Agricultural Market Volatility

Causes and impacts

The momagri analysis

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Where do we stand?

Millenium Development Goals → **Failure ?**

(Cf. State of Food Security in the world 2010)

- the number of undernourished people has grown since 1995 (except 2010/2009)
- Farmers in LDC's are the most affected (508 millions over 925 millions, i.e. 55%, in 2010)

Doha Round (WTO negotiations) → **Failure ?**

Free trade : best system for Ag markets?

Why not a larger progress ?

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Several grounds…

- Political reasons (low loans to agriculture at world level)
- Strategic - geopolitical reasons

… and <u>above all</u>, the inadequacy of the economic models in use :

- ill-adapted to agriculture (while they are acceptable for other sectors),
- and primarily used by decision makers who let the models say more than they were designed for.

⇒ Momagri is a think tank which aims at contributing to help solving issues in agriculture encompassing this question

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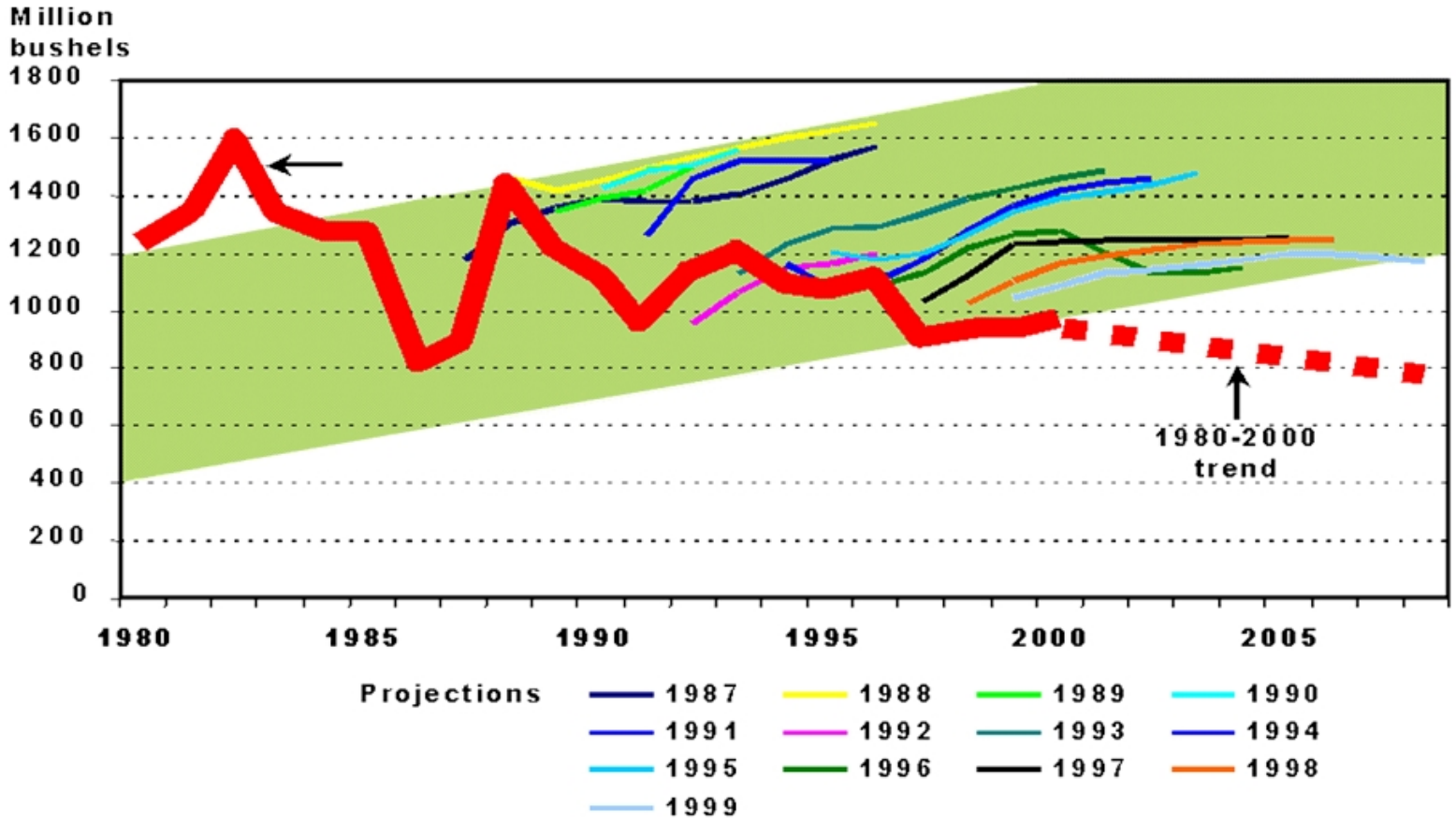
Persistent mistakes in predicting american Agricultural output using one of the standard models in use



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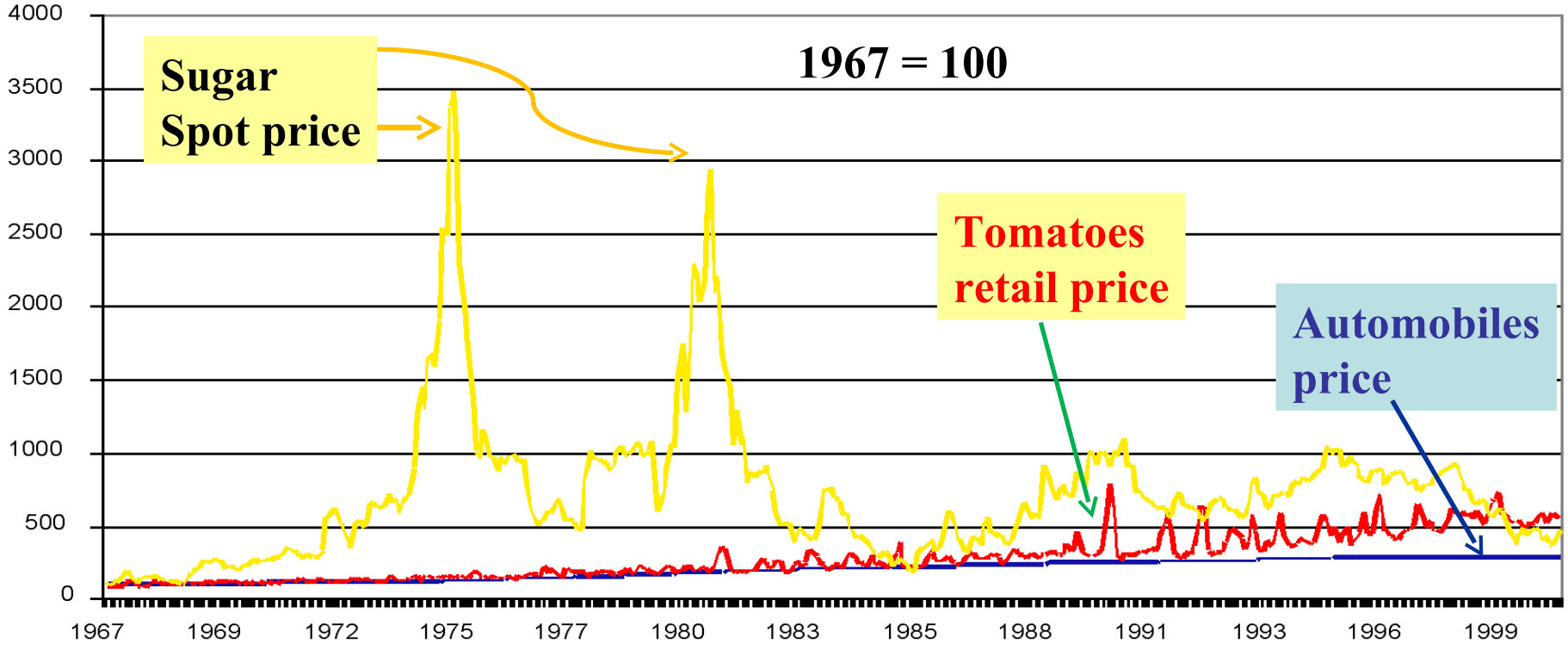
Three illustrative levels of volatility according to markets structures and degrees of financialization



US CPI price index of new automobiles

Retail Price in main US cities

Sugar #11 Chicago Spot Price

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More specifically (1): Models in use do not take risk into account

- **The word « risk » is *never* mentioned throughout the technical document (linkage model (World Bank))**

- **The words « uncertainty » and « expectation » are mentioned only *once*.**

« *Agriculture is modeled the same way as Industry. […] A more realistic description of that sector would be desirable* »

(MIRAGE (CEPII), technical paper, 2002)

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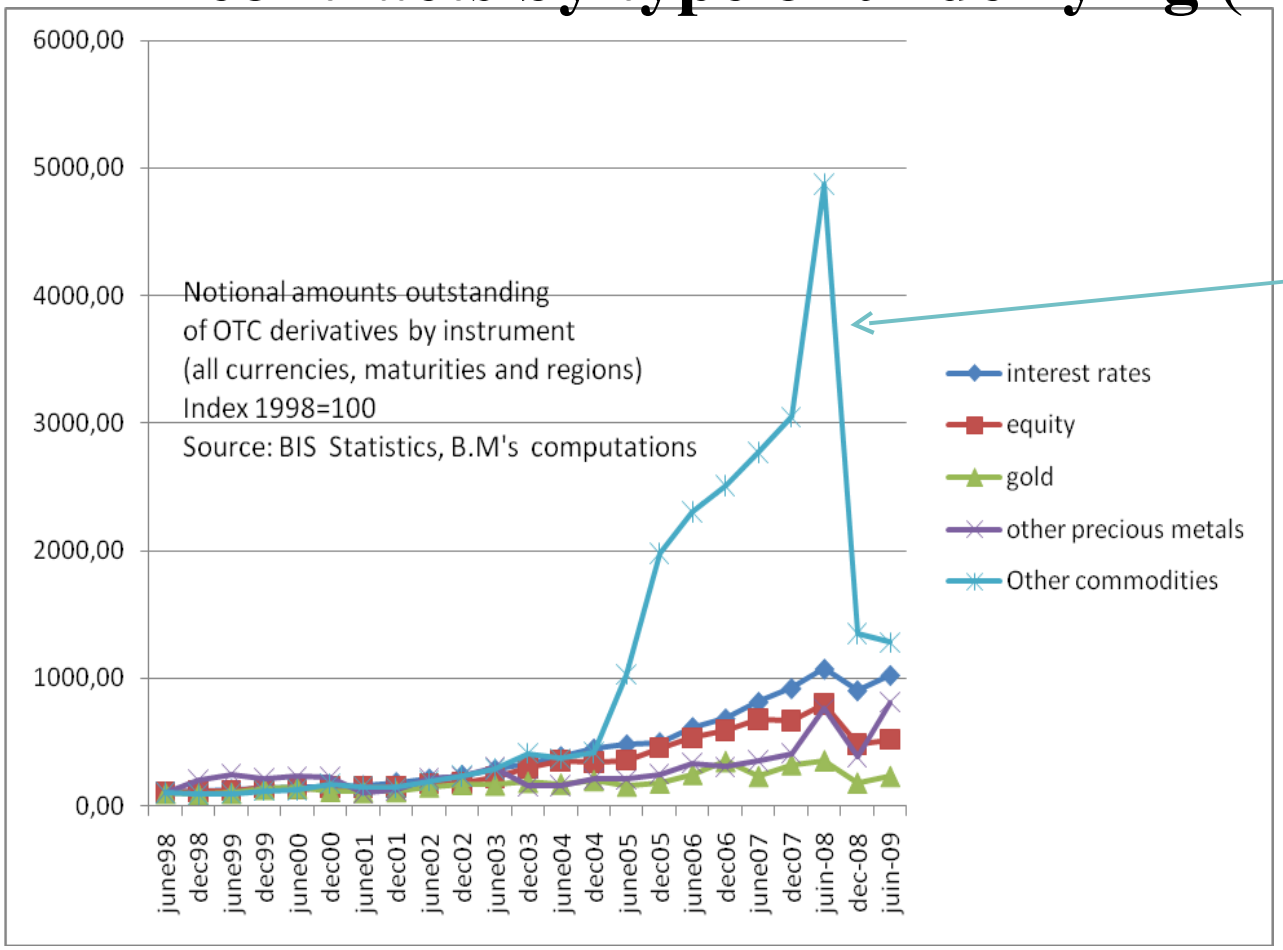
More specifically (2): Models in use ignore financialization

- **Standard models ≠ Agricultural commodity markets have become progressively financialized**
- **Scale of the phenomenon have been considerably enlarged in the last decade (2001-2010) and call therefore for a clearly different modeling**
- **… particularly referring to OTCs markets**

Indexes of outstanding amounts of OTC derivatives contracts by type of underlying (BIS statistics)



This curve shows the evolution of derivatives based on agricultural commodities as well as on oil

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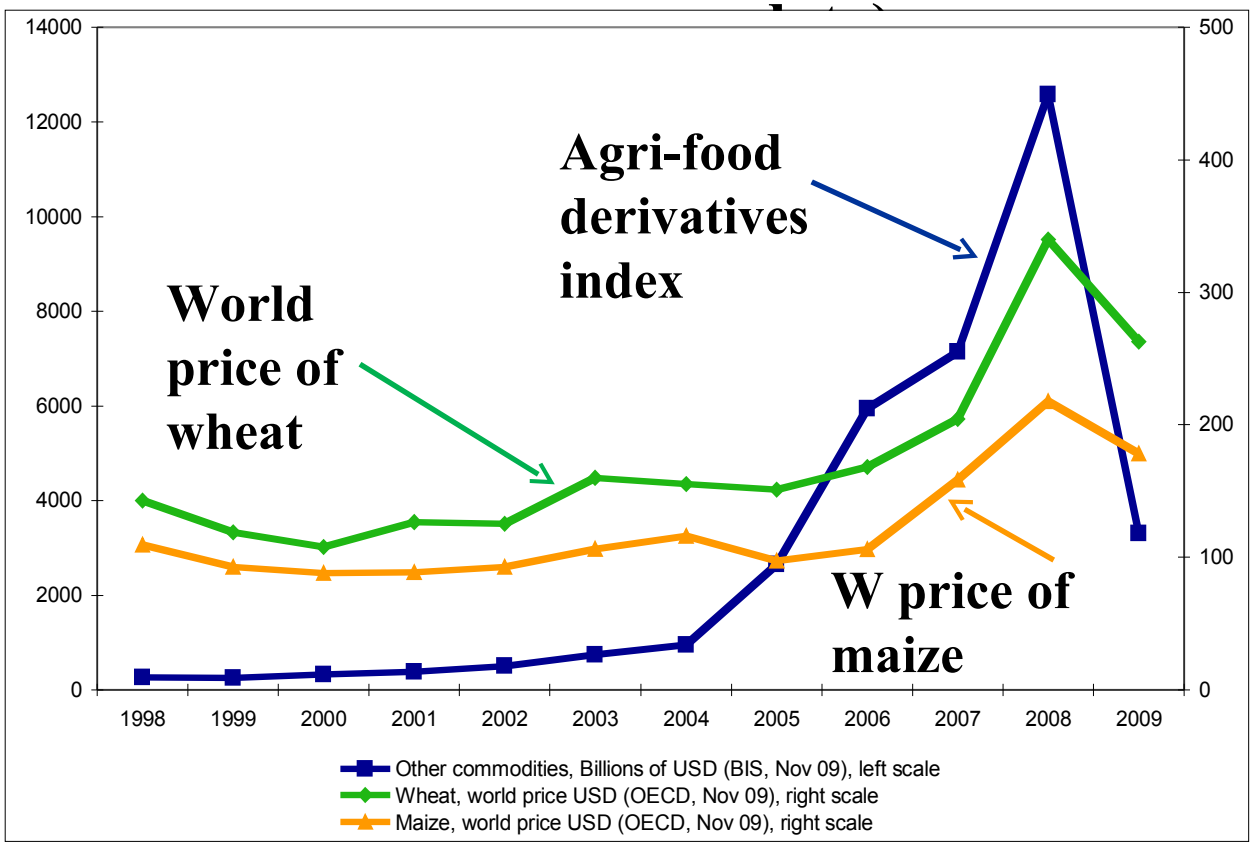
Indexes of outstanding amounts of over the counter derivatives contracts on « other commodities » (BIS statistics and OECD



More precise data on the same period from USDA have been shown by Tang and Xiong (2009) to confirm the diagnosis, at least for the major grains as well as for oil.

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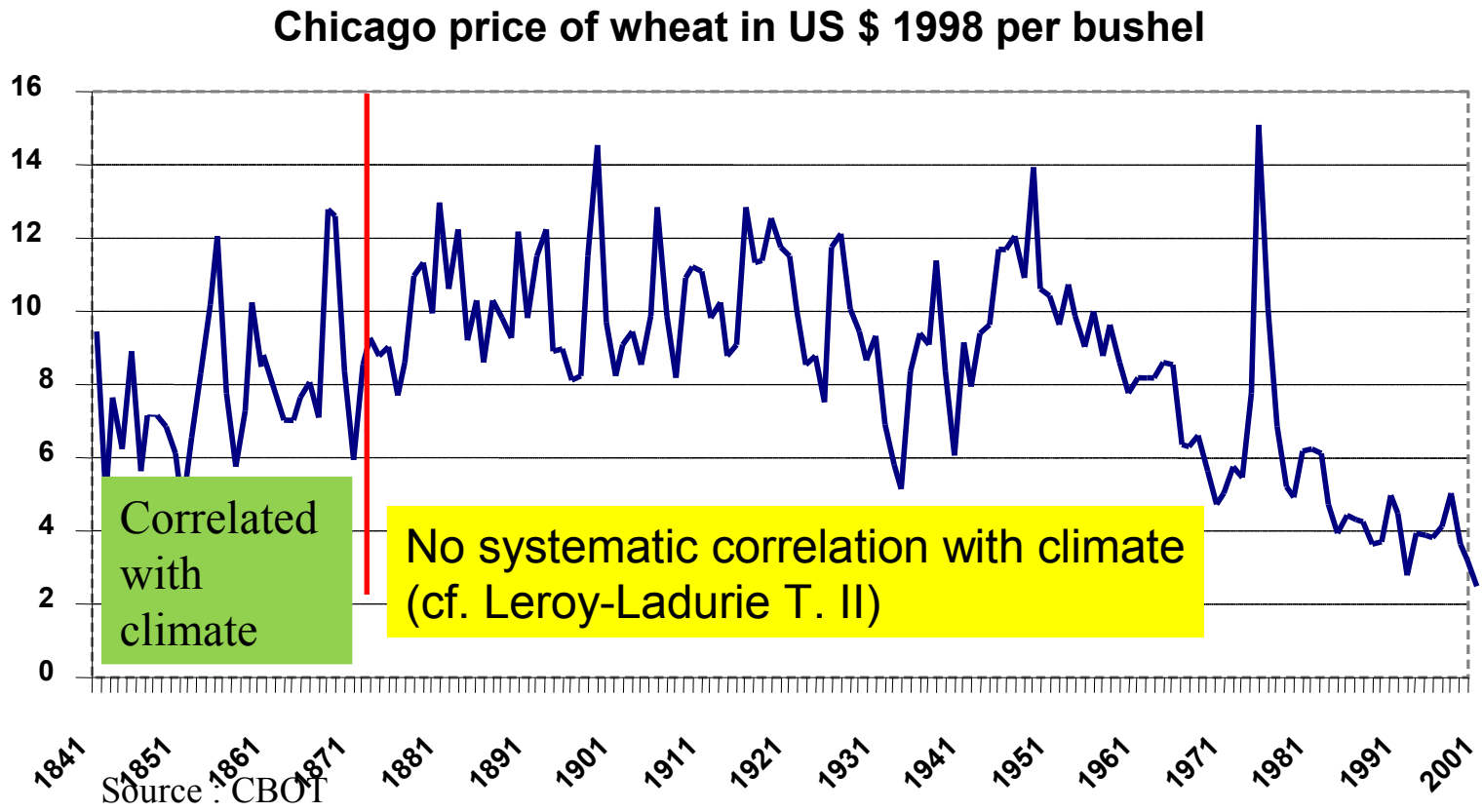
To be sure, SOME volatility has been there for a long time, but for reasons that have changed over 160 years



Source : CBOT

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Changes introduced by financialization

1) It has turned these markets into expectations driven ones

2) *Middlemen* (here: short term investors) have changed the type of behavior of these markets (informational externalities)

3) Specific types of connections with the financial markets AND with monetary policy.

4) Policy making should look at the system as a whole (at the world inter - regional level)

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The momagri model is a new effort to incorporate the 4 traits of financialized markets within a world simulation model, built progressively since 2006 to provide a more appropriate tool for policy makers (integrated approach)

Principle:

Modelling of market psychology facing uncertainty

in interaction with

the modelling of economic indicators

≠ standard macro models

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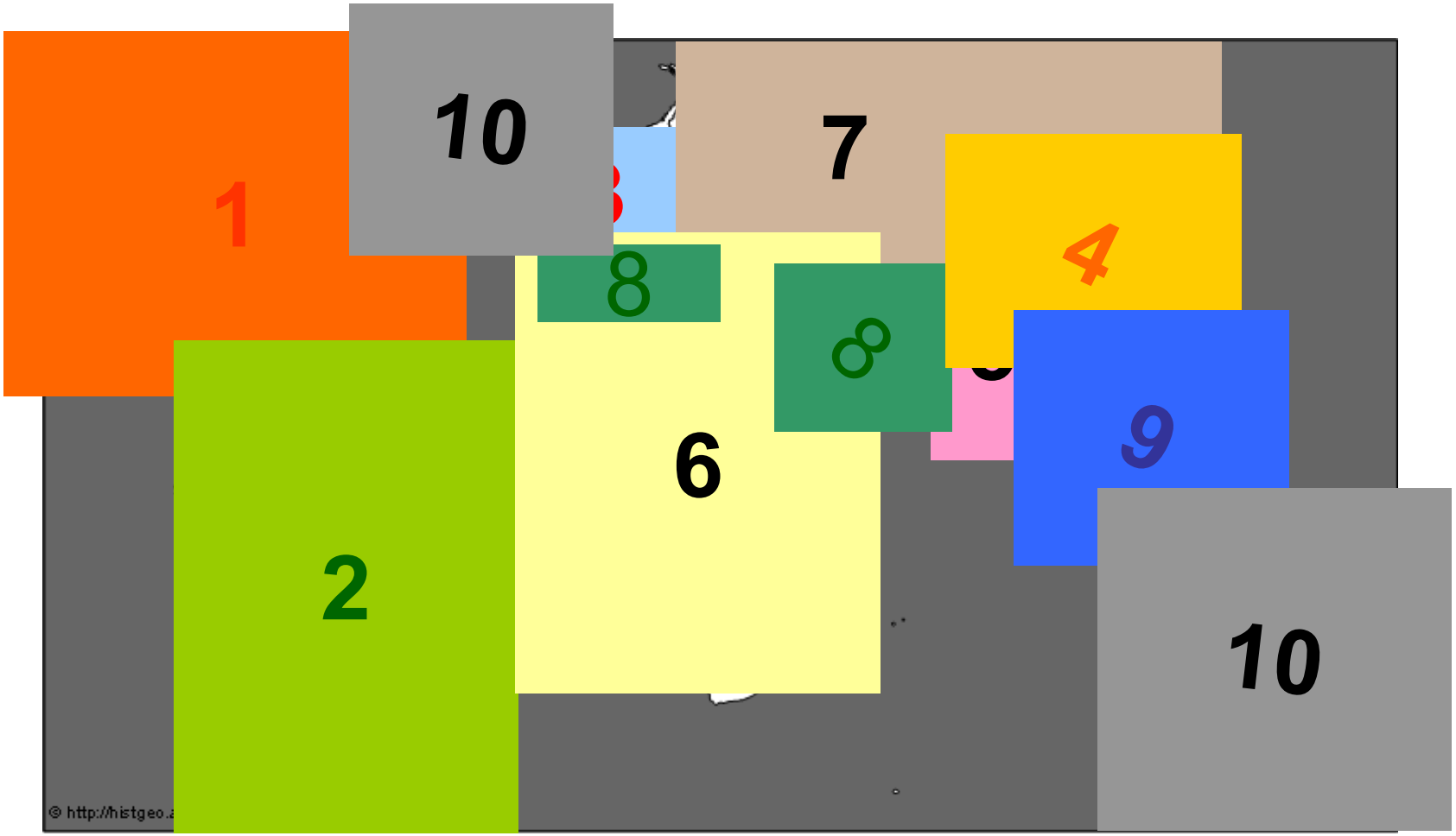
The 10 regional zones of the momagri model



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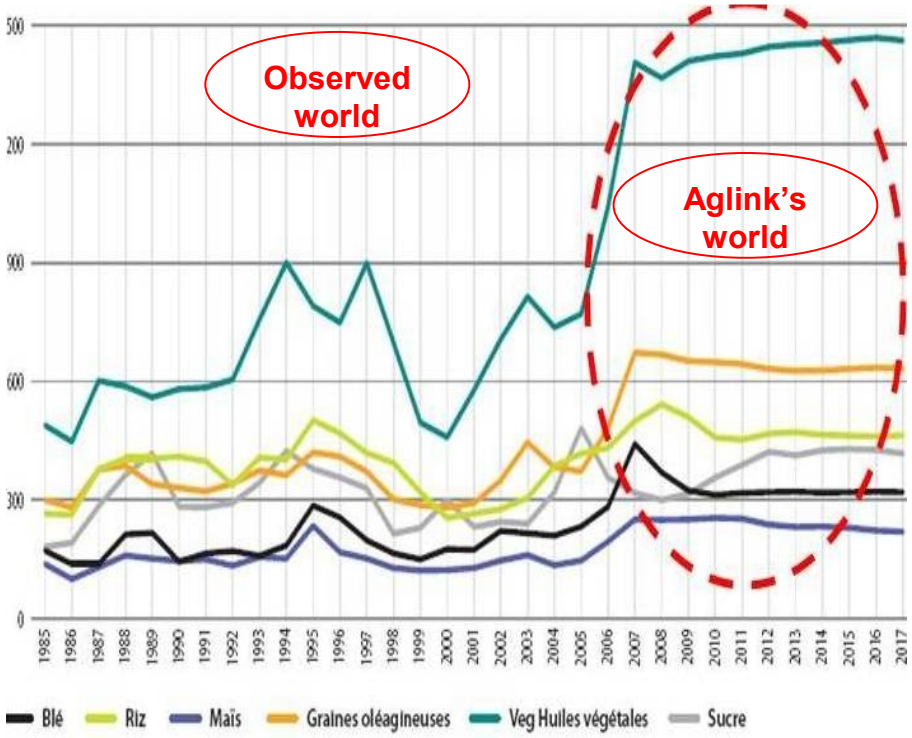
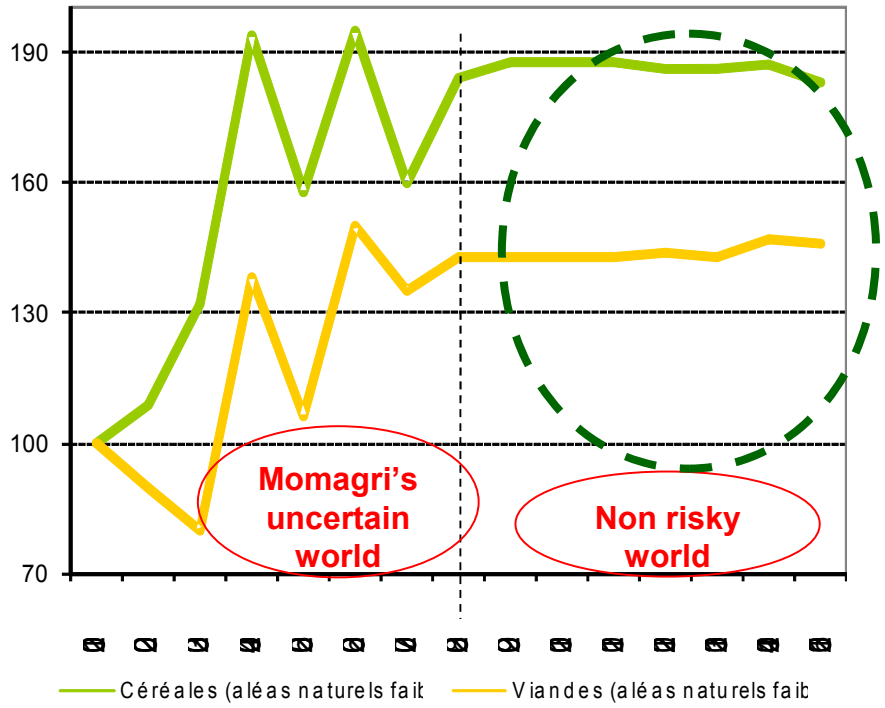
Simulations on Aglink ≠ Simulations based on Momagri with 'middlemen' (-2008) and without 'middlemen' later

Historically observed prices (- 2006) and estimated prices of various food products and of fodder – Source : Aglink Model, 2008



In a complex world, simple models fail

Simulated world prices of aggregate agri-food products (- 2008), assuming a world deprived of imperfect expectations after 2008 – Source: Momagri Model, 2008



In a non - complex world, farmers may learn

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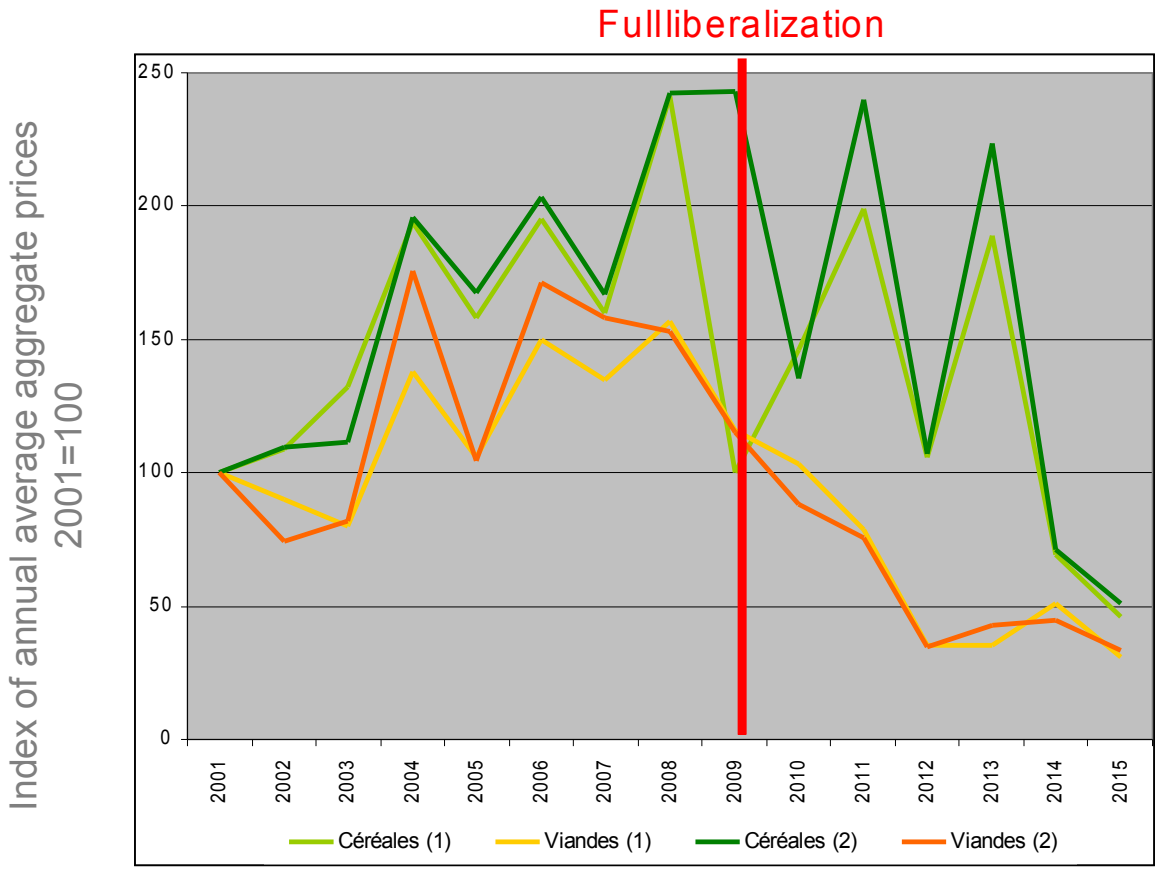
Simulations of March 2008. Momagri version 1. A scenario of full liberalization after 2009 under two different natural risk hypotheses



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Impacts and lessons for today and tomorrow

- **1) Volatility is *partly* an *endogenous* (≠ natural risk!) and lasting phenomenon on financialized markets. It doesn't result from the sole natural uncertainty.**

- **2) The total effect of a full liberalization as understood today leads definitively to an increase in price volatility (our first simulations)**

- **3) Food security is intimately related to price volatility (though investment behavior, etc.), especially within LDC's**

- **4) Excess-dependence on commodities without real substitutes may be costly in terms of welfare (price volatility and efficiency disruption, see oil).**

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What are we able to do ? (1)

- **We should provide individual farmers with some *tools designed to cope with the part of uncertainty* which governments can't wipe out (complement to FAO's 'food intelligence')**

- **Insurance schemes should be considered along the experience of some countries, but cannot cope with the whole problem (profitability, risk substitution, price volatility…)**

- **To help curb volatility (and speculation), a more reasonable inventory policy than pursued in the last twenty years should be restored.**

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What are we able to do ? (2)

- **Futures markets should be maintained and short term investors as well, to maintain liquidity <u>BUT</u> these markets should be organized and regulated.**

- **We certainly can try to limit excessive volatility of agricultural prices by *adjusting market structures* and specifying *regulatory* and *fiscal* policies on the financial part of the global sector, in order to foster (twice) real investment**

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Concluding remarks: Crucial points

- **Our world is a complex one: its successive trajectories follow one another in a way which is very difficult to predict beyond a very short period. *Simulation* should always be performed *prior to try predicting quantitative* changes.**
- **Volatility has multiple causes : To control it, an integrated tool kit is needed (Tinbergen principle). Momagri is providing such a tool.**
- **A narrower and innovating cooperation (beyond words!) is urgently needed between monetary-financial-, trade- and agricultural international agencies.**

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Thank you for your attention