FAO Undernourishment Indicator: Strengths & Weaknesses

Ben Senauer
University of Minnesota
Methodology is Based on Three Key Components (Parameters)

- Average calories available per capita based on national food balance sheet data – DES: Dietary energy supply per capita
- The distribution of calorie consumption assumes a log-normal function & CV derived from household surveys.
- An average minimum calorie requirement, which sets the cut-off point on the distribution for undernourishment.
Strengths

- Serves as an important “annual” benchmark against which progress towards reducing hunger, or lack thereof, can be gauged.
- Assumes it has the trend right.
- Able to monitor food insecurity at the global, regional, and national levels.
- Same methodology can be used for all countries.
- The FAO estimate is widely cited and when released each fall receives widespread media coverage.
Weaknesses

- The approach obviously relies on the accuracy of the three major components.
- Food Balance sheet data are the foundation.
- Only calories are accounted for and other nutritional deficiencies disregarded.
- Seasonal variations
Key Sources & References


Lisa Smith

• FAO’s measure largely reflects national food availability.
• Shows that the proportion of undernourished is not very sensitive to different CV’s in a simulation.
• Promotes use of national household survey data to measure chronic undernourishment.
• When not available, use national socio-economic data and extrapolation techniques to derive an estimate.
Peter Svedberg

- Criticizes the use of a single cut-off point for calorie requirements.
- Questions whether CV used by FAO reflects a plausible distribution of calorie access and requirements.
Svedberg concludes

- Calorie requirements & calorie intake across households are “jointly distributed”.
- The FAO model induces an underestimate, whereas the values of the parameters actually used by FAO lead to an overestimate.
- “FAO faces an enormous challenge to improve its dataset (the data used to estimate chronic undernourishment)”, which yield the key parameters.
Food Balance Sheets: Source of the DES

- Food Balance Sheets: also referred to as food disappearance or food availability data.
- Start with an estimate of annual production by crop.
- Based on estimates of area harvested (acres or hectares) and yield from “field men”. (Norway vs. Congo)
- Supply (by crop) = production + imports + beginning stocks – exports.
- Disappearance must then equal/balance supply.
Food Balance Sheets (continued)

- Disappearance = seed and feed use + ending stocks + government purchases (military, etc.) + residual
- Residual that “balances” supply and disappearance or utilization and is assumed to have been “consumed”.
- “Consumed” not really accurate. For U.S, an estimate of what’s available at the retail level for consumption.
- The aggregate availability is divided by national population estimate to get the per capita availability.
The calories across all crops and animals can then be summed to get the total “DES” per capita estimate.

PLEASE NOTICE HOW MANY TIMES “ESTIMATE” WAS USED.

“Conversion Factors” convert the crop supply at farmgate into what’s available as retail-level food products.

It accounts for losses during transportation, storage, and processing.
Conversion Factors

- For example, 0.76 is the U.S. factor for converting beef carcasses to retail beef availability and 0.689 for boneless.
- In other words, 76% of a beef carcass is assumed to end up at the retail level, and 68.9% if leaving out bones.
- It can be very complicated.
- For example, wheat (grain) is converted into dozens (hundreds) of food products that are consumed.
Conversion Factors

- Served as the Principal Investigator for a project with USDA to update U.S. conversion factors.
- Presumably transportation & processing are more efficient, but retail quality standards are higher.
- We visited dozens of packing and processing plants, and interviewed scores of industry personnel.
- Were in a field in Calif. at 6:00am as celery was picked and packed directly in plastic retail sleeves and boxed for direct shipment to retailers.
Conversion Factors

- Was very difficult to get industry cooperation.
- Information is considered proprietary in many cases.
- How efficient a slaughter house is at converting cattle to retail meat is not something you want competitors to know.
- We usually needed a “contact” to get “in the door”.
- Got the most accurate information we could; but how good was it???
Consumer-Level Food Losses

- Estimates for “cooking loss and uneaten food”.
- Compare dietary intake data (24 hour recall NHANES) and food purchase data (Homescan).
- Using the new loss estimates the average American consumes 41.9 fewer calories per day.
- NOT CLEAR HOW FAO CONVERTS CROP/ANIMAL SUPPLY INTO FOOD CONSUMED (DES) per capita.
Conclusion

- HOW SOUND A FOUNDATION ARE FOOD BALANCE SHEET DATA FOR DERIVING FAO’S UNDERNOURISHMENT ESTIMATES???????