Modeling farm decoupled payments: Comparison of Partial and General Equilibrium Evaluations

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Huge impacts of modeling assumptions when assessing « decoupled payments »

- Static, long run, marginal cost pricing rule: no impacts
- With risk aversion: insurance and wealth effects
  (ex: OECD, Hennessy)
- With dynamics: investment and expectation effects
  (ex: Roe, Vercammen)
- With the farm household model: leisure and entry/exit
  (ex: de Gorter, Benjamin)
- With budget constraint: taxation/MCPF effects
  (ex : Chambers, Moschini and Sckokai)

But we must never forget that in reality « decoupled payments »

- Interact with other farm instruments (protection, production quotas, …) : cross effects may offset

- Are not free lunch (cross-compliance) : « environmental » effects

- Are all these effects included in some modeling framework ?

  More empirical works are required

Let's focus on available global models

- One dividing line of ag. models: Partial Equilibrium (PE) and General Equilibrium (GE)
  - Van Tongeren et al. (2001) review 8 PE and 8 GE models
  - They suggest a modeller's research agenda

- Does that make a great difference ?
  - A priori GE outperforms PE because a PE can be viewed as a restricted GE.

  => Empirical comparisons are needed

Available impacts of the Luxembourg CAP reform on EU15 total wheat production:

FAPRI Iowa & Missouri	-1.2%;-1.5%	2007-2012
FAPRI Ireland	-0.3%;-1.1%	2007-2012
CE	-0.1%;-0.8%	2007-2010
Jensen, Frandsen (GTAP)	-6.1%;-10.1%	2013
OECD (PEM)	-0.3% (s.d. 0.4%)	2002
OECD (Aglink)	-0.5%	2008
IAP Bonn	-5.7%	2009

PE/GE estimates of farm policy: Review of empirical comparisons

- Gylfason (1995) reviews 14 studies assessing the cost of the EU CAP in the 1980's

- 9 PE models => average cost = 0.7% GDP (0.3% – 1.3%)

- 5 GE models => average cost = 2.2% of GDP (1.4% – 3.3%)

- Main source of difference: larger price elasticities

PE/GE estimates of farm policy: Review of empirical comparisons

- Tokaric (2003) assess welfare effects of agricultural liberalisation of dpvd countries

	USA	EU	Japan
Partial equilibrium results			
Producer surplus	-36,725	-31,786	-131
Consumer surplus	37,556	20,308	14,374
Taxpayer surplus	10,472	22,194	-10,823
Total welfare*	11,303	10,716	3,420
General equilibrium results			
Equivalent variation	6,182	31,788	22,333

PE/GE estimates of farm policy: Review of empirical comparisons

- Hertel (1992) assesses market effects of the CAP and does not find huge differences

- Peterson et al. (1994) also find limited differences when assessing multilateral trade liberalisation but stress the importance of a complete coverage of the agricultural sector.

- Nielsen (1999) has similar findings when evaluating the EU enlargement to the East.

PE/GE estimates of farm policy: Unresolved issues

- Market effects similar while welfare effects different ?

- Welfare analysis requires appropriate modelling of all distortions (Harberger) => Adequate treatment of non farm distortions in GE models ?
  - Interaction with labor market distortions (Goulder and Williams III, 2003).

Empirical framework

- Standard GTAP CGE model as the core
- 3 sectors (animal, crop, others (services))
- 2 regions (EU, RoW)
- Database : Version 4
- Latent separability for final consumption
- Capital is fixed by sector

Empirical framework

- Two other versions:

- A PE version where prices and productions of other goods, regional incomes and wages are fixed

- A « Distorted » GE model with wage rigidity and unemployment (like Harrison et al (1993) or Mercenier (1995)).

- Simulation of a complete removal of the CAP.

Initial features of the EU economy

	Crop	Animal	Services	Total
Production	240.5	491.7	15,544.2	16,276.4
Share	1.5%	3.0%	95.5%	100%
Value Added	126.9	141.8	7,367.8	7,636.5
Share	1.7%	1.9%	96.4%	100%
Output subsidy	25.0	23.2	-358.9	-310.7
Output subsidy rate	10.4%	4.7%	-2.3%	
Export subsidy	2.6	9.8	-3.8	8.6
Export subsidy rate	15.8%	42.9%	-0.4%	
Import tariff	5.2	5.3	23.1	33.5
Import tariff rate	12.9%	52.1%	2.7%	

Market impacts

	Standard GE	PE	Distorted GE
EU productions			
Crop	-8.1	-8.7	-8.4
Animal	-14.9	-15.2	-15.2
Services	+0.3	-	+0.02
EU Producer prices			
Crop	-1.1	-1.2	-0.9
Animal	-7.7	-7.7	-7.6
Services	+0.03	-	-0.02
EU final consumption			
Crop	+0.0	+0.1	-0.1
Animal	+1.0	+1.1	+0.8
Services	+0.1	+0.4	-0.4
EU labor market			
Price	-0.1	-	0
Demand by crop sector	-12.0	-12.8	-12.5
Demand by animal sector	-21.0	-21.4	-21.3
Demand by services	+0.9		+0.03

Welfare impacts

	Standard GE	PE	Distorted GE
"Producer surplus" (cap+land)			
Crop	-24.0	-24.8	-24.4
Animal	-41.8	-42.2	-42.0
Services	+32.8	-	+2.5
Taxpayer "surplus" Values of preceding taxes/subsidies	+51.0	+50.2	+49.7
"Consumer surplus" Disposable income EV	-13.4 +8.9	- +29.7	-40.8 -19.1
"Total Welfare"	+8.9	+12.8	-19.1

Concluding comments

- On a complete CAP removal scenario, PE and GE models give similar market effects
- Welfare effects are highly sensitive to the modelling of other distortions (unemployment)
- PE modellers must not be afraid to engage in welfare evaluations
- GE modellers must not be afraid to report their market effects and need to improve the structural representation of the economy if they are only interested by welfare effects.

Then, why differences between available studies on the Luxembourg CAP reform ? Data and elasticities