

# A prototype of an index-based margin insurance for agriculture in Austria

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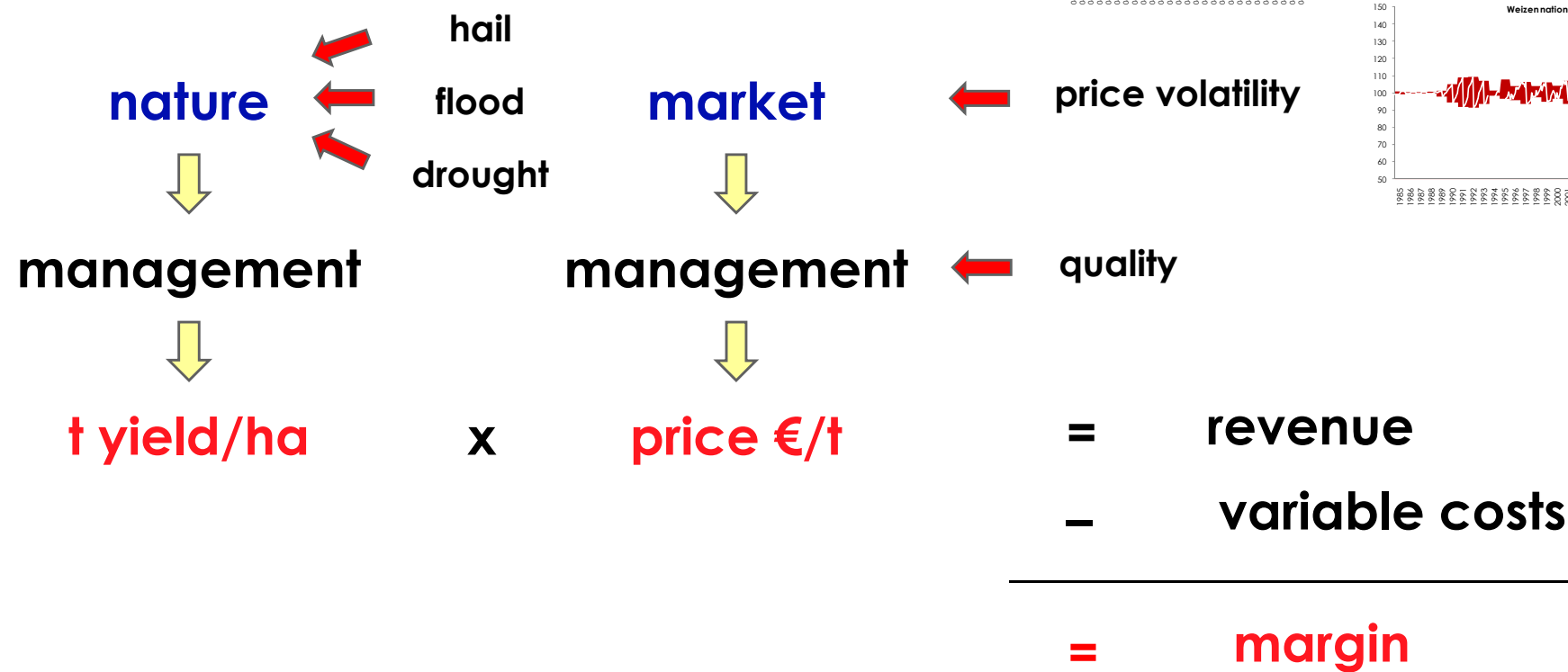
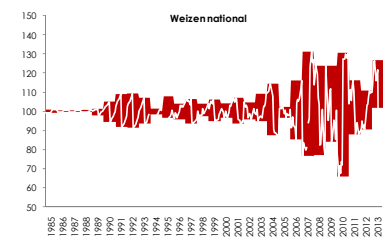
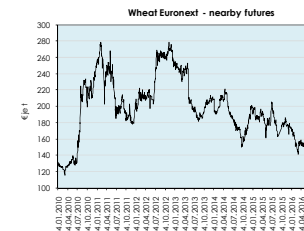
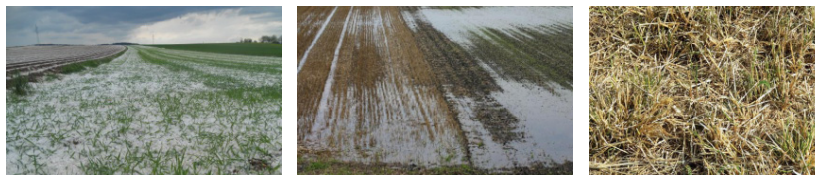
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# motivation and problem statement

## motivation and problem statement

- farm structure in Austria and level of education
- challenges of price volatility
  - more uncertainty about **revenues** and **costs**
  - specialisation and liquidity problems – not alleviated by EU direct payments
  - political measures: late, uncertain, no legal title, wrong incentives
  - tax credits – not relevant in Austria for most farms
  - price hedging instruments steep learning curve and intransparent markets
  - most frequently used: service of buying co-operatives

# what is a margin insurance



## motivation and problem statement

### types of income related insurance in Austria

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#### ■ **mandatory:**

- unemployment insurance for employees
- public disability and accident insurance

#### ■ **voluntary:**

- unemployment insurance for self-employed persons (since 2009) – but not for farmers
- private invalidity and disability insurance
- private health insurance: daily allowances (additional coverage)

#### ■ **all these insurances have special features to make them operational**

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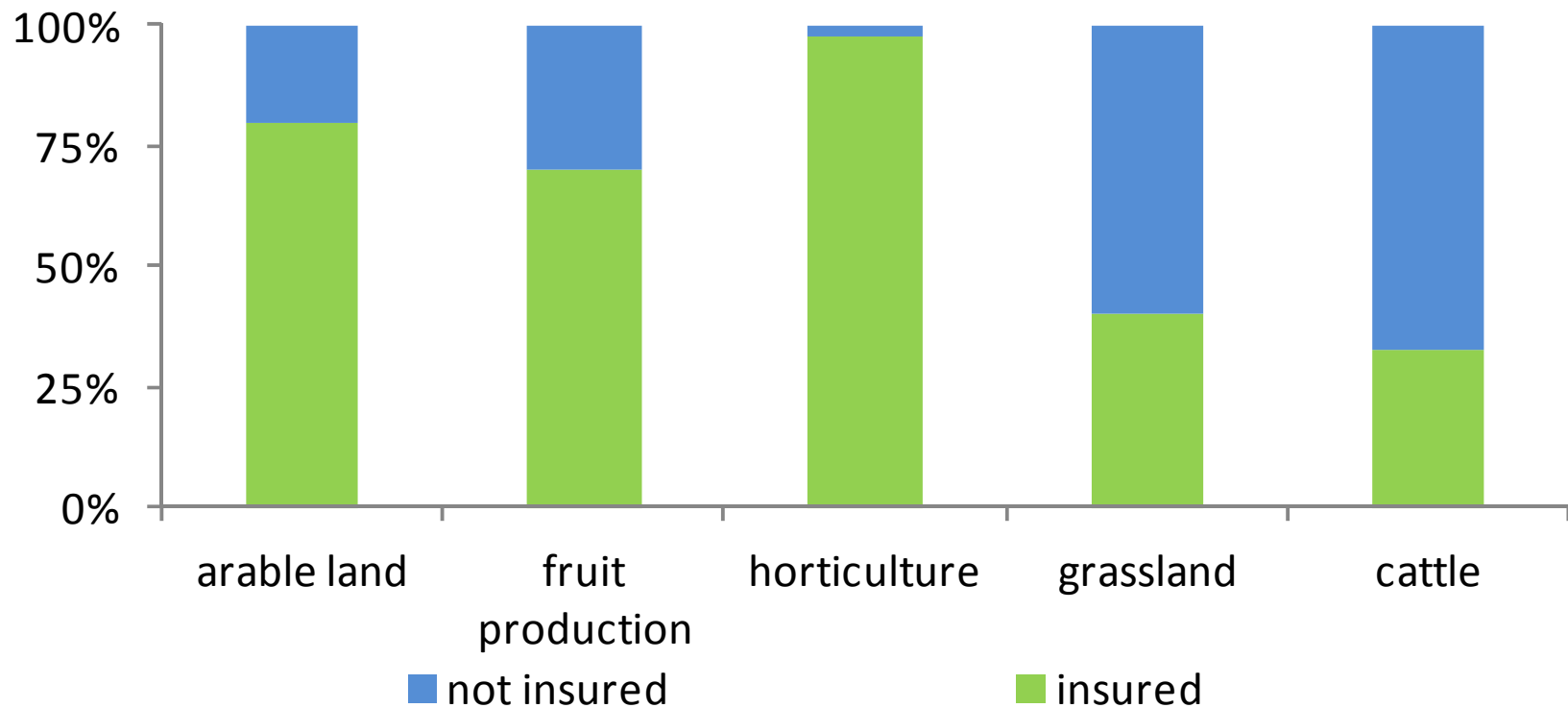
# agricultural production risk management in Austria

# agricultural production risk management in Austria

	Hail	Consumer's risk due to hail	Hail induces fusarium infestation	Frost	Drought	Re-cultivation	Storm	Drift	Siltation (mud)	Flooding	Predation	Sprouting	Snow damage	Additional hassle and rot	Spoilage	Heavy rain	Death	Dead birth	Animal epidemics	Death failure of ventilation	Technical defects	Fire
<b>cereals / grains</b>	x			x	x			x	x	x	x	x										
<b>maize</b>	x		x		x		x	x	x	x	x		x									
<b>Potatoes</b>	x			x	x	x		x	x	x	x											
<b>Rape</b>	x			x				x	x	x	x											
<b>Soy Bean</b>	x				x			x	x	x	x											
<b>Clover</b>	x				x	x		x	x	x	x											
<b>Other forage plants</b>	x					x		x	x	x	x											
<b>Fruit trees</b>	x						x						x									
<b>Apples</b>	x			x	x																	
<b>Grapes</b>	x			x										x								
<b>Glasshouse</b>	x						x			x			x		x						x	x
<b>Tree nursery</b>	x			x			x			x			x		x							
<b>Cattles</b>																	x	x	x			
<b>Pigs</b>																			x	x		



# agricultural production risk management in Austria



# agricultural production risk management in Austria

## Key data on the market for production related risks in Austrian agriculture

	2000	2005	2014
clients	71,897	67,866	n.a.
area, 1,000 ha	913	1,079	1,209
premium volume, mn €	45.9	53.1	96.3
farmer's losses, mn €	64.3	23.3	n.a.
premium subsidy, mn €	22	24	40
<b>amount covered, bn €</b>	<b>n.a.</b>	<b>n.a.</b>	<b>3.7</b>

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**necessary conditions for an  
income related insurance to work**

# necessary conditions for an income insurance in agriculture to work

- **low administrative costs**
  - mutual insurer
  - index based system on **margins** instead of **personal income**
- **avoid adverse selection**: self selection into well designed product
- **avoid moral hazard**: farmer's behaviour has no effect on outcome - index
- **avoid accumulation risk**
  - diversified farm products / inputs of which prices are uncorrelated
  - re-insurance
- **no unconditional insurance of structural shifts**:
  - limited payout period, regular renegotiation of insurance contract
  - automatic adaptation of premiums / indemnity levels

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**the concept and a prototype**

# introduction to INCAP

## index based costs of agricultural production

### INCAP

INCAP consists of 2 activity groups.

#### Plant production activities

(INCAP.p)

#### Livestock activities

(INCAP.l)

←  
Activity groups

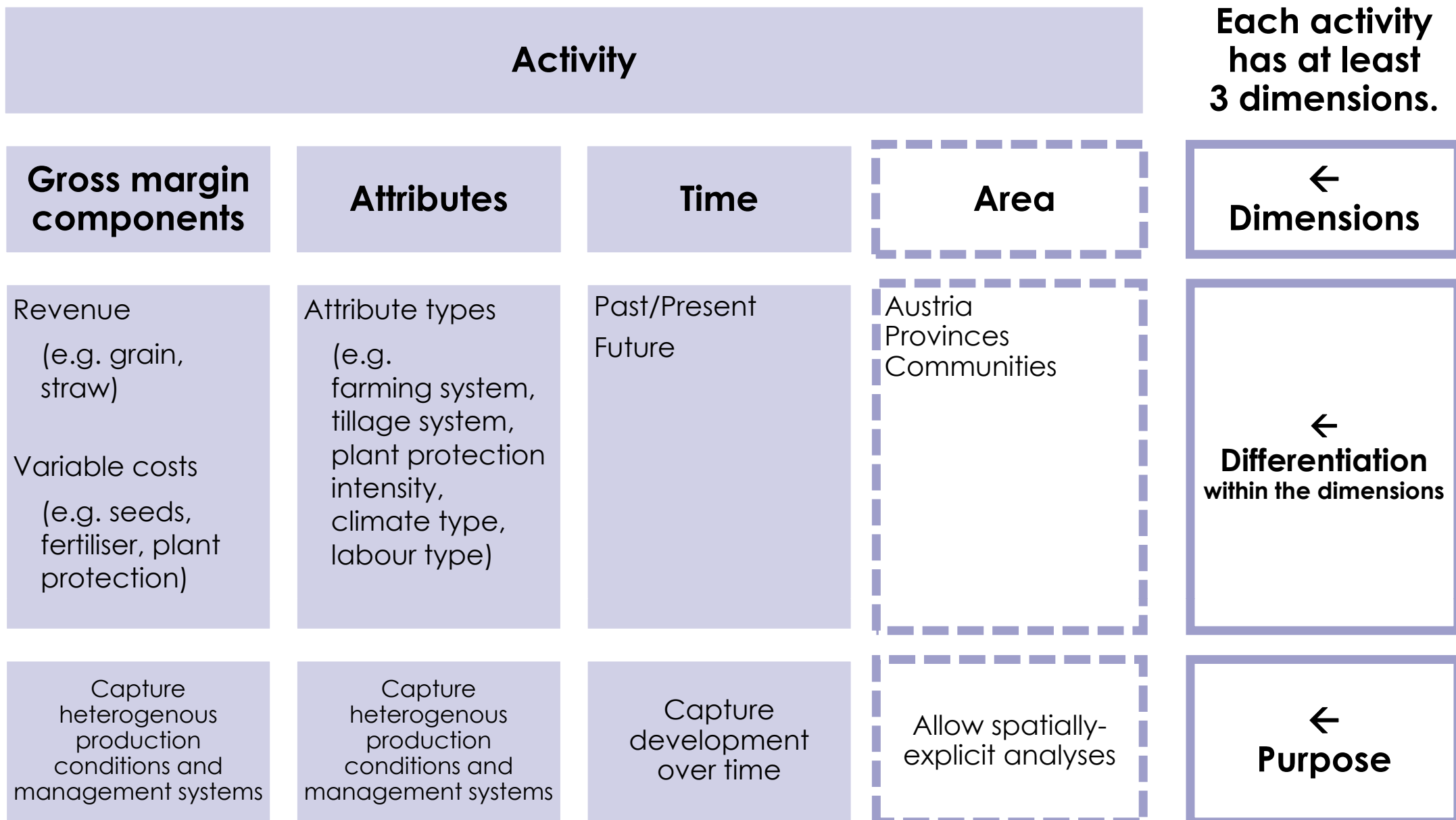
Cereals, oilseeds, protein crops, root crops, catch crops, fallow land, silage, hay

Dairy cow and milk prod., heifer rearing, bull fattening, suckler cow + beef calf prod., piglet production, pig fattening

←  
Activity types

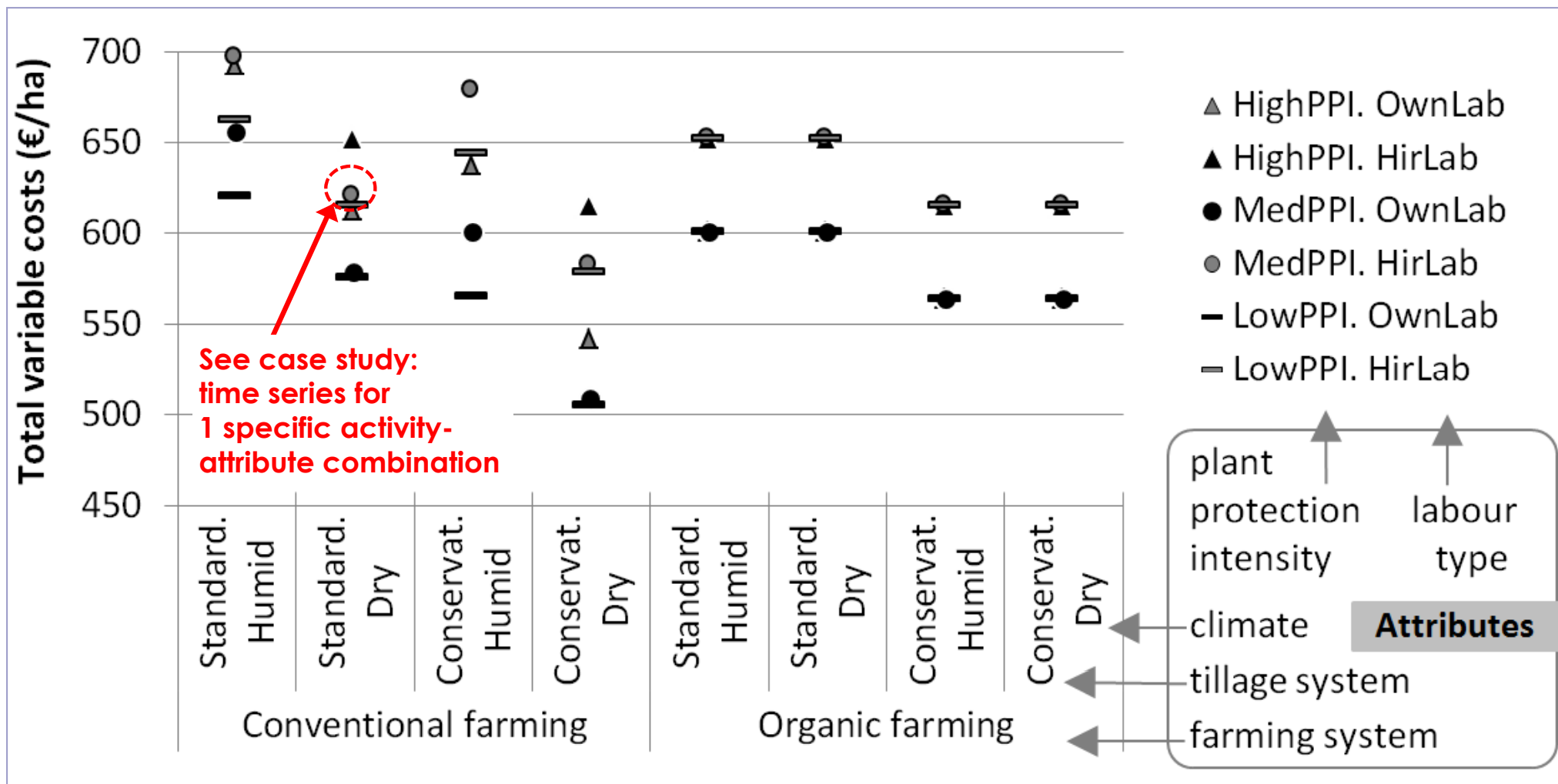
# introduction to INCAP

## index based costs of agricultural production



# example

## quality wheat, average 2011-2013

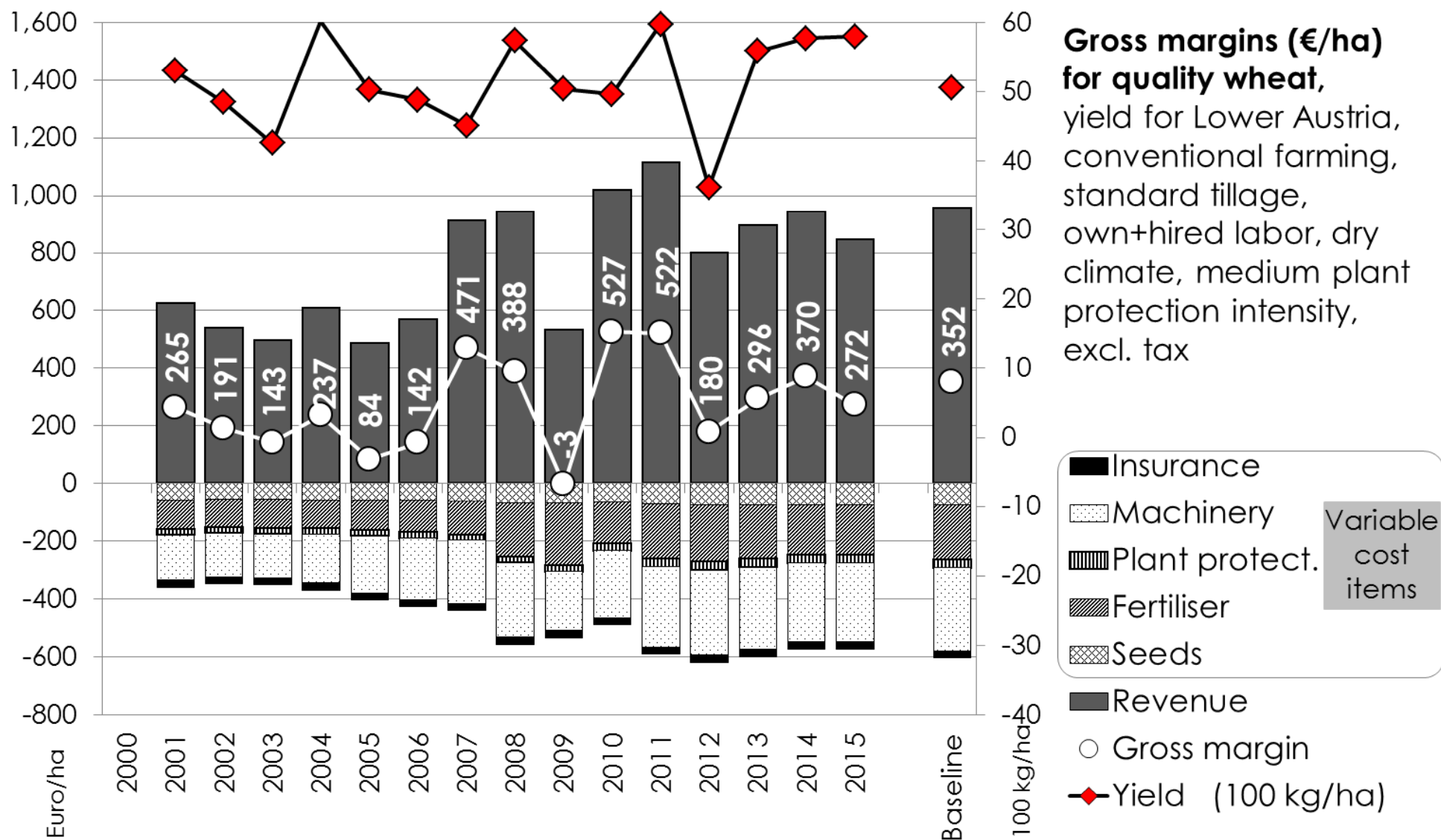


Variable costs for 48 combinations of quality wheat, no straw recovery, cropland, field size: 2ha, tax excluded) in the reference year (average 2011-2013), €/ha.

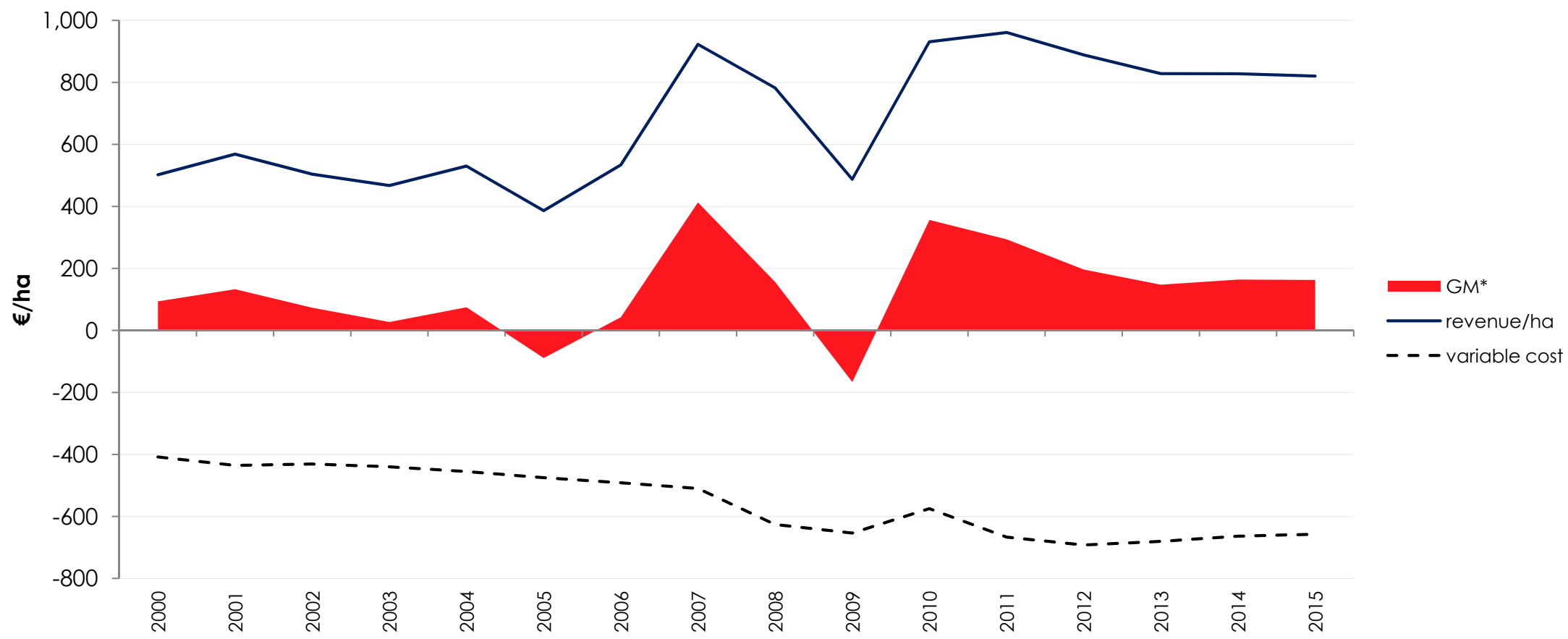


# introduction to INCAP

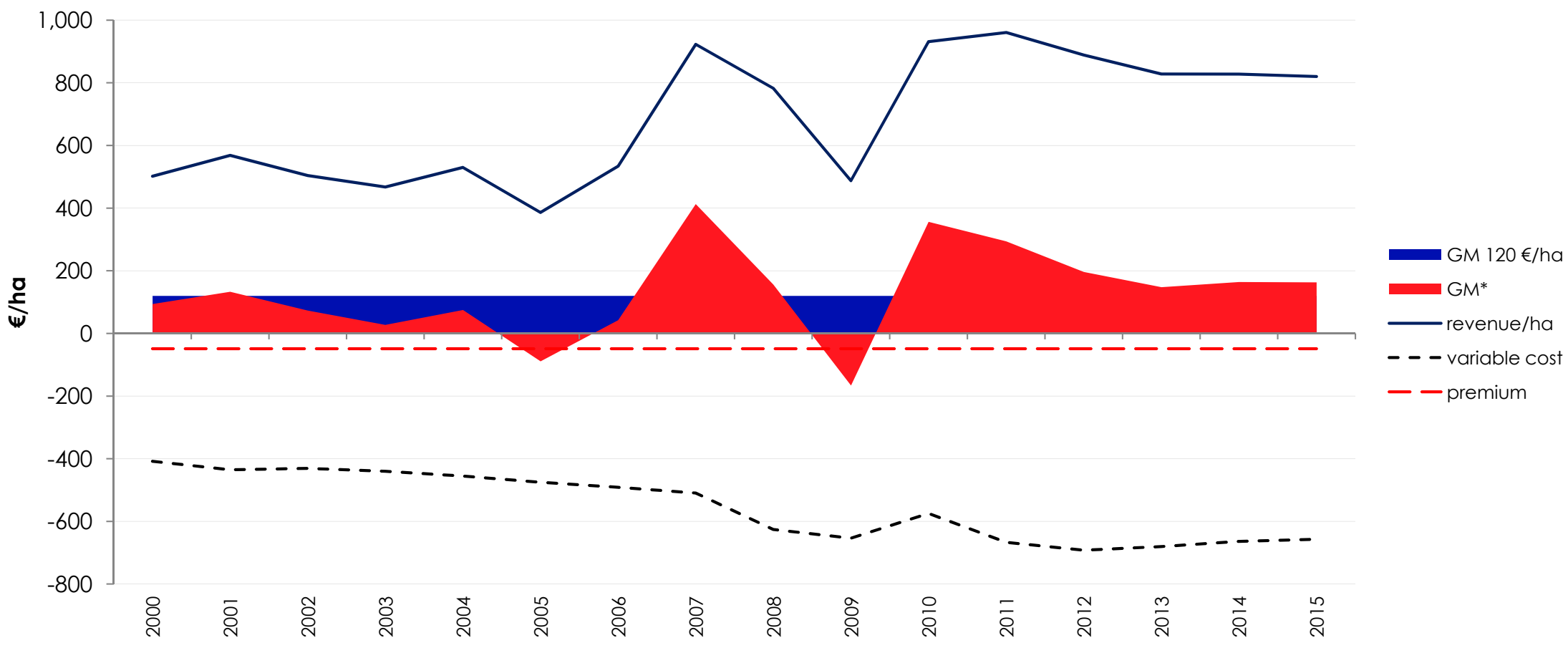
## time series for 1 specific quality wheat production activity



# a prototype of a margin insurance quality wheat in Austria



# a prototype of a margin insurance quality wheat in Austria



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## discussion and outlook

# deficiencies of the prototype and some open questions

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- at the moment just a little more than a prove of concept
- farmers' reaction and willingness to pay not yet known
  - they may be interested in income insurance instead of margin insurance
  - variable costs are not very volatile for many activities: only a small group may be interested → high accumulation risk
- not for all products / inputs there are adequate price indices available
- time series properties of candidate indices are not yet well understood

# some sufficient conditions for an income insurance in agriculture to work

- **control of accumulation risks**
- **details of contract are attractive for farmers**
  - e.g. monthly benefits for milk producers
  - benefits at the time of sale for pig, piglet, grain producers
- **combination with production risk insurance with discounts**
- **government support during introduction period / as a new policy instrument**
- **marketing and sales: wholesale buyers / dairies / producer organisations offer margin insurance as a service**

## the way ahead

- further validation of margin calculation tool
- research on adequate indices for various activities
- statistical properties / time series properties of relevant data
- development of more sophisticated prototypes for more activities
- micro-simulation of variants of products using data from existing firms
- farmers' willingness to pay for well designed products
- check of legal / agricultural policy context for such types of products

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**Thank you**



# credits

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