Modeling the Introduction of Decoupled Payments in the EU: An Example

Julian Binfield

Modeling US and EU Agricultural Policy: Focus on Decoupled Payments

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The model - GOLD

- EU-15
- Not FAPRI EU model used for baseline
- Partial equilibrium, dynamic
- System of single equations
- Allows focus on biological, economic, policy interactions
- "Synthetic" – not estimated
- Use EUROSTAT, USDA, European Commission and FAO data
- Simulate in SAS and Excel

First: How coupled are current policies?

- Arable area payment
  - Does not explicitly impact on crop choice
  - Voluntary set aside sometimes available
  - Modeled as largely decoupled
- Beef payments
  - Usually need animal to claim
  - Modeled as largely coupled
- Therefore incorporating into SFP will have different impact

Example equations

- Crops
  - Cereal area = f(cereal returns, oilseed returns, set aside)
  - Wheat area share = f(ratio of wheat market returns to other cereals)
  - Wheat yield = f(trend yield, prices, area)
  - Wheat production = area*yield
- Cattle
  - Beef cows = f(lagged beef cows, prices, SCP, SBP, SLP)
  - Calf crop = f(beef cows, dairy cows)
  - Slaughter = f(available animals)
  - Slaughter weight = f(prices, slaughter mix)
  - Production = slaughter*slaughter weight

Second: Is SFP completely decoupled?

- If yes, no problem, just set payment to zero in model
- But wealth effects and cross compliance etc means we still include them
- In theory straightforward – just include in model that proportion of payments that is coupled.

Analysis of new CAP is very complicated

- Use Rumsfeld characterisation:
  - Known knowns: legislation, member states choices made public
  - Known unknowns: SAPS/SFP transition date, top-up rates, financial discipline
  - Unknown unknowns: manner of modulation payments, cross compliance
- Impose KKs, guess at KUs, and hope UUs provide future employment

Calculating Supply Inducing Effect
(or How to Overcomplicate things Unnecessarily)

Types of Payment:
A = SFP Payment
B = Recoupled CAP Payment
C = New Payment
x = "decoupling coefficient"
m = (1-(modulation rate + financial discipline))
s = stocking density

Historic = (A*x+B)*m + C
(where A = old payment not recoupled)

Regional Crops =(A*x+B)*m + C
Regional Livestock = (A*s*x+B)*m + C
(where A = Total Payment/Area or New Payment)

Additional Adjustments

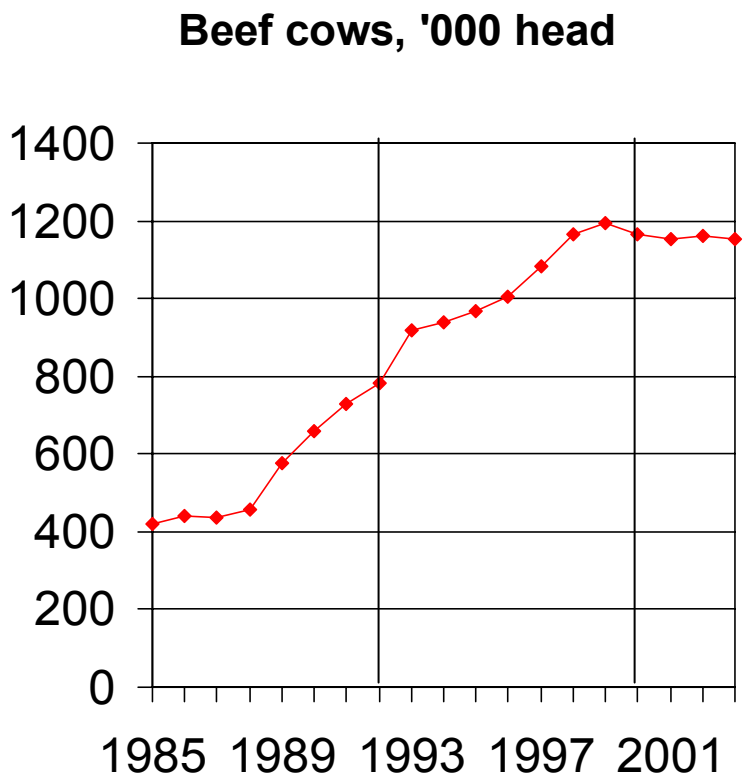
- In livestock sector payments impact production more in some countries than others
- Made further adjustments in the breeding herd equations of beef and sheep to reflect this
- Overall EU drop determined by model, but shared differently between countries
- Ireland, UK, show larger drops in numbers than Italy

How can we validate results?

- Results vs other studies
  - vs others in "MTR Impact Studies"
  - vs Commission and OECD analysis
- Input from expert review groups, and from industry opinion
- Farm level analysis as part of FAPRI-Ireland
- Ultimately through experience!

Example – Irish cattle sector

- CAP changes led to rapid expansion of beef cow herd
- Payments typically 100%+ farm income in sector
- Decoupling likely to lead to big changes



Irish farm level analysis

- Difficult to model as it is unclear what new "production systems" might be used
- Assume "good farming condition" means maintaining overhead costs
- Few farmers just farm entitlement and most choose to maintain some sort of enterprise
- Increase in part time farmers (10%), constrained by age profile
- 75% better off, worse off mostly calf rearing enterprises
- In general aggregation of animal number reductions was greater than in the sector level analysis

Impact of CAP Reform in the EU-15

- Just for EU-15
- Overview:
  - SFP has little impact on the crops sector, area changes by < 2%
  - Potential major impact on beef and sheep sector

Results of Previous Work – CAP Reform Crops

	Baseline	MOST (Max. decoupling)		Least (Min. decoupling)	
EU-15 crop area (1000 ha.)		2007-2012 Average			
Soft Wheat	14,282	-89	-0.6%	-56	-0.4%
Durum	3,798	-186	-4.9%	-165	-4.4%
Barley	10,750	-47	-0.4%	-41	-0.4%
Corn	4,371	-11	-0.3%	-11	-0.3%
Rye	960	-84	-8.8%	-84	-8.7%
Rice	391	-6	-1.6%	-6	-1.6%
3 Oilseeds	4,984	-30	-0.6%	-8	-0.2%
Total	39,537	-455	-1.2%	-372	-0.9%
World Prices ($/mt)					
Wheat	146.67	1.00	0.7%	0.71	0.5%
Corn	104.73	0.34	0.3%	0.21	0.2%
Soybeans	232.39	0.65	0.3%	0.17	0.1%
Rice	258.9	-6.45	-2.5%	-6.47	-2.5%

Source: "Analysis of the 2003 CAP Reform Agreement", FAPRI Staff Report 2-03

Results of Previous Work – CAP Reform Livestock

	Baseline	MOST (Max. decoupling)		Least (Min. decoupling)	
EU-15 animal numbers (1000 hd.)		2007-2012 Average			
Non dairy cows	11,816	-1,263	-10.7%	-382	-3.2%
Ewes	65,432	-4,157	-6.4%	-2,249	-3.4%
EU-15 meat production (1000 mt)					
Beef	7,268	-189	-2.6%	-16	-0.2%
Sheep meat	1,091	-59	-5.4%	-18	-1.7%
EU-15 meat prices (euro/mt)					
Beef	240.36	14.3	5.9%	1.52	0.6%
Pork	132.56	0.86	0.6%	0.11	0.1%
Poultry	126.91	0.94	0.7%	0.13	0.1%
Sheep meat	367.88	47.53	12.9%	13.26	3.6%
EU-15 Dairy					
Milk production (mmt)	122.36	-0.02	0.0%	-0.02	0.0%
4 product net exports	0.98	-0.05	-5.0%	-0.05	-4.9%
Milk price (euro/100kg)	27.2	-0.37	-1.4%	-0.37	-1.4%

Source: "Analysis of the 2003 CAP Reform Agreement", FAPRI Staff Report 2-03

Comparing 3 Analyses

- Three analyses considered
  - EU Commission, *Medium-term prospects and impact assessment of the CAP reform, EU - 15 & EU – 25, 2003 – 2010*
  - OECD, *Analysis of the 2003 CAP reform*
  - FAPRI, *Analysis of the 2003 CAP Reform Agreement, FAPRI Staff Report 2-03*

Crops - % Change From Reform

	FAPRI 2010 Max	EU Commission 2010 Central	OECD 2008 Max
Area			
Wheat	-1.8	-0.8	-0.5
Coarse grains			0
Barley	-0.4	1.2	
Maize	-0.2	-2.1	
Rye	-4.5	-10.3	
Oilseeds	-0.6	-1.0	-0.4
Rice	-2.3	-10.2	-9.5
World Prices			
Wheat	0.8		0.3
Oilseeds	0.4-0.6		0.3

Meat- % Change From Reform

	FAPRI 2010		EU Commission 2010	OECD 2008
	Max	Min	Central	Max
Numbers				
Beef cow	-11.5	-4.5	-6.8	-3.2
Production				
Beef	-3.2 (-3)	-0.5 (-0.8)	-1.9	-0.6
Pork	0.4	0.1	0.5	0.1
Poultry	0.5	0.1	0.6	0
EU Prices				
Beef	7.2 (8.9)	1.2 (2.8)	6	2.7
Pork	0.8	0.1	2.3	1.8
Poultry	0.9	0.2	0.4	

Note: EU Commission Max and Min figures in brackets

Dairy - % Change From Reform

	FAPRI 2010 Max	EU Commission 2010 Central	OECD 2008 Max
Production			
Cheese	0.3	-0.4	1.2
Butter	-0.6	-2.4	-1
SMP	-2.3	-4.5	-4.5
WMP	0.6		-6.2
EU Prices			
Cheese	-0.9	0.3	-2
Butter	-6.3	-10.7	-6.8
SMP	2.5	-2.1	2
WMP	-1.1		-2.8

Any clues yet? June census numbers

	2002	2003	2004	04/03
Beef cows				
France*	4,233	4,217	4,166	-1.2%
UK	1,657	1,700	1,735	+2.0%
Ewes				
UK	17,630	17,599	17,702	+0.6%

*May

The New Member States

- Treat the same way as for the EU-15
- Take account of top-up
- Therefore some positive impact on production
- Will NMS act in the same way as a producer in the same position?
- NMS SAPS/SFP payment effects dwarfed by price movements and enlargement specific effects

Why I like what I have done

- Simple
- Transparent
- Flexible
- Satisfies picky clients – incorporates most policy twists
- People broadly happy with the results

Why I don't like what I have done

- Choice of decoupling factor arbitrary
- Treats different member states the same
- Therefore treats producers the same

- Is there another way?
- Farm level analysis more important in future
- IF payments not decoupled, need for country level detail in models?