

Territorial Aspects of  
Enterprise Development in  
Remote Rural  
Areas



# **Agricultural Policy Changes and Regional Economies: A Standard CGE Analysis for Greece**

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# BACKGROUND

❖ **TERA (FP6 PROJECT)** ⇒ Economic Development in Remote Rural Areas

## **AIMS:**

❖ **Identify territorial factors which influence development**

❖ **Review whether existing policies take account of factors**

❖ **Propose new policy**

**“The trends and choices that affect rural areas cannot be studied in isolation from what is going on in non-rural areas” (Saraceno, 1994)**

# BACKGROUND

## Approach

- Regional/Local
- Modelling within region rural-urban linkages
- 6 Case Study areas.

## Reflect *different*

- Economic and Institutional Context
- Spatial Scale
- Rural-urban Spatial Relationships



- Rural town of Archanes
- 15 Km from the city of Heraklion, Crete
- Total land area 31.5 sq. Km  
60% is cultivated  
34% is permanent pasture
- Resident population 4,548  
1981 – 1991 ↑ 1,23%  
1991 – 2001 ↑ 6.29%

# MODELLING

- **Social Accounting Matrices (SAM) - all transactions given point in time**
- **SAM - basis for Computable Equilibrium Model (CGE)**
- **SAM Construction - each study area**
  - Existing secondary sources, e.g. national input-output tables
  - Primary Data collection
  - Survey of Households and Business survey, interviews with key informants

# CGE MODEL

- Behaviour of representative agents in economy
  - Producers and Traders – maximise profits
  - Consumers – maximise their well-being (have demand curves)
  - Government collects taxes and makes transfers (tax rates and transfers are exogenously set)
- Model Closure rules – reflect assumptions on how markets operate e.g. labour
- All transactions in economy accounted for.
- TERA -CGE Models
  - IFPRI Standard CGE Model (Lofgren et al) ([www.ifpri.org/pubs/microcom/micro5.htm](http://www.ifpri.org/pubs/microcom/micro5.htm))
  - Disaggregation of Accounts to allow analysis of rural-urban questions

# ARCHANES MODEL

- Activities/Industries: 18 (9 rural)
  - Commodities: 20
  - Production Factors: 10 (5 rural)
  - Households: 13 (6 rural)
  - ROW: 1
  - Government: 1
- 
- Production Activities/Industries, Factors and Households:  
Disaggregated by Rural/Urban Location

# ARCHANES MODEL

- **CGE Model Estimation**
- Case study area (base = 2004)
- Data - SAM plus other literature estimates
- Procedure - calibrate CGE model so each CGE replicates Case study SAM
- **CGE Model Usefulness**
  - Full Picture of case-study economic transactions
  - Controlled experiments – what if ?

# MOTIVATION FOR AGRICULTURAL POLICY SIMULATION

- ❖ **RECENT (FUNDAMENTAL) CAP REFORM** ⇒ Most subsidies replaced by SFP – Cross Compliance - Modulation
- ❖ **CAP REFORMS** ⇒ Have significantly influenced rural areas (farm + non-farm incomes; economic activity; distribution, etc.) – Some evidence of New-CAP impacts
- ❖ **IMPACT ASSESSMENT** ⇒ Several studies – rather ex-ante. Various predictions ranging from modest to ‘non-modest’.
- ❖ **PREDICTION DOMAINS** ⇒ Farm income change; rural economic activity; distribution of gains; structural adjustment (incl. farm size, orientation, specialization); farm labour costs, etc.

# MOTIVATION FOR AGRICULTURAL POLICY SIMULATION

## TERA

- ❖ Seeks to analyze the impacts of the role of agriculture and (especially) farm support
- ❖ Assess (rural and urban) economic effects associated with changes in agricultural policy
- ❖ TERA CGE MODELS  $\Rightarrow$  Capture multi-product nature of agriculture – Structure allows simulations to portray economic interdependencies within each economy + rural/urban interactions

# AGRICULTURE IN THE STUDY AREA

## Seems rather important

- ❖ Employment share: GR: 38% but sharp exodus (53% in 1991)
- ❖ UAA: 94% privately-owned; 18% irrigated – LFA
- ❖ Structures: Very small-fragmented family farms (2.6 ha on average)
- ❖ Production: Vines, table grapes, olive-oil; very little livestock – strong links with processing
- ❖ Labour: Mostly family labour – some seasonal labour (immigrants)

# DEFINITION OF AGRICULTURAL POLICY SCENARIOS

- ❖ Rather "extreme"
- ❖ **AGPCUT** ⇒ Termination (100%) of all agric. subsidies
- ❖ **DECOUPLE** ⇒ Full (100%) Decoupling (govt. transfer to Agric. HHS) – New CAP SFP
- ❖ **PILLAR 2** ⇒ 100% reduction of agric. subsidies with transfer of all funds to Pillar 2 (investment demand for Construction)
- ❖ **MODULATION** ⇒ 20% of the SFP funds goes to Pillar 2 – Axis 3 (CAP Health-check?)

# AGPCUT Scenario

↑ Indirect Activity Tax Rate (Agricultural Sector)



↓ Domestic Activity of the Agricultural Sector

⇒ ↓ Domestic Production of Agricultural Products



Agricultural Sector linked with other Sectors of the Economy ⇒ Changes in Sectors Dom. Activ.



↓ Total Domestic Activity-Domestic Production



↓ Employment, ↓ GDP, ↓ Exports, ↓ Private Cons.

## DECOUPLE Scenario

↑ Transfers to Agr. HHS  $\Rightarrow$  ↑ Income of Agr. HHS  
and also affects other HHS income



↑ Private Consumption Levels of Agr. HHS  
But what happens to other HHS Consumption?  
What happens to farm-linked sectoral activity?  
What Happens to Prices?



↑↓ Sectoral Domestic Activity-Domestic Production



↑↓ Employment, ↑↓ GDP

↑ Exogenous Investment Demand of the  
Construction Commodity



↑ Domestic Production of the Construction  
Commodity



↑ Domestic Activity of the Construction Sector  
What Happens with the Domestic Activity of other  
Sectors? Usually positive effects in other sectors,  
but possible trade-off due to decrease in AgrHHS  
Consumption.



↑ ↓ Employment, ↑ ↓ GDP

## % Changes in Real GDP at Factor Prices

|                    | AGPCUT       | DECOUPLE     | PILLAR 2     | MODULATION   |
|--------------------|--------------|--------------|--------------|--------------|
| <b>Total</b>       | <b>-0,41</b> | <b>-0,58</b> | <b>-0,29</b> | <b>-0,52</b> |
| <b>R-Primary</b>   | <b>-1,19</b> | <b>-1,09</b> | <b>-1,23</b> | <b>-1,12</b> |
| <b>R-Secondary</b> | <b>-2,23</b> | <b>-2,97</b> | <b>-2,04</b> | <b>-2,78</b> |
| <b>R-Tertiary</b>  | <b>0,00</b>  | <b>0,03</b>  | <b>0,00</b>  | <b>0,00</b>  |
| <b>Total Rural</b> | <b>-0,71</b> | <b>-0,71</b> | <b>-0,71</b> | <b>-0,72</b> |
| <b>U-Primary</b>   | <b>-8,67</b> | <b>-8,67</b> | <b>-8,79</b> | <b>-8,69</b> |
| <b>U-Secondary</b> | <b>1,13</b>  | <b>-0,53</b> | <b>2,21</b>  | <b>0,00</b>  |
| <b>U-Tertiary</b>  | <b>-0,29</b> | <b>-0,22</b> | <b>-0,31</b> | <b>-0,24</b> |
| <b>Total Urban</b> | <b>-0,40</b> | <b>-0,57</b> | <b>-0,27</b> | <b>-0,51</b> |

## %Changes in Macroeconomic Indicators

|                           | AGPCUT | DECOUPLE | PILLAR 2 | MODULATION |
|---------------------------|--------|----------|----------|------------|
| <b>Rural Agr.<br/>HHS</b> | -9,98  | 4,16     | -10,05   | 1,31       |
| <b>Urban Agr.<br/>HHS</b> | -1,58  | 0,06     | -1,38    | -0,23      |
| <b>Savings</b>            | -5,26  | 1,33     | 5,78     | 2,19       |
| <b>Gov. Surplus</b>       | 5,62   | -1,54    | 6,02     | -0,11      |

# RESULTS



## % Changes in Employment Levels

|                           | AGPCUT       | DECOUPLE     | PILLAR 2     | MODUL.       |
|---------------------------|--------------|--------------|--------------|--------------|
| <i>R-Unskilled Labour</i> | <b>-3,88</b> | <b>-3,92</b> | <b>-3,93</b> | <b>-3,93</b> |
| <b>Primary</b>            | -6,22        | -6,08        | -6,35        | -6,08        |
| <b>Secondary</b>          | -6,06        | -6,06        | -5,30        | -6,06        |
| <i>R-Skilled Labour</i>   | <b>-1,64</b> | <b>-2,00</b> | <b>-1,36</b> | <b>-1,87</b> |
| <b>Primary</b>            | -5,48        | -5,48        | -6,85        | -5,48        |
| <b>Secondary</b>          | -2,59        | -4,31        | -0,86        | -2,59        |
| <i>U-Unskilled Labour</i> | <b>-1,43</b> | <b>-1,72</b> | <b>-1,32</b> | <b>-1,64</b> |
| <b>Primary</b>            | -15,18       | -15,14       | -15,36       | -15,18       |
| <b>Secondary</b>          | 1,09         | -1,02        | 2,21         | -0,43        |
| <i>U-Skilled Labour</i>   | <b>-0,11</b> | <b>-0,51</b> | <b>0,25</b>  | <b>-0,36</b> |

## %Changes in Factor Income

| Factors                | AGPCUT | DECOUPLE | PILLAR 2 | MODUL. |
|------------------------|--------|----------|----------|--------|
| <b>R-Unsk. Labour</b>  | -3,88  | -3,92    | -3,93    | -3,93  |
| <b>R-Skill. Labour</b> | -1,64  | -2,00    | -1,36    | -1,87  |
| <b>U-Unsk. Labour</b>  | -1,43  | -1,72    | -1,32    | -1,64  |
| <b>U-Skill. Labour</b> | -0,11  | -0,51    | 0,25     | -0,36  |
| <b>Capital</b>         | -0,17  | -0,51    | 0,03     | -0,41  |
| <b>Agric. Capital</b>  | -18,10 | -17,75   | -18,38   | -18,03 |
| <b>Agric. Land</b>     | -8,98  | -8,75    | -9,18    | -8,84  |
| <b>R-Land Housing</b>  | -3,59  | -0,67    | -3,65    | -1,27  |
| <b>U-Land Housing</b>  | -0,42  | -0,55    | -0,28    | -0,50  |
| <b>Agric. Rents</b>    | -16,78 | -16,57   | -17,06   | -16,67 |

## %Changes in Domestic Activity

|                       | AGPCUT       | DECOUPLE     | PILLAR 2     | MODULAT.     |
|-----------------------|--------------|--------------|--------------|--------------|
| <b>Total</b>          | <b>-0,27</b> | <b>-0,54</b> | <b>-0,10</b> | <b>-0,46</b> |
| <b>Rural Area</b>     | <b>-0,56</b> | <b>-0,76</b> | <b>-0,51</b> | <b>-0,71</b> |
| <b>R-Agricultural</b> | -1,20        | -1,09        | -1,25        | -1,12        |
| <b>R-Food Proc.</b>   | -4,85        | -4,78        | -4,61        | -4,73        |
| <b>R-Construction</b> | 1,45         | -0,24        | 3,00         | 0,40         |
| <b>Urban Area</b>     | <b>-0,25</b> | <b>-0,53</b> | <b>-0,08</b> | <b>-0,45</b> |
| <b>U-Agricultural</b> | -8,68        | -8,68        | -8,80        | -8,70        |
| <b>U-HHS Serv.</b>    | -0,60        | -0,13        | -0,51        | -0,20        |
| <b>U-Construction</b> | 2,41         | -0,32        | 4,68         | 0,65         |

## %Changes in Domestic Production

|                     | AGPCUT       | DECOUPLE     | PILLAR 2     | MODULATION   |
|---------------------|--------------|--------------|--------------|--------------|
| <b>Total</b>        | <b>-0,21</b> | <b>-0,50</b> | <b>-0,04</b> | <b>-0,41</b> |
| <b>Grapes</b>       | <b>-4,82</b> | <b>-5,23</b> | <b>-5,00</b> | <b>-5,18</b> |
| <b>Olives</b>       | <b>-5,33</b> | <b>-5,74</b> | <b>-5,51</b> | <b>-5,69</b> |
| <b>Other Agr.</b>   | <b>-5,16</b> | <b>-5,43</b> | <b>-5,37</b> | <b>-5,42</b> |
| <b>Wine</b>         | <b>-6,98</b> | <b>-7,30</b> | <b>-7,19</b> | <b>-7,28</b> |
| <b>Other Food</b>   | <b>-0,84</b> | <b>-1,30</b> | <b>-0,98</b> | <b>-1,24</b> |
| <b>Construction</b> | <b>2,38</b>  | <b>-0,36</b> | <b>4,62</b>  | <b>0,64</b>  |

## %Changes in Exports

|                   | AGPCUT       | DECOUPLE     | PILLAR 2     | MODULATION   |
|-------------------|--------------|--------------|--------------|--------------|
| <b>Total</b>      | <b>-1,00</b> | <b>-0,98</b> | <b>-0,99</b> | <b>-0,98</b> |
| <b>Grapes</b>     | -11,06       | -11,67       | -11,04       | -11,54       |
| <b>Olives</b>     | -9,94        | -10,51       | -9,95        | -10,40       |
| <b>Other Agr.</b> | -14,74       | -15,22       | -14,64       | -15,11       |
| <b>Wine</b>       | -11,49       | -11,69       | -11,53       | -11,66       |
| <b>Other Food</b> | -1,08        | -2,30        | -1,29        | -2,09        |

## %Changes in Imports

|                   | AGPCUT      | DECOUPLE     | PILLAR 2    | MODULATION   |
|-------------------|-------------|--------------|-------------|--------------|
| <b>Total</b>      | <b>0,39</b> | <b>-0,38</b> | <b>0,50</b> | <b>-0,21</b> |
| <b>Grapes</b>     | 2,01        | 1,83         | 1,59        | 1,78         |
| <b>Olives</b>     | 1,03        | 0,86         | 0,61        | 0,81         |
| <b>Other Agr.</b> | 3,19        | 3,11         | 2,68        | 3,03         |
| <b>Wine</b>       | 2,88        | 2,31         | 2,28        | 2,31         |

## Changes in Rents/ Prices

### In all Agricultural Scenarios

- ↓ Agricultural Rents (up to 17%)
- ↑ Consumer Price of Agricultural Products
- ↓ Consumer Prices of the Secondary (except in Agpcut) and Tertiary Products
- ↑ Producer Prices of Agricultural Products
- ↑ Producer Prices of Secondary
- ↓ Producer Prices of Tertiary

## %Changes in Household Income

|                                | AGPCUT | DECOUPLE | PILLAR 2 | MODULATION |
|--------------------------------|--------|----------|----------|------------|
| <b>R-Poor/Middle<br/>Other</b> | -3,21  | -3,21    | -3,20    | -3,21      |
| <b>R-Wealthy<br/>Other</b>     | -2,32  | -2,33    | -2,28    | -2,32      |
| <b>R-Agricultural</b>          | -9,98  | 4,16     | -10,05   | 1,31       |
| <b>U-Poor/Middle<br/>Comm.</b> | -1,34  | -1,43    | -1,22    | -1,39      |
| <b>U-Wealthy<br/>Comm.</b>     | -0,81  | -1,03    | -0,63    | -0,95      |
| <b>U-Agricultural</b>          | -1,58  | 0,03     | -1,38    | -0,23      |

# CONCLUSIONS

- Subsidies are important for this rural economy  $\Rightarrow$  cutting them off results in losses but these do not seem drastic.
- Cutting subsidies “hurts” others than just farmers  $\Rightarrow$  agric. linked sectors seem to experience hard times if agricultural activity is not subsidized
- Full Decoupling seems to cause higher negative effects compared to the elimination of subsidies (but Agr. HHS incomes rise)
- Transfer of SFP funds to Pillar 2 measures rather “improves” the situation (except Agr. HHS income)
- Impacts of Modulation Scenario: a bit worse than subsidies elimination, but better than Full Decoupling