TESTING FOR A REFERENCE CONSUMER

IN INTERNATIONAL COMPARISONS OF LIVING STANDARDS

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Matthijs van Veelen and Roy van der Weide (2008) (henceforth VW) compare the axiomatic and economic approaches to choosing multilateral index numbers for international comparisons of real income. They are right to stress the potential importance of accounting for preference heterogeneity in general; and to warn against misinterpretations of the approach advocated by Neary (2004) in particular: the preferences of the reference consumer used in the comparison may not resemble those of any actual consumer in the countries compared. However, VW go on to claim that the axiomatic approach can make meaningful comparisons without the assumption of homogeneous tastes. They may be correct, but they offer little in the way of concrete suggestions to back up their claim.

By contrast, the economic approach offers a clear path to dealing with preference heterogeneity. First, at a conceptual level, it avoids the pitfalls associated with interpersonal comparisons of utility by proposing that a particular (actual or hypothetical) consumer be selected as reference, and asking how well off that consumer would be when faced with the prices in each of the countries to be compared. Second, at a practical level, the existence of a common utility function is testable (as discussed in Neary (2004), footnote 20). If a common utility function is acceptable then searching for an appropriate parametric system of preferences (as done in Neary (2004)) is valid. If a single utility

function is rejected then we can ask how many different utility functions are needed to rationalise the data, and partition the data into corresponding sub-groups. Perfectly valid international comparisons can then be made within groups. Equally, if the data reject common preferences it might still be reasonable to use the approach in Neary (2004) to proceed on an "as if" basis and to impose, as a reference consumer, those preferences which best fit the observed demand patterns. The economic approach therefore offers very promising scope for an intellectually coherent "Plan B" (VW p. 14) as well as a "Plan A".

To illustrate this procedure we reexamined the data in Neary (2004) using algorithms from Ian Crawford and Krishna Pendakur (2008). We found that the data on 11 commodity groups in 60 countries are rationalisable by a single non-homothetic utility function but not by any homothetic utility function.[1] This is good news for the approach followed in Neary (2004) in two ways: (i) it justifies estimating a single set of preferences using the pooled data; and (ii) it shows that the usual justification for the EKS method (the main alternative to the Geary method, which underlies the Penn World Table) is shaky. Finally, if we take homotheticity seriously and ask how many different sets of homothetic preferences would be needed to rationalise the data for these 60 countries, we found that the answer is eighteen, although only four were required to explain 75% of the data, the rest are singletons.[2]

To sum up, when VW advocate the axiomatic approach on the grounds that (unlike the economic one) it can be used when tastes differ internationally, they risk consigning it to

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[1] More formally, the data satisfy the General Axiom of Revealed Preference, but violate the Homothetic Axiom of Revealed Preference.
[2] Details are given in a web appendix to this note.

an intellectual dead end, since it fails a basic test: what do the numbers mean? Following the economic approach instead and specifying a reference consumer as in Neary (2004) offers a clear path by contrast, and we have illustrated how it can be followed.

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Crawford, Ian, and Krishna Pendakur. 2008. " How many types are there? A simple, theory-consistent approach to unobserved heterogeneity," mimeo.

Neary, J. Peter. 2004. "Rationalizing the Penn World Table: True Multilateral Indices for International Comparisons of Real Income." American Economic Review, 94(5), 1411-1428.

van Veelen, Matthijs, and van der Weide, Roy. 2008. "A Note on Different Approaches to Index Number Theory." American Economic Review, 98(4): ***-***.

Appendix

(For web publication only)

The composition of the estimated groups is as follows:

A (14 Members) = {Austria, Canada, Colombia, Denmark, France, Germany, Hong Kong, Israel, Japan, Madagascar, Mali, Netherlands, U.K., U.S.}

B (14 Members) = {Argentina, Ecuador, Finland, Greece, Honduras, Hungary, Indonesia, Italy, Korea, Nigeria, Panama, Paraguay, Tanzania, Yugoslavia}

C (10 Members) = {Bolivia, Chile, Ethiopia, Guatemala, Luxembourg, Pakistan, Poland, Senegal, Sri Lanka, Zambia}

D (7 Members) = {Brazil, Cameroon, Ireland, Norway, Portugal, Uruguay, Zimbabwe}

These four groups account for 75% of the data, the rest are singletons. They can tentatively be rationalized as follows. Group A consists of medium-to-rich OECD members except for Madagascar, Mali and Colombia; Group B is "poor-to-wannabe-OECD", again except for the African countries and perhaps Indonesia; Group C is mostly very poor, except for Luxembourg and to a lesser extent Poland and Chile; while Group D is composed of countries at different income levels but (in 1980) all highly dependent on primary products.