	614	710	894	884	896	886
Urban/Municipal								1,113	1,110
Old Municipal	568	681	749	838	931	1,015	1,107		
Old Sanitary District	469	510	591	620	721	895	890		
Whole Kingdom	473	522	600	636	737	878	882	916	922
Rural/Non-Municipal	445	485	566	592	690	840	825	835	841
Urban/Municipal								1,086	1,090
Old Municipal	590	672	746	816	930	1,020	1,086		
Old Sanitary District	452	492	573	598	693	848	836		

Source: NESDB

Table 2: Poverty Incidence in Thailand 1988-2002

Regions/Areas	Poverty Incidence (Head-Count Ratio)								
	1988	1990	1992	1994	1996	1998	2000	2001	2002
Central	25.2	20.5	12.1	8.4	5.9	7	5.4	4.6	4.3
Rural/Non-Municipal	28.8	22.9	14.7	9.7	6.9	8.1	6.4	4.5	4.8
Urban/Municipal								5	3
Old Municipal	10.6	8.6	2.1	5.2	1.6	2.3	2		
Old Sanitary									
District	17.6	18.3	6.5	4.5	4.1	5.1	3.4		
North	32	23.2	22.6	13.2	11.2	9.1	12.1	10.6	9.8
Rural/Non-Municipal	34.3	25.5	25.9	15	13.1	10.2	13.9	11	10.9
Urban/Municipal								9	6
Old Municipal	14.3	11.3	5.2	3.8	3.6	3.3	3.4		
Old Sanitary									
District	29.1	16	12.1	7.4	3	5.1	6.6		
Northeast	48.4	43.1	39.9	28.6	19.4	24	28.1	24.5	17.7
Rural/Non-Municipal	51.6	45.9	42.4	31.4	21.1	26.2	30.7	26.5	18.9
Urban/Municipal								15	11
Old Municipal	19.2	19.1	13.8	6.7	3.6	4	6		
Old Sanitary									
District	28.2	24.9	25.4	18.5	12	14.2	19		
South	32.5	27.6	19.7	17.3	11.5	14.6	11	13.5	8.7
Rural/Non-Municipal	36.9	30.5	22.7	20	12.6	16.9	12.9	15.2	9.4
Urban/Municipal								8	6
Old Municipal	13.8	13.9	7.5	5.1	6.3	3	4		
Old Sanitary									
District	18.6	20.5	9.5	9.3	7.3	10.2	3.9		
Bangkok	3.8	3.3	1.9	0.6	0.3	1	0	1	1
Bangkok Vicinity	8.7	3	1.7	1.6	1	0.5	0.7	1	2
Rural/Non-Municipal	12.6	2.3	3	2.2	0.2	0.9	0.1	1.1	0.9
Urban/Municipal								1	2
Old Municipal	7.8	3.8	0.7	0	3.3	1	1		
Old Sanitary									
District	2.6	1.6	1.8	1.5	0	0	1.5		
Whole Kingdom	32.6	27.2	23.2	16.3	11.4	13	14.2	13	9.8
Rural/Non-Municipal	40.3	33.8	29.7	21.2	14.9	17.3	19.1	16.6	12.6
Urban/Municipal								6	4
Old Municipal	8	6.9	3.6	2.4	1.6	1	2		
Old Sanitary									
District	21.8	18.2	12.7	9.6	5.8	7.5	8.4		

Source: NESDB

Table 3: Comparing Recommended Dietary Allowance 1988 and 2003

Old Thai Recommended Dietary Allowance			New Thai Recommended Dietary Allowance		
Age Group	Male	Female	Age Group	Male	Female
			Less than 1 year	800	800
1-3	1200	1200	1-3	1000	1000
4-6	1450	1450	4-5	1300	1300
7-9	1600	1600	6-8	1400	1400
10-12	1850	1700	9-12	1700	1600
13-15	2300	2000	13-15	2100	1800
16-19	2400	1850	16-18	2300	1850
20-29	2787	2017	19-30	2150	1750
30-59	2767	2075	31-50	2100	1750
60+	1969	1747	51-70	2100	1750
			71+	1750	1550

Source: Nutrition Division, Health Department, Ministry of Public Health, 2003

Table 4: Poverty Line using proposed New Methodology, 1988-2002

Regions / Areas	Proposed New Poverty Line (baht/person/month)										
	1986	1988	1990	1992	1994	1996	1998	1999	2000	2001	2002
Bangkok	879	940	1,061	1,179	1,294	1,446	1,633	1,643	1,670	1,694	1,703
Central	624	686	749	842	880	997	1,193	1,204	1,206	1,222	1,230
Rural	596	659	718	807	839	952	1,152	1,170	1,164	1,177	1,180
Urban	694	749	818	916	966	1,087	1,272	1,269	1,288	1,310	1,326
North	572	618	667	753	784	893	1,045	1,045	1,042	1,065	1,075
Rural	548	594	640	724	749	857	1,008	1,007	999	1,022	1,033
Urban	668	715	770	868	922	1,033	1,189	1,192	1,211	1,233	1,236
Northeast	473	525	565	672	713	817	1,005	995	1,000	1,010	1,021
Rural	455	507	545	654	693	794	984	971	978	984	995
Urban	590	635	682	776	824	939	1,113	1,115	1,115	1,125	1,136
South	569	608	670	753	810	930	1,071	1,074	1,073	1,099	1,109
Rural	546	585	645	726	778	895	1,026	1,030	1,026	1,047	1,057
Urban	661	703	769	860	928	1,056	1,227	1,227	1,233	1,260	1,269
Whole Kingdom	581	634	693	790	839	953	1,130	1,131	1,135	1,153	1,163
Rural	519	570	618	713	749	857	1,032	1,031	1,030	1,045	1,054
Urban	740	792	873	975	1,048	1,176	1,353	1,355	1,370	1,385	1,396

Source: Jitsuchon, S., 2004, "A Framework for Revised Official Poverty Lines for Thailand", paper presented to UNDP and NESDB on Review of Thailand's Official Poverty Line Project.

Table 5: Poverty Incidence as products of proposed New Poverty Lines, 1988-2002

Regions / Areas	Poverty Incidence with respect to proposed new poverty line										
	1986	1988	1990	1992	1994	1996	1998	1999	2000	2001	2002
Bangkok	12.9	10.2	10.2	3.8	3.6	0.9	1.0	2.0	1.4	1.3	1.7
Central	34.0	34.0	25.5	17.5	11.5	6.3	7.9	9.1	9.2	6.9	7.2
rural	37.5	38.2	28.9	22.1	13.6	7.4	10.2	10.8	11.3	8.6	9.1
urban	25.5	24.5	18.1	7.5	7.1	4.2	3.4	5.8	5.4	3.6	3.5
North	47.6	49.5	36.8	34.0	22.2	19.4	17.8	20.0	24.7	23.2	20.2
rural	50.6	51.9	39.1	37.9	22.9	20.7	18.7	21.9	26.8	24.6	22.1
urban	35.4	39.7	27.7	18.9	19.5	14.5	14.4	12.4	16.7	18.1	12.9
Northeast	63.0	57.7	47.7	41.7	29.2	25.3	31.5	36.4	36.1	34.3	21.9
rural	67.1	61.9	50.6	44.8	31.8	27.3	34.3	39.9	39.3	38.0	24.4
urban	36.2	31.8	30.6	24.1	14.9	14.6	16.4	18.3	19.8	18.2	10.5
South	41.0	36.6	32.9	27.6	20.8	11.9	16.1	17.3	18.9	16.5	9.9
rural	46.6	40.8	36.1	31.7	23.4	12.9	18.6	19.4	22.3	19.4	11.6
urban	18.0	19.7	20.0	11.9	11.1	8.4	7.4	10.0	7.1	7.8	4.6
Whole Kingdom	45.5	43.1	34.7	28.9	20.1	15.6	18.3	20.9	21.9	20.0	14.4
rural	54.2	51.6	41.4	36.5	24.7	19.4	23.4	26.6	27.9	25.7	18.5
urban	23.2	22.1	18.8	11.0	9.3	6.6	6.7	8.0	8.3	8.0	5.5

Source: Jitsuchon, S., 2004, "A Framework for Revised Official Poverty Lines for Thailand", paper presented to UNDP and NESDB on Review of Thailand's Official Poverty Line Project.

Figure 1: Comparing Poverty Lines using Different Methodologies.

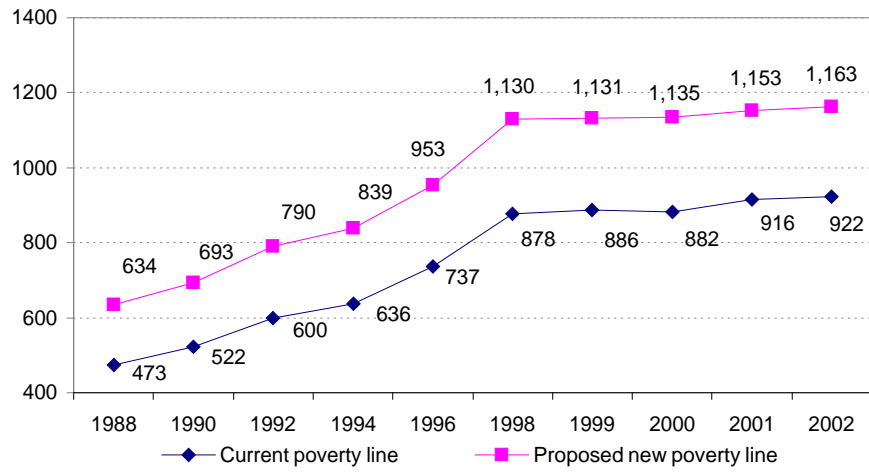


Figure 2: Comparing Poverty Incidences using Different Methodologies.

