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Overview and theory relating to the concepts of competitiveness, efficiency and productivity

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The concept of competitiveness

- The literature using the concept of competitiveness is rich
 - Academia (scientific articles, conference papers)
 - European Commission, OECD, FAO, ...
 - Technical institutes, extension bodies, professional farming organisations, ...)
- Profusion of definitions
- Economic theory provides no clear definition
- Studies adopt their own definition

- Tentative definition from my own readings
 - Ability to be successful when facing competition
 - Ability to sell products that meet demand requirements (price, quality, quantity), and, at the same time, ensure profits over time that enable the firm to thrive

- It is a relative measure
 - Within domestic markets: firms or sectors in the same country are compared with each other
 - Within international markets: comparisons between countries

- Competitiveness is a **broad and fuzzy concept**
- **But agreement** on the fact that **it is useful**
 - in assessing **how resources** (production factors, public subsidies) **should be allocated** within an economy (across sectors, regions, firms) in view of economic growth and social welfare
 - in investigating the **consequences of trade negotiations and agricultural policy reforms** on farm and food sectors

Measurement of competitiveness

Large array of indicators in the literature

From two approaches:

1. Approach based on **trade success**
(exchange rate, export shares, comparative advantage)
2. Approach based on **firms' performance**
(costs of production, profitability, productivity, efficiency)

1. Approach based on trade success (for a country)

- **Exchange rate:** reflects the demand for the currency (and hence for the goods) of a country
- **Export shares:** show the place of a country on the international markets
- **Comparative advantage:** (comparing exports of a good by a country, to those by other countries): shows the superiority of a country in the production of a good

The approach based on trade:

- uses **aggregated data (macro-economic)** on trade flows;
- allows **compare countries** and assess their international competitiveness, depending on the sectors;
- but does **not** allow compare the competitiveness across sectors or **across firms within a country**

2. Approach based on firms' performance

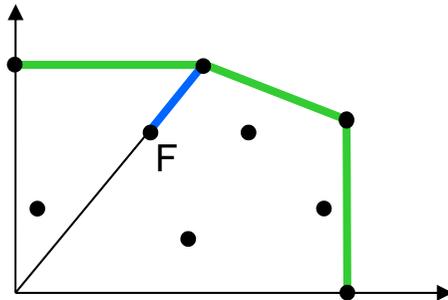
Using **profitability** and **costs**

- **Opportunity costs of domestic production:** comparing production cost within a country to the value added of output at world price
- **Production costs of a good per unit of size:** e.g. per labour unit, per hectare
 - Fixed costs: land, other assets, labour
 - Variable costs: specific costs varying with production
- **Profitability:** comparing production costs to revenues

Using *productivity* and *efficiency*

- **Ratios of partial productivities:** yield, labour productivity, ...
- **Total factor productivity (TFP):** ratio of aggregated outputs to aggregated inputs
- **Technical efficiency:** shows the ability to produce the highest possible level of outputs with a given technology
- **TFP change over time:** increase of technical efficiency (firms are getting closer to the possible production frontier) + **technological progress** (possible production frontier shifts over time)

Quantity of output 1 per input unit ($Y1/X$)



Quantity of output 2 per input unit ($Y2/X$)

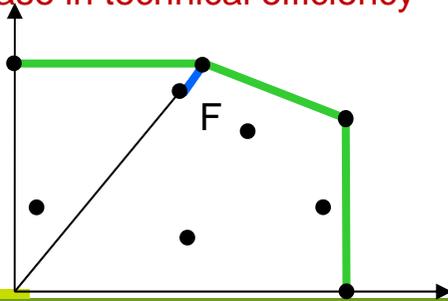
• Sample's farms

Possible production frontier

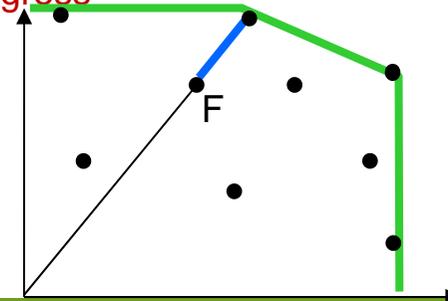
Technical inefficiency of farm F

Increase in total factor productivity (TFP)

Increase in technical efficiency



Technological progress



Determinants of competitiveness

Methodologies to explain competitiveness

- **Competitiveness is measured for separate sub-samples**

Firms are separated into sub-samples depending on specific criteria (location, size, production sector, legal status, observation period, ...)

Comparison of competitiveness averages across sub-samples

- **Statistical (econometric) analysis**

Estimation of coefficients α and β : $competitiveness = \alpha + \sum_k (\beta_k * determinant_k)$

Quantifies the impact of each determinant

Potential determinants of competitiveness

- **Determinants controllable by firms**
 - Size and other structural characteristics (legal status, type of inputs, ...)
 - Social capital (age, education, ...)
- **Determinants beyond firms' control**
 - National factor endowments, demand conditions
 - Soil and climate conditions
 - Other location conditions (infrastructures, density, ...)
 - Risk, price volatility
 - Government intervention (R&D, subsidies, regulations, ...)

Focus on productivity and technical efficiency of farms

- No clear cut findings on the role of **determinants on which farms have control** (size, type of production, degree of specialisation, reliance on external inputs, age, time spent off farm) - **except for positive effect of education**
- **Negative** impact of **poor climatic and soil** conditions
- **Positive** impact of transport and market **infrastructures**
- No clear cut findings on the role of **public subsidies** to farms
 - Used to be general agreement on negative effect
 - But recent evidence shows otherwise
 - **Depends on methodology used, subsidy considered, static vs. dynamic**

Conclusions

Competitiveness: a fuzzy concept

- No agreement on its definition
 - But intuitively everybody has the same underlying idea (ability to survive and thrive when facing competition)
 - Remaining question: 'thrive' in terms of what?
- No agreement on the way to measure it
 - E.g. at the micro level: productivity or profitability?
 - *Using a single measure is not sufficient to have robust insights*

Necessary to overcome the static nature

- In general measurement in a specific period
- But competitiveness is the ability to sustain a dominant position **in the long term**
- Some firms may be uncompetitive in the short term because they have implemented actions to become competitive in the long term
- ***Need to measure the evolution over time, and to account for firms' dynamic behaviour***

Need to account for government intervention

- Some competitiveness indicators may be **distorted by government intervention**
 - Subsidies favouring exports
 - Tariffs or veterinary standards limiting imports
 - Direct subsidies or price intervention increasing profitability
- Competitiveness may be **artificially** high or low

Need to concentrate on non-price competitiveness

- Non-price competitiveness **important in gaining market shares or sustaining profits**
 - Product quality: especially important in international comparisons
 - Service
 - Reputation
 - Environmental or social actions
- But almost never investigated

Thank you

For further information:

Latruffe, L. 2010. **Competitiveness, Productivity and Efficiency in the Agricultural and Agri-Food Sectors**. OECD Food, Agriculture and Fisheries Working Papers, No. 30, OECD Publishing. 63 p.

Free access: http://www.oecd-ilibrary.org/agriculture-and-food/competitiveness-productivity-and-efficiency-in-the-agricultural-and-agri-food-sectors_5km91nkdt6d6-en

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Free access: <http://www.tandfonline.com/doi/full/10.1080/00036846.2016.1194963>

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