

Adaptation to climate change in the European agriculture: A new tool for explicit cost accounting

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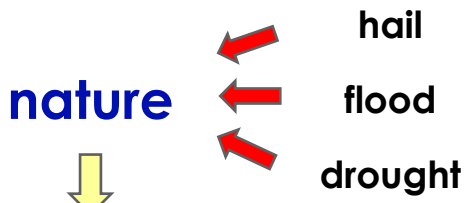
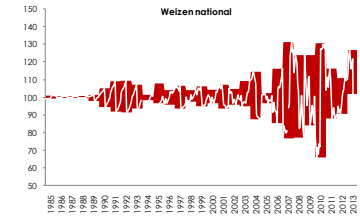
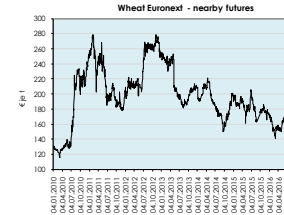
motivation and problem statement

farm income volatility and adaptation to CC

motivation and problem statement

- farm structure in Austria and level of education
- challenges of more volatile markets / more uncertain yields
 - 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



↑
quantity

t yield/ha

x

price €/t

=

revenue

-

variable costs

=

margin

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

necessary conditions for an income insurance in agriculture to work

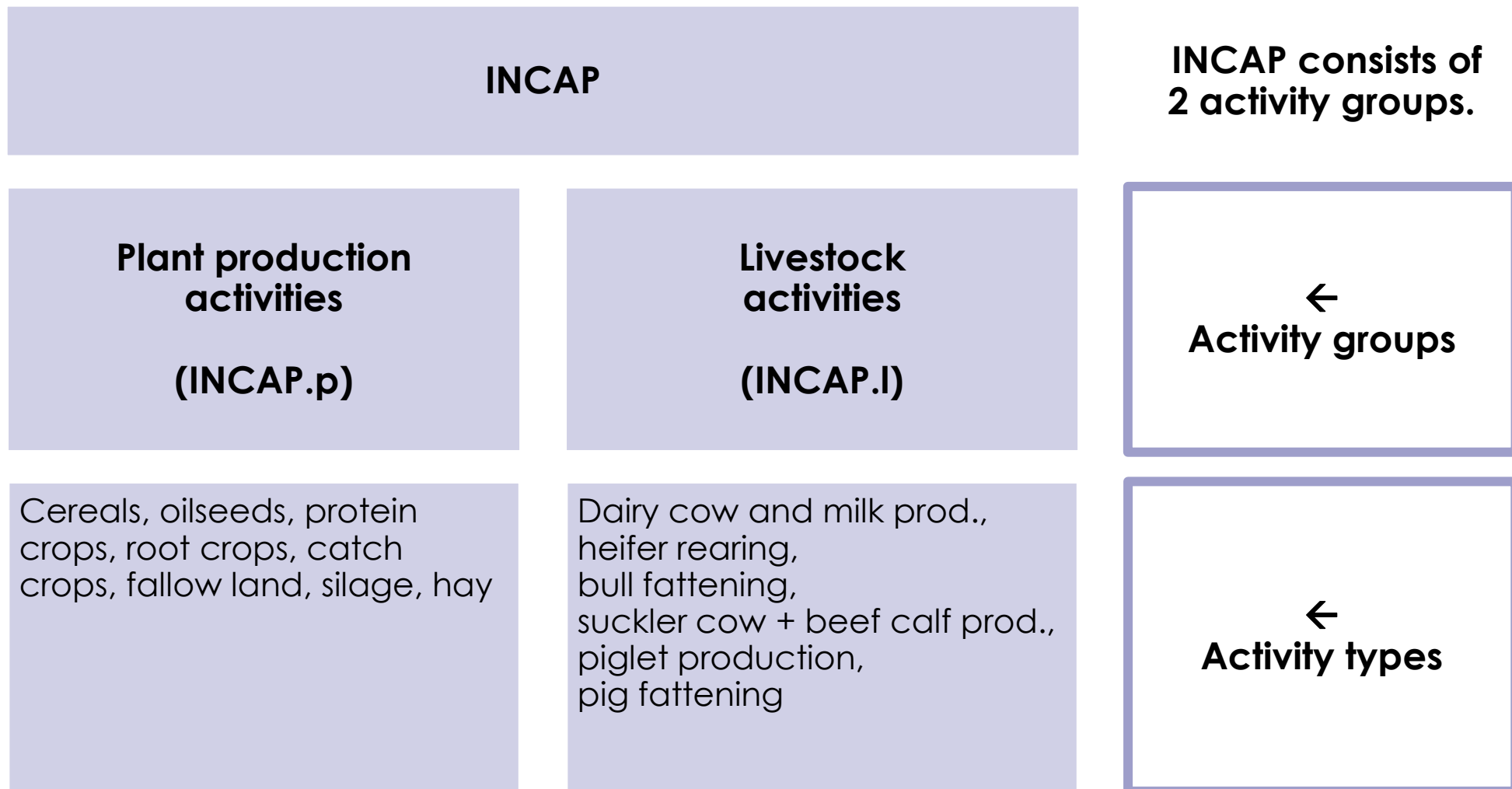
- **low administrative costs**
 - mutual insurer
 - index based system on **margins** instead of **personal income**
- **avoid adverse selection**: self selection into well designed product
- **avoid moral hazard**: farmer's behaviour has no effect on outcome - index
- **avoid accumulation risk**
 - 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

INCAP

**the concept and a prototype
of a margin insurance**

introduction to INCAP

index based costs of agricultural production



introduction to INCAP

index based costs of agricultural production

Activity

Each activity has at least 3 dimensions.

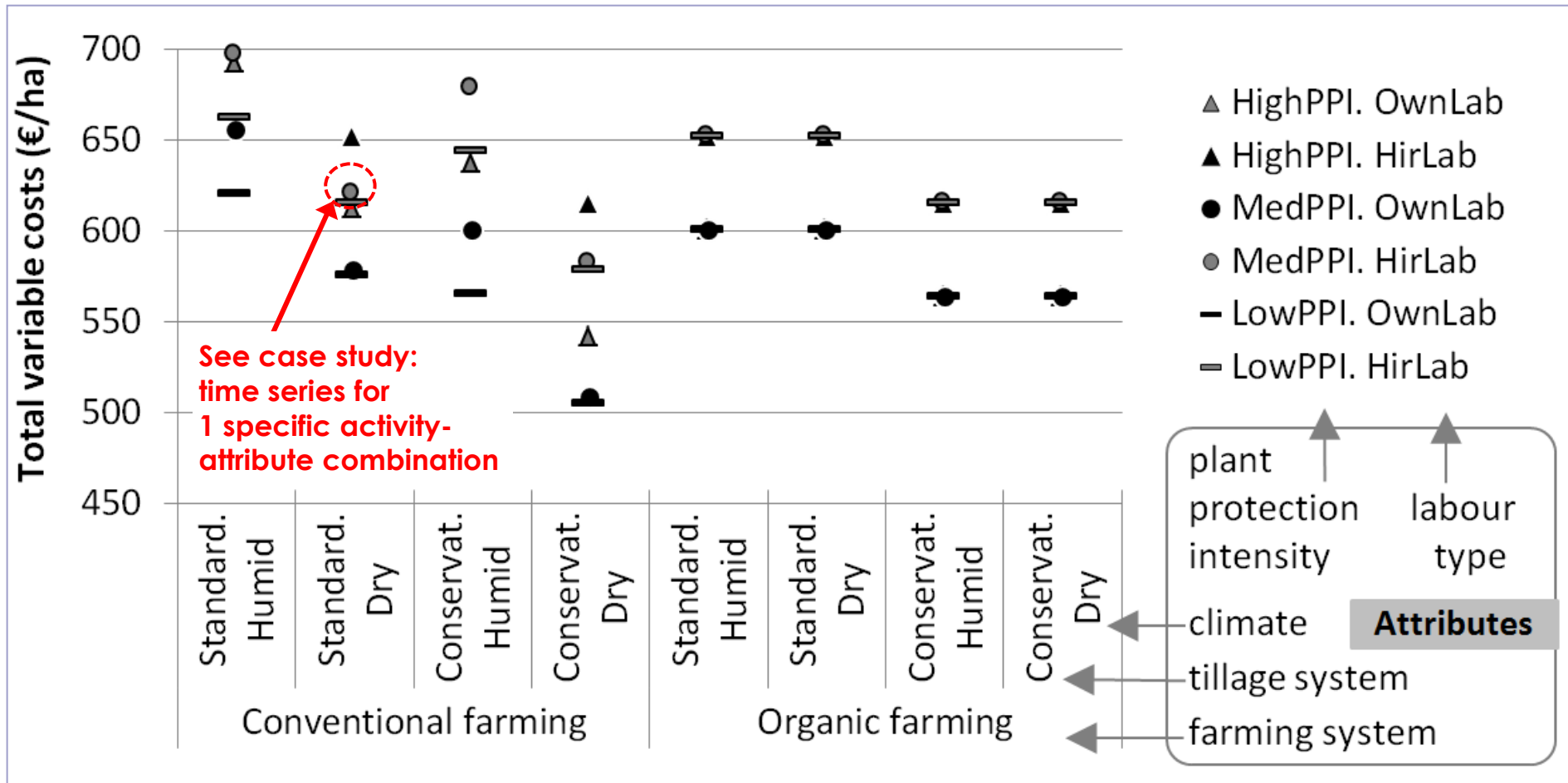
Gross margin components	Attributes	Time	Area
Revenue (e.g. grain, straw) Variable costs (e.g. seeds, fertiliser, plant protection)	Attribute types (e.g. farming system, tillage system, plant protection intensity, climate type, labour type)	Past/Present Future	Austria Provinces Communities
Capture heterogenous production conditions and management systems	Capture heterogenous production conditions and management systems	Capture development over time	Allow spatially-explicit analyses

←
Dimensions

←
Differentiation within the dimensions

←
Purpose

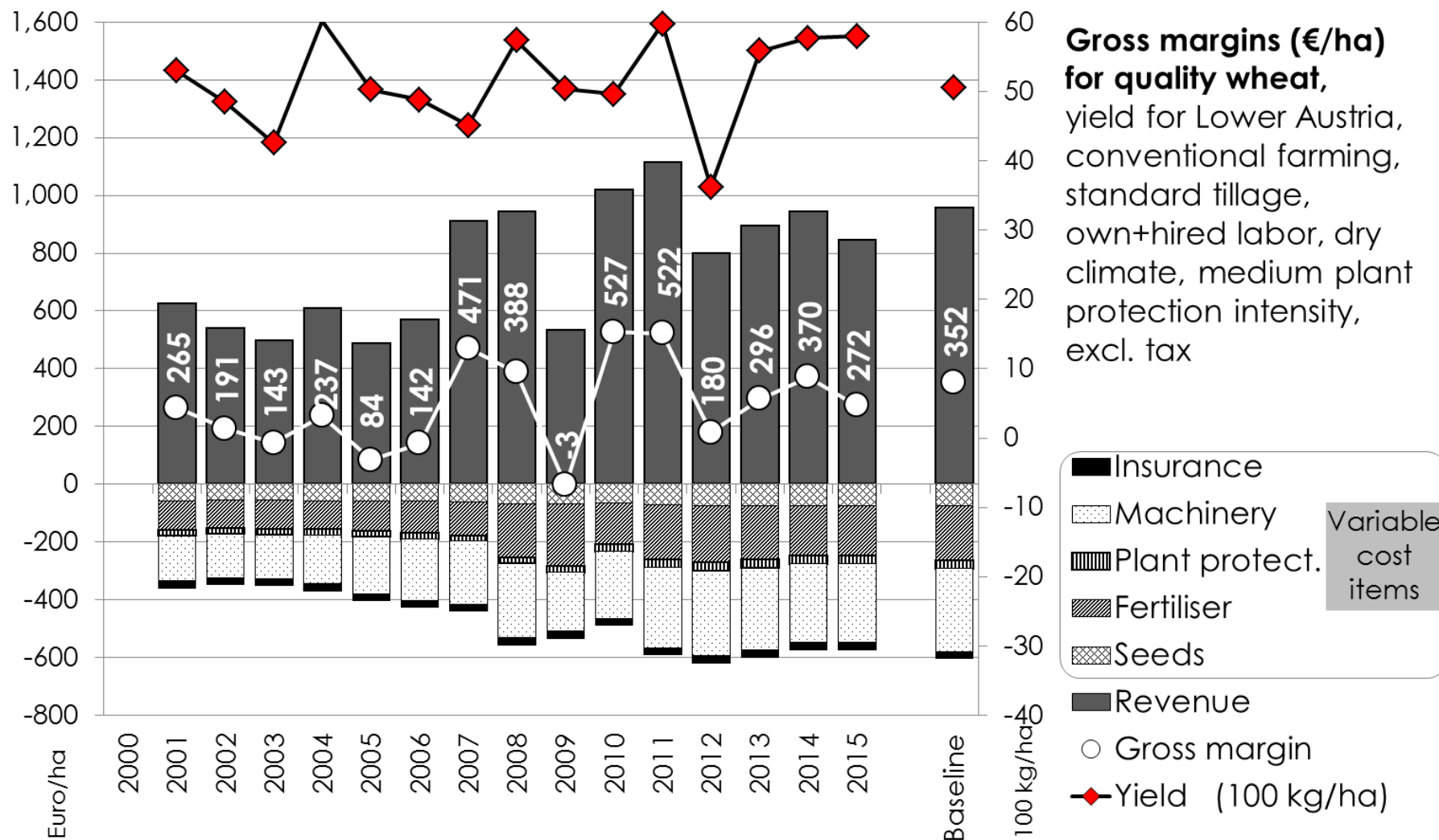
example quality wheat, average 2011-2013



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.

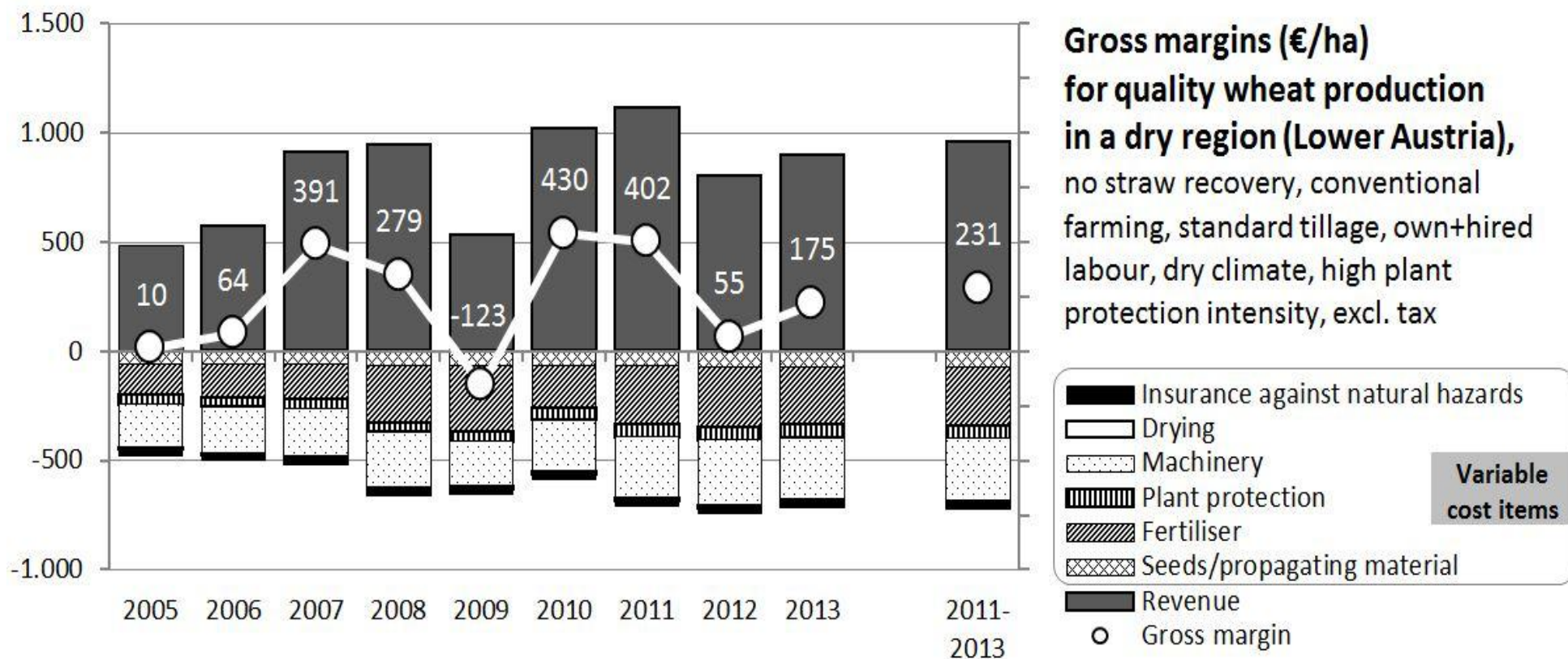
introduction to INCAP

time series for 1 specific quality wheat production activity

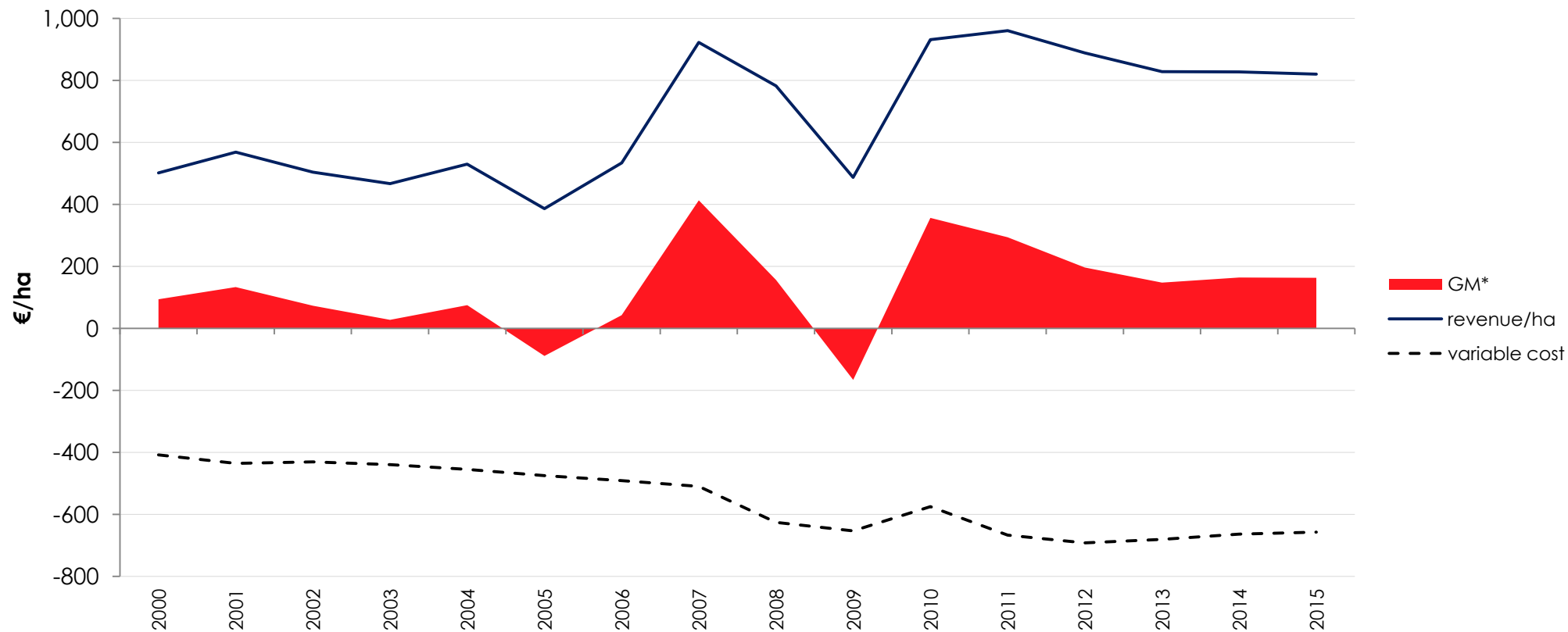


introduction to INCAP

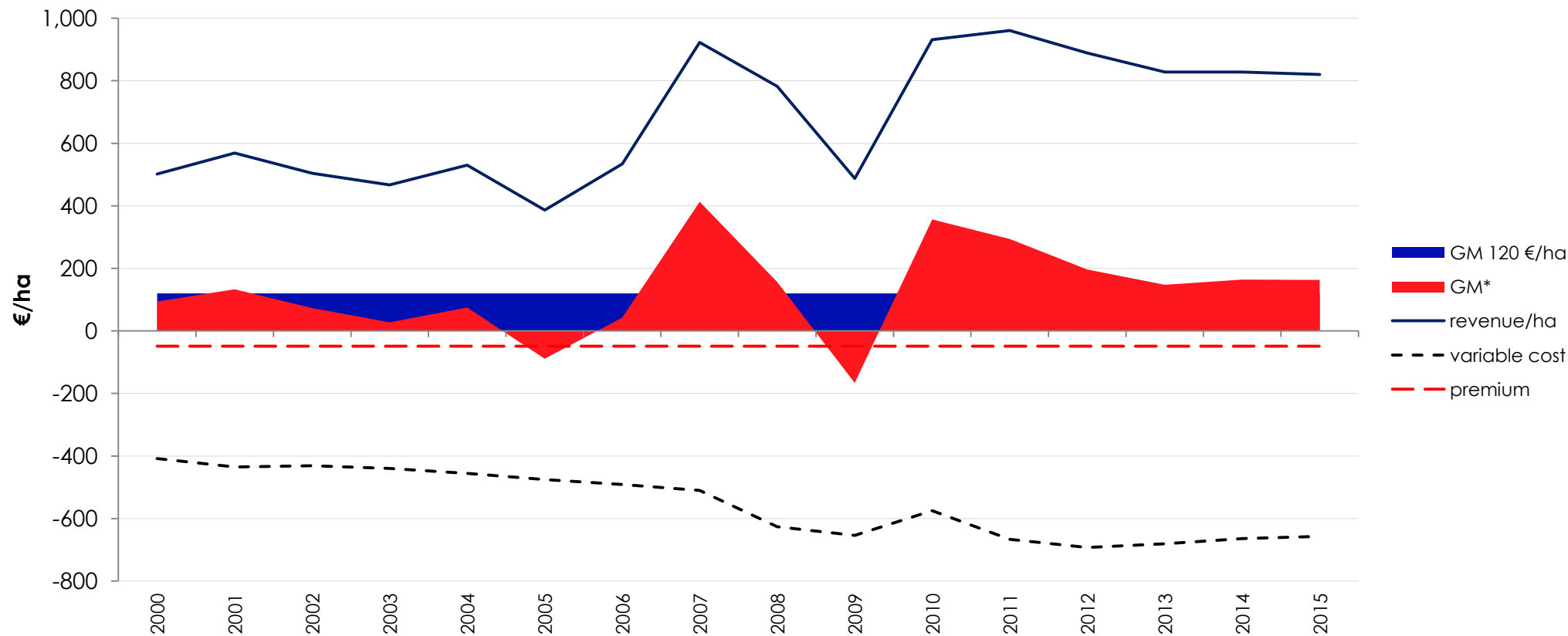
time series for 1 specific quality wheat production activity



a prototype of a margin insurance quality wheat in Austria: +1 bad harvest



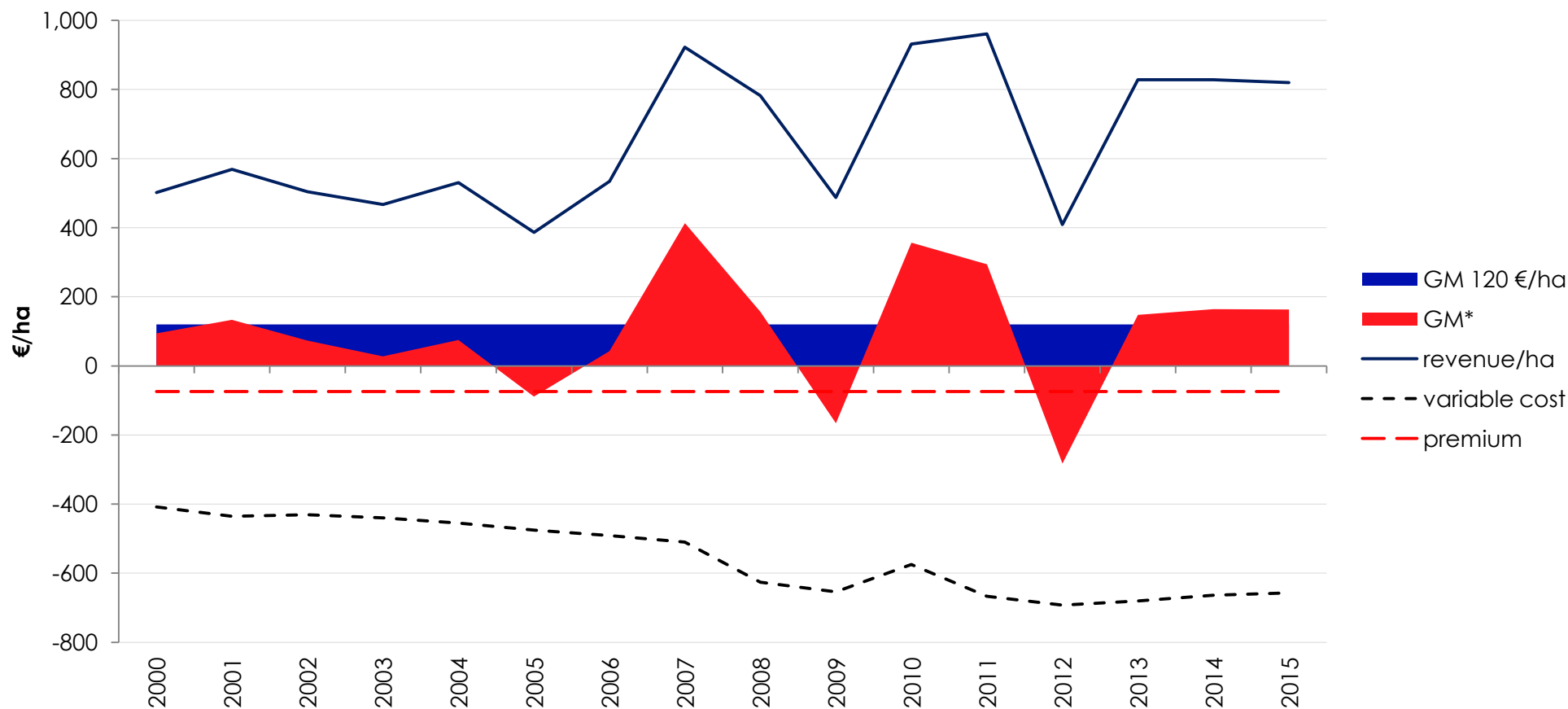
a prototype of a margin insurance quality wheat in Austria: observed



annual fair premium: 49 €

likely consequences of CC:
more volatile crop yields
more volatile crop prices

a prototype of a margin insurance quality wheat in Austria: a bad harvest in 2013 cp

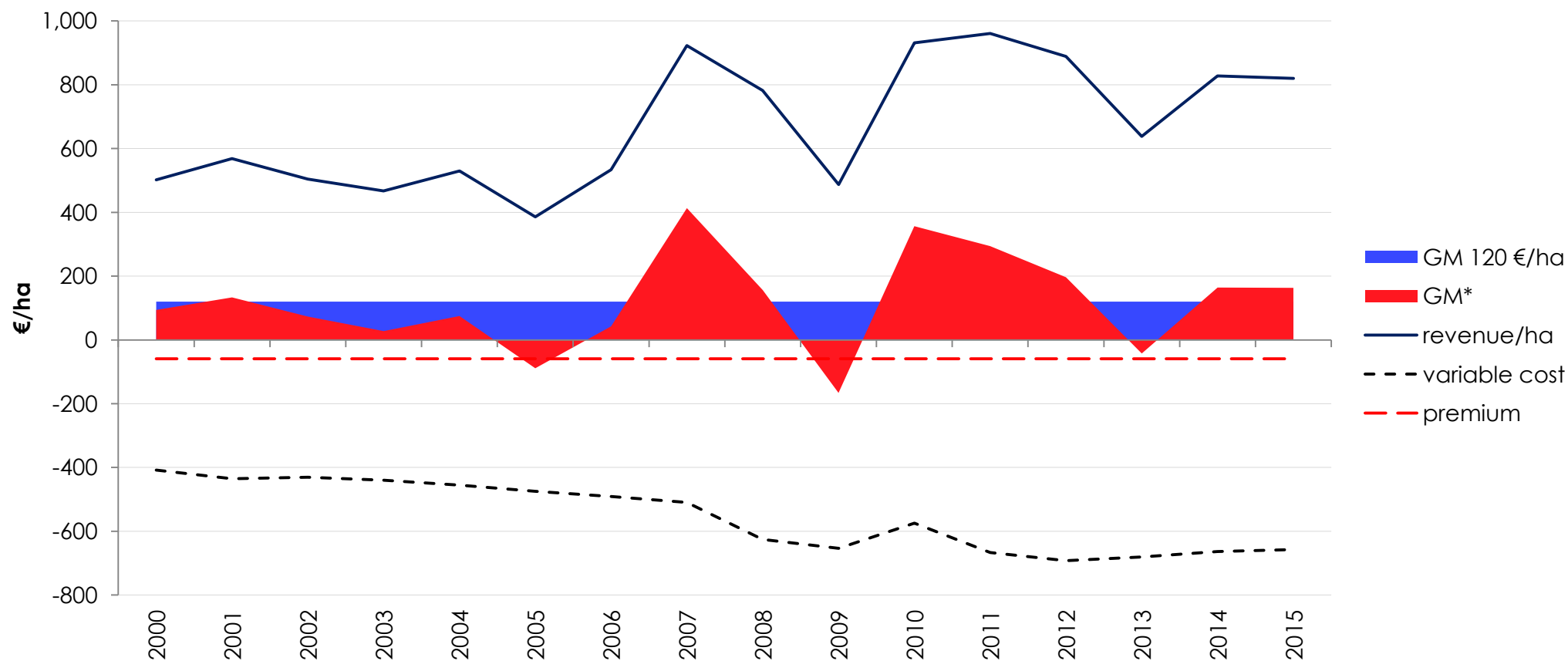


annual fair premium: 59 €

and costs

a prototype of a margin insurance

quality wheat in Austria: avg. wheat prices in 2012 cp



annual fair premium: 69 €

discussion and outlook

deficiencies of the prototype and some open questions

- 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
- we know very little about the **frequency** of **adverse events** in 2050

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

- **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**
- **better understanding of market related volatility at global level**

Thank you for your attention

credits

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