No More Gambling: Estimating Non-Survey Regional Input-Output Tables by Averaging Location Quotients

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Datasets containing regional inputâ€“output (IO) tables are not frequently produced by surveys but estimated using regionalization techniques. When the required information is available, an adjusting procedure of national IO tables based on RAS algorithms and its variants is widely applied. But if the required information is not at hand, a regionalization procedure based on Location Quotients (LQ) is the most popular technique. Broadly speaking, this class of methods consists of multiplying the national matrix of IO coefficients by a regional LQ, with the solutions suggested by Flegg et al. (1995) and Flegg and Webber (1997, 2000) extensively adopted and applied. However, some authors (Lehtonen and TykkylÃ¤inen, 2012; Kowaleski, 2015) have criticized these solutions, arguing that they critically depend on the specification of an unknown parameter value: there is a multiplicity of estimated regional IO tables depending on this particular choice. In order to respond to these critiques, regression-based techniques have been proposed (see BuendÃ-a et al. 2022, for a recent example) to find â€œoptimalâ€• values for the parameter of interest.

A similar problem arises in a completely different field within economic modeling: in time-series analysis and particularly in the field of forecasting. In this branch of the literature, the use of forecast combinations has been extensively studied, and it has been empirically tested that forecast combinations produce a superior performance when compared with individual predictions. The initial work by Newbold and Granger (1974), Makridakis et al. (1982), Makridakis and Winkler (1983), have been continued by more recent studies, such as in Stock and Watson (2004), Smith and Wallis (2009) or Genre et al. (2013). All provide examples of the empirical success of forecasting strategies consisting of computing a simple mean of individual forecasts. Through this averaging, the variance of the resulting predictions is significantly reduced and there are remarkable gains in terms of accuracy.

Based on this same idea, this paper proposes an easy-to-apply way of producing non-survey regional and interregional IO tables from national information and data in the form of LQs. Instead of relying on a specific parameter value that sets the values of the LQ applied, the resulting regional IO table is calculated as the simple average of several solutions produced by setting a range of plausible values for our LQs. The technique is illustrated and evaluated by conducting a numerical simulation similar to the exercise presented in Bonfiglio and Chelli (2009). Our results show how this simple approach alleviates largely the arbitrariness present in the choice of the parameter values for specifying the LQs, while reducing remarkably the risk of producing regional IO tables that deviate from the true ones.