GLAMUR
Global and local food assessment:
a MUltidimensional performance-based approach

SEVENTH FRAMEWORK PROGRAMME

Sustainability of local versus global bread supply chains: a literature review

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Outline

- Background
- Objectives
- Methodology
- Results
- Discussion

Background

- Social,environmental and economic issues (population growth, soil infertility, depletion of natural resource, waste management, market volatility and changes in consumer behavior) have rapidly focused public attention on the food supply chain (European Union, 2014)
- The sustainability of the food supply chain is a core issue in the research and policy debate
- A major stream of literature contrasts and compares local versus global food chains

Background

- Increasing knowledge of the resource efficiency of the food supply chain can help to meet EU global challenges (European Commission, 2011)
- A number of research papers have been published which contrast (Wilhelmina et al., 2010) and compare (King et al., 2010) local versus global food chains, pointing out the challenges in meeting sustainability goals
- No consensung among research paper results on sustainability of food supply chain lenght

Background

- No consensus among sustainability dimensions definition
  - Economic, environmental, social
  - (ethical)
  - (health)
- The assessment of sustainability of food supply chains is complicated by three sets of issues
  - Lack of shared definition of local and global supply chains
  - identification of suitable criteria and indicators for the assessment
  - a common and robust methodology
    - Monetary Vs non-monetary valuation

Objectives

- Frame the state of the art about assessment of food supply chain
- Highlight empirical challenges on assessment of supply chain length sustainability
  - Highlight most studied dimensions of sustainability - economic, environmental, health, social and ethical
  - Case study on the bread supply chain

Why a focus on bread supply chains?

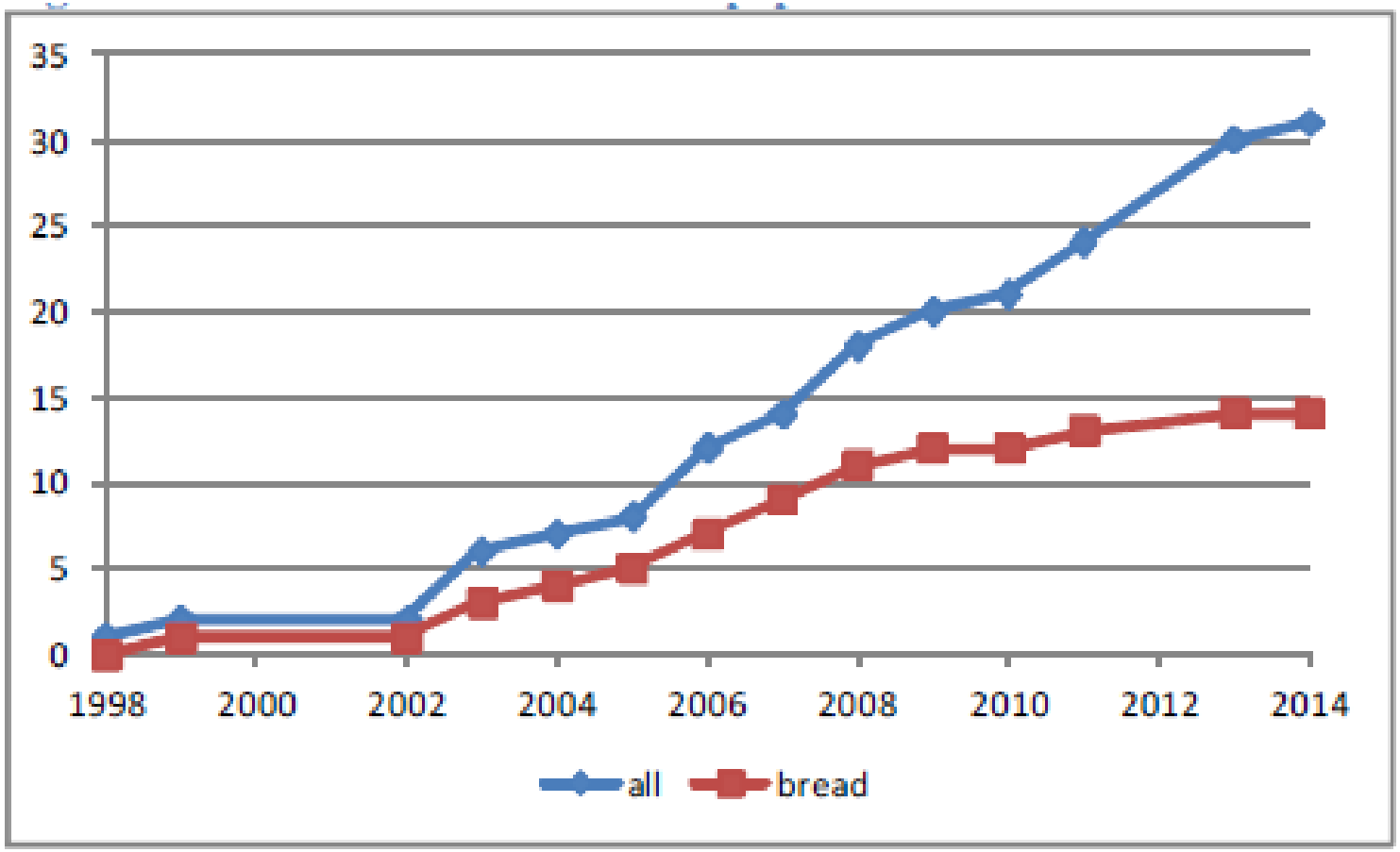
Two main reasons :

1. Common set of row materials(…), but very diversified process:
    1. very local (i.e. within one farm) vs very global (i.e. Multinational etc.) supply chain
2. The wheat to bread supply chain contrasts “local” and “global” issues:
    - The use of locally produced wheat as opposed to imports from large scale distant producers
    - Industrial vs. artisanal processing technologies and standardized vs typical bread
    - The centrality of bread as a staple food and within almost any diet across the world and implications in terms of affordability and food security

Methodology

- Systematic literature review (Fink 2014, Pfau et al. 2014)
  - Search terms and strings on WoS and Scopus
  - Duplicates elimination and availability by academic institutions
  - Manual screening : “Does the paper assess the sustainability of a food supply chain?” “What indicators is / are used for which dimension/step?”
  - 31 papers were selected for review

Results papers on food chain assessmet (cumulative distribution)



Results
indicators avialable (economic)

Attributes	methodological paper	empirical analysis		Total
		bread sector	Other sectors	
Income	0	0	6	6
Competitiveness	0	5	0	5
Costs	0	0	2	2
Financial risk	0	0	2	2
Export	0	1	0	1
Import	0	1	0	1
Information & communication	0	0	1	1
Local embeddedness	0	1	0	1
Potential for investment in innovation & technology	0	1	0	1
Relocalization	0	1	0	1
Technological innovation	0	0	1	1

Results
indicators avialable (environmetnal)

Indicators	methodological paper	empirical analysis		Total
		bread sector	Other sectors	
Water	4	5	21	30
Biodiversity	1	1	6	8
Soil quality /land use change	8	0	1	9
Pollution	7	0	0	7
Emissions	1	2	3	6
Waste	4	2	0	6
Resource depletion	0	0	4	4
Climate change	0	3	0	3
Energy	1	1	1	3
Forestry	2	0	1	3
Efficiency	0	0	2	2
Agricultural inputs	0	0	2	2
Ecological embeddedness	0	0	1	1
Ecological network	1	0	0	1
Risk	0	0	1	1

Results
indicators avialable (social/ethics & health)

Attrubutes	methodological paper	empirical analysis		Total
		bread sector	Other sectors	
Animal Welfare	0	0	5	5
Labour relations/connection	0	0	5	5
Employment	0	1	0	1
Income of specifc group	0	1	0	1
Tax	0	1	0	1

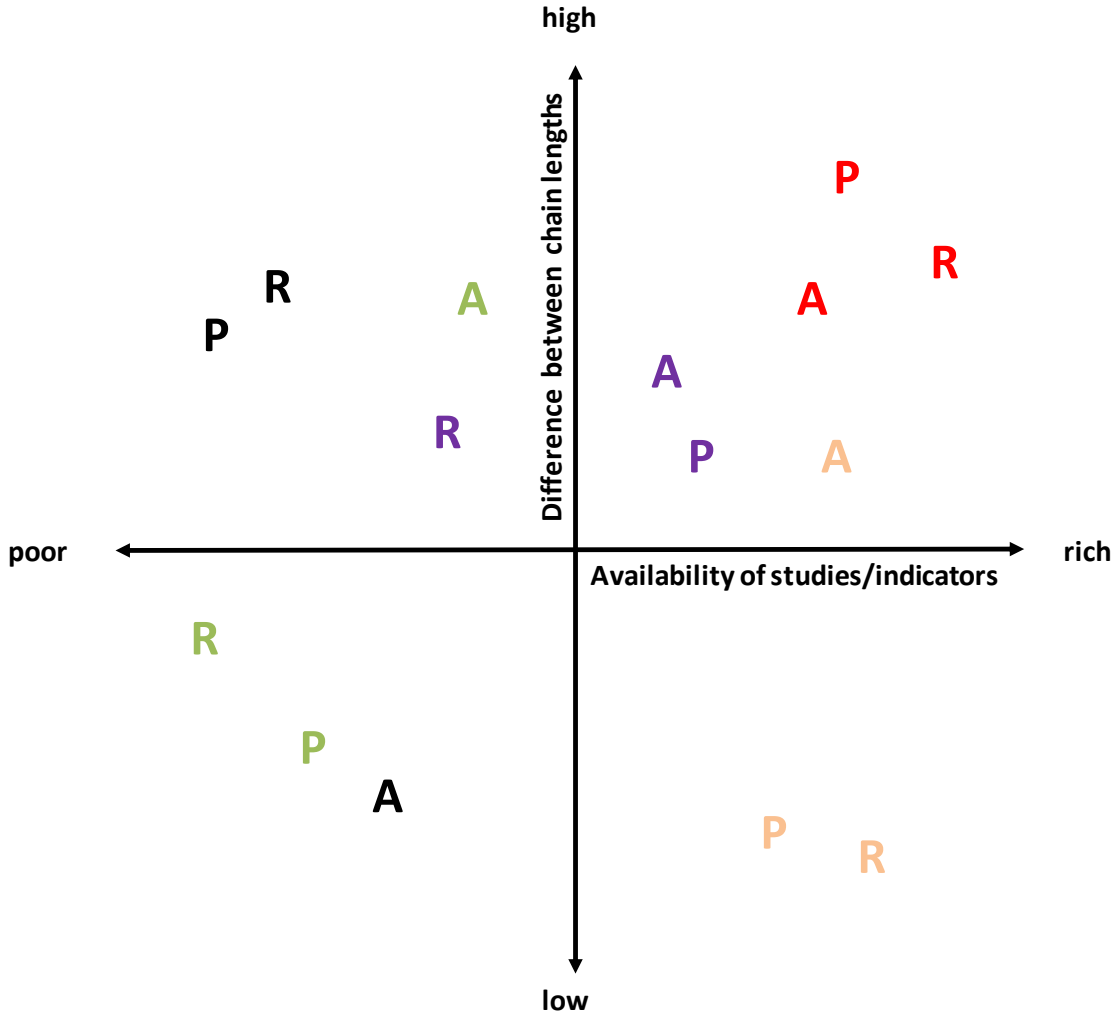
Attributes	methodological paper	empirical analysis		Total
		bread sector	Other sectors	
Food safety	0	0	1	1
Nutritional quality	3	0	2	5

Results
indicators avialable for food supply chain steps

Dimension	production	processing	Retailing	full supply chain
Economic		1	2	9
Environmental	26	1	7	38
Social/Ethic	3			7
Health				6

Dimension	production	processing	full supply chain
Economic	1	1	8
Environmental	1	1	12
Social/Ethic			3

Results
chain lenghts differences VS data/indicators avialability



Supply Chain phases:
A= Production
P= Processing
R= Retailing

Dimensions:
Economic
Environmenttl
Ethic
Health
Social

Discussion

- Very Preliminar results
- Results point out that despite its relevance for land use and for its weight on the international trade, the bread supply chain lacks a comprehensive assessment in terms of all sustainability dimensions and for all steps of the supply chain.
- Health, social and ethic dimensions in relation to the processing and retailing phases are less investigated and would deserve more attention by the scientific community

Discussion

- The paper highlights several directions for further work due to the potentially of increasing sustainability assessments by understanding the causal links between food supply chain and the impacts.
- Room for further developments can be found in the statistical comparison (meta-analysis) on alternative food supply chain lengths.
- Even if large literature deals with quantification of impacts on several sustainability dimensions, aggregated assessment taking into account all relevant dimensions is still missing.
  - monetary assessment of the impact across the food supply chain and/or use of weights of MCA can allow a comparison of utilities of the supply chain stakeholders and of society whose utility is affected by stakeholder's actions.

Thank you for your attention

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