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A COMMENT ON "GROWTH AND EQUITY IN DEVELOPING COUNTRIES: A REINTERPRETATION OF THE SRI LANKAN EXPERIENCE," BY BHALLA AND GLEWWE

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The inaugural issue of this journal contained an article by Bhalla and Glewwe which addresses some problems that arise in attempting to assess "the relative success or failure of policies in different countries or policy regimes" (Bhalla and Glewwe, 1986, p. 36). Their conceptual framework contrasts two approaches to raising economic welfare: "the direct or basic needs approach and the indirect or economic growth approach" (p. 61). From 1960 to 1977 Sri Lanka is seen as approximating the first regime, while the subsequent period, following the change of government in 1977, is cast as having a closer correspondence to the second. The general conclusion invited by the paper is that the change in policy orientation has been for the better: "the evidence . . . suggests that the post-1977 policies have not been detrimental to equity objectives and may offer more promise than those which they replaced" (p. 62).

In what follows I will suggest that Bhalla and Glewwe have exceeded the interpretations which their data will support. Accordingly, their case cannot be sustained, much as one would like to have answers to the questions they raise. For my own part, I share the majority view that Sri Lanka's system of food subsidies was (and to some extent remains) inefficient. But it is surprising to find that Bhalla and Glewwe also question performance in the social field between 1960 and 1977, and that they totally ignore Sri Lanka's current state of disruption in their optimistic prognosis.

I. SRI LANKA'S ACHIEVEMENTS IN THE SOCIAL FIELD

It is well known that, in relation to countries at similar levels of per capita income, Sri Lanka has been exceptionally successful in such social fields as health and education. As a result, studies like those of Isenman (1980) and Sen (1981),

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which effectively plot social statistics (for example, life expectancy or infant mortality) on a scatter diagram against some measure of per capita income, invariably show Sri Lanka to be an outlier. This is taken as evidence of benefits, to be set against the cost of high levels of social welfare expenditures which Sri Lanka has incurred.

To ascertain whether these expenditures were efficient in producing results would ideally require formal modeling of production processes in the social field, as Bhalla and Glewwe have noted (p. 37). Rather than attempt this, they argue that previous authors have misinterpreted the evidence of the scatter diagrams. Sri Lanka is admittedly an outlier with respect to, say, life expectancy in 1960 and again in 1978. But to justify the social expenditures of the period 1960–78, it is not enough to show that Sri Lanka is again an outlier in 1978, according to Bhalla and Glewwe. To justify expenditures which were exceptional over the period, they claim, it is necessary to demonstrate that life expectancy *improved* exceptionally over the same period (subject, perhaps, to an allowance for lags). But this did not happen. Life expectancy remained exceptionally high, but it did not improve exceptionally. Hence Bhalla and Glewwe conclude that Sri Lanka's performance in the social field from 1960 to 1978 was "nonexceptional" (p. 49).

This argument is not acceptable as it stands. Gross social expenditures can be divided between expenditures needed to maintain given levels of achievement, and expenditures over and above maintenance costs, the purpose of which is to achieve improvements or extensions in social services. Naturally, starting from a low base, gross expenditures are largely net or improvement expenditures in most developing countries. Hence, if little or no improvement is observed, then it is reasonably safe to conclude that the expenditures were inefficient. But this is obviously not a reasonable assumption in Sri Lanka: to maintain primary school enrollment ratios at around 90 percent obviously requires a good deal of resources. Accordingly, high social expenditures on education in Sri Lanka after 1960, with relatively little improvement in literacy, are not evidence that these expenditures were inefficient: it is evidence that it is expensive for any country to maintain a 90 percent literacy rate.¹

To show that, by international standards, Sri Lanka's social expenditures were inefficient, Bhalla and Glewwe would either have to build a structural model or they would have to show that other countries which started in 1960 with similar levels of performance were better able to maintain and improve on that performance, and at less cost. As far as I know, there are no countries which

1. Bhalla and Glewwe recognize that their argument breaks down if high levels of a social indicator require high levels of expenditure to maintain. However, this recognition is confined to a footnote to discussion of the sharp fall in death rates in 1947 and their low value subsequently, following a highly successful malaria eradication program in 1946. Bhalla and Glewwe say: "The implicit assumption is that the expenditures needed to maintain a particular level [of the death rate] are much smaller than the initial capital expenditure needed to improve (it)" (p. 39, footnote 8). This may or may not be a reasonable assumption in this particular instance. But it is clearly not reasonable across the whole field of social services, especially when, as in Sri Lanka, high levels of performance have already been achieved.

dominate Sri Lanka in this sense. It then follows that a fairer assessment of the Sri Lanka performance might therefore be that, while their policies may or may not have been the most efficient, it was nevertheless a remarkable performance for Sri Lanka to maintain its exceptional position throughout the period.

Bhalla and Glewwe formally fit equations which relate levels of each social indicator to income per head for the period 1960 to 1978. They note that "In principle, the same methodology for assessing comparative performance could be conducted for the shorter time period from 1977 to 1984" (p. 49). Or they could have simply used the post-1977 data to make explicit econometric tests for structural breaks consequent on the change in policies. It is regrettable, therefore, that we are offered only casual empiricism to support their suggestion that "the growth orientation of the economy from 1977 to 1984 was accompanied by improvement in the living standards of the population and the poor" (p. 49). This is hardly persuasive when formal testing was possible.

Bhalla and Glewwe give no reason for not involving data for the period after 1977 in any formal statistical analysis. However, we can note that had they attempted to do so they would have run into trouble. Granted that there was faster growth after 1977, their regression equation leads to the expectation of improved performance on social indicators as a consequence. But this statement is based on the a priori expectation that the slope parameter of the regression equation is positive. In fact, both for primary school enrollment and life expectancy, a negative value is found empirically, so that faster growth since 1977 leads to the prediction of rapid deterioration subsequently! Thus, had Bhalla and Glewwe submitted their hypothesis and data to formal testing, their methodology would be seen to have broken down at this juncture.

II. OUTPUT AND EMPLOYMENT

As a second step in their argument, Bhalla and Glewwe provide a brief discussion of economic growth in Sri Lanka from 1960 to 1984. They characterize the period 1970-77 as one of economic stagnation and refer to the period since 1977 as one of "recovery" characterized by a "growth strategy" (p. 52). They note the marked reduction in unemployment over recent years and the growing share of manufacturers in exports. But they fail to mention that much of this growth is attributable to the opening of a free trade zone, the advent of which had little to do with decisions on the level of social expenditures. They cite the 84 percent increase in paddy production from 1976 to 1984 but do not mention how far this is due to market forces as opposed to the opening up of new lands under a major social intervention, namely, the Mahaweli Ganga irrigation scheme. There is no mention of the growing importance of employment in the Persian Gulf, both in reducing domestic unemployment and in easing the balance of payments constraint through remittances which grew to the extent of becoming second only to tea as a source of foreign exchange. And there is no mention of the very large external deficit which grew after 1977, facilitated by

the considerable inflow of development aid and assistance from abroad in support of the new government (and not least to continue financing further stages of the Mahaweli project). In short, granted that there has been an acceleration of growth since 1977, at least up until the riots of 1983, at no point do the authors discuss how far this growth is sustainable or the extent to which it has been dependent on the choice of social welfare policy.

III. CHANGES IN INEQUALITY AND POVERTY

Sri Lanka has undertaken a number of household surveys of incomes and expenditures over the years. These include two Socio-Economic Surveys, for 1969–70 and 1980–81, and three Surveys of Consumer Finances, for 1973, 1978–79, and 1981–82. The third and final step in the analysis provided by Bhalla and Glewwe is to look at these surveys to ask what has happened to income and consumption levels, especially among the poor, over the period in question. Of course, the answer depends in part on the sources chosen. Bhalla and Glewwe are therefore at pains to discredit the 1969–70 Socio-Economic Survey results on the grounds that they reflect a relative abundance of rice (the basic wage good in Sri Lanka) which was politically engineered. This is most helpful to their argument since the survey results for 1969–70 dominate those for subsequent years. But even if one accepts their point, there then remains the question of whether the other surveys are comparable among themselves, not on account of underlying economic and political considerations, but because different surveys use different designs, definitions, and questionnaires. The World Bank Living Standards Measurement Study (Altimir and Sourrouille 1980; Booker, Singh, and Savane 1980; Chander, Grootaert, and Pyatt 1980; Scott, de Andre, and Chander 1980; Visaria and Pal 1980; and U.N. Statistical Office 1980) brings together much of the evidence, including evidence from Sri Lanka, on the extreme difficulty (if not the ultimate impossibility) of using different surveys to answer questions about changes in living standards over time. It is really quite surprising therefore that Bhalla and Glewwe do not at any point discuss the conceptual and technical comparability of the different surveys. Had they done so, then it would have been apparent immediately that the 1981–82 Socio-Economic Survey is not comparable with the three Surveys of Consumer Finances. If one is then, at best, prepared to accept some comparability only among the three Surveys of Consumer Finances (1973, 1978–79, and 1981–82) then the picture that emerges is not especially encouraging for the Bhalla and Glewwe thesis. One ought perhaps, therefore, to be circumspect about the conclusion of Bhalla and Glewwe “that growth has indeed trickled down; that is food subsidies have been replaced by labor income” (p. 60). The facts are that there is no clear upward trend evident in the levels data from 1973 to 1981–82 provided by the Consumer Finance Surveys; the income inequality data show a deteriorating situation; and one can only agree with Bhalla and Glewwe when they say that “too much should not be read into the figures on expenditure inequality” (p. 60). Perhaps they are right

in their view that the condition of the poorest has not deteriorated. But that is at best a very minimal qualification for an acceptable policy regime. What is more certain is that Bhalla and Glewwe have failed to make the case for growth with equity in Sri Lanka: there is no evidence here of the advent since 1977 of an accelerated and sustainable growth of living standards in which all have shared.

IV. A FINAL COMMENT

To end on a more constructive note, the questions raised by Bhalla and Glewwe are important, and the challenge for researchers of how they should be addressed has been around for some time. Chander, Grootaert, and Pyatt (1980) set out some of my own thinking on these matters. Here I would simply like to emphasize two points.

First, in asking questions about how living standards are affected by policy, it is invaluable to recognize a taxonomy of socioeconomic groups. There is some concession toward this view by Bhalla and Glewwe in a footnote which discusses the lack of fairness toward Indian estate workers under the new food subsidy system (p. 54, footnote 28). Recognizing that these are among the poorest groups in Sri Lanka, it would have been most constructive, and by no means particularly difficult, to investigate whether, for this group, "food subsidies have been replaced by labor income" (p. 60). And the approach could be extended. It is arguable, for example, that the riots of 1983 and the continuing conflict between Sinhalese and the Tamils in the northern provinces has roots in government policy with respect to land settlement, education, and employment opportunities. It would therefore have been interesting and to the point if Bhalla and Glewwe had taken advantage of the separate data collected in the surveys they cite to see whether the northern provinces have indeed shared in Sri Lanka's growth. They say that "the post 1977 policies have not been detrimental to equity objectives" (p. 62). I suggest that it is an open question as to whether an analysis according to socioeconomic groups would allow this conclusion to be sustained.

Finally, if we are to move beyond description of what has happened to the living standards of different groups and begin to explore why, then it is necessary to set the questions within an integrated macroeconomic framework. Policies, production structures, and the distribution of incomes are inextricably interwoven. They therefore need to be investigated simultaneously in the quest for development strategies to stimulate growth with equity. Bhalla and Glewwe have provided the latest attempt at a short-cut to this problem. The lack of conviction carried by their results serves only to confirm that an integrated macroeconomic framework is necessary if we are to progress in this area.

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A COMMENT ON "GROWTH AND EQUITY IN DEVELOPING COUNTRIES: A REINTERPRETATION OF THE SRI LANKAN EXPERIENCE," BY BHALLA AND GLEWWE

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In the first issue of this journal, Bhalla and Glewwe (1986) called into question Sri Lanka's record on social indicators and contrasted their views with those expressed by Sen (1981) and myself (1980a). This comment discusses three points relating to their analysis. The first is whether Bhalla and Glewwe have applied an appropriate yardstick to judge the change in Sri Lanka's social indicators. The second relates to questions about specification of Bhalla and Glewwe's regression equations. Reestimation of some of these equations suggests that they have overstated the effect of growth on social indicators; the reestimation also reconciles the apparently internally inconsistent results of their two regression specifications. The third and most important point is that Bhalla and Glewwe's interpretation of the Sri Lankan experience as a test of the "direct" versus "indirect" approaches to poverty alleviation obscures the evolving synthesis of the two in development policy and theory. While I have some other concerns about Bhalla and Glewwe's analysis, the accompanying comment by Pyatt in this issue of the *Review* (see above) covers most of them.¹ It is ironic to be debating the issue of Sri Lanka's social progress at this time of communal strife and violence there; but Bhalla and Glewwe are right in thinking that Sri Lanka's experience illustrates some important lessons for development policy.

1. On another point, see Isenman (1980b) on why "Kravis" prices, which revalue services at rich-country prices, should not be used to compare incomes among low-income countries. Bhalla and Glewwe also argue that even at conventional prices and exchange rates, Sri Lanka had a relatively high per capita income in 1960, equal to that of the Republic of Korea. It is certainly true that Sri Lanka, like most other countries, has not kept pace with the torrid pace of development in Korea and some other East Asian countries. It is worth noting, though, that with the "hindsight" provided by 1980 weights Korea's per capita income in 1960 was already 2.7 times that of Sri Lanka.

Paul Isenman is on the staff of the World Bank. He would like to thank those who have reviewed the draft of this comment or discussed the issues that it raises, including Jagdish Bhagwati, Sidney Chernick, Dennis de Tray, Paul Glewwe, Greg Ingram, Anne Krueger, Deepak Lal, Sarwar Lateef, Graham Pyatt, Adrian Wood, and Satya Yalamanchili.

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I. WHAT IS THE RELEVANT QUESTION?

Bhalla and Glewwe's argument on Sri Lanka's social indicators, in a nutshell, is that its record since 1960 is unexceptional, and hence that "the conclusion pertaining to Sri Lanka's 'exceptional' status in the mid-1970s may have resulted from a methodology which ignored the important effect of initial conditions." Bhalla (forthcoming, a) is even stronger in his criticism of Sen (1981) and Isenman (1980a) for allegedly ignoring initial conditions. Sen and I simply showed that in the mid-1970s Sri Lanka had exceptional social indicators for a country at its income level. Neither of us attempted to analyze Sri Lanka's relative progress during different time periods, let alone said that Sri Lanka had reached its exceptional relative status only after 1960.²

Bhalla and Glewwe's quantitative analysis focuses on change since 1960. They indicate that Sri Lanka's record has been, with some caveats, "comparatively nonexceptional" (p. 61). But this is not the point. To rephrase a key point of Pyatt (1987), *if Sri Lanka was one of the leaders in 1960, the more relevant question is whether it kept up the pace expected of a leader, not whether it increased its lead.*

Let us look at what Bhalla and Glewwe actually found. They estimated eight equations on change in health and fertility indicators (life expectancy, death rate, infant mortality, and fertility rate, each estimated for log-log and logistic equations). Sri Lanka performed better than its expected value in six of them, significantly so in two cases. On the four education equations (primary enrollment and literacy, again with log-log and logistic equations), Sri Lanka fell below its expected values, although not significantly so. Overall, while Sri Lanka seems to have done better on health than education, there are no grounds, in terms of statistics or common sense, to say that Sri Lanka has not kept pace. Bhalla and Glewwe's own findings thus appear to contradict their negative evaluation of Sri Lanka's record on social indicators.

II. QUESTIONS ON REGRESSION SPECIFICATIONS

Bhalla and Glewwe also use their regression equations to attempt to show that growth has such a powerful effect on social indicators that any decline in social indicators caused by low social expenditures would have been rapidly offset by improvements induced by growth (pp. 50–51). The regression specifications and results, though, raise a number of questions about the robustness of their findings on either Sri Lanka or on the effects of growth. Why is the effect of income growth on change in social indicators apparently *negative*, and significantly so, in the only specification (log-log) that they themselves say controls adequately for initial conditions (that is, that accounts for the slowdown in progress on social

2. My article emphasized Sri Lanka's social indicators, not only before 1960, but before independence as well. See also Sen's comment (forthcoming) on Bhalla (forthcoming, a) and Bhalla's reply (forthcoming, b).

indicators as countries approach maximum feasible levels)?³ Why do their two specifications also produce opposite results on some indicators for whether Sri Lanka does better or worse than expected? And how does their restricted sample affect their results?

In an attempt to resolve these questions, Bhalla and Glewwe's regressions on change in one of their indicators, life expectancy,⁴ were respecified and reestimated. An alternate larger country sample (62 countries versus Bhalla and Glewwe's 43 countries) was estimated as well.⁵ Results are reported in the appendix; the equations are annotated to explain why they were tried and what they showed.

Overall, the results seem robust and unequivocal. For the log-log equations, income growth consistently has a *negative* (but not always statistically significant) effect on life expectancy for the Bhalla and Glewwe country sample (equations 1–3 in appendix). Reassuringly, with the larger sample, the effect of income growth turns consistently, although far from significantly, positive (once the curve is no longer forced through the origin) (equations 7, 8). For the logistic equations, *the effect of income growth weakens and is no longer significant once a variable is added to take account of the initial life expectancy* (equations 5, 10). (Recall the emphasis that Bhalla and Glewwe themselves put on initial conditions.) In their sample, income growth has virtually no effect at all once initial life expectancy is added to the equation. In the larger sample, income growth does retain a more noticeable, if not significant, effect. Still, in order for growth to raise life expectancy by even one additional year, Sri Lanka would have to have had an implausibly high annual growth rate of 11 percent per capita for the 1960 to 1978 period; this compares with its actual growth rate of 2 percent. (See the note to equation 10.)

Thus, with the reestimation, Bhalla and Glewwe's two models now yield consistent results on the effect of income. Income growth does help social indicators, but by nowhere near as much as they state.

3. Regarding the specification problem on initial conditions, they state, "If the logistic form is used (*but one which does not weight initial conditions as the log-log form can*) then Sri Lanka's performance in terms of life expectancy and death rate appears more favorable" (p. 47, emphasis added).

4. Life expectancy was chosen because they used it as an example of the effects of income growth on social indicators and because their two specifications gave conflicting results on the effect of income growth on life expectancy and on Sri Lanka's residuals.

5. Bhalla and Glewwe's stratification of their sample by per capita income level raises problems for their log-log specification. Although they state that "in all the regressions, income is an exogenous variable" (p. 45), this is not the case for their log-log specification, where only the growth and not the level of per capita income occurs. In practice, their restriction of the sample to countries with per capita incomes under about \$300 in 1960 means that a disproportionate number of countries with high initial indicators are omitted (since, as they show, social indicators are highly correlated with per capita income). In fairness, though, it would be complex, often unnecessarily so, if analysts had to change their samples each time the original variable (properly) used for sample stratification did not appear directly in the equation being estimated. In any event, there should be no objection to *not* stratifying the sample, since as they note this may improve the efficiency of estimation and since the larger sample eliminates anomalous results on the effect of income growth and on Sri Lanka's residuals. I am grateful to Paul Glewwe for his suggestion, on reading a draft of this comment, that the 5 oil countries included in my initial larger sample be dropped, thus reducing the sample from 67 countries to the 62 reported on here.

The reestimation also substantially reduces the discrepancy between the two specifications on whether Sri Lanka's improvement in life expectancy is better or worse than expected. With the improvements in specification for the Bhalla and Glewwe sample, and even more so for the larger sample, Sri Lanka looks increasingly less "good" than suggested by their logistic results and less "bad" than suggested by the log-log results.⁶ In other words, by both specifications, Sri Lanka did just about as well as expected for a country with its high life expectancy in 1960. In contrast with the case of income growth, then, these results *strengthen* the finding of Bhalla and Glewwe that Sri Lanka's record on change in social indicators from 1960 to 1978 was "comparatively nonexceptional." However, as discussed above, the question should be whether Sri Lanka kept up the pace, not whether it accelerated it.

III. BROADER IMPLICATIONS

In sum, neither Bhalla and Glewwe's regression results nor the more detailed results on life expectancy presented here support the contention that Sri Lanka fell behind the pace on progress in social indicators that would be expected for a country with its initial conditions. Rather, the most important and robust statistical result is that countries that wish to achieve rapid progress on social indicators should not count on growth to do the job automatically. Growth is clearly important, whatever these (single-equation) regressions say, because of its effect on the incomes of the poor and on government revenues for social programs. But what the regression results are clearly saying is that growth is not enough. This reemphasizes that it is also important to encourage a pattern of growth that increases the productivity of the poor and that pays careful attention to programs that can (efficiently) improve social indicators.

So the relationship between the "direct" and "indirect" approaches to poverty alleviation is more complicated than Bhalla and Glewwe suggest. Their central hypothesis would have been more relevant a decade ago. Then there were many more, among researchers and among policymakers, who believed in a direct approach in which growth is substantially deemphasized. Today, although the battle between the direct and indirect approaches undoubtedly rages on in some quarters, it is gradually giving way to an emerging consensus that both approaches are important and in many ways complementary.

Some elements of this consensus can be seen by comparing the discussion of Sri Lanka in Bhalla and Glewwe (1986), which is in effect a brief for the indirect approach, and in Isenman (1980a), which attempted to draw on both approaches. There was strikingly little difference between the two on economic policy. Both condemned the poor economic policies followed before 1977 equally strongly, as well as the inefficiency and lack of targeting of the food rationing

6. Moving from Bhalla and Glewwe's log-log equation (1) to the preferred log-log equation with the larger sample (8), Sri Lanka's residual improves from 1.5 to only 0.1 standard errors below its expected value. For the logistic equations, Sri Lanka's residual worsens from 2.1 standard errors better than its expected value (equation 4) to 0.2 standard errors below it (equation 10).

program⁷ (see Isenman 1980a, pp. 245–51). Both also expected increased growth from the policy reforms begun in 1977. However, two points illustrate the differences that remain. First, Bhalla and Glewwe lump together (and largely condemn) all social programs, rather than distinguishing between the generally quite good health and education programs and the nutritionally effective, but wasteful and fiscally disastrous, rationing program. Second, Bhalla and Glewwe ignore entirely the effect of human capital on growth potential.⁸

The debate over direct, indirect, and integrated approaches to poverty alleviation should be seen in the context of the evolution of thinking on development policy. Development economics has been subject to changing fashions, some of which have been “direct” and others “indirect.” We now see flaws in and caveats to these fashions as initially stated, and even more so as popularized. Lal (1983) has pointed to these as indications of the “poverty of development economics.” But parts of core insights of these fashions, to a varying extent, become accepted as a part of the mainstream of development economics.

During the 1970s the major “direct” fashions included (in rough chronological order): employment, integrated rural development, income distribution, and basic needs. None of these is now widely seen as the main focus of development efforts, let alone as a panacea. Yet each has left its mark on the mainstream practice of development economics. For example, regarding basic needs, today virtually no one believes in the popularized view of this approach that relegated growth to minor status. But the basic needs approach has contributed to an increased recognition both that growth alone is not a sufficient objective or measure of development strategies, and that steps to meet basic health and educational needs can contribute to increasing incomes directly and through reducing population growth (see World Bank 1980).

The useful cores of these fashions of the 1970s have been grafted onto a base of the “indirect approach which emphasizes economic growth and less government intervention” (Bhalla and Glewwe 1986, p. 36).⁹ Indeed, with hindsight,

7. Bhalla and Glewwe note the progress on social indicators since the policy turnaround of 1977. This is highly encouraging, and it would be interesting to explore its causes. However, the remarkable increase in primary enrollment they cite is essentially a statistical fluke. The primary enrollment ratio had dropped sharply earlier in the 1970s when the school enrollment age was raised from 5 to 6 years. The enrollment ratio went sharply up again in 1977 when this change was reversed. Also, although my article (1980a) cited the “politically bold and highly desirable step of reducing the coverage of the ration programme” (p. 241), the nutritional value of the program to those still covered has been eroded to the point that effects on malnutrition, particularly among estate workers, are now a subject of debate (see Edirisinghe 1985 and Sahn, forthcoming).

8. On growth prospects after 1977, Isenman (1980a) stated: “For the future, acceleration of growth seems much more feasible in Sri Lanka than in most other slow growing countries. Sri Lanka’s potential for per capita income growth has been enhanced by its relatively highly developed human resources, its low rate of population growth and its comparatively low wage rates. Whether it will achieve accelerated and sustained growth depends heavily on the quality and stability of growth policies . . .” (p. 257).

9. The economic devastation among many developing countries in the 1980s, particularly in Africa and in Latin America, has been increasingly laying to rest any residual views among those interested in poverty alleviation that growth is not important. With declines in incomes, for example, primary school enrollments have declined in many African countries (World Bank, 1986, p. 29). These declines suggest

one can say that the presumption of market failure and of public sector success was the single most important fashion in development economics of the 1960s and 1970s. Interestingly, this fashion relates more to how to achieve growth than to the appropriate amount to spend on social services or other direct means to achieve poverty alleviation. Like the other fashions cited, this interventionist fashion contributed to the evolution of development economics. Few today would deny the vital role of the public sector in development in even completely market-oriented economies. Yet today there is better appreciation that market failure is less pervasive and public-sector failure more pervasive than was believed, and that more attention needs to be given to concentrating the limited resources of the state where they are most needed.

It is difficult to judge the extent of acceptance of an integrated view of development economics. The trend in this direction in the World Bank, for example, is indicated in World Bank (1980, 1984, 1986). It is also reflected in the inclusion of recommendations for increased allocations to primary education, health, and small farm production in the Bank's (generally growth-oriented) reviews of public expenditure programs. Bhagwati (1985), who Bhalla and Glewwe cite approvingly and who deals primarily with the resurgent emphasis on growth issues, concludes on a similar point: "The experience of the post-war years has essentially taught us to supplement this basic (growth-route) strategy for assaulting poverty by policy instruments whose significance was insufficiently appreciated at the beginning of the development and planning process. There is evidence already in the policies of many developing countries that these lessons have been learnt" (p. 23).

APPENDIX: REGRESSION EQUATIONS

Equations are presented in sequences beginning with Bhalla and Glewwe's equations. Reasons for modifications in the specifications and the results of these modifications are summarized in the notes under each equation. Some variations on these specifications were also tried, all with results consistent with those reported here.

H_{it} = life expectancy in 1960 in country i

H_{iT} = life expectancy in 1978 in country i

Y_{it} = Gross domestic product (GDP) per capita (in 1960 U.S. dollars) in 1960 in country i

Y_{iT} = GDP per capita (in 1960 U.S. dollars) in 1978 in country i

R^2 = adjusted R^2

S.E. = standard error of regression; figures in parentheses are " t " values

S.L. residual = Sri Lanka's residual

that Bhalla and Glewwe should not use the term "fixed effect" interchangeably with "initial condition." Rather they reinforce the point made by Pyatt that maintenance of the social programs that affect social indicators is expensive and should not be taken for granted.

Bhalla and Glewwe Sample: Forty-Three Countries

$$(1) \quad \ln H_{iT} - \ln H_{it} = 0.695 \cdot \frac{(1)}{\ln H_{it}} - 0.032 (\ln Y_{iT} - \ln Y_{it})$$

(27.143) (-2.189)

R² = 0.22
S.E. = 0.032
S.L. residual = -0.049

This simply repeats the Bhalla and Glewwe log-log equation (their equation 8)—using the same specification and the same data—for comparison purposes. The results of the next two equations are not very interesting for this smaller sample, although they are for the larger sample (equations 7 and 8).

$$(2) \quad \ln H_{iT} - \ln H_{it} = -0.055 + 0.896 \cdot \frac{(1)}{\ln H_{it}} - 0.027 (\ln Y_{iT} - \ln Y_{it})$$

(-0.297) (1.329) (-1.169)

R² = 0.20
S.E. = 0.032
S.L. residual = -0.045

This is the same Bhalla and Glewwe equation, but with a constant added to avoid forcing the curve through the origin. The *t* values deteriorate in this smaller sample. The sign of income growth remains negative.

$$(3) \quad \ln H_{iT} - \ln H_{it} = -1.611 + 1.017 \ln H_{it} - 0.143 (\ln H_{it})^2$$

(-0.632) (0.754) (-0.803)

- 0.021 (\ln Y_{iT} - \ln Y_{it})
(-0.889)

R² = 0.20
S.E. = 0.032
S.L. residual = -0.028

This is the same as equation 2, but a more flexible log quadratic specification of initial conditions is substituted for the Bhalla and Glewwe log inverse specification. This smaller sample shows no improvement in fit, and the sign of income growth remains negative.

$$(4) \quad \ln \left(\frac{76 - H_{iT}}{H_{iT}} \right) - \ln \left(\frac{76 - H_{it}}{H_{it}} \right) = -0.397 - 0.001 Y_{iT} + 0.001 Y_{it}$$

(-8.265) (-4.369) (1.780)

R² = 0.38
S.E. = 0.138
S.L. residual = -0.291

This simply repeats the Bhalla and Glewwe logistic equation (their equation 7) for comparison purposes. The “76” in the dependent variable is the upper limit

on life expectancy they chose. Note that (unlike in the log-log equations) a negative residual indicates a *better* than expected performance.

$$(5) \ln \left(\frac{76 - H_{iT}}{H_{iT}} \right) - \ln \left(\frac{76 - H_{it}}{H_{it}} \right) = 2.211 - 0.028 \ln Y_{iT} + 0.092 \ln Y_{it} \\ (2.906) \quad (-0.281) \quad (0.091) \\ - 0.695 \ln H_{it} \\ (-2.993) \\ R^2 = 0.44 \\ S.E. = 0.133 \\ S.L. \text{ residual} = -0.036$$

This equation improves Bhalla and Glewwe's preferred specification in two ways. First, changing the income variables from linear to log terms reflects the effect of *percentage* growth in income. This is preferable to their linear specification, which less plausibly (and with lower *t* values) reflects the effect of the *dollar* increase in income. Second, adding a term (the log of initial life expectancy) to control for initial conditions refines their logistic specification in the manner they themselves refined their log-log specification. The most important result is that *the coefficients for income growth are no longer significant*. (This effect held once initial conditions were accounted for, whether the income variables were in log or linear form). Sri Lanka now falls very close to its expected increase in life expectancy.

Larger Sample: Sixty-Two Countries

$$(6) \ln H_{iT} - \ln H_{it} = 0.655 \cdot \frac{(1)}{\ln H_{it}} - 0.019 (\ln Y_{iT} - \ln Y_{it}) \\ (23.865) \quad (-1.289) \\ R^2 = 0.16 \\ S.E. = 0.041 \\ S.L. \text{ residual} = -0.044$$

This is the Bhalla and Glewwe log-log equation, but with a larger sample. The sign of income growth is still negative, but this is because their specification (without a constant) forces the curve through the origin.

$$(7) \ln H_{iT} - \ln H_{it} = -0.335 + 1.878 \cdot \frac{(1)}{\ln H_{it}} + 0.014 (\ln Y_{iT} - \ln Y_{it}) \\ (-2.375) \quad (3.643) \quad (0.717) \\ R^2 = 0.22 \\ S.E. = 0.039 \\ S.L. \text{ residual} = -0.019$$

The sign of the coefficient of income growth is positive but far from significant once a constant is added. The significant coefficient for the constant suggests that

a part of the "exogenous effect" (Bhalla and Glewwe 1986, p. 46) is independent of initial conditions.

$$(8) \quad \ln H_{iT} - \ln H_{it} = -5.041 + 2.833 \ln H_{iT} - 0.384 (\ln H_{it})^2 \\ \quad \quad \quad (-2.634) \quad (2.852) \quad (-2.988) \\ \quad \quad \quad + 0.011 (\ln Y_{iT} - \ln Y_{it}) \\ \quad \quad \quad (0.606) \\ \quad \quad \quad R^2 = 0.32 \\ \quad \quad \quad S.E. = 0.036 \\ \quad \quad \quad S.L. \text{ residual} = -0.004$$

The more flexible quadratic specification of initial conditions improves the statistical fit with this larger sample. This is the preferred log-log specification (and sample size). The sign of the coefficient of income remains weak but positive. Sri Lanka is almost exactly at its expected value.

$$(9) \quad \ln \left(\frac{76 - H_{iT}}{H_{iT}} \right) - \ln \left(\frac{76 - H_{it}}{H_{it}} \right) = -0.484 - 0.0005 Y_{iT} + 0.0005 Y_{it} \\ \quad \quad \quad (-11.186) \quad (-2.203) \quad (1.003) \\ \quad \quad \quad R^2 = 0.16 \\ \quad \quad \quad S.E. = 0.230 \\ \quad \quad \quad S.L. \text{ residual} = -0.275$$

This is the Bhalla and Glewwe logistic equation with the larger sample. The statistical fit, surprisingly, deteriorates with this larger sample. We know, from the following equation, that this is because of the lack of control for initial conditions. Sri Lanka's favorable residual is no longer significant.

$$(10) \quad \ln \left(\frac{76 - H_{iT}}{H_{iT}} \right) - \ln \left(\frac{76 - H_{it}}{H_{it}} \right) = 2.713 - 0.110 \ln Y_{iT} \\ \quad \quad \quad (4.204) \quad (-1.223) \\ \quad \quad \quad + 0.143 \ln Y_{it} - 0.891 \ln H_{it} \\ \quad \quad \quad (1.560) \quad (-4.404) \\ \quad \quad \quad R^2 = 0.51 \\ \quad \quad \quad S.E. = 0.176 \\ \quad \quad \quad S.L. \text{ residual} = 0.042$$

The rationale for this improved specification, controlling for initial conditions and logging income, is given in the note to equation 5. As with the smaller sample, the effect of income growth is no longer significant. Sri Lanka falls below its expected value, but by only 0.2 standard errors.

The calculation cited in the text of the additional growth required to raise Sri Lanka's life expectancy from 69 to 70 years is done by taking first differences of two versions of equation 10 in which these life expectancies are (respectively) substituted; the only term on the right-hand side that changes is $\ln Y_{it}$. The

resultant *increase* in required annual growth is 8.8 percent. *Even with Bhalla and Glewwe's own equation* (equation 4), and so without the improvements noted above, *the income growth rate required to increase Sri Lanka's life expectancy by only one year would be 5.2 percent*, which would have put it third in the growth sweepstakes, behind only Korea and Taiwan. While the choice of a one year increase in life expectancy is arbitrary, this is a more meaningful measure than their calculation of how long it would take Sri Lanka to make up for lower social expenditures through higher growth. They calculated this (from equation 4) at 16 years, which they compare to Sen's estimate of 77 years (Bhalla and Glewwe). Their comparison is inappropriate, though. Sen estimates 77 years for Sri Lanka to make up its "lead" over other countries accumulated *over the generations*; they estimate 16 years to make up the lead (that is, residual) that Sri Lanka accumulated *in only 18 years*. In addition, when we consider the case of a country with a zero residual (or, like Sri Lanka in the present equation, with a near zero residual), it becomes clear that the Bhalla and Glewwe calculation leaves something to be desired as a measure of the trade-off between growth and social indicators.

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A RESPONSE TO COMMENTS BY GRAHAM PYATT
AND PAUL ISENMAN

Paul Glewwe and Surjit S. Bhalla

In their comments, Isenman and Pyatt raise six questions regarding our analysis of growth, equity, and living standards in Sri Lanka:

1. Does our methodology accurately control for initial conditions? (Isenman)
2. Should we have added more countries to our sample? (Isenman)
3. How can we explain the negative effect of income on living standards when using the log-log functional form? (Isenman and Pyatt)
4. Are the data from the different household surveys comparable over time? (Pyatt)
5. Why do we not distinguish between maintenance and other expenditures? (Pyatt)
6. Why did we not analyze the time period 1977-84? (Pyatt)

Although we appreciate these comments, we do not think that they have a substantial effect on either our analysis or the conclusions we have drawn. The following paragraphs address these comments individually.

Initial conditions. The methodology that controls for initial conditions has been discussed in considerable detail in two forthcoming papers.¹ Allow us to state this as simply as possible: our method of controlling for initial conditions is to take first differences of the level-level (static) regressions (equations 6 and 7 in our article) to remove the fixed effect term λ_i , which gives equations 6' and 7'.² Equation 8 is simply a refinement of 7' and should not be interpreted as the "real" or "correct" method of controlling for initial conditions. Finally, if an appropriate functional form is available (we prefer the logistic version in 7') then one need not search for countries with comparable levels of achievement in 1960, as suggested by Pyatt.

1. Although these have not yet appeared in print, Isenman and Pyatt have seen both papers, particularly the first, upon which they have commented (Bhalla, forthcoming, a and b). At no point do we use our analysis to claim that "Sri Lanka has not kept pace" (Isenman). What we state is that Sri Lanka's performance in raising living standards from 1960 to 1977 has not been exceptional.

2. For example, when the fixed effect is explicitly entered into equation 6, we have $\ln H_{it} = \lambda_i + \alpha + \beta \ln Y_{it}$. This is then transformed into equation 6': $d \ln H = \ln H_{iT} - \ln H_{it} = (\alpha_T - \alpha_t) + \beta(\ln Y_{iT} - \ln Y_{it})$. Note that the initial conditions effect, λ_i , is not a function of time and thus drops out of 6'.

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Appropriate sample. We have tried a variety of functional forms, and none of them changed our basic conclusion. Isenman has taken a step further and added some more countries. Though some differences appear, in his comment above Isenman himself admits that his efforts “strengthen the finding of Bhalla and Glewwe that Sri Lanka’s record on change in social indicators from 1960 to 1978 was ‘comparatively nonexceptional,’” which is our main point.

Negative income coefficient. The only reason the log-log regression was estimated was to highlight the drawbacks of the conventional level-level approach used by Isenman and Sen. If a log-log equation is properly specified, both level-level and change-change regressions should give broadly similar coefficients on the income variable. The switch from a positive coefficient in the former to a negative income coefficient implies that the log-log functional form is a poor choice. This does not occur when the logistic functional form is used, which (apart from its intuitive appeal) is another reason to prefer it over the log-log form. We do not think it necessary to defend a functional form which we have already discarded for its implausible results.³ In effect, Pyatt and Isenman are in agreement with us on this, yet they ignore the more appropriate logistic model.

Comparability of survey data. We have presented a variety of data from different sources (national accounts, survey data, food balance sheets, living standards indicators) in order to evaluate the Sri Lankan experience as thoroughly as possible. Changes in inequality are best measured by survey data, though one must always be careful regarding comparability over time. If one rejects these data what other data can one use? We presented both food and total expenditure data from five surveys, three of which were undertaken by the same institution (Central Bank of Ceylon) and to a great extent by the same group of people. Why would there be a comparability problem for these three surveys (1973, 1978–79, and 1981–82), which by themselves support our conclusions? In addition, food expenditure information is collected in a very similar manner in all five surveys and also supports our conclusions. For a detailed analysis, particularly a critique of the income data, see Glewwe (1986, and forthcoming).

Maintenance expenditures. We agree that appropriate consideration should be given to maintenance expenditures in order to make a proper assessment of the relationship between living standards and social expenditures. This was explicitly discussed in Bhalla (forthcoming, a). We can go further and take the example of education expenditures. From 1960 to 1977 maintenance (current expenditures) costs averaged Rs33.43 per capita (in 1970 prices), with a low of 27.5 in 1974 and a high of 37.7 in 1970.⁴ From 1978 to 1984 maintenance costs averaged Rs29.60 per capita, which is 11 percent lower than those prevailing in

3. “The importance of functional forms is indicated by the ‘wrong’ log-log functional forms” (Bhalla, forthcoming, a, p. 26); “implausible results are generated by the log-log functional forms” (Bhalla and Glewwe 1986, p. 47).

4. This is calculated from the data in Alailima (1985) and the gross domestic product deflator.

the 1960–77 period. Yet, as noted in our article (p. 49), primary school enrollment dropped from 1960 to 1977 but rose substantially from 1978 to 1982.⁵

Exclusion of 1977–84 period. Pyatt contends that repeating our statistical analysis for the time period 1977 to 1984 would cause us to “run into trouble.” Such an analysis was not done because: (1) recent data are not available for many countries in our sample; and (2) such a short time period may not be long enough to make an assessment—progress in living standards is often slow and is best measured over longer periods of time. Yet we find Pyatt’s prediction strange, given the statistics reported in our article (particularly in table 1). The preliminary data we offer from 1982 show striking improvements in primary school enrollment and infant mortality in Sri Lanka. Improvements in these indicators may well have a progressive incidence—the rich are always able to send their children to school and pay for their medical care. In addition, the Sri Lankan economy has grown at a much faster rate since 1977,⁶ which “requires” a commensurately greater improvement in living standards to be “typical” than would be the case if the economy grew at the rates prevailing before 1977. Thus being typical with a higher rate of economic growth would, in a very real sense, imply an *improvement* for Sri Lankan living standards (relative to being typical at the former lower rates of growth). Finally, both of the above-mentioned indicators are subject to ceiling (or floor) constraints, so it is noteworthy that their improvements have proceeded at a more rapid pace in the post-1977 period than during 1960–77. Contrary to Pyatt’s assertion, we expect that a formal statistical analysis of the 1977–84 period is likely to show Sri Lanka to be an exception.

In conclusion, we welcome the comments by Isenman and Pyatt on the general issue of which policies promote living standards in developing countries. It would seem that all of us agree that a mix of “direct” and “indirect” policies is needed (see p. 61), and we also agree that further analysis of the issues needs to incorporate an “integrated macroeconomic framework” (Pyatt). However, we fear that these exercises have not always been terribly illuminating in regard to Sri Lanka. Our contribution is much more modest and also more specific: we sought to discuss “alternative methodologies of analyzing cross-country performance in terms of living standards” (p. 60) and to examine Sri Lanka’s performance in terms of growth and living standards before and after 1977.

5. The primary school enrollment ratios are: 1960, 95 percent; 1977, 86 percent; 1978, 94 percent; and 1982, 103 percent. Even if one uses 1978 rather than 1977, as suggested in Isenman’s footnote 7, the main point still holds.

6. Pyatt’s request that we discuss the causes and sustainability of growth in Sri Lanka since 1977 is beyond the scope of our article (see p. 61). This is discussed to some extent in Bhalla and Glewwe (1985), which was mistakenly omitted from the list of references in our article.

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