Evaluation of CAP measures applied to the starch sector

Analysis of income effects of coupled aid delivered to starch potato growers

European Evaluation Helpdesk
Good Practice Workshop "How to assess direct payments in the new CAP"
Athens, 9-10 November 2022

© stock.adobe.com

European Commission

EVALUATION CARRIED OUT BY:

EEIG AGROSYNERGIE

Rue Belliard, 20, Boite 2- 1040 Etterbeek - BE
Tel. (+39) 06.85.37.35.21
Email: a.devot@oreade-breche.fr

Context and objectives of the evaluation

- Carried out in 2010 and considered the CAP measures applied to the starch sector (cereal and potato starch) after the 2003 CAP reform (Single Payment Scheme)
- 2003 CAP reform → to maintain / increase and stabilizer the income of farmers

Objective: Assess the effects of partial decoupling applied to the starch sector (cereal and potato starch) on:

- Production decision and geographical area of production
- Market orientation and competitiveness of farmers
- Farm income
- Structural changes in the starch sector

Also, a prospective analysis of potential effects associated with the removal of coupled support introduced by the CAP Health Check as of 2012

Geographical scope → EU-27 with a focus on the main potato starch producers (DE, FR, NL, SE, DK, FI, PL)

Period of analysis → from 2000 to 2010 (previous CAP programming period > 2007-2013)

Method and tools

- Theoretical framework in order to:
  - establish a counterfactual situation and
  - assess the role of other drivers (sugar CMO reform)

- Quantitative empirical assessment with statistical analysis of:
  - Data from Eurostat (FADN, Prodcom, Comext), Comtrade, national databases
  - Private databases (Global Industry Analysts, European – GIA, Association of cereal and potato starch manufacturers-AAF)
  - Primary data (survey with manufacturers and end-user industry)

- Qualitative empirical assessment:
  - 7 National Studies and Case Studies (in DE, NL, FR, DK, SE, FI, PL)
  - Interviews with farmers, manufacturers, end-users and authorities

- Bibliographic research

- Prospective analysis of full decoupling: microeconomic simulations based on FADN data for samples of starch potato growers

Difficulties and limits

Limited availability of statistical data

- Confidentiality issues
- Comparison between databases for types of starch products considered (Prodcom/Comext)
- Starch potatoes are not always identified as such

Limits arising from the use of FADN data:

A main source of data in this evaluation is the EU FADN database. However, the use of this database raised several difficulties.

- No recent data available (latest data were 3 years old at that time : 2007)
- Insufficient FADN sample for FI (no analysis done)
- Uncertain distinction between SP and potatoes for processing in DE
- No analytical accounting: analysis of whole farming system and not of a specific crop

Theoretical analysis (1)

Microanalysis of theoretical effects of coupled and decoupled payments on farmers' behaviour:

- assume that farmers seek to maximize their profit under a set of constraints (land, capital, labour force)
- profit can be written as a function depending on (1) agricultural output, (2) costs and (3) the different CAP payments.

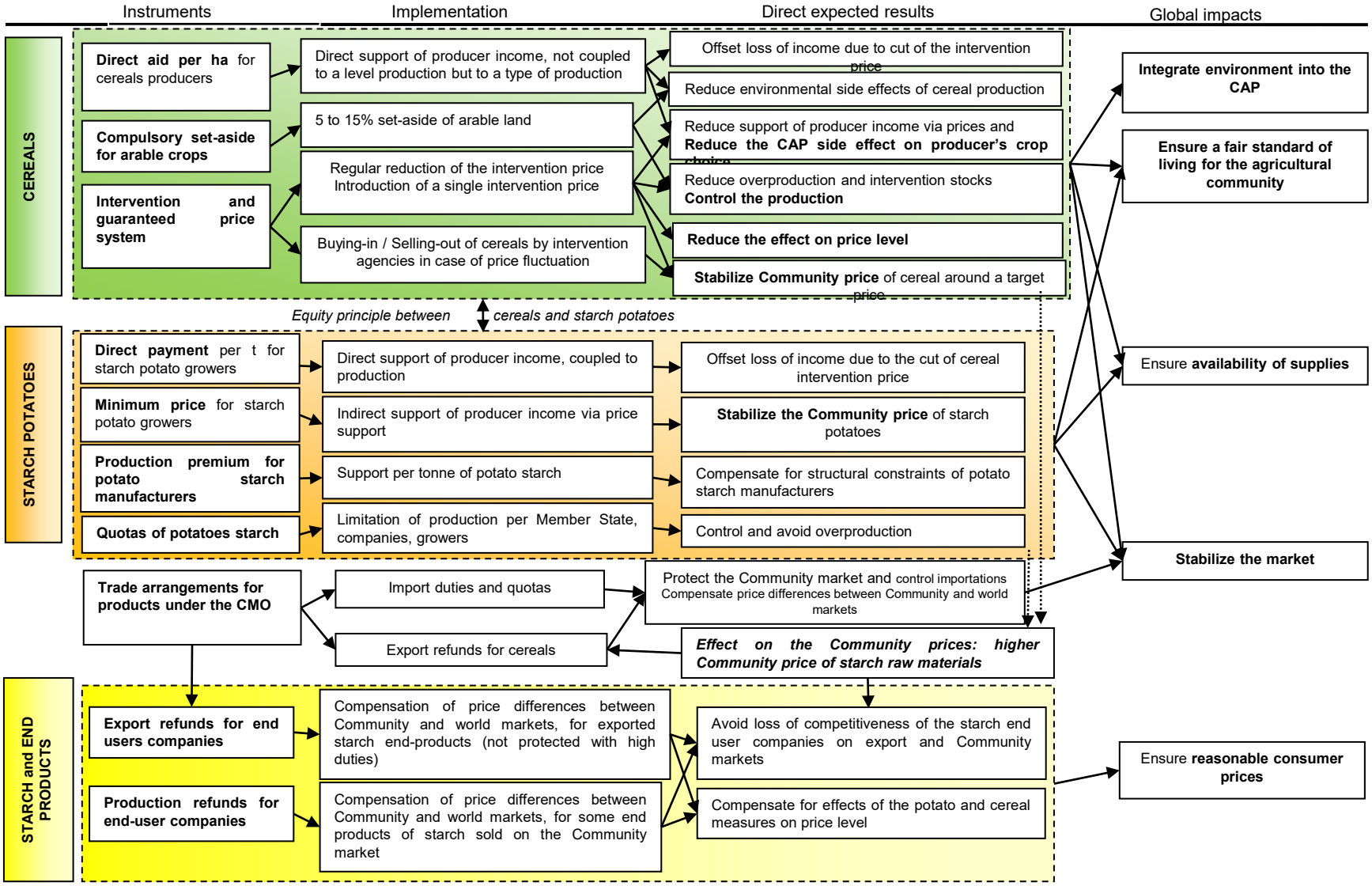
Assumptions of expected effects on crop profitability (income effect) and production choices made by farmers with different cost structures

- Coupled aid is necessary for farms with higher costs (in less adapted areas) to maintain their production, that would otherwise decrease
- In the absence of coupled aid, less profitable farms would cease starch potatoes production (* *here price support and quotas implemented at that time also play a significant role*)

Construction of the model of the intervention logic (IL) based on the theoretical analysis and the regulation analysis

- IL highlights main effects expected from the CAP interventions

Theoretical analysis (2)



Use of FADN data

Approach for analysing the specific cost and profitability of starch potatoes

- Consider the **farming system as a whole** to measure its profitability (with this approach, it is not necessary to allocate the costs per crop)
- Identification of **typical farming systems** including starch potatoes in Case Studies.

Overall sampling method

- Identify a stable farming system over time, excluding high-value crops with significant influence on farm results and the highest possible Starch Potato Output/Total Output ratio.
- Establish 3 samples to enable comparisons:
  - COP, sugar beets and breeding activities with starch potatoes (sample 1)
  - COP, sugar beets and breeding farming system without starch potatoes (sample 2)
  - Table potato farming system (sample 3)
- Express the **income per Family Work Unit per ha**

Weighting coefficients

- The selection of specific farms may disturb the **use of the FADN weighting coefficients** as starch potato sector is a “small sector” not well represented by FADN Farm types.
- Analyses were carried out with and without weights to highlight potential bias.

Effects of coupled supports on Starch Potato Grower Income

To what extent have the measures applied to the starch sector contributed to maintaining / increasing income of farmers?

Indicators :

- Changes in farm net income with and without support (FADN)
- Yearly fluctuations in farm net income with and without support (FADN)
- Other factors affecting income (opinions of stakeholders)

Main results:

Farm net income range from 100€ to 500 €/ha in MS studied over the period considered

CAP supports (direct payments and coupled aid) were significant:

- They contributed to reach positive income levels (that would otherwise have been negative)
- Coupled aid represented more than 50% of incomes after the 2003 reform

Income indicators increased due to a cereal price rise as from 2005 :

- all growers studied have cereals in their rotation plan
- cereal price is positively influencing starch potatoes price

Simulation of full decoupling on income

For different level of cereal prices (change in % and real value of wheat price).

Simulation of the corresponding changes in starch potato producer price and average income / Family Work Unit / hectare :

(1) When manufacturers do not compensate for the « loss » of coupled aid

(2) When manufacturers compensate for the « loss » of coupled aid

THE NETHERLANDS	Reference income/FWU/ha: 435 € (average 2005-2007)								
Cereal price change	-40%	-30%	-20%	-10%	-5%	0%	5%	10%	20%
Wheat price	88 €	102 €	117 €	132 €	139 €	146 €	154 €	161 €	176 €
H 1 : Manufacturers do not compensate for the loss of aid									
Simulated change in income/FWU/ha	44 €	128 €	211 €	295 €	337 €	378 €	420 €	462 €	546 €
Change from reference	-90%	-71%	-51%	-32%	-23%	-13%	-3%	6%	25%
Income/FWU/ha/Labour opportunity cost	0.1	0.2	0.4	0.5	0.6	0.7	0.8	0.8	1.0
H 2 : Manufacturers fully maintain the producer's receipt									
Simulated change in income/FWU/ha	390 €	474 €	558 €	641 €	683 €	725 €	767 €	808 €	892 €
Change from reference	-10%	9%	28%	47%	57%	67%	76%	86%	105%
Income/FWU/ha/Labour opportunity cost	0.7	0.9	1.0	1.2	1.2	1.3	1.4	1.5	1.6

Main results:

- Without compensation from manufacturers, the income would increase if cereal price increases by at least 5% (depending on MS → 10% in the Netherlands)
- With compensation from manufacturers, income would generally increase, unless significant decrease in cereal prices (up to -35% in the Netherlands)
- Starch potato farming system would not always be more attractive than the labour market depending on MS and changes in price

Lessons for the future of evaluation

- **Quantitative analyses** are used to check results from the theoretial analysis → empirical observations of trends
- But the **literature and the opinions from stakeholders** remain essential to cross-check and interpret the results from quantitative analysis
- FADN remains an extensive source of data for farm income analysis at EU level that offer many possibilities :
  - It is the most **homogeneous and reliable source of farm accounting data** in the European Community
  - It provides a **wide range of useful variables for many Farm Types**, although all methodological approaches are not always feasible (e.g. uncertain distinction between specific crops)
  - Methodological limitations exist and must be highlighted (e.g. analysis of farming systems vs crop) as they also reflect **the variety and complexity of systems in the farming sector**
  - FADN sometimes reveals different data treatment by Member States that require **ad-hoc treatment to be overcome**

THANK YOU !

The evaluation report is available here: https://agriculture.ec.europa.eu/common-agricultural-policy/cap-overview/cmef/products-and-markets/cap-measures-applied-starch-sector_en

Contact: a.devot@oreade-breche.fr

Use of FADN data (1)

Approach for analysing the specific cost and profitability of starch potatoes

FADN does not provide specific costs and profitability for starch potatoes

Two methods can be applied to identify the costs and the profitability of a given crop:

- select farms that have an output composed mainly of the studied crop output → then the specific costs of the farms can be regarded as the costs of the studied crop
- apply a cost allocation model

In this case, none of the two methods can be applied to starch potatoes that are usually rotated with various other crops.

The method applied :

- **Consider the farming system as a whole to measure its profitability** (with this approach, it is not necessary to allocate the costs per crop)
- Identification of typical farming systems including starch potatoes in Case Studies.
- In the FADN, farms applying these farming systems are **identified on the basis of their output composition**.

Use of FADN data (2)

Overall sampling method

To analyse the profitability of starch potatoes and income of growers, the study considers the farming system as a whole. The objective was to build a sample with:

- A stable farming system over time → to avoid yearly fluctuation linked to changing farming systems;
- A farming system excluding high-value crops per hectare with significant influence on farm results → all farms with vegetable, fruit and vineyard production were excluded;
- The highest possible Starch Potato Output/Total Output ratio;
- Other farming activities as little diversified as possible

Identification of three samples to establish comparisons:

- typical potato starch farming system includes COP, sugar beets and sometimes breeding activities (sample 1)
- COP, sugar beets and breeding farming system without starch potatoes (sample 2)
- table potato farming system (sample 3)

To deduce the specific results of starch potato production, the starch potato farming system was compared with alternative farming systems in each Member State.

To avoid bias due to differences in area, economic size and labour force, the results were divided by the total of farm area and over total total labour force (e.g. income per FWU per ha)

Use of FADN data (3)

Weighting coefficients

- In the FADN database, each farm has a specific weight, calculated by the FADN so that **weighted averages properly represent the European agriculture** as well as a given agricultural sector at the regional, national and EU levels. The weighting system is based on three dimensions: regions, ESU and Farm types.
- The selection of specific farms generated a bias on the weighting coefficients as starch potato sector is a “small sector” that is not well represented by Farm types. Therefore, the **FADN weight might not properly represent the starch potato sector**.
- For the ex-post analyses, it appears that results with and without weights showed similar trends. So the weighting coefficients of the FADN do not introduce a heavy bias, and they **were considered as a good proxy** and applied.

Simulation of full decoupling on profitability (2)

Estimation of full decoupling on the relative profitability of SP:

The simulation considers the various farming systems engaged in SP

To avoid bias, results associated with livestock breeding were excluded in order to focus on the **profitability of the cropping system**.

Hence, the approach based on the farming systems had to be combined with cost allocation method.

Method chosen to focus the analysis on profitability of crops:

- Examination of specific costs of cropping activities available in the FADN: seeds and plants, fertilisers, crop protection, other crop specific costs.
- Estimation of costs and external factors not specific to crops – share of farming overheads, depreciation and total labour input that can be allocated to crops based on pro rata of crop contribution to total output

The central indicator is the profitability of the cropping system per hectare and AWU defined by the Farm Net Value Added of crops, calculated as:

FNVA CROP per ha and AWU = (Crop Total Output - Crop Specific Costs - Crops share of Farming Overheads - Crops share of Depreciation)/ (Crop share of labour *Total farm area)

Simulation of full decoupling on profitability (3)

Main results:

Full decoupling would significantly hinder the profitability of the PS cropping system

- SP cropping system would become less profitable than alternative cropping systems based on cereals and sugar beets (sample 2) or table potatoes (sample 3)
- To maintain SP profitability (and secure their supply), manufacturers would need to pay a price that compensate SP growers for the loss of coupled aid. In this situation, SP relative profitability would be favoured by a cereal price decrease and conversely
- Cropping systems with table potatoes would be in most cases the more profitable. However, there is a risk of disruption of this niche market if too many starch potato growers switch to table potatoes