DEVELOPMENT AND THE DISTRIBUTION OF LIVING STANDARDS: A *CRITIQUE* OF THE EVOLVING DATA BASE

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Household surveys of the distribution of income and expenditure are discussed in this paper. The potential for non-sampling errors, effecting both the mean and measures of dispersion, is noted. These errors are shown to result in substantial discrepancies between the survey data and national accounts-based estimates of the incidence of poverty and trends in living standards. It is argued that the reconciliation of these discrepancies offers the best way forward for improving both types of data.

1. INTRODUCTION

Students of poverty and inequality in third-world countries have been stimulated over recent years by the increasing number of household income and expenditure surveys. One consequence has been to place a growing selection of primary data sets in the public domain. Another has been to encourage the compilation of secondary data sets on inequality and poverty, both across countries and over time. My initial concern in writing this paper has been to comment on the quality of both types of data. However, a further objective, building on this commentary, is to argue that the full potential of the survey data is not being realized. As a result, the quality of these data is poorer than it need be and our understanding of poverty and inequality as features of the development process has not progressed as it might otherwise have done.

The expansion of the data base for developing countries owes much to the World Bank which has been heavily involved not only in encouraging the collection of primary data but also in the compilation of secondary data sets. Its operational policies, especially since 1990, have boosted the demand within countries for information on the distribution of living standards while the Living Standards Measurement Study, which the World Bank initiated in 1980, has shown how such demands might be met and, in the process, been instrumental in making primary data sets available. Moreover, the World Bank has throughout been an influential user of the data, one aspect of which has been the regular publication of poverty estimates for individual low income countries, for regions, and globally. In addition, and in parallel with the above activities, the World Bank has sponsored the compilation of secondary data sets, a notable example being the

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large compilation of Gini coefficients and related data described in Deininger and Squire (1996).

The present paper has evolved out of an earlier critique (Pyatt, 1999b) of the Deininger and Squire (1996) compilation which has attracted the attention of others also, notably Atkinson and Brandolini (2002) and Szekely and Hilgert (1999). In presenting a revised and expanded data set, Deininger and Squire (2002) is an initial response to these critiques. It suggests that the exchanges have been helpful, although a number of outstanding issues remain. This is in part because Atkinson and Brandolini (2002) have addressed the subject matter from an OECD perspective, comparing the relevant entries in the Deininger and Squire (1996) compilation with results generated by the Luxembourg Income Study (LIS).[1] Their perspective is therefore rather different from that of the developing countries for two main reasons.

Firstly, there are substantial technical difficulties which make the work of the survey statistician much easier in an OECD context where an administrative infrastructure can be assumed, the economy is more fully monetized and the substantial resource costs of survey research can more easily be afforded. Secondly, the policy context is very different. In the OECD countries, poverty is essentially a consequence of inequality, which can be addressed via social security and other public welfare programmes. In contrast, in most third-world countries there are no universal public welfare programmes to protect the poor, who may be a majority of the population, since the cost would be prohibitive. A redistributive approach to poverty alleviation is therefore not feasible. This makes it all the more important to develop alternatives, especially now that the "forgiveness" of official external debt under the Extended Heavily Indebted Poor Countries Initiative has been made contingent on the preparation by each country of a Poverty Reduction Strategy that is acceptable to the Bretton Woods institutions. At the very least, it is important in these circumstances to know whether poverty is going up or down, and the extent to which such changes depend on changes in inequality and/or on growth.

In commenting on the evolving data base from a developing country perspective, the present paper is organized into six main sections, following this introduction, with a short final section setting out some suggestions for the way ahead. The starting point is a review, in Section 2, of the growth in survey activity. This is documented in term of the growth in size of various compilations of data from secondary sources, starting with the Kuznets (1955) study of data for six countries through to the latest, revised compilation by Deininger and Squire (2002). The commentary on this growth recognizes the fact that, while much of it can be explained by the increasing frequency of surveys in particular countries, the spread of survey activity to a growing number of countries is also important. Meanwhile, the acceptance standards adopted by successive compilers have, by and large, been rising so that some of the weaker data have been filtered-out over time. This should mean that the average quality of the data has risen. However, given the inevitable pressure to include data for a growing number of countries, progress in individual

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[1]See Atkinson *et al.* (1995) for details of the Luxembourg Income Study.

countries over time must be weighed against the learning difficulties of those new to the field.

While acceptance standards may have risen, they remain low, which allows Deininger and Squire to admit secondary sources that employ alternative definitions of income alongside others that ignore income and focus instead on household expenditure as the basic measure of living standards. Section 3 of the paper reviews the problems that can arise in survey work, starting with the definition of basic concepts such as income and expenditure, the translation of these concepts into an empirical data set, and the generation of final results. The potential for non-sampling errors, effecting both survey means and measures of dispersion (sometimes in opposite directions) is noted at each stage.

The origins and objectives of the LSMS are discussed in Section 4. The fact that, circa 1980, non-sampling errors were seen to be ubiquitous is only one reason why the World Bank initiated the LSMS programme. The timing was crucial also since the challenges posed by third-world poverty were being taken up with a new urgency at that time, following the publication of *Redistribution with Growth* in 1976.[2] The limitations of the data base then available became apparent within this policy context. The original objectives of the LSMS are reviewed in this section of the paper, including the perceived need to integrate household survey data into the process of estimating national income and its major components.

Recent evidence is presented in Section 5 on the consequences of having failed to pursue this potential for integration of survey data and the national accounts. The inconsistencies between survey data on living standards and the corresponding detail on private consumption and personal incomes in the national income and expenditure accounts of many countries are documented in this section of the paper and shown to imply that we actually have relatively little reliable information on country-specific changes in poverty and living standards despite all the attention these topics have received.

Some reactions to the inconsistencies documented in Section 5 are discussed in Section 6. Evidently, some authors favor the adjustment of primary survey data to achieve greater consistency with alternative sources, while others do not. The particular examples cited in the text suggest that the problem is pervasive among developing countries and calls for more serious attention than it has received to date.

These limitations of the primary data on which secondary compilations must ultimately depend provide the background for a discussion in Section 7 of the revised Deininger and Squire data set. A number of developments are noted that respond to earlier comments. While the documentation of data sources remains weak, some other comments and criticisms have apparently been well received, causing Deininger and Squire to now warn against the use of their data in time-series analyses for individual countries as distinct from cross-section and panel analyses. The essential implication is that the data are not good enough.

Suggestions as to what might be done about this are discussed in the final section of the paper. They emphasize the need for greater consistency between survey data and the national accounts, starting with the consistency of the

[2]See Chenery *et al.* (1976).

concepts used and moving on via the documentation of discrepancies to reconciliation where feasible and a greater understanding of the statistical difficulties involved. The fact that some of the poorest countries in the world are being pressed to finance surveys of the distribution of living standards in order to document their case for debt relief should give new urgency to the need to improve on current statistical practices. Otherwise, the data that are now being collected are likely to be of limited value in trying to decide whether living standards have gone up or down, and hence in trying to differentiate between policies that work and those that apparently do little good and may even be counter-productive.

2. The Growing Number of Surveys

Household surveys of income and expenditure patterns are a relatively recent addition to the information flows that official statisticians are now providing on a regular basis in an increasing number of developing countries. This is partly a matter of competence since technical progress in information technology has reduced substantially the difficulty of what, 50 years ago, was a peculiarly labor intensive process. But the increasing flow of results is also a reflection of the changing information requirements of those governments that are willing (or obliged) to demonstrate some concern for the poor, if not for overall inequality. Historically, this concern was focused primarily on the purchasing power of wages and the consequent need to construct a cost of living index. This created a demand for details of household consumption patterns to determine the weights of such an index. One consequence has been that it is only recently that a typical household survey in Latin America has covered the rural sector, since wage employment was primarily an urban phenomenon. The policy focus also effected survey design since the primary objective was to quantify an average consumption basket rather than to obtain a representative sample from which the dispersion of living standards could be inferred with a prescribed degree of accuracy.

Other uses of household survey data were acknowledged, of course, as in India where a need to monitor living standards and their distribution was recognized from the early days following Independence. Similar concerns spilled over into Pakistan and Sri Lanka. And in Malaysia, the explicit objective of government to reduce poverty among Malays (and the foreign ownership of domestic assets also) was soon translated into a need for household survey data so that the different circumstances of the main ethnic groups could be compared.

As the number of primary data sets has grown, so too have the secondary data sets that pull together the results of different surveys. The initial stimulus came from Kuznets (1955) who inferred from his own a priori reasoning and the data for six developing countries that there may be a tendency for inequality to increase in the early stages of development as the population shifts out of the rural/agricultural sector and into urban/non-agricultural activities.

This suggestion, that increasing inequality may be a normal feature of the initial stages of development, has worried economists over the years, not least because the hypothesis has its own underlying logic as formalized by Robinson (1976). Moreover, the hypothesis was supported empirically by one of the first

TABLE 1

THE NUMBER OF OBSERVATIONS (SURVEYS) INCLUDED IN SOME OF THE SECONDARY DATA SETS

Source	Number of Surveys[1]	Source	Number of Surveys[1]
Kuznets (1955)	6	Fields (1989)	105
Adelman and Taft Morris (1971)	47	Deininger and Squire (1976)	682 (2600+)
Paukert (1973)	56	WIDER (2000)	(5000+)
Jain (1975)[2]	60 (405)	Deininger and Squire (2001)	1013

Notes: [1]The main entry is the number of observations subsequently used by the author(s) in their empirical research. The numbers in brackets record the size of the population from which the main entries have been selected.
[2]The main entry for the Jain data set is the number of observations used subsequently by Ahluwalia (1976).

extensive compilations of secondary data by Paukert (1973) and subsequently by the details for 60 countries that were selected for further analysis by Ahluwalia (1976) from a larger compilation by Jain (1975). As a result, while other uses of the data have been developed, the quest for (or against) a Kuznets curve has proved to be an important consideration—perhaps the most important—motivating not only the early compilations but also the subsequent efforts of Fields (1989) and Deininger and Squire (1996). The fact that most, if not all secondary data sets have gathered information on the dispersion of living standards (the Lorenz curve) but neglected details of their level (the mean or median of the distribution) may well be a consequence of this preoccupation.[3]

Table 1 documents the growth in size of secondary data sets that has taken place over the years. This is the result of various influences, including the diligence of individual compilers in searching the archives. A further consideration has been the movement away from the compilation of a cross-section of data points, as in Paukert (1973) for example, to recognize multiple observations for individual countries and, therefore, to develop an international cross-section of national time series. Accordingly, some 385 of the 682 "high-quality" entries in the Deininger and Squire (1996) data set are accounted for by 21 countries (predominantly those that are members of the OECD). It is also worth noting that these 682 observations represent less than 30 percent of the total number of observations included in the Deininger and Squire compilation. Moreover, their grand total of over 2,600 entries appears modest when compared with the subsequent efforts of the World Institute for Research in Development Economics (WIDER).

A second consideration affecting successive compilations has been to raise the minimum standards for data to be included. For example, Paukert (1973) rejected 16 of the observations included in Adelman and Taft Morris (1971) while the Deininger and Squire (1996) compilation excludes 38 of the 56 observations included in Paukert (1973) and all but 61 of the 405 observations collected by Jain (1975). However, 73 of the 105 observations included in the Fields (1989) compilation are retained by Deininger and Squire (1996) within their "high-quality" data set.

[3]The policy implications of the Kuznets hypothesis were debated in the *World Development Reports* for 1980 and 1990 and, more recently, in Bruno *et al.* (1998).

This relatively high retention of data from Fields (1989) reflects the fact that Deininger and Squire have built their compilation according to three acceptance criteria that were initially proposed by Fields. These require that:

- the final figures must be based at source on a distribution of household income (or expenditure) *per capita* that has been established through a household survey;
- the survey in question must be representative of the whole population;
- the survey should cover income sources comprehensively.

While none of these criteria is exceptional as a minimum standard, they are interpreted by Deininger and Squire to exclude what they describe as "synthetic estimates."

> Applying the criterion that the unit of observation be either the household or the individual, we exclude a number of studies such as Adelman and (Taft) Morris (1973) and van Ginneken and Park (1984). These studies have generated synthetic estimates of inequality from national accounts and assumptions on the functional form of the distribution of income taken from other countries "at the same level of development", from a social accounting matrix (SAM), or from extrapolation of the distribution of income observed in small surveys originating within the same country. (Deininger and Squire 1996, p. 568)

The compilers of the WIDER data set take a less restrictive view which admits the results of studies rejected by Deininger and Squire, including the work of van Ginneken and Park and that of the LIS. Otherwise, however, the WIDER study can be characterized as a straightforward extension of the Deininger and Squire compilation which raises no new issues. We can therefore concentrate here on the Deininger and Squire data set, as have both Atkinson and Brandolini and Szekely and Hilgert in their respective critiques. The new Deininger and Squire data set (Deininger and Squire, 2002) responds both to their comments and to Pyatt (1999b).

This dialogue between compilers and commentators is not new. However, perhaps the most influential of these exchanges was stimulated by Jain (1975) since the reactions she provoked were instrumental in persuading the World Bank to initiate a thorough investigation of all the primary data then available for developing countries. This was undertaken by Oscar Altimir, covering Latin America and the Caribbean, and Pravin Visaria, who concentrated mainly on South and South-East Asia.[4] Their overall conclusion was that very few developing countries had successfully completed two or more comparable household surveys of income and/or expenditure and, therefore, that it was generally not possible to say, *circa* 1980, what had happened to inequality over time or which groups had benefitted from economic growth in particular countries.

The main difficulties encountered by Altimir and Visaria were that both the methods used for obtaining initial listings of households and the design of samples changed between surveys, as did the questionnaires used. There was, therefore, no

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[4]Overviews of the work of Altimir and Visaria are provided in Altimir and Sourrouille (1980) and Visaria (1980). See also Altimir (1977). The fact that the first two of these three references are Nos. 2 and 3 respectively in the *LSMS Working Papers* series underlines the importance of the work of Altimir and Visaria in laying foundations on which the LSMS was able to build.

TABLE 2
ALTERNATIVE ESTIMATES OF HOUSEHOLD DISPOSABLE INCOME IN THE REPUBLIC OF IRELAND IN 1973

Source of Income	Household Survey, 1973[1] (i)	National Accounts[2] (ii)	Ratio (%) (i)/(ii)
Wages and salaries[3]	976.9	1,349.9	72
Self-employment: non-farm income	107.8	160.5	67
Self-employment: farm income	282.3	363.1	78
Capital income[4]	28.1	186.9	15
Public transfers	163.2	334.9	49
Less taxes on income and wealth	158.8	291.7	54
Household disposable income[3,4]	1,399.5	2,103.6	67

Source: Based on Table 9.1 of van Ginneken and Park (1984).
Notes: [1]Central Statistical Office, Dublin (1976).
[2]Central Statistical Office, Dublin (1981).
[3]Excludes employer's contributions to social security.
[4]Excludes imputed rental income from owner-occupied dwellings.

case for assuming that non-sampling errors were being held constant. Moreover, with the arguable exception of India, there was little evidence of systematic attempts being made to use household survey results to inform the compilation of the national income accounts, which was especially worrying since large discrepancies were already evident between (grossed-up and suitably modified) household survey results and the conceptually comparable numbers published in the national accounts. Table 2 provides an example for Ireland in which the results of a 1973 household survey are compared with the conceptually comparable numbers published subsequently in the national income and expenditure accounts. The example illustrates the magnitude of the discrepancies to be found for a country that had already achieved a high level of statistical competence.

These general conclusions were subsequently endorsed by other enquiries, including Anand (1983) who documents the difficulties he encountered in trying to compare household surveys for 1957/58, 1967/68 and 1970 in Malaysia.[5] In concluding that no two of these three surveys yielded comparable results on the level and distribution of income, Anand notes the general lack of consistency between survey data and the national accounts and warns against "the danger of comparing the data on inequality from different surveys after a superficial examination which does not first establish comparability (of the income concept employed, sample coverage, and so on)" (Anand, 1983, p. 22).

Another type of difficulty (also discussed by Anand) undermined the claim in Fields (1977) that poverty had been reduced in Brazil between 1960 and 1970. Here, the essential problem was that the class intervals used to present the distribution of income in official sources changed over time (in real terms) so that some form of interpolation was necessary. The choice of an appropriate method in such circumstances is not trivial. Paukert's 1973 study was motivated in part by a perceived need to improve on the interpolation methods used by Adelman and Taft

[5]The surveys in question were the 1957/58 Household Budget Survey, the 1967/68 Malaysian Socio-Economic Sample Household Survey and the 1970 Post-enumeration Survey.

Morris, while Ahluwalia *et al*. (1980) is a critique of the methods used by Fields (1977). More recently a software package known as POVCAL has been developed within the World Bank to support the analysis of survey data. This includes the interpolation procedures that have been used by Deininger and Squire (1996) to smooth their data prior to its inclusion in their published data set.

These findings raise a number of issues, three of which are developed in this paper. The first follows from the fact that successive authors have excluded data which had previously been thought acceptable. The quality of the data is therefore an issue which Deininger and Squire recognize to they extent that they use only the "high-quality" sub-set of their data in subsequent applications.[6]

Secondly, there is considerable scope for non-sampling errors to permeate the results of household enquiries into such complicated (and delicate) issues as household income, composition and expenditures. It is potentially usefully, therefore, to review the main sources of such errors in the next section of the paper where it is noted that non-sampling errors that bias the sample mean may well bias measures of inequality also, typically in a downward direction. There is therefore no reason to assume that estimates of inequality derived from household survey data are more reliable than the estimates of average living standards that can be derived from the same source material. It is remarkable, therefore, that all the secondary data sets listed in Table 1 compile information on the dispersion of living standards but not their level.[7]

The third theme to emerge has strong links with those already noted. It concerns the lack of consistency between survey data and national income accounts. This has major implications both for the (lack of) control of non-sampling errors and also for the usefulness of the data in various applications, including the monitoring of changes in living standards over time and, more especially, of poverty. This topic will be developed in Section 5.

3. Non-sampling Errors

While the (stochastic) sampling errors that arise in survey work are generally recognized, it was the prevalence of non-sampling errors which led the World Bank to conclude in the late 1970s that, for all but a few developing countries, it was not possible to make clear statements about what had been happening over time to the living standards of different groups or the location of Lorenz curves from the data then available.

Non-sampling errors fall into three categories, the first of which comprises those errors that arise *ex ante* in defining what metric is to be used to measure living standards and the population to be covered; secondly, there are all sorts of errors that arise in implementing a survey, from sample selection and questionnaire design through to actual data collection; and thirdly, there are errors that arise in coding data, editing and compiling the results. The relative importance of these alternative sources of error has shifted over time as a result of changing technology.

[6]See Deininger and Squire (1998).
[7]The WIDER (2000) compilation is a partial exception to this general rule.

The household is normally taken to be the appropriate unit of enquiry, with the set of all households as the corresponding population to be covered in a comprehensive national survey. Similarly, it is conventional to assume that the metric to be estimated for each individual is some version of x/n where, in the simplest cases, x is the aggregate income or consumption expenditure of the household and n is household size. The maintained hypothesis, therefore (which can be seriously wrong) is that individuals within the same household share a common standard of living.

Given these basics, the generally accepted standard (which is not always adhered to) is to define the components of household income, transfers and consumption expenditure according to the conventions established for compilation of the national income and expenditure accounts. This has the obvious advantage that it should make survey results and the national accounts more comparable than they would otherwise be. But it does not resolve the need to fix on precise definitions for both x and n. Both variables raise substantive problems, such as:

- whether income should include capital gains and be calculated before or after deduction of discretionary (or all) transfer payments;
- whether x should include the value of time used in providing services for consumption within the household and/or the imputed value of transfer receipts in kind (such as subsidised education services);
- whether domestic servants and lodgers should be regarded as separate households (as in the national accounts) and the household should otherwise be defined on a *de facto* or *de jure* basis.

None of these questions has an obvious answer. Indeed, the most appropriate definition of x/n is likely to depend on the context, which is one reason why it is always useful to have access to primary data sets. Secondary sources necessarily present the analyst with pre-determined choices of both x and n which are unlikely to be the same for every survey. As a result, secondary data sets typically contain details of the dispersion of income *per capita* (with income defined in various ways) for some countries, while x/n will measure consumption *per capita* for others. To complicate matters further, countries sometimes change their definition of income, or they switch from income to a consumption-based metric, or vice versa.[8]

While most analysts recognize that the choice of x matters, less attention is paid to the determination of n. This is unfortunate since the OECD norm of a nuclear family living in its own accommodation is not universal. The extended family is more typical elsewhere; polygamous relationships are common in some parts of the world; and accommodation is often shared among several families. The treatment of domestic servants, lodgers and absentee members of a family present further difficulties which can have a significant impact on the results for countries, such as Kuwait, where it is not unusual for a "first-class" family to have six domestic servants, or in Southern Africa where many males spend a significant fraction of their working lives in camps or hostels. Indeed, the lack of coverage of those with no fixed abode and the institutionalized population—in hospitals, barracks, on board ship etc. who are not, therefore, to be found in houses—can

[8]Yet further complications are the result of changes over the years in the recommended coverage of imputed income and expenditures within the national income and expenditure accounts.

make a big difference to the final results for particular socio-economic groups and overall. Even greater distortions can arise from the fact that some secondary sources report details of the distribution of x among households rather than the distribution of x/n among individuals.

The definition of the metric gives least trouble when the concept is furthest removed from any claim to be a measure of welfare. Such claims are often based on a re-interpretation of n as a measure of needs rather than of household size via the introduction of either

- an equivalent adult scale and/or some measure of the economies of scale within a household; or
- an allowance for the fact that access to services and the availability/quality of goods is not the same for each household, nor are the prices they have to pay.

While the variation of prices by season and geographic location is widely recognized, few surveys make any allowance for this. And there are no instances I know of in which the data have been adjusted to recognize the fact that potable water delivered to urban squatters by a water carrier may cost ten times the amount charged to middle class consumers connected to a mains supply.

To assume that, within a given country, definitions stay constant over time has to mean that each of these issues is treated consistently. And that is unlikely, especially in countries that start out with little or no experience of what is involved in undertaking a household survey and as the interval of time between successive surveys increases.

Table 3 lists some of the additional concerns that arise at the next, implementation stage of a household survey. The first of the issues noted is sample selection, which depends both on sample design and on the listing of households from which the sample is drawn. In relation to the first of these, it is important to note that household surveys are usually designed to measure average levels of income or expenditures, and their design is far from optimal if the main concern is to measure the *variation in* (as distinct from the *level of*) income (or expenditures) *per capita* across households. Not least of the problems is the difficulty of ensuring adequate coverage of the tails of the distribution, i.e. of the richest and poorest households. The poor are more likely than others to be under-represented on the various registers or listings that are normally the starting point for sample selec-

TABLE 3

Biases that May Enter at the Implementation Stage of a Household Survey

Sources of Bias	Direction of Bias of	
	The Mean	Inequality
Sample selection, e.g. under-representation of the poor	+ve	−ve
Non-response		
e.g. (i) under-representation of the rich	−ve	−ve
(ii) details of non-wage income	−ve	−ve
Incomplete coverage of imputed incomes and expenditures	−ve	+ve
Random (multiplicative) measurement errors	+ve	+ve

342

tion (census listings, voter registers, etc.) because they have no fixed abode or because they try to avoid involvement in anything "official." For the rich, the problem is usually the somewhat different one that, having listed an appropriate number of rich households, survey statisticians experience some difficulty in persuading them to answer questions; typically, the probability of non-response increases with income above some threshold. But the effect is the same in each case. Observed inequality will be biased downwards because the tails of the distribution are inadequately represented. An important aspect of the quality of a survey is the way in which it addresses this problem.

Another source of difficulty, working in the opposite direction, is that any unsystematic (measurement) errors will tend to increase perceived inequality, so that systematic and unsystematic errors are likely to have offsetting effects. To begin to unravel the difficult questions that then arise about the noise-to-signal ratio in household survey data, we need to go back to primary source materials.

Szekely and Hilgert (1999) have done just that, basing their analysis on the results of a recent survey in each of 18 Latin American countries. Their investigations suggests not only that the rich are under-represented in the samples but also that, for those included, non-labor income—especially self-employment income—is under-reported. This confirms the earlier findings of Altimir, also for Latin America, and similar findings elsewhere, such as the results for the Republic of Ireland in Table 2. Based on the surveys they have studied, Szekely and Hilgert have concluded that Gini coefficients for income inequality are biased downwards towards the Gini measure of inequality for employment income, and that the extent of such bias may well be sufficiently different for different surveys to change the relative rankings of countries according to the size of G. This important finding gives empirical support to the expectations noted in the final column of Table 2.

Further evidence of the under-recording of income is to be found in the frequency with which negative savings are observed in those surveys that measure both income and expenditures, and in the discrepancies between survey data and the national income and expenditure accounts which suggest that it is typically the survey data that underestimate the mean of the distribution of personal income. This same evidence also suggests that aggregate consumption expenditure is measured more accurately than income by household surveys, which is one reason why some analysts prefer to work with household consumption *per capita* as their basic metric.

While the consumption data may often be better, they have their own limitations. In particular, these data are especially vulnerable to non-response or recall errors which are exacerbated by the difficulties many (illiterate) households experience in trying to keep diaries or in recalling previous purchases. The consumption data may be better, therefore, on balance relative to the income data if only because most surveys that estimate both income and expenditures suggest an unreasonably high frequency of households for which savings are negative. But this is hardly a strong endorsement of the consumption data.

A further problem, effecting income and consumption data equally, is the treatment of imputed income and expenditures. Imputations are normally made after a survey has been completed, usually as part of the editing process. The ques-

tions of principle that arise in deciding what should be covered within this category have been noted above. Beyond them lie considerable difficulties in practice. For example, an attempt is often made to estimate the consumption of own produce by subsistence farmers. But valuation is not easy since it depends on farm-gate prices, which can vary considerably over time and space. And, sometimes but not always, an effort is made to estimate the rental value of owner occupied housing. But hunting and gathering, fetching water and similar activities are often neglected. Their omission will undoubtedly bias downwards the estimated mean of the metric. And estimates of inequality will also be biased, but in the opposite direction, to the extent that such "do-it-yourself" activities are more important among those who are least well integrated into the monetary economy.[9]

For all these reasons it must be concluded that survey-based estimates of income and expenditure inequalities are likely to be biased and these biases are unlikely to be small or remain constant over time as the monetization of economies proceeds and statistical competence grows. All comparisons are therefore likely to be problematic: observed trends may be statistical artifacts, reflecting changes—not always improvements—in survey methods, while comparisons of inequality across countries may be dominated by the effects of differences in survey methods and/or in the institutional setting. As a result, any changes in, say, the Gini measure of inequality are as likely to be caused by (changes in) non-sampling errors, which can be large, as they are to parametric changes in the underlying distribution. Potential users of secondary data sets should therefore be aware that allowing for fixed country effects is unlikely to be a sufficient way of accommodating non-sampling errors in a data set that has not been carefully checked for definitional and methodological consistency. In their original, historical context, these arguments meant that very little of the data available, *circa* 1980, was thought at that time to provide a sound basis for comparative analysis of trends. Had matters been otherwise, we can be sure that such analysis would have been attempted and the World Bank would not have initiated the LSMS.

4. The Living Standards Measurement Study

Redistribution with Growth was published in 1976 and *Basic Needs; A One-world Problem* appeared in the same year.[10] Both, in their different ways, recognized the importance of distributive concerns within the development process and, as a result, they stimulated a demand for better data on the distribution of living standards. The response of the United Nations Statistical Office at that time was to sponsor a *National Household Survey Capability Programme* while that of the World Bank was to try to identify, via the LSMS, the data that were needed to support development policy, and then to provide one or more demonstrations of how such information could be collected. The overall objective of LSMS was,

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[9]A related example arose in the processing of a survey for Sri Lanka where the owners of tea estates provide housing, education and medical services for estate workers and their families. By grossly over-valuing the services provided, the survey overstated the income of estate households and understated the dispersion of living standards nationwide.
[10]See Chenery *et al*. (1976) and International Labour Office (1976).

therefore, to identify specific demands for data and to initiate methods whereby these data could be made available.[11]

Within this overall objective, the primary concern of LSMS was to provide information on who was benefitting from development and by how much. This put a premium on the consistency of survey results and, therefore, on the consistency of survey design over time (which could potentially be relaxed by including a panel element in the design of individual surveys).

Next, it was recognized that poverty and basic needs were multidimensional so the LSMS needed to cover *inter alia* nutrition, health, education and housing, although not necessarily in any great depth or all at the same time. Moreover, it was maintained from the outset that, despite the evident difficulties, coverage in depth of household incomes and expenditures should be at the core of any survey design.[12]

This predilection towards coverage of both sources of income and patterns of expenditures was based on several considerations, one of which was to develop internal consistency checks within the questionnaire. Another was to recognize that many households are simultaneously consumers and producers and that all forms of imputed income should be matched on the outlay side of a household's accounts.

A strategic decision in the very early days of the LSMS was to promote parallel surveys of households and of the communities in which they live. Price data could then be collected at the community level (potentially as a joint enterprise, serving the need of others for data on purchasing power parities) along with details of the facilities (schools, clinics, etc.) to which members of the community had access.[13]

This decision to simplify the main household survey instrument by setting aside the measurement of prices recognized the considerable variation among such prices (which can be strongly correlated with income) and the virtual impossibility of accurate measurement at this level of detail. Earlier hopes of measuring the distribution of *real* incomes and/or expenditures at the level of the household had, perforce, to be abandoned.

This setback was not without its compensations, however, since the fall-back position of having to accept x/n as the working definition of the metric, without correcting for differences in relative prices, has the advantage that aggregation is now straightforward: the average value of x/n among a group of individuals is X/N where $X = \Sigma x$ and $N = \Sigma n$. The average value of the metric suggested by a household survey should therefore be equal to the alternative estimate of X/N that can be derived from a national accounts estimate of X and a census-based estimate of N.[14]

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[11]See Pyatt (1979) and Chander *et al.* (1980)

[12]In anticipation of the difficulties to be overcome, early and widespread adoption of an LSMS survey instrument in Africa was not envisaged.

[13]This particular possibility for serving two objectives with one instrument has been resurrected recently by Biru (1999).

[14]The national accounts concept of the household sector is broader than the set of households covered by a typical household survey. So for this and other reasons, some adjustments to the data are necessary before making comparisons.

Of course, this alternative estimate of X/N will not be independent of the survey-based estimate if the survey data are used to estimate the consumption component of the national accounts. However, this is not typically the case since most developing countries recognize a best-practice approach to the construction of the national income and expenditure accounts that uses a commodity balance framework. This requires an estimate of aggregate supply for each commodity (imports *plus* domestic production) to be set against an estimate of aggregate demand, i.e. the aggregate of intermediate demand, consumption, investment and exports. In theory, the two sides of the equation must balance separately for each category of goods and services. And, when they fail to do so in practice, each discrepancy has to be evaluated with a view to changing one or more of the components of the aggregate balance. The usual presumption is that household survey data on consumption, when available, are the least reliable. They therefore take most of the adjustment, which effectively implies that consumption is estimated residually for most commodities and, to that extent, independent of the survey results. The alternative, of recognizing that other data are also likely to contain errors, is a possibility that is rarely taken to its logical conclusion outside the literature on social accounting matrices.

It is now some 20 years since the LSMS was launched and subsequent events have helped to shape the way in which the initial program has evolved. In particular, the debt crisis that surfaced in the early 1980s dominated the development agenda for the remainder of that decade and, while LSMS survived, those aspects which emphasized the links between household surveys and the national accounts did not.

The first nationwide surveys to be initiated under the auspices of the LSMS programme were canvassed in the Cote d'Ivoire, Peru and then Ghana during the years 1985–87. Others soon followed so that Grosh and Glewwe (1997) were able to report that "As of 1996 surveys with several, if not all, of the hallmarks of the *Living Standards Measurement Study* had been conducted in about two dozen countries."

Much of the impetus for this continuing activity was sparked by the World Bank's renewed interest in poverty, signalled in their *World Development Report, 1990*. Income distribution data were needed to quantify the number of people living on less than "a dollar a day" and to identify, within each country, who the poor are and their salient characteristics. This latter type of analysis was particularly prominent within the context of *Poverty Assessments* which, throughout the 1990s, were the main expression at the country level of the World Bank's concerns in this area. They drew extensively on guidelines and case studies, many of which were published as *LSMS Working Papers*.[15]

Access to a number of the new data sets generated by all this activity has been facilitated by the World Bank via a dedicated website. This is a cumulative resource which has enormous research potential. These same data also yield the estimates of national and global poverty that are published in the annual *World Development Reports*. Their underlying methodology has been developed in a series of papers, the most recent of which is Chen and Ravallion (2000).

[15]There are now over 200 papers in the *LSMS Working Papers* series.

This rich flow of primary data sets is likely to continue under the latest Bretton Woods program—the Heavily Indebted Poor Countries Initiative (HIPIC)—which ties official debt relief to the preparation at country level of a *Poverty Reduction Strategy Paper*. Household survey data can contribute substantially to the preparation of these papers, which have to include details of how progress towards the overall objective of reducing poverty is to be monitored.[16] The potential links between poverty and development are therefore critical to any justification of the considerable expense of household surveys in poor countries. But the data are also important at the international level in forming opinions about the choice of macro-economic strategies and, in particular, in maintaining the importance of economic growth for poverty reduction.

5. THE ESTIMATION OF POVERTY

The method used by Chen *et al.* to construct poverty estimates for individual countries that are comparable internationally depends on the translation of an international purchasing power standard—"a dollar a day"—into a local currency equivalent denoted here by z. The proportion P of the population that is poor (known as the head-count ratio) is then defined by the relationship

$$P \equiv \Pr(m \leq z) \equiv \Pr\left(\frac{m}{Em} \leq \frac{z}{Em}\right) \equiv F(z/Em)$$

where the function $F(\cdot)$ is the distribution function of the variable m/Em, i.e. of the metric, m normalized by its mean. The extent of poverty in a particular country therefore depends on the distribution function $F(\cdot)$ and the variable z/Em, which is the ratio of the poverty standard z to the average value of the metric. It follows immediately that, for given z and $F(\cdot)$, poverty will fall as the average living standard, Em, rises.

The procedure followed by Chen *et al.* uses household survey data to estimate both $F(\cdot)$ and Em. However, it is evidently possible to use survey data to estimate $F(\cdot)$ and some independent source, such the national accounts, to estimate Em. The results obtained from this alternative procedure will then be different from those of Chen *et al.* to the extent that the alternative estimates of Em are different. The empirical results set out in Table 4 show that, in practice, these alternative estimates can be very different. We therefore observe a very different pattern of global poverty, depending on which of the alternative measures of Em is adopted.

This result was to be feared, given the earlier work of Altimir and Visaria. However, there was some hope that LSMS procedures and practices would mitigate the problem. Unfortunately, they have not: the results in Table 4 clearly demonstrate that, based on the first 28 LSMS surveys, very different estimates of average living standards and, hence, of poverty are obtained, depending on whether the survey data or national accounts are used to estimate Em.[17] Indeed,

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[16]Various ways in which survey data can contribute are discussed in the *Poverty Reduction Strategy Workbook* which is accessible on a World Bank website.
[17]Karshenas (forthcoming) shows how differences in the estimate of Em translate into different estimates of poverty, depending on what is known as "the poverty elasticity."

TABLE 4

A COMPARISON OF LSMS AND NATIONAL ACCOUNTS ESTIMATES OF AVERAGE CONSUMPTION PER HEAD

Cases in which the LSMS Gives the Lower Estimate	Ratio of the Smaller to the Larger Estimate	Cases in which the National Accounts Give the Lower Estimate
None	20–30%	Tanzania (1992/93)
None	30–40%	Kyrgyz (1993)
Venezuela (1992)	40–50%	Russia (1993/94)
Bulgaria (1995)	50–60%	Guyana (1993)
		Nicaragua (1993)
Peru (1991 and 1994)	60–70%	None
Peru (1985/86)	70–80%	Cote d'Ivoire (1985/86)
Romania (1994)	80–90%	Cote d'Ivoire (1986/87 and 1987/88)
		Ghana (1987/88)
		Pakistan (1991)
Cote d'Ivoire (1988/89)	90–100%	Morocco (1990/91)
Ecuador (1994)		
Jamaica (1988, 1989/90, 1990/91, 1991/92, 1992/93, 1993/94, and 1994/95)		

Source: Based on Deaton and Grosch (2000) as reported by Muñoz (1998).

some of the discrepancies for *Em* are huge. And "learning by doing" does not seem to have taken care of the problem. In a more recent study by Ravallion of 142 data sets, the survey mean is less than the national accounts estimate in three-quarters (85) of all cases.[18] Of these, the ratio is below 0.6 in a third (27) of the cases covered. At the extremes, the ratio is less than 0.5 in ten cases and above 1.5 in five cases. Accordingly, unless one is prepared to argue that estimates of *Em* from one source are significantly better than those from the other, we have to conclude that we know much less than one might have thought about the average level of living standards in developing countries and, therefore, about the incidence of poverty as measured by the headcount ratio, *P*.

This argument can be taken further since, if the inconsistencies reported in Table 4 could be explained by fixed country effects, then there is no reason why changes over time, as measured by the alternative data sources, should not be strongly correlated.

Evidence on this point has also been reported in Ravallion (2000). His main findings are reproduced in Figure 1, which gives little support to the fixed-effects model of the data. Rather, the figure shows that there is little or no correlation between the *changes* in consumption *per capita* implied by successive surveys and the corresponding measure of change based on the national income and expenditure accounts.

The lack of correlation evident in Figure 1 implies that the survey data suggest a very different picture of what has happened to average living standards and, therefore, to poverty in poor countries to that which can be gleaned from their national income and expenditure accounts. It must then follow that not only do we not know with any acceptable degree of accuracy how much poverty
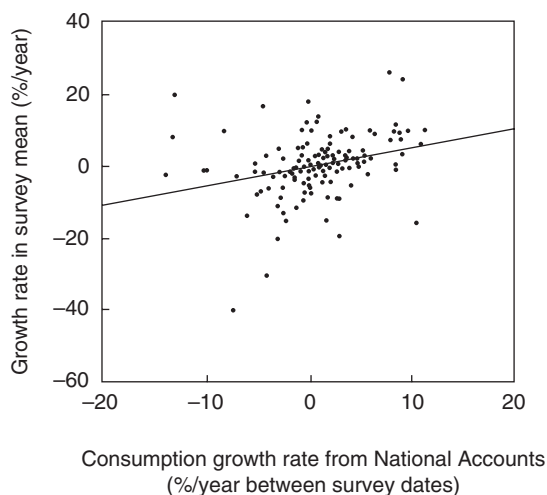
[18]See Ravallion (2002).

Figure 1. Growth in the mean living standard of households, measured by comparing the results of two household surveys versus the growth in household consumption expenditure as recorded in the national accounts

Source: Ravallion (2000), Figure 3.
Note: The fitted repression line is reported as having a slope of 0.52.

there is in particular countries, but also that we cannot readily distinguish between countries which are managing to reduce poverty and those where the incidence of poverty is increasing. As a result, any attempt to infer from the international cross-section (panel) evidence those policies that seem to be working and those that are detrimental is unlikely to yield results that are independent of the choice between the alternative ways of measuring average living standards.

6. Adjusting the Primary Data

The data problems discussed above have inevitably led some commentators to argue that primary data should be adjusted to reduce any observed discrepancies between alternative sources. Since the results of a population census are often used to provide the listing from which a sample of households is selected, survey statisticians regularly compare their results with comparable census information. And, if and when important discrepancies are found, a possible remedy is to re-weight the survey results to be consistent with the census findings. Such adjustments go well beyond the normal process of editing results to eliminate outliers and "guestimate" missing values. Inevitably they raise questions about how far one should go in "massaging" primary data in order to achieve consistency with other information sources.

There are important differences of opinion on this issue, especially as it effects the consistency between survey data on living standards and the national accounts. One consequence, noted previously, is that Deininger and Squire have rejected the secondary statistics carefully constructed by van Ginnegen and Park and the

349

subsequent efforts of the LIS on the grounds that their results are too far removed from the primary data.[19]

Various considerations influence the alternative perspectives. One is the hard-work and technical difficulty involved in reconciling survey data and the national accounts. Another is the contention that any such attempt at reconciliation makes little substantive difference to estimates of the Lorenz curve. Neither of these arguments is entirely persuasive, however. With respect to the second, it follows directly from the discussion in Section 2 that non-sampling errors are likely to bias estimates of *both* the sample mean *and* the Lorenz curve. And an obvious response to the first line of argument is that if the technical issues of reconciling household survey data and the national accounts are not addressed, then the ambiguities evident from Tables 2 and 4 will remain.

While the LSMS was originally intended to address this issue of consistency, the discrepancies reported in Table 4 suggest a more or less general failure to make a significant contribution towards solving this problem. Experience in the Cote d'Ivoire, one of the pioneering countries, illustrates some of the difficulties.

Four LSMS surveys were conducted in the Cote d'Ivoire between 1985 and 1989. Their results are ambiguous, however, since alternative teams of *masseurs* have produced alternative sets of results. The World Bank has, I think, adopted the data set discussed in Demery and Grootaert (1993) as opposed to that of Coulombe *et al.* (1993, 1997). But this cannot be ascertained from the documentation and the choice is not trivial. Its significance is noted by Deaton (1997) who makes use of

> "corrective weights" provided by the [World] Bank. These were calculated after the surveys were completed and are designed to correct some known deficiencies in the design that led to over- or under-sampling. The most controversial component of the weight "corrects" the surveys' estimates of household size. In the raw data, average household size declines over time at an implausible rate, something that could happen if large households were over-sampled in the first survey (see Coulombe and Demery, 1993 and Demery and Grootaert, 1993), or through progressive quality deterioration if enumerators became better at avoiding the very large households that can take many hours to interview (see Coulombe *et al.*, 1993). The weights are based on the former hypothesis, and are controversial because they depend on its correctness: it is far from clear that they can be interpreted as inverse sampling probabilities. Unfortunately, inferences about *per capita* expenditures in Cote d'Ivoire are sensitive to these corrections (see again Coulombe *et al.*, 1993). (Deaton, 1997, p. 152)

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[19]The van Ginnegen and Park project attempted to reconcile household survey data and the national accounts while avoiding the reconstruction of the latter. Their approach was based on a methodology previously set out in Altimir and Sourrouille (1980), the essence of which was to scale the survey data for particular classes of income so as to reproduce the corresponding magnitudes within the national accounts. This pragmatic approach was not intended to imply that the national accounts data were necessarily superior: they might be in particular instances, but this could only be argued on a case-by-case basis, recognising the particular methodologies employed. Details of the LIS approach can be found in Atkinson *et al.* (1995).

Underlying the figures for Cote d'Ivoire in Table 4 is a rise of *per capita* consumption expenditure of 27 percent over the period 1985 to 1989. The corresponding estimate from the national accounts is 3 percent. Since this difference is largely attributable to the massaging favored by Demery and Grootaert, the documentation of any re-weighting that has actually been imposed on a particular data set would seem to be important in explaining why the Cote d'Ivoire jumps from one side of Table 4 to the other in successive surveys. It is unfortunate, therefore, that there is no documentation of this issue in World Bank sources or in Demery and Grootaert (1993).

The above example suggests that neither Deininger and Squire nor the custodians of LSMS data sets within the World Bank have any objection to the modification of primary data to achieve consistency with alternative demographic data. Nor, we can assume, would they object to the use of any knowledge gained through that process to improve details for the private sector and the overall balance of the national accounts. But they evidently resist information flows in the opposite direction, i.e. from the national accounts to the household surveys. Inconsistencies between survey data and the national accounts data are therefore not recognised as a *prima facia* reason for questioning the survey data.

Bourguignon and Morrison (1998) respond to the problem differently. They write (p. 252):

> The data shown in (our) appendix is generally in agreement with the data base recently collected by Deininger and Squire . . . except for a few discrepancies. These come from several consistency checks that have been made in our own data. In some instances these led us to prefer one data source to another among those listed in Deininger and Squire and in some instance to prefer another data source. These checks were based on: (a) the inter-temporal consistency of the data—i.e. no big change in the distribution could possibly have been observed in a country without a big change in the structure of the economy or in its rate of growth, (b) the comparability with other data sources when they exist, (c) and consistency with National Accounts data, censuses and SAM where available.

and then proceed to document examples (taken from Morocco and Nepal) of the consistency checks that persuade them to prefer their own data to those listed by Deininger and Squire.

The opinion of Bourguignon and Morrison on this matter is evidently shared by Bigman (1996) who reports on an attempt within the World Bank to develop a simulation model of the separate trends in population and consumption per head for rural and urban households, consistent with census data and the national accounts. His model is calibrated via a synthesis of demographic data, national accounts and the results of a household survey for some base year. It therefore allows a comparison of simulated versus actual trends when the results of a second household survey are available. This is the situation for two of the five countries studied by Bigman, *viz* Ghana and Nigeria. In both cases the comparison is revealing. For Nigeria, it shows that, according to (World Bank) national accounts and demographic data for the period 1987 to 1992, private consumption grew slightly faster than the population, so that growth of private consumption *per capita* was

351

marginally positive. In contrast, household surveys covering the same period suggest that consumption *per capita* increased by more than a third. For Ghana, similarly worrying discrepancies emerge. A comparison of survey results for 1987/88 and 1991/92 suggests that consumption *per capita* remained more or less constant in urban areas, and grew by some 17 percent in rural areas. However, the national accounts data show the differential moving strongly in the opposite direction by a net 8 percent. In commenting on these results, Bigman notes that "estimates of trends based on the Ghana Living Standards Survey data must be interpreted with great caution, however, because methodological changes between the two surveys severely impair their comparability."[20]

Bigman's conclusions are disturbing. They reinforce the earlier evidence that one of the key problems the LSMS set out to address has not been resolved and that neither the national accounts nor household survey data can be accepted as a definitive source of information on trends in living standards. The recent study of this issue which generated the data in Figure 1 (Ravallion, 2000) provides the best evidence we have. It shows that private consumption, as recorded in consecutive household surveys, and the private consumption component of the gross domestic product, moved in opposite directions in about one third of those instances in which a comparison could be made. Clearly, on this evidence, both sets of numbers must be considered suspect.

7. Deininger and Squire's Secondary Data Set

The problems that arise with primary data sets necessarily condition the quality and relevance of whatever data might be included in a secondary compilation of statistics. Accordingly, they effect the "high-quality" data set introduced by Deininger and Squire in their 1996 paper, which has already become a landmark in the field. Researchers have generally responded positively to this new compilation by accepting the data as a resource to be drawn on in a variety of studies, many of which are listed in Deininger and Squire (2002). Others, notably WIDER, have taken the Deininger and Squire data base as the starting point for developing their own compilations, while Deininger and Squire have themselves received continuing support from the World Bank to develop and refine their original contribution. Yet others have reviewed the original contribution and offered suggestions for its improvement. Deininger and Squire (2002) reports on their most recent work, which can be seen as a constructive response to some, but not all, of the points raised by the critics.

The new 2002 data set provides summary results for more than a thousand "high-quality" surveys with a substantially increased representation of the less developed countries. For the most part, the additions are either recent (1990s) surveys or they belong to collections of information that were previously ignored. Atkinson and Brandolini have noted some of the early compilations of data on the dispersion of income that had previously been overlooked, including UN (1951), while Pyatt (1999b) discusses the lack of concordance between Deininger and Squire (1996) and the alternative World Bank compilation by Chen and

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[20]It can also be noted that only one of the Ghana surveys is recognized in Table 2.

Ravallion. Deininger and Squire acknowledge these omissions and have now merged the latter compilation with their own. At the same time, however, they have eliminated all observations prior to 1960, arguing that the early surveys are generally of lower quality.

The elimination of survey data for the period prior to 1960 brings the Deininger and Squire data set into line with the convention followed in the *World Tables* published annually in the *World Development Report*. This is to be regretted in my opinion since it encourages the general practice among development economists of ignoring the 1950s and earlier experience. Useful data exist for the 1950s from which lessons can be learned. Certainly, the quality of surveys has improved over time in most countries. But we also know from the work of Altimir and Visaria that, with few exceptions, most of the survey data for developing countries prior to 1980 is problematic, as is much of the subsequent material. From this perspective the decision to exclude all surveys prior to 1960 appears to be somewhat arbitrary.

Deininger and Squire have made other changes in response to new information and the comments stimulated by their 1996 paper. However, as previously noted, they remain unwilling to include data that they think have been massaged unduly. And they continue to regard the inclusion of a particular data set in a United Nations or World Bank publication as a sufficient guarantee of its quality.

This convenient criterion for the acceptance of a particular data set is not easily reconciled with the convention that each entry in a data base must ultimately be justified by something more substantial than its provenance. In Pyatt (1999b) I argued that, all too often, the documentation offered by Deininger and Squire is less than adequate and that the use of data in a particular secondary sources, such as a World Bank or UN report, should not be considered a sufficient guarantee of quality, if only because the reports in question are not objective statistical documents. Typically they do not explain the sources and methods of the data they invoke and, all too often, they do not include references to where such information can be found. Indeed, in some cases, such as the World Bank *Poverty Assessments* previously referred to, the lack of documentation reflects the fact that adequate documentation was never prepared or, if it was, has since been lost. It must be a moot point whether, in such cases, the results that are being passed down through secondary sources should retain their currency. While most analysts are reluctant to spend time tracing their data back to its primary sources, they ought to be worried by the thought that it may not be possible to do so. Accordingly, it should be a cause for some concern that Deininger and Squire have not, as yet, identified which of their data can be supported by documentation of the primary material that might be considered adequate according to conventional norms.

On a more positive note, Deininger and Squire have moved some way towards accepting that their data on the dispersion of living standards ought to describe the whole distribution so that, in addition to information on the Lorenz curve, information on the mean or median might be useful. However, rather than include this additional information on the World Bank website, the current suggestion is to make the data available on request. This is problematic. But assuming the obvious difficulties can be overcome, an important implication is that users should now find it easier to reproduce the World Bank's poverty estimates, or to calculate

the average income of the poorest 20 percent, for example, or the Sen measure of social welfare $(1 - G)\overline{m}$, using survey information only. It should also mean that users will now be able to make an initial check on data quality by comparing survey means with corresponding estimates in the national income and expenditure accounts.

Deininger and Squire have responded to concerns about the quality of their data by arguing that users should be sufficiently aware of the data's limitations and proceed accordingly. This is not self-evident, especially when the documentation is weak. And, beyond that, the quality of the data needs to be judged in relation to particular applications since there can be no absolute standard. It would be appropriate, therefore, to review what has been learned so far via the Deininger and Squire data set and how reliable these findings might be.

Unfortunately, such a review is well beyond the scope of this essay. It must suffice, therefore, to note that the most influential applications to date build on the fact that the data show little evidence of systematic changes in Lorenz curves over time or across countries. One consequence is that Gini coefficients are relatively stable and it is quite rare to find a Gini coefficient for a non-socialist country that lies outside the range 0.3 to 0.6. An important consequence for most countries is that the graph of the Gini coefficient versus gross domestic product *per capita* rarely suggests a statistically significant trend or turning point. Accordingly:

> [the data] offer virtually no support for an increase of inequality at low levels of income and a decrease at higher levels as suggested by Kuznet's inverted-U relationship. This leads us to conclude that, based on the available evidence, the Kuznets hypothesis is either too flat to be noticeable in the data (and thus unlikely to be of relevance for policy makers) or is not relevant for developing countries. (Deininger and Squire, 1998, p. 282)

The fact that Deininger and Squire chose to investigate this crude version of the Kuznets hypothesis as one of the first applications of their data is consistent with the suggestion that this potential application was important in motivating their compilation exercise. But, however that might be, the policy implications of their exercise have been seized on by Bruno *et al.* (1998) and others as evidence that there is no necessary trade-off between inequality and economic growth in poor countries.[21]

As yet, little systematic work on the dynamics of Lorenz curves and their stability has been published. But, meanwhile, Deininger and Squire have decided to advise prospective users that their compilation is not intended to support time series analyses for particular countries. This is a major concession to the critics, which apparently undermines their own investigation of the Kuznets hypothesis.

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[21]This evidence is suspect to the extent that the Deininger and Squire result is "hard-wired" into their analysis via their specification of the relationship between inequality (the Gini coefficient) and gross domestic product *per capita*. The basic problem is that the equation fitted by Deininger and Squire predicts a value of the Gini coefficient between 0.3 and 0.6 if, but only if the gross domestic product *per capita* lies within a certain interval. Moreover, the nature of the restriction implies that the curve becomes flatter as the interval in question increases. Hence, given their specification, the observed "flatness" of the curve is a function of the range of observations of the gross domestic product *per capita* in the data set to which the curve is fitted: the larger the data set, the less likely it is that any significant Kuznets effect will be observed.

Some further clarification of their views may be needed, therefore, not least because Deininger and Squire want to encourage applications that treat individual countries as members of a panel. Some part of the answer may be that they recognize the potential for fixed country effects in their data. But it is far from obvious that the pervasive presence of non-sampling errors can be accommodated so easily.

8. A Way Ahead

The evidence assembled in this paper suggests that it is very difficult to collect reliable data on the distribution of income or consumption expenditures via a household survey. The observed discrepancies between survey results and the national accounts are too large to be dismissed lightly, and the potential for non-sampling errors to permeate the survey results makes it inconceivable that the preponderance of errors arise in compiling the national income and its various components. Equally, in so far as the national income accounts are constructed via a residual balance approach that gives little credence to household survey results, their compilation must be called into question. The way forward for measurement of average living standards and their dispersion must be to confront the two types of data and to pursue the agenda that arises from the observed discrepancies.

The first stage of such a confrontation is conceptual. As we have seen, most household surveys adopt national accounting definitions of the household, its income and expenditures, in principle. In practice, this standard is not easy to implement and numerous discrepancies can arise. The problems involved have recently been reviewed in detail by the Canberra Group, working largely with the interests and experience of the OECD countries in mind.[22] A useful step would now be for the LSMS to review this work with a view to integrating its findings into LSMS manuals and procedures.

A further stage of development would be to document the discrepancies between survey results and national accounts. On the income side this activity should yield results similar to those of the Van Ginnegen and Park study illustrated in Table 1. On the expenditure side, a similar table could be produced, showing the discrepancies for each of the main categories of expenditure and savings. Both accounts could usefully distinguish imputed items from cash transactions and separate details for those parts of the private sector that are not resident within households.

Making the discrepancies explicit along the lines suggested would be a significant contribution towards deciding what to do about them. They pose classic statistical problems which cannot be resolved here. But these are not insuperable. Rather, there is every chance that country-specific ways of improving both survey data and the national accounts will emerge after due deliberation, once the problems are confronted.

This confrontation has been avoided for many years, going back at least to 1968 when a decision was made to develop the *System of Social and Demographic Statistics* independently of the *System of National Accounts*. There must now be

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[22]See van der Laan (2000).

some concern about how long this apartheid should be allowed to continue. And here we can note that, while the reconciliation of survey data with the national accounts is an end in itself, it is also a first step towards the creation of social accounting matrices in which commodities, production activities and the household sector are disaggregated to reveal the mutual interdependence of trade relations, production activities, poverty and the distribution of income. Reconciliation is therefore not only the way ahead in seeking to improve the quality of data at national level: it also represents a constructive response to the need for a better appreciation of poverty and inequality as features of the overall equilibrium of the economy. The improvement of the data can therefore be seen as a necessary first step towards a deeper understanding of the policy issues. Meanwhile, as matters stand, the inconsistencies between household survey data and the national accounts of poor countries are a major obstacle to effective policy making in this crucial area.

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