

HUMAN CAPITAL FORMATION AT THE FCC

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Definition and objectives

- **Value of training impact** of the FCC: the benefits that students and early-career researchers (ECRs), who spent at period of research at CERN, are expected to enjoy when enter the labour market after their years of service at CERN
- In the FCC socio-economic impact model, the value of training impact will be evaluated in terms of a **salary premium** that ECRs will gain during their working life as compared to their peers without the CERN experience
- **Objectives:**
 - show the model to estimate the FCC value of training impact
 - introduce preliminary evidence on input data feeding into the model

- Camporesi (2001)
- Florio, Forte, Sirtori (2016)
- Catalano, Florio, Morretta, Portaluri (2018)
- Florio (2019)
- Bianchin, Giacomelli, Iconomidou-Fayard, Niedziela, Sciascia (2019)
- European Commission (2021)

- Camporesi, Catalano, Florio, Giffoni (2017)
- Catalano, Giffoni, Morretta (2021)

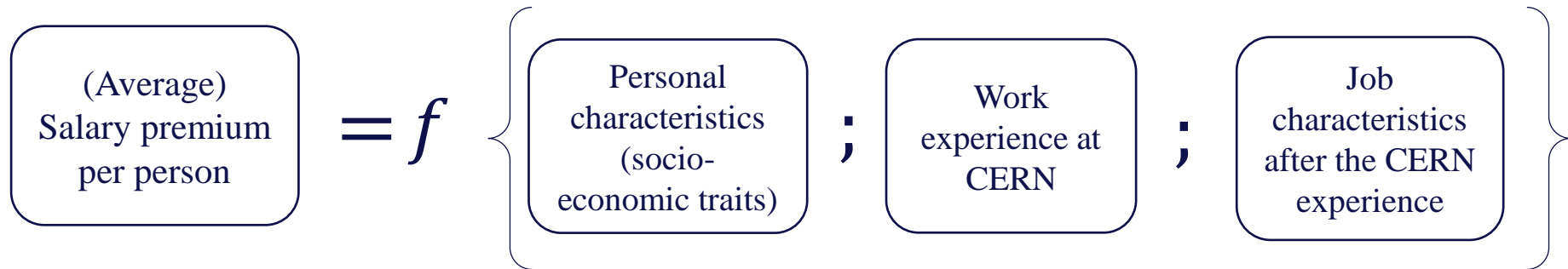
5-12%
CERN
LHC
premium

Model for the evaluation of the FCC value of training

$$\begin{array}{ccc} \boxed{\begin{array}{c} \text{FCC value of} \\ \text{training} \\ \text{(CHF)} \end{array}} & = & \boxed{\begin{array}{c} \text{Number of people} \\ \text{involved in the} \\ \text{FCC-ee scientific} \\ \text{programme} \end{array}} * \boxed{\begin{array}{c} \text{(Average)} \\ \text{Salary premium} \\ \text{per person} \end{array}} \end{array}$$

- **Time horizon:** FCC-ee life cycle 2028 – 2057
- **FCC people to be considered:** people under 30 years old, as they are likely to benefit the most from the training experience at CERN when entering the labour market
- **Salary premium:** the incremental salary that CERN ECRs are expected to enjoy in the labour market as compared to their peers without the CERN experience. The premium depends on several variables.

Salary premium: main determinants



We launched a new survey to investigate on these aspects (still on-going)

Personal characteristics

- Nationality
- Age
- Gender
- Education background

Work experience at CERN

- Duration of stay
- Domain of activity (theoretical vs experimental physics, administration, engineering, etc)
- Skills acquired

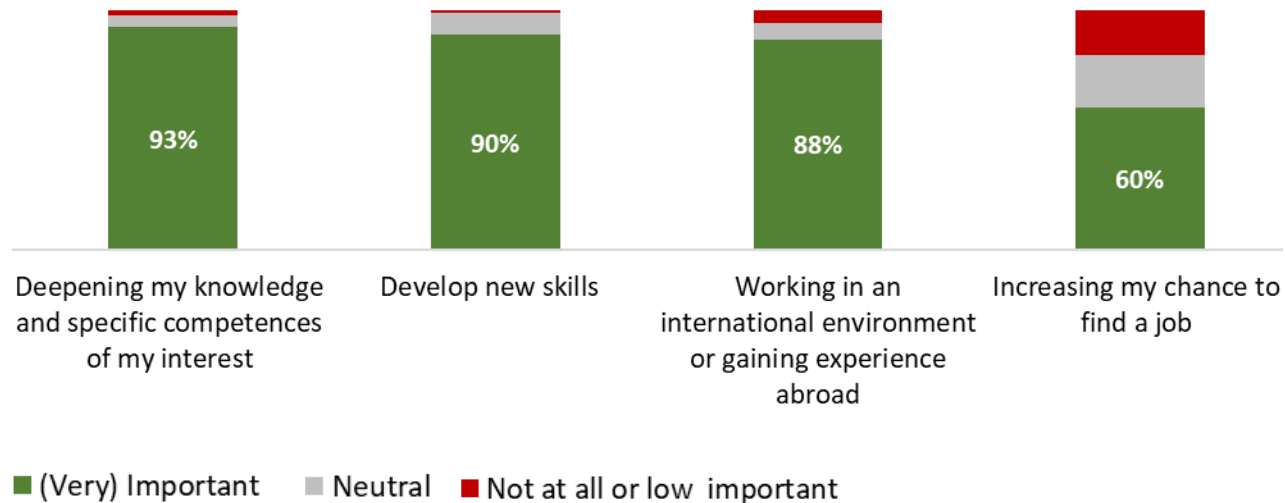
Job characteristics after the CERN experience

- Country of employment
- Sector of employment
- Salary
- Career development
- Duration of the working life (before retirement)

Salary premium: main determinants

Focus on CERN working experience

How do you rate the importance of the following considerations on your decision to apply for a working experience at CERN?

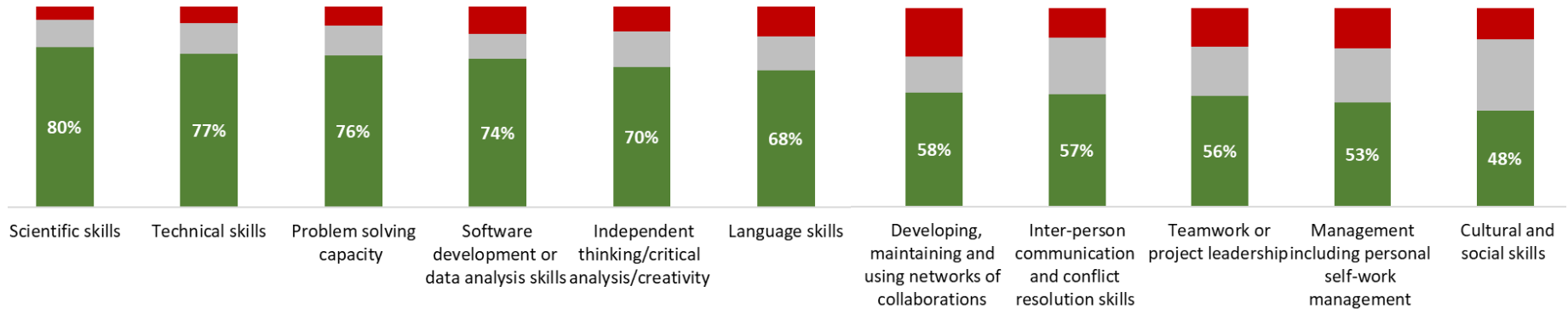


N of answers = 120

Salary premium: main determinants

Focus on the skills acquired at CERN

Thanks to my experience at CERN, I have improved my:



- The acquisition of **hard skills** such as scientific, technical problem solving, and software development are likely to drive career development of CERN ERCs, including they salary. **Soft skills** (communication, cultural and social networks) play a minor role

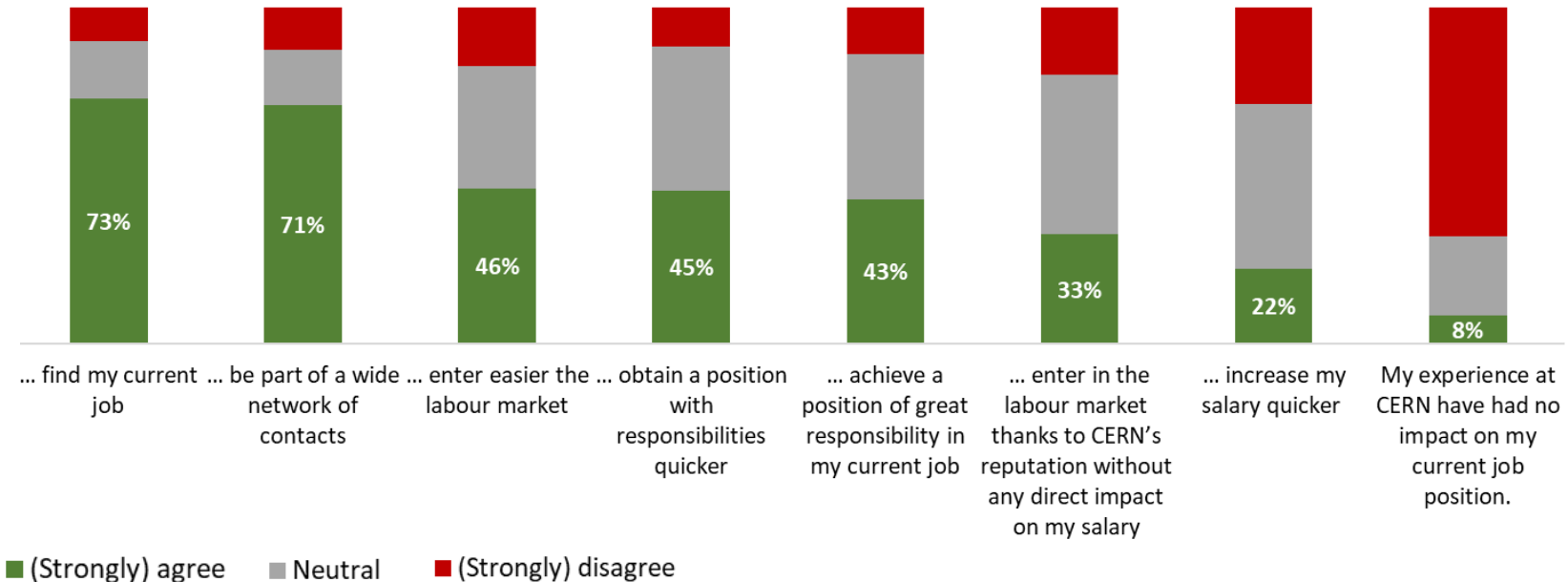
N of answers = 120

■ (Very) Much ■ Somewhat ■ Slightly or not at all

Salary premium: main determinants

Focus on the effects from the working experience at CERN

My experience at CERN helped (will help) me...:



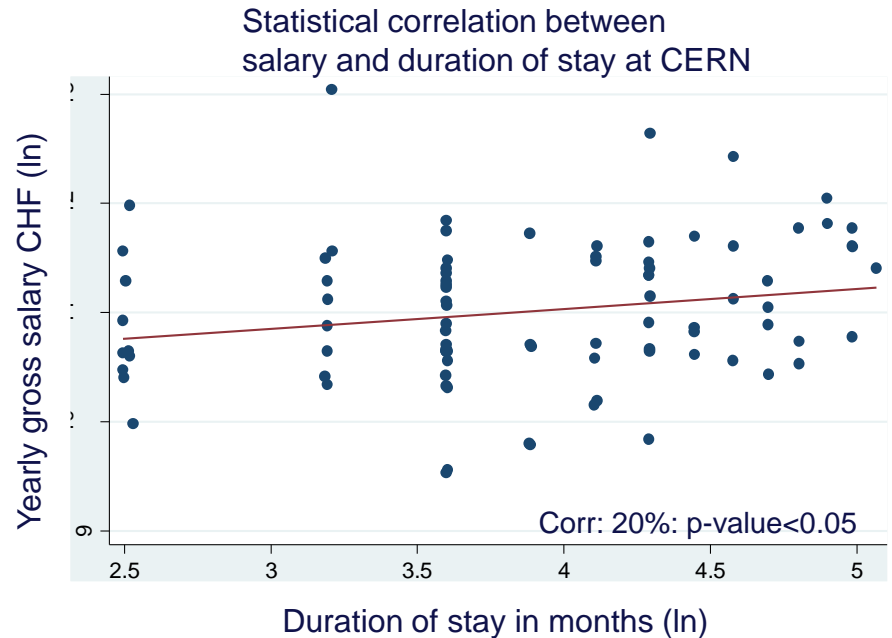
N of answers = 120

Salary premium: main determinants

Focus on the relationship between the salary and the duration of stay at CERN

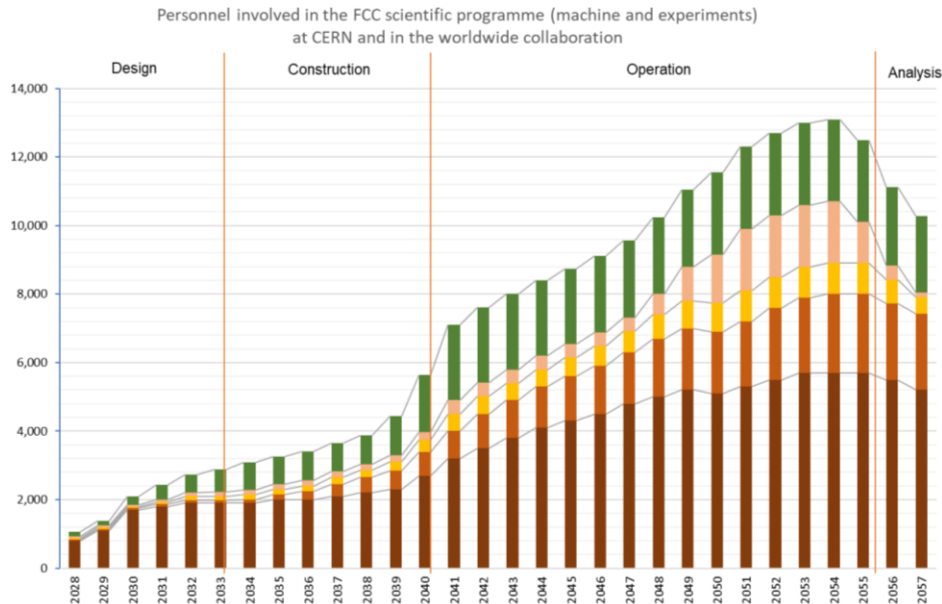
Table: summary statistics
(from the survey N = 89 valid answers)

Variable	Mean	Std. Dev	Min	Max
Yearly Gross salary (CHF)	75,376	63,177	13,797	460,315
Duration of stay at CERN (months)	59.3	38.5	12	158



FCC-ee personnel by year and category

- Period of analysis: 2028 – 2057
- Unit of analysis: FCC-ee scientific programme (two experiments + accelerator and technical infrastructure)
- Total number of persons in the period: **216,300**
- **The value of training impact will apply to the share of persons under 30 years old**



- Technicians, Administration [47,920; 22%]
- Undergraduate students [16,450; 8%]
- Engineers [13,710; 6%]
- Doctoral and postdoctoral students [31,720; 15%]
- Scientists [106,500; 49%]

Source: «Plan for Research Infrastructure Socio-economic Impact Analysis» FCCIS-P1-WP4-D12; Education and Training Chapter. Forecasts based on LHC (received by CERN)

Next steps

- Validate figures and assumptions with CERN
- Improve the survey dissemination strategy so as to reach a higher number of (former) CERN ECRs
- Perform a robust statistical and econometric analysis to investigate on the amount of the CERN salary premium (if any) and identify its drivers.



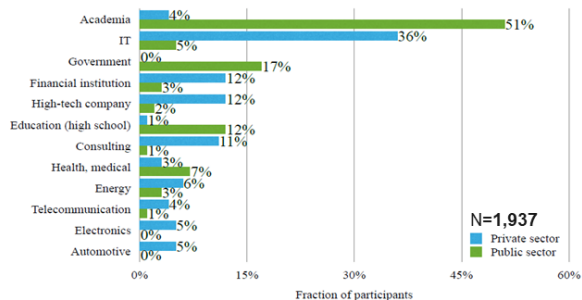
Thank you
for your attention

Back-up slides

Salary premium: main determinants (other inputs)

- *Focus on the sector of employment after the CERN experience*

Fig. 2.18: Sectors in which former CERN users continue their careers. The percentages correspond to the fractions of answers. Blue, results for the private sector; green, results for the public sector.



Source: Bianchin, C., Giacomelli, P., Iconomidou-Fayard, L., Niedziela, J., and Sciascia, B. (2019). Study on the career trajectories of people with a working experience at CERN. CERN Yellow Reports: Monographs, CERN-2019-004. <https://cds.cern.ch/record/2689210/files/90-78-PB.pdf>



Distribution of CERN people by sector to be used for the value of training impact of the FCC

Sector	%
Academia and research	53%
Industry and finance	32%
Public administration	15%
TOTAL	100%

Details are available in the «Plan for Research Infrastructure Socio-economic Impact Analysis» FCCIS-P1-WP4-D12; Education and Training chapter.

Our survey: preliminary results (N =142)

Q. Type of firm/organisation you work

