

Impacts of Global Developments on the European Agriculture



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Population growth
Income growth



Increase in demand
Increasing urbanisation



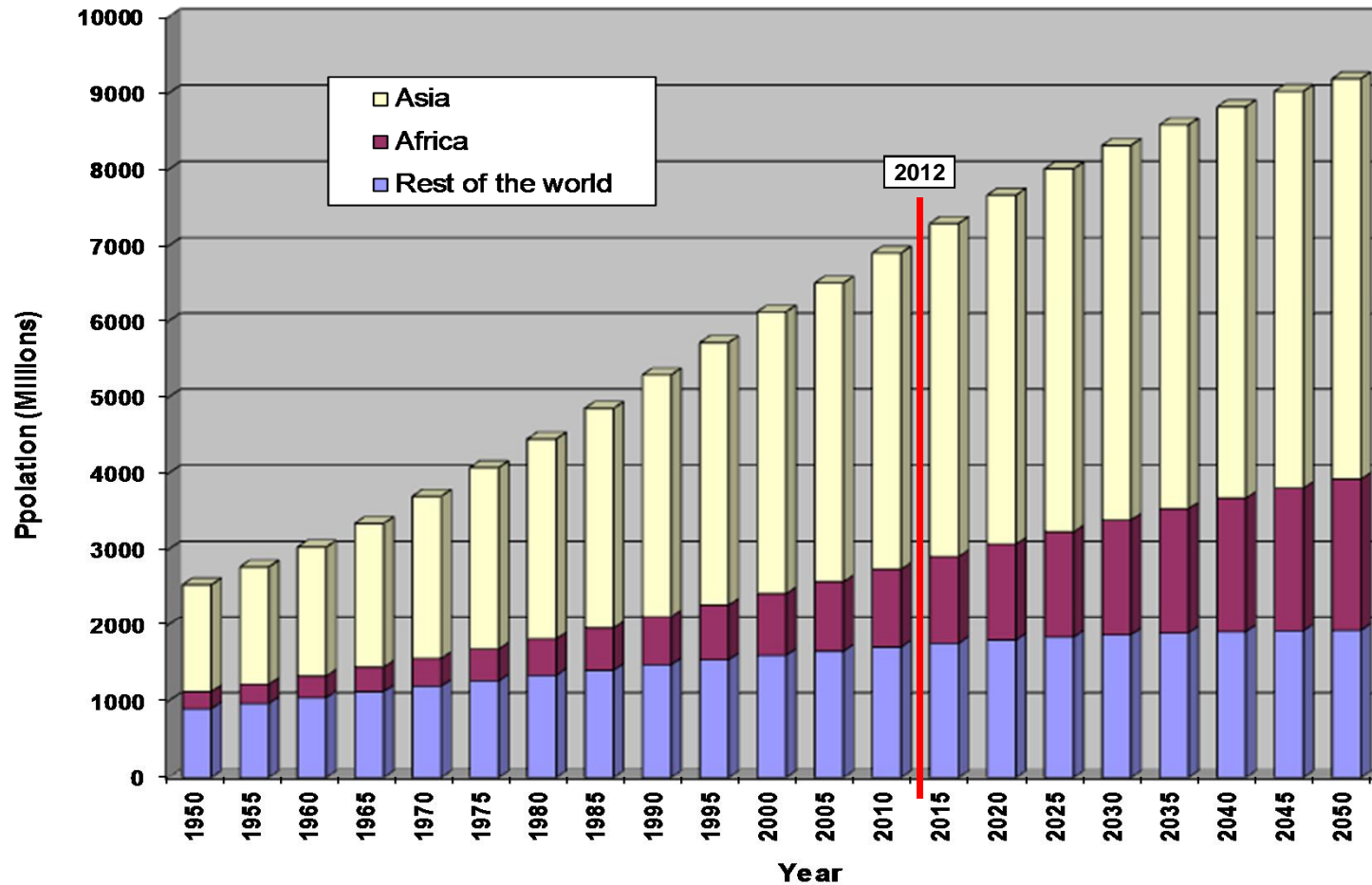
Climate change



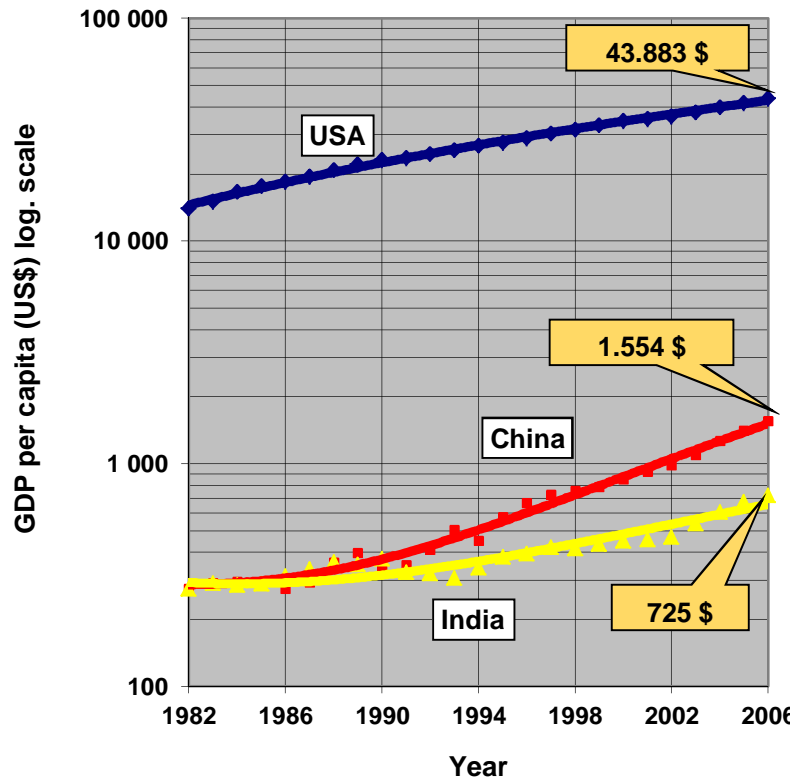
Reduction of cropland
Water scarcity



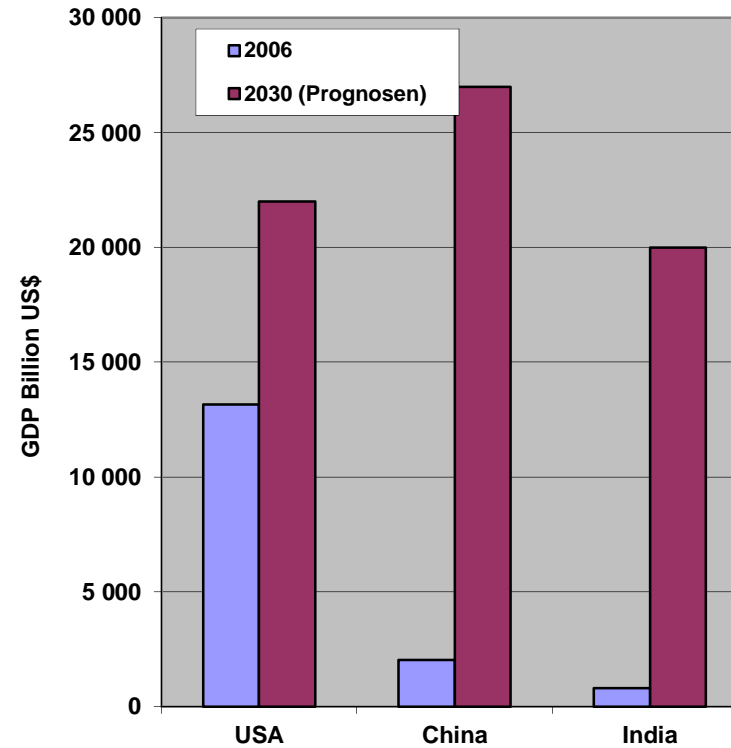
Increasing demand at diminishing resources



Source: United Nations



Source: IMF World Economic Outlook and EconStats



Source: UBS Outlook

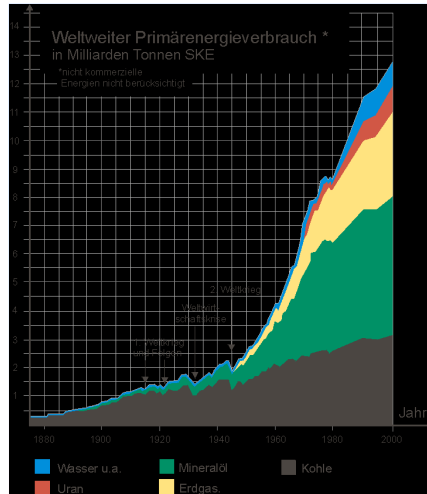
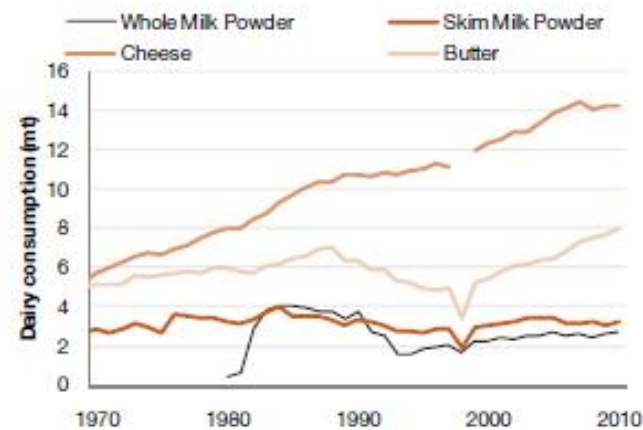
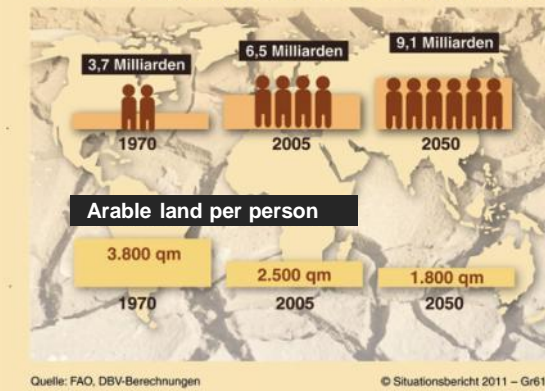


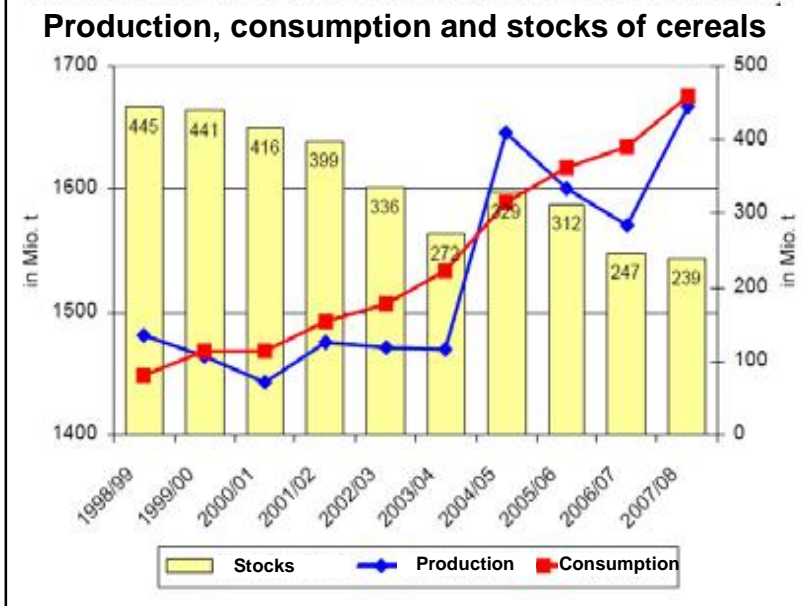
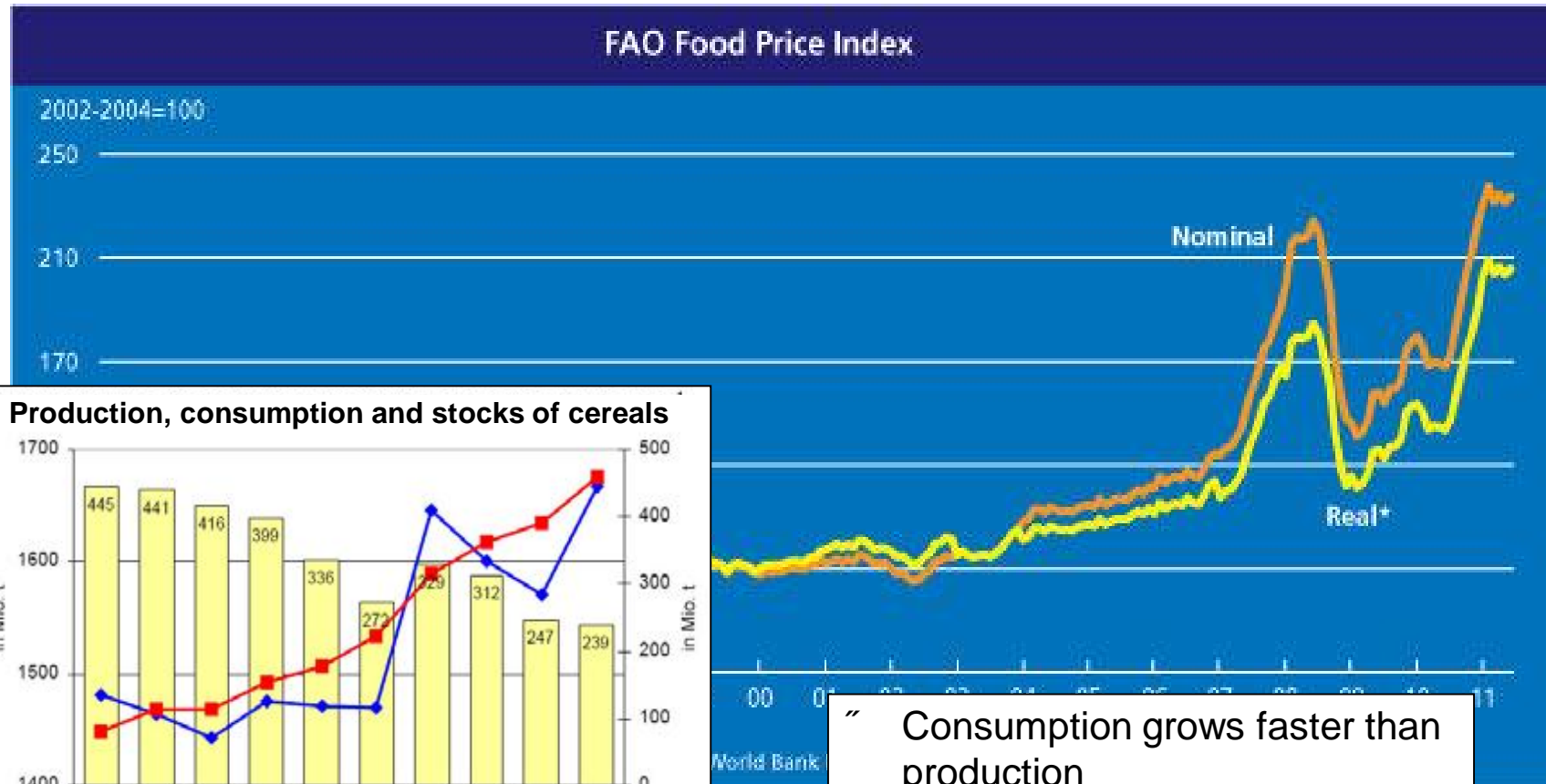
Figure 9: Processed milk consumption by product class



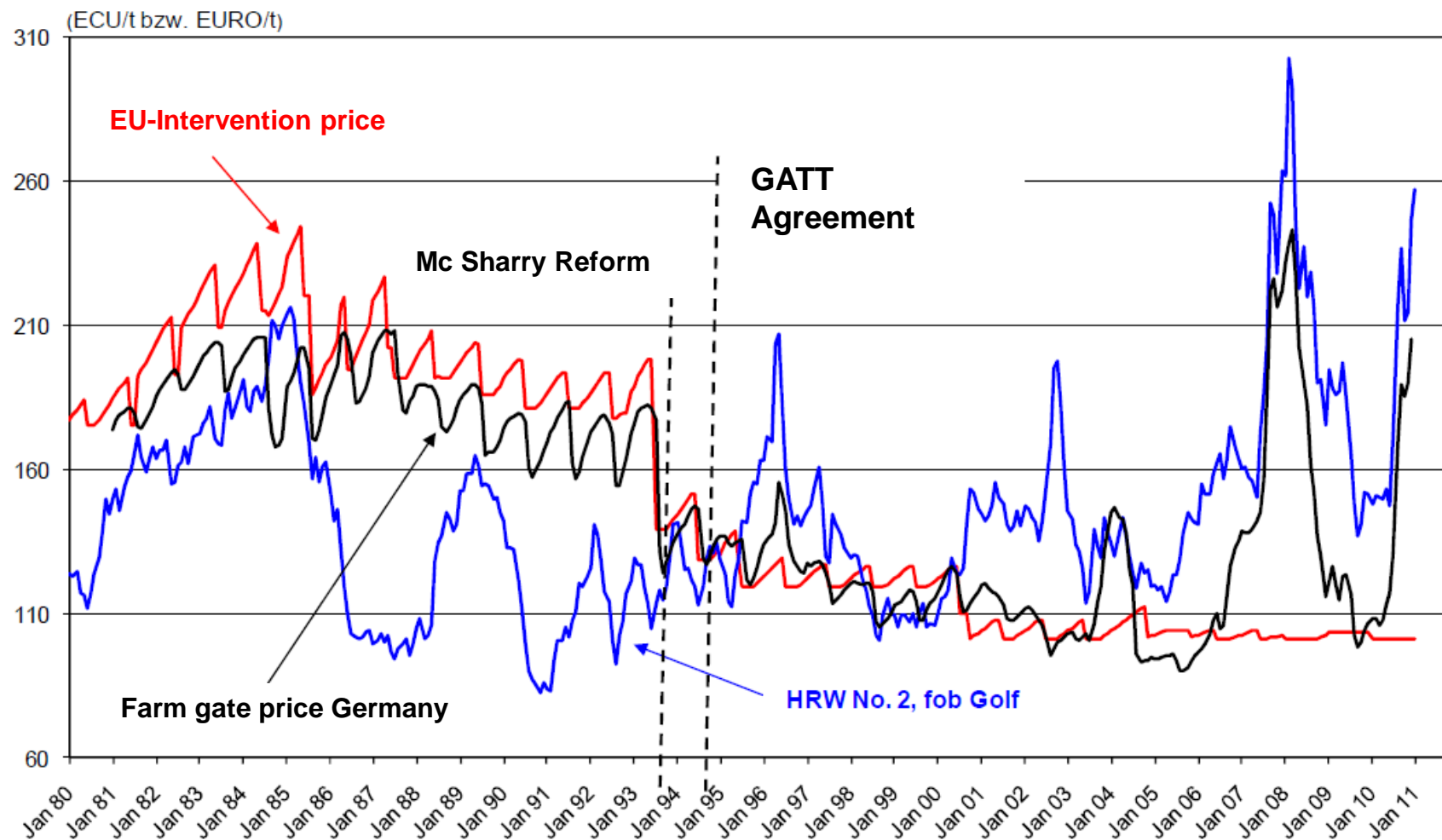
Cropland per capita decreases constantly



- ❖ Growth of global demand for \ddot{o}
 - Energy . primarily caused by growing industrial production
 - Food . particularly livestock products (meat, milk and milk products)
 - Feedstuffs . due to increased livestock production
- ❖ Ongoing reduction of natural resources



- “ Consumption grows faster than production
- “ Inventory levels decrease
- “ Variations of global harvest can hardly be compensated



Quelle: Ledebur & Schmitz (2011)

*US Hard Red Winter, fob am Golf von Mexiko.

Measuring the volatility of prices

Price volatility is typically measured as the standard deviation of the relative price change between two periods R_t :

$$R_t = \log\left(\frac{P_t}{P_{t-1}}\right)$$

$$\sigma = \sqrt{\frac{1}{n-1} \sum_{t=1}^n (R_t - \bar{R})^2}$$

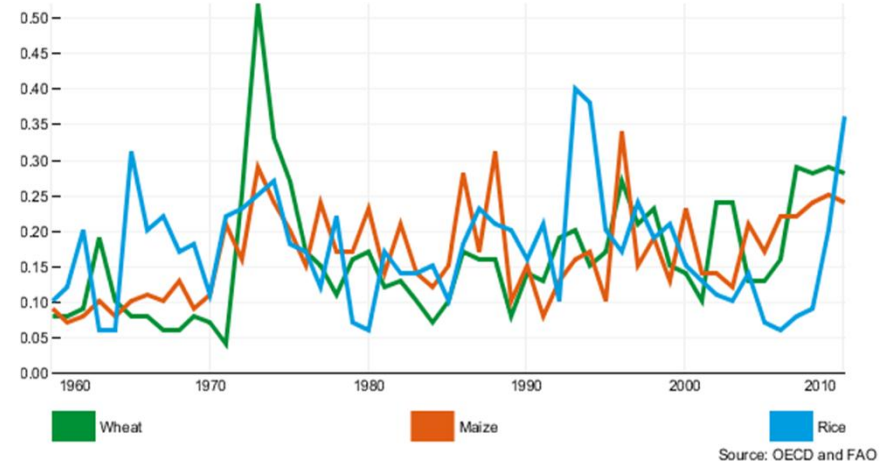
monthly volatility

$$\sigma_{an} = \sigma \sqrt{12}$$

annualized volatility

The above volatility measure is comparable to the well known coefficient of variation. It characterizes the relative dispersion of prices around their expected value.

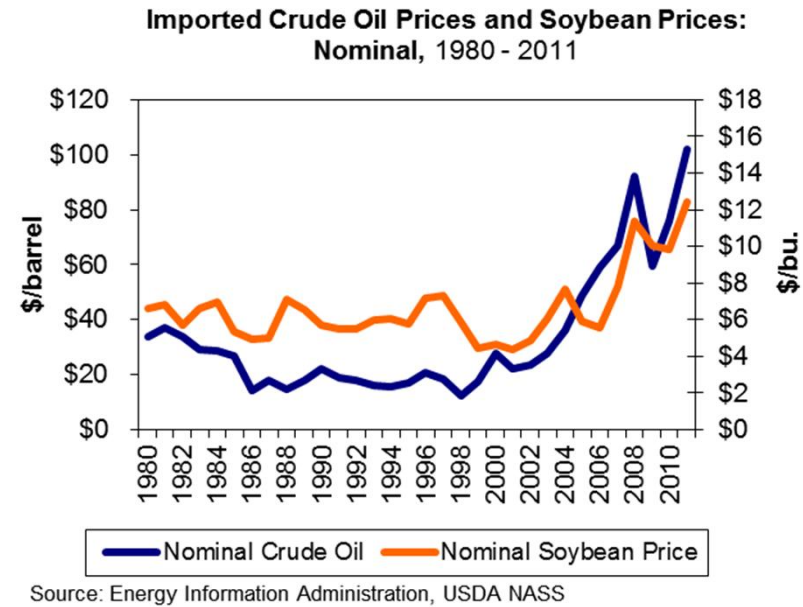
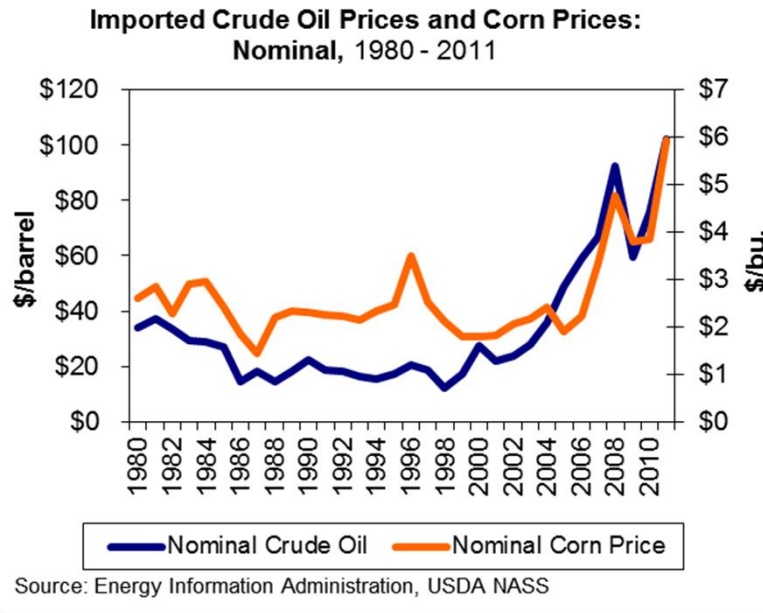
Historical annualized volatility of world market prices

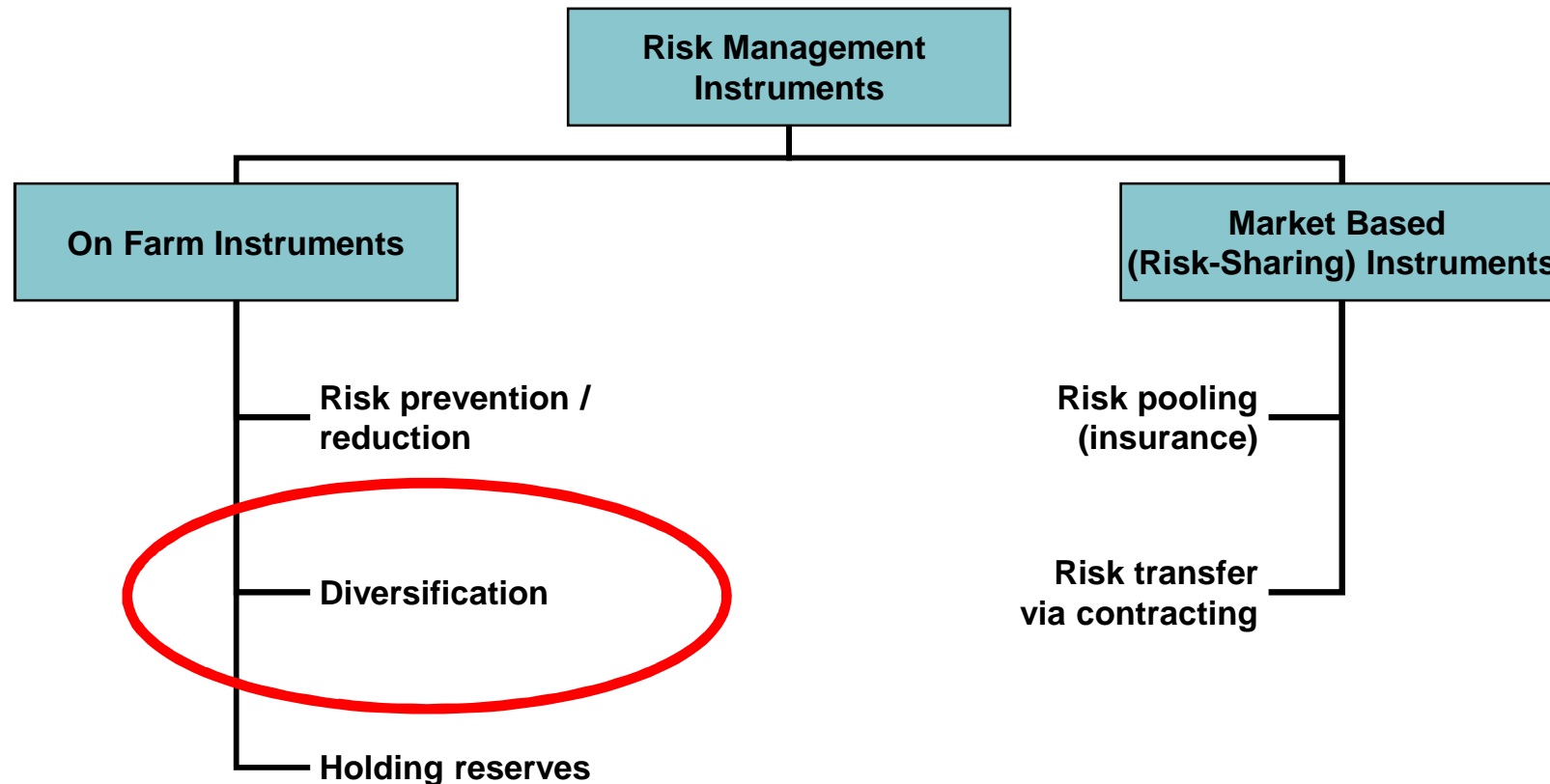


Historical annualized volatility of farm gate commodity prices in Germany (1993-2008)

	Total 93 - 08	Per. 1 93 - 00	Per. 2 01 - 04	Per. 3 05 - 08
Wheat	16,95	13,20	<u>17,03</u>	<u>22,92</u>
Malting barley	13,92	10,34	10,68	<u>21,34</u>
Oil seed rape	15,81	14,80	17,12	16,68
Wheat (world market)	25	-	-	-

Quelle: Artavia et al. (2010)





Types of diversification:

Horizontal: More diversified portfolio of business activities

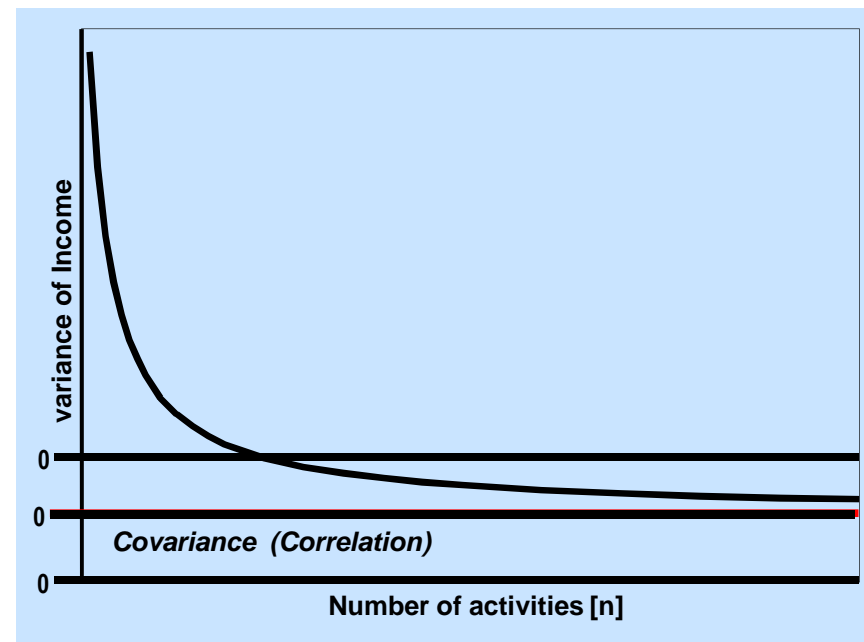
Vertical: Integration of upstream or downstream stages of the supply chain

Effect:

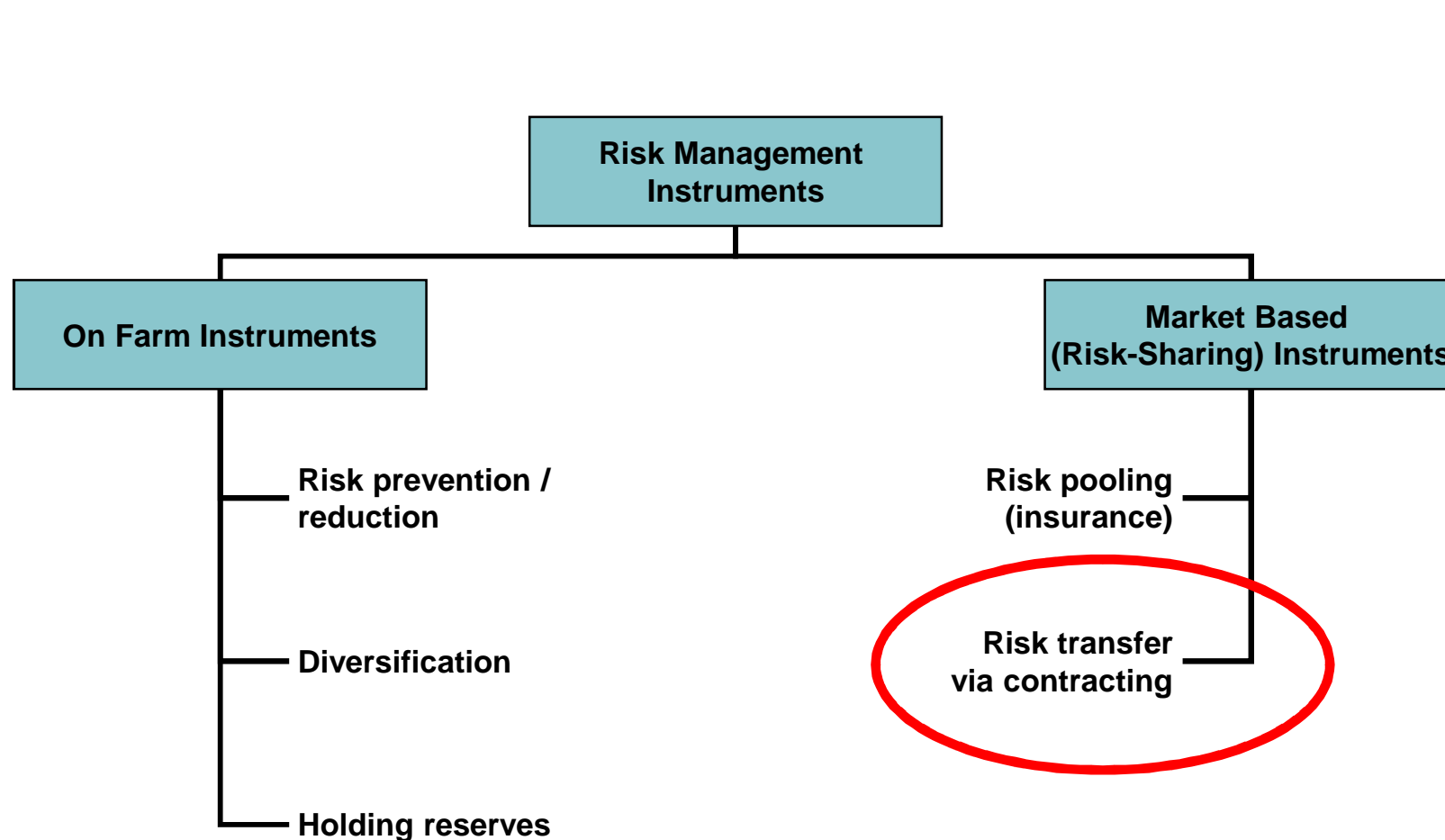
Reduction of income variance, since downside deviations hardly affect all activities equally

Critical influence factor:

Degree of dependency between the performance measures of different activities (correlation)



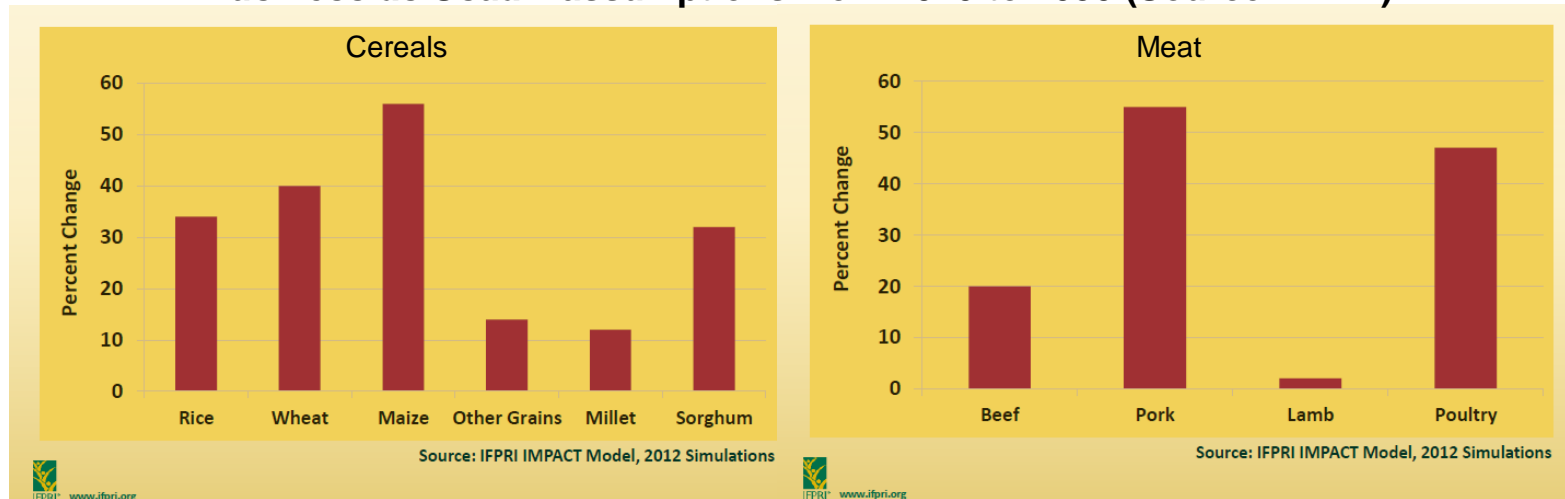
- Risk reduction via diversification works best at high degrees of specialisation. A rotation with three to four crops utilises most of the risk reduction potential in arable farming. ■
- The reason is that agricultural commodity markets are connected, as many products are substitutes. This causes positive price correlations which, in turn, limit the risk mitigation potential of diversification. ■
- A truly risk reducing diversification can be achieved either by vertical integration, or by expanding the business activities into areas which are far from being influenced by agricultural commodity markets. ■



- Hedging with futures and options and forward contracting are the appropriate means to mitigate price risk.
- Numerous studies in the US have evaluated hedging strategies and illustrated their potential for risk reduction.
- In Europe, futures markets have developed in the recent past, but still lack efficiency due to low trading volume.
- In view of the liberalisation of commodity markets and increasing volatility of prices, the European futures markets will further improve.
- The instrument should mainly be used by vendors, who then are able to offer cash forward contracts to the farmers. . In Germany, a remarkable variety of contracts has evolved during the recent years.



Projected percentage changes of average world market prices under ‘Business as Usual’ assumptions from 2010 to 2050 (Source: IFPRI)



- Demand for agricultural commodities grows faster than production. This causes increasing commodity prices.
- This holds for output prices as well as for input prices.
- The market dynamics bear opportunities as well as threads.
- In north western and central parts of Europe, the impacts of climate change are rather moderate.
- **In summary the future perspectives of farming are quite favourable.**

- Active adaptation to changing market conditions is necessary. ■
- Increasing price volatility causes higher risk, but also better chances. ■
- Risk management needs more attention. In this respect, universities as well as extension organisations are asked to provide the necessary support. ■
- Cost efficiency remains a challenge, because not only output prices, but also the costs will rise (energy!) ■

Thank You for Your Attention

