Subjective poverty lines and regional inefficiency

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(*) The author thanks the financial support of the EU *FP7/2007-2013* [SSH-CT-2009-244597].

Aims

The idea of using minimum income question to assess subjective poverty line is generally attractive.

Minimum income can be regarded as the realization of a point on a cost function from which equivalence scales can be derived.

The unbiased estimation of such point is the focus of this paper.

Main idea: regional inefficiency

It can be shown that the variation in minimum income is best explained by family size and current household income.

But, households having the same family size and current income may have different abilities to convert income into well-being.

In other words, by given income and family size, some households can be more efficient in converting income into well-being than others depending on random factors strictly related to the characteristics of the region they live in (i.e. local labour market characteristics, access to health care, crime, etc.).

Our aim is to investigate the sources of these inefficiencies and correctly estimate subjective poverty lines and equivalence scales.

Ordinal Leyden Method

(Van Praag and Van der Sar, 1988)

- Supplying a verbal label as “end meet”
- Collecting response Y_{min} under fixed (p, h)

it is possible to estimate $U(Y_{min}; p, h)$

→ By inversion, we may construct a cost function and equivalence scales for individuals living under various (p, h)

$$\ln C_i = \ln C(U_i; p_i, h_i) = \sigma(h_i) \text{☞}^{-1}(U^*) + \mu(h_i) \qquad (1)$$

for a fixed utility level $U_i = U^*$ and p fixed

Hypothesis

1) Individuals assign the same welfare connotation to the verbal statement “end meet”

2) Individual have the same indirect utility function

Equivalence scales

$$m(p_i, h_i) = \overline{c}(p_i, h_i) / \overline{c}(p^R, h^R)$$

Traditional estimation methods

The eq. 1 can be estimated as

$$\ln C_i = x_i \alpha + h_i \gamma + \varepsilon_i$$

Observed answer to the question

Vector of dummies indicating different household types

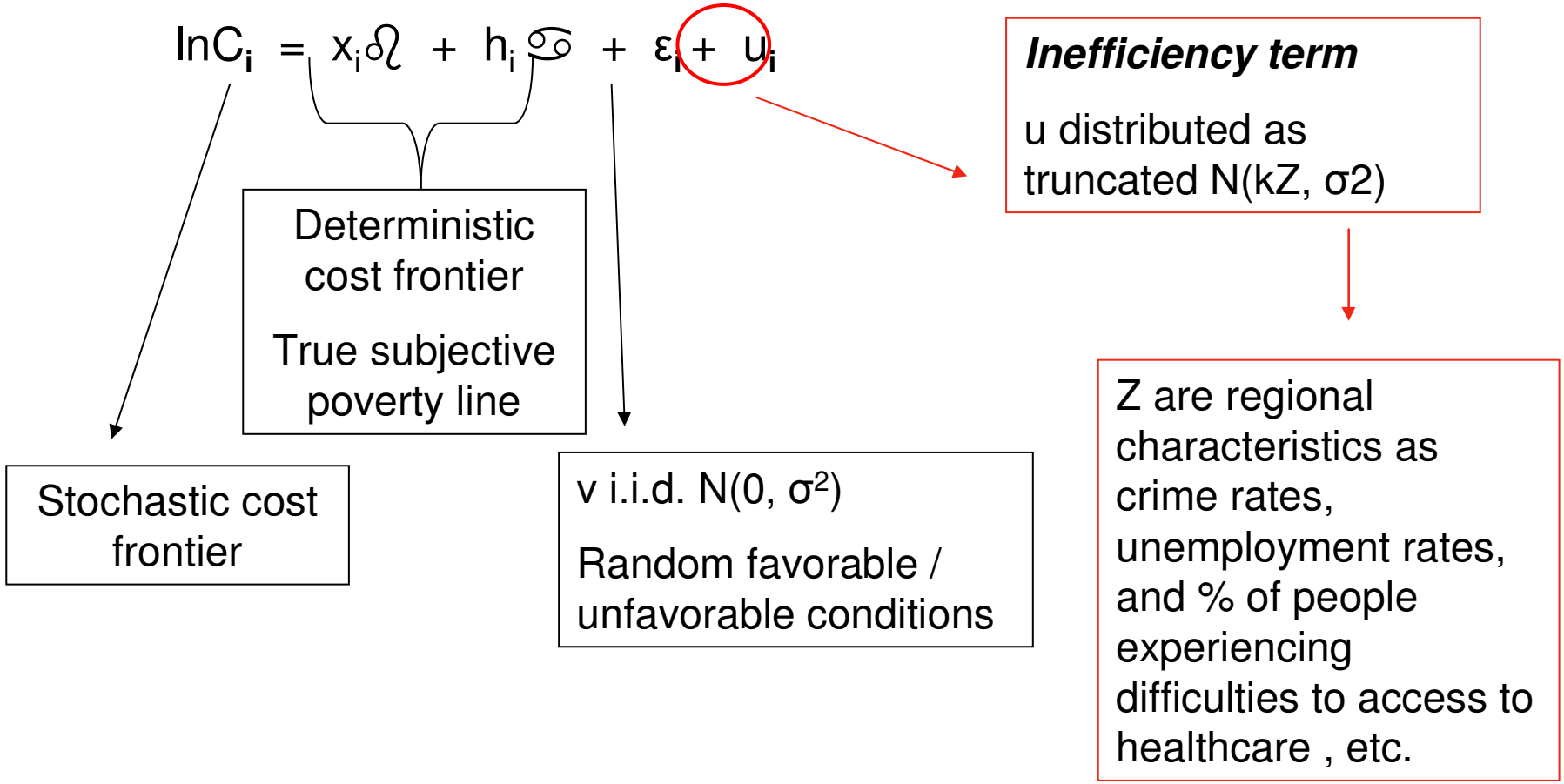
Vector of test shifters (time constant):

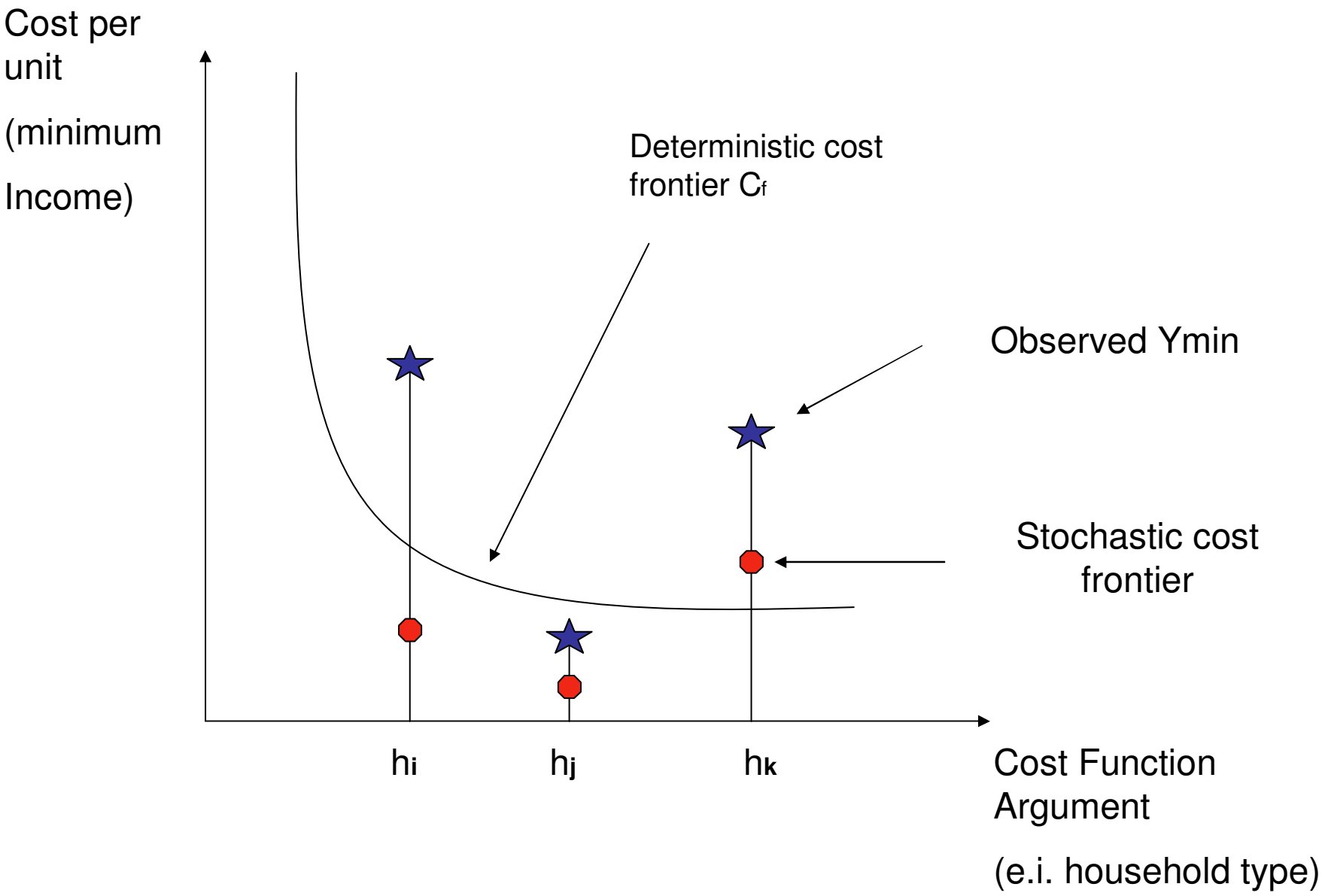
average income, sex, edu, disable, country, urban/rural

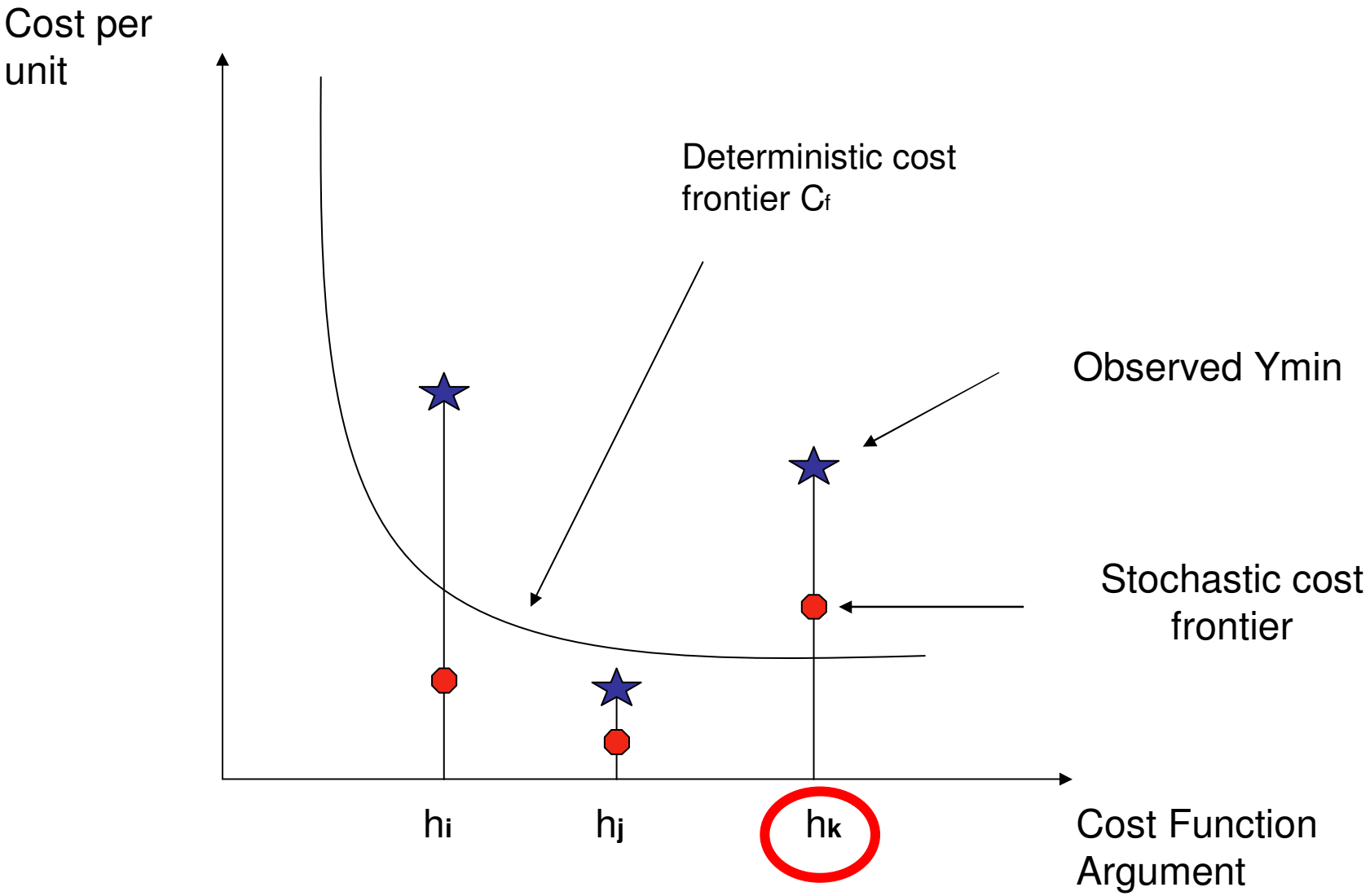
Frontier Approach

(Kumbhokar et al., 1991; Battese and Coelli, 1993)

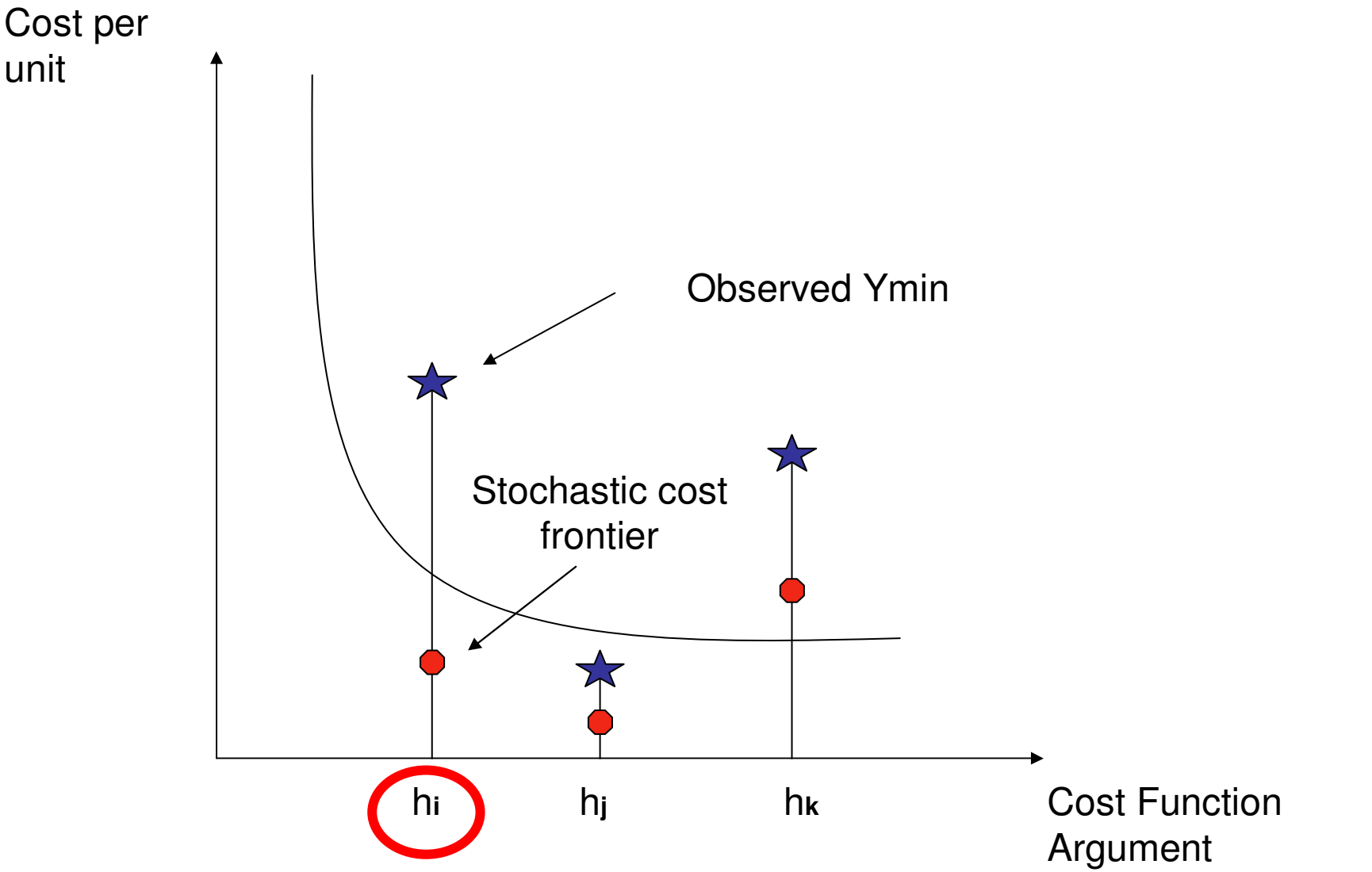
The eq. 1 can also be estimated as



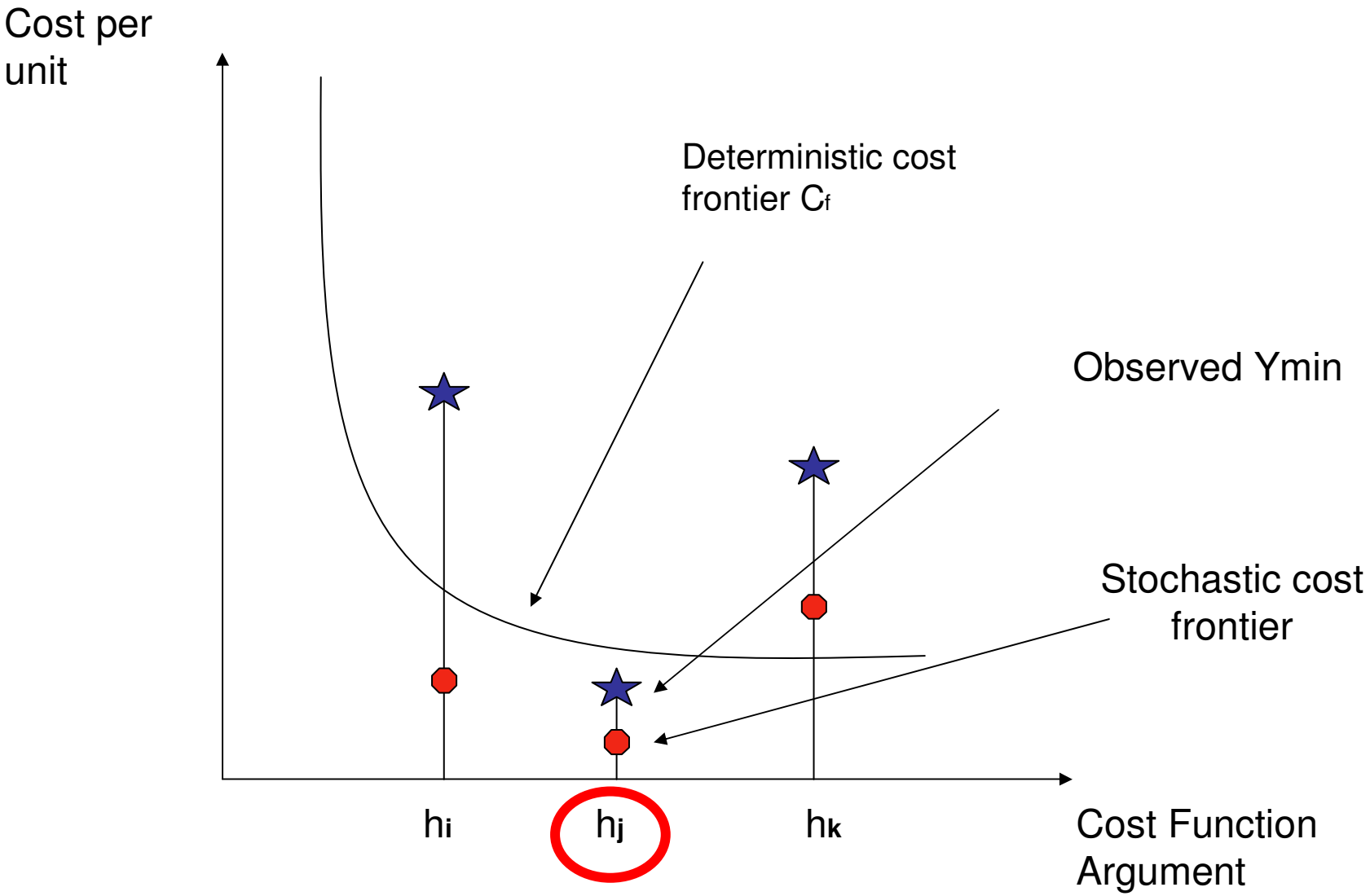

Cost per unit
(minimum
Income)
Deterministic cost frontier C_f
Observed Ymin
Stochastic cost frontier
h_i
h_j
h_k
Cost Function Argument
(e.i. household type)



- Random unfavorable conditions $v_i>0$
- Inefficiency: $u_i>0$



- Random favorable conditions $v_i<0$
- Inefficiency offsets the favorable conditions $u_i>v_i$



- Random favorable conditions $v_i<0$
- Lower inefficiency: $u_i<v_i$

Issue: systematically biased responses

- High income households tend to report higher minimum needs income and lower actual income housholds tend to report lower minimum needs (suggested solution: intersection method)

But also...

- Women tend to report lower minimum needs income
- Old individuals (aged 65+) tend to report lower minimum needs income
- ....

Solution?

Individual fixed effects (it permits also to control for time constant personality traits as optimism/pessimism)

The frontier model can include fixed effects → Wang and Ho (2011)

Data: EU-SILC 2006-2008

	%poor	% subj poor	Y	Y_Min
Overall	16.1%	31.3%	2468	1711
AT	12.3%	11.0%	3069	1831
BE	14.4%	29.7%	2648	1934
CY	15.1%	33.9%	3354	2665
CZ	6.9%	33.2%	1511	1193
ES	16.9%	46.7%	2462	2155
FI	16.5%	10.1%	2492	1313
IE	12.0%	14.5%	3212	1793
IT	19.0%	35.3%	2647	1948
LU	10.6%	10.7%	4304	2240
NL	12.2%	11.5%	2955	1775
NO	14.7%	9.3%	3028	1686
PL	14.8%	39.9%	1184	994
PT	16.9%	46.7%	1923	1630
SI	13.0%	26.8%	2422	1669
UK	17.3%	9.9%	3408	1728

(*) The listed household types make up approximately 80% of all households

Empirical Results

Dependent variable: ln(Ymin)	Coef.		SE
2 Adults (no children)	0.155	**	0.004
3 Adults (no children)	0.225	**	0.005
4 Adults (no children)	0.316	**	0.006
2 Adults 1 Child	0.239	**	0.006
2 Adults 2 Children	0.293	**	0.006
sex	-0.025	**	0.003
age	-0.003	**	0.000
Medium education	0.049	**	0.003
High Education	0.093	**	0.004
Disable	-0.006		0.004
ln(average income)	0.485	**	0.033
ln(average income)-squared	-0.010	**	0.002
Country and urban/rural dummies	yes		yes
_cons	3.888	**	0.139
mu			
ln_unmet	0.040	**	0.003
ln_crime	0.044	**	0.004
ln_unempl	0.033	**	0.003
ln_pol	0.001		0.007
_cons	0.556	**	0.065

	Cost Inefficiency	Subj Poverty (no inefficiency)	Subj Poverty	% subj poor (no inefficiency)	% subj poor
AT	18.9%	1223	1454	4.2%	10.5%
BE	18.3%	1364	1608	11.6%	26.4%
CY	25.4%	1464	1836	15.4%	34.1%
CZ	24.2%	728	903	10.6%	36.4%
ES	**27.7%**	**1354**	**1729**	**27.7%**	**47.6%**
FI	19.8%	916	1097	3.3%	6.3%
IE	22.3%	1011	1240	4.9%	15.2%
IT	26.8%	1274	1614	12.2%	29.9%
LU	25.4%	1496	1874	1.9%	5.3%
NO	**13.8%**	**1367**	**1557**	**5.0%**	**6.6%**
PL	30.3%	608	793	18.2%	45.8%
PT	25.9%	965	1218	30.3%	50.5%
UK	26.3%	1065	1345	2.2%	4.9%

Dependent variable: ln_y_min	Subj Poverty (no inefficiency)	Subj Poverty	Equivalence scale	% subjec poor	% subj poor
1 Adult (no children)	749	932	1.0	20.50%	46.60%
2 Adults (no children)	1049	1301	1.4	9.30%	22.90%
3 Adults (no children)	1254	1567	1.7	7.80%	18.60%
4 Adults (no children)	1486	1863	2.0	8.20%	18.80%
2 Adults 1 Child	1416	1771	1.9	9.90%	23.40%
2 Adults 2 Children	1543	1913	2.1	9.20%	22.90%

Fixed Effects Results

- To be added

Conclusions

The methodology identifies the regional characteristics that impact more on the inability to convert income into well-being and provides estimates of subjective poverty lines.

We find that inefficiencies are higher for household living in areas characterized by crime, difficulties in accessing healthcare services and high unemployment

Consequently, minimum income levels needed for achieve valuable lives should be high to compensate lack of area opportunities.

Our method provides policy makers with novel relevant information.