

Title: *A Neural Network Architecture For Data Editing In The Bank Of Italy's Business Surveys*

Author(s): Claudia Biancotti, Leandro D'Aurizio and Raffaele Tartaglia-Polcini

Institution/Country: Bank of Italy

This paper presents an application of neural network models to predictive classification for data quality control. We train three feed-forward networks (for variables related to employment, investment and sales respectively) on a set of records from the 2003 wave of the Bank of Italy's business surveys in order to identify and correct measurement error. Our output variable is a binary proxy of unobservable measurement error: an error-generating process, reproducing known error patterns, is activated that produces a perturbed dataset. The vector of input variables includes many characteristics of a firm, including, but not limited, to levels of the variables subject to perturbation and some transforms thereof. We find that the Resilient Propagation learning algorithm performs significantly better than alternative methods. The generalization error is evaluated by way of multiple test datasets. The exercise signals which records and which group of variables should be subjected to tighter monitoring. This provides a means for improvement in the efficiency of the quality control process and, ultimately, in the reliability of survey data