



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

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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

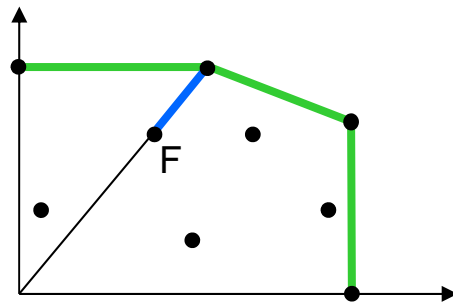
### Using *profitability* and *costs*

- **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 ( $Y2/X$ )

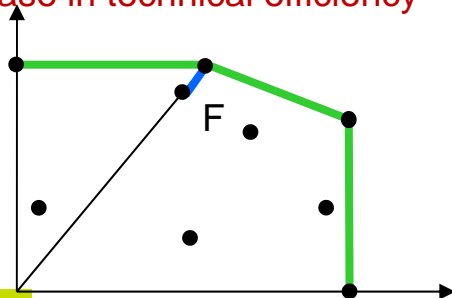
- Sample's farms

Possible production frontier

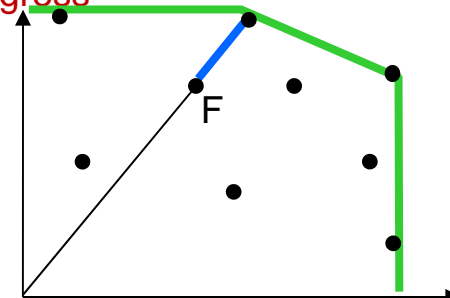
Technical inefficiency of farm F

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  $\alpha$  and  $\beta$ :  $competitiveness = \alpha + \sum_k (\beta_k^* determinant_k)$

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](http://www.oecd-ilibrary.org/agriculture-and-food/competitiveness-productivity-and-efficiency-in-the-agricultural-and-agri-food-sectors_5km91nkdt6d6-en)*

Minviel, J. J., Latruffe, L. 2017. **Effect of public subsidies on farm technical efficiency: a meta-analysis of empirical results**. Applied Economics, 49(2): 213-226.

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

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