

A New Method for Adjusting Health State Utilities to Increase Their Transferability from UK to Italy

Background

- Foreign utilities of the EQ-5D-3L (3-level version of the EuroQol-5 Dimension of health questionnaire) are not readily transferrable to economic evaluations conducted from a national perspective [1].
- It has been advised to avoid transferring mean utilities from one country to another without adjusting them; yet no such method exists [1].

Objective

- The present study aimed to develop a method for adjusting mean utilities to increase their transferability from UK to Italy.

Method

- The published 243 health state utility weights (HSUW) for the scoring of the 3-level version of EQ-5D (EQ-5D-3L) survey in Italy (IT) [3] and The United Kingdom (UK) [2] were incorporated in two regression models (linear & nonlinear) using the IT HSTUW for each state of the EQ-5D-3L as the dependent variable and the corresponding UK HSTUW as regressor to estimate the equation (2).

$$Utility^{UK} = \frac{\sum_0^n HSUW_j^{UK}}{n} \quad (1) \quad \bullet \quad Utility^{IT} = \beta_0 + \beta_1 \cdot \frac{\sum_0^n HSUW_j^{UK}}{n} \quad (5)$$

$$HSUW_j^{IT} = \beta_0 + \beta_1 \cdot HSUW_j^{UK} \quad (2) \quad \bullet \quad Utility^{IT} = \beta_0 + \beta_1 \cdot Utility^{UK} \quad (6)$$

$$Utility^{IT} = \frac{\sum_0^n HSUW_j^{IT}}{n} \quad (3)$$

$$Utility^{IT} = \frac{\sum_0^n (\beta_0 + \beta_1 \cdot HSUW_j^{UK})}{n} \quad (4)$$

- Goodness of fitting was evaluated for both linear and nonlinear models based on visual inspection and the R-squared.
- Eventually, the coefficients from the selected regression model were validated using results from a published article containing mean utilities obtained by valuing the EQ-5D-3L data using both IT and UK value sets [4].

Results

- The nonlinear model between the IT HSTUW and the UK HSTUW was fitting better the data at both visual inspection and the R-squared (0.8723 vs. 0.837, for nonlinear and lineal models, respectively). the model is presented in table 1.
- $$HSUW_j^{IT} = 0.3388 + 1.026 \cdot HSUW_j^{UK} - 0.4197 \cdot (HSUW_j^{UK})^2 \quad (7)$$
- $$Utility^{IT} = 0.3388 + 1.026 \cdot Utility^{UK} - 0.4197 \cdot [(Utility^{UK})^2 + Var_{Utility^{UK}}] \quad (8)$$
- The final model was valid in both bootstrapping method and published utilities comparisons (Table 2).

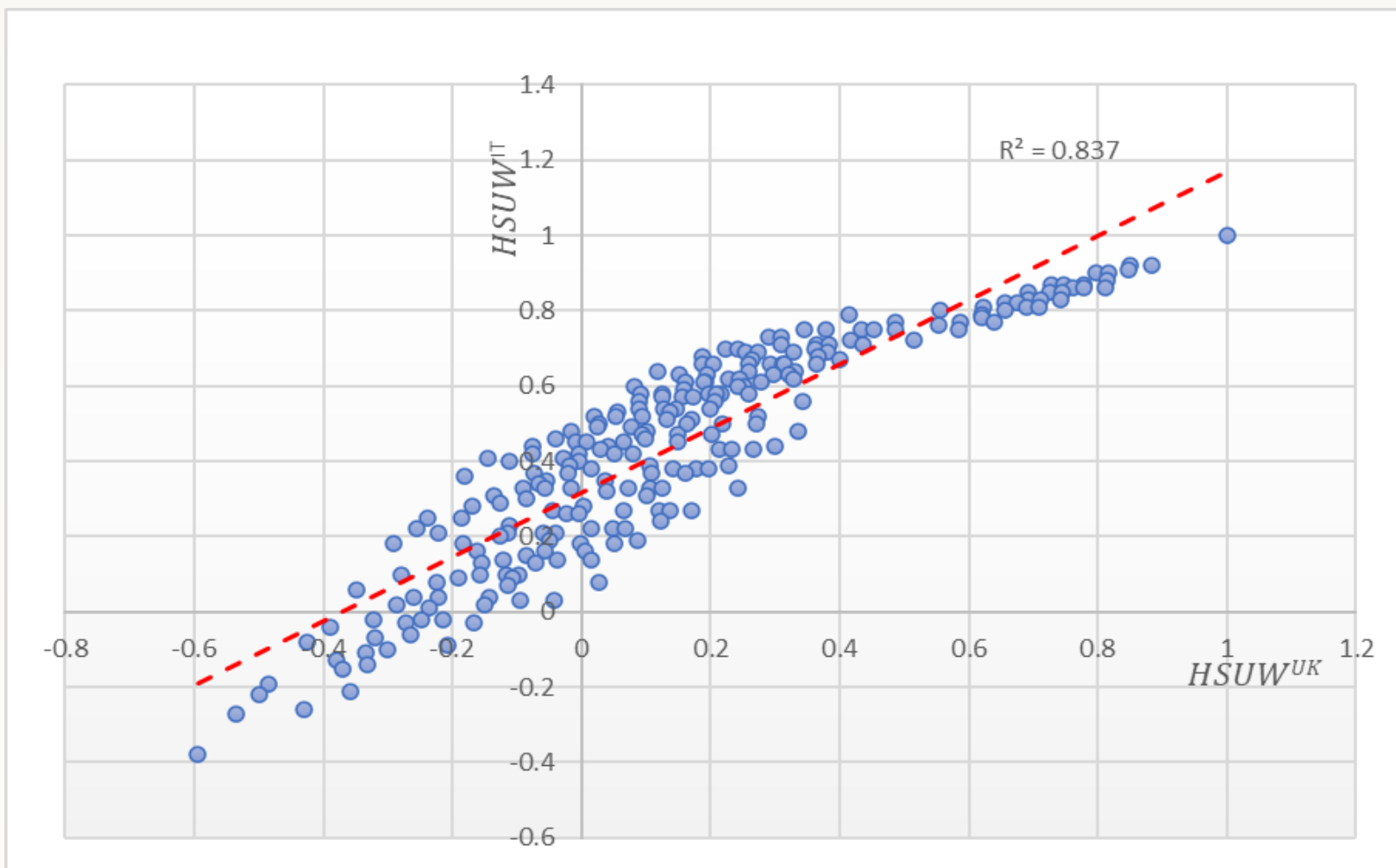
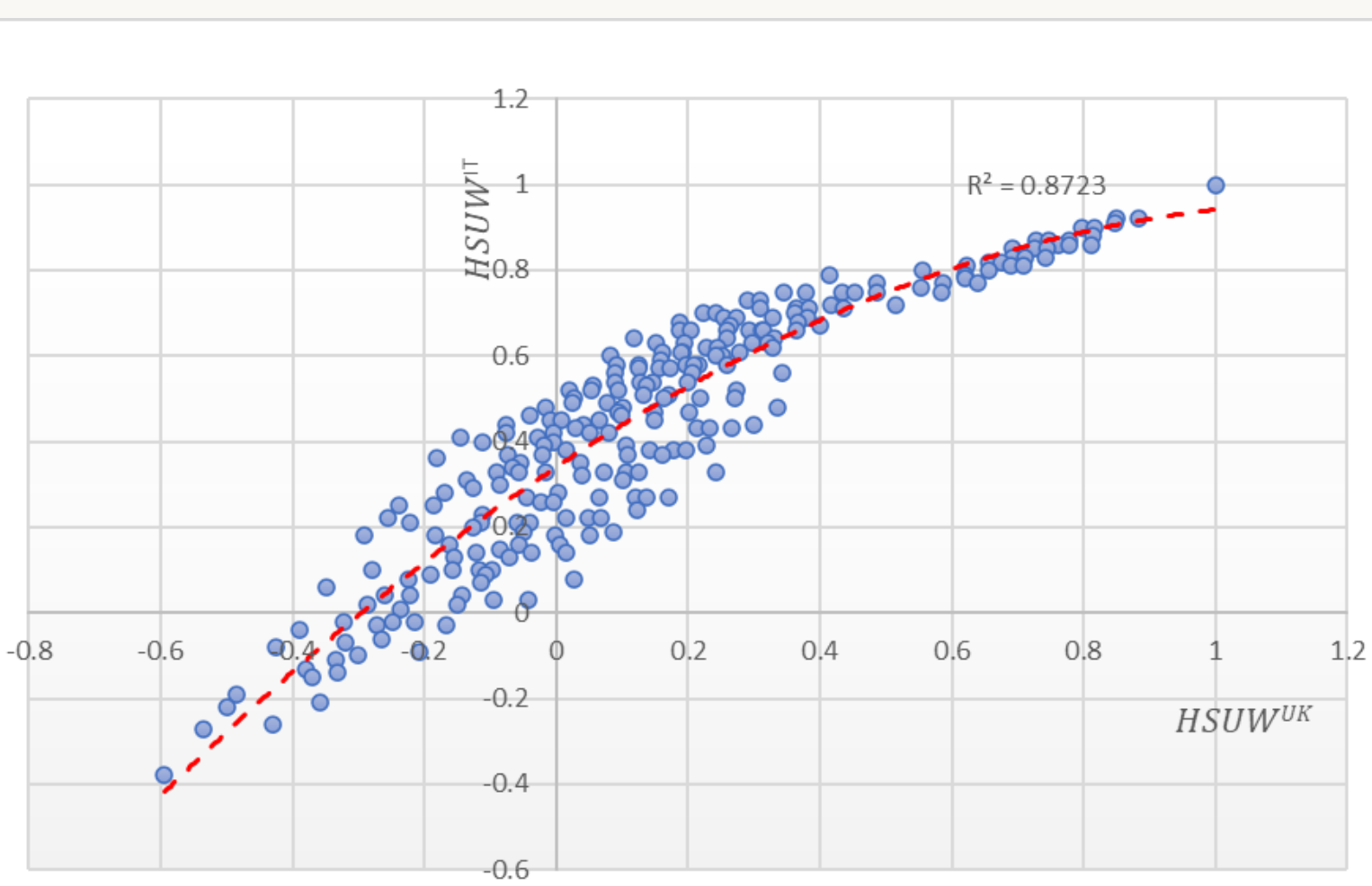


Table 1	Mean	SD	2.50%	Median	97.50%
β_0	0.3388	0.008094	0.3229	0.3388	0.3548
β_1	1.026	0.03111	0.9646	1.026	1.087
β_2	-0.4197	0.05357	-0.5251	-0.4196	-0.3146

Table 2	Total pts	Mean	SD	Var
Published UK utility	500	0.57	0.32	0.1024
Published IT utility	500	0.76	0.20	0.04
Predicted IT utility		0.7441		

Conclusions

- Our analysis suggests that, given the results of the estimated model, It is feasible to adjust UK mean utilities estimated based on the EQ-5D-3L survey and UK HSUW to make them reflect Italian population preferences for health.

References

- [1] Oddershede, Lars, and Karin Dam Petersen. "Adjustment of foreign EQ-5D-3L utilities can increase their transferability." ClinicoEconomics and outcomes research: CEOR 7 (2015): 629.
- [2] Dolan P. Modeling valuations for EuroQol health states. Med Care. 1997;35(11):1095–1108.
- [3] Scalone, Luciana, et al. "Italian population-based values of EQ-5D health states." Value in health 16.5 (2013): 814-822.
- [4] Mozzi, Adelaide, et al. "A comparison of EuroQol 5-Dimension health-related utilities using Italian, UK, and US preference weights in a patient sample." ClinicoEconomics and outcomes research: CEOR 8 (2016): 267.