



POVERTY LINES

Principles and Common Practices

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PLAN OF THE LECTURE

- ▶ Principles
- ▶ Methods
 - ▶ The Food Share Method
 - ▶ The Cost-of-Basic-Needs Method
- ▶ Conclusions



CONSISTENCY

- The single most important feature of a poverty line is **welfare consistency**.
- **consistency** requires that two households with the same standard of living are treated equally, irrespective of the time or place being considered: they should both be considered either poor or non-poor.



POVERTY LINES: A SIMPLE TAXONOMY

- A (non-operational) **definition** (Ravallion, 1998: 3):

“I shall define a poverty line as the monetary cost to a given person, at a given place and time, of a reference level of welfare. People who do not attain that level of welfare are deemed **poor**, and those who do are not”.

- Alternative methods of setting poverty lines:
 - 1) **subjective** *versus* **objective** poverty lines
 - 2) **absolute** *versus* **relative** poverty lines



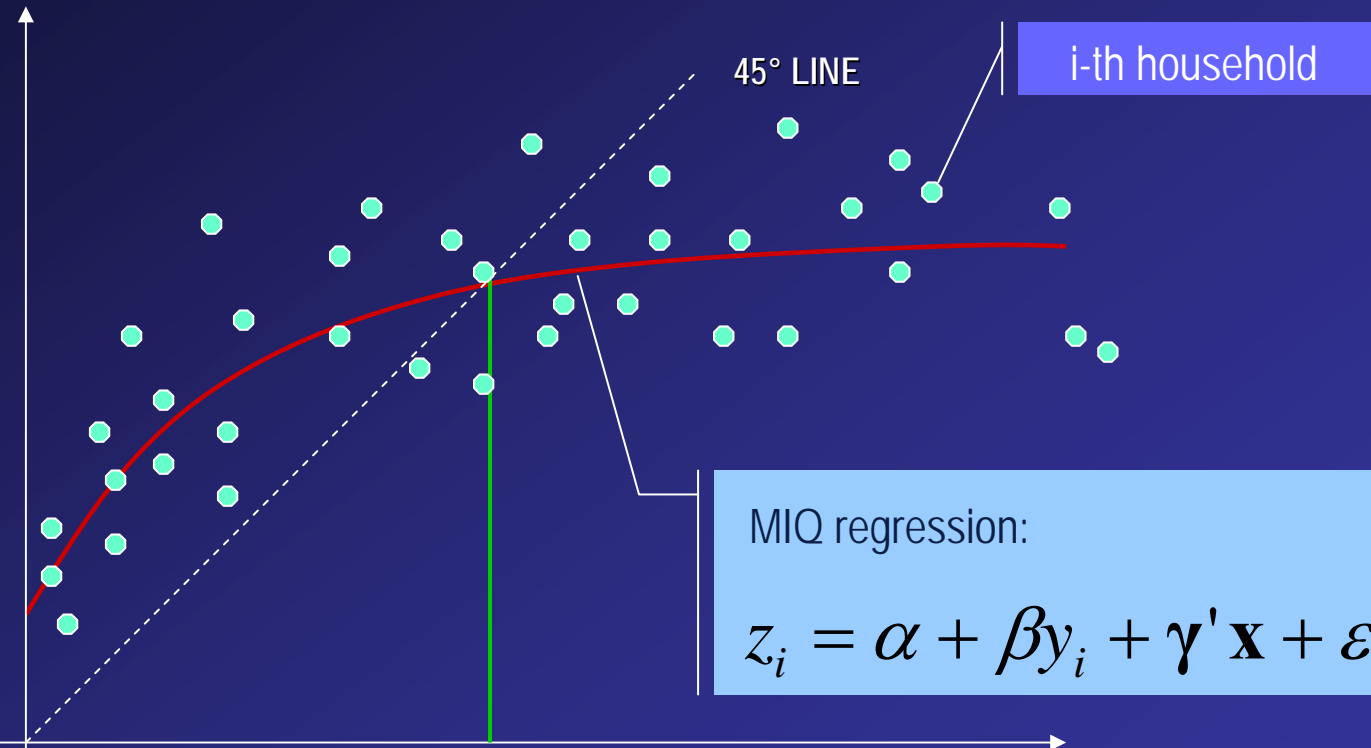
SUBJECTIVE POVERTY LINES (MIQ)

- Poverty lines are inherently **subjective judgments** people make about what constitutes a socially acceptable **minimum standard of living** in a particular society at a given time (Ravallion 1994: 42).
- The subjective poverty approach is based on the **self-assessed** adequacy of a family's food, housing, and clothing.
- Surveys ask the **Minimum Income Question (MIQ)**:
"What income level do you personally consider to be absolutely minimal? That is to say that with less you could not make ends meet?"



MIQ, OPERATIONALLY...

SUBJECTIVE
MINIMUM INCOME



i-th household

MIQ regression:

$$z_i = \alpha + \beta y_i + \gamma' \mathbf{x} + \varepsilon_i$$

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$$z^* = \frac{\alpha + \gamma' \mathbf{x}}{1 - \beta}$$

SUBJECTIVE POVERTY
LINE



SUBJECTIVE POVERTY LINES – ASSESSMENT

- Problem # 1
do households share the same **concept of 'income'**?
(very unlikely, and especially so in developing countries)
- Problem # 2
no guarantee of **consistent** inter-household welfare
comparisons: people with the same level of income but
with different answers can be classified differently.



ABSOLUTE VS. RELATIVE POVERTY

- An **absolute poverty line** is one which is fixed in terms of living standards (or welfare).
 - Example: cost of a bundle containing “basic commodities”, *however defined*.
- A **relative poverty line** is one which varies with the average standard of living.
 - Example: half the mean of per capita income.

RELATIVE POVERTY

From Adam Smith (1776) ... to the EU Social Protection Committee (2006)

- **A. Smith** (1776), *The Wealth of Nations*, (Book V, Ch. II, Part II, Article IV)

By **necessaries** I understand not only the commodities which are indispensably necessary for the support of life, but whatever **the custom of the country** renders it indecent for creditable people, even of the lowest order, to be without ...

- **P. Townsend** (1979), *Poverty in the United Kingdom*, (Ch. 1)

Poverty can be defined objectively and applied consistently only in terms of the concept of **relative deprivation**...



RELATIVE POVERTY

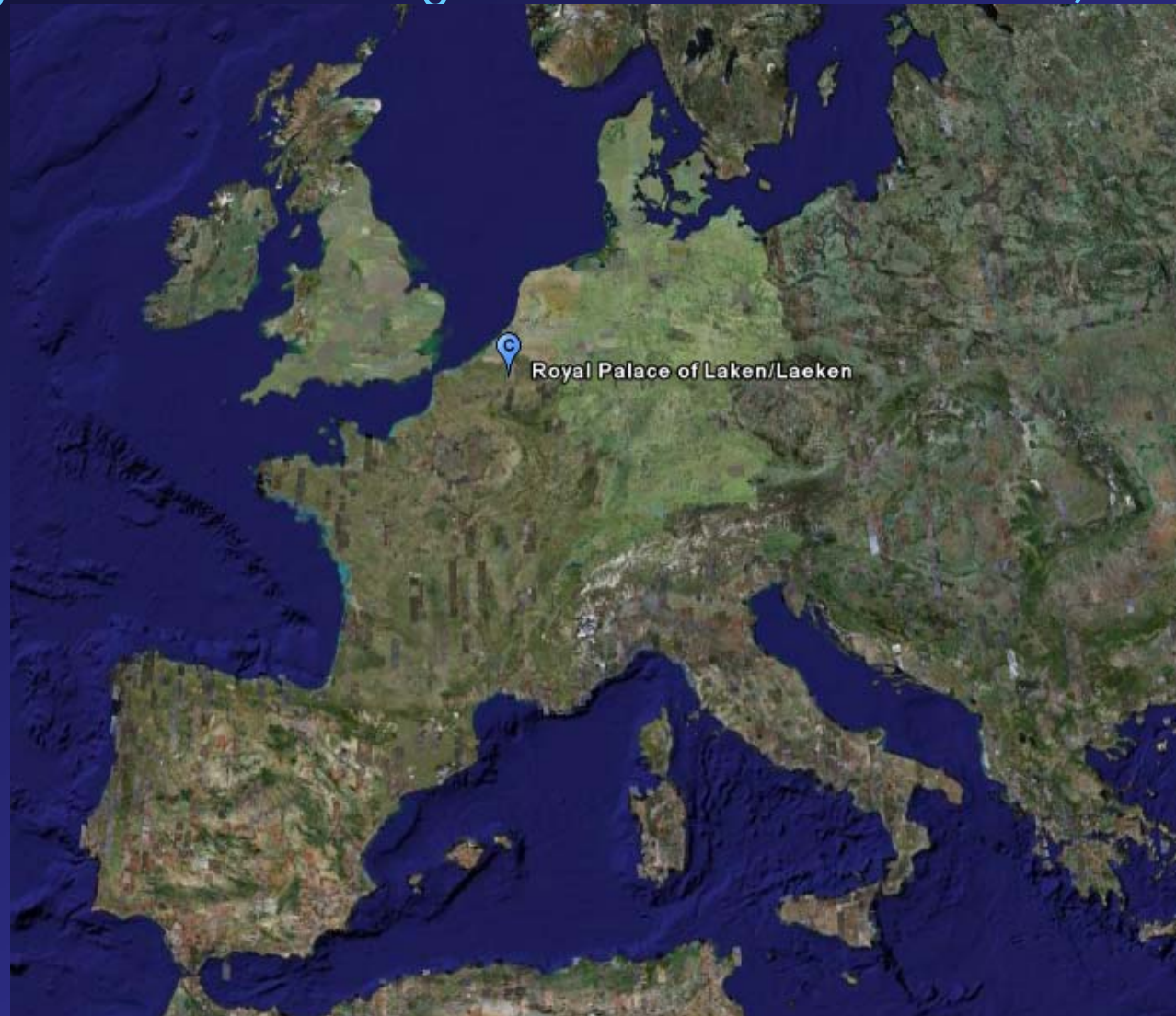
EU Roadmap

- Mar 2000 – European Council of Lisbon asks Member States to eradicate poverty by 2010.
- Jun 2000 – Member States establish an Advisory **Social Protection Committee (SPC)**
http://ec.europa.eu/employment_social/social_protection_committee/docs/decision_2000_en.pdf
- Oct 2001 – *The Report in the Field of Poverty and Social Exclusion*. Suggests the use of 18 statistical indicators of social exclusion and poverty.
- Dec 2001 – At the Laeken European Council, EU Heads of State endorse the set of indicators, soon to be known as **Laeken indicators**.



INCIDENTALLY...

(if you are wondering where Laeken is located)





EU

Relative poverty lines

- The EU definition of **relative poverty line**:
“Low income rate after transfers with low-income **threshold set at 60% of median [equivalized] income**, with breakdowns by gender, age (...)”
- The line has EU **official status**.
- Also of interest Indicator 11 (“Dispersion around the low income threshold”). **Three thresholds: 40, 50 and 70% of the median income.**
- Jun 2006 – the SPC revises/updates Laeken indicators, but sticks to the relative poverty approach.



RELATIVE POVERTY

- **Common practice:** use a proportion of the median (or the mean) of the distribution of income as the poverty line. For instance:
 - (EU) PL = 60% median
 - PL = 50% mean
- **Problem:** You cannot rule out the possibility that poverty measures based on relative poverty lines are **increasing functions of the mean** (more growth → more poverty ! or... depression → less poverty!)



RELATIVE POVERTY: THE RICHER...THE POORER?

x1	x2	x3	x4	x5	total	mean	poverty line (50% of the mean)	poor
2	2	16	20	60	100	20	10	40%
3	3	24	170	300	500	100	50	60%

An **awkward feature** of relative poverty lines is that a policy which raises the living standards of all, but proportionally more those of the rich, will increase poverty, notwithstanding the fact that the absolute living standard of the poor have increased!



ABSOLUTE POVERTY LINES

- The concept of **absolute poverty** is based on the assumption that individuals who fail to achieve a ***minimal standard of living***, regardless of their relative position, are classified as poor.
- This does not mean that 'one poverty line fits all'. On the contrary, given that individuals differ with respect to their needs and other circumstances (geographical location etc.), the same poverty line *cannot* apply to all.



POPULAR METHODS FOR SETTING ABSOLUTE POVERTY LINES

1) DIRECT CALORIE INTAKE (DCI)

- ▶ Kakwani (2003)

2) FOOD ENERGY INTAKE (FEI)

- ▶ Dandekar & Rath (1971) + Greer & Thorbecke (1986)

3) FOOD-SHARE

- ▶ Orshansky (1963, 1965)

4) COST OF BASIC NEEDS (CBN)

- ▶ Rowntree (1901) + Ravallion (1994), among the others



THE FOOD-SHARE METHOD

Orshansky (1963)

$$Z_{FS} = x_{\text{food}} / \bar{w}_{\text{food}}$$

- Z_{FS} is the poverty line;
- x_{food} is the cost of a food bundle achieving a certain calorie-intake level;
- w_{food} is the **average budget share for food** of some group of households deemed likely to be poor (*e.g.* bottom 1-3 deciles). Could also be a **normative value** (*e.g.* the cost of a nutritionally adequate diet → Orshansky's method)
- For instance, if $w_{\text{food}} = 0.33$, then the poverty line is the cost of food bundle multiplied by three.



Mollie Orshansky (1915-2006)



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Source: www.socialsecurity.gov.



ORSHANSKY AND BiH

vol. II, where methods take centre stage

Report No. 25343-BIH

Bosnia and Herzegovina Poverty Assessment

(In Two Volumes) Volume II: Data on Poverty

November 21, 2003

Poverty Reduction and Economic Management Unit
Europe and Central Asia Region



ORSHANSKY AND BiH

The Total Poverty Line in 2001 = 1438 KM (person/day)

General Poverty Line = Value of food consumption + Value of Non-Food Consumption

Where:

Food Consumption = Value of Food Poverty Line = 760 KM = 34.5 % of GPL

Non-food Consumption = 65.5 % of GPL

General Poverty Line = $760 / 0.345 = 2198$ KM = 760 + 1438.

$$Z_{FS} = x_{\text{food}} / \bar{w}_{\text{food}}$$





THE FOOD-SHARE METHOD

An Assessment

- **PRO** – simplicity + empirically well-grounded.
- **CON** – arbitrary in the choice of reference group over which the food budget share is calculated
- **CON** – potentially inconsistent.

Think of two groups with different average PCE. Households with higher PCE will have a lower w_{food} (by Engel's law), a higher poverty line, and hence higher poverty rates.



THE COST OF BASIC NEEDS (CBN) METHOD

- ▶ In a nutshell: to identify a **consumption bundle** adequate to meet **basic** consumption needs and estimate its cost.
- ▶ **Question:**
What constitutes a '**basic need**' and what does not?
- ▶ **Constraint:**
The choice of the basic-needs bundle should reflect local perceptions of what constitute poverty (**specificity**).
- ▶ **Solution (partial):**
A safe start consists in including **foodstuffs** among the basic needs.
After, we'll think how to add an **allowance for** consumption of **non-food goods/services**.



THE CBN METHOD

The Strategy

- 1) Estimate the cost of a 'basic food bundle':
this gives the **food poverty line**.
- 2) Estimate the **allowance for 'basic non-food goods'**.
- 3) Add 2) to 1): this gives the **(total) poverty line**.



THE CBN METHOD

Two Methods for the Food Poverty Line

- ▶ To set the food poverty line we consider two methods:
 - 1) determine **average calorie requirement** (AKR), estimate the **cost of 1 calorie** (C), and calculate their product.
 - 2) identify a "**suitable**" food bundle, and estimate its **cost**.
- ▶ Both methods deliver estimates of the food poverty line.



THE CBN METHOD

The Food Poverty Line – method 1

- ▶ Calorie requirements are calculated with the assistance of nutritionists and demographers. In their absence...
 - 1) determine **average calorie requirement (AKR)** for region k (we partition the country for the usual reasons...)

$$AKR_k = \sum_{j \in J} w_{jk} KR_j \quad \text{with} \quad \sum_k \sum_j w_{jk} = 1$$

$J = \{\text{adult male, adult female, child 0-6, child 7-15, elderly}\}$

w_{jk} are population shares

KR_j are calorie requirement coefficients, usually from FAO/WHO (but also from the Ministry of Public Health, if available).



THE CBN METHOD

The Food Poverty Line – method 1

- 2) estimate the **average cost of 1 calorie** (C) in region k.
Two formulae available:

$$\bar{C}_{Pk} = \frac{\sum_{h \in k} x_h^{food}}{\sum_{h \in k} K_h}$$

"PLUTOCRATIC"

$$\bar{C}_{Dk} = \frac{1}{n_k} \sum_{h \in k} \frac{x_h^{food}}{K_h}$$

"DEMOCRATIC"

The results will be different.
We use the democratic approach.

h denotes the h -th household (presumably around the PL)
 x_h^{food} is the expenditure on food
 K_h is the calorie intake (consumption) of the h -th household



THE CBN METHOD

The Food Poverty Line – method 2

1/4

- Method 2 consists in identifying a “suitable” food bundle, and estimate its cost.
- Problem: there are infinite food combinations which can achieve any given nutritional requirement.
- “Suitable” food bundles achieve mean nutritional requirements and are consistent with local dietary habits.
- Nutritionists help with the identification problem.



THE CBN METHOD

The Food Bundle – method 2

Take the Poverty Update Report for Yemen, 2002:

- Baki (1999) identifies the consumption levels of food commodities (grams/person/day) for the **average** Yemeni. The bundle corresponds to **2,523 kcal** (person/day).
- The report sets the **minimum** energy requirement to **2,200 kcal** (person/day).
- $2,200/2,523 = 0.8719$ was used to scale down actual food consumption levels.
- *For instance*, actual consumption of wheat is 170 g/day: becomes $170 \times 0.8719 = 148.2$ g/day in the food bundle underlying the FPL.

THE BASIC FOOD BUNDLE FOR YEMEN

Commodity	(Kg/person/year)	Commodity	(Kg/person/year)
Wheat	54.1	Carrots	3.3
Sorghum	16.9	Papayas	6.4
Maize	6.4	Watermelons	6.4
Barley	2.5	Cantaloupes	3.2
Millet	3.2	Bananas	6.4
White Flour	36.6	Oranges	3.8
Rice	7.6	Dates	3.8
Legumes	12.1	Mangoes	2.5
Red Meat	2.5	Grapes	6.0
Chicken	3.8	Vegetable Oil/Ghee	15.9
Fish	2.5	Sugar	15.9
Eggs	1.8	Salt	3.2
Milk (and Milk Products)	12.4	Spices	0.6
Yeast	2.2	Tea	1.3
Dark-colored Vegetables	19.1	Coffee	1.0
Green Vegetables	15.9	Coffee Husks	2.5
Tomatoes	4.3	Various Juices	9.6
Potatoes	3.9		



COST OF THE FOOD BUNDLE

- The cost of the food bundle can be estimated separately for **urban** and **rural** areas in **each governorate**. In so doing, **differences in the cost-of-living** faced by population sub-groups are accounted for.
- Two sources of information are usually available to price food items:
 - **market prices** (from price survey).
 - **unit values** (or **implicit prices**): ratio of household expenditures to consumed quantities (from Household Budget Surveys);



MARKET PRICES VS. UNIT VALUES

- **Market prices** from price survey are often only partially suitable for pricing the food bundle.
- **Unit values** suffer from quality bias: richer households tend to buy higher quality foodstuffs.
- Hence, **unit values cannot be treated as if they were market prices.**
- Econometric methods are available to purge unit values of quality bias.



THE CBN METHOD

Food Poverty Lines – Method 2

- For calculating the food poverty line z^F in region k (assuming that market prices are available):

$$z_k^F = \sum_{j=1}^J p_{kj} q_j$$

k is the k -th governorate,

j identifies the goods in the food bundle

p_{kj} is the j -th market price in the k -th governorate,

q_j denotes the j -th item in the basic food bundle.

FOOD POVERTY LINES FOR YEMEN 1998 (rial/person/month)

Governorate	Rural	Urban
Ibb	2,039	2,073
Abyan	1,928	1,921
Sana'a City		2,095
Al-Baida	2,102	2,171
Taiz	2,082	2,095
Al-Jawf – Mareb	2,090	2,139
Hajjah	2,259	2,058
Al-Hodeida	2,008	1,921
Hadramout - Al-Mahrah – Shabwah	2,257	2,339
Dhamar	2,179	2,246
Sa'adah	2,222	2,246
Sana'a	2,045	2,110
Aden		2,089
Laheg	2,090	2,197
Al-Mahweet	1,990	2,104
	2,103	2,093



SETTING ALLOWANCES FOR NON-FOOD GOODS

- By analogy to the method adopted for the FPL, the allowance for non-food goods *could* be estimated by **pricing a basic non-food bundle**.
- In practice, the **arbitrariness** implied by such an operation would lead to highly contentious estimates for the non-food allowance.
- Ravallion and Bidani (1994) outlined a practical alternative.

ALLOWANCE FOR NON-FOOD GOODS Lower Bound



a number of things ...

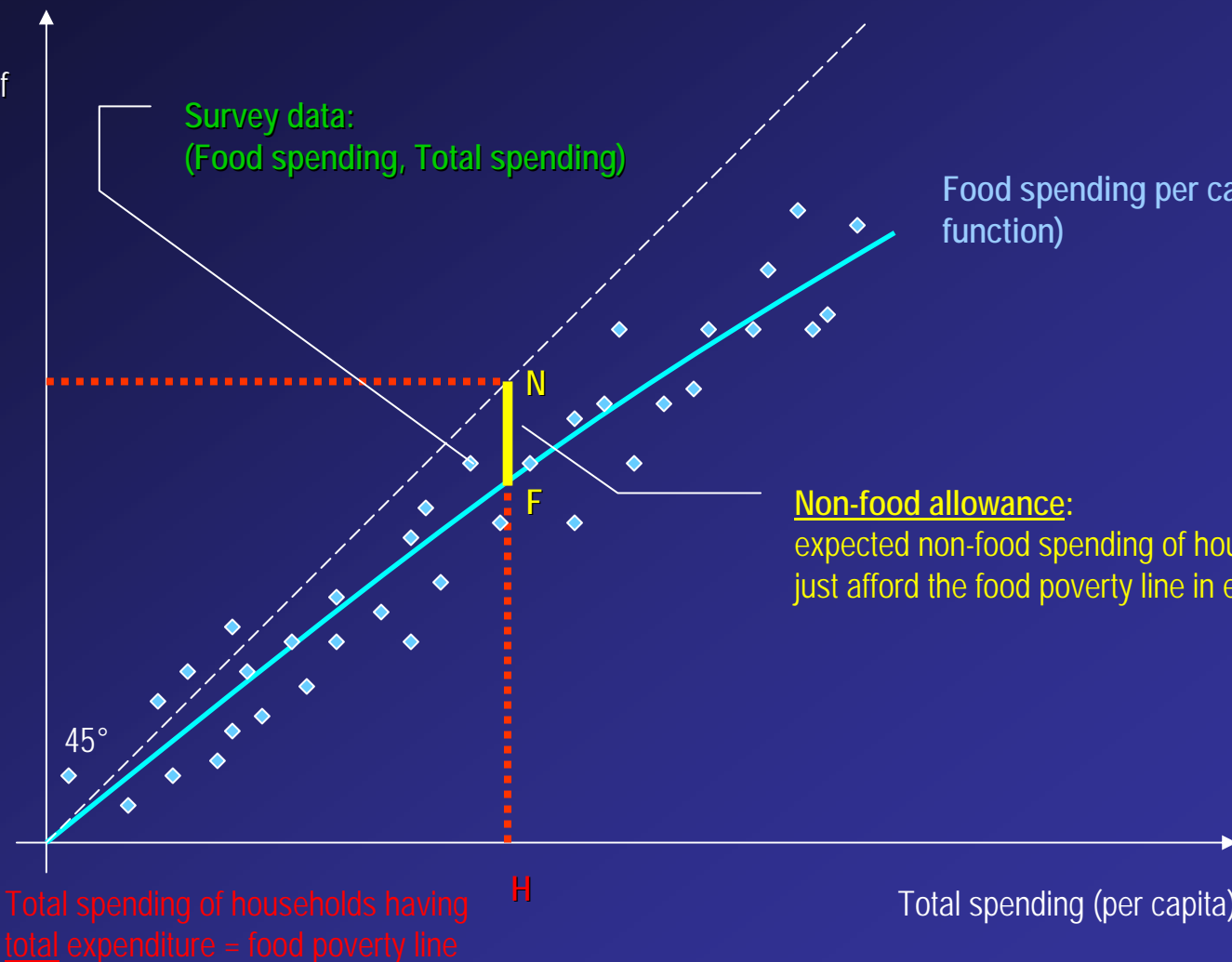
Survey data:
(Food spending, Total spending)

Food spending per capita (regression function)

food poverty line
(z)

Non-food allowance:

expected non-food spending of households who can just afford the food poverty line in each governorate.



ALLOWANCE FOR NON-FOOD GOODS

Upper Bound



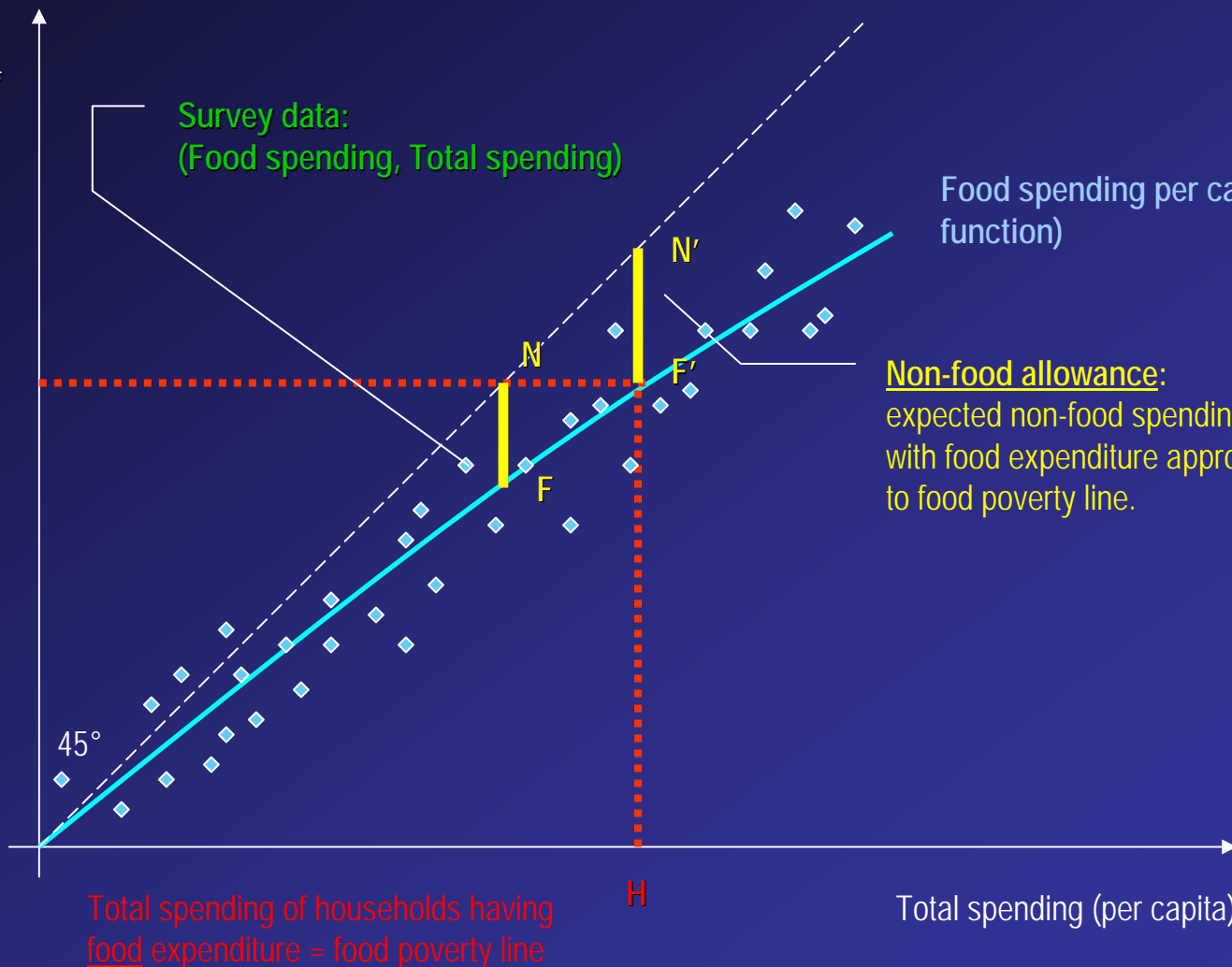
a number of things ...

Survey data:
(Food spending, Total spending)

Food spending per capita (regression function)

food poverty line
(z)

Non-food allowance:
expected non-food spending of households with food expenditure approximately equal to food poverty line.





HOW REALISTIC IS ALL THIS?

1/2

I appealed to Stata...

In order to answer in a (hopefully) **persuasive** way, I tried the following Stata code on the Croatian 2004 Household Budget Survey:

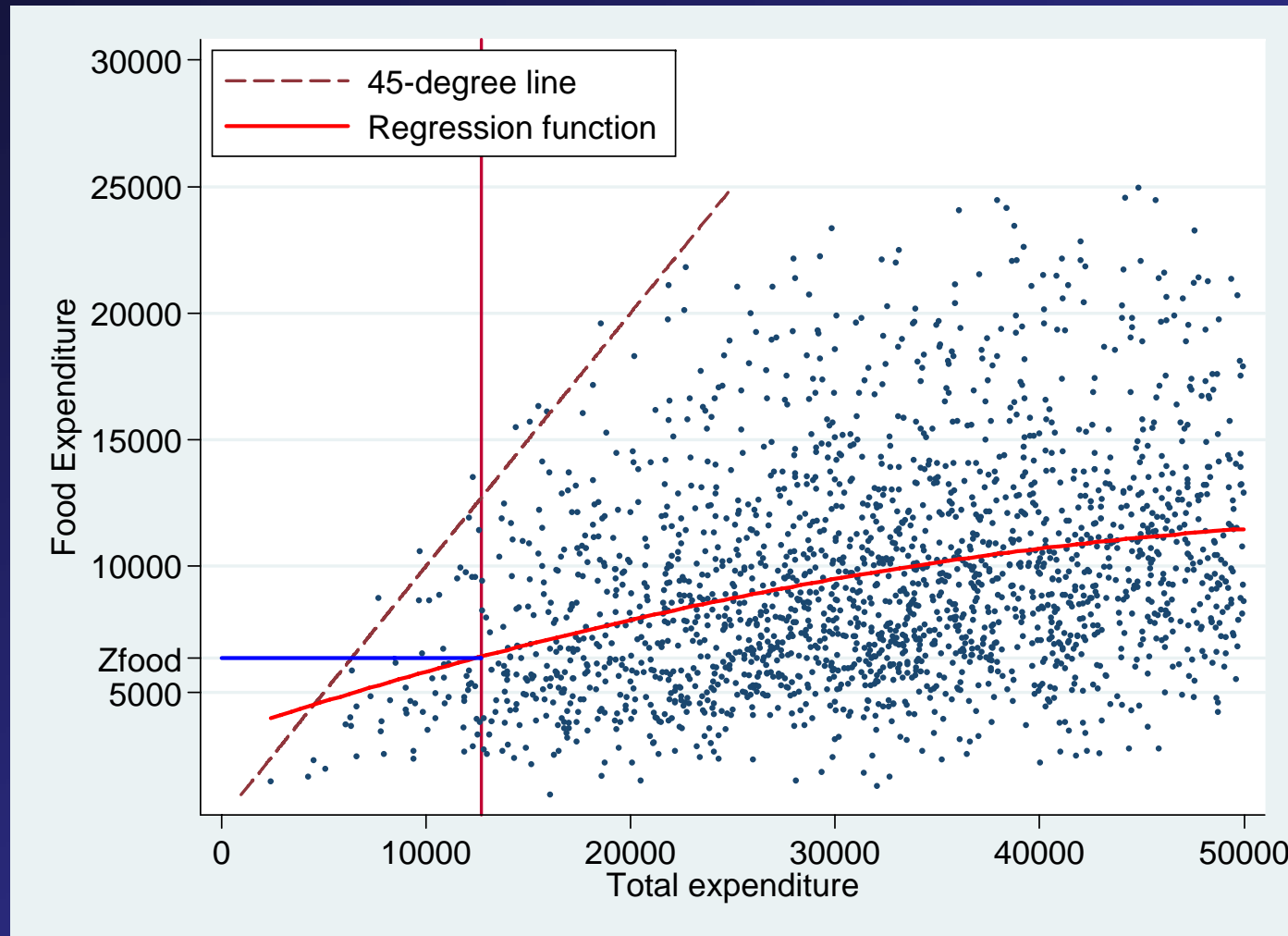
```
twoway (scatter food_nut cons_eu if cons_eu<50000 &
cons_eu>2000 & food_nut<25000, ms(.) msiz(*.25)) (line
food_nut food_nut if cons_eu<50000 & cons_eu>2000 &
food_nut<25000, ms(i) sort lpat(dash)) (qfit food_nut
cons_eu if cons_eu<50000 & cons_eu>2000 &
food_nut<25000, lwid(medthick) lcol(red)) (function
y=6352.2, range(0 12700) lcol(blue) lwid(medthick)) ,
legend(order(2 3) label(2 "45-degree line") label(3
"Regression function") col(1) ring(0) pos(11))
ytit("Food Expenditure") xtit("Total expenditure")
ylab(5000 6352 "Zfood" 10000 (5000)30000, angle(h))
xline(12700)
```



HOW REALISTIC IS ALL THIS?

2/2

Stata's response...





ESTIMATING THE ALLOWANCE FOR NON-FOOD GOODS

- The relationship between food- and total spending is crucial in estimating the value of NF. One option is **parametric estimation**:

$$w_h^F = \alpha + \beta_1 \ln(x_h / z^F) + \beta_2 \ln(x_h / z^F)^2 + \varepsilon_h$$

α gives the average **food budget share** of households having total spending = food poverty line ($x_h = z^F$).

Hence, the (total) poverty line z :

$$z_{CBN} = z^F + (1 - \alpha) z^F = (2 - \alpha) z^F$$



(TOTAL) POVERTY LINES

- ▶ The **total poverty line** z_k is obtained by adding the non-food allowance (NF) to the food poverty line (Z_f):

$$z_k = z_k^F + NF_k$$

POVERTY LINES FOR YEMEN 1998 (rial/person/month)

Governorate	Rural	Urban
Ibb	3,268	3,223
Abyan	2,772	2,706
Sana'a City		3,352
Al-Baida	3,147	3,132
Taiz	3,268	3,194
Al-Jawf – Mareb	2,531	3,390
Hajjah	3,212	2,904
Al-Hodeida	2,954	2,803
Hadramout - Al-Mahrah – Shabwah	3,271	3,278
Dhamar	3,424	3,404
Sa'adah	3,458	3,392
Sana'a	3,323	3,303
Aden		3,315
Laheg	3,280	3,306
Al-Mahweet	3,019	3,054
	3,215	3,195



POVERTY LINES, YEMEN 1998 (rial/person/month)

	Yemen	Urban	Rural
Food poverty line	2,101	2,103	2,093
Allowance for basic non-food spending ^(*)	1,109	1,092	1,122
Total poverty line	3,210	3,195	3,215

^(*) Inclusive of qat, which absorbs between 8-12 % of household budgets.



List of (relatively) safe CONCLUSIONS & RECOMMENDATIONS

- 1) The choice of the poverty line affects both the **level** of poverty (its incidence, depth, ...), and its **structure** (the poverty profile). The implications for the policy maker are therefore substantive.
- 2) There is **no single ideal method** of setting poverty lines.
- 3) Technical, seemingly neutral, choices are, in fact, necessarily, inclusive of **normative value judgments**.



CONCLUSIONS & RECOMMENDATIONS

- 4) The **FS method** turns out to work well empirically, and stands out for its simplicity and “flexibility”.
- 5) The recommended method: The **Cost-of-Basic-Needs approach**.
- 6) Whatever the poverty line selected, it is important to carry out **sensitivity analysis**. This consists in testing the degree to which the results are sensitive to the choice of poverty line.



BEYOND THE RELATIVE-ABSOLUTE POVERTY DICHOTOMY: A (NOT SO) PERSONAL VIEW

- Uncomfortable with a purely **relative** concept of poverty (source: introspection)
- Equally uncomfortable with an **absolute** concept of poverty, in the strict sense of the word
- Compromise/Solution: **absolute standard containing provisions for periodic revision** (Atkinson 1998: 27).



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