Food miles: Starving the poor?

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March 2009
1. Introduction

- Food miles measure the distance food travels to reach consumers plates
- Although substituting local food for imported produce will not necessarily reduce greenhouse gas (GHG) emissions, the food miles movement is widely supported by consumers and import-competing producers
- We investigate the economic implications of food miles-induced preference changes in Europe using a global, economy-wide model
2. Outline

3. Food miles

4. Modelling framework & results

5. Conclusions
3. Food miles

- The phrase ‘food miles’ was first coined by British academic Professor Tim Lang in the mid-1990s.

- By 2003-04, news articles on food miles were appearing in UK media on a daily basis.
  - Stated that one easy way consumers can reduce their carbon footprint is to reduce the amount of food in their diets that has travelled long distances.

- Food miles campaigns are driven by commercial advertising, food security and lobbying by environmental groups.
3. Food miles

- Food miles are an inadequate measure of environmental sustainability.

- An accurate assessment of the environmental consequences of consuming food from different countries should evaluate GHG emissions during each product’s lifecycle.

  - Saunders et al. (2006) estimate that, after taking into account transport to the UK, the energy associated with certain from New Zealand is lower than that associated with equivalents from alternative sources.
Food miles arguments also ignore the energy efficiency of alternative transport modes.
3. Food miles

- Nevertheless, food miles arguments has gained momentum in the UK and other part of western Europe
  - 40% of UK consumers prepared to pay an average of 10% more for environmentally-friendly goods
  - 71% of people aim to reduce their personal carbon footprint by often buying more UK-grown fruit and vegetables
  - 21% of European consumers have bought locally-produced products or groceries in the past for environmental reasons
  - “Chefs serving out-of-season produce should be fined” (Gordon Ramsay)

- We consider food miles movements in the UK, France and Germany (active nations)
We analyse the economic implications of food miles movements using ‘GTAP6inGAMS’

- Considers inter-regional and inter-sectoral interactions
- Provides a representation of the global economy in 2001

Our aggregation of the database identifies 15 regions

- Australia, New Zealand, Sub-Saharan African nations (Madagascar and Malawi), and others
Distance from the UK (kms)
4. Modelling framework & results

Agro-food exports relative to GDP (significance measures) to active countries
4. Modelling framework & results

We model preference shifts as iceberg transport costs using a flexible form that allows for different distance-preference shift relationships.

\[ \lambda_r^s = \alpha + \beta d_r^s \]

- where \( \lambda \) is the proportion of exports from region \( r \) to active regions \( s \) that melts during transportation
- \( d \) is the distance between regions \( r \) and \( s \)
- \( \alpha \) and \( \beta \) are parameters
In our base simulations we set \( \alpha = 0 \) and calibrate \( \beta \) so that 20% of New Zealand’s (the most distant nation) exports melt.
Welfare changes, EV as a % of GDP

- New Zealand
- Australia
- United States
- Madagascar
- Malawi
- Rest of EU
- RoW

UK
Germany
France
4. Modelling framework & results

- We also consider alternative values of $\alpha$
  - Suppose $\alpha = 0.2$

\[ \lambda_{NZL} = \lambda_{MLW} = 0.2 \]

\[ \alpha = 0 \quad \alpha = 0.2 \]

Distance

$\text{d}_{MLW} \quad \text{d}_{NZL}$
Welfare changes, EV as a % of GDP
(food miles preference changes in all active nations)

$\alpha = 0.2$

$\alpha = 0$
5. Conclusions

- Although flawed, food miles arguments could change preferences in western Europe.
- The largest losers from food miles movements will be some of the world’s poorest nations.
- Food miles campaigns will increase global inequality without necessarily improving environmental outcomes.
- Pacific focus and future research:
  - A large number of visitors to the South Pacific arrive by air.
  - The UK has implemented a carbon-related air passenger tax.
  - Need to calculate carbon footprints for alternative holiday experiences.
  - Consider economic implications and highlight inequality concerns.
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