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Federal Department of Home Affairs FDHA  
**Federal Statistical Office FSO**

# Future development of the educational level in Switzerland

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Swiss Statistics



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# Overview of the FSO's education forecasts

Goal : Assist educational planning in Switzerland (at national, regional and institutional levels)

- Highly detailed modelling of flows in the education and training system
- Data sources: FSO's comprehensive surveys
- Yearly; horizon: 10 years
- Output: school students/university students, diplomas/degrees, human resources, indicators
- Universities: MAPE < 2% for the first 4 years of projection

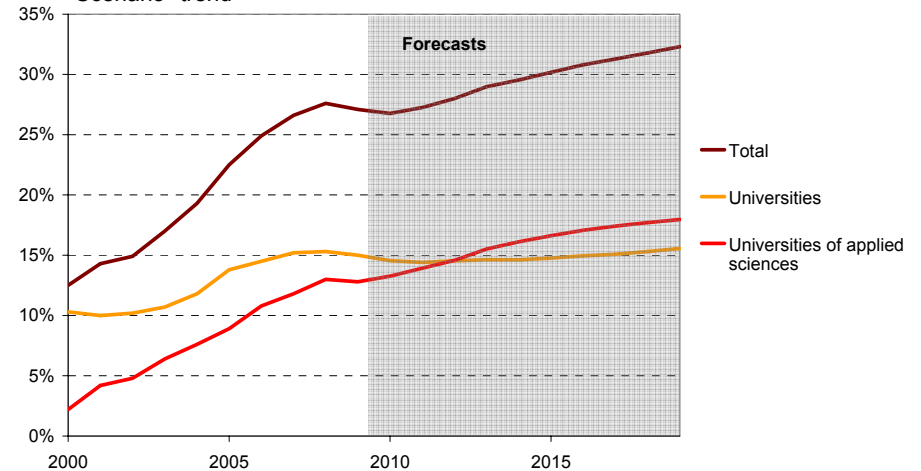


# Some consequences of this work

- Better understanding of the education and training system and its "dynamics" (structural effects, reforms, "upgrade", trends, ...)
- Forecasts of the future flow of new graduates

Tertiary-type A graduation rate

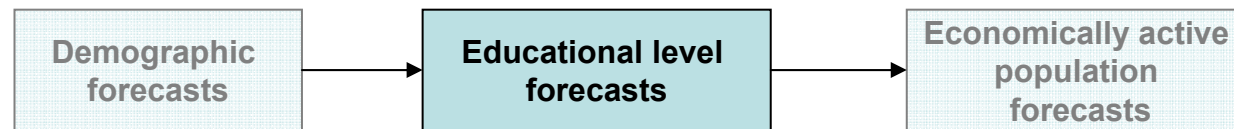
Scenario "trend"





# Educational level forecasts – Model

Part of FSO population forecasts 2010-2060



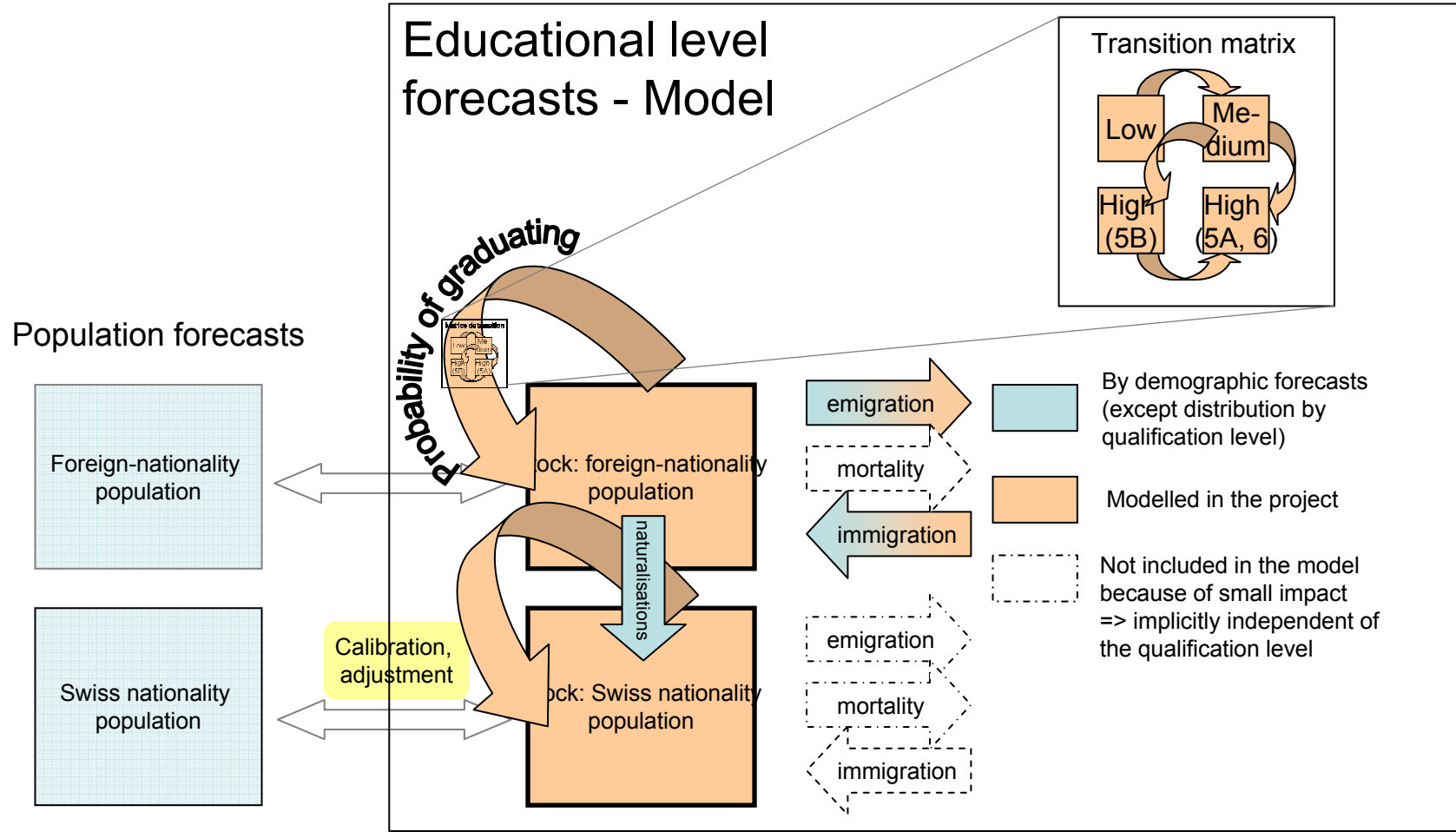
Model for the educational level:

- hierarchical multistate model. States/strata: age, sex, nationality (Swiss, foreign), educational attainment (4 levels)
- taking account of migration flows by educational level

Data: Labour Force Survey (LFS) for the stock and the transition probabilities (flow) => coherence



## Educational level forecasts - Model





# Taking account of migration flows by educational level

## Why?

- Since 2003, substantial immigration to Switzerland with approx. 60% with a tertiary-level degree
- Influence on the structure of the foreign population in Switzerland

## Model:

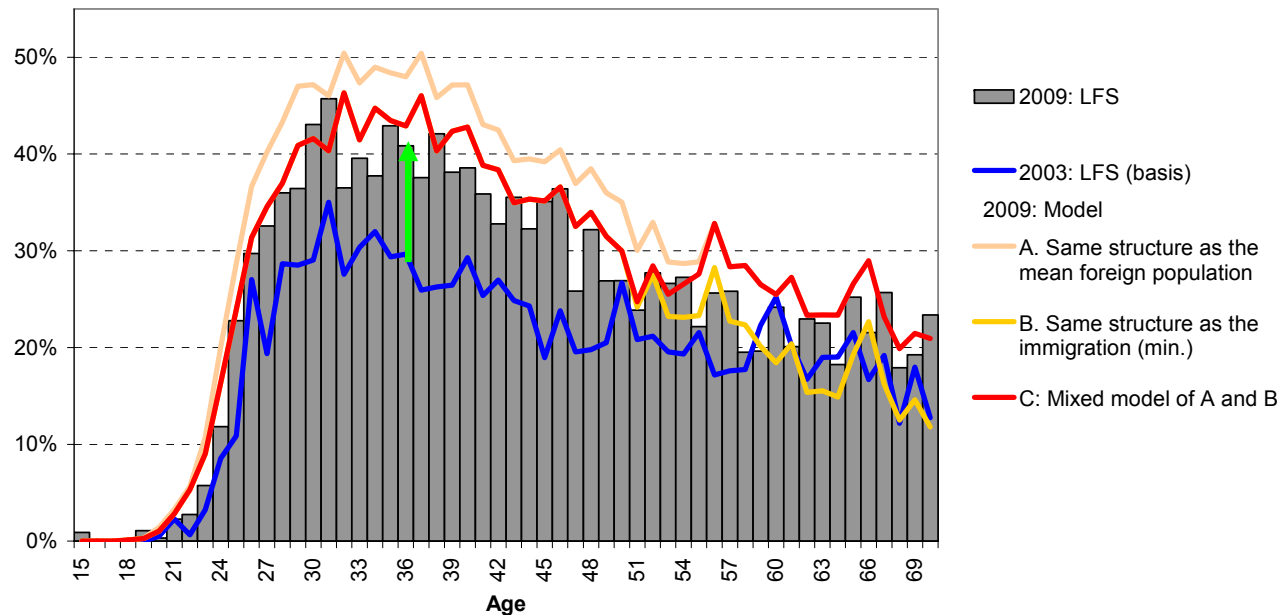
- Immigrants, educational level: LFS
- Emigrants, educational level not measurable => determined by modelling the foreign population



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# Structure of emigration: based on the educational level of the foreign population

Proportion of the foreign population in Switzerland with a high educational level  
Comparison between forecasts and observations for different hypotheses regarding the emigration structure



Good constraints by modelisation  
⇒ emigration structure ~ immigration structure

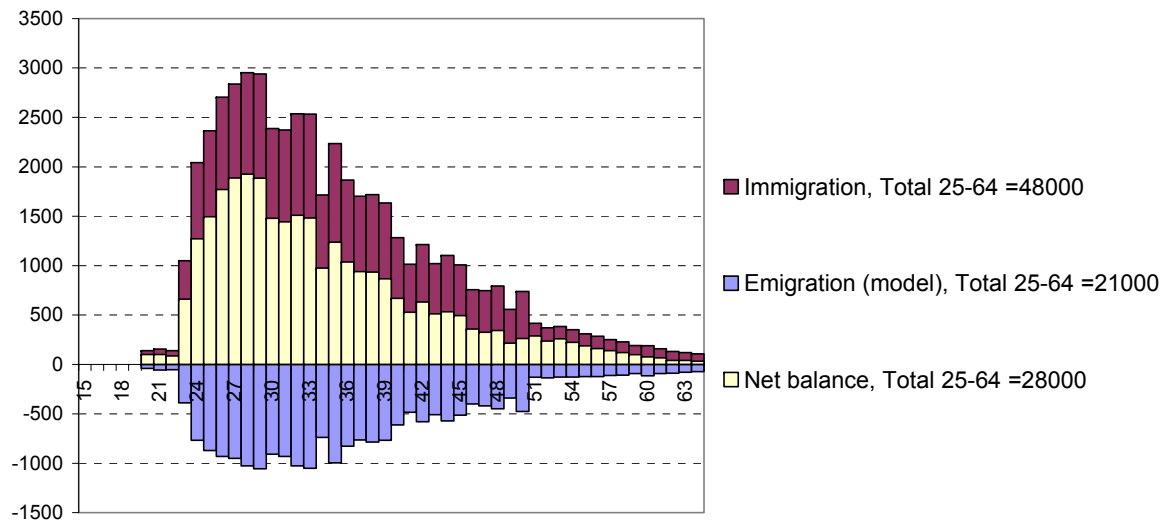




# Import of high qualifications

## Flow of high qualifications

Persons, mean 2004-2009, by age



- Net balance = 28000 / Y. To be compared with the approx. 50000/Y degrees awarded.
- 2004-2009: impact of approx. 1.5 % points on the proportion of tertiary education graduates

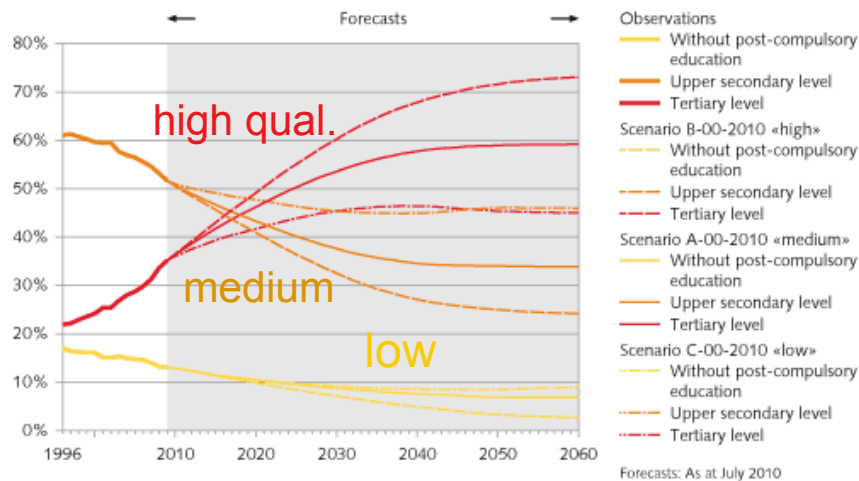


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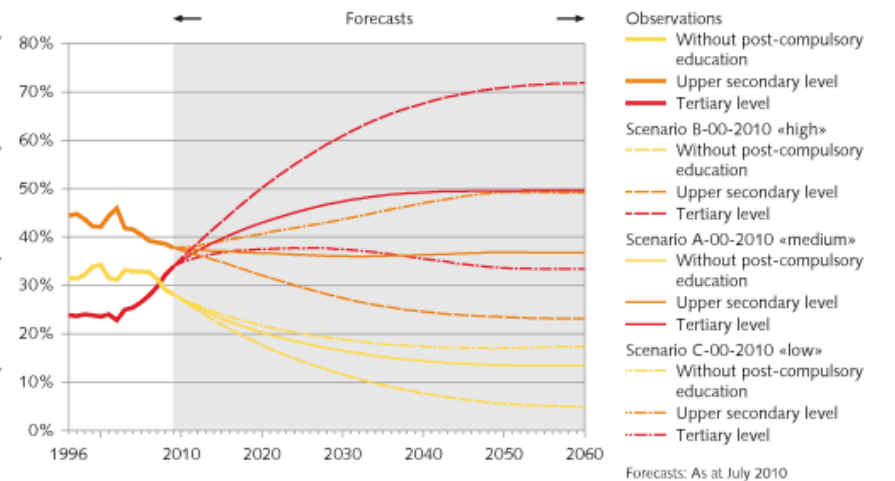
# 2010-2060 forecasts : Main results

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2010-2060 scenarios for the population development  
Level of education of population aged 25 to 64 in Switzerland



2010-2060 scenarios for the population development  
Level of education of foreign population aged 25 to 64



Whole population of Switzerland

Foreign population of Switzerland

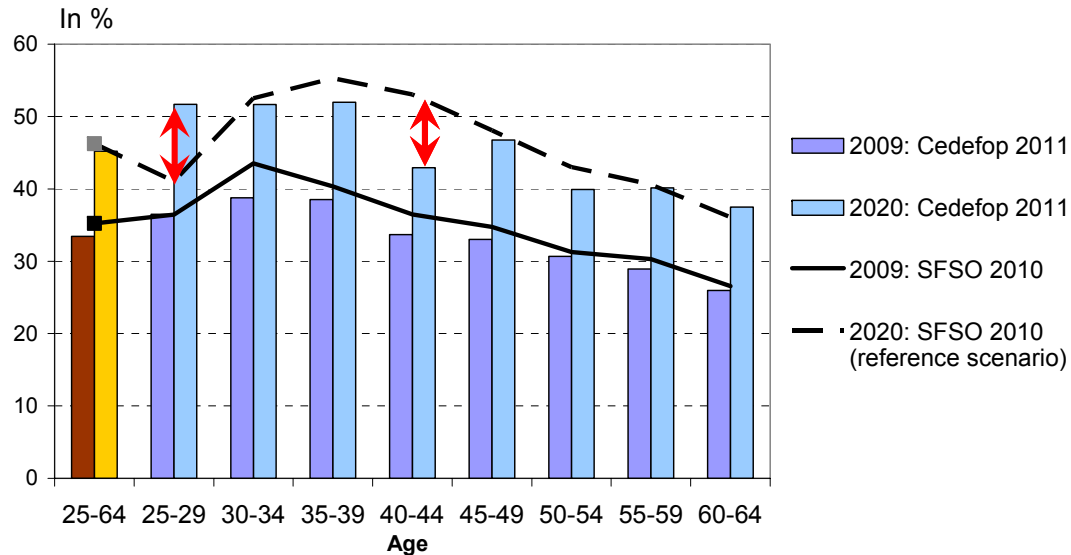
=> Large increase of the % of persons with high qualifications



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# Comparison between SFO forecasts and those of CEDEFOP

Percentage of high-qualification in the Swiss population, by age



- Global results for 2020 are in very good agreement
- Differences in age structure. Interpretation: CEDEFOP-2011 flow by age for CH not totally coherent with the stock



# Preliminary conclusion

Model and projections



However...

How does the educational level that people say they have compare with the one we think they have (according to standard definitions)? What exactly are we talking about? Not only a methodological issue.

=> Detailed analyses of the flow of new graduates are necessary



# Determining the flow: Methods

## Longitudinal analyses

- **“LFS-T”**: based on LFS by "differentiating" the stock
- **“LFS-L”**: based on the LFS panel
- **“EduSys”**: based on education system data
- Other

Advantages	Disadvantages
Coherent with the stock by definition	Difficulty of isolating appropriate populations, possible biases, applicable only for 3 levels.
Direct determination of the flow based on the panel. In principle coherent with the stock. Applicable to a large number of levels.	Potential problems in the panel (e.g. interviews, weighting)
"Objective" determination of the flow. Comprehensive data.	Not necessarily coherent with stock (potential problems with coverage, definition), potential double-counting problems
Additional information for subpopulations	Problems of coherence



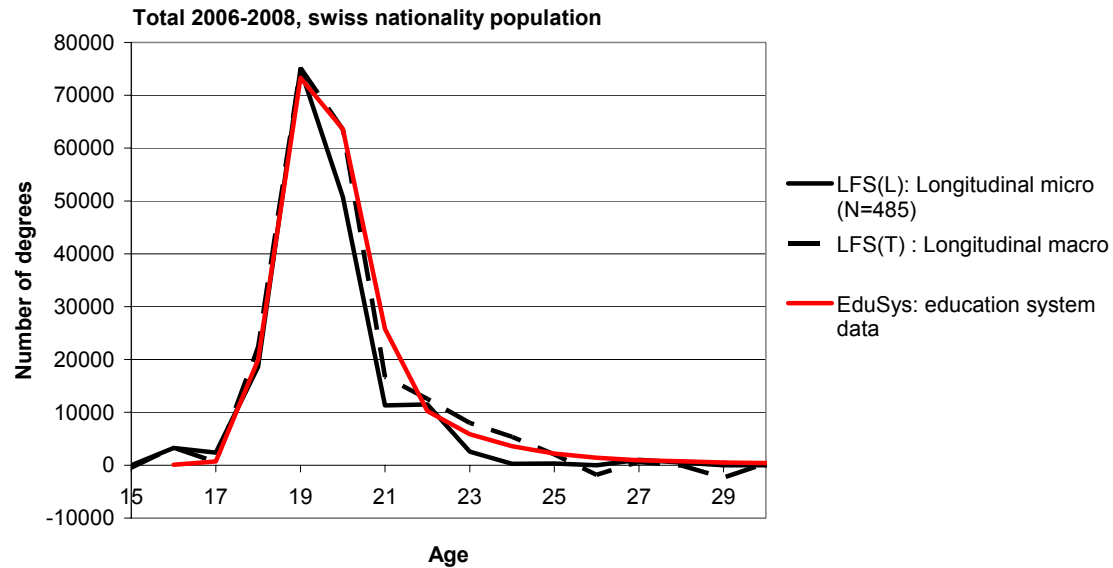



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# Comparison of methods

## I. From low to medium qualification

Number of degrees awarded in the upper secondary programmes  
(ISCED 3/4, medium qualification)



- Good agreement 
- Some uncertainty on the % of the population who do not graduate

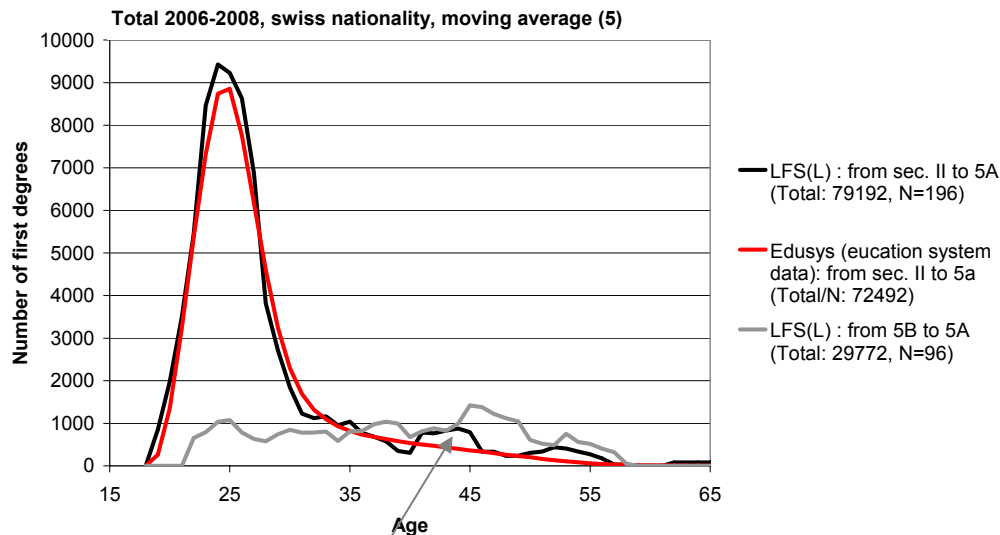


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# Comparison of methods

## II. To high qualifications (Universities, ISCED 5A/6)

Number of first degrees awarded in the swiss universities  
(ISCED 5A/6, high qualification)



- Good agreement for the transition from ISCED 3/4 to 5A/6 (diff. < 9%)
  - From LFS(L): large number of transitions from 5B to 5A/6 (but N=96...).
- Cause: continuing education?

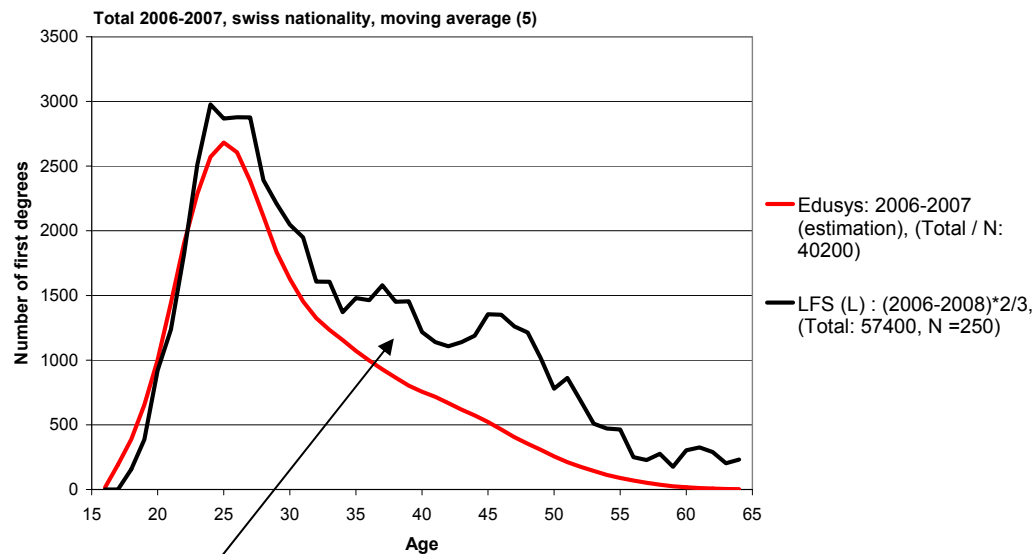




# Comparison of methods

## III. To high qualifications (ISCED 5B, Professional Education and Training)

Number of first degrees from professional education and training programmes (ISCED 5B, high qualification)



- 40% more graduates in LFS (L), not the same age distribution.
  - 5B: complex and important domain in Switzerland (difficult to measure).
- Continuing education? Analyses underway

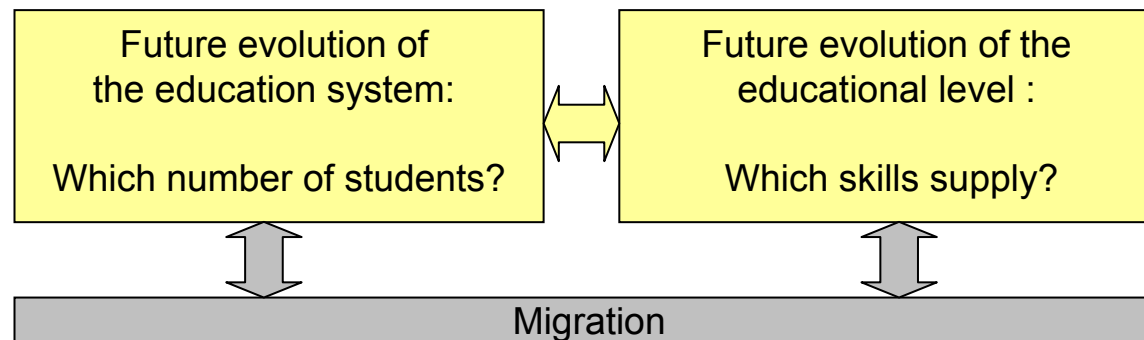


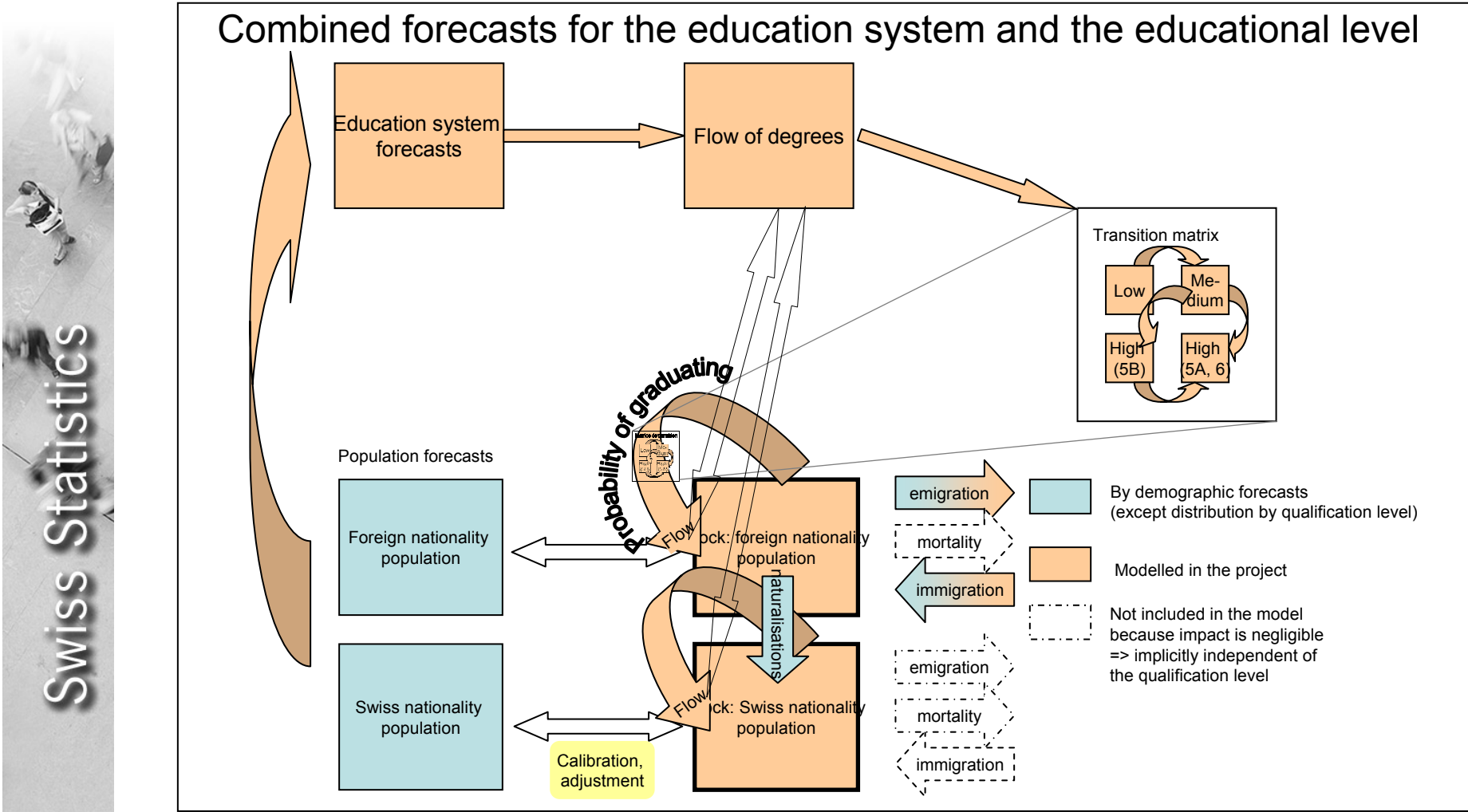
## Next step

**Coherent** global forecasts for the education system and educational level

Why?

- Allows connecting developments in the education system, its output and the population structure
- Better hypotheses/forecasts, deeper understanding, more usable by the stakeholders





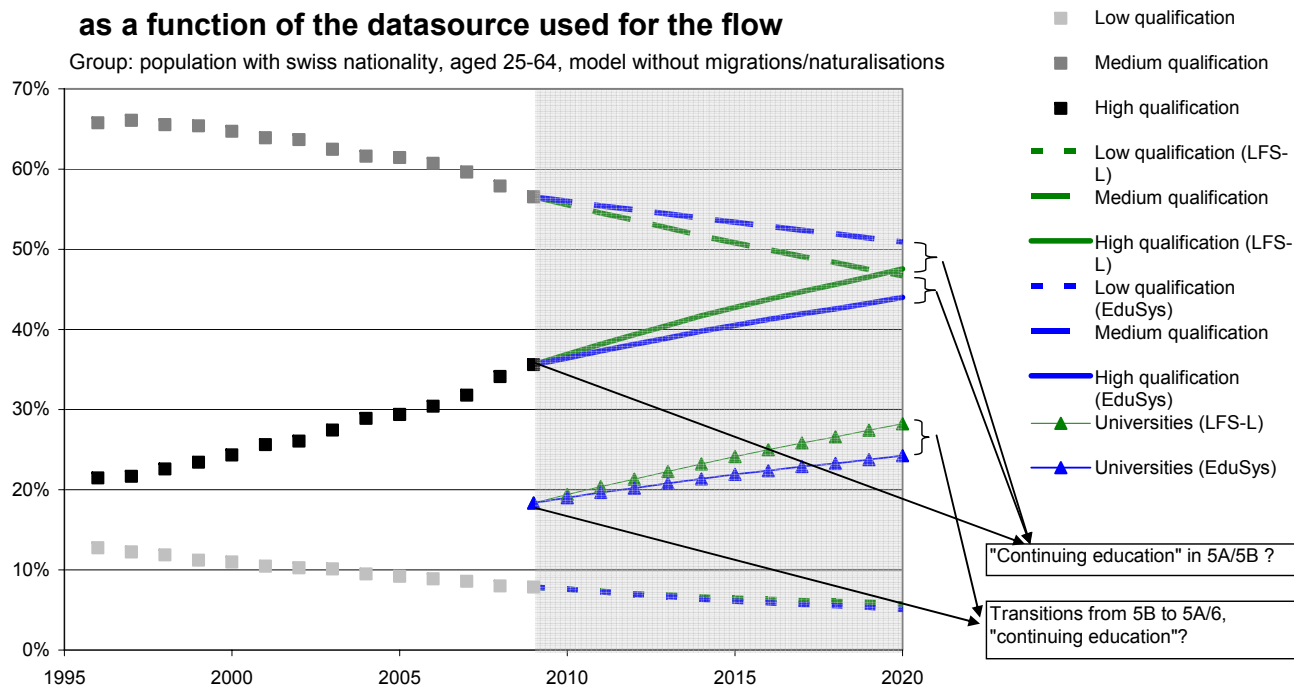


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# Preliminary results:

## Level of education of the population of Switzerland as a function of the datasource used for the flow

Group: population with swiss nationality, aged 25-64, model without migrations/naturalisations



Part of the past/future evolution of the educational level could be due to continuing education.





# Closing remarks

- Model and quality OK
- Very good agreement for the educational level 2020 with CEDEFOP (2011) (apart from the age structure)
- Comparisons between LFS and number of degrees awarded => number of implications, including improvement of sources
- For long-term projections it is important to make global, and thus coherent, forecasts both for the educational level and the education system:  
Skills supply ↔ Number of students



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# Thank you for your attention!

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