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**Agroscope**

# Change in agricultural income estimate due to the introduction of the Swiss random sample

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# Outline

- Start of new time series from the year 2015
- Quantification of and reasons for the break in the time series of...
  - farm income
  - work income (remuneration of family labour input)
- Conclusions



# NEW TIME SERIES



# Start of new time series from 2015

- Time series until 2014 based on the **old system**
- **From 2015** a new time series starts based on the new **random based sample**
- Break in time series: **Shift downwards**
- **Quantification of break** possible based on comparison of agricultural income in old and new system in the year 2014



# Two estimates in SpE 2014

- **Problem!**

- Sampling plan in 2014 was suboptimal.

**Substantial change in sampling plan from 2014 to 2015**

- **Two ways to estimate 2014**

A: Average of full sample 2014.

Comparing macroeconomic development with

FADN shows: **FADN estimate 2014 seems to be too low!**

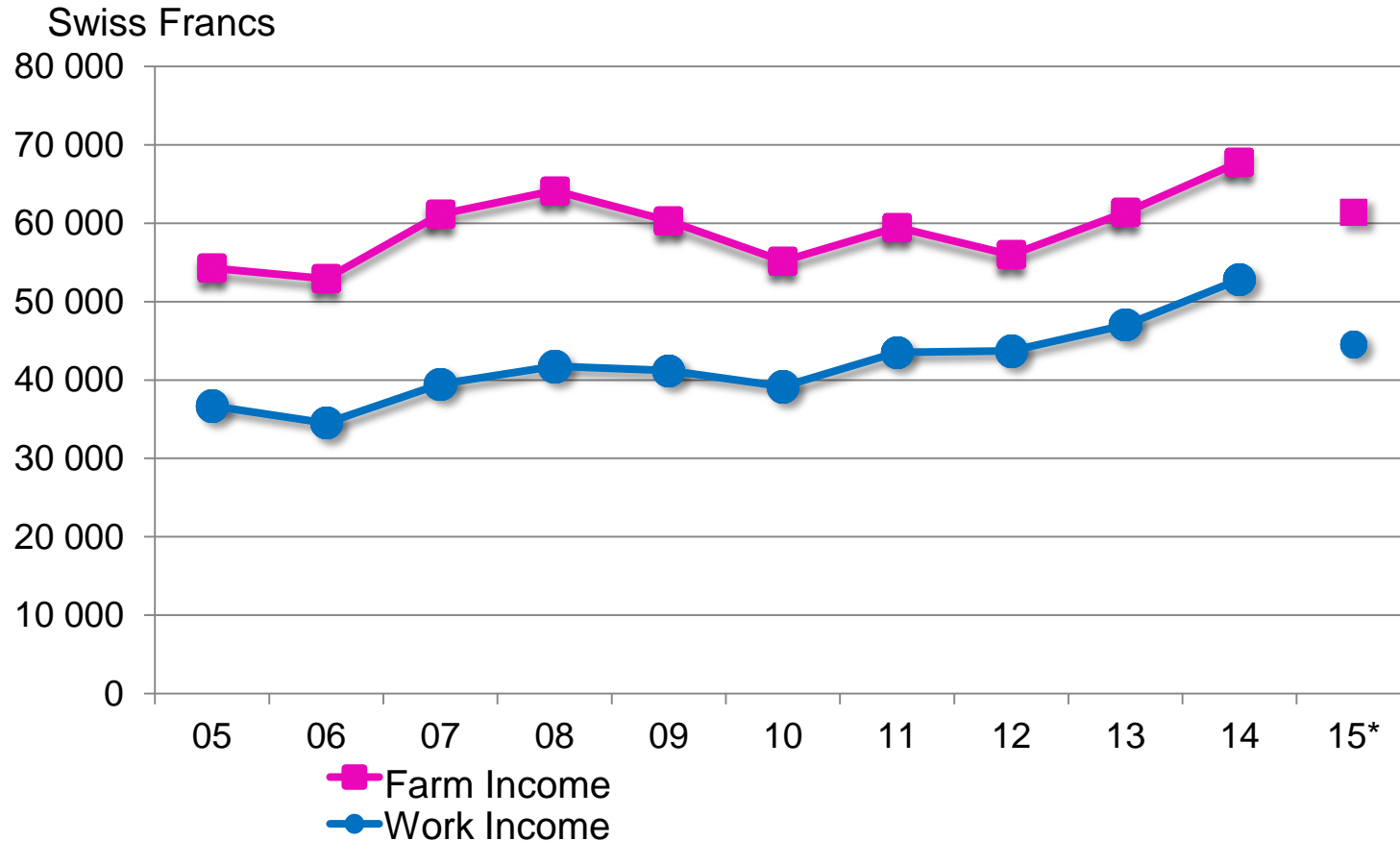
**(Should be higher)**

B: Calculate 2014 based on full sample in 2015 taking into account the relative change of the balanced sample 2014/15.

→ Calculate “backwards” from 2015 to 2014.



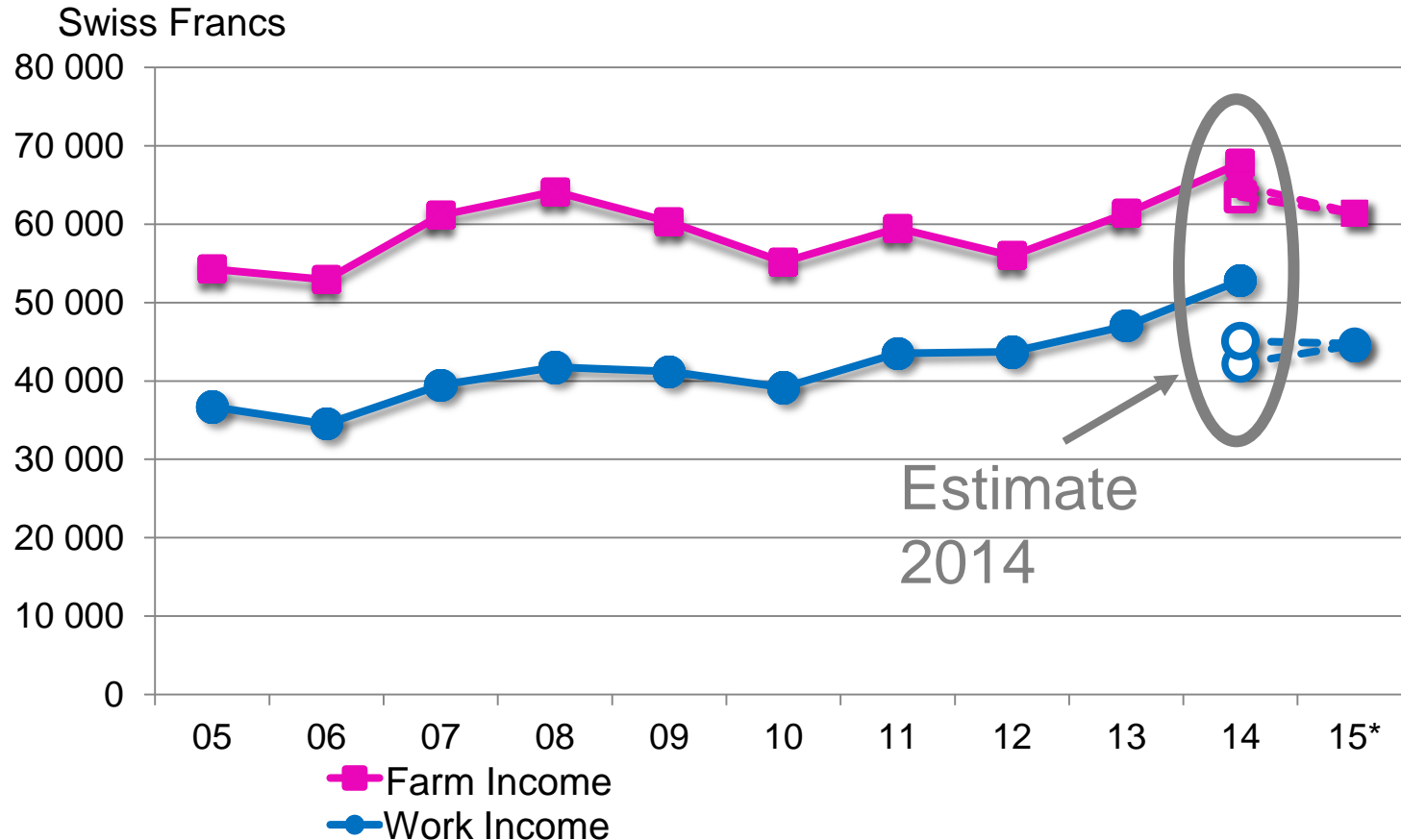
# Break in time series



Source: Agroscope, Swiss FADN



# Break in time series



Source: Agroscope, Swiss FADN

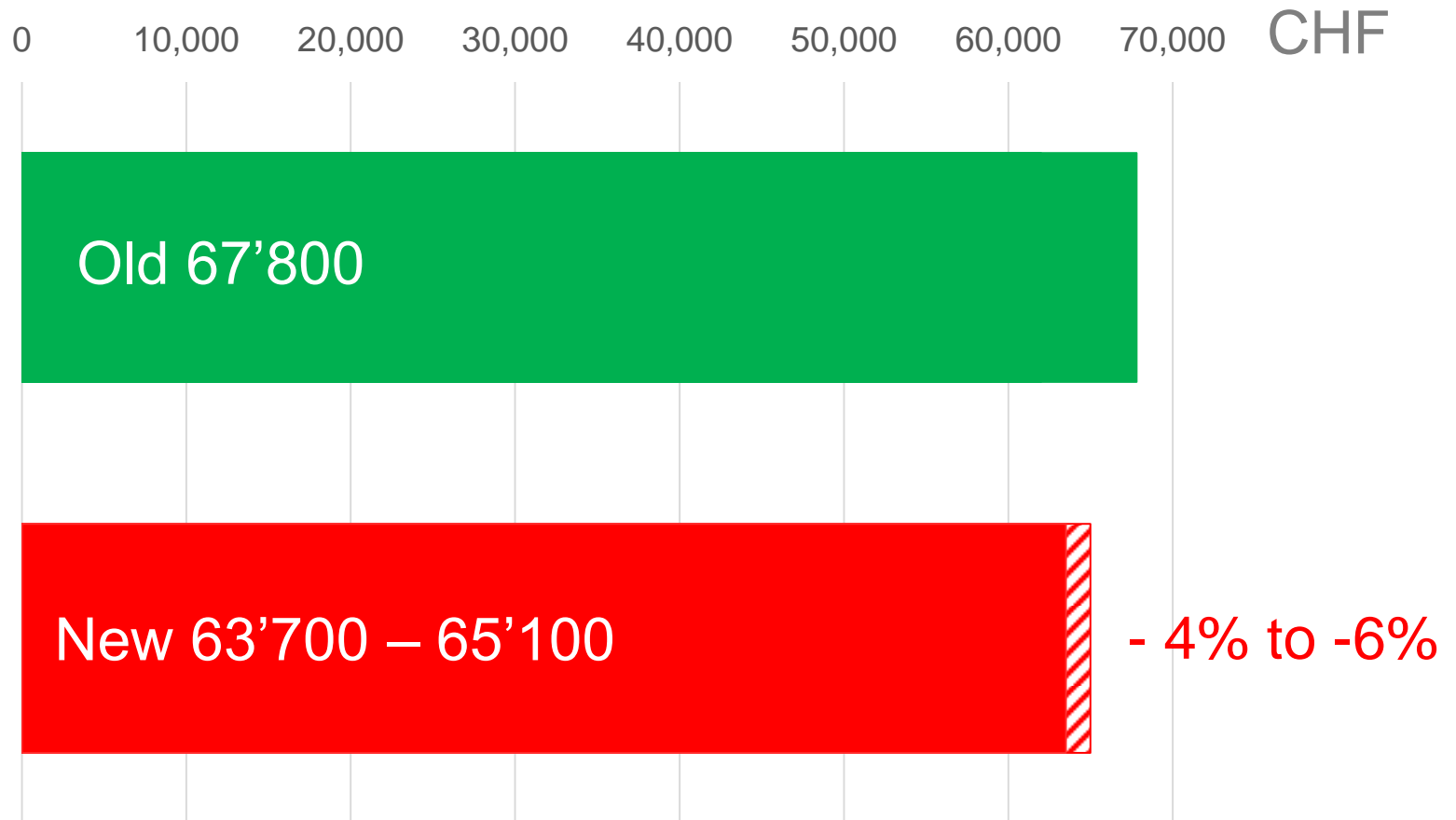


# QUANTIFICATION OF BREAK IN FARM INCOME





# Farm income 2014



Source: RefB/Old FADN system. SpE/Random FADN sample (2 estimates)



# Reasons for break in farm income

## 1. Methodological changes in accountancies:

From analytical accounting to financial accounting (tax optimized)  
Updated calculation of farm income

## 2. New definition of statistical **population**

## 3. **Random sample**

## 4. Other reasons:

- **New weighting method:** Calibration instead of post stratification
- **New farm typology**



- Residential house: House belongs to farm. Family has to pay rent.
  - Old: Economic rent (est. real costs, higher rent -> higher farm income)
  - New: Imputed rental value (for taxes, lower rent -> lower farm income)

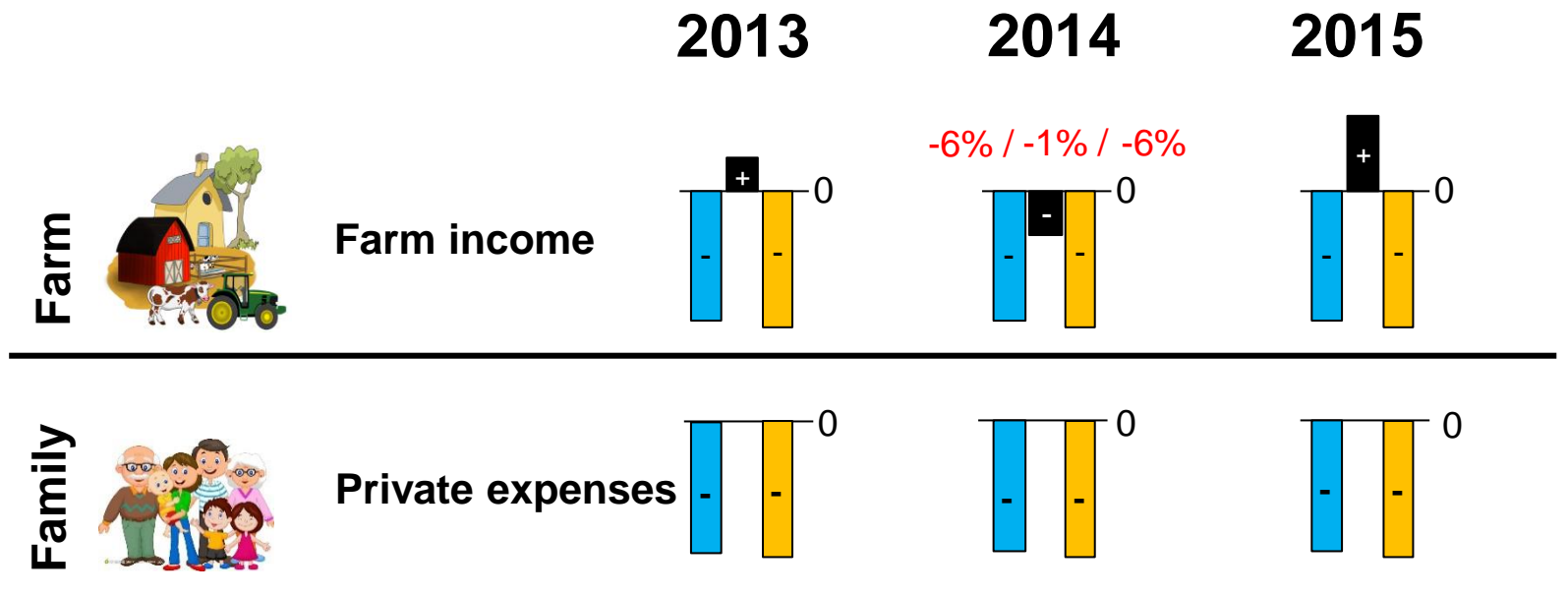
Shift: farm - family

- Depreciation
  - Old: Linear
  - New: Optimized for taxes (higher yearly fluctuation)

Shift over years

- Social insurance and retirement provision of family labour
  - Old: 0% farm costs, 100% private costs
  - New: 50% farm costs

Shift: farm - family





# Definition of the population

- *Old system*: physical minimal sizes, e.g.:
  - 10 ha UAA (usable agricultural area)
  - 6 dairy cows
- *New system*: minimal standard output (95% criteria), e.g. in 2014:

Plain region	Hilly region	Mountains
Fr. 80'000	Fr. 54'600	Fr. 34'800

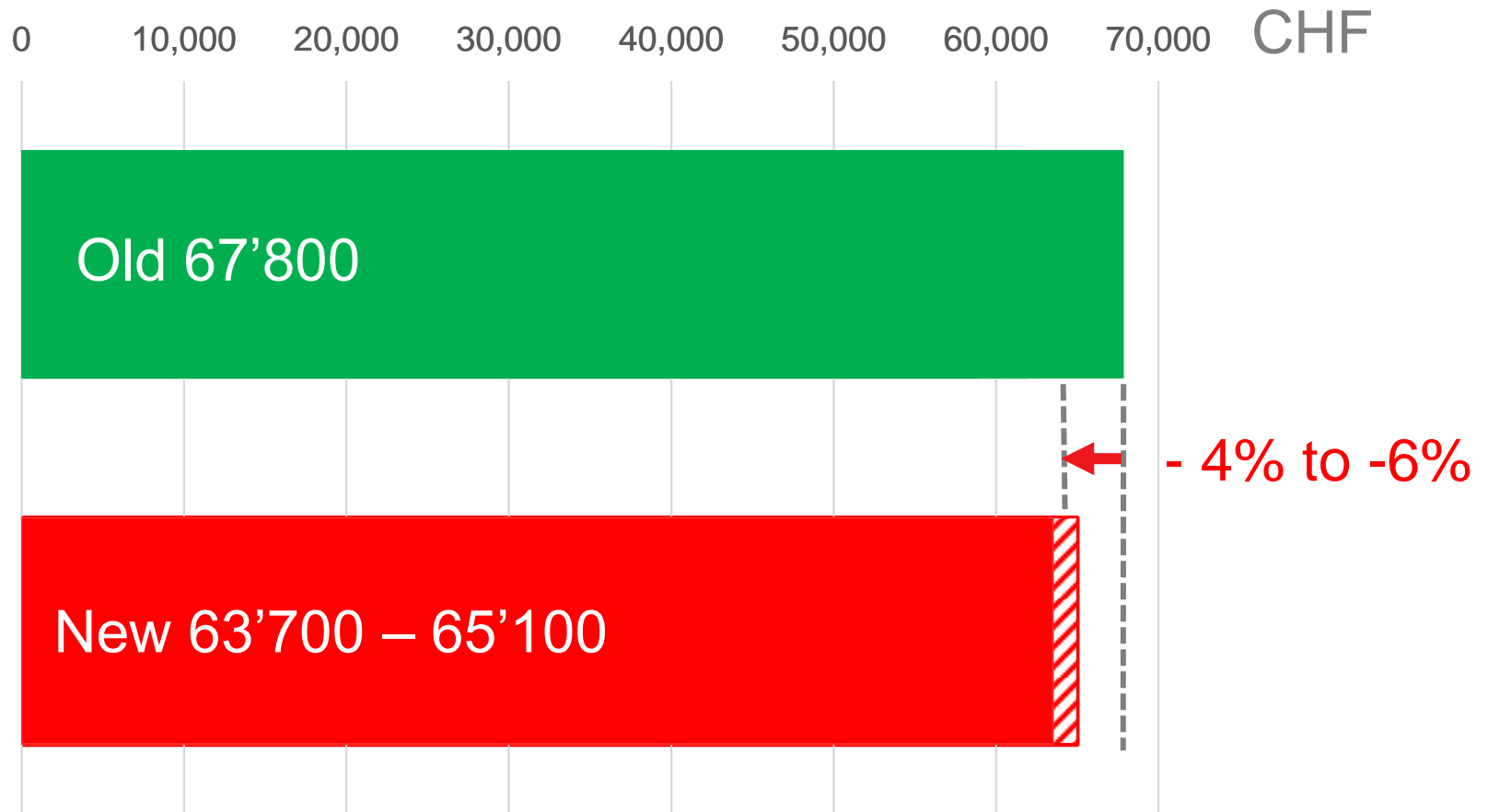
Sample also contains group/collective farms

➤ Average farm size increases:	<b>UAA</b>	<b>LU</b>	<b>SGM</b>
	+8%	+13%	+14%

UAA: usable agricultural area, LU: livestock units, SGM: standard gross margin



# Farm income 2014

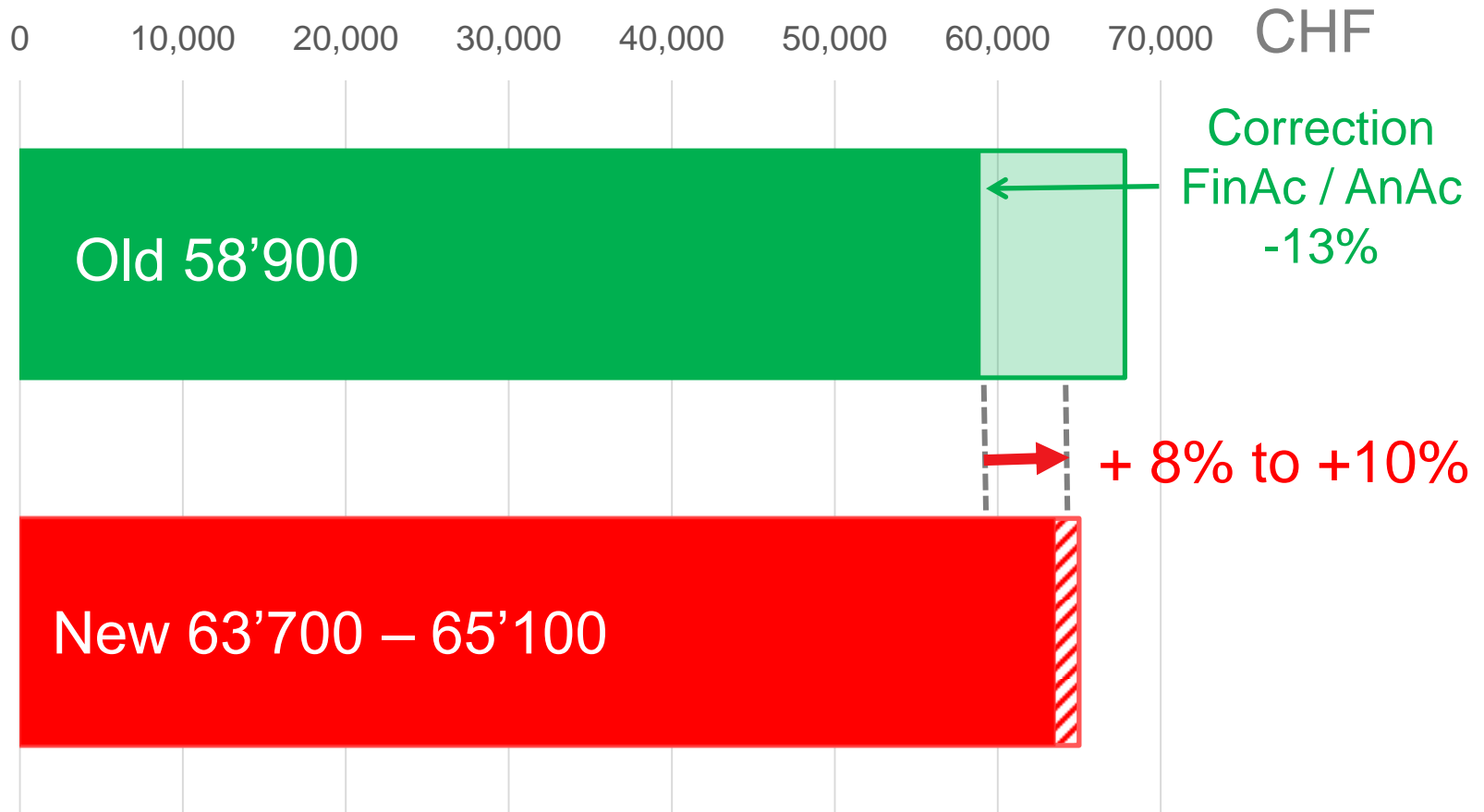


Source: RefB/Old FADN system. SpE/Random FADN sample



# Farm income 2014

(Old system adapted to new methodology)

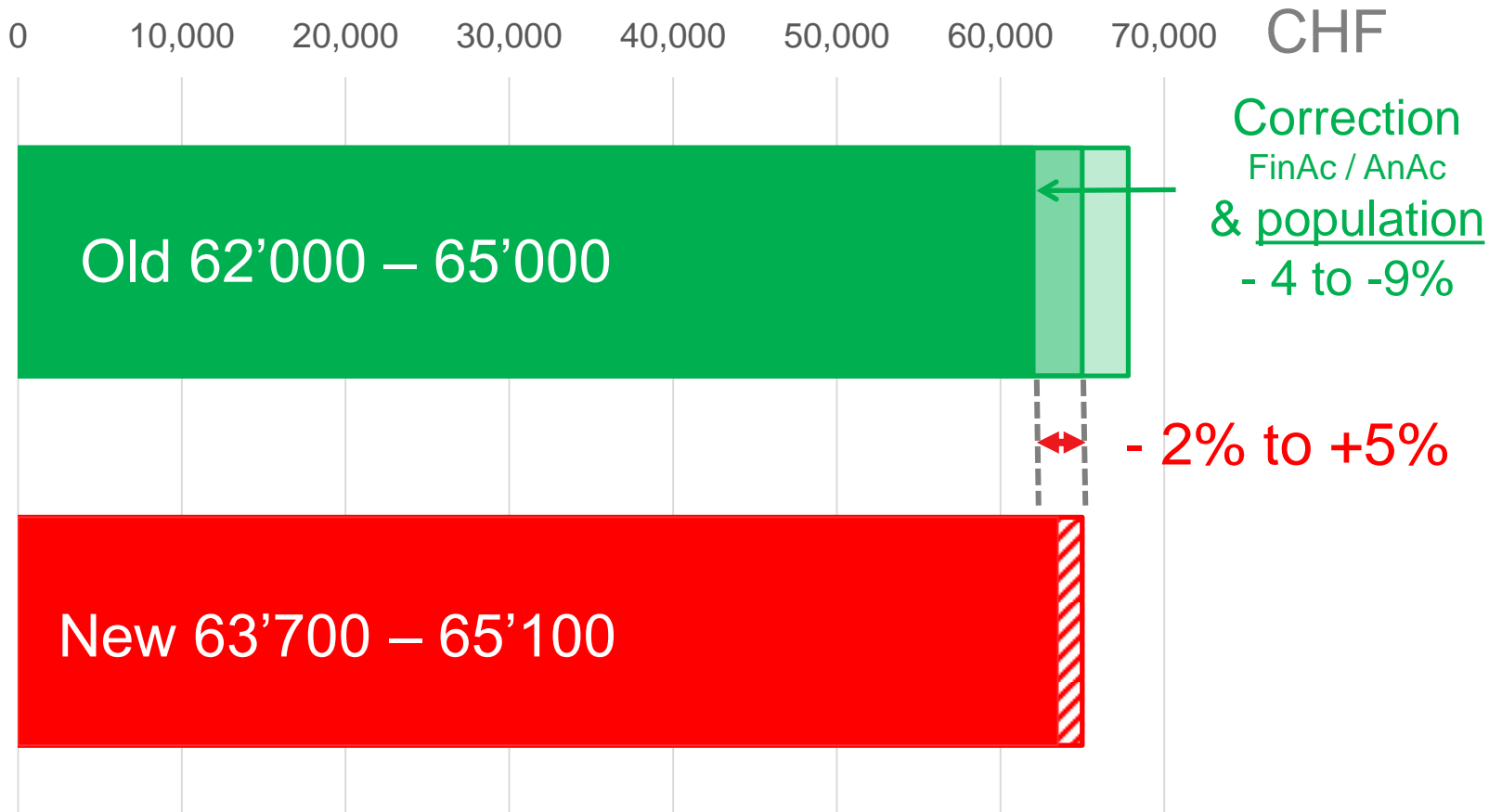


AnAc: Analytical Accountancies, FinAc: Financial Accountancies  
Source: RefB/Old FADN system. SpE/Random FADN sample



# Farm income 2014

(Old system adapted to new methodology)



Source: RefB/Old FADN system. SpE/Random FADN sample



# Remuneration of family labour

- Calculation of work income (WI) per family annual working unit (FAWU) :

$$WI \text{ per FAWU} = \frac{(\text{farm income} - \text{calc. costs equity})}{FAWU}$$

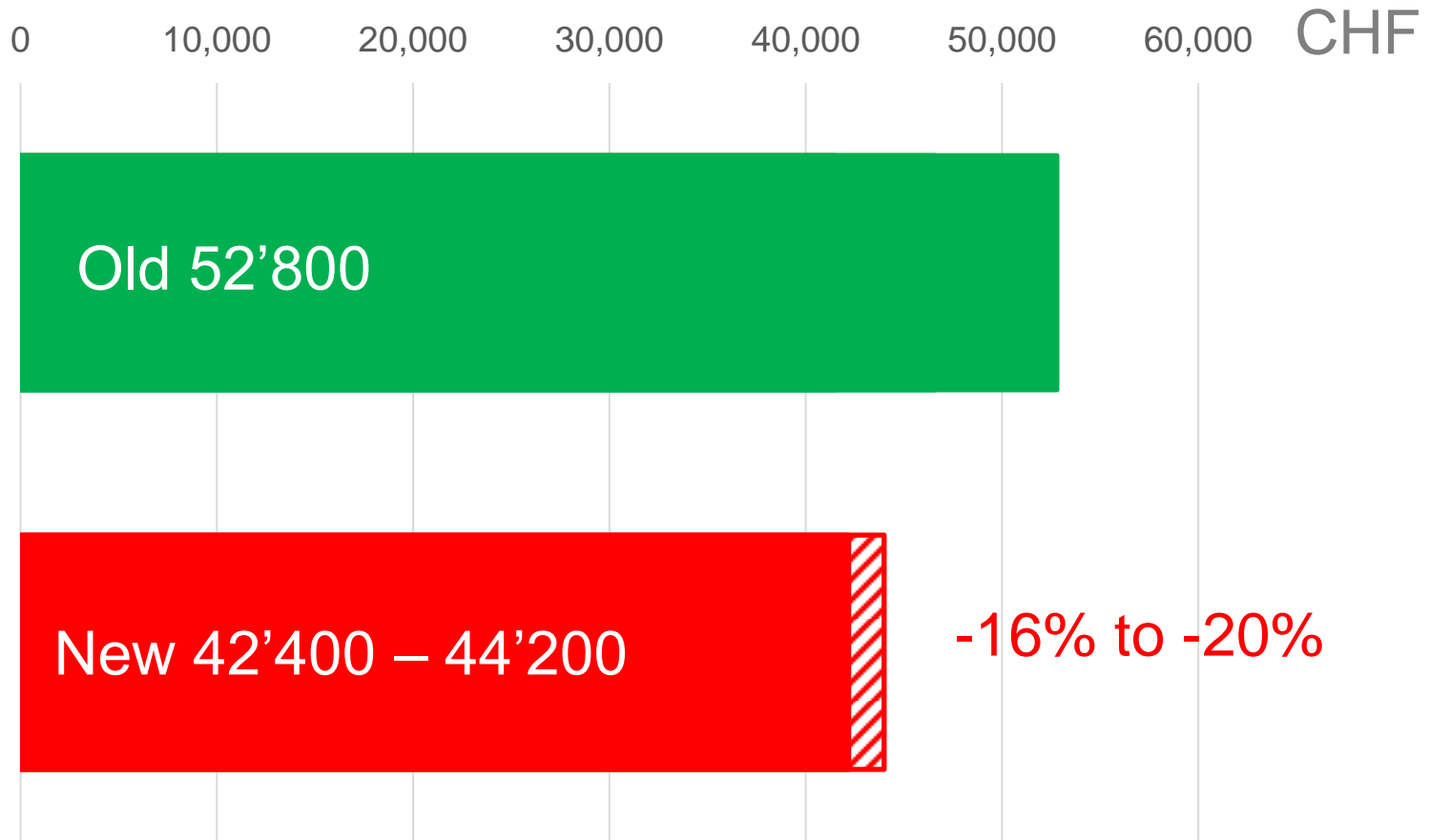
- where:

$$\text{calc. costs equity} = \text{equity} * \text{interest Swiss Conf. bonds}$$





# Work income per family labour unit



Source: RefB/Old FADN system. SpE/Random FADN sample

# Reasons for the break in work income per family working unit

	Old	New	Difference
<b>Farm income (CHF)</b>	67'800	63'700 to 65'100	-4% to -6%
- calc.costs eq.(CHF)	-3'600	-3'400 to -3'300	-5% to -8%
<b>= Work income (CHF)</b>	64'200	60'300 to 61'800	-4% to -6%
<b>/ annual working units</b>	1.22	1.42 to 1.40	+15% to +16%
<b>= WI / FAWU (CHF/...)</b>	<b>52'800</b>	<b>42'400 to 44'200</b>	<b>-16% to -20%</b>

Lower farm income and higher family labour input cause dramatically lower work income per family labour unit.

WI: work income, FLU: family labour unit



# Conclusions

- The introduction of the new random based sample led to break in the time series of farm income and work income per family labour unit.
- There are several reasons for the break. An exact quantification of all influencing factors is not possible.
- Despite larger farms in the new sample and the newly defined population, the estimate of farm income and work income decreases by 4 to 6% and 16 to 20%, respectively.
- The introduction of the new sample has shown that work income was massively overestimated with the old FADN system.



# Thank you for your attention



**Agroscope** good food, healthy environment



# Literature

## Methodik:

- Hoop D., 2016. Harmonisierte Berechnung des landwirtschaftlichen Einkommens und des Arbeitsverdienstes in der Zentralen Auswertung von Buchhaltungsdaten.
- Hoop D., Schmid D., 2016. Betriebstypologie ZA2015 (BT-ZA2015).

[www.agrarmonitoring.ch](http://www.agrarmonitoring.ch) → Stichprobe Einkommenssituation → Methodische Grundlagen

## Daten(auswertungen) 2014/2015:

- Hoop D., Jan P., Renner S., Dux D., Schmid D., 2016. Grundlagenbericht 2015.
- Dux D., Schmid D., Jan P., Hoop D., Renner S., 2016. Die wirtschaftliche Entwicklung der schweizerischen Landwirtschaft 2015. Hauptbericht Nr. 39 der Zentralen Auswertung von Buchhaltungsdaten.

[www.grundlagenbericht.ch](http://www.grundlagenbericht.ch)

## Neues Rechnungslegungsrecht:

- AgroTwin AG, 2014. Kontenrahmen KMU-Landwirtschaft –Revision 2013. Bern.

[www.agrotwin.ch](http://www.agrotwin.ch)