

**Alternative Approaches to the
Estimation of Household Equivalence Scales:
An Australian Application**

by

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Declaration

I certify that the substance of this thesis has not already been submitted for any degree and is not currently being submitted for any other degree or qualification.

I certify that any help received in preparing this thesis, and all sources used, have been acknowledged in this thesis.


Ma. Rebecca J. Valenzuela

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Abstract

The equivalence scale is a concept with considerable policy significance. As an instrument for comparing welfare levels of households differing in size and composition, it seeks to answer such questions as, “How much income does a household with two adults and one child need to enjoy the same level of welfare?”. Such comparisons are inevitable in major policy exercises such as the measurement of inequality and poverty, studying the effects of a set of tax changes on welfare levels of different households and calculating the compensation that a household with a child requires for the additional cost of that child.

This research develops new methods for estimating equivalence scales from budget data. The conventional two-step procedure for estimating scales based on the extended linear expenditure data is improved in two ways: (i) simultaneous estimation of all the parameters in the model, and (ii) derivation of estimators which allow error correlation across the different commodity equations. This research also explores the use of Bayesian procedures for the equivalence scale estimation problem. The Bayesian procedures proposed are shown to facilitate statistical inference through the convenient estimation of posterior densities and associated posterior means and variances. Because Bayesian estimates of

parameters are presented in the form of density functions, the approach provides for a multidimensional characterisation of the estimated parameters.

Another major contribution of this work addresses the problem of observed zero expenditures common in survey-based data. An econometric model is developed to account for observed zeros which arise out of the infrequent purchasing behaviour of households and a corresponding Bayesian procedure is derived for the estimation of its parameters. The resulting equivalence scales are shown to have lower relativities than those derived from a model which did not account for the occurrence of zero expenditures. The Bayesian approach is shown to facilitate the estimation of the proposed model, one which is too difficult to handle within the conventional sampling theory framework.

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