

The global pattern of malnutrition:

From undernutrition to obesity and diet-related disease

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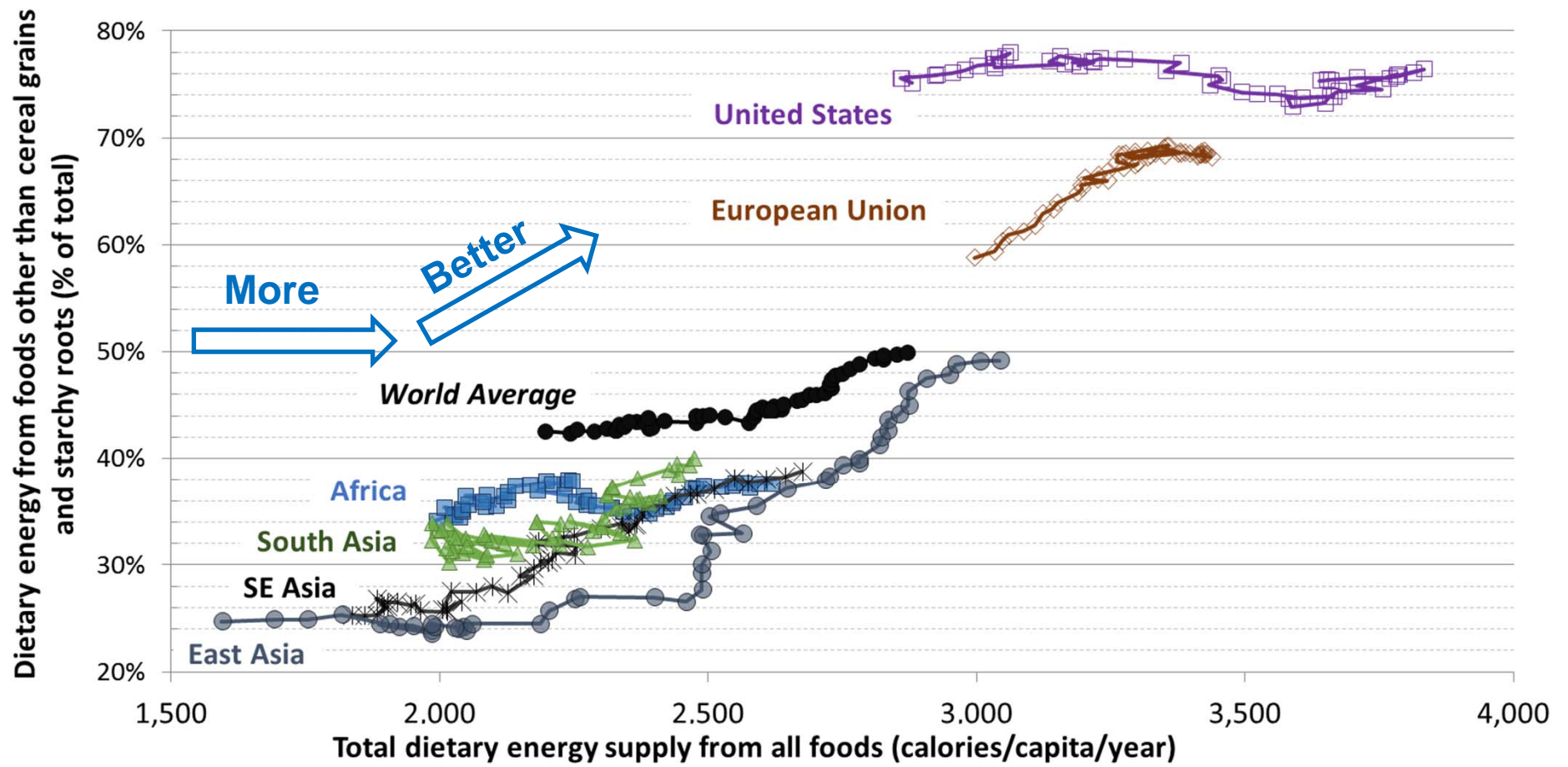
Building Human Capital: Nutrition is Fundamental
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The global pattern of malnutrition
stunting | wasting | obesity | disease

In fifty years, from *more* food to *better* food

Percent of energy from non-staple foods and total dietary energy by region, 1961-2011
(FAO Food Balance Sheet estimates)



Source: Author's calculations from FAO Food Balance Sheets,
<http://faostat3.fao.org/download/FB/FBS/E> (June 2015).

Fifteen years into the 21st c., we have:

- **Progress on stunting and wasting**
...but still far to go
- **Sharp rise in obesity**
...and more to come
- **Rapid shift in diet-related diseases**
...even in developing countries

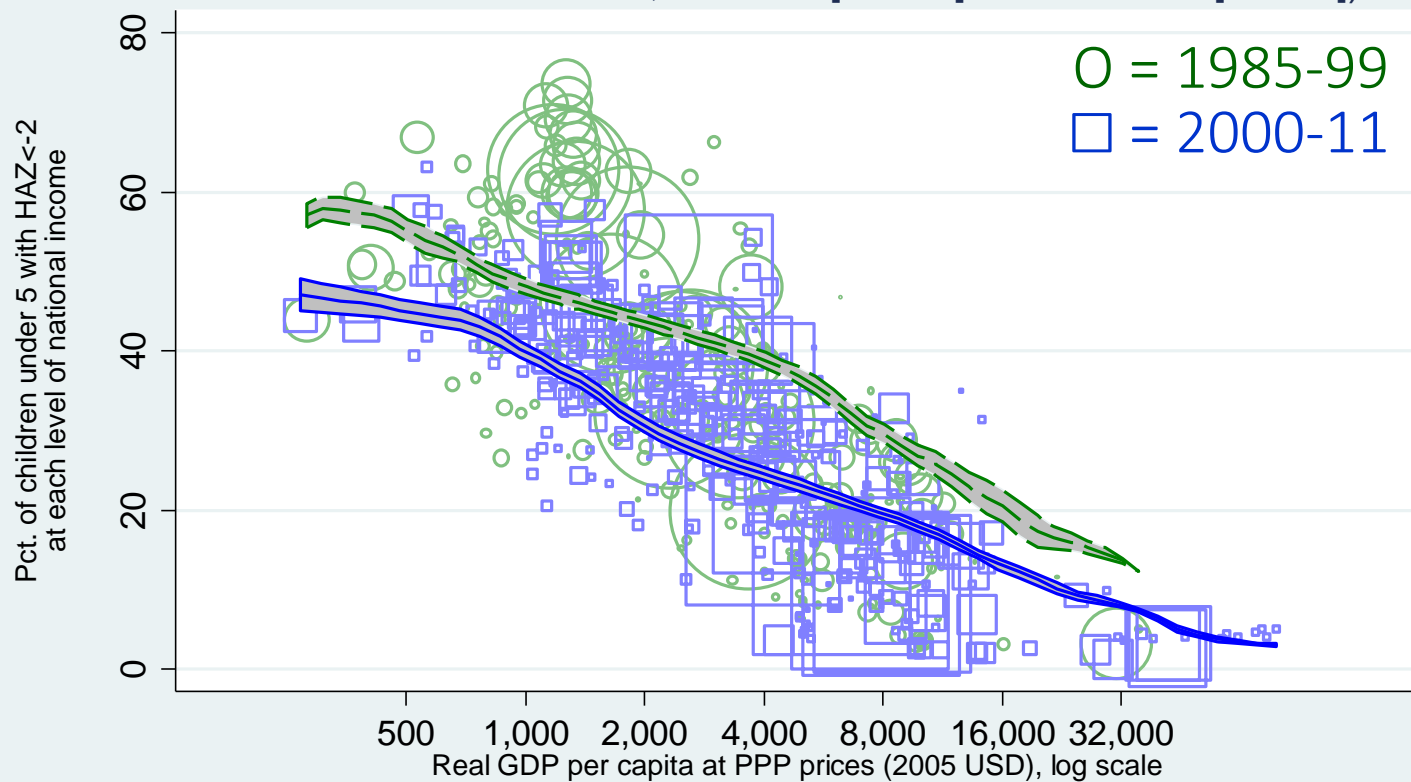
How has the food system changed?

- **Are countries just richer, or different in other ways?**
 - Richer = more of everything, both public and private
 - Different = new things, both technologies and institutions
- **Strategy**
 - test for shifts in the global average *at each level of national income*
 - this generalizes the Preston curve (Preston 1975, Bloom & Canning 2007), first applied to life expectancy
- **Data**
 - national income: purchasing power per capita
 - height and weight: stunting, wasting and obesity
 - disease burden: diabetes and diarrhea (*% of DALYs lost*)
- **Method**
 - all data are nationally representative; results are weighted by population
 - calculate local mean and confidence interval at each income level
 - this represents the average person in countries at that level of income, in each period of time

The main development goal:
child stunting

Clear progress against child stunting, at each level of income

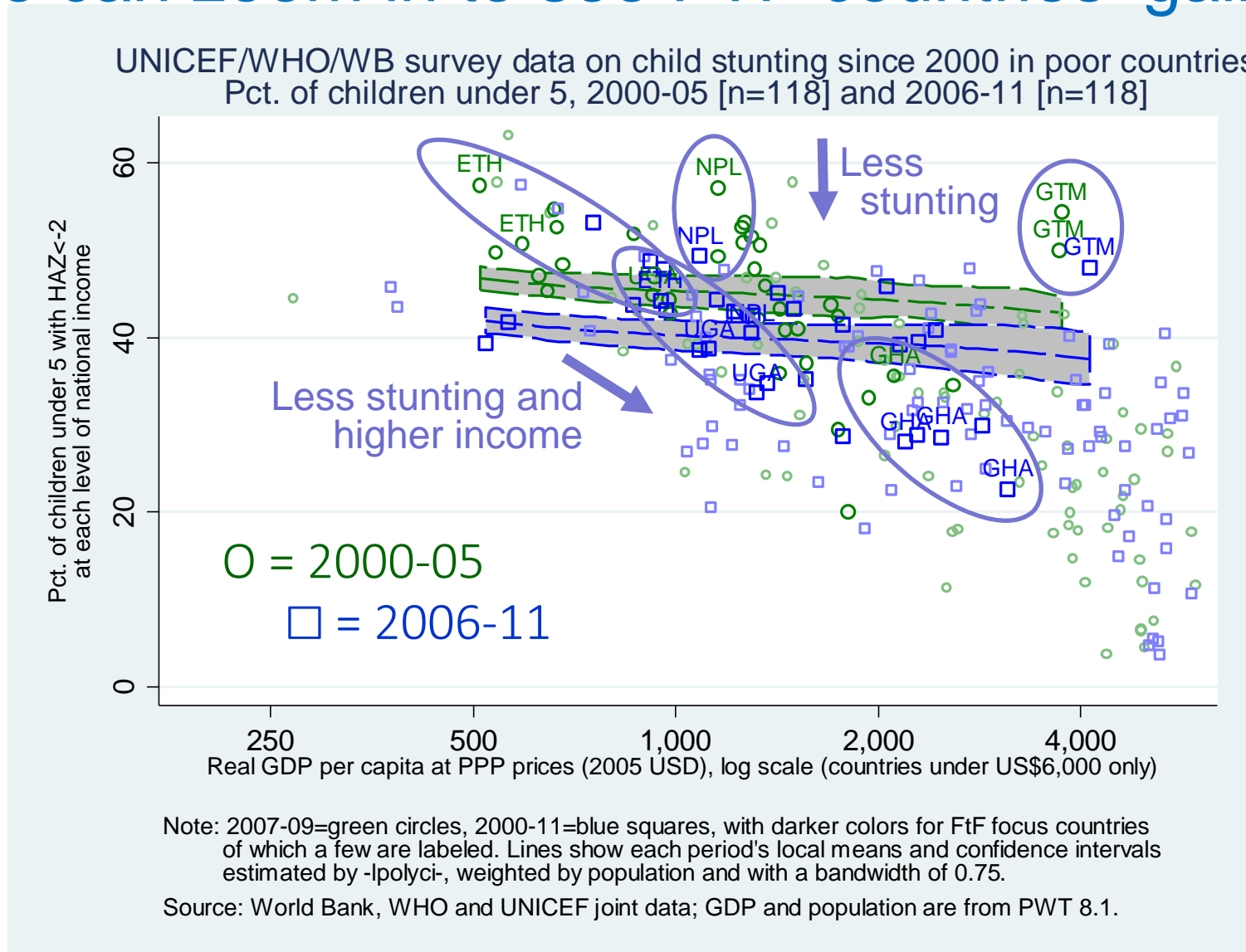
UNICEF/WHO/WB survey data on prevalence of child stunting, 1985-2011
Pct. of children under 5, 1985-99 [n=250] and 2000-11 [n=337]



Note: Symbols are sized by population, with decades shown by green circles for 1986-99 (250 surveys in 103 countries) and blue squares for 2000-2011 (337 surveys in 117 countries). Lines show local means and confidence intervals for each period estimated by -lpolyci-, weighted by population and with a bandwidth of 0.75.

Source: World Bank, WHO and UNICEF joint data; GDP and population are from PWT 8.1.

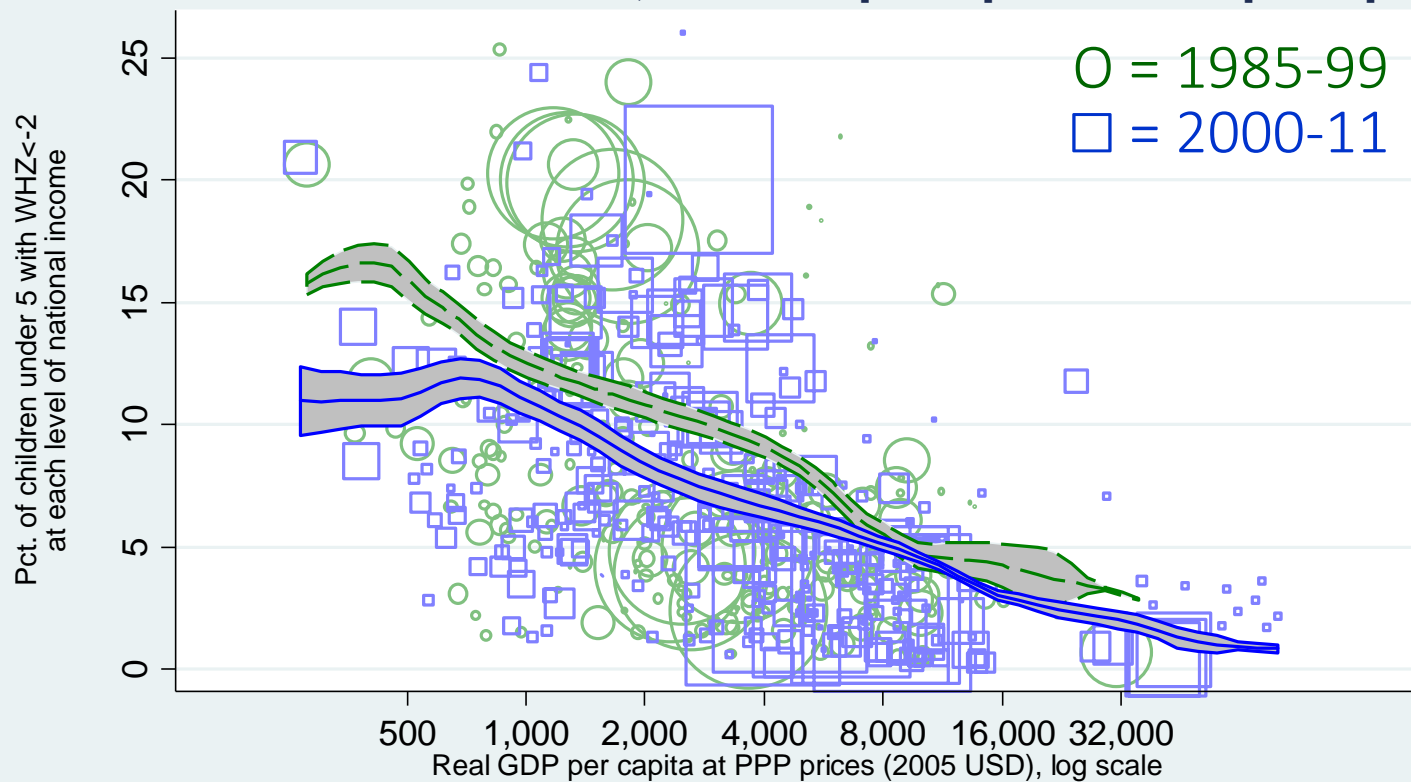
Focusing on the poorest in recent years, we can zoom in to see FTF countries' gains



Less prevalent, but still serious:
child wasting

Child wasting rates have also fallen

UNICEF/WHO/WB survey data on prevalence of child wasting, 1985-2011
Pct. of children under 5, in 1985-99 [n=244] and 2000-11 [n=333]

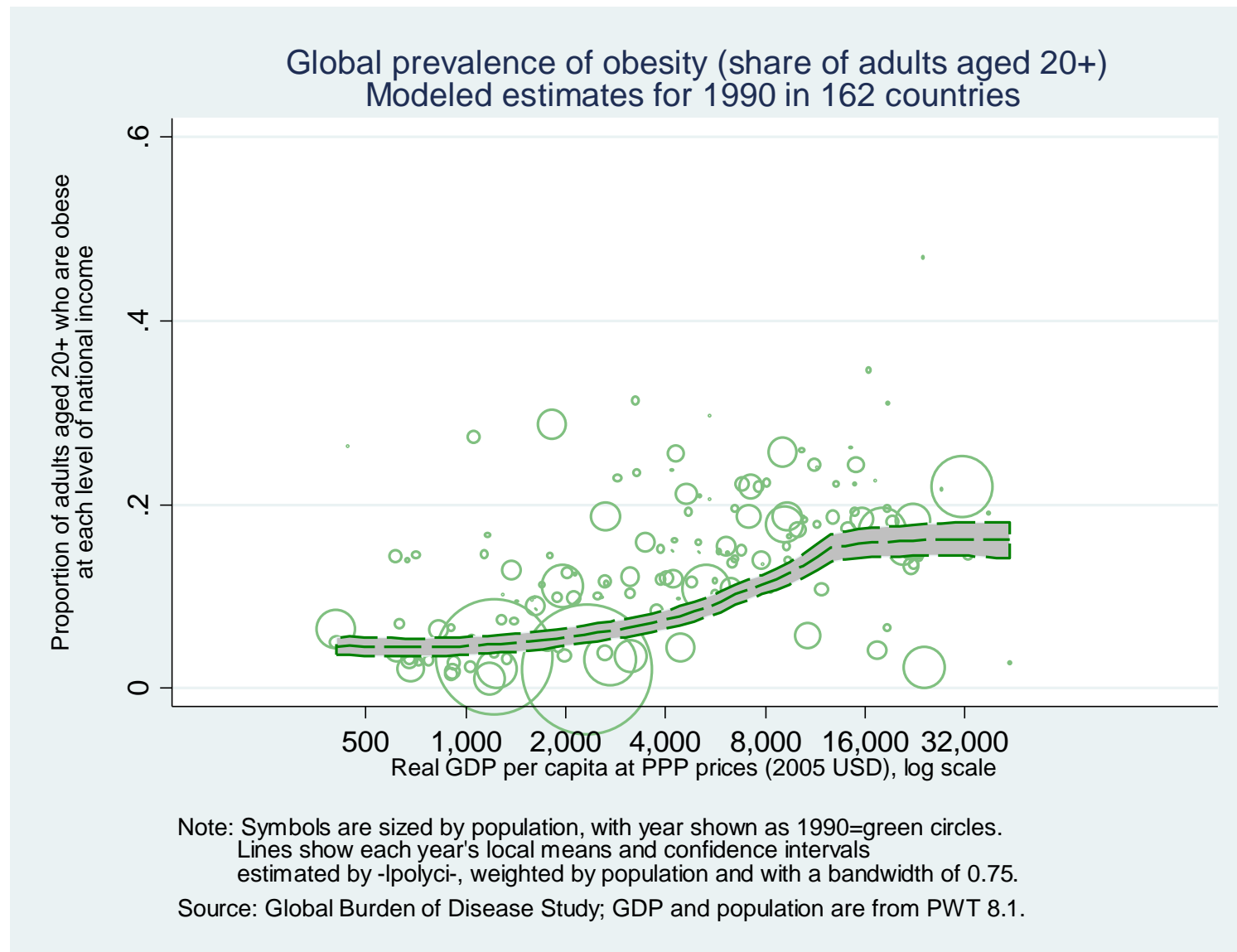


Note: Symbols are sized by population, with decades shown by green circles for 1986-99 (244 surveys in 102 countries) and blue squares for 2000-2011 (333 surveys in 116 countries). Lines show local means and confidence intervals for each period estimated by -lpolyci-, weighted by population and with a bandwidth of 0.75.

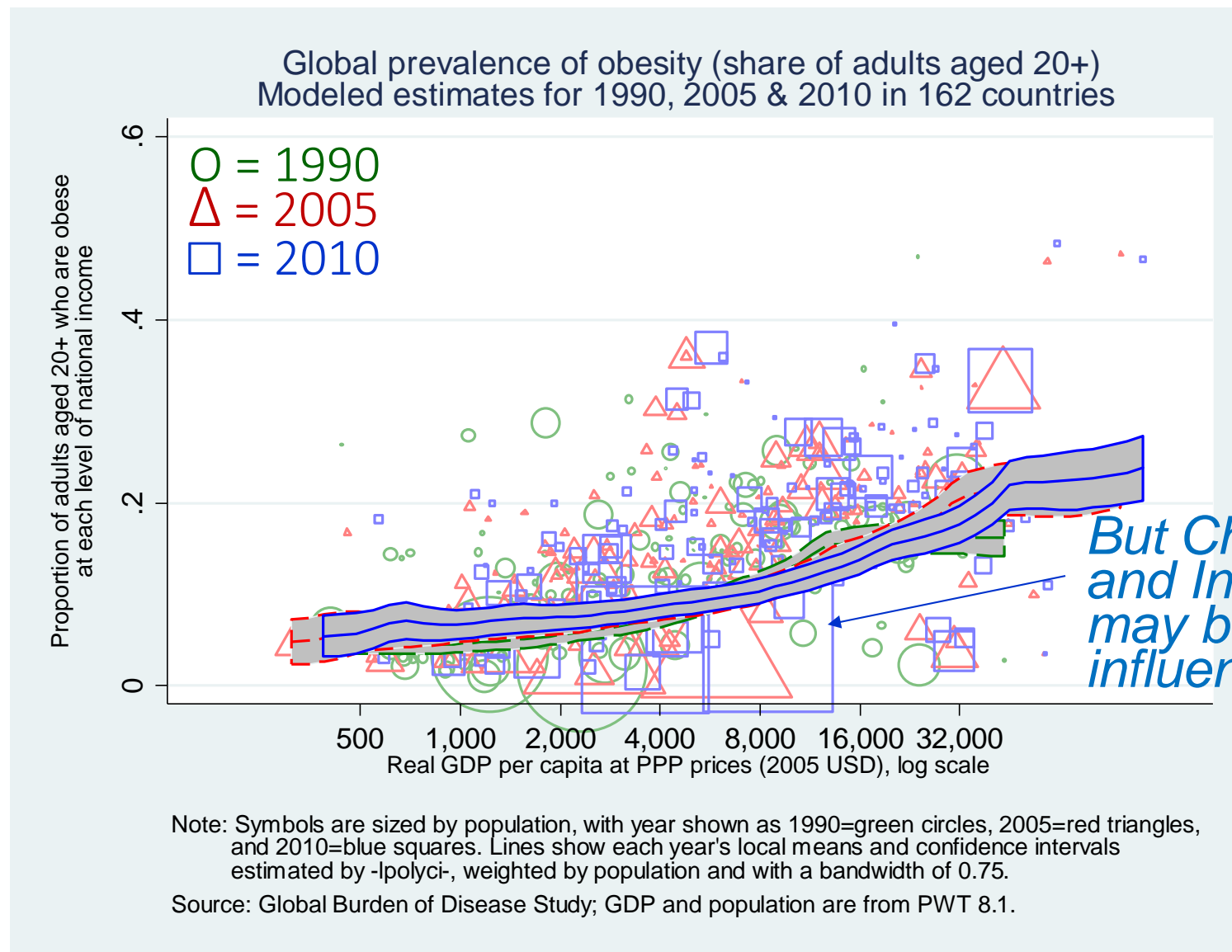
Source: World Bank, WHO and UNICEF joint data; GDP and population are from PWT 8.1.

The most visible kind of change:
adult obesity

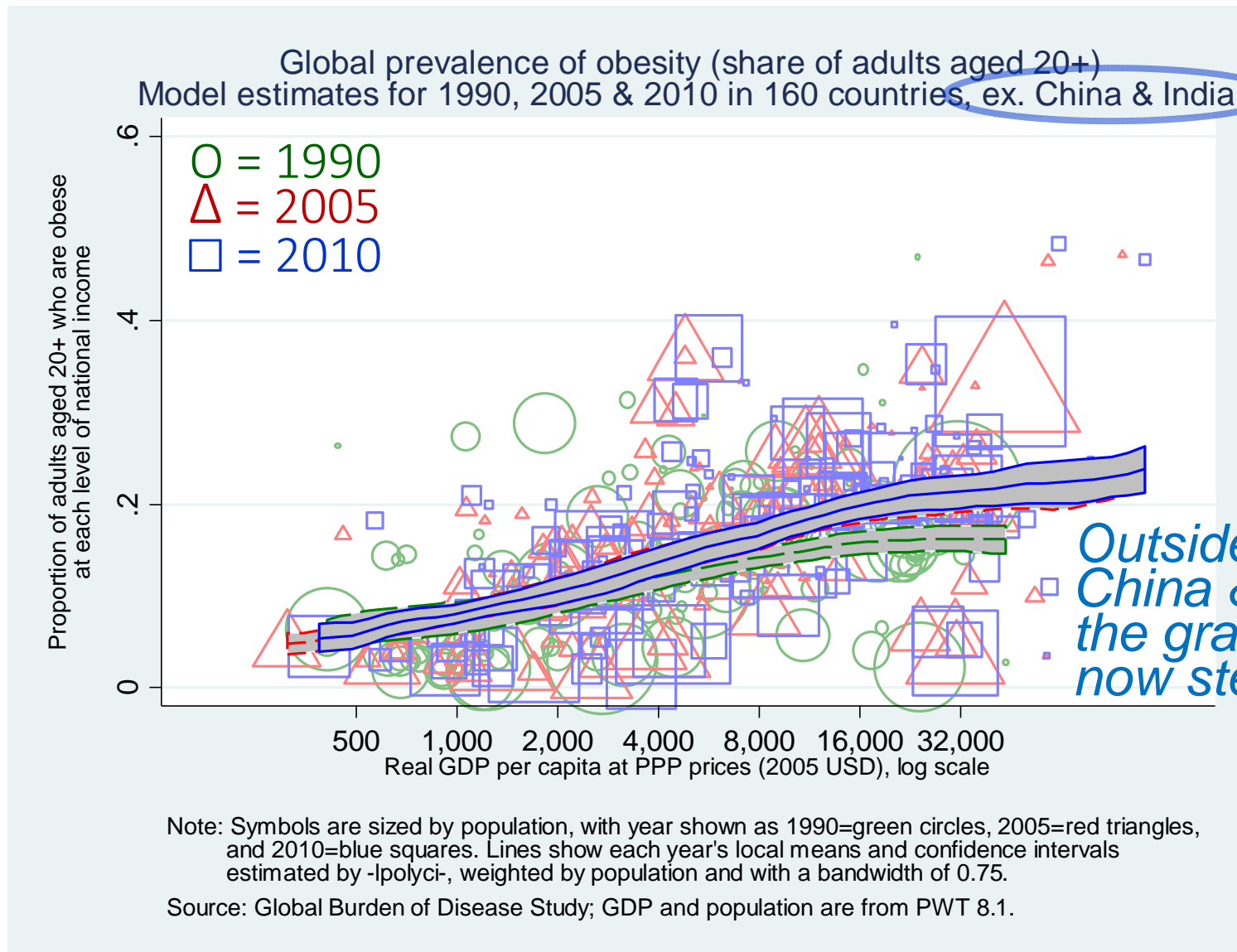
Adult obesity had a clear income gradient in 1990



From 1990 to 2010, did the income gradient shift?

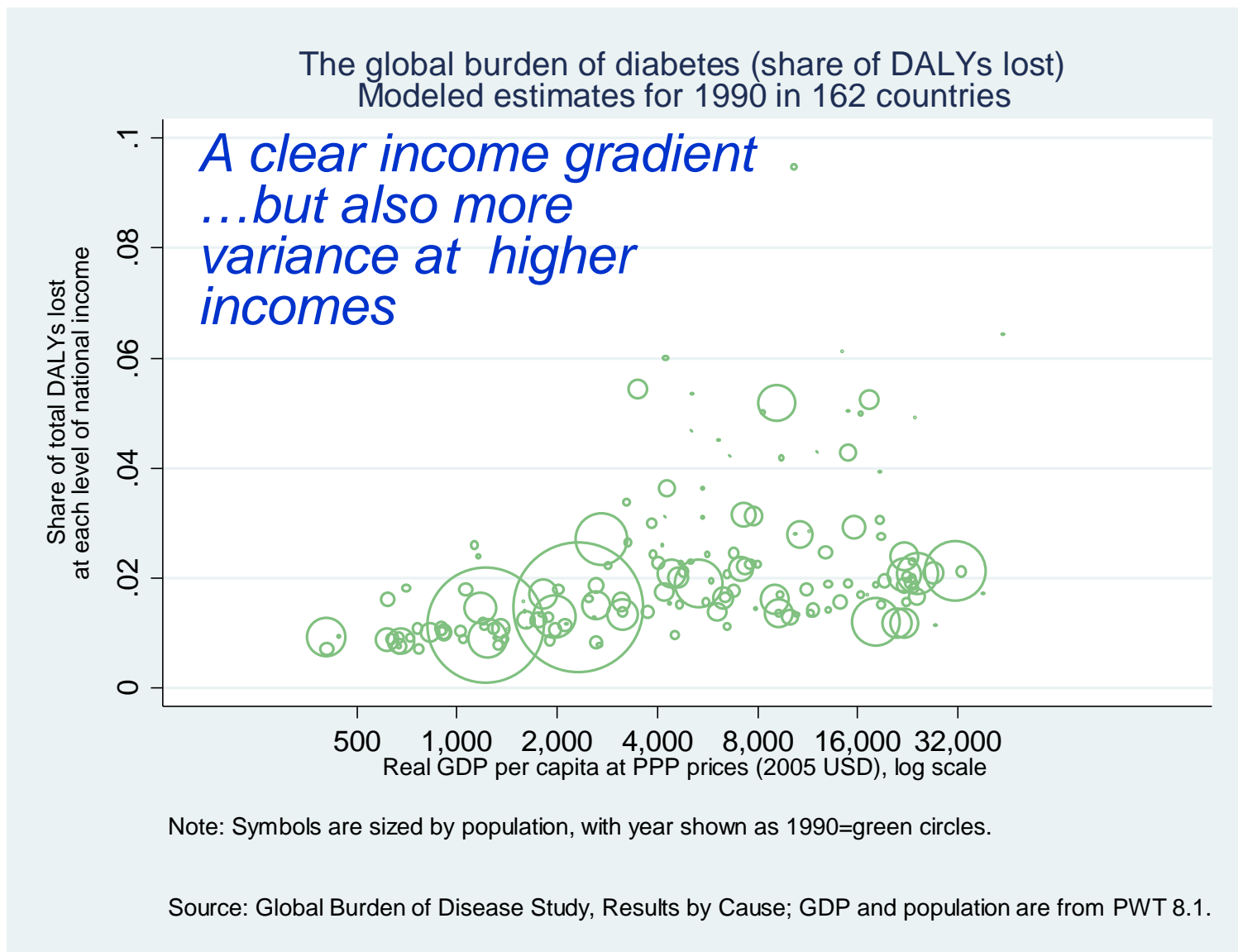


Adult obesity has shifted up in richer countries

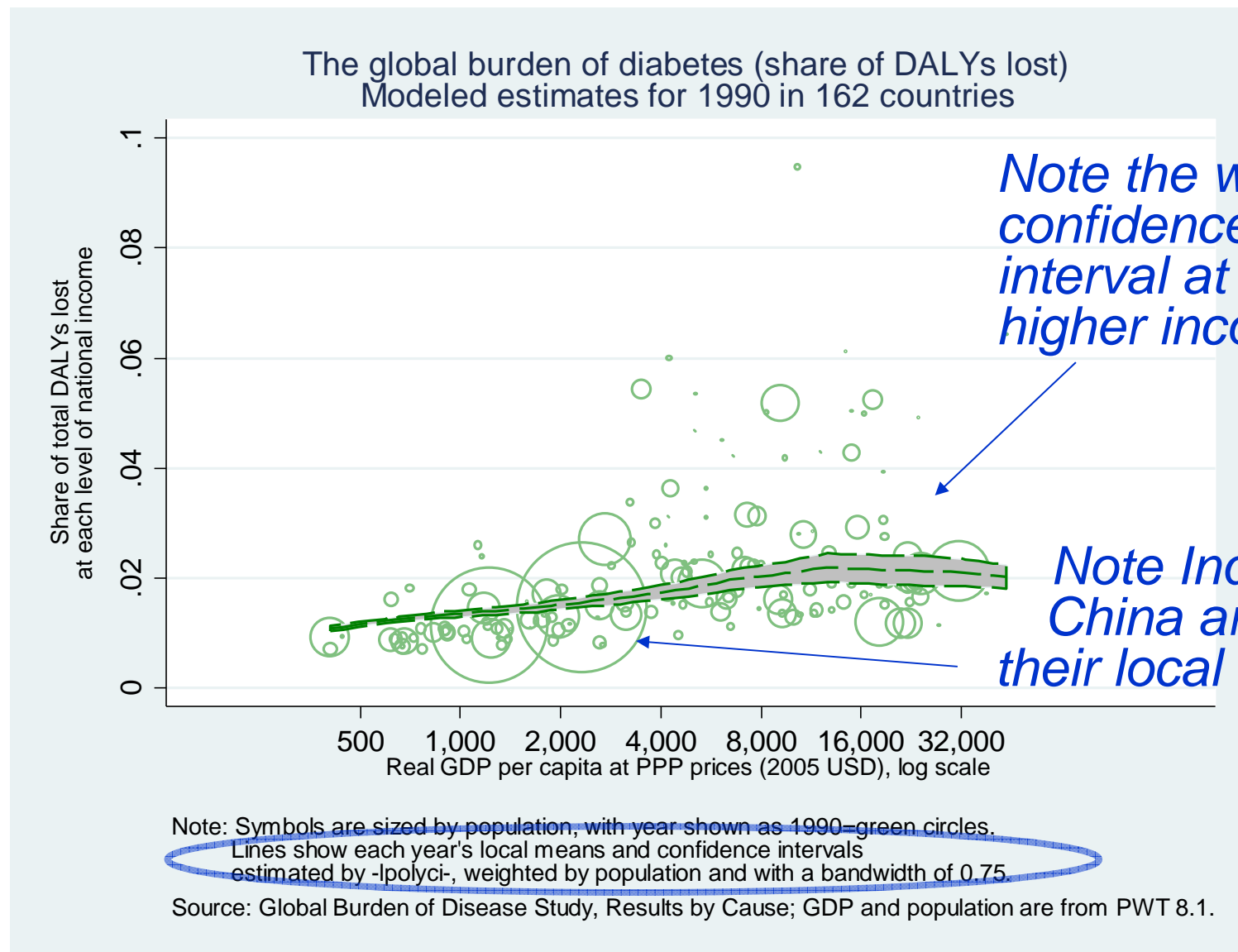


The worst diet-related disease:
diabetes

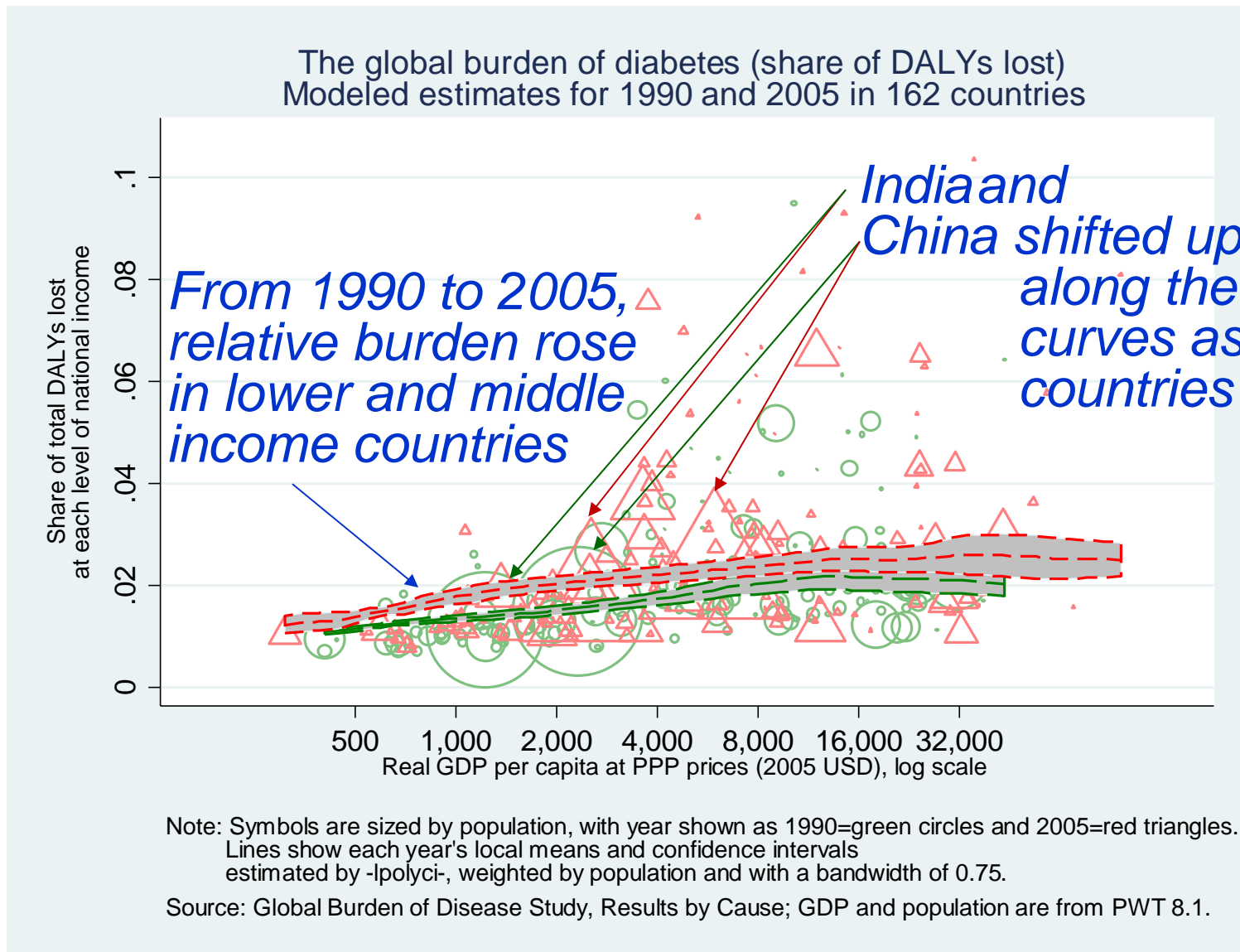
Diabetes burdens in 1990



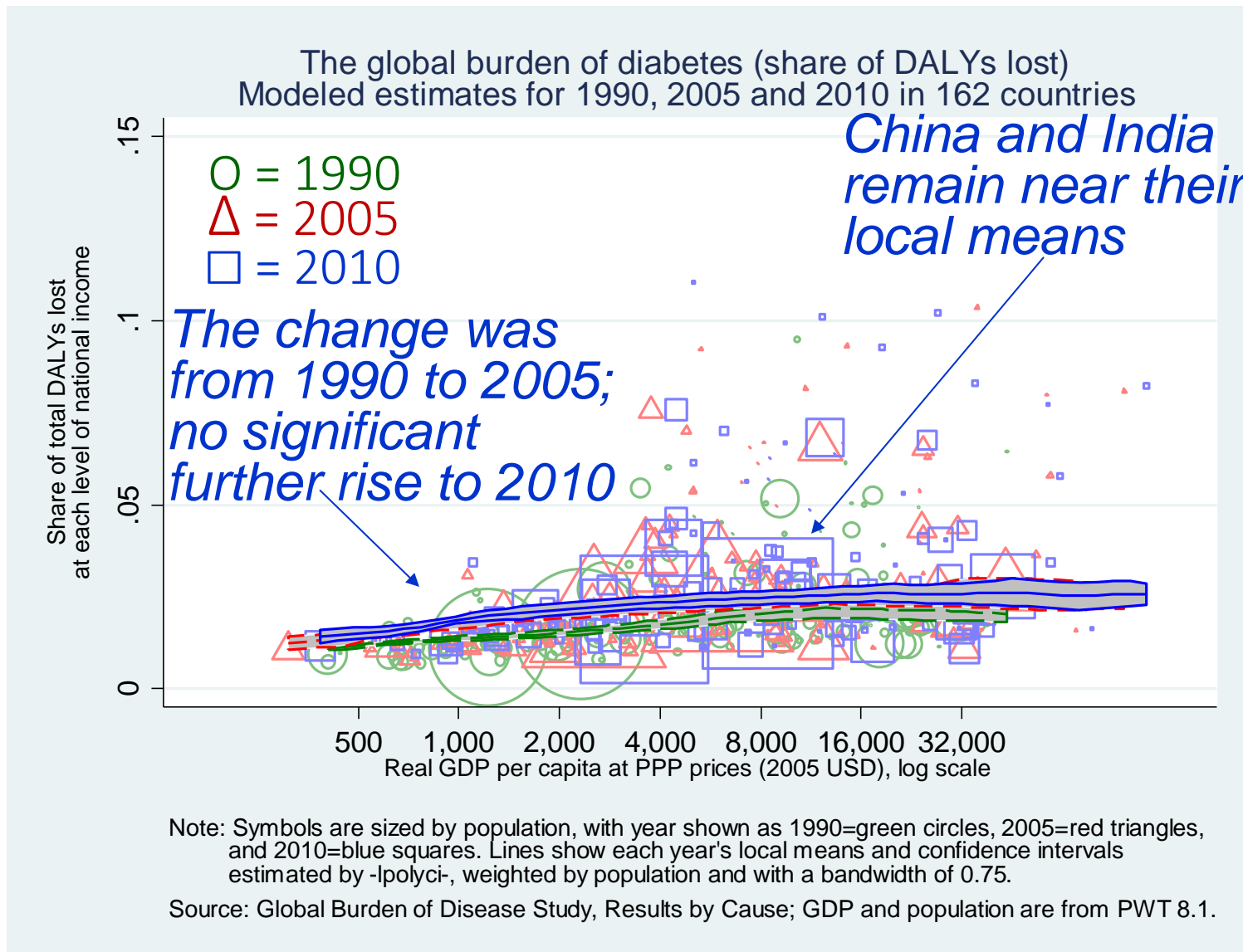
Diabetes burdens in 1990, with local means



Changes in diabetes from 1990 to 2005



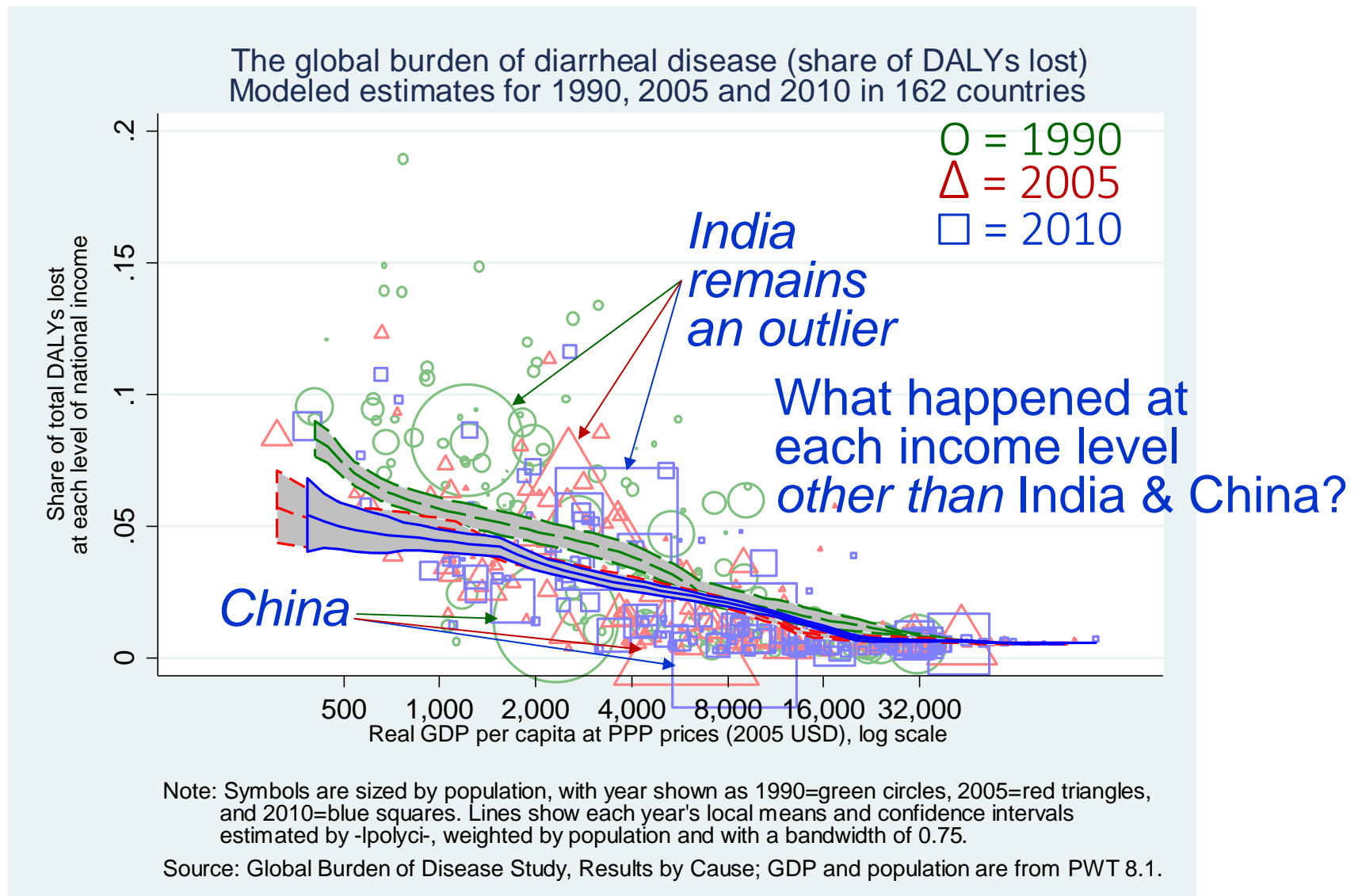
Diabetes burdens have risen in poor countries



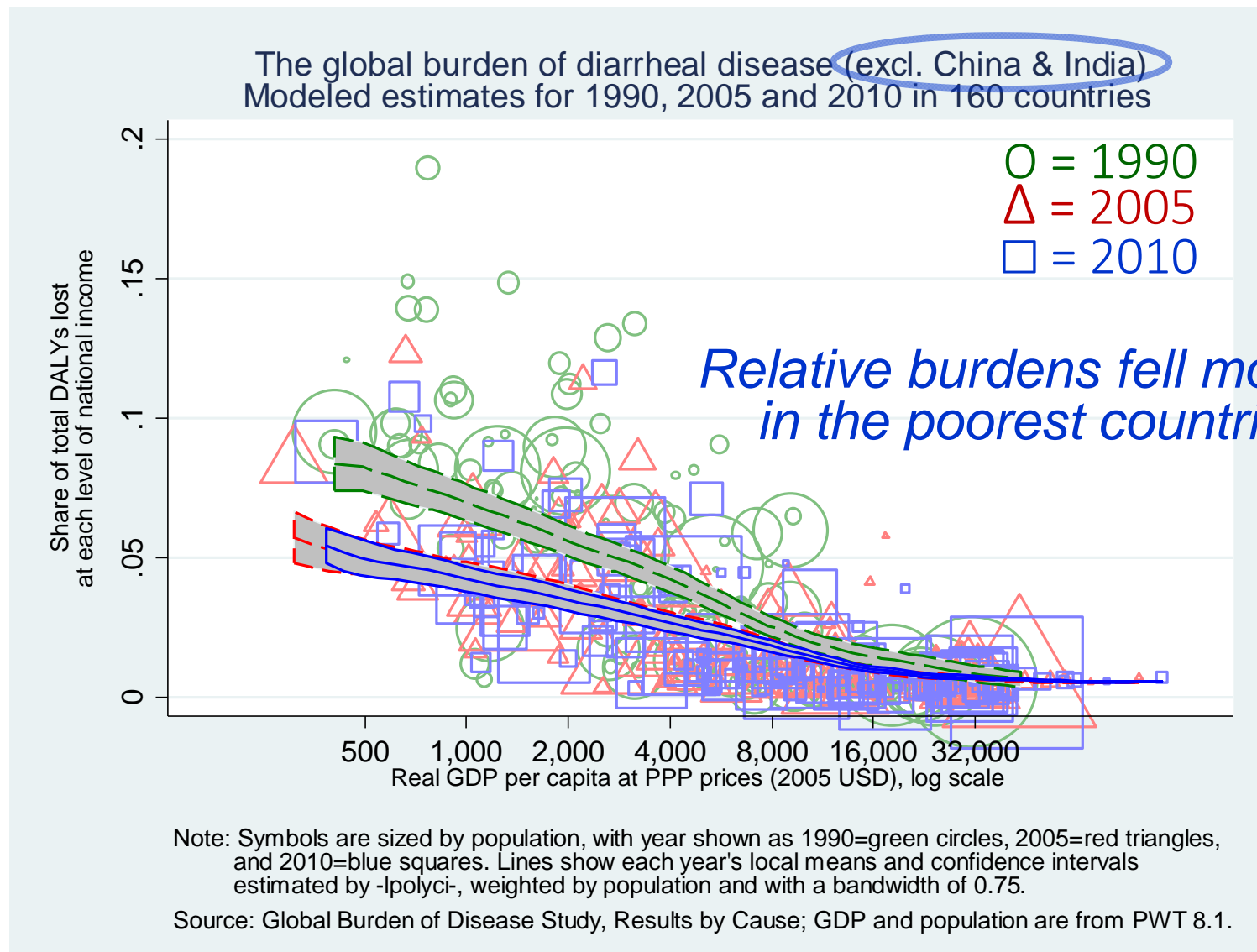
Now contrast with the signature
illness of undernourishment:

diarrheal disease

Diarrhea burdens have fallen but are still large



Diarrhea burdens have fallen but are still large



In conclusion:

Fifteen years into the 21st c., we have...

- **Progress on stunting and wasting**
...large gains from higher income,
and also big improvement in poor countries
- **Sharp rise in obesity**
...so far, almost entirely due to higher income
and also worsening in the richest countries
- **Rapid shift in diet-related diseases**
...worsening of diabetes at low and middle incomes
while diarrhea is improving in poor countries

Looking forward: In the coming decades, we can...

- **Complete eradication of stunting and wasting**
...and reap large gains
in later health & cognition
- **Bend the curve of obesity**
...and reverse its rise
at higher incomes
- **Treat and prevent diet-related diseases**
...such as diabetes and diarrhea

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thank you!

