

SMM637 Exercises - Model for Binary Data

1. Consider the female labor force participation example for 872 women from Switzerland (`SwissLabor`) from the `AER` package.

The dependent variable is `participation`, and the regressors we consider are

- `income` - nonlabor income (in logs)
- `education` - years of formal education
- `age` - age in decades

(a) Install and load `AER` package and attach the `SwissLabor` data.

(b) Explain what the following R command is doing

```
SwissLabor$participation.b <- as.numeric(SwissLabor$participation)-1
```

(c) Using R fit linear probability model by regressing `participation` on `income`, `age` and `education`

(d) Comment on the significance and interpretation of the estimated parameters.

(e) Fit the logit and probit models on the same data.

(f) Are the estimated coefficients of the probit comparable with those of the logit? Justify your answer.

(g) Using both the probit and logit models fitted above, compute the predicted change in the `participation` probabilities when `education` is increased from 11 to 12, `income` is set at 10.70 and `age` at 4. What do you conclude?

(h) Now, using again the same models, compute the predicted change in the `participation` probabilities when `education` is increased from 1 to 2, `income` is set at 10.70 and `age` at 4. What do you notice?

(i) Compare the results obtained in (g) and (h) to that obtained from the linear probability model.