

# Micro simulation model estimating Czech farm income from Farm Accountancy Data Network database

22<sup>nd</sup> Pacioli workshop  
29<sup>th</sup> September 2014



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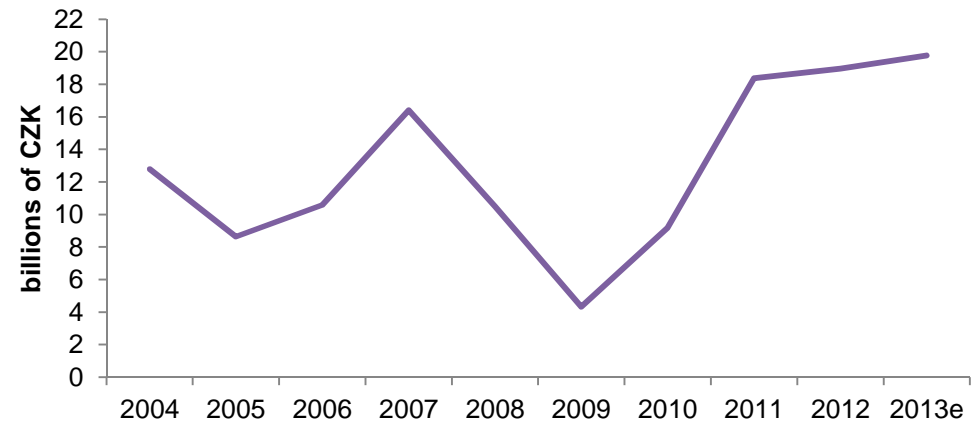
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# What do we estimate...

**Farm income of Czech agriculture and its components:**

- **Farm net income**
- **Farm net value added**
- **Costs**
- **Production**
- **Subsidies**



Farm level estimates → weighting & aggregation → national level estimates

## ...based on FADN CZ database

1417 questionnaires for DG.AGRI represent ≈14 800 Czech farms

# When do we estimate

the sooner the better

## I. stage

- estimation **10 months** before FADN final results are ready
- December of current accounting year
- input information is known

Done

## II. stage

- estimation **13 months** before FADN final results are ready
- September of current accounting year
- input information partly known, partly estimated

Ongoing

## III. stage

- forecast **22 months** before FADN final results are ready
- December of preceding year
- scenarios of following year results, no information known

Under preparation

## Process of estimation (stage I and II)

### Data

- farm sample selection
- selection of independent variables in **FADN CZ farm return**
- external input data search

### Index compilation

- index calculation, identification of price/rate per unit
- integration of indices/prices/rates into simulation model
- assumptions

### Projection

- running of the projection on individual farms
- calculation of output results
- application of weights
- aggregation by class

### Results analysis

- production (crop, livestock), costs, subsidies, income
- annual trend
- changes in values
- comparison with macroeconomic results

## Selection of independent variables

**Annual change rate is applied to all key items affecting economic results**

**Production:** main crops  
livestock categories  
products (milk, eggs)

**Costs:** direct livestock and crop costs, energy, services,  
costs of machinery and buildings, wages, rent paid.

**Subsidies:** according to information available at time of calculation

# Information source

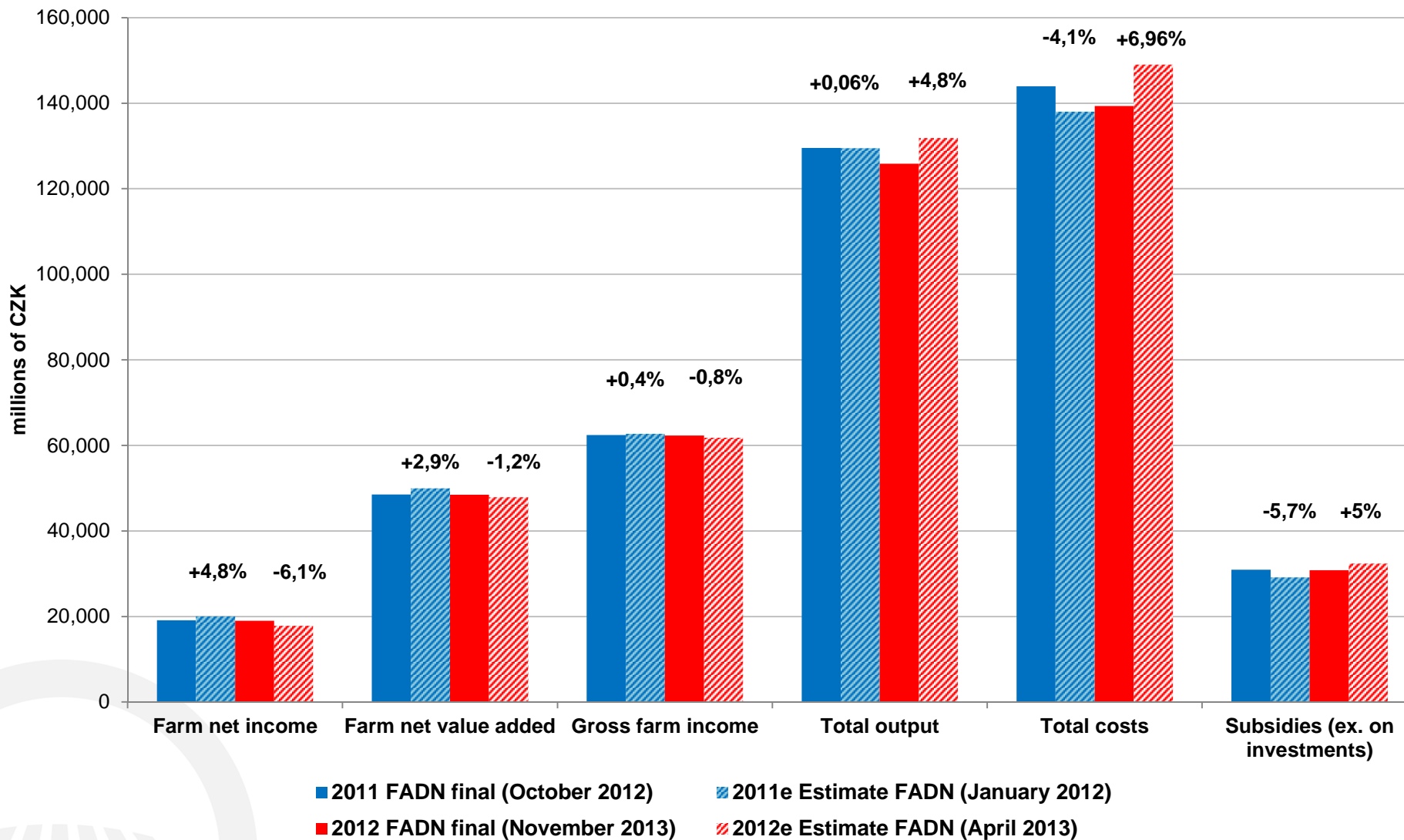
Mainly on-line public information

- Czech Statistical Office
- Ministry of Agriculture
- [Institute of Agricultural Economics and Information](#)
- State Agricultural Intervention Fund
- Agricultural unions etc.

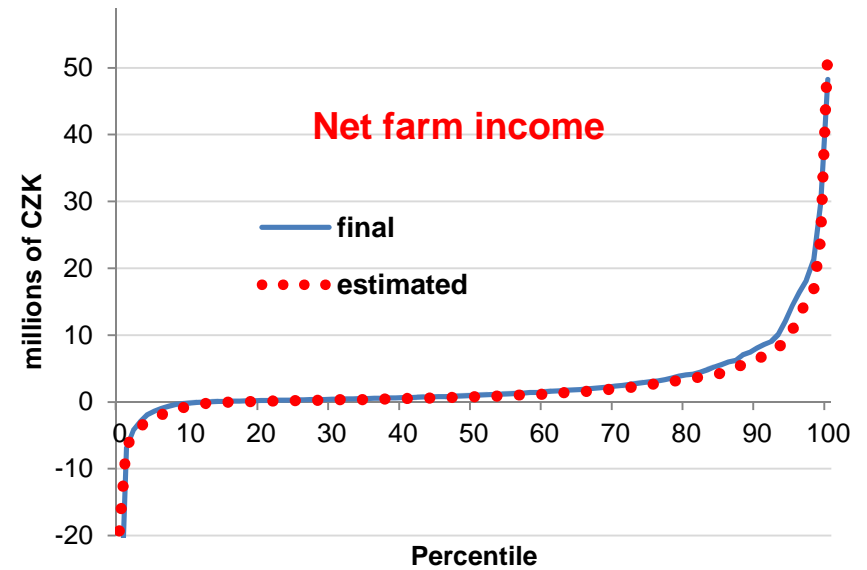
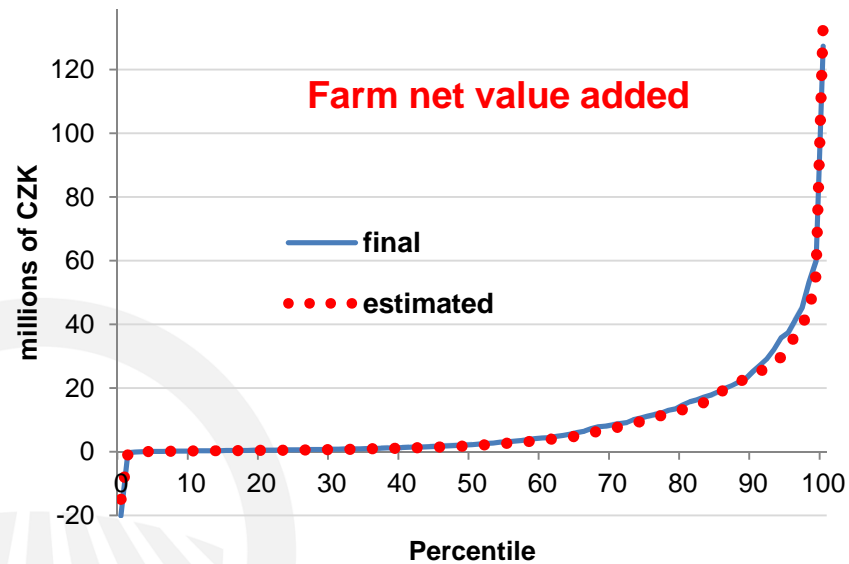
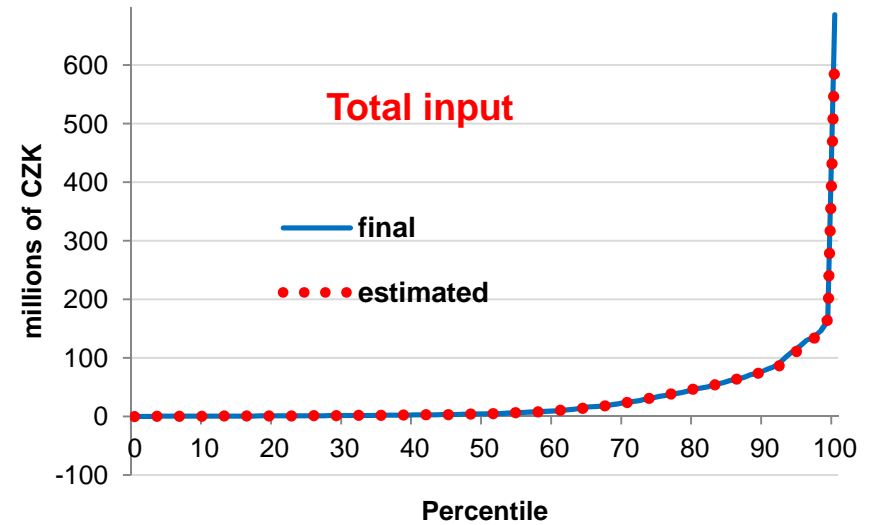
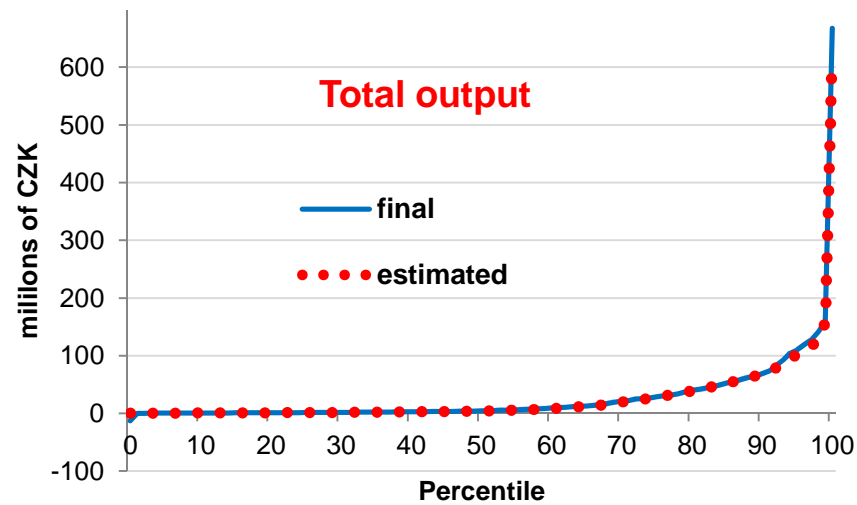
- Average monthly prices of agricultural producers
- Input agricultural price indices
- Commodity statistics
- Livestock inventory
- Information on estimated yield and harvest of selected crops
- Information on estimate of yield and production of agricultural crops
- Economic Accounts for Agriculture (macro economical data)
- Information on subsidy (totals, rates)



# Results of stage I – weighted results comparison, 2011 and 2012



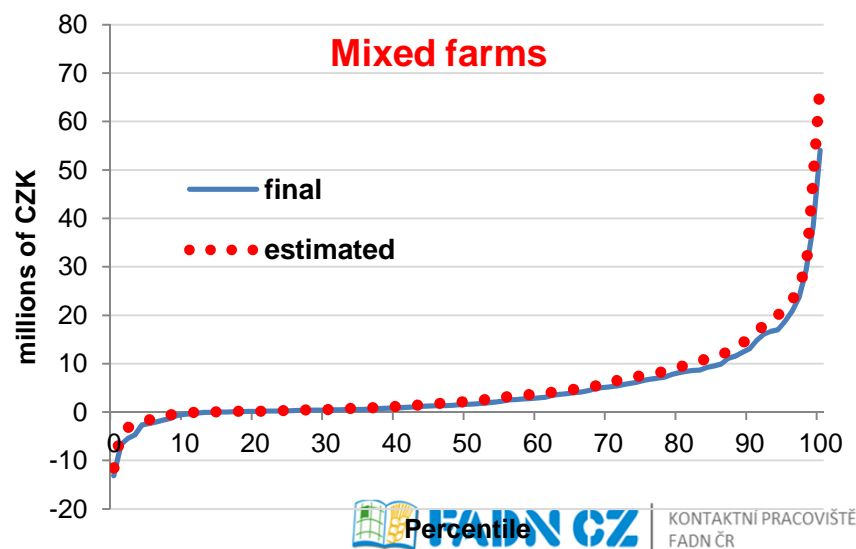
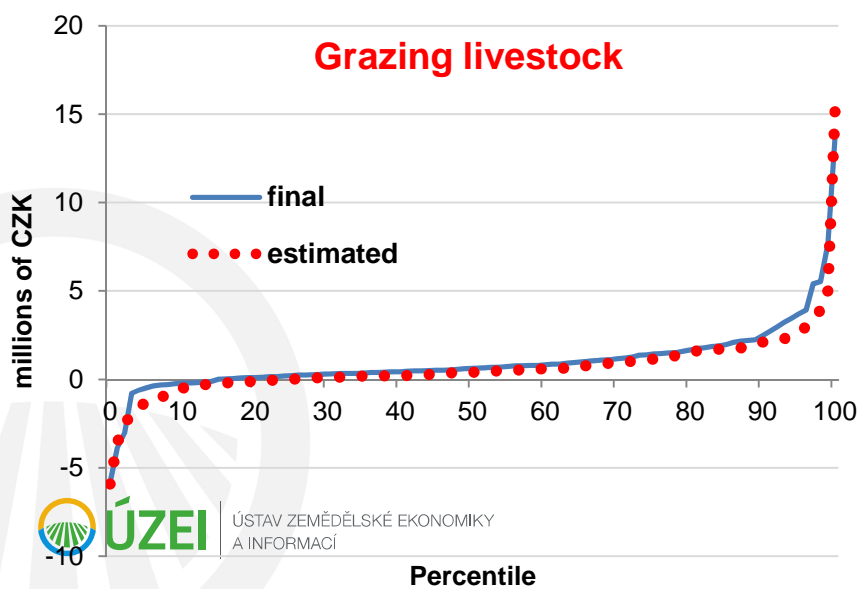
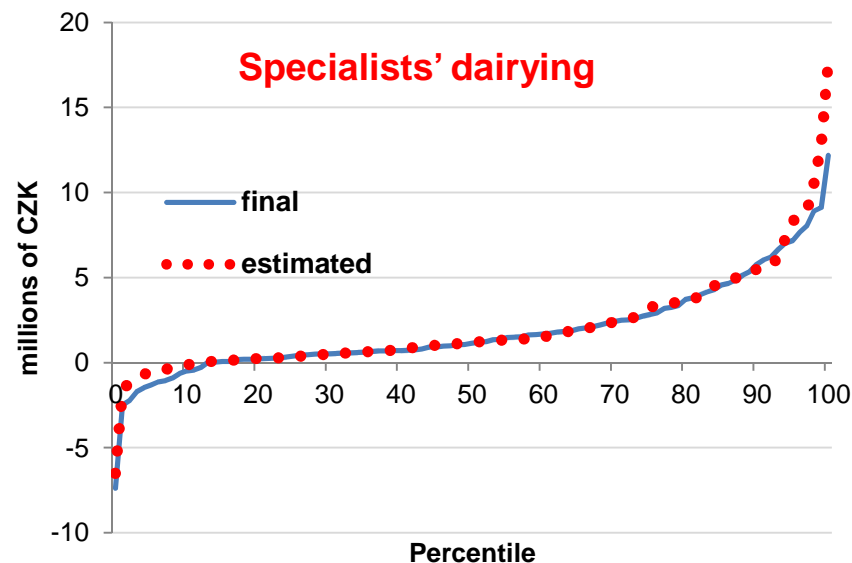
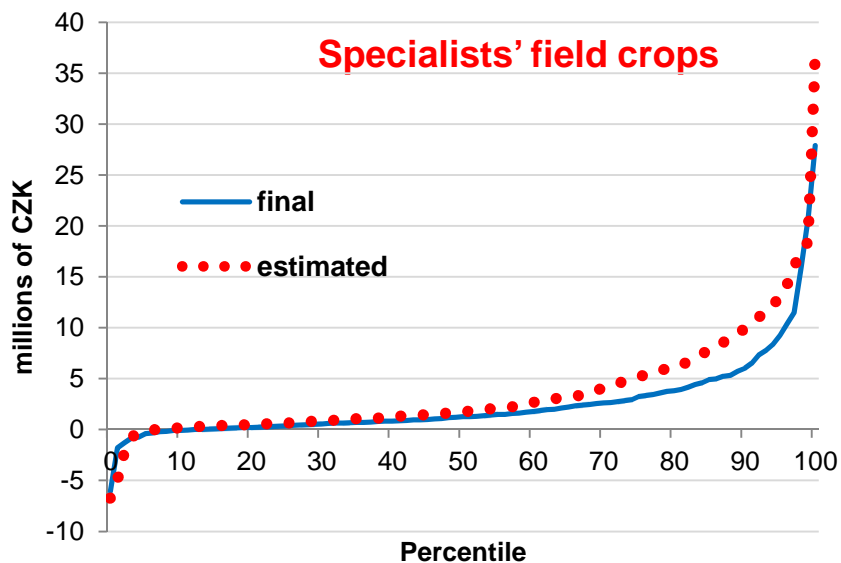
# Testing of stage I – farm distribution comparison FADN 2012





# Testing of stage I – farm distribution comparison FADN 2011

## NFI by type of farming



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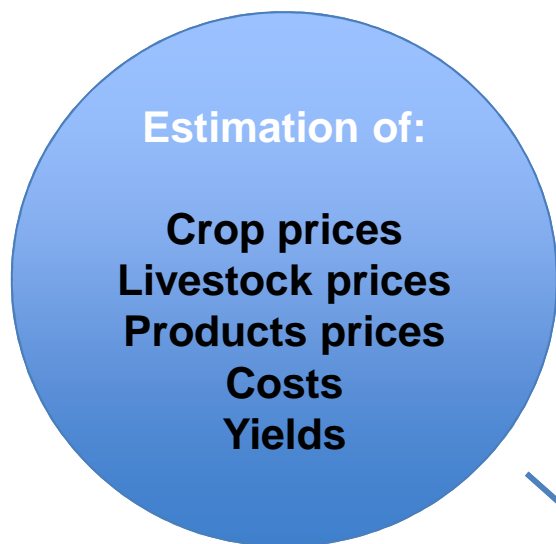
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## Stage II – input information estimation



### FADN CZ estimates:

- Crop prices and costs
- Forecast function of linear regression
- 2001-2012 (2013) panel data

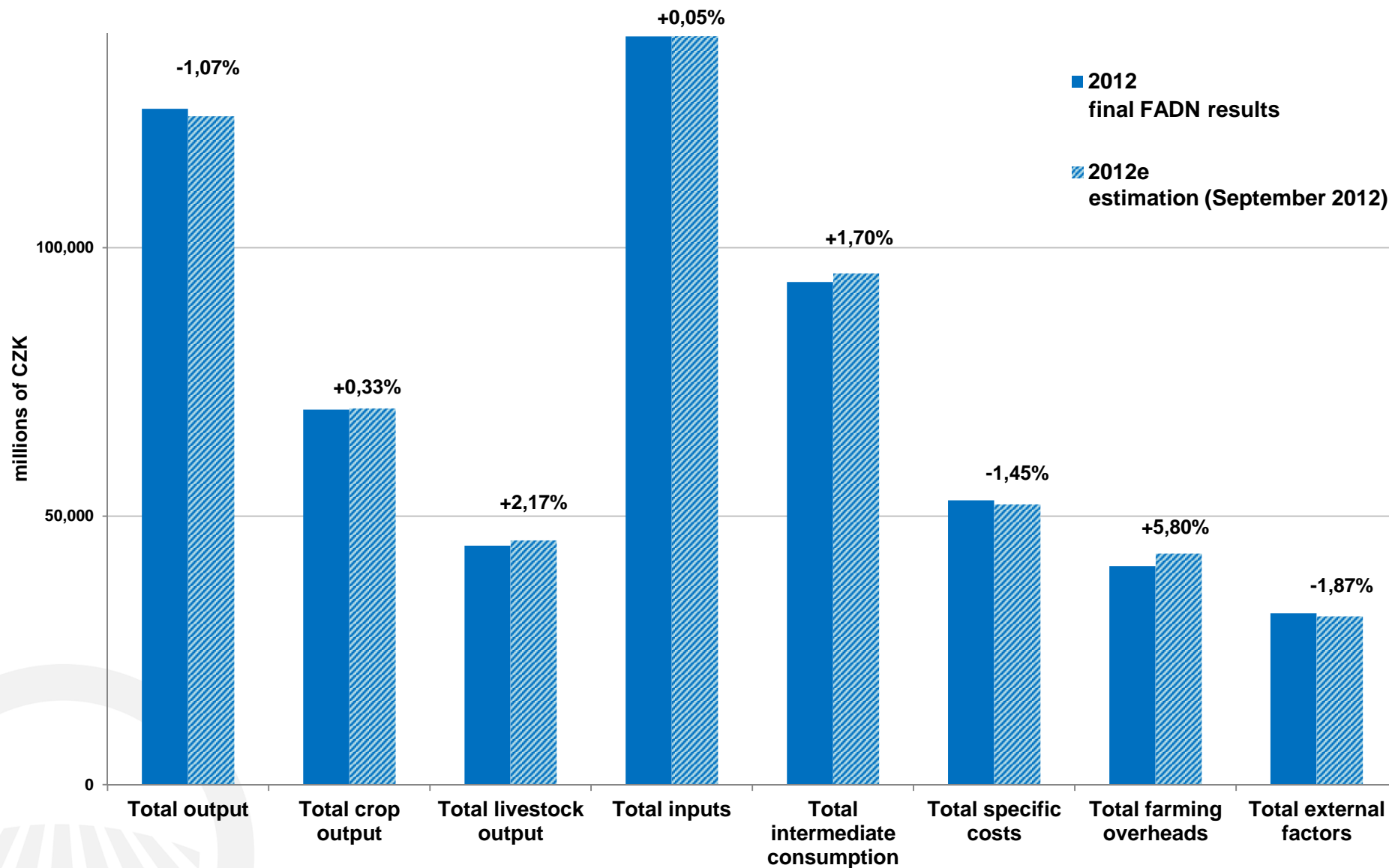
### Public estimates:

- Czech Statistical Office
- Ministry of Agriculture

### IAEI estimates:

- prediction of Economic Accounts of Agriculture in CZE (model EAA)
- Commodity department estimates

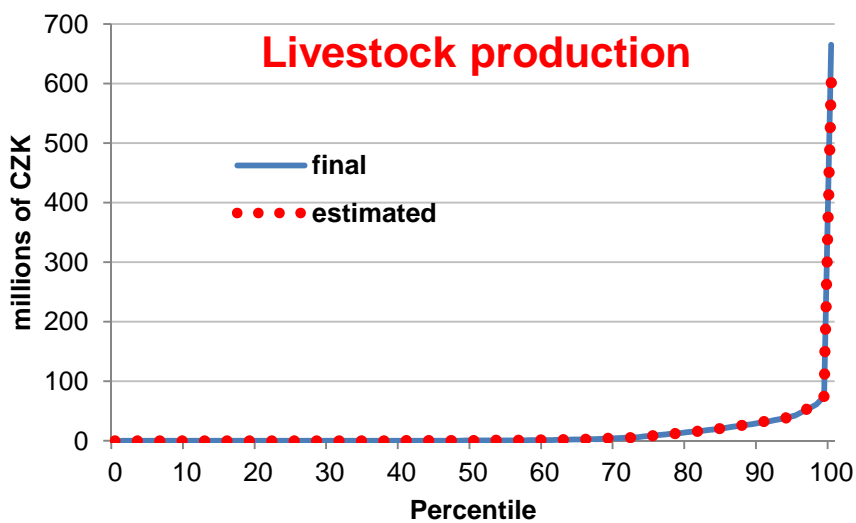
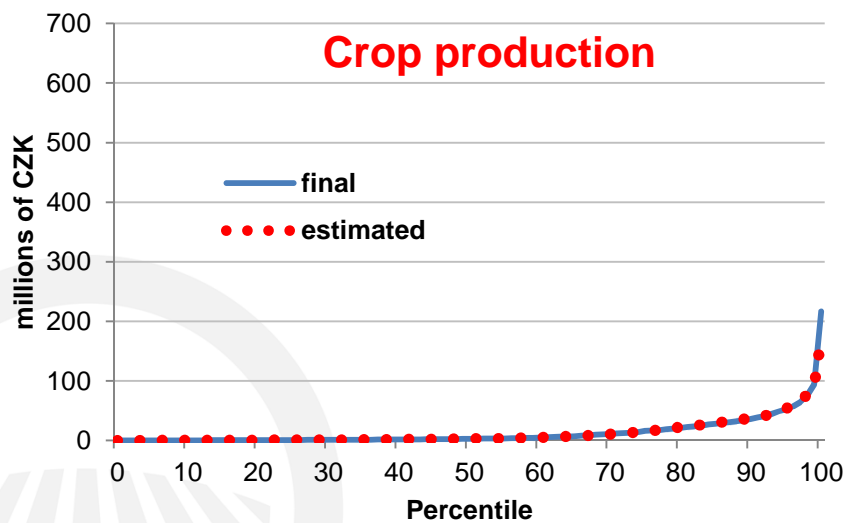
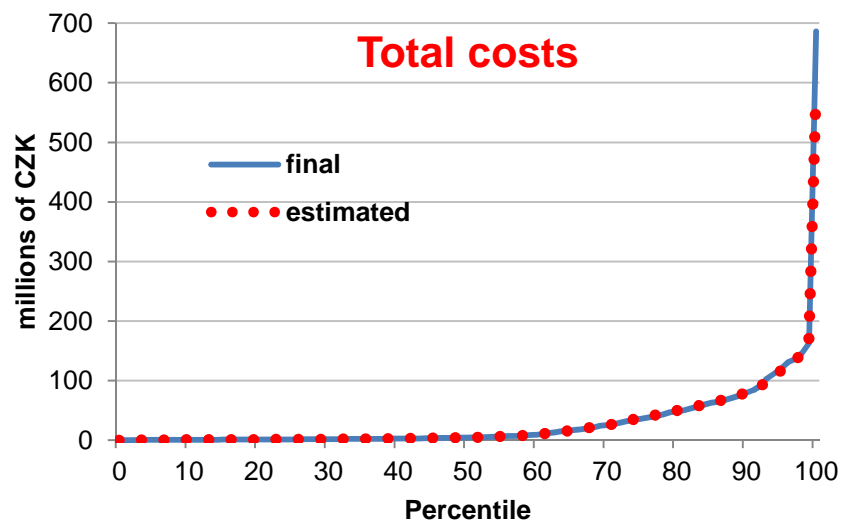
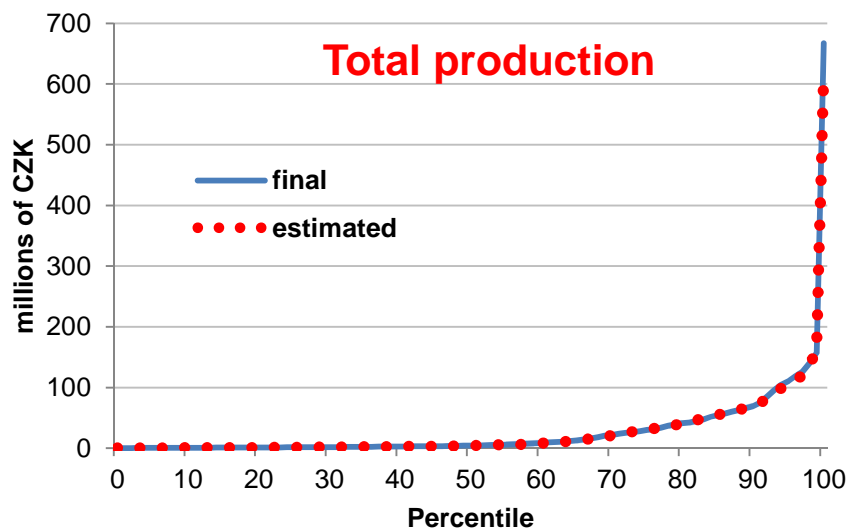
# Testing of step II – weighted 2012 results comparison



## Testing of step II – weighted 2012 results comparison

Millions of CZK		2012	2012e	Final vs. Estimated %
SE131	<b>Total output</b>	<b>125 859</b>	<b>124 509</b>	<b>-1,07%</b>
SE135	Total crop output	69 832	70 059	0,33%
SE140	Cereals	33 308	33 551	0,73%
SE160	Oil seed crops	13 664	14 331	4,88%
SE170	Vegetables	3 887	3 811	-1,95%
SE175	Fruit	1 152	1 165	1,07%
SE195	Forage crops	7 138	7 347	2,92%
SE206	Total livestock output	44 501	45 466	2,17%
SE216	Cow´s milk and products	21 480	22 081	2,80%
SE220	Beef and veal	8 355	7 572	-9,37%
SE225	Pigmeat	7 539	7 127	-5,47%
SE235	Poultrymeat	4 578	4 071	-11,09%
SE270	<b>Total inputs</b>	<b>139 351</b>	<b>139 417</b>	<b>0,05%</b>
SE275	Total intermediate consumption	93 622	95 214	1,70%
SE281	Total specific costs	52 936	52 169	-1,45%
SE285	Seeds and plants	6 397	5 913	-7,58%
SE295	Fertilisers	8 659	9 179	6,01%
SE300	Crop protection	7 305	7 333	0,37%
	Total feed	24 237	25 108	3,60%
SE336	Total farming overheads	40 685	43 045	5,80%
SE365	Total external factors	31 907	31 311	-1,87%

# Testing of step II – farm distribution comparison FADN 2012



# Limitations

**Extreme weather and its unexpected impacts on production  
(drought, flood, spring frost, hail, heavy rain)**

**Change of political decisions**

**Prices of production available from the Czech Statistical Office not weighted by volume  
of production**

**Volatility of prices**

**Information on subsidies not comprehensive in the course of year  
(difficult to estimate real payments)**

**Model does not include forecast of structural change and assets**



**THANK YOU FOR YOUR ATTENTION**

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