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The impact of the 2013 Common Agricultural Policy reform on farmer's investment decisions: a scenario analysis through farm level modelling

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Outline

- Objectives
- CAP 2013 reform and Literature review
- Methodology: Modelling and Scenarios analysis
- Selection of farms (model input)
- Model results
- Policy insight
- Conclusion and planning

Objectives

1. To provide a formalisation of farm investment decision making

2. To assess the impact of different agricultural policy and economic scenarios on farmers' investment behaviour and income

CAP reform (budget)

- With respect to the previous programming period,

an overall reduction in the allocated budget will take place from 2014 to 2021 (-5.9% if considering 2011 prices).

- The budget reduction is higher for the 2nd pillar (13.5%) than for the 1st pillar (3.2%).

- Convergence (external)

- 15% of the national envelope can be allocated to coupled payments for strategic sectors

Literature review
1 pillar

1. Policy impact on investment is a relatively less exploited topic in the context of policy analysis (especially ex ante analysis)

2. Decoupled Direct Payment can affect investment in two ways: releasing financial resources (particularly efficient in case of restricted credit access) and/or favouring better credit conditions (e.g. reducing interest rate).

3. Coupled Direct Payments, in addition, affect the relative profitability of farm activities, and hence affect investments through the different assets needed by combinations of farm activities

The literature focused **on the effects of decoupling (controversial)**

- Policies that provide cash unrelated to production will translate into a higher propensity to invest due to the increase in savings/liquidity
- Less coupled incentives result in a lower propensity to innovate as they reduce the profitability of higher production intensity or of specific crop choices

Literature review
2 pillar

1. Investment subsidies in the 2nd pillar, according to the design of RDPs in the last two CAP reforms, can also affect investments through two channels: granting capital or subsidising credit interest rates, as pointed out by Cahill (2004).

2. 2 pillar subsidies are constrained to investment, while DP are not but represent additional revenue which stabilise farm income and thefore influence their decisions and their attitude to risk

3. Reducing the net investment cost for the farm appears to be the main channelling effect, but credit facilitation appears to be a key issue for a successful investment support scheme.

The literature focused **on the effects of enhanced RD programmes in eastern European and developing countries (positive impact)**

- They are recognised to be effective in increasing on-farm investments, but some studies have also highlighted the presence of major deadweight losses

Methodology

1. Dynamic NPV maximising farm(-household) model usig integer programming (asset choice) (Viaggi et al., 2011)

Main decision variables:

- Asset choice, including land
- Labour allocation
- Crop (activity) mix (not primary focus)
- Liquidity/credit
- External investment

2. Scenario analysis

3. Data sources:
   - Investment survey 2013 (Sample of individual farms from the sample)
   - Secondary data (FADN and IPTS models)

Complementarity between (1) mathematical programming models (predictions of decisions in scenarios not observable today) and (2) econometric models **(understand the drivers of the intentions to invest as stated by the farmers in the survey).** Here, we focus on (1).

Scenario variables
Policy variable

Direct Payments :

- SFP (unit **process** payment*eligible crop up to n. of entitlements-> no entitlement trade)
- Basic Payment (unit **regional** payment*eligible crop up to n. of entitlements-> no entitlement trade)

Coupled payments

- Unit **production** payment*eligible activity (can vary across scenarios)

Investment subsidies:

- **Public support rate*** **Probability of being funded** (success rate, allocated budget)*Investment costs

Scenario analysis/1

Scenario variables	S0 - Baseline (Pre-2013 CAP)	S1 - Post 2013 CAP	S2- Post 2013 DP but no RD investment support	S3 - Increase in RD investment support, abolition of DP	S4- no DP no RD investment support
Unit value (per hectare) of decoupled Direct Payments (1st pillar)	Farm unit SFP/SAP (source GFk database[4]) or average regional unit SFP/SAP (source GfK database or FADN public database)	National Unit Basic Payment (including greening) as proposed in Reg. (EU) No. 1307/2013 * projections of change estimated yearly, source DGAgri) *(young farmer: above value*1.25, as foreseen in art. 50 of Reg. (EU) No. 1307/2013)*		-	-
Public support rate in investment subsidies (2nd pillar)	As in Council Regulation (EC) No. 1698/2005 (national level) 40% *(young farmers: 50%)*	As in art. 17 and in Annex II of Reg. (EU) No. 1305/2013 (national level) 40% *(young farmers: 60%)*	-	Double of the official value in art. 17 and in Annex II of Reg. (EU) No. 1305/2013 (national level) 80%	-

Scenarios analysis/2

Scenario variables	S0 - Baseline (Pre-2013 CAP)	S1 - Post 2013 CAP	S2- Post 2013 DP but no RD investment support	S3 - Increase in RD investment support, abolition of DP	S4- no DP no RD investment support
Probability of being funded by investment subsidies (2^{nd} pillar)	Number of farms funded under investment subsidies (measure 121)/total number of farms declaring complete data on RD subsidies received, in the GfK database: 0.2		-	Number of farms funded under investment subsidies (measure 121)/total number of farms declaring complete data on RD subsidies received, in the GfK database: 0.2	-
Coupled payments	Unit coupled payments as in S1 and S2, eligible crop and livestock categories prior to 2013 CAP reform are provided by DGAgri	Unit coupled payments estimated based on annual average national DP envelope * % allocated to coupled payments (as foreseen in). National ceilings and eligible crop and livestock categories are provided by DGAgri.		-	-
Agricultural product prices	According to yearly projections of the 2013 Medium-term Prospects for Agricultural Markets and Income (EC, 2013)				

Farm selection general criteria

1. for each country one region is selected for each specialisation and (at least) two farms are chosen within each region.

2. regions holding the highest national share of agricultural production of a given specialization are selected within each country.

3. within each region, farm are selected according to size: one smaller and one larger farm than the median of the region (Eurostat data).

N.B.
However, in some case choosing the extremes of the regional sample results to be more meaningful, as the number of farms is very limited and, usually, the smallest farm of the sample correspond to the average of the region (Eurostat data).

Number of farms modelled

50 MODELS	Arable	Livestock	Mixed farms	Total country
Italy	3	3	4	10
France	4	3	2	9
Germany	2	3	4	9
Spain	4	3	0	7
Poland	3	3	2	8
Czech Republic	2	3	2	7
Total specialization	18	18	12	50

Results – Impact of scenarios on farm income

		Scenario S1	Scenario S2	Scenario S3	Scenario S4
Arable	mean value	7%	9%	-19%	-22%
	standard deviation	24%	20%	10%	12%
Livestock	mean value	0%	-4%	-13%	-20%
	standard deviation	6%	8%	14%	12%
Mixed	mean value	1%	-2%	-10%	-14%
	standard deviation	7%	9%	7%	11%

Data are given as increment % with respect to the baseline scenario

Results – Impact of scenarios on investments

		Scenario S1	Scenario S2	Scenario S3	Scenario S4
Arable	mean value	26%	-1%	-200%	-300%
	standard deviation	225%	125%	1206%	1215%
Livestock	mean value	-1%	-1%	-2%	-4%
	standard deviation	6%	3%	10%	16%
Mixed	mean value	4%	10%	-1%	-2%
	standard deviation	40%	42%	36%	41%

Data are given as increment % with respect to the baseline scenario

Policy insights

- Very wide range of reaction->relevance of farm specificities
- But also increasingly differentiated policy (partially accounted by the model)
- CAP first pillar important for income support, less for investment (as expected)
- CAP investment support in 2 pillar affects more investments than DP, but it is not a substitute of pillar 1 with the range of change assumed here (as expected)
- **Altogether: need of investment support to affect investment, but need of targeting given the relative economic weight**

Discussion & further work

- Early information about CAP implementation->several assumptions and simplification
- Future work: simplified typologies, but more realistic regulatory settings
- Enhance cross country analysis

Conclusions

- 2013 CAP reform (S1) not expected to have major impact or impacts be hidden in local implementation details
- The enhancement of the investment support through RD subsidies (S3) is counteracted by the decrease of DP
- The abolition of DP and of RD investment subsidies (S4) negatively affects farm income and has a detrimental effect on investments (net “CAP effect”).