



Dochody gospodarstw rolnych a ryzyko walutowe



Cezary Klimkowski

Instytut Ekonomiki Rolnictwa i Gospodarki
Żywnościowej – Państwowy Instytut Badawczy



Presentation plan

- A few words about theory
- Impact of PLN/EUR on selected price indexes
- Exchange rate and subsidies
- Foreign exchange risk in Polish agriculture
- Conclusions





Definicje

Kurs walutowy – cena waluty krajowej wyrażona w walucie obcej

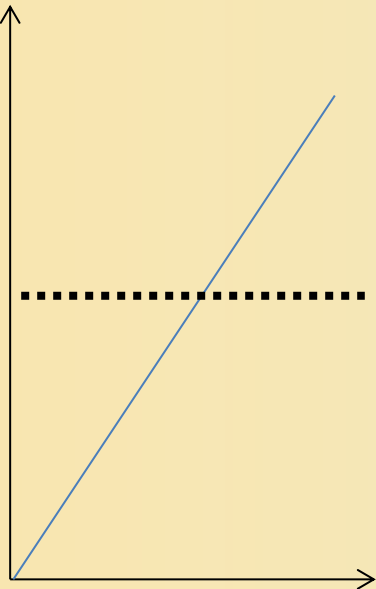
Ryzyko walutowe – prawdopodobieństwo uzyskania dochodów innych (mniejszych) od planowanych w wyniku zmian wartości waluty krajowej





World and domestic prices

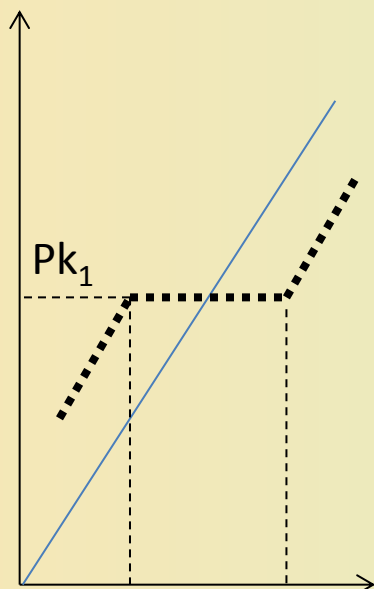
Domestic price



World price

A. Autarky

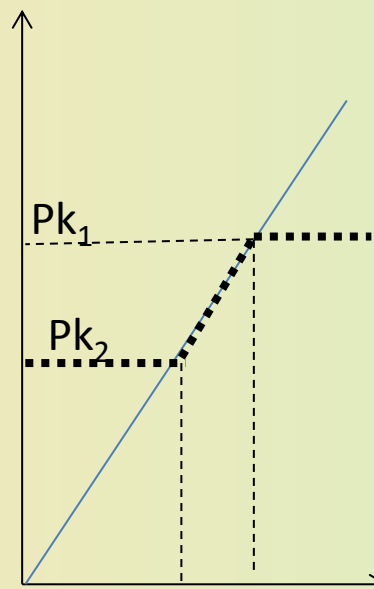
Domestic price



World price
 P_1 P_2

**B. Trade
restrictions:
tariffs**

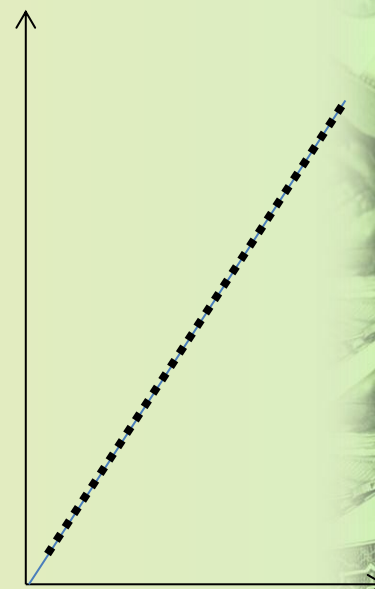
Domestic price



World price
 P_1 P_2

**C. B. Trade
restrictions:
quotas**

Domestic price



World price

D. Open economy











World and domestic prices relation

The power of the economy

Trade openness

	Open	In-between	Autarky
Large	Considerable	Cons  	
Small		Considerable 	Ze 





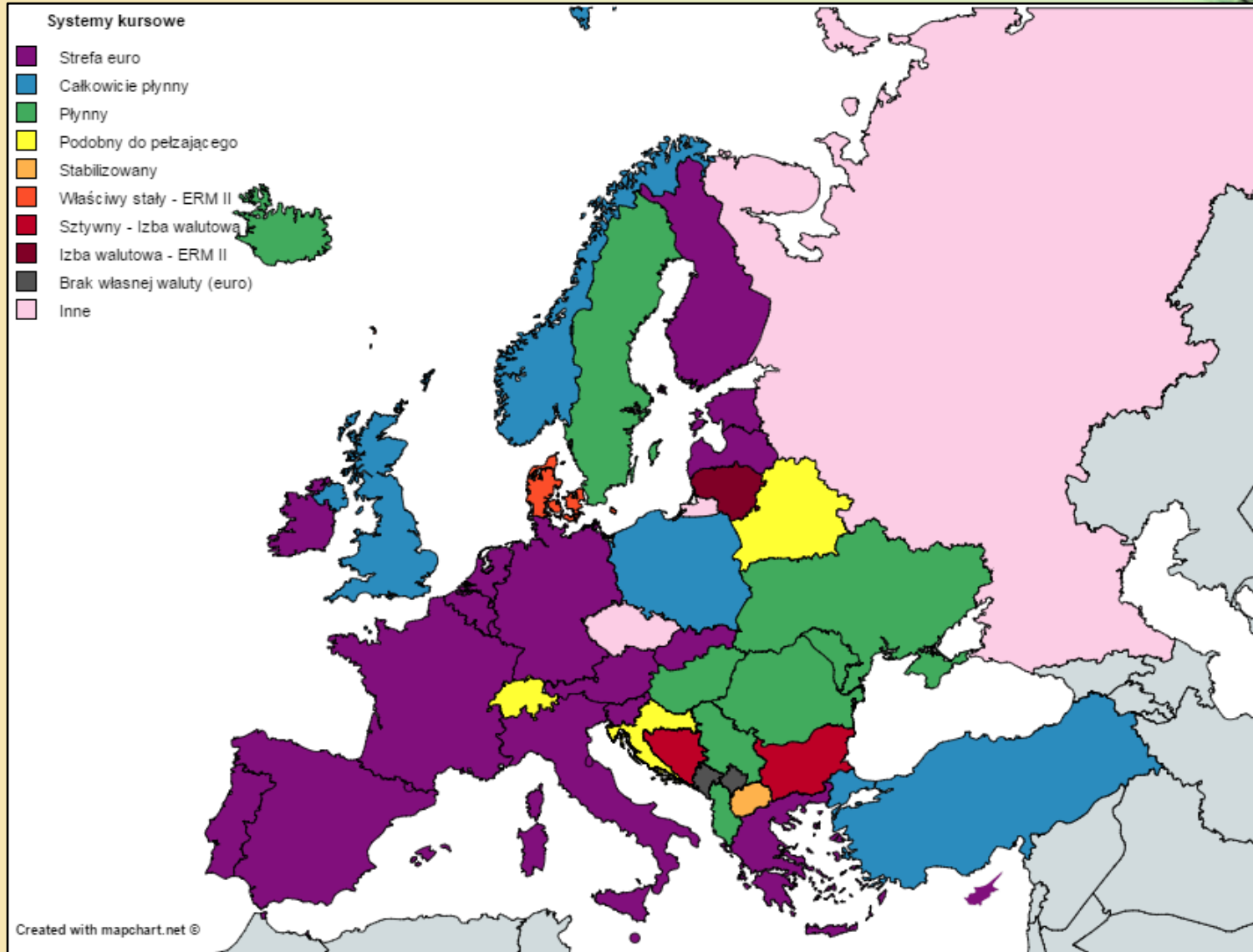
Systemy kursowe

- Sposób ustalania kursu walutowego:
 - Kursy stałe:
 - Izba walutowa (*currency board*)
 - System kursu bez własnej waluty (*no separate legal tender*)
 - Kursy pośrednie:
 - Właściwy kurs stały (*conventional peg*)
 - K. stały w przedziale wahań (*pegged ex. r. with horizontal bends*)
 - K. stabilizowany (*stabilized arrangement*)
 - K. pełzający (*crawling peg*)
 - K. zbliżony do pełzającego (*crawl-like arrangement*)
 - Kursy płynne:
 - K. płynne (*floating*)
 - K. całkowicie płynny (*free-floating*)





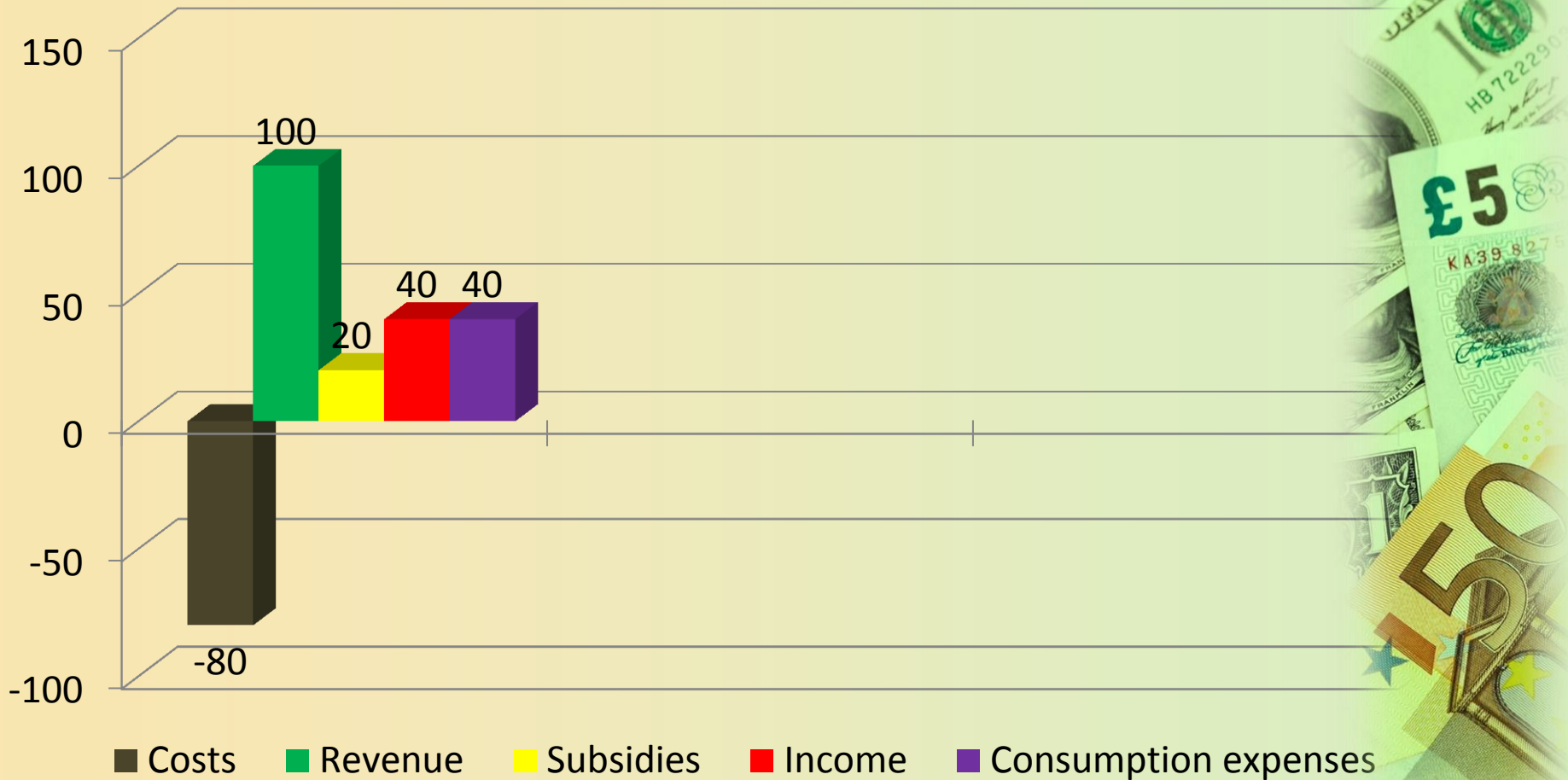
Systemy kursowe w Europie w roku 2014





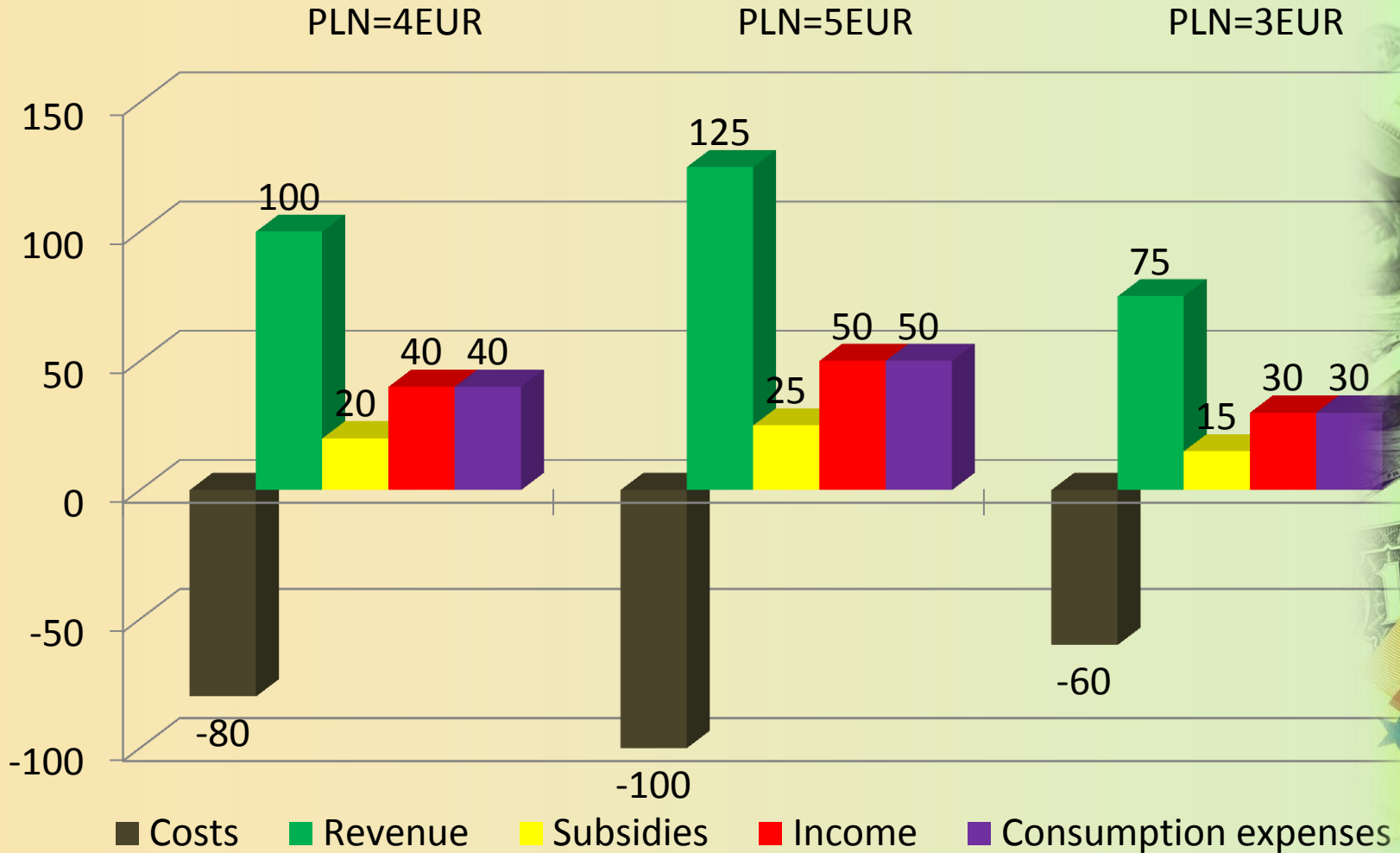
Exchange rate impact on domestic prices

PLN=4EUR





Exchange rate impact on domestic prices





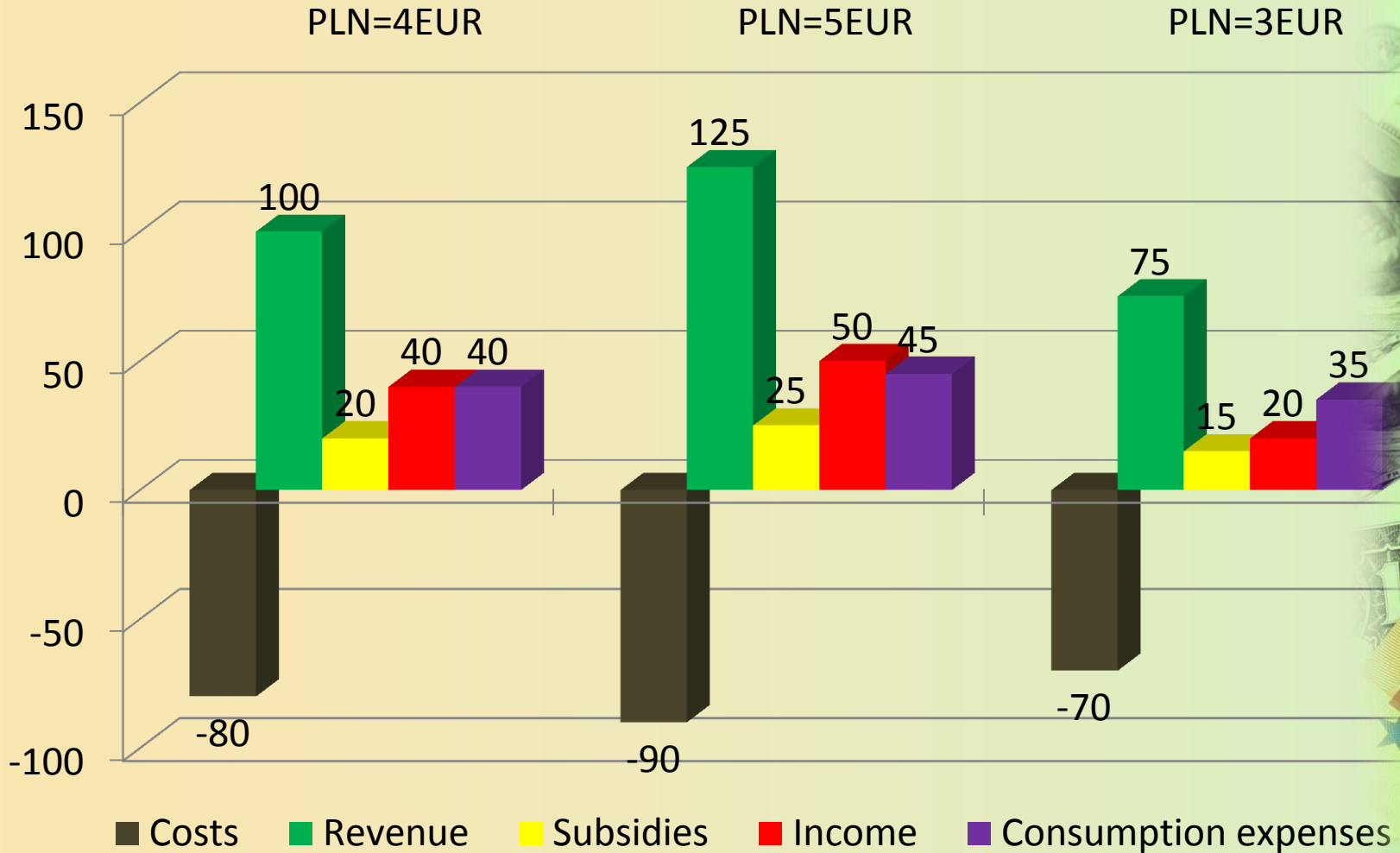
Selected determinants of the level of Exchange Rate Pass-Through

- Behaviour of economic agents
(*producer/local currency pricing*)
- Homogeneity of tradable goods
(the larger homogeneity – the stronger ERPT)
- Variability of exchange rate
(the larger variability – the lower ERPT)
- Existence of non-tradable goods





Exchange rate impact on domestic prices





The aim of the price analysis

- To prove that Exchange Rate Pass-Through (ERPT) for agricultural products differ significantly from ERPT for agricultural means of production
- If this is true exchange rate changes matters and foreign exchange risk influence farmers' income in Poland





Data

- Monthly indexes of prices of selected agricultural products and agricultural means of production:
 - Indexes based on prices from France (in euro) and from Poland (in polish zloty)
- Exchange rate PLN/EUR
- Analyzed sector: I 2010 – XII 2015
- Each time series are logarythmized





Methods

- ADF and KPSS test -> stationarity
- AIC (Akaike) or BIC (Bayesian) -> VAR length
- Johansen test -> cointegration
- VECM -> Error Correction Term and its coefficients





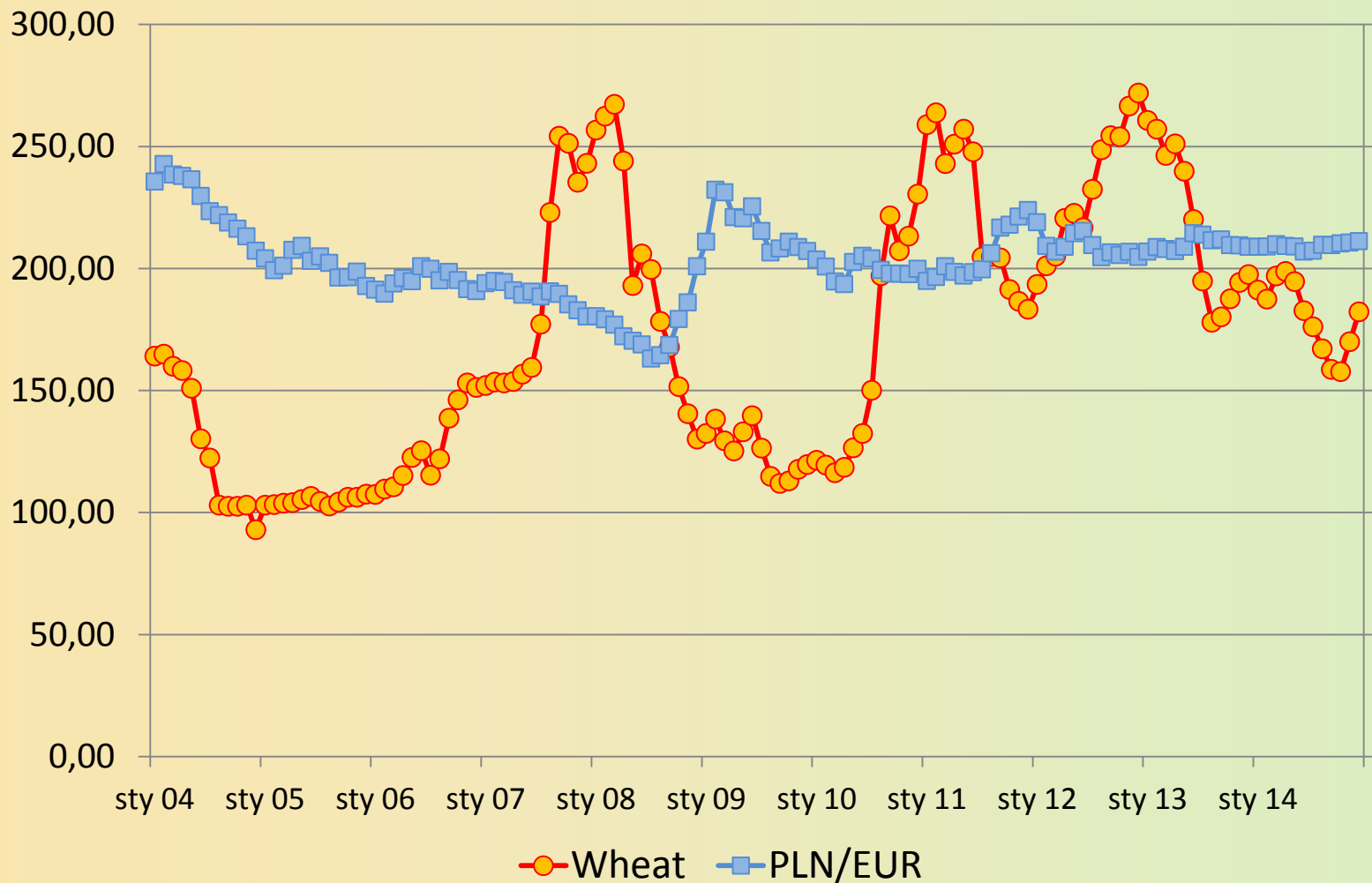
Results



Analyzed index	Cointegration	Error-correction term β -coefficients			α -coefficient (the pace of adjustment to long-term equilibrium)
		POL	Exch Rate	FRA	
Cereals	YES	1	-1,16	-1,01	-0,470***
Diary	YES	1	-0,93	-0,57	-0,389**
Urea	YES	1	-1,20	-0,68	-0,079***
NPK fertilizier	NO	-	-	-	
Feedingstuff-pigs	YES	1	-0,27	-0,76	-0,093*
Feedingstuff-hens	YES	1	-0,26	-0,95	-0,102***
Machines	NO	-	-	-	
Tractores	YES	1	-10,34	3,99	-0,008***
Fuel	NO	-	-	-	

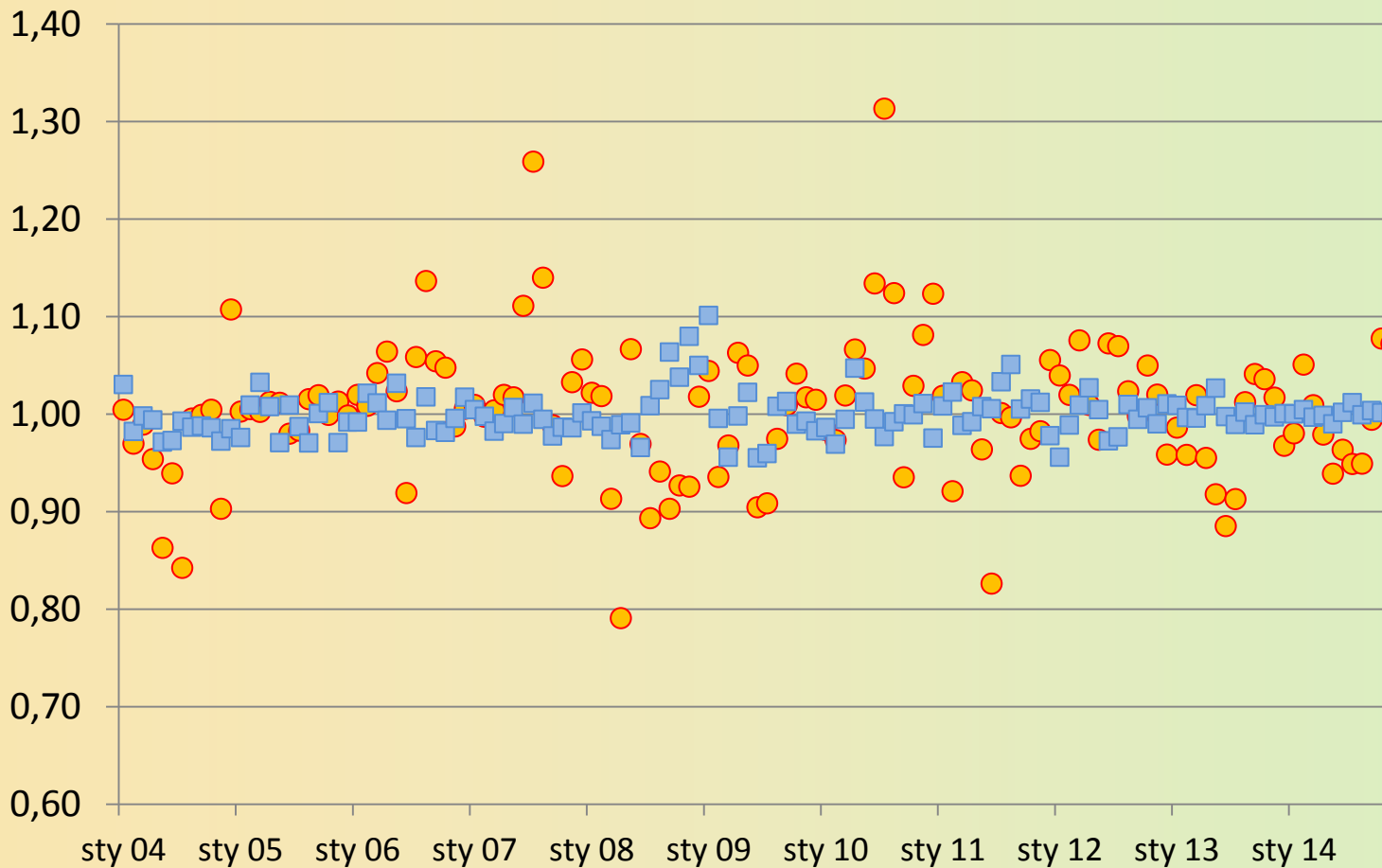


EU wheat prices [euro/ton]



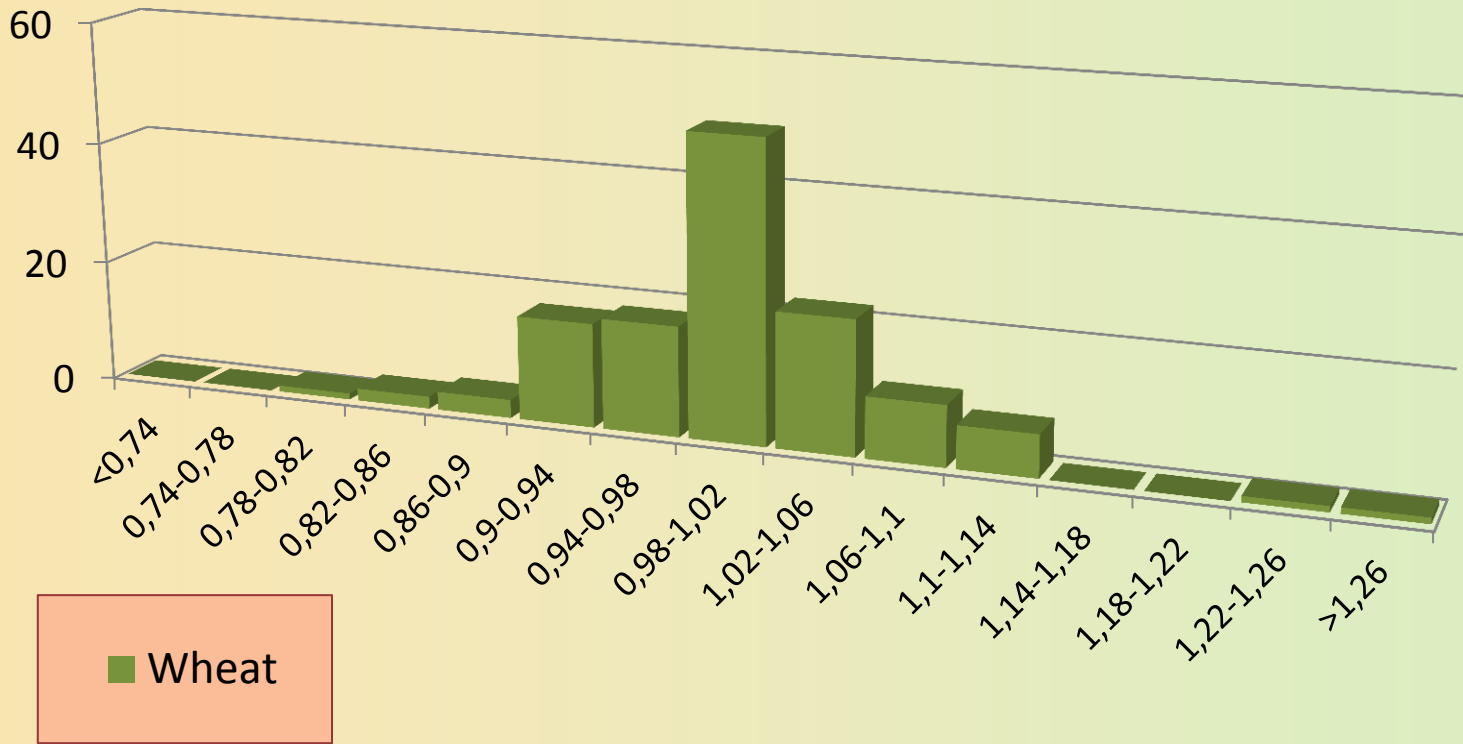


EU wheat prices changes [month-to-month]



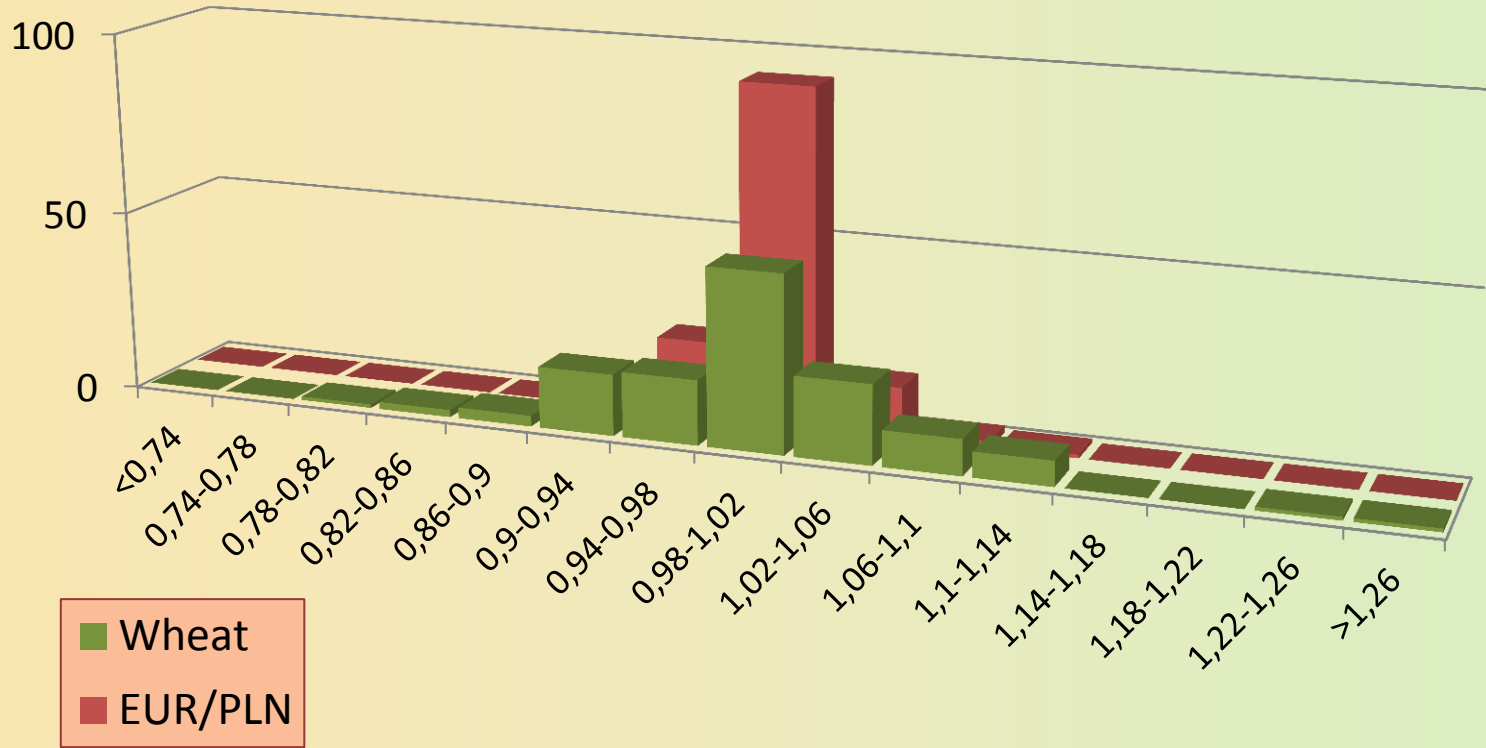


EU wheat prices index [month-to-month]



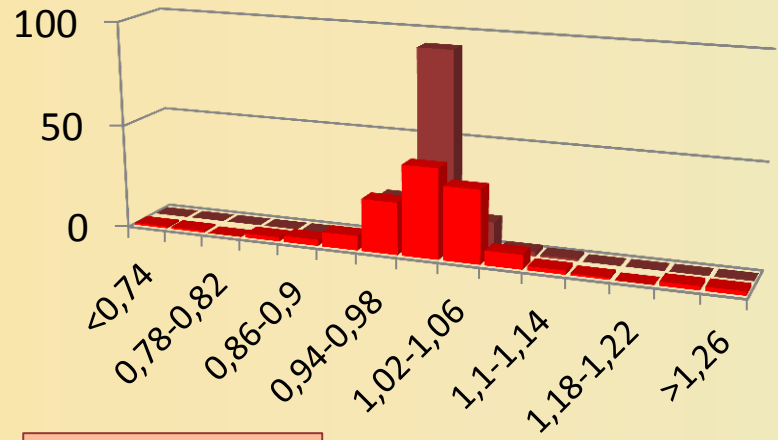


month-to-month Index

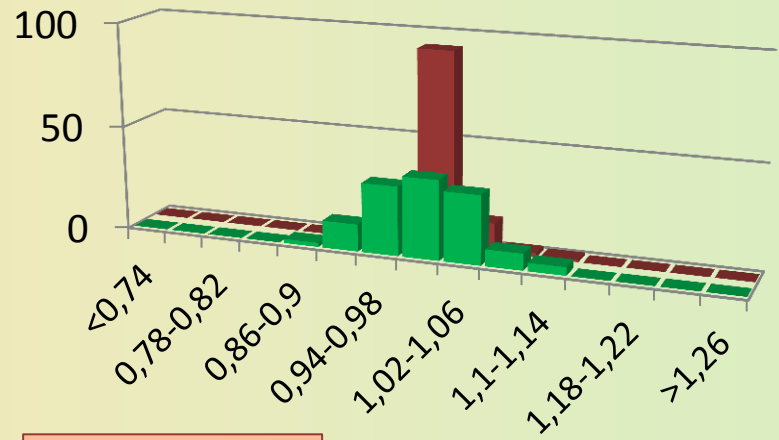




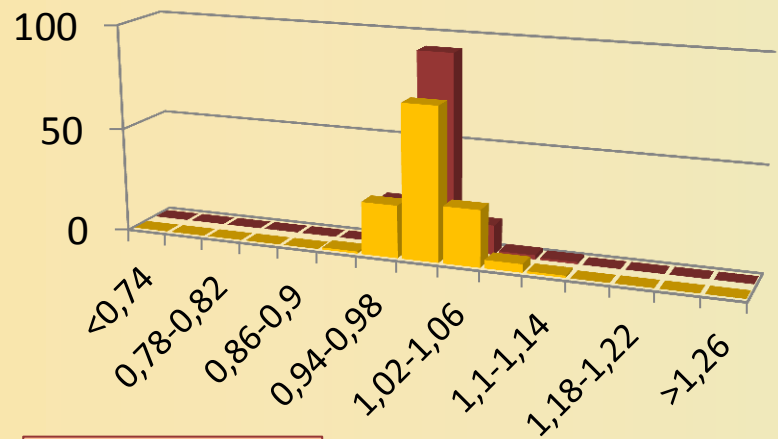
month-to-month indexes



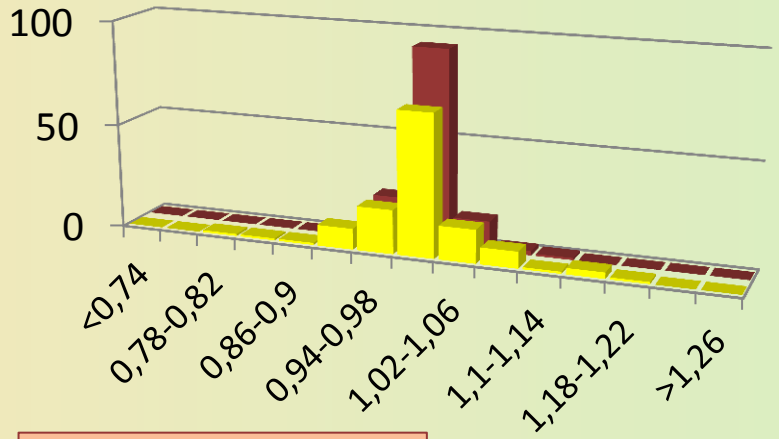
■ UE Rye
■ EUR/PLN



■ Pig livestock
■ EUR/PLN



■ UE Cattle livestock
■ EUR/PLN

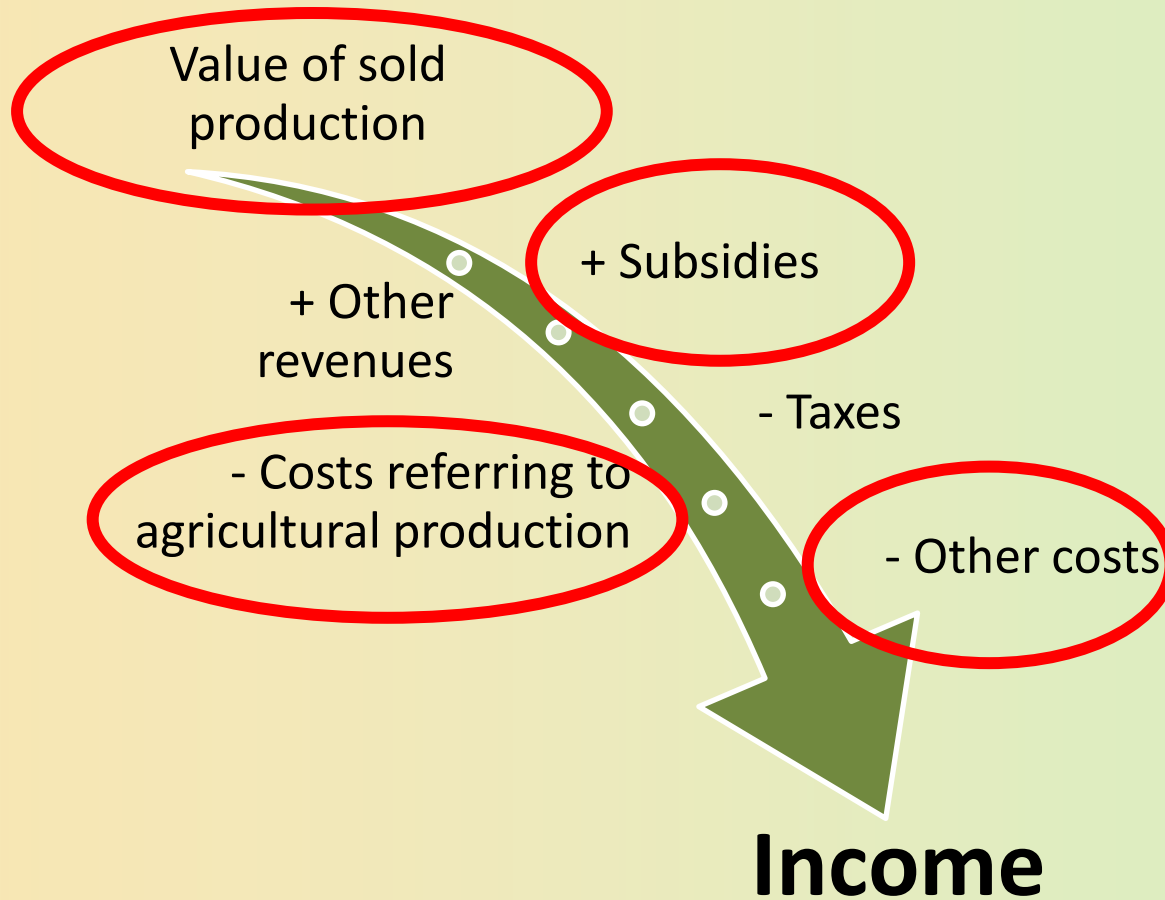


■ UE Butter
■ EUR/PLN





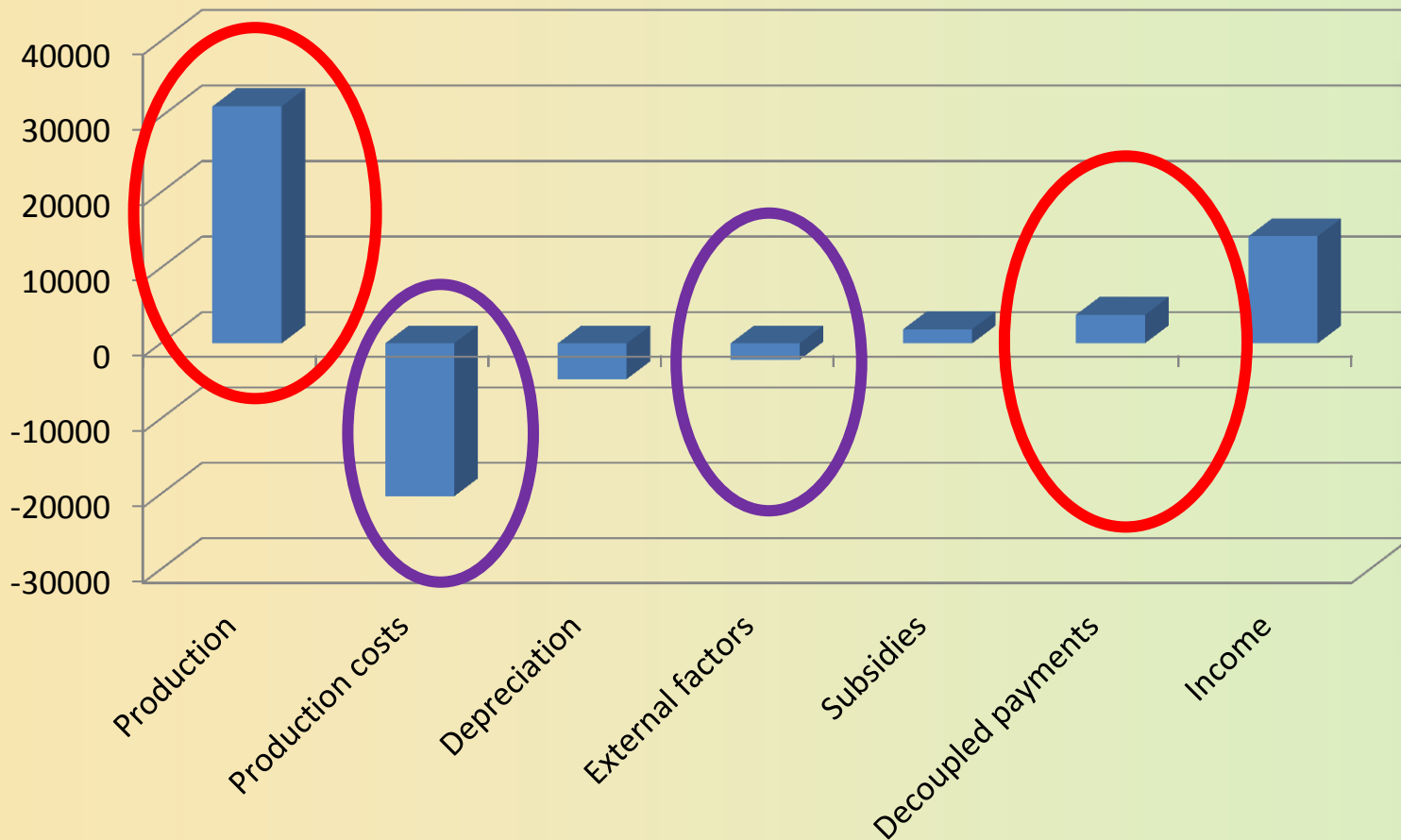
Exchange rate and agricultural income





Average Polish farm income in 2013 (according to FADN)

Average





Simulation



Ec Size	Production	Costs	Depreciation	Decoupled Payments	Other Subsidies	Income
(1)	7457	5258	2018	1593	827	2601
(2)	18752	12516	3857	2962	1510	6851
(3)	43265	27831	6984	5336	2744	16530
(4)	90510	59484	12035	9167	4903	33061
(5)	285291	213831	23518	19530	9065	76537
(6)	1631058	1518390	120462	136022	46862	175090



Simulation



Ec Size	Income	Income (10% depreciation)	Change (%)	Income (10% appreciation)	Change (%)
(1)	2601	3401	31%	1801	-47%
(2)	6851	8772	28%	4930	-44%
(3)	16530	20833	26%	12227	-41%
(4)	33061	41839	27%	24283	-42%
(5)	76537	102742	34%	50332	-51%
(6)	175090	321430	84%	28750	-91%



Conclusions:

- Exchange Rate Pass-Through is much higher for agricultural products than for agricultural means of production
- Exchange rate strongly influence farmers' income through price and value of subsidies change
- The biggest farms are the most dependant exchange rate movements





Thank you

