A Quantitative Study on the Problem of Aggregation Bias in Input-Output Model

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Scholars have done a lot of researches on the problem of aggregation bias in input-output model, but there still lacks an effective solution for quantitative analysis. So some misunderstandings may occur in input-output practice and application, for example, some researchers misuse the degree of aggregation (such as the number of aggregated sectors) as the gauge of aggregation bias. In view of this, this paper reviews the relevant researches with regard to the characteristics of aggregation bias, and then discriminates different measurement methods of aggregation bias via the discussions of their reasonability and applicability. On the basis of these, we launch an empirical study on the problem of aggregation bias from the perspectives of industrial linkage effect and comprehensive measurement respectively, using the input-output table from National Bureau of Statistics of China and STAN Databases. Our results show: firstly, under the standard of industrial linkage, the overall aggregation bias depends on the heterogeneity degree and the element importance of corresponding aggregated sectors, and the local distribution of aggregation bias rests with the relevance between the object and corresponding aggregated sectors; secondly, under the standard of comprehensive measurement, we design two index: CHI (Comprehensive Heterogeneity Index) and CBI (Comprehensive Bias Index) and find that CHI is the main determinant of CBI, but this doesnâ€™t rule out other interference factors whose influence are relatively minor. It is believed that our findings can be positive and useful for the measurement of aggregation bias in input-output models under certain conditions.