

An Index-Based Margin Insurance for Agriculture Wheat Production in Austria

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Contents of the presentation

- **Motivation and problem statement**
- **INCAP – a tool for cost accounting**
 - **concept**
 - **application**
- **margin-insurance for crop producers: a prototype**
 - **necessary conditions for a margin insurance to work**
 - **concept, prototype, application**
- **discussion and outlook**

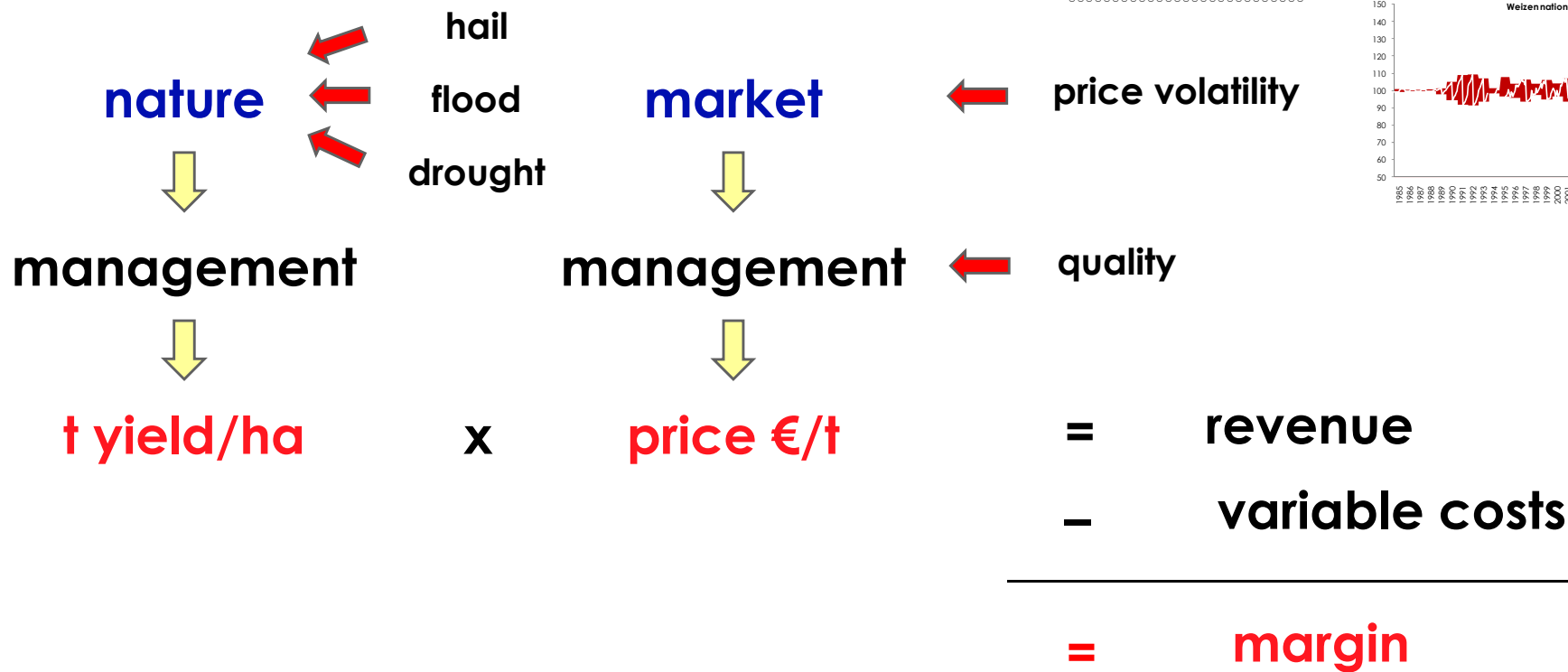
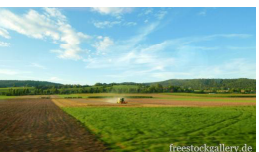
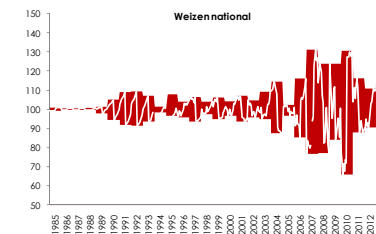
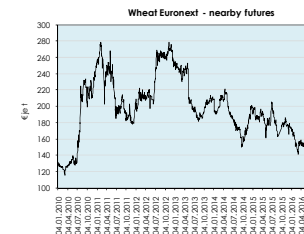
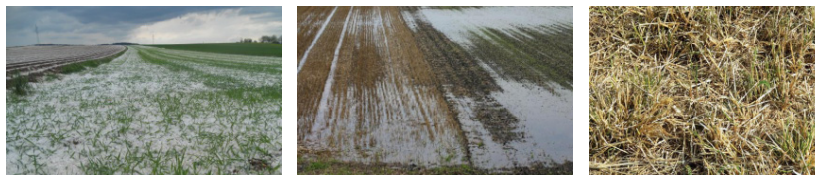
motivation and problem statement

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

**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

INCAP

INCAP consists of 2 activity groups.

Plant production activities

(INCAP.p)

Livestock activities

(INCAP.l)

←
Activity groups

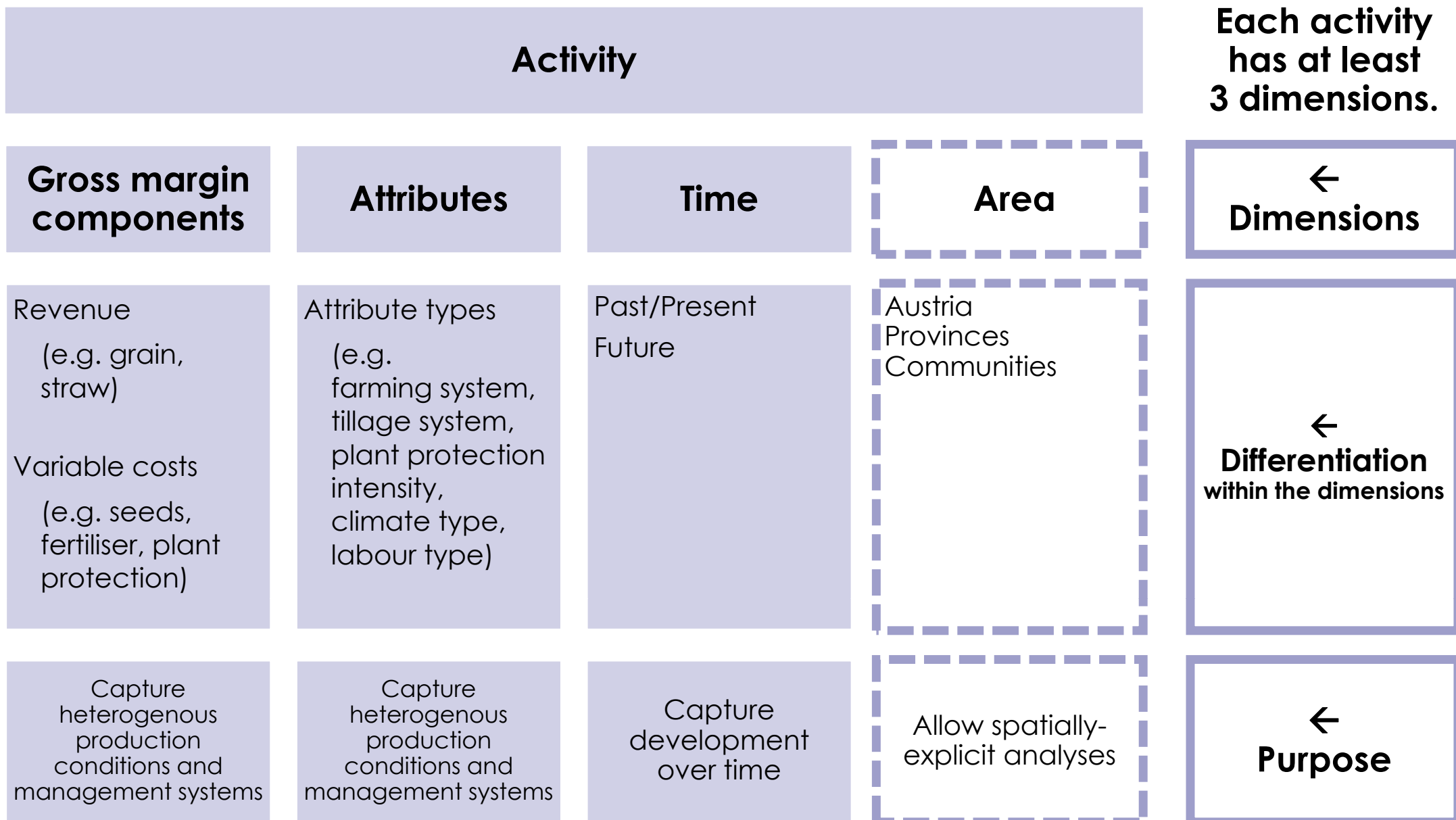
Cereals, oilseeds, protein crops, root crops, catch crops, fallow land, silage, hay

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

←
Activity types

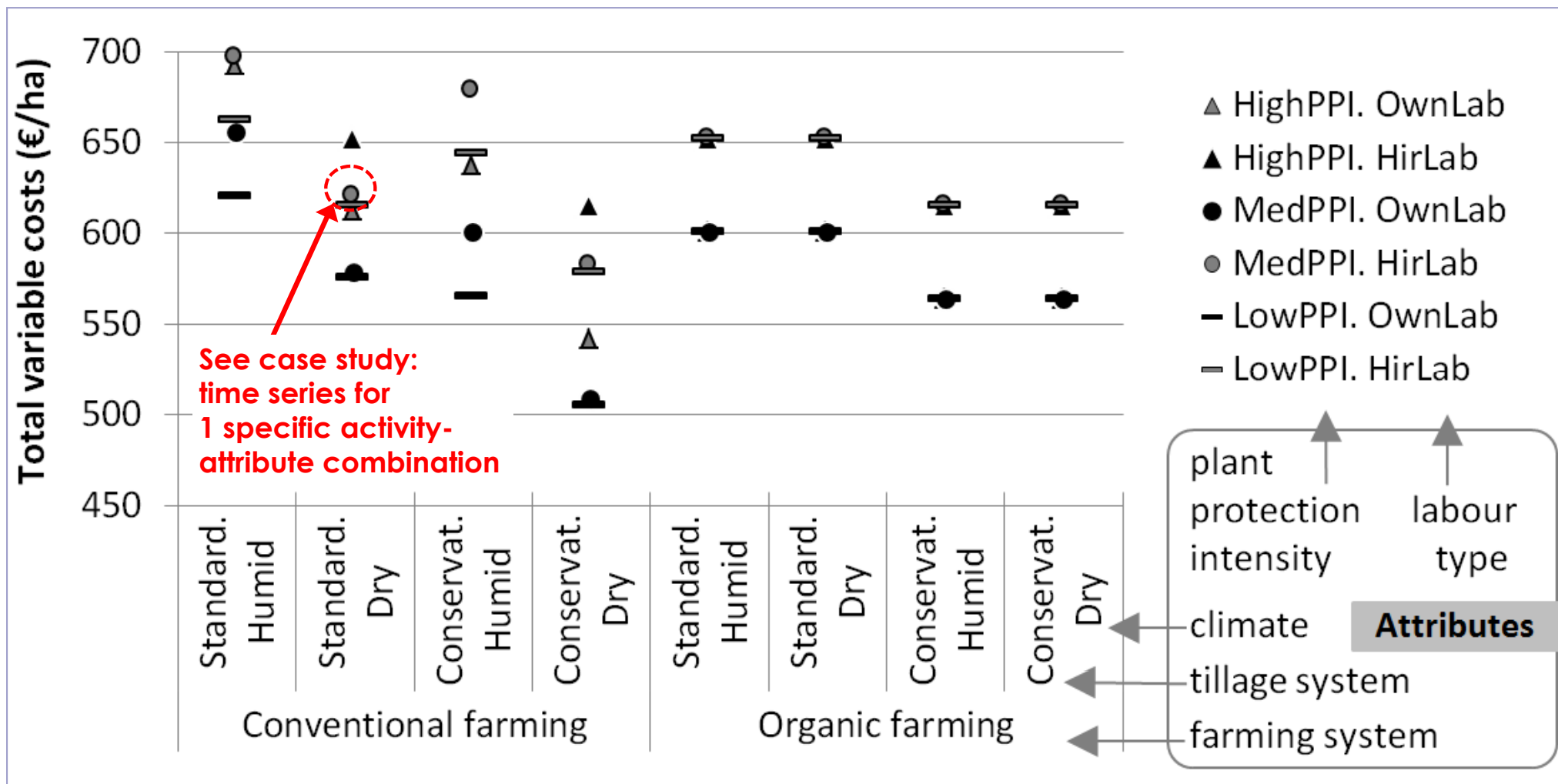
introduction to INCAP

index based costs of agricultural production



example

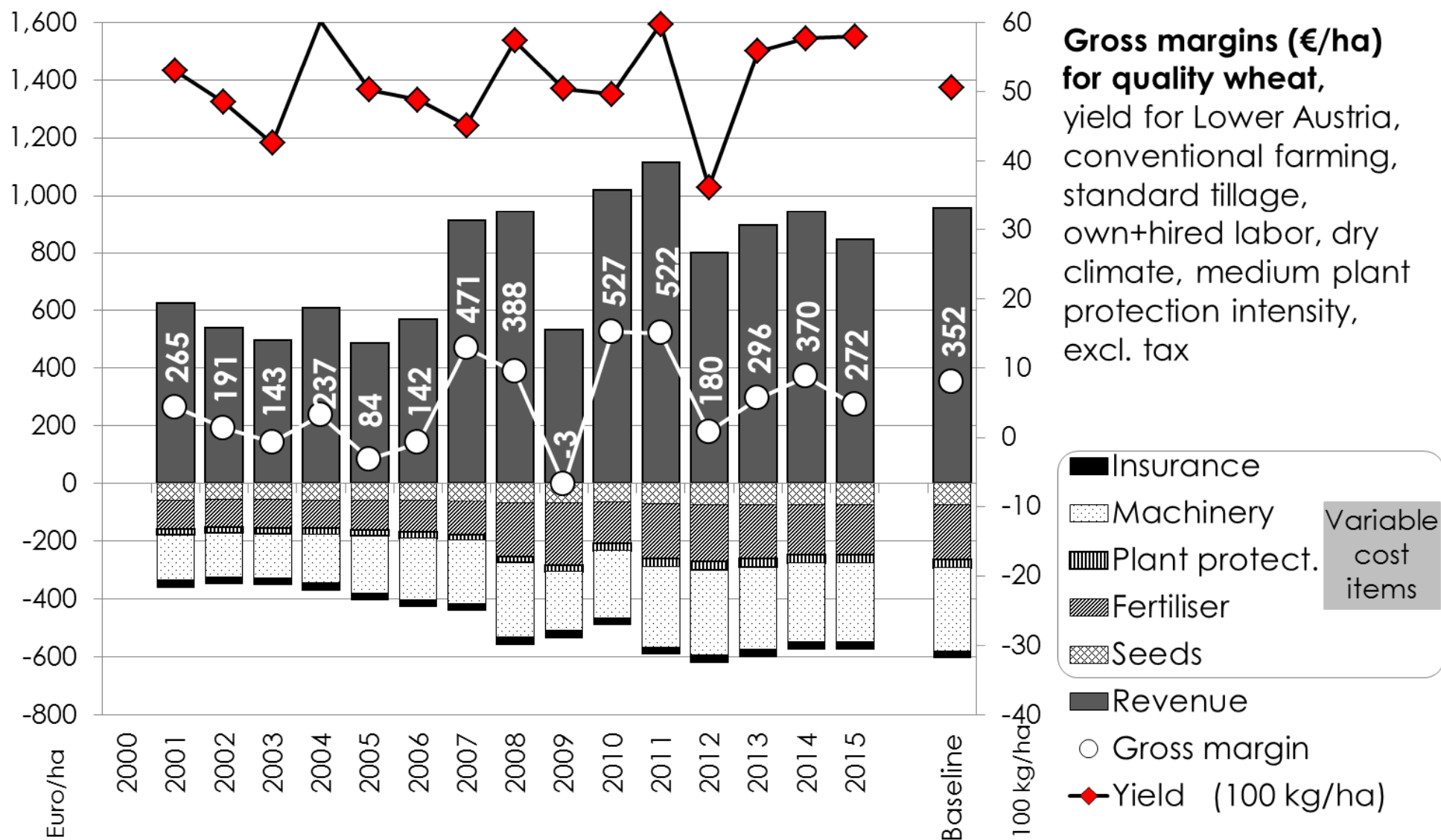
quality wheat, average 2011-2013



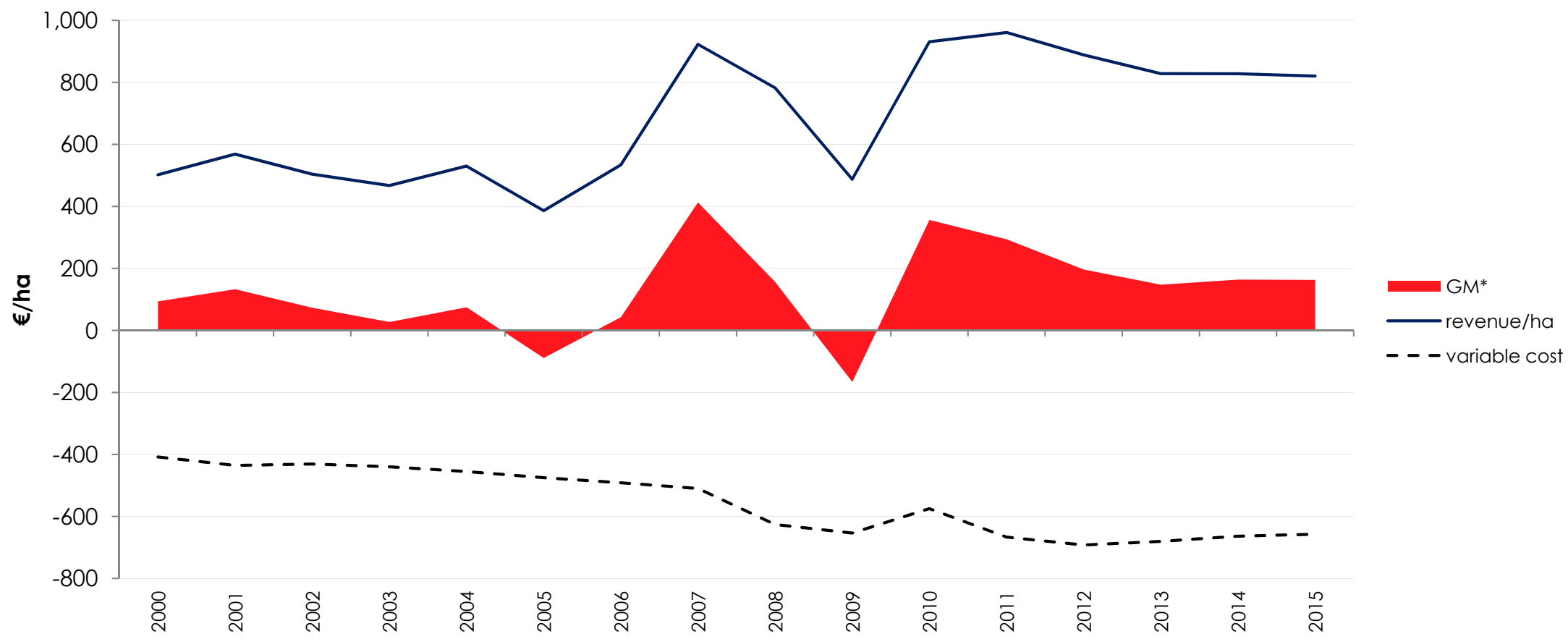
Variable costs for 48 combinations of quality wheat, no straw recovery, cropland, field size: 2ha, tax excluded) in the reference year (average 2011-2013), €/ha.

introduction to INCAP

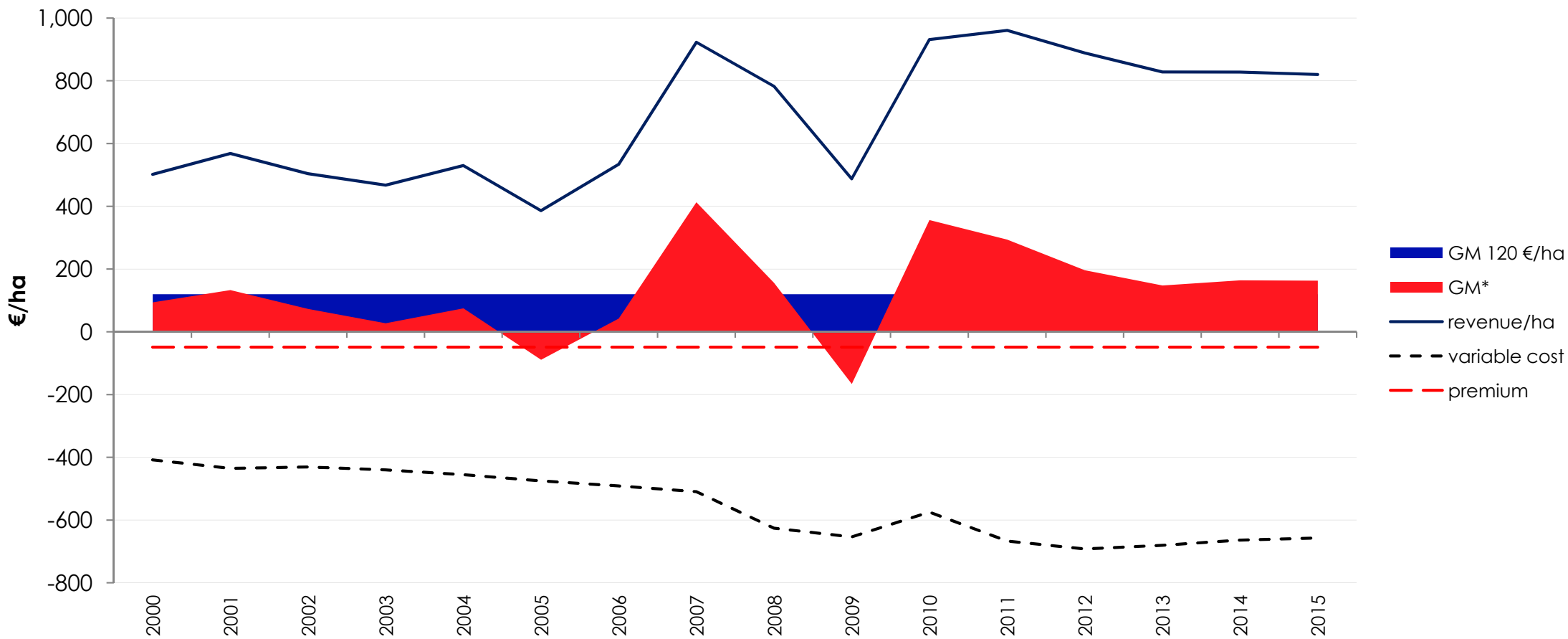
time series for 1 specific quality wheat production activity



a prototype of a margin insurance quality wheat in Austria: average for whole country



a prototype of a margin insurance quality wheat in Austria: average of whole country



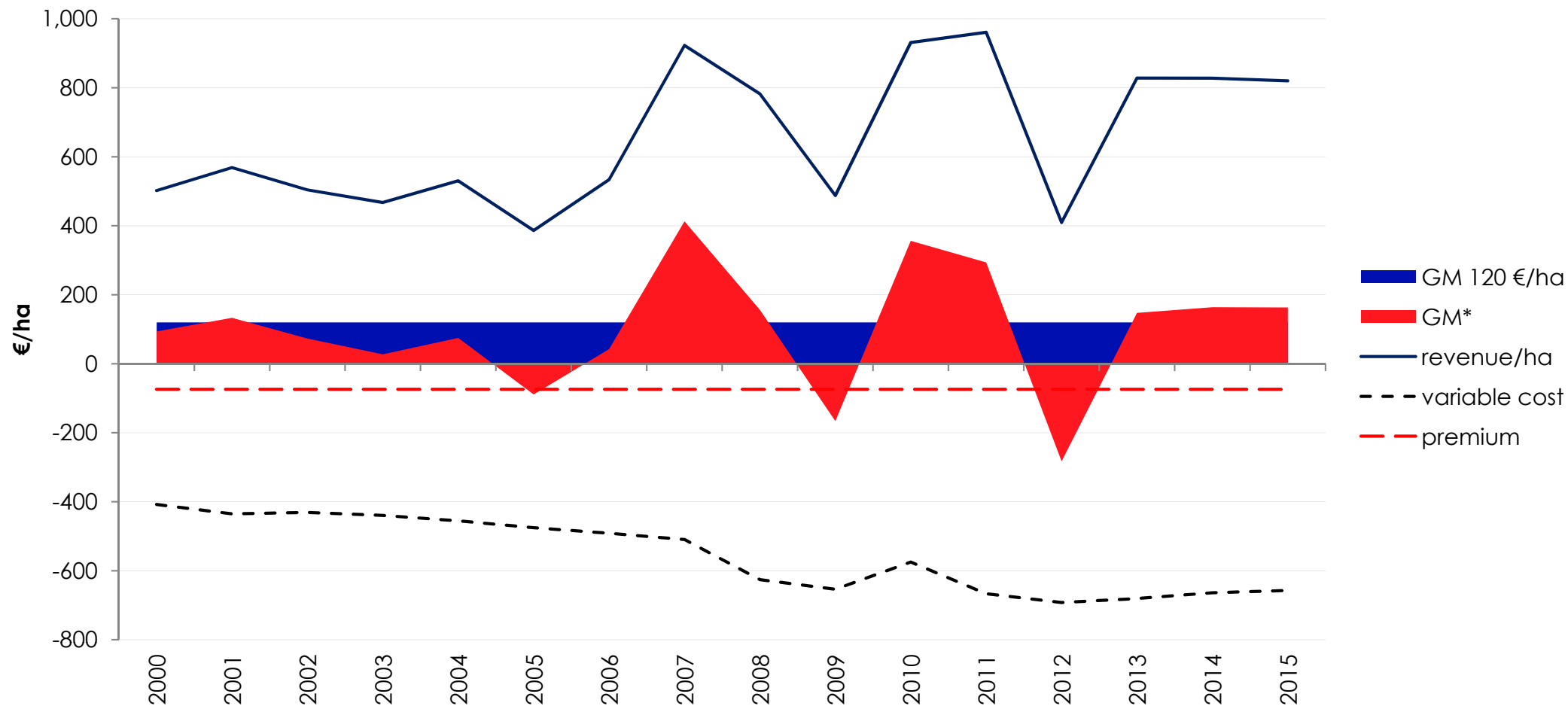
annual fair premium: 49 €

sensitivity

states of nature: more volatile crop yields

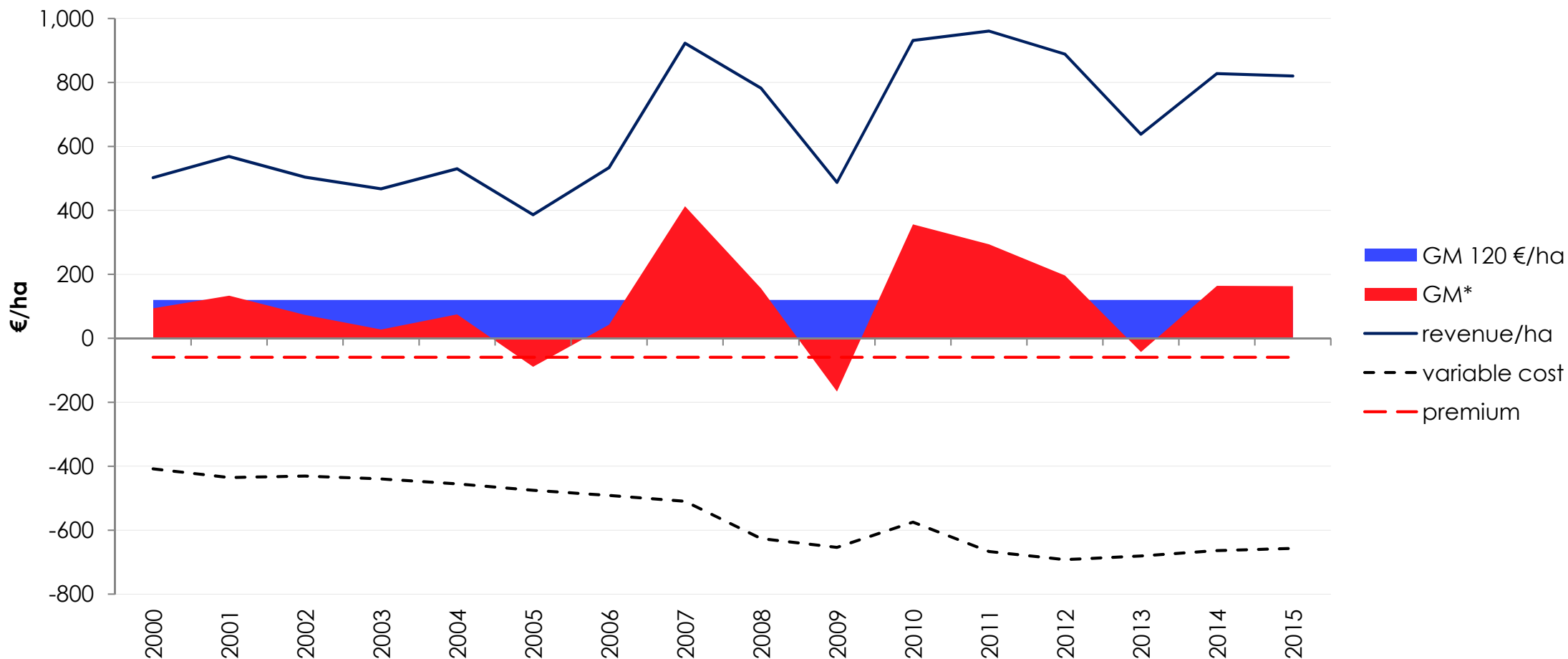
states of markets: more volatile crop prices

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



annual fair premium: 59 €

a prototype of a margin insurance
 quality wheat in Austria: avg. wheat prices in 2012 cp



annual fair premium: 69 €

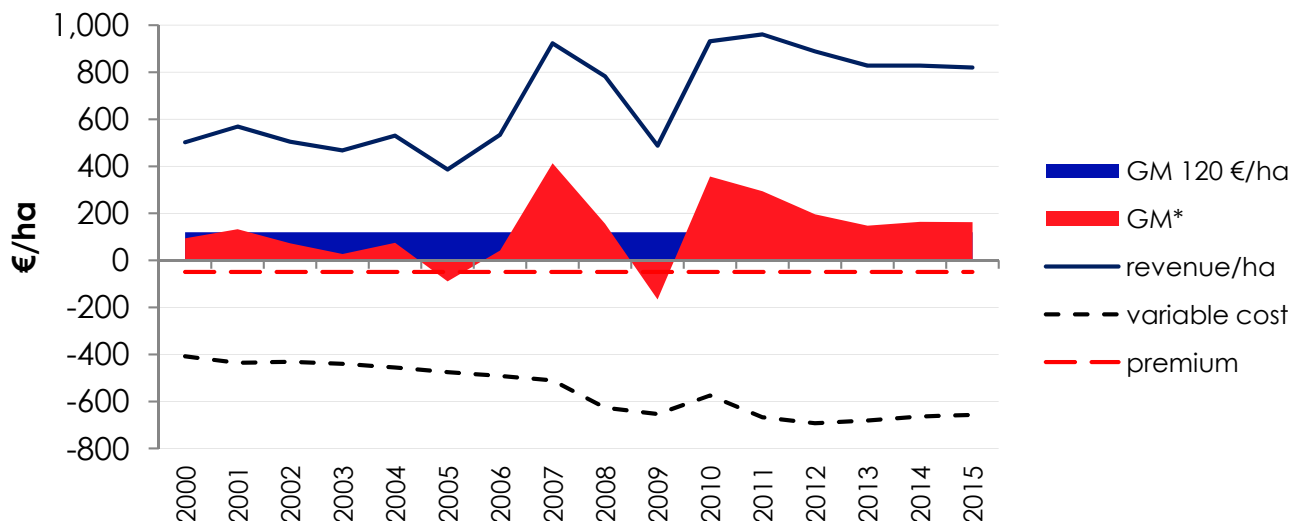
moral hazard

A: average farmer

B: best farmer: price +5%, harvest +10%

C: cheating farmer: price -5%, harvest -10%

a prototype of a margin insurance moral hazard: 3 types of farmers



**annual fair premium: 49 €
indemnities based ONLY on A**

A B C
Ø 2000 - 2015

revenue / t	t / ha		134	140	127
yield	kg / ha		5,145	5,659	4,630
revenue*	€ / ha	1	684	790	585
revenue/ha + indemnity	€ / ha	2	733	839	634
seed, fert., plant prot.	€ / ha	3	273	273	273
machinery	€ / ha	4	280	280	280
premium	€ / ha	5	49	49	49
GM*	€ / ha	1-3-4	130	236	31
GM	€ / ha	2-3-4	130	236	31
Δ farmer A €/ha	€ / ha		-	106	-99

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

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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literature

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