

# Investment Support under Rural Development Policy

presented by  
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# General information about the study

- ▶ **Final report:**  
[http://ec.europa.eu/agriculture/evaluation/rural-development-reports/investment-support-rdp-2014\\_en.htm](http://ec.europa.eu/agriculture/evaluation/rural-development-reports/investment-support-rdp-2014_en.htm)
- ▶ **Judgement of the report quality:** DG AGRI units E.1, E.3, E.4, F.1, G.1, G.2, H.1, H.4 and SG, DG REGIO, DG RTD, DG ENTR, DG EMPL, JRC, DG COMP
- ▶ **Project partners/participants:**
  - METIS (Project Co-ordinator)
  - Austrian Institute of Economic Research (WIFO)
  - AEIDL
  - Methodological experts (7)
  - Geographical experts (11 countries)

# Justification for this study

1. Evaluation has a significant and increasing role in a process of a policy design <**accountability, transparency and policy learning!**- what did (did not) work?, and why?>
2. Answers to evaluation questions on effectiveness, efficiency and impact of RDP **can be extremely biased** if incorrect methodologies are applied
3. Important objective of this study was to assess strength and weakness of various methodologies applied in evaluations but also to:

=> explore under which conditions different methods can be applied **in a real context** of evaluations of RDP (i.e. taking into account limited data availability and capacity to collect own data)

# Study objectives (ToR): Answering Evaluation Questions

- EQ1:** To which extent are the different evaluation methods **appropriate** for the assessment of the effectiveness, efficiency and impact of the different types of investment support under RDP?
- EQ2:** What is the **effectiveness, efficiency and impact** of the investment support studied in the selected RDP territories?
- EQ3:** To what extent have the different approaches to **targeting** investment support been effective in meeting the general objectives of rural development policy and/or specific objectives included in the relevant RDPs?

# RDP investment measures covered by the study

Investment group/type	Code	Description
A: Productive investment support to private beneficiaries to increase economic performance/business competitiveness under measures	121	Modernisation of agricultural holdings
	122	Improving the economic value of forests
	123	Adding value to agriculture and forestry products
	311	Diversification into non-agricultural activities
	312	Support for business creation and development
	313	Encouragement of tourism activities
B: Investments in public infrastructure	125	Improving and developing infrastructure related to the development and adaptation of agriculture and performance/business competitiveness
C: Non-productive investments to private beneficiaries for environmental or non-market purposes under measures	216	Support for non-productive investments in agriculture
	227	Support for non-productive investments in forestry
	313*)	Encouragement of tourism activities
D: Investment support to private beneficiaries for investments required to meet minimum standards under Axis 1 measures 121 and 123 other than those which improve the economic performance of the holding	121*)	Modernisation of agricultural holdings
	123*)	Adding value to agriculture and forestry products

\*) overlaps between the investment types

# Budgetary outlays for RDP investment support measures (2007-2013):

Allocations			Volume of allocated public funds in Mill. EUR	
			EU <sup>6</sup>	Case study RDPs <sup>78</sup>
Total EAFRD funds allocated for 2007- 2013			96,208.94	35,582.69
EAFRD funds allocated for investment measures 2007 - 2013 <sup>9</sup>			28,158.53	8,871.05
EAFRD funds per measure	Group A <sup>10</sup>	121	11,635.99	4,041.34
		122	369.36	101.91
		123	5,539.96	1,445.17
		311	1,236.75	554.74
		312	2,046.01	906.38
		313	1,226.97	329.82
	Total		22,055.03	7,379.31
	Group B	125	4,786.72	1,330.99
	Total		4,786.72	1,330.99
	Group C	216	544.20	100.90
		227	772.58	59.80
		313	1,226.97	329.82
	Total		2,543.74	490.63

# Main challenge in evaluation of RDP (appropriateness of methods) EQ1

## ► Explaining causality:

- Ability to isolate effects of a programme from other factors

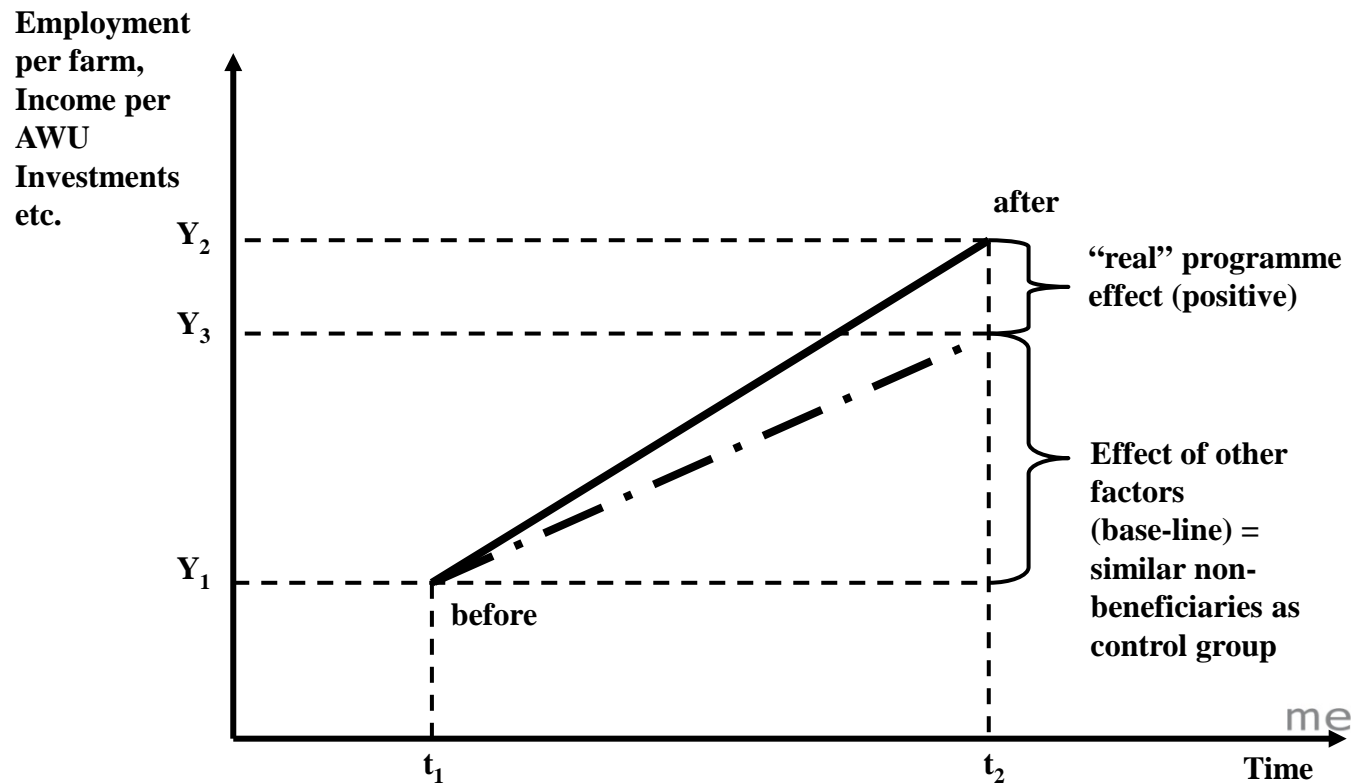
**=> It is necessary to know:**

- What would have happened in the absence of investment support?
- Was it really an investment support causing observed effects?

**=> Effects of support cannot be directly observed (!)**

## Causality: The main challenges (2)

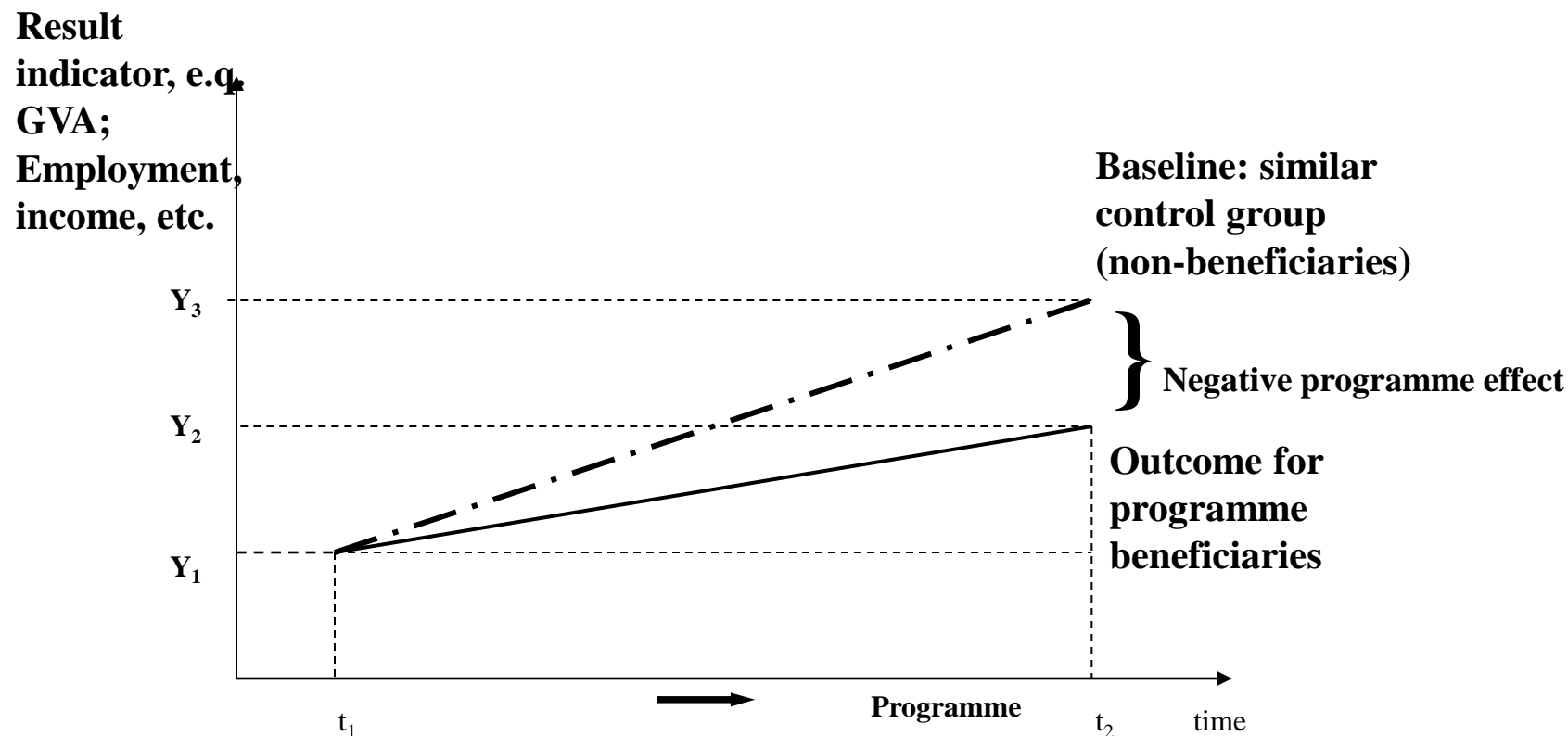
**Real effect** of a programme  $\Rightarrow$  not directly observable!





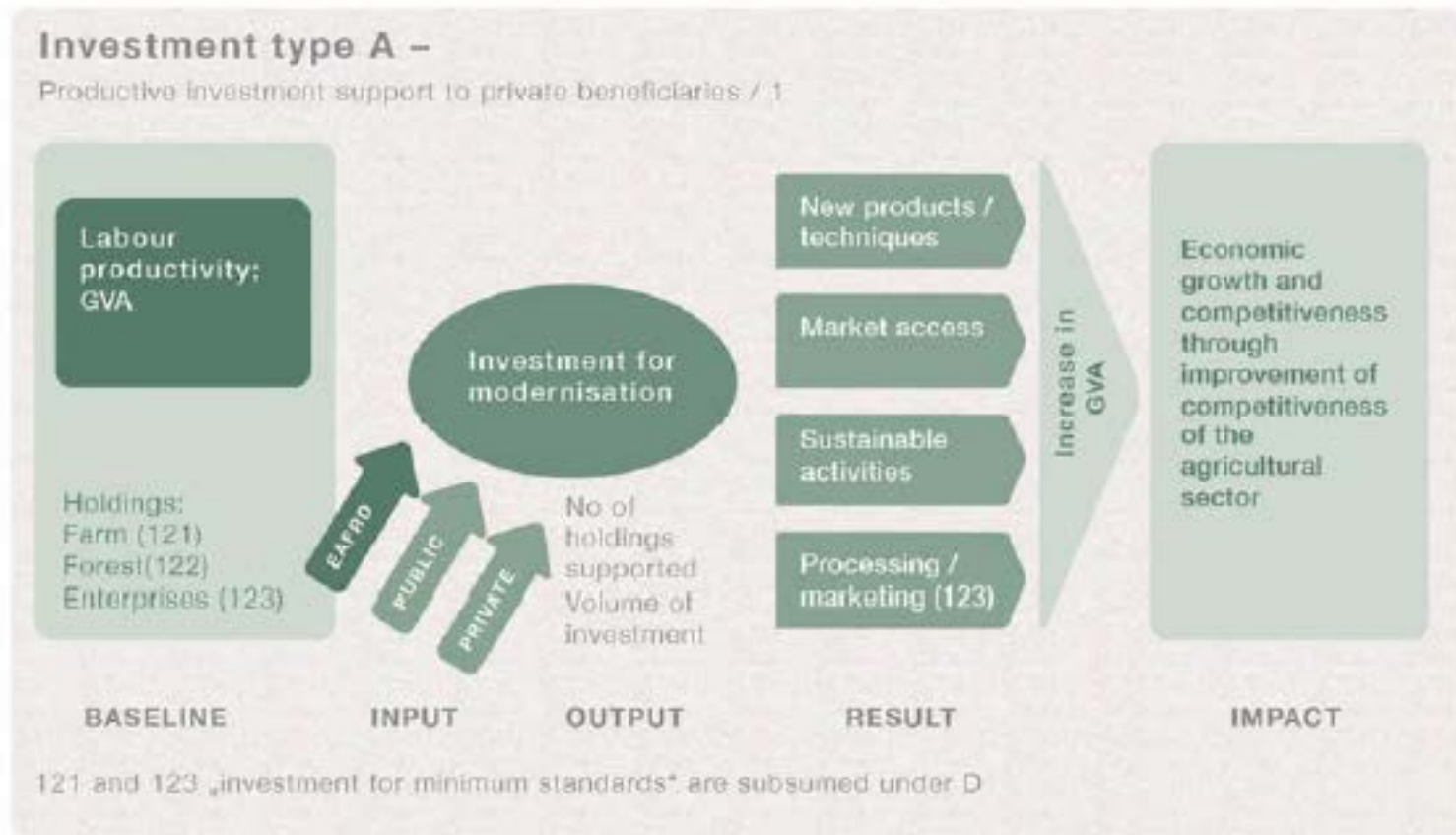
# Causality: The main challenges (3)

## Negative programme effect !



# Determination of causality (real world)

Figure 1. Intervention logic by type of beneficiary for measures 121, 122, 123



# Evaluation approaches: non-experimental, quasi-experimental, experimental

## Selected method: representative for a given group + applied in evaluation of RDP programmes

Method	Input	Output	Examples of methods ( <b>selected methods</b> )
<b>Qualitative methods</b>	Expert , beneficiaries, non-beneficiaries interviews	Substance of text analysed, effects, impacts (ordinal)	Intervention logic, interviews, <b>method for impact assessment of programmes and projects (MAPP)</b> , Delphi method
<b>Theory-based evaluation</b>	Programme theory or any other social/ economic theory	Estimate on effectiveness of the intervention logic	Realist Evaluation <b>Theory-based evaluation</b>
<b>Econometric method</b>	Economic theory and data at unit level	Estimates of (net) effects (cardinal), hypothesis tests	<b>Propensity Score Matching (PSM)</b> , regression analysis, <b>DiD</b> , Regression Discontinuity Design (RDD)
<b>Experimental methods</b>	Designed experiment observations	Estimates of (net) effects (cardinal) hypothesis tests	Randomised control trials (RCT): Phase in design, pilot project design, encouragement design
<b>Computational economic models</b>	Economic theory and exogenous parameters	Estimates of impacts (cardinal)	<b>Regional and national IO</b> , general and partial equilibrium models, farm models, <b>costs benefit analysis (CBA)</b> , <b>costs effectiveness analysis (CEA)</b>
<b>Environmental approaches</b>	Scientific theory, figures on unit level, coefficient or parameter	Effects, impacts, text on environment	Life-cycle analysis (LCA), integrated modelling approaches, <b>Strategic Environmental Assessment (SEA)</b> , <b>cost effectiveness analysis (CEA)</b>
<b>Combinations of approaches</b>	All of the above	All of the above	GRIT, theory of driving forces, pressures, states, impacts, responses

# Other criteria for assessment of an appropriateness of a given method (EQ1)

- ▶ **Method should enable calculation of programme direct and indirect effects, e.g. deadweight losses, substitution, displacement effects, etc.**
- ▶ **Method should enable elimination of a possible selection bias (e.g. best enterprises apply for support => non-comparable with programme non-participants)**
- ▶ **Method meets evaluation standards:**
  - Scale of outcomes: cardinal <numbers>; ordinal <rank order, e.g. low – very low, high>; nominal <verbal description>
  - Rigour (scientific standards; causality based on counterfactual)
  - Reliability (similar results if repeated under different conditions e.g. by different persons)
  - Robustness (degree of results stability)
  - Transparency (clear structure)
  - Validity (logically and factually sound, internal and external validity)
  - Practicability (data, resources, time constraints, etc.)

# Approach to answering EQ2 (Effectiveness, efficiency and impact of RDP measures): Methods applied per case study

Case studies		Planned application				Realised application of methods (measures where Targeting was analysed are highlighted in green)												
MS	RDP territory	A:	B:	C:	D:	A						B	C			D		no of methods
						M121	M122	M123	M311	M312	M313	M125	M216	M227	M313	M121	M123	
AT	Austria	x	x			IO, PSM	IO, PSM	IO, PSM	IO, PSM, SEA, CEA	IO	IO	IO, PSM, SEA, CEA						4
CZ	Czech Rep.	x	x	x	x	IO, PSM, MAPP, TBE		IO, PSM, MAPP, TBE	IO, PSM, MAPP, TBE	IO	IO	IO		TBE	TBE	n.a.	n.a.	4
DE	DE / Hessen	x		x		IO, PSM, TBE		IO	IO	IO	IO			TBE, SEA, CEA				5
DK	Denmark	x		x		TBE, CEA		TBE						n.a.				2
ES	ES / Galicia	x	x	x		IO, MAPP	IO, MAPP	IO, MAPP	IO, MAPP	IO, MAPP	IO, MAPP	MAPP, SEA, CEA		MAPP, SEA, CEA				4
FR	France			x	x	SEA, CEA							TBE, SEA, CEA	TBE, SEA, CEA	TBE, SEA, CEA	TBE		3
PL	Poland	x			x	IO, PSM, TBE		IO	IO	IO						n.a.	n.a.	3
UK	UK / Scotland	x		x		IO, MAPP	IO	IO, MAPP	IO, MAPP	IO	IO			SEA, CEA				4
GR	Greece	x	x			IO, MAPP		IO, MAPP	IO, MAPP	IO, MAPP	IO, MAPP	IO, SEA, CEA						4
CY	Cyprus	x		x		IO, TBE, SEA, CEA		IO, TBE						TBE, SEA, CEA	TBE			4
SK	Slovakia	x	x		x	IO, PSM, MAPP	IO	IO, MAPP	IO, PSM		IO	IO, MAPP				n.a.	n.a.	3

# Approach to answering EQ3 (targeting)

- To analyse targeting approaches used in the RDPs a survey on investment measures was carried out.
- Geographical experts received a structured questionnaire asking how targeting was done in selected measures of their region:
  - ▶ What kind of eligibility criteria were applied (territorial, sectoral, investment type, investment costs, beneficiary type)?
  - ▶ Was there a differentiated maximum aid-intensity?
  - ▶ What kind of selection criteria were applied?
  - ▶ Were there any changes during the program period (e.g. as part of the "Health Check")?
- Additionally a case study with FADN data for Austria was carried out to estimate how well, eligibility criteria, aid-intensity differentiation and selection criteria helped to achieve targeting.



# PART II - FINDINGS

# EQ1 (Step1): Analysis of method's appropriateness

criterion		more preferred		less preferred
reliability		assumed to be given		
		CEA, IO, MAPP, PSM, SEA, TBE		
rigour	causality/counterfactu.	estimated	estimates based computations	assumed
		PSM	IO, CEA (in special cases)	CEA, IO, MAPP, SEA, TBE
	scale of indicators	cardinal	ordinal	nominal
		CEA, IO, PSM	IO, PSM, CEA, MAPP, SEA, TBE	CEA, IO, PSM, MAPP, SEA, TBE
	link to theory	closely linked to theory		not closely linked to theory
		CEA, IO	PSM	MAPP, SEA, TBE
	scientific literature	frequently used		not frequently used
		CEA, IO, PSM		MAPP, SEA, TBE
	net/gross effects	can be quantified	estimates based computations	assumed
	deadweight	PSM	IO, CEA	CEA, IO, MAPP, SEA, TBE
	leverage	PSM	IO, CEA	CEA, IO, MAPP, SEA, TBE
	multiplier	IO		MAPP, SEA, TBE
robustness	displacement	IO, PSM		MAPP, SEA, TBE
		standard procedure	possible with special efforts	not possible
	sensitivity checks	CEA, IO, PSM	MAPP	SEA, TBE
	specific checks	PSM		
validity	internal validity	given		not given
		CEA, IO, MAPP, PSM, SEA, TBE		
	external validity	given		not given
		CEA, IO, PSM		MAPP, SEA, TBE
practicability	qualification	intermediate		high
		CEA, MAPP, SEA, TBE		CEA (special cases), IO, PSM
	time needed	intermediate		high
		CEA, IO, PSM, SEA		MAPP, TBE
	infrastructure	none		specific needs
		CEA, IO, MAPP, PSM, SEA, TBE		CEA (in special cases), PSM
	software	standard tools		specific needs
		CEA, MAPP, SEA, TBE		IO, PSM
frequency	method	more preferred		less preferred
	CEA	11	4	6
	IO	11	4	6
	PSM	13	2	4
	MAPP	5	2	10
	SEA	6	1	10
	TBE	5	1	11



# Results EQ1

- 1. Quantitative methods (PSM, I-O) are necessary to provide quantitative results**
- 2. Qualitative methods (incl. interviewing stakeholders) are not appropriate to answer CEQ in quantitative terms (the best one can get is ranking of measure or verbal descriptions)**
- 3. Qualitative methods are very helpful in describing a logic of intervention, context of intervention, etc. and formulating hypothesis to be tested by quantitative methods**
- 4. Ranking of methods w.r.t. derivation of counterfactuals:**
  - 1. PSM (the best)**
  - 2. I-O and CEA using inputs from PSM (2<sup>nd</sup> best)**
  - 3. I-O and CEA using inputs from expert judgement (3<sup>rd</sup> best)**
  - 4. Qualitative (MAPP) using inputs from judgement of stakeholders**
  - 5. TBA and SEA using inputs from administrative documents or expert judgements**

# Answer EQ1: adequacy of a method – observed cases

	<b>CEA/SEA</b> environmental	<b>IO</b> macro-	<b>MAPP</b> qualitative	<b>PSM</b> econometric	<b>TBE</b> theory based
<b>Causality</b>	assumed	assumed	assumed	measured	assumed
<b>Scale</b>	all scales	cardinal	ordinal	cardinal	ordinal
<b>Efficiency</b>	X CEA	X		X	
<b>Effectiveness</b>	X SEA	X		X	X
<b>Impact</b>	X SEA	X	X	X	
<b>Data requirements</b>					
<b>Structured data</b>		IO-tables		FADN+	
<b>Analyses/reports</b>	X	X	(X)		X

# Answer EQ2

## Results on efficiency, effectiveness, impact

### ▶ CEA/SEA

- results on efficiency (CEA) and effectiveness/impact (SEA) sparse and not conclusive for many measures

### ▶ IO results (focus on employment per million €)

- efficiency: it ranges from negative (1 case) to more than 100 jobs;
- effects based on PSM estimates are significantly lower in comparison with MA estimates

### ▶ MAPP and TBE

- complementary on large number of aspects (incl. environment) but different results obtained on various (sub-) indicators of the same measure

### ▶ PSM

- most measures show low efficiency; effectiveness / impact

# Qualitative MAPP Method / findings (example)

Table 35. Aggregated results of MAPP

Indicator	sub 1	sub 2	n-b b	121 GR	121 UK	121 SK	121 CZ	121 ES	123 GR	123 UK	123 SK	123 CZ	123 ES	125 GR	125 SK	125 ES	Axis 3 GR	Axis 3 ES	311 UK	311 CZ	122 ES
Efficiency							1					1								1	
Effectiveness																					
impact	jobs	agr/prim	b		0	-1				0	-1					-1				-1	
impact	jobs	agr/prim	n-b		-1	0				-1	0					-1				-1	
impact	jobs	agr/prim		-1			-1		-1			0	1	-1		0	-1	0		1	1
impact	jobs	non agr		0			0	0	0			0	1	0		0	0	1		0	0
impact	jobs	non agr	b		1					1										-1	
impact	jobs	non agr	n-b		-1					-1										-1	
impact	incomes	agr/prim	b	0	1	0			0	-1				0			0			-1	
impact	incomes	agr/prim	n-b	0	0	0			0	-1	-1			0	-1		0		0		
impact	incomes	agr/prim					1	1					0			0		0		1	1
impact	incomes	non agr	b			0					0				-1						
impact	incomes	non agr	n-b			0					1				-1						
impact	incomes	non agr						1				1	1			0		1			0

# Counterfactual Econometric Method:

## Data availability

- 1. Contrary to expectations, availability of data necessary to apply advanced econometric (PSM) method was good (!!)** in all (11) case studies
- 2. Yet, it was necessary to merge anonymous national individual bookkeeping (or FADN) data with data from Paying Agency on programme beneficiaries**
- 3. In all case studies, compilation of these two data sets was always (!) done by a relevant national FADN office and after making it anonymous the data was made available to evaluators for analysis**

# Counterfactual Econometric Method:

## Main Results (example M121)

- 1. Low effectiveness of M121 on increase of result indicators: GVA/employment/labour productivity (e.g. GVA -3% --- + 19% in 6 years)**
- 2. Relatively low contribution of M121 to an overall increase of GVA/etc. of programme beneficiaries = from 0% or neg. to max 50% (i.e. other factors were more important!)**
- 3. Low efficiency of M121 (ratio of an increase of result indicators to the amount of support obtained)**  
**=> Between 0 to 37 Cents for 1 EUR support obtained**

# Counterfactual Econometric Method: Main Results (e.g. M121)

## **4. Low impact of M121 (impact indicators at programming area level)**

- a. GVA increase: Between 0% to 69% of target values**
- b. GVA increase: Between 0 to 277 Mill EUR (Poland: 1487 Mill EUR spent on M121)**

## **5. In some countries considerable effect of M121 support on an increase of farm transfers to private consumption (!)**

## **6. Significant effect on an increase of a return to private investment (e.g. from 24 years (or 0.0413) to 13 years (0.0735), i.e. by 11 years in Austria) = cost saving.**



# CONCLUSIONS AND RECOMMENDATIONS

Synthesis across all measures, case studies and methods



# Conclusions on adequacy

## EQ1: methods for investment support

- ▶ **Challenge of evaluation: make statements on non-directly observable outcomes**
  - only specific econometric methods / experiments are adequate for empirical evaluation of causal effects
  - other methods: use such results or make assumptions
- ▶ **Results on efficiency, effectiveness, impact**
  - quantitative: only IO and PSM
  - ordinal: MAPP and TBE but not all indicators
  - SEA and CEA: few results on environmental outcomes
- ▶ Economies of scale when applying IO and PSM
- ▶ High variable costs for MAPP and TBE

# Conclusions

## EQ 3: targeting

- ▶ EQ2 results are partly correlated with targeting, but causality not verified (sample size)
- ▶ Case study on M121 in AT suggests
  - Aid-intensity differentiation did not lead to significantly higher effectiveness of support
  - Selection criteria did not lead to significant differences between supported and not-supported farms which undertook investments in examined period
- ▶ More case studies needed for better understanding of targeting

# Conclusions

EQ1 to EQ3 and fieldwork

- ▶ **Causal effects**: requires adequate ***econometric methods*** / experiments and **high quality micro-data**
- ▶ **Quantitative methods** are well suited for evaluation of investment support measures (economies of scale)
- ▶ Strength of **non-quantitative methods**: exploration, feedback of stakeholders and (non-)beneficiaries, e.g. explanation “Why did a given measure not work?”
- ▶ **Complementarity** between methods (**no substitution!**): MAPP / TBE → PSM → IO: more valid results!
- ▶ **Non-quantitative methods** need data as well. Most frequently they are acquired ad-hoc. This process is very time consuming and costly!!

# Recommendations

## **For managing authorities:**

- define spectrum of interest (results) before choosing methodology
- make sure that evaluation method and data match / focus on micro-data / consider treatment and control-groups
- seek for partnership in order to use economies of scale
- consider combinations of methods to increase validity
- If it is not possible to identify a method that can be used to evaluate its intended effects it is strongly recommended to reconsider the implementation of a measure

# Recommendations

## ► **For users:**

- prefer econometric / quantitative results
- consider details of the method when interpreting results
- make judgments on quality based on transparency of results

## ► **General recommendations:**

- More in-depth studies on targeting
- adjust database such that IO / or similar method (e.g. regional CGE) can be used with minimum efforts in **all** regions
- merge FADN data (anonymously) with RDP-beneficiary and non-beneficiary information
- Increase FADN sample (in some countries)