

Gender wage difference estimation at quantile levels using sample survey data and multiple imputation

Mihaela-Catalina Anastasiade-Guinand¹, Alina Matei², Yves Tillé²

¹Swiss Federal Statistical Office

²University of Neuchatel, Switzerland

The presentation is motivated by the growing interest in estimating gender wage differences in official statistics. The wage of an employee is hypothetically a reflection of their characteristics, such as the education level or the work experience. It is possible that men and women, with the same characteristics obtain different wages. The gender wage differences are usually estimated at the mean level (see Blinder, 1973: *J Hum Resour*, 8, 436–455; Oaxaca, 1973: *Int Econ Rev*, 14, 693–709). Our goal is to estimate the differences between wages at different quantiles, using sample survey data into a super-population framework. To do this we use a parametric approach based on conditional distributions of the wages in function of some auxiliary information, as well as a counterfactual distribution (see Biewen and Jenkins, 2005: *Empir Econ*, 30, 331-358). The counterfactual distribution can be interpreted as an imputed distribution. It is constructed here by using a reweighting approach (see Fortin et al., 2011: *Handbook of Labor Economics*, 4, 1-102) based on calibration (see Anastasiade and Tillé, 2017: *Survey Methodology*, 43, 211-235). We use methods inspired from multiple imputation to estimate the quantiles of the wage distributions, as well as those of the counterfactual distribution. We show in our simulation studies that the use of auxiliary information well correlated with the wages reduces the variance of the counterfactual quantile estimates compared to those of the competitors. Since, in general, wage distributions are heavy-tailed, the interest is to model wages by using heavy-tailed distributions like the GB2 distribution. We illustrate the approach using this distribution and the wages for men and women using simulated and real data from the Swiss Federal Statistical Office.