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The Future development of CAP and Price Risk in Domestic Agri-food Markets

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Proposals for CAP 2013+ and Competitiveness of Food Sector and Rural Areas
Kazimierz Dolny, 18-20 June, 2012



Motivation

- Increase in volatility of the world agricultural commodity prices observed in recent years
- Growing concern about stability of farm incomes and food prices
- Calls for policy actions
- Potential role of policy in mitigating negative consequences of agricultural prices volatility
- Future CAP and its possible impact on volatility of agricultural and food prices and related price risk



Objectives

- Discuss briefly factors considered currently as influencing volatility of the world agricultural commodity prices
- Illustrate historical price volatility at various levels and time perspectives – are we really experiencing a new price regime?
- Describe assumed changes in the future CAP
- Make an attempt to analyze potential interactions between future CAP and volatility of agricultural and food prices and related price risk in domestic agri-food markets



Understanding and measuring price volatility and price risk

- Unconditional price volatility

Log returns: $r_t = \ln\left(\frac{Y_t}{Y_{t-1}}\right)$ Annualized SD:

$$\sigma_T = \left[T * \left(\frac{1}{n-2} \sum_{t=2}^n (r_t - \bar{r})^2 \right) \right]^{0.5}$$

- Stochastic price volatility

E.g. ARMAX modeling:

$$r_t = \phi_0 + \sum_{i=1}^k \delta_i x_{i,t} + \sum_{i=1}^p \phi_i r_{t-i} + \varepsilon_t - \sum_{i=1}^q \theta_i \varepsilon_{t-i}$$

- Conditional price volatility

ARCH modeling

$$r_t = \mu_t + \varepsilon_t$$

$$\varepsilon_t = z_t \sigma_t$$

GARCH modeling

$$\sigma_t^2 = \omega + \sum_{i=1}^p \alpha_i \varepsilon_{t-i}^2 + \sum_{j=1}^p \beta_j \sigma_{t-j}^2$$

- Price Volatility + Exposure = Price risk

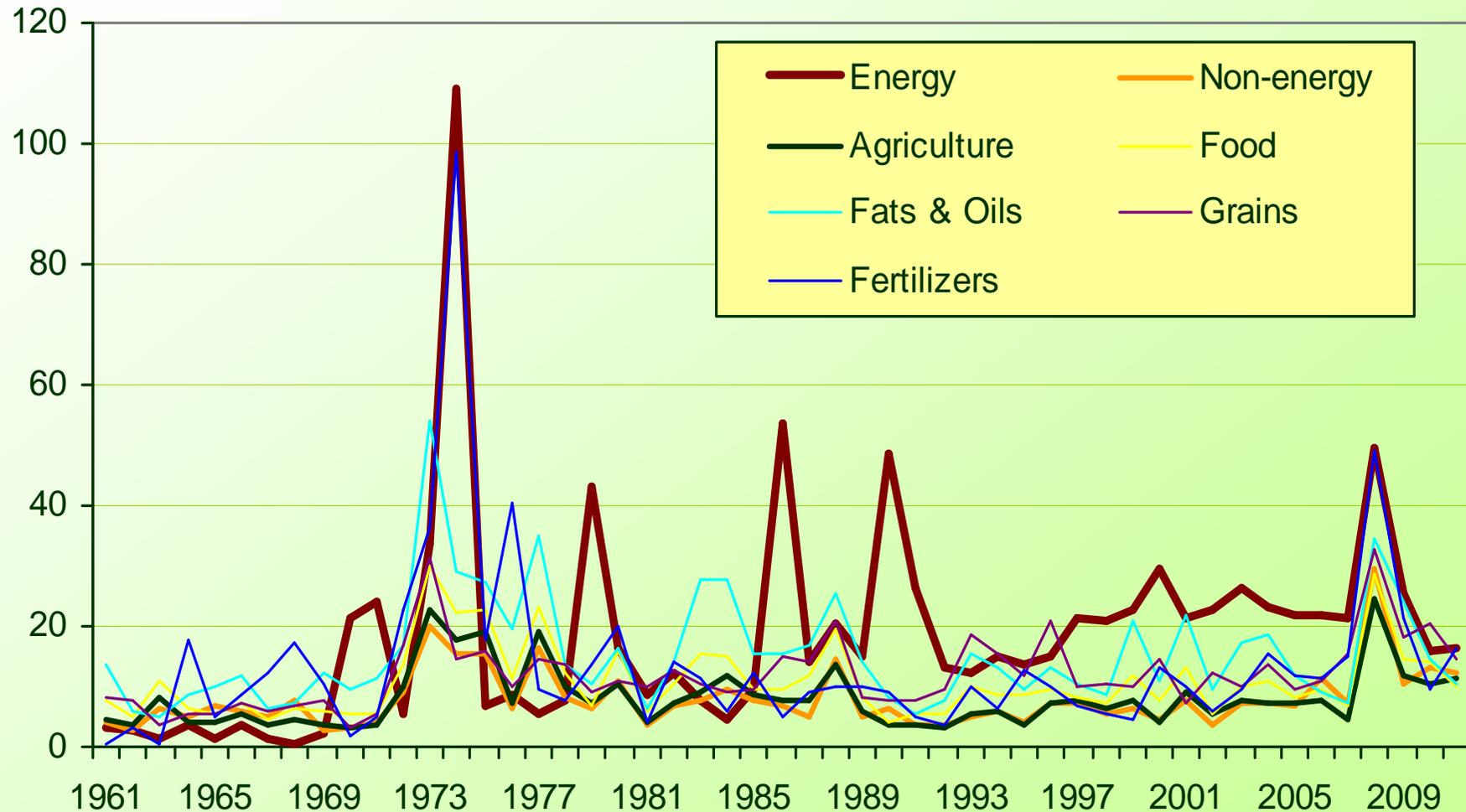


Factors influencing volatility of the world agricultural commodity prices

- Impacts of climate change on agriculture;
- World population growth and increasing urbanization;
- Increasing and more inelastic food demand;
- Growing demand for land in developing countries;
- Transmission of price volatility from energy to agricultural markets;
- Short-sighted agricultural public policies in response to food price increase – protectionism, trade restrictions, etc.;
- Low inventory levels and the slow rate of restocking at the household, state, regional and international levels;
- Exchange rates and currency movements by affecting domestic commodity prices; and
- Speculative influences related to the interests of financial investors.

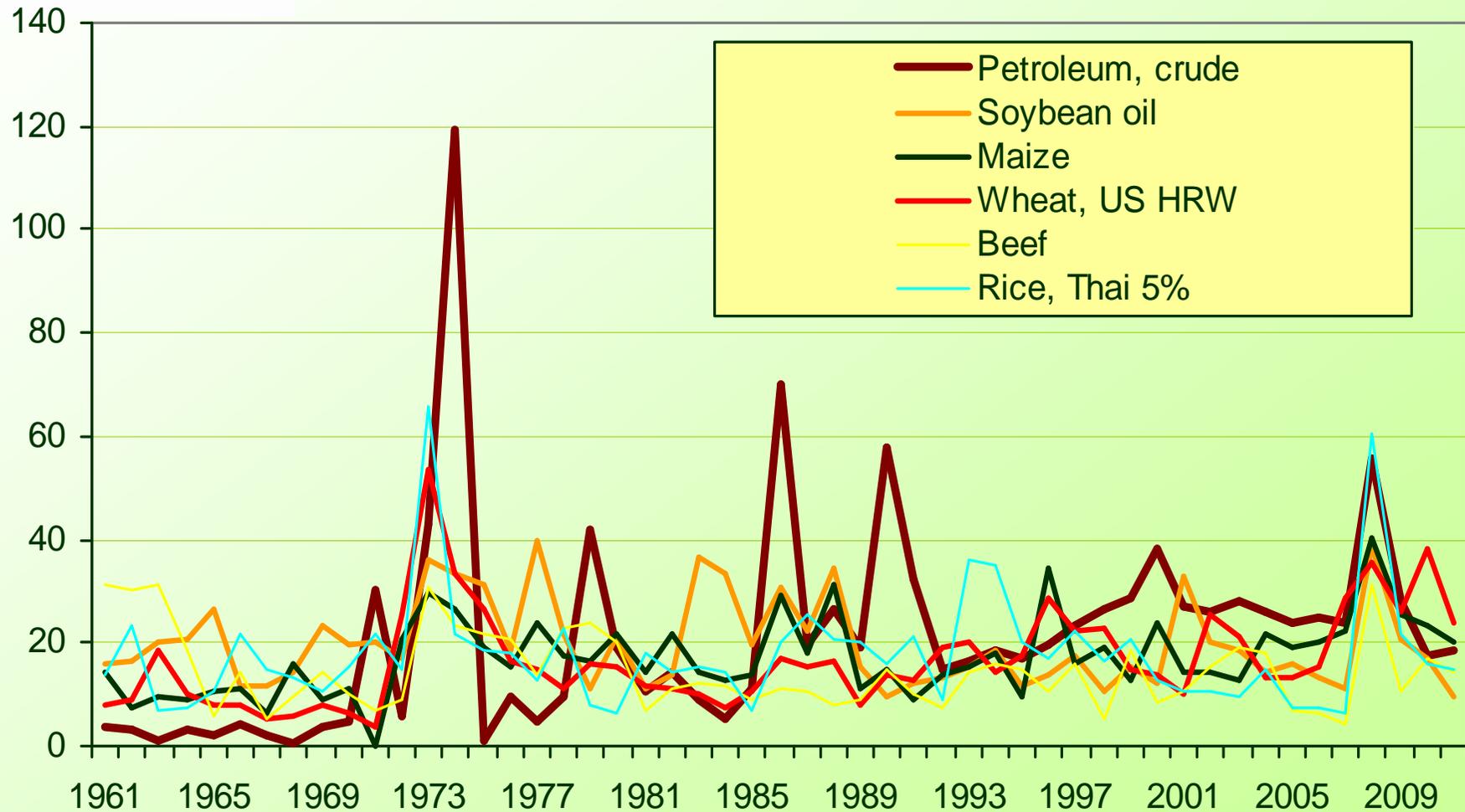


Annualized volatility of the selected world prices (I)



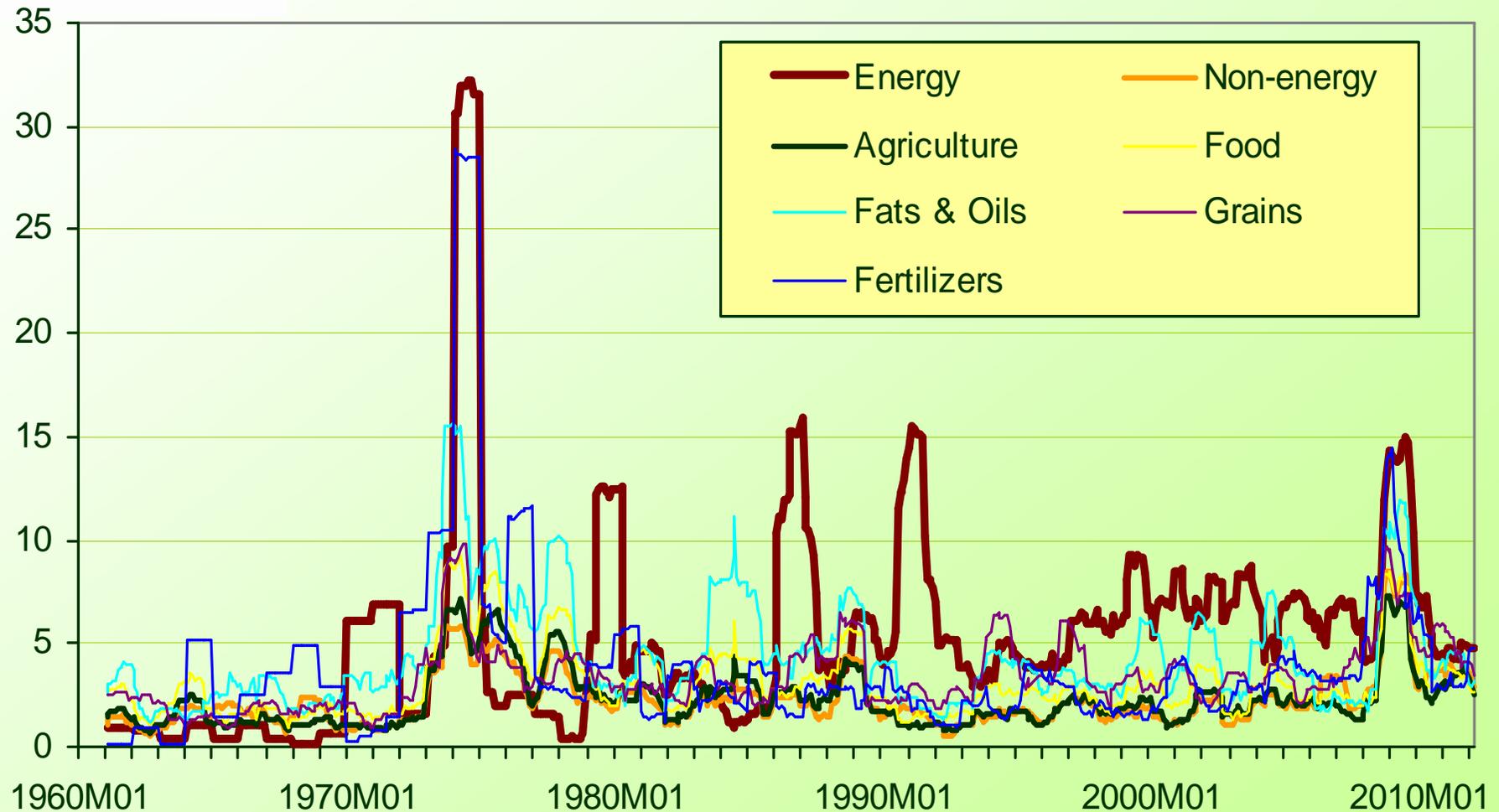


Annualized volatility of the selected world prices (II)



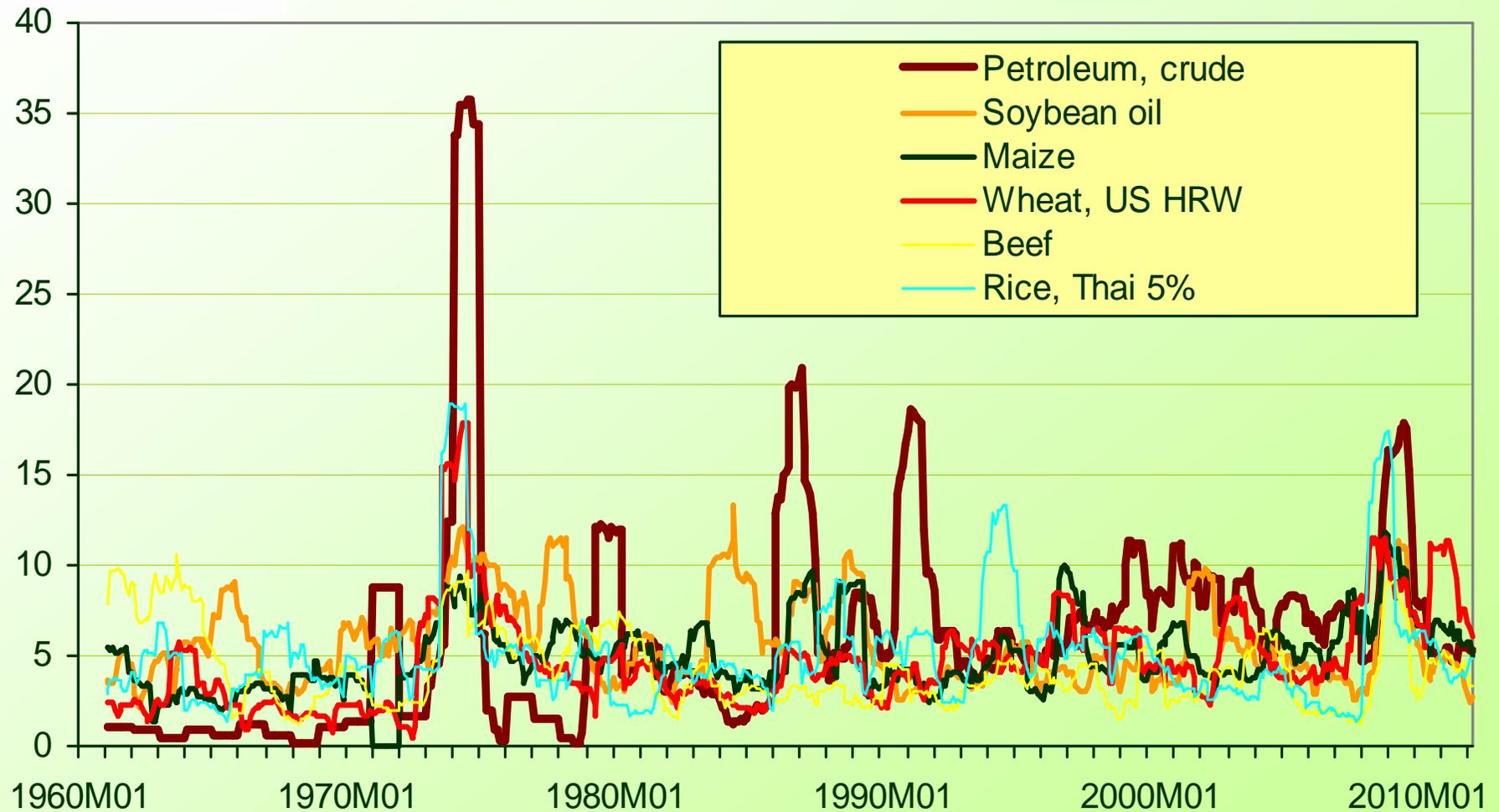


Historical volatility of the selected world prices – 12 month SD (I)



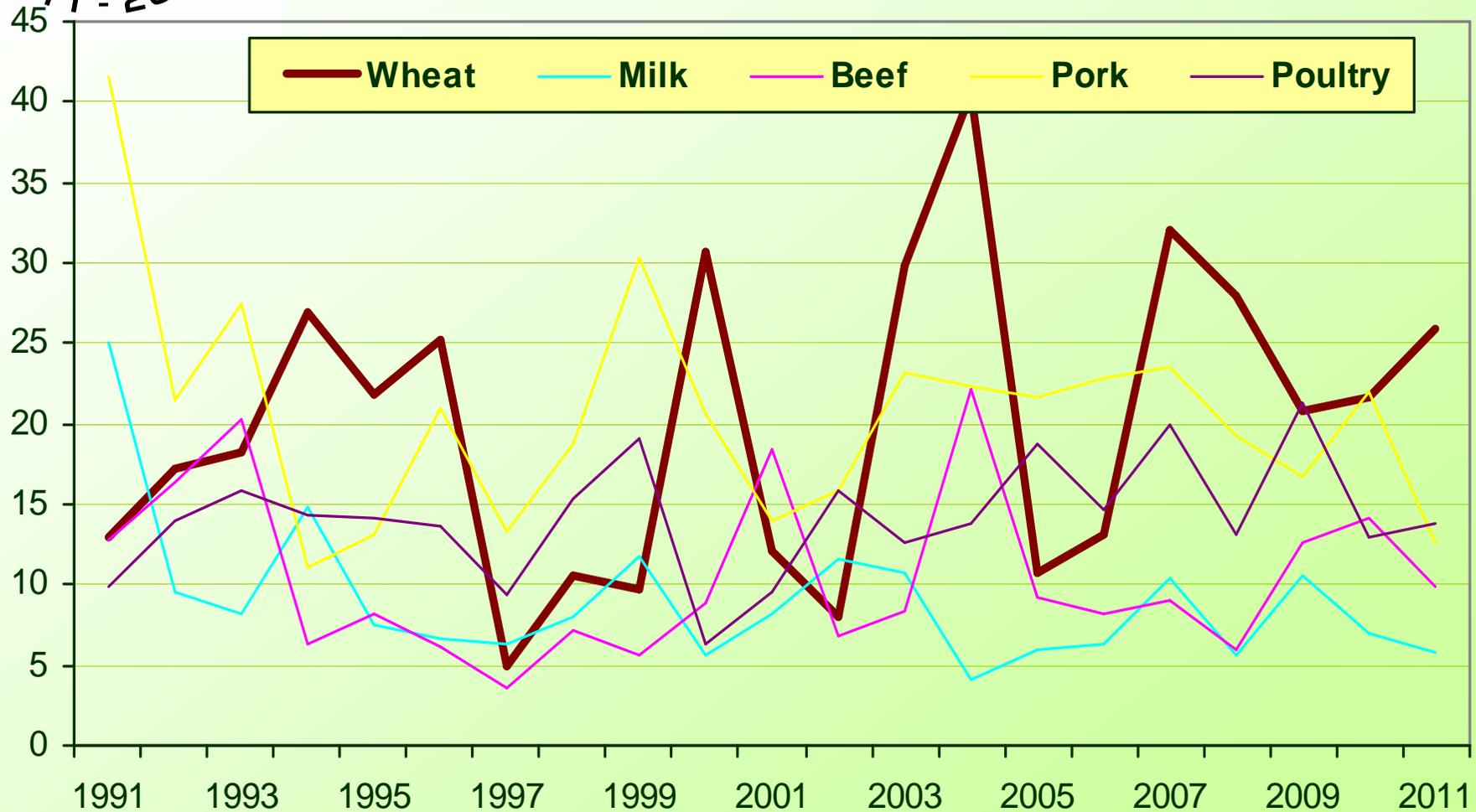


Historical volatility of the selected world prices – 12 month SD (II)



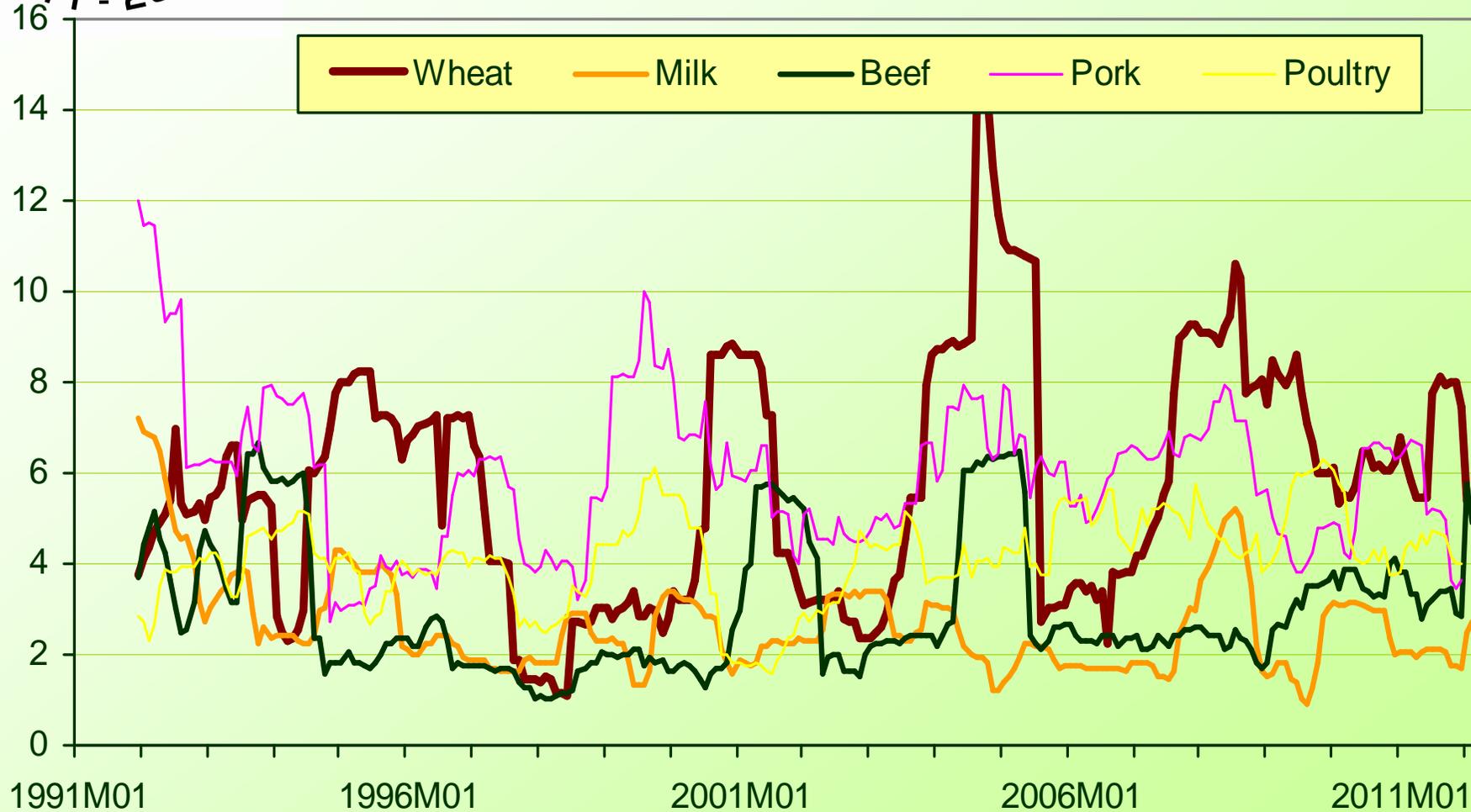


Annualized volatility of the Polish agricultural prices



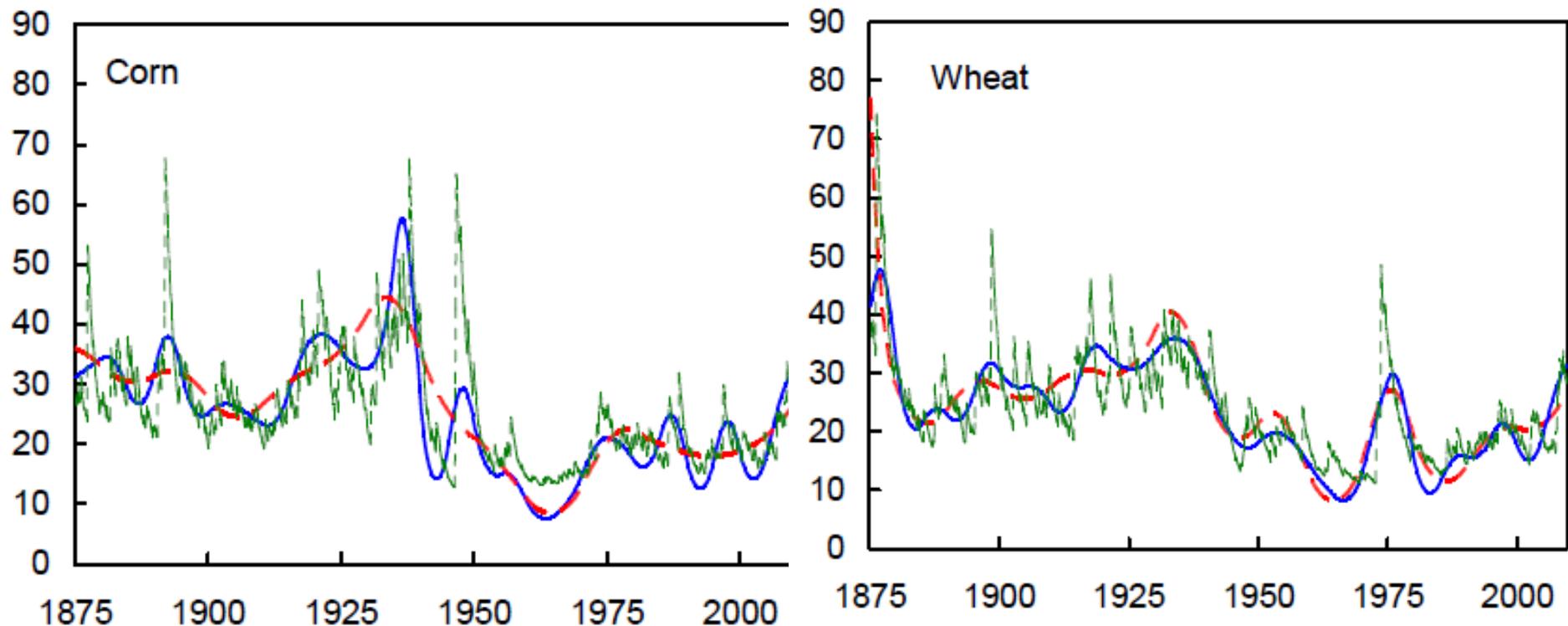


Historical volatility of the Polish agricultural prices – 12 month SD





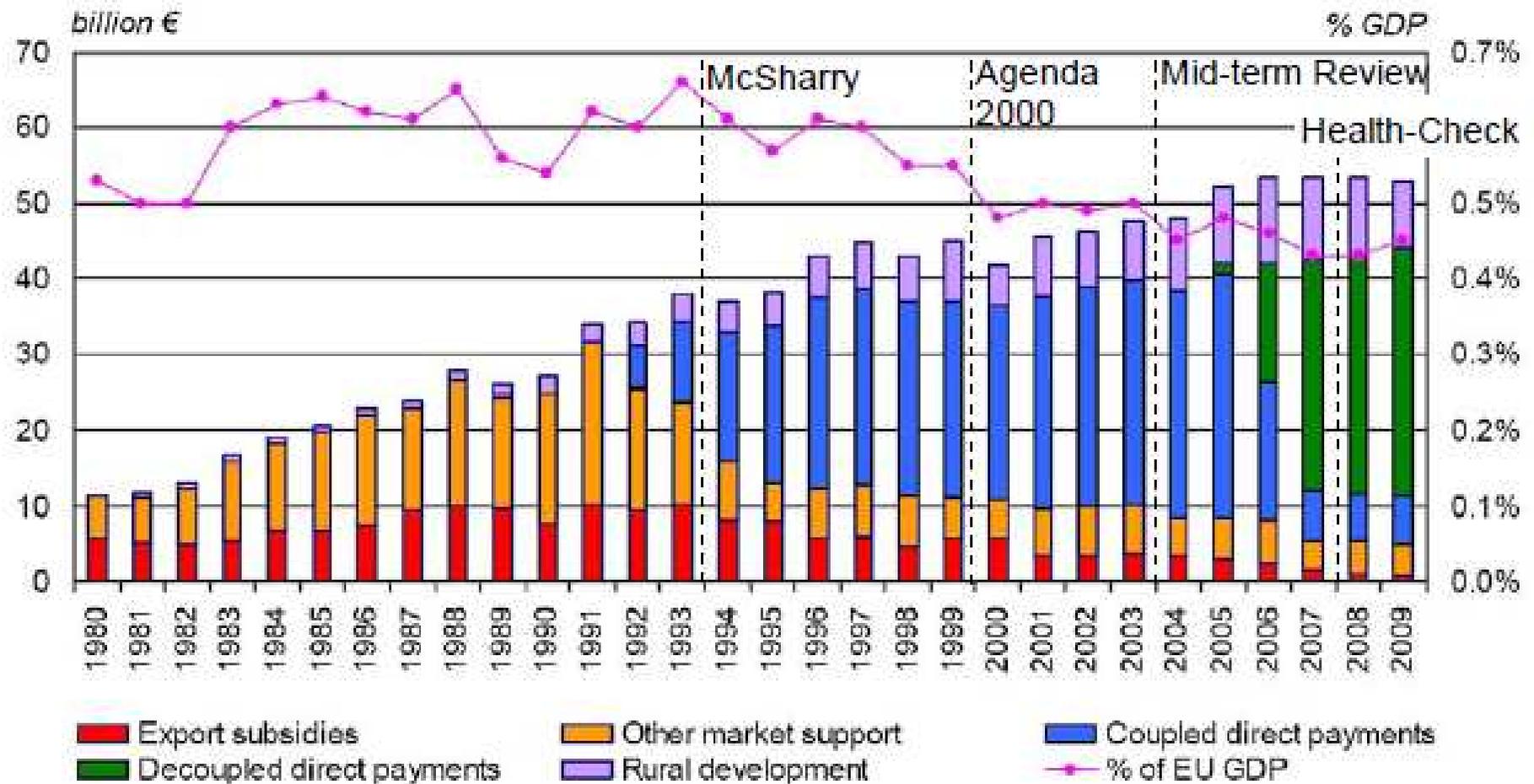
Annualized volatility of corn and wheat prices in the long run



Source: Roache S. K. 2010. What Explains the Rise in Food Price Volatility, IMF Working Paper.



Evolution of the CAP expenditures

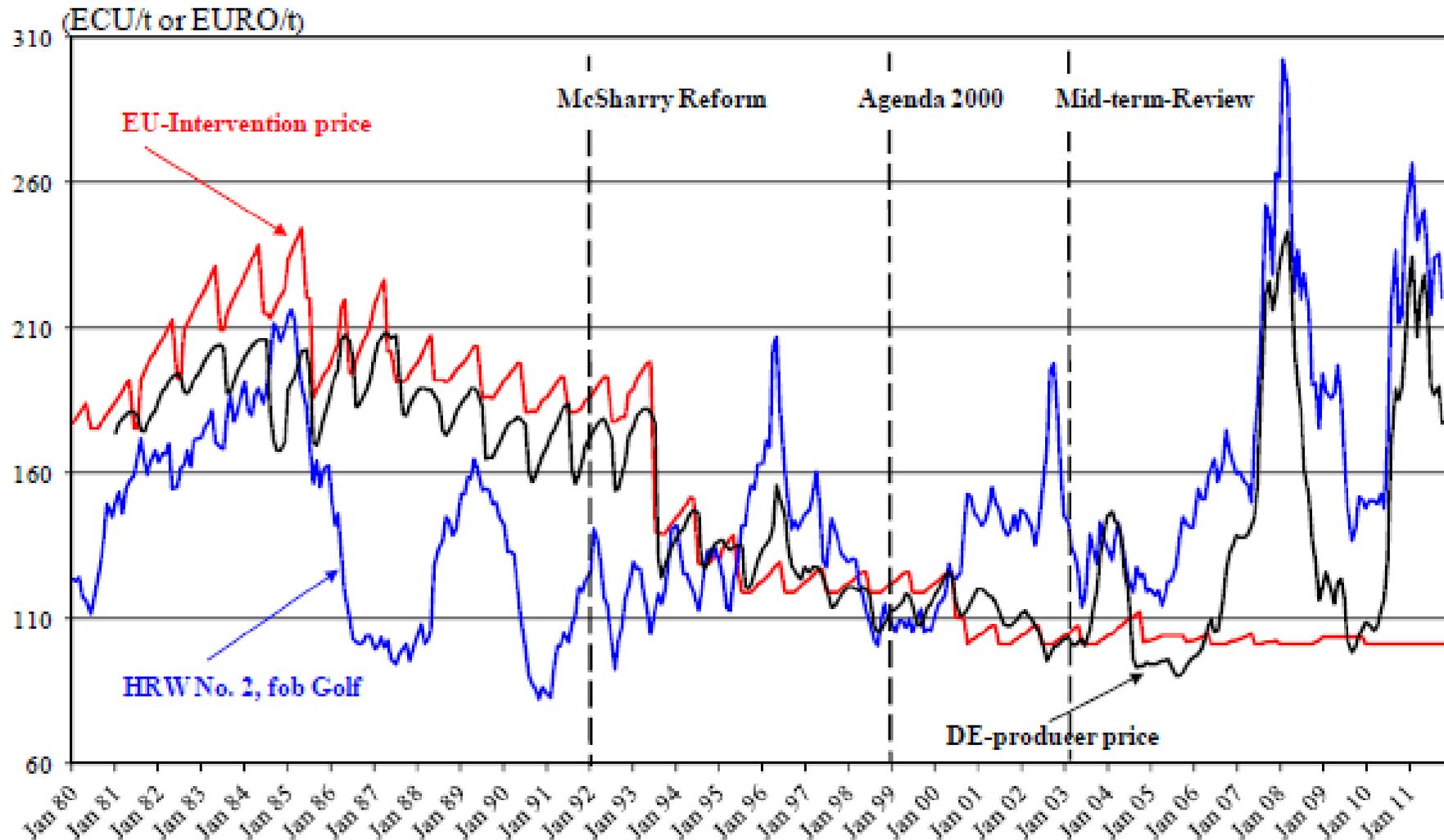


Source: European Commission (2010).



Coincidence between the CAP reforms and variability of Wheat Prices – Case of Germany

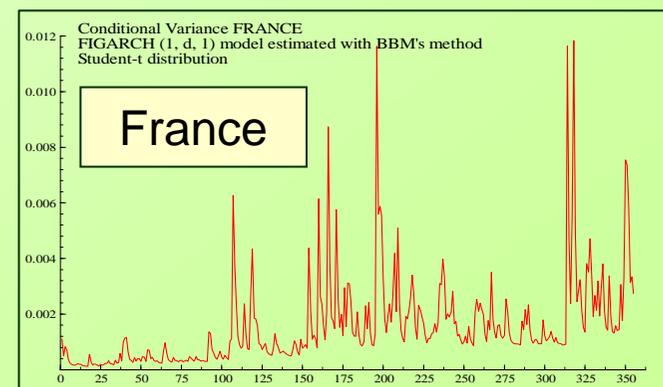
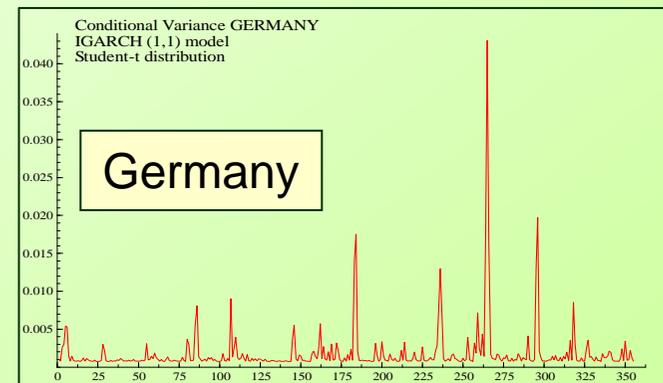
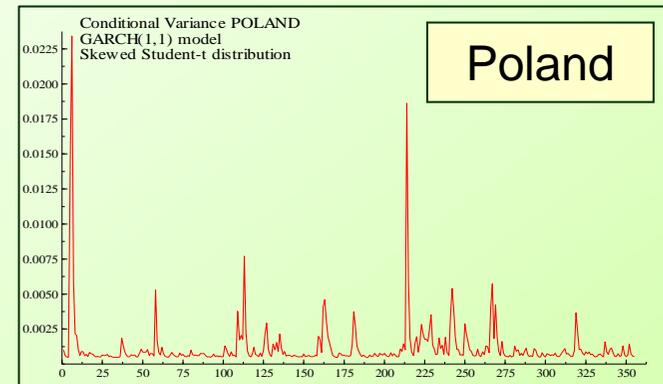
Source: von Ledebur O., Schmitz J. 2012. Price volatility on the German Agricultural Markets. Paper prepared for the 123rd EAAE Seminar, Dublin.





Wheat prices volatility in the EU member countries –GARCH models

- No seasonal parameters
- Student-t or skewed Student-t
- GARCH(1,1): Poland
Lithuania, Hungary
- IGARCH(1,1): Germany
Italy, Spain
- FIGARCH(1,d,1): France
Belgium, Slovakia





Why worry about changes in policy?

- Policy being a form of intervention always means a deviation from freely established undistorted market equilibrium
- Evidence that agricultural policies can influence development of agricultural prices (both on the demand and supply side)
- Expectations that agricultural policies should provide solutions for stabilization of agricultural prices, and hence farm incomes



Main changes proposed in the CAP 2014-2020

- Budget allocation: 72% – direct payments, 24% – rural areas development, 4% – market instruments
- Direct payments – greening, modulation and capping
- Rural development – removal or reengineering of certain types of support and introduction of risk management package (insurance, mutual funds)
- Organization of markets – crisis management instruments including market intervention



CAP 2014-2020 – Potential impact of the “reform” on price behavior

Types of instruments	Potential impact
Direct payments - greening - modulation - capping	Neutral to negative (depending on the world food demand)
Rural development	Neutral (mostly income oriented)
Organization of markets	Neutral (may mitigate effects of unpredictable price shocks?)



Conclusions (I)

- Historical volatility of agricultural commodity prices vary over time and recently seem to be little dependent on agricultural policies
- Considerable differences in price behavior patterns among EU member states (e.g. wheat prices)
- The “new CAP” is unlikely to have a significant impact (neutral to slightly negative effect) on volatility of agricultural prices as other factors may dominate commodity price movements



Conclusions (II)

- Key drivers of agri-food price volatility and related price risk
 - prices of other commodities than agricultural ones, especially energy (volatility is positively correlated across different commodities)
 - variation in exchange and inflation rates
 - world food demand
- Recommendations
 - enhanced market transparency and removal or reduction of policy distortions
 - safety nets and adoption of risk management strategies



Thank you for your attention
Dziękujemy za uwagę