

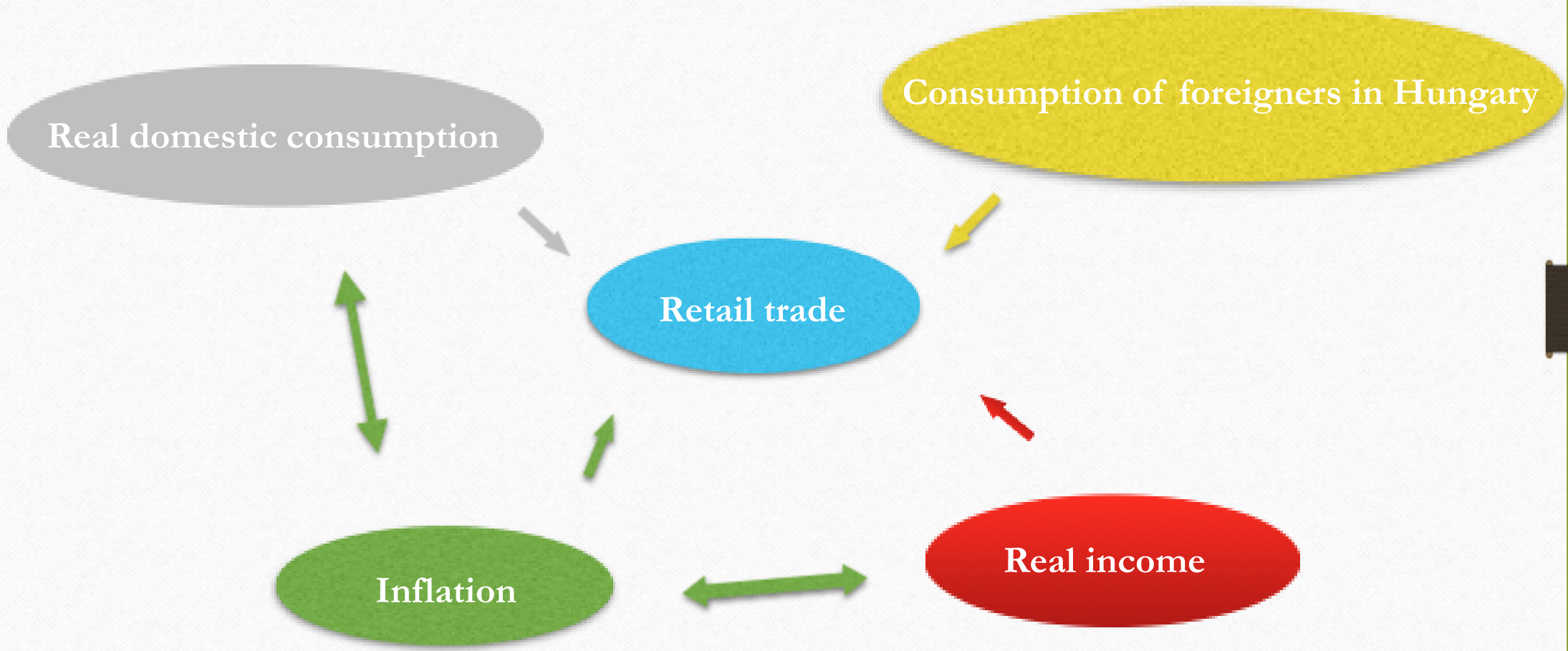


# GKI Retail Trade Model

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László Molnár and Márk Tátrai

## Factors, which affect the volume of the retail trade



Source: GKI

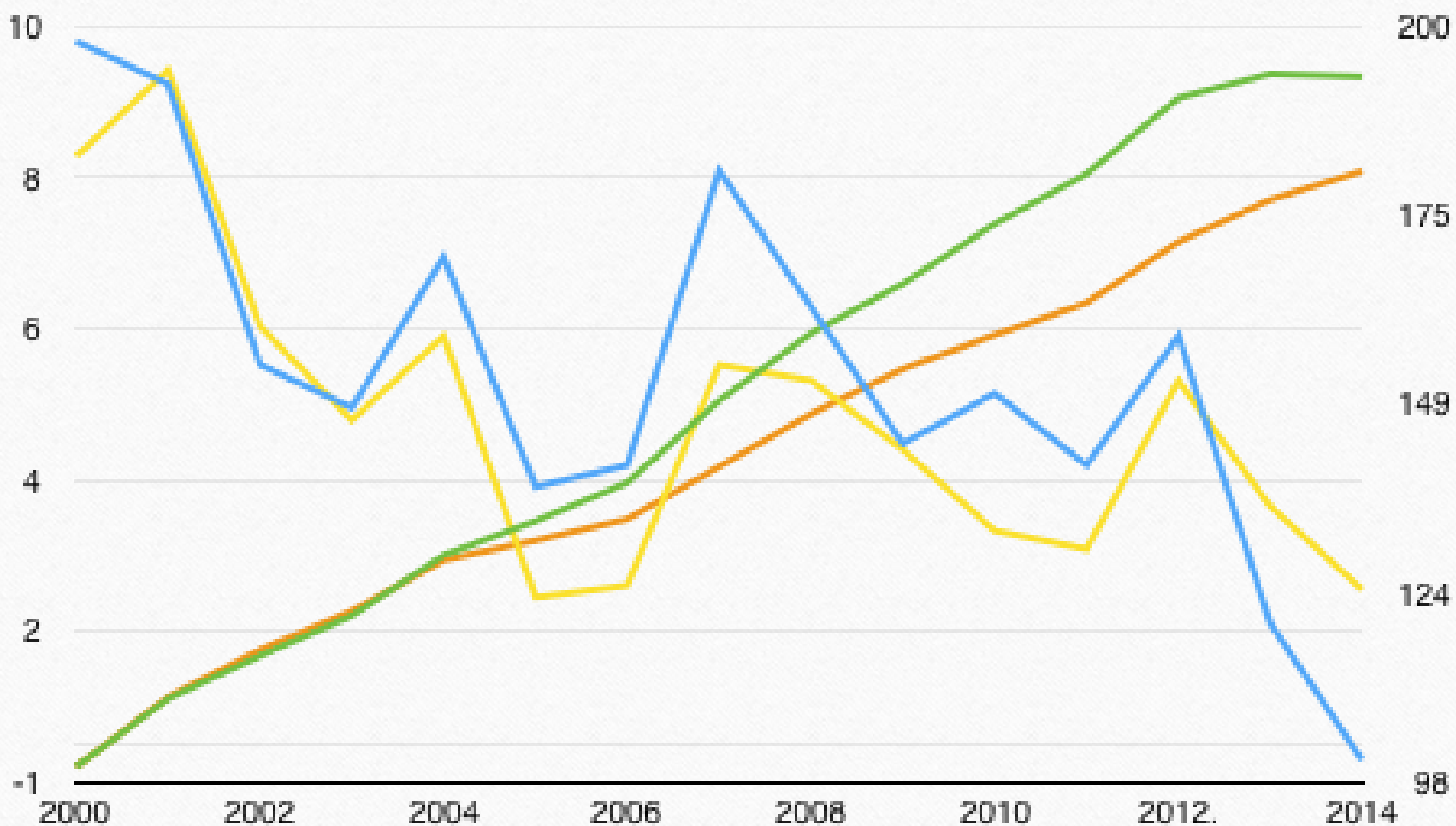


# Inflation

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- CPI (blue) with no trend
- Declining from 10% per year to 0%
- CPI growth rate was 93%
- Core inflation 80%
- Modification factors (utility prices for households, fuels)
- „real inflation” around 2-3%

The changes in the CPI in Hungary, 2000-2014 (%)



Source: CSO, GKI

— Consumer Price Index (CPI)    
 — Cumulated CPI    
 — Core Inflation  
— Cumulated Core Inflation

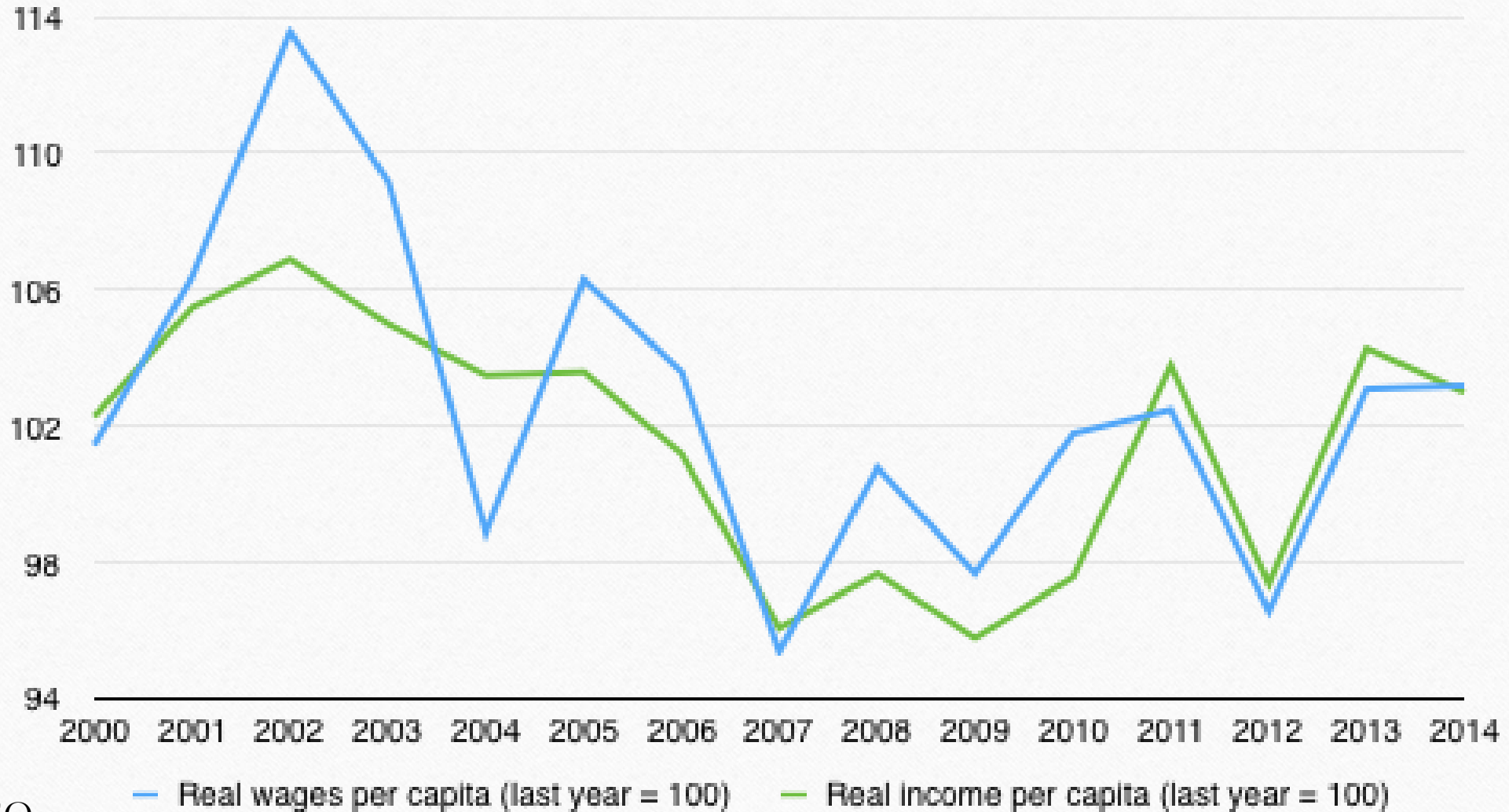
# Real income

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- 2002 major wage increase
- 13<sup>th</sup> month's pension
- 600 thousand people and 2,8 million pensioners
- 2011 – new flat tax system and family allowance regulations
- 230 thousand public workers
- 5% of the whole employment



Real wages and real income per capita, 2000-2014 (previous year = 100)



Source: CSO

# Real domestic consumption

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- In 2002 50% wage increase
- 2009 financial crisis
- 2011 – weakening HUF compared to CHF and EUR
- Employee's tax deduction ceased
- One-time minimal wage increase (20%)
- Utility prices lowered by 20%
- Household's debt for real estate in foreign currencies

Real consumption, 2000-2015 (last year's same month = 100)



Source: CSO

— Real consumption (last year's same month = 100%)

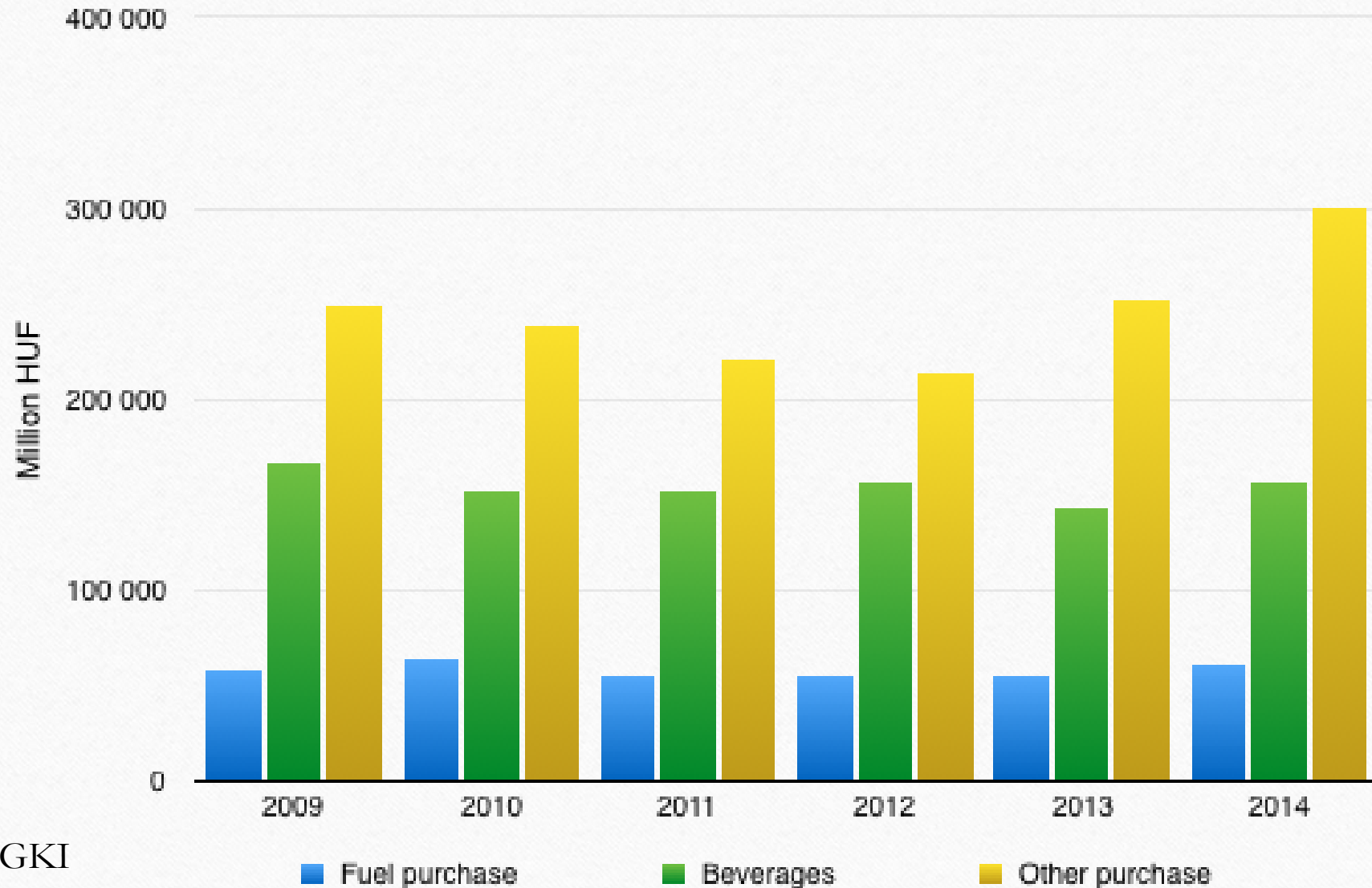


# Consumption of the foreigners

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- Decrease until 2012
- 16% of the whole consumption
- Cannot be modeled

### The elements of the retail trade of the foreigners consumption



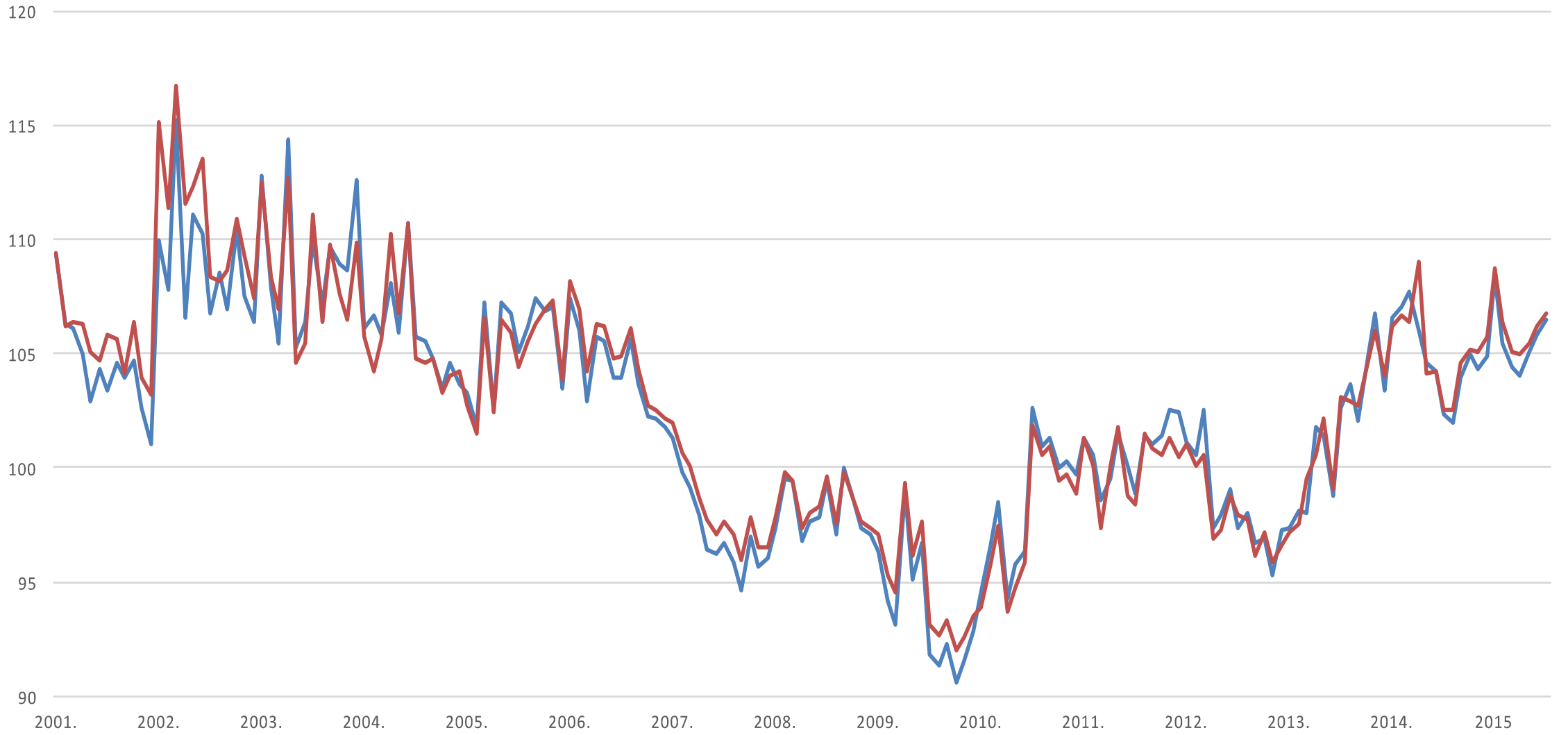
Source: CSO, GKI

# Retail Trade

- Decrease until 2009
- From 2012 a growing tendency
- Three elements:
  - Online cash-registers
  - Fuel consumption
  - Real income







Source: CSO

— Retail trade without fuels — Retail trade

# The model I.

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- Household's survey data
- Consumer Sentiment Index
- Expectations concerning the future economic situation
- Data shifted with 4 months
- Weighted with the household's whole income

	ES4		ESIPC4		ESH4		RTWF	
	PC*	N	PC*	N	PC*	N	PC*	N
RT	,749**	183	,753**	183	,761**	183	,975**	174
RTWF	,794**	174	,790**	174	,796**	174	1	174
	*Pearson Correlation							
	**Correlation is significant at the 0,01 level (2-tailed)							
Source: GKI	N = Number of the months observed							

- ES4 = economic situation shifted with 4 months
- ESIPC4 = economic situation weighted with income per capita shifted with 4 months
- ESH4 = economic situation weighted with the household' whole income, shifted with 4 months
- RTWF = retail trade without fuels
- RT = retail trade

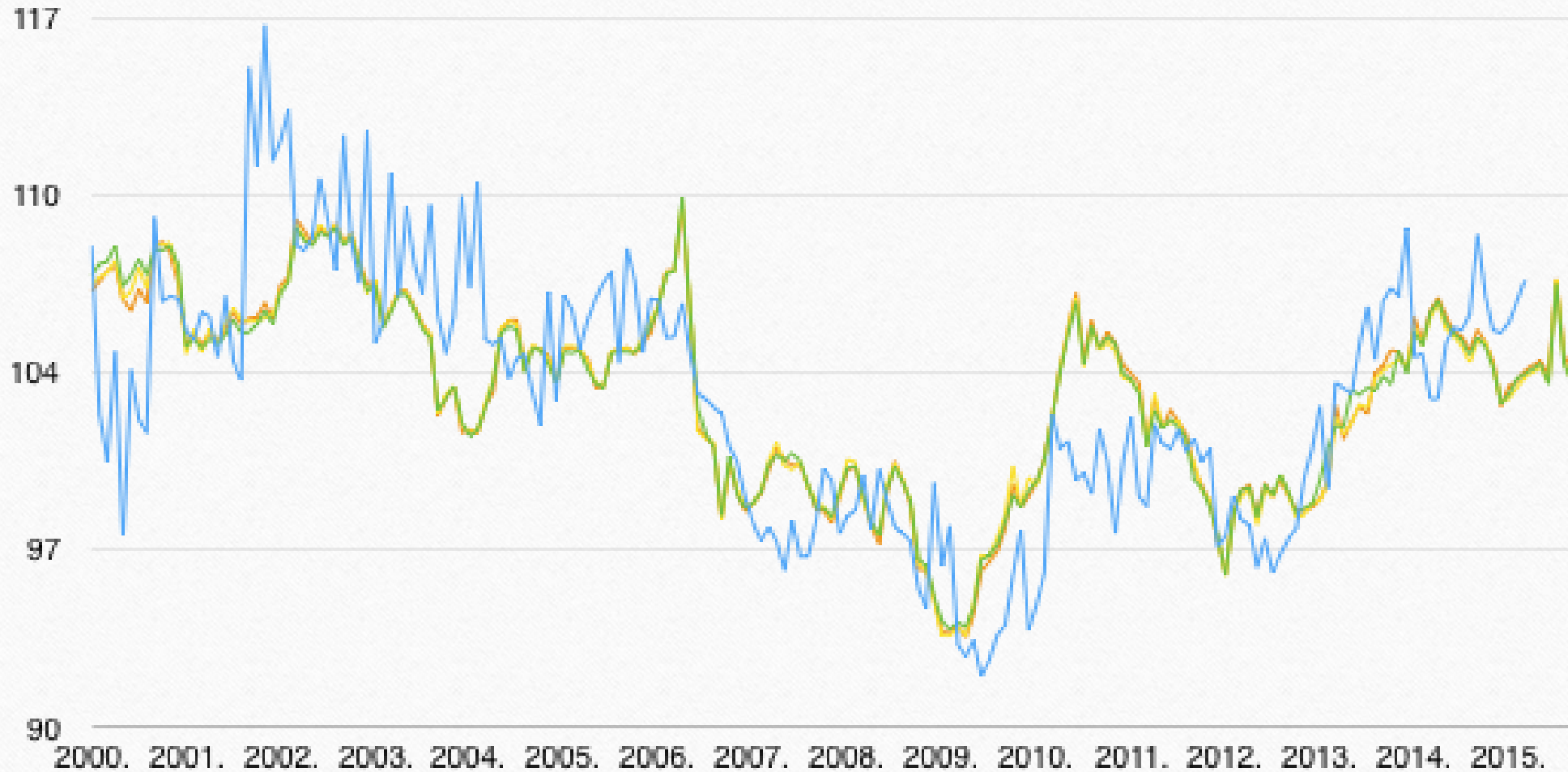


# The model II.

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- $R^2 = 0,576$
- 16% unexplained consumption of the foreigners
- Errors
- Whitening effect
- Black economy

The retail trade and the forecasts, 2000-2015 (%)



Source: CSO, GKI

- Retail trade
- GKI forecast without weight
- GKI forecast weighted with income per capita
- GKI forecast weighted by households' income

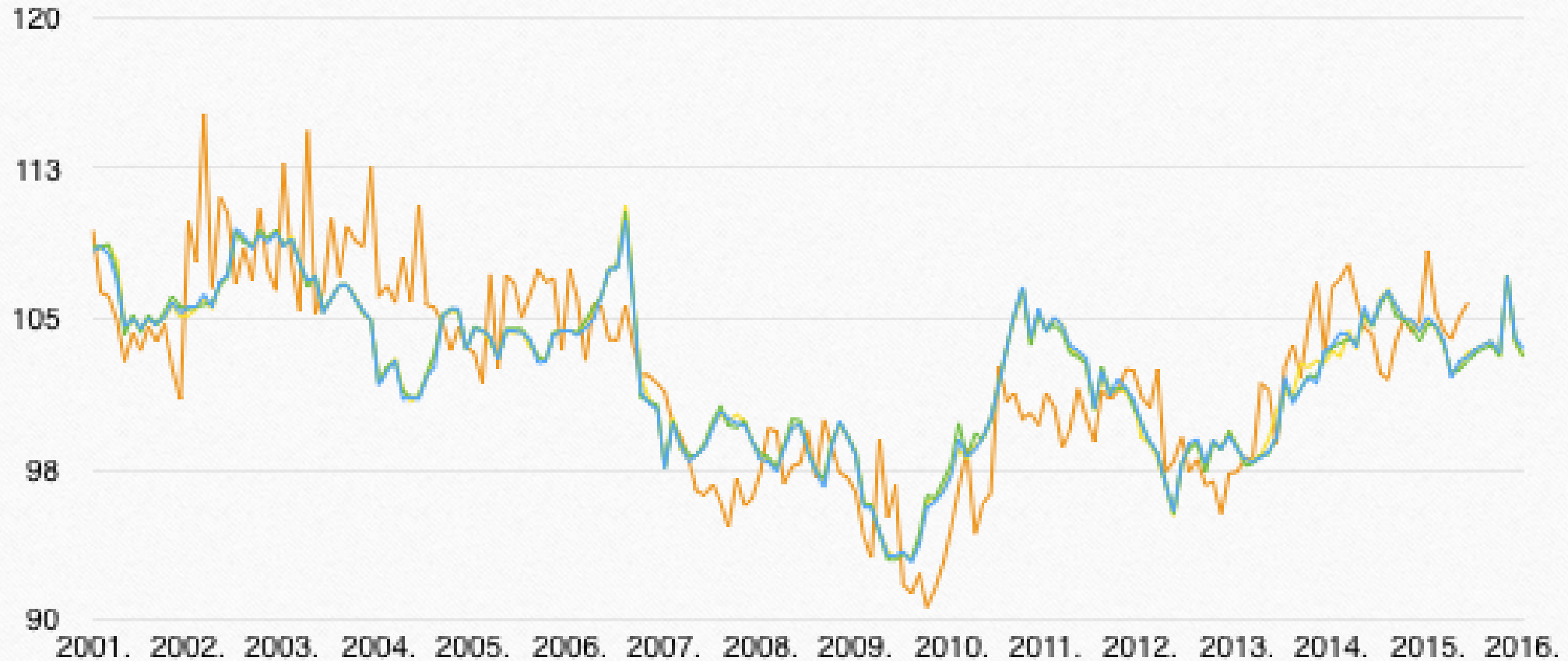
# Retail trade without fuels

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- $R^2 = 0,63$
- Stronger explanatory power
- Regression model
- With the same weighting



## Retail Trade without fuels and GKI model forecasts



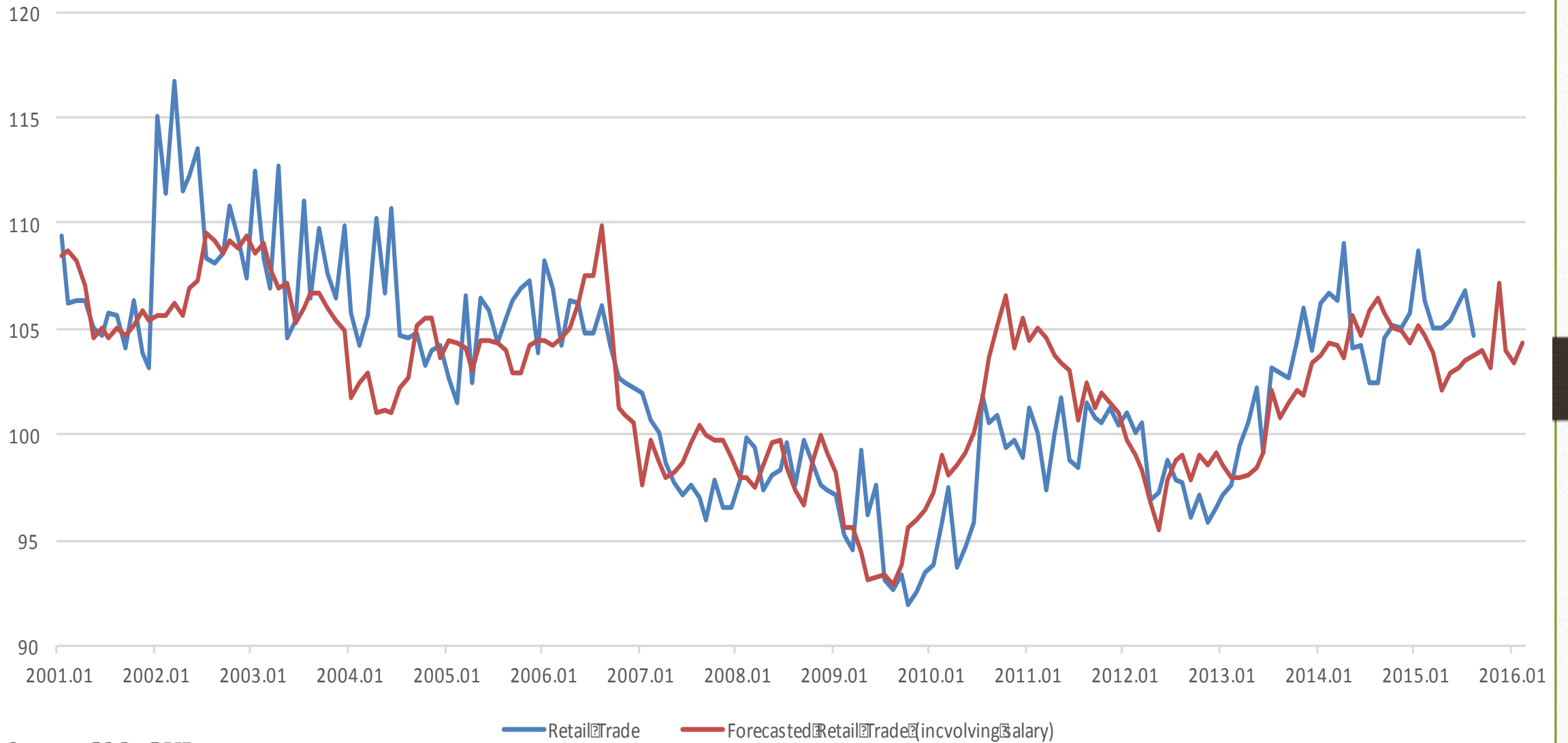
- GKI Retail Trade Model weighted by household's income
- GKI Retail Trade Model weighted by income pre capita
- GKI Retail Trade Model without weight
- Retail Trade Without Fuels

Source: CSO, GKI

# „The improved model”

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- Regression model
- Income added as an other independent variable
- $R^2$  grew to 0,667
- The only variable (on income) available monthly is the salaries
- Example: pension and unenployment benefits are not included



Source: CSO, GKI



Thank you for your attention!

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