Inference Tests for Tax-Progressivity and Income-Redistribution:
The Suits Approach.

Jordi Arcarons, Samuel Calonge.

1. The file **Programme.sas** contains the SAS code to compute the Suits index estimator and its standard error.

2. The programme is an automatic SAS MACRO that enables you to estimate the statistics without the need of programming a new code: just follow the instructions at the top of the file.
The instructions refer to the type of file containing your data (it can be a **SAS dataset** or an **EXCEL file**), number of taxes to be analysed, name of the pre-tax income and tax variables, and the name of the 'grossing-up' variable (number of population units represented by each sample observation) .

3. The output generated by the programme includes the pre-tax income Gini and Suits indices and their corresponding standard error. To compute the redistributive effect of a tax, just set the post-tax income variable in your dataset as one of the tax variables in the programme instructions. Warning: a negative sign is interpreted as progressive redistribution (change the sign when presenting this result, do not modify the code).

4. Slight modification to some of the original formulae make it possible to carry out all calculations in just two steps.

4.1 The **first data-step** estimates the Gini and Suits indices. To compute the estimator $\hat{\theta}_i$ (see equation 18 in the paper), we shall use the same expression, excepting the term $x_i\overline{y}$ which is excluded. Let us denote this estimator as $\hat{\theta}_i^*$. It is easy to see that the Suits index would be $\hat{S} = \frac{\hat{\theta}^*}{\overline{x}\,\overline{y}}$ with $\hat{\theta}^* = n^{-1}\sum \hat{\theta}_i^*$.

4.2 The **second data-step** provides the index standard errors. In this step, it is necessary to estimate the statistic $\hat{\theta}_i$ in its original form by simply adding up the quantity $x_i\overline{y}$ to the estimate $\hat{\theta}_i^*$ (see the first data step) . The formula for the auxiliary variable W_i (see equation 27) must also be slightly modified as $W_i = (\hat{S}+1)x_i + \frac{\hat{\theta}^*}{\overline{y}^2}y_i + \frac{\overline{x}}{\overline{y}}y_i - \frac{2}{\overline{y}}\hat{\theta}_i$.

5. Data used in the paper to estimate asymptotic statistics (see table 1 in the paper) are provided. Variables are x1=pre-tax income, x3= gross-tax liability, x4=net-tax liability, factor=grossing-up variable (needed to compute weighted estimates of the statistics).

6. To estimate bootstrap-*t* statistics, use the body of the two data-steps of the programme to create your own routine in SAS or other languages.