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Increasing Incomes for the Poor and Economic Growth: Toward a Simple Taxonomy for Policies

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Increasing Incomes for the Poor and Economic Growth: Toward a Simple Taxonomy for Policies

Jere R. Behrman

April 2002

Inspired by a suggestion from Anne Krueger, this paper explores the attraction and power of a simple two-by-two taxonomy for the analysis of policies as they relate to increasing incomes for the poor and economic growth. However, real-world complexities and serious policy assignment, estimation and measurement problems limit the overall utility of such simplified taxonomies.

Nevertheless, useful policy insights, in particular contexts within certain markets and institutions, might be gleaned through the development of slightly more sophisticated taxonomies, as considered here in detail, that could apply continuous dimensions of poverty alleviation and increased efficiency.

The author concludes that such scientific analyses will certainly raise important policy and research questions as to the choices made, their characterization, and why political economy processes do not lead to “better” policy choices in a particular context.



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**Increasing Incomes for the Poor and
Economic Growth: Toward a Simple
Taxonomy for Policies**

Jere R. Behrman

ABOUT THE AUTHOR

Jere R. Behrman is Director of the Population Studies Center and the W.R. Kenan, Jr. Professor of Economics, McNeil 160, 3718 Locust Walk, University of Pennsylvania, Philadelphia, PA 19104-6297, USA; telephone 1 215 898 7704, fax 1 215 898 2124, e-mail: jbehrman@econ.sas.upenn.edu.

He prepared this paper while he served as a short-term visiting scholar to the Asian Development Bank Institute (ADBI). He thanks members of the ADBI, particularly M.G. Quibria, John Weiss and Masaru Yoshitomi, for helpful comments given while he visited in late January 2002. Only he, not the ADBI, is responsible for the contents of this paper. Behrman (2002) presents a much more concise version of the same material as part of the ADBI's Research Policy Briefs series, under the title Policy Failures and Successes of Directly Targeted Policies for Poverty Reduction.

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PREFACE

The ADB Institute aims to explore the most appropriate development paradigms for Asia composed of well-balanced combinations of the roles of markets, institutions, and governments in the post-crisis period.

Under this broad research project on development paradigms, the ADB Institute Research Paper Series will contribute to disseminating works-in-progress as a building block of the project and will invite comments and questions.

I trust that this series will provoke constructive discussions among policymakers as well as researchers about where Asian economies should go from the last crisis and recovery.

The inspiration for this study is derived from Anne Krueger's keynote speech delivered at the ADBI's 3rd Anniversary Conference on Alternative Development Paradigms and Poverty Reduction in December 2000 (www.adbi.org/povpara).

Masaru Yoshitomi
Dean
ADB Institute

ABSTRACT

The relationship between poverty alleviation and economic growth has been the subject of considerable interest among policymakers and analysts. There has also been some amount of controversy regarding the extent to which emphasis should be on poverty alleviation *per se* or on poverty alleviation as a complement of growth. Anne Krueger, in a recent ADBI lecture, proposes that it might be helpful to analyze how policies relate to economic growth and increases in the incomes of the poor in the framework of a simple “two-by-two” policy taxonomy.

Krueger suggests that this simple taxonomy would help clarify considerably policy options and thus lead to improved policies. However, this paper shows real-world complexities and serious policy assignment, estimation and measurement problems limit the overall utility of such simplified taxonomies.

Nevertheless, useful policy insights, in particular contexts within certain markets and institutions, might be gleaned through the development of slightly more sophisticated taxonomies, as considered here in detail, that could apply continuous dimensions of poverty alleviation and increased efficiency.

Such scientific analyses will certainly raise important policy and research questions as to the choices made, their characterization, and why political economy processes do not lead to “better” policy choices in a particular context.

Behrman (2002) presents a much more concise version of the same material as part of the ADBI’s Research Policy Briefs series, under the title *Policy Failures and Successes of Directly Targeted Policies for Poverty Reduction*.

TABLE OF CONTENTS

<i>About the Author</i>	II
<i>Preface</i>	III
<i>Abstract</i>	IV
<i>Table of Contents</i>	V
Executive Summary	1
1. The Clarity of Simplicity—Krueger’s Proposed “Two-by-Two” Taxonomy for Policies Related to Growth and Increasing Incomes of the Poor and Related Steps to Improve Policies	7
2. The Complexity Of Reality—Conceptual Framework, Measurement and Estimation Issues, Social Objectives, Implications for Krueger’s Two-by-Two Policy Taxonomy and Extensions Beyond Kruger’s Two-by-Two Policy Taxonomy	9
2.1. Frameworks for Analysis of Proximate Determinants of Outcomes and Behaviors of the Poor and Basic Efficiency and Distributional Policy Motives	9
2.1.1. Why Frameworks for Analysis are Necessary	10
2.1.2. Analytical Frameworks for the Determinants of Human Capital Investments	12
2.1.3. Intrahousehold Allocations of Human Capital Investments	16
2.1.4. Information Problems and Human Capital Investments	17
2.2. Efficiency and Distributional Considerations and Evaluating Policies	19
2.2.1. Efficiency/Productivity	20
2.2.2. Distribution	22
2.2.3. Policy Choices to Increase Efficiency and to Improve Distribution	23
2.3. Empirical Issues—Measurement of Poverty, Income Growth and Policies	25
2.3.1. Measurement of Poverty	25
2.3.2. Measurement of Income and Economic Growth	32
2.3.3. Measurement of Policies	34
2.4. Empirical Issues—Estimation of Policy Effects	34
2.4.1. Experimental Evaluation of Policies	35
2.4.2. Econometric Estimates of Policy Impacts	38
2.4.2.1 Relations to be Estimated	38
2.4.2.2 Estimation Problems	41
2.4.3. Implications for Analysis of Endogenous Policies	43
2.5. Increasing Incomes of the Poor and Economic Growth as Policy Objectives	46
2.5.1. Increasing incomes of the Poor and Growth as Objectives within the Broader Literature	46
2.5.2. Increasing Incomes of the Poor and Growth as Related to the Standard Policy Objectives of Efficiency and Distribution	48

2.6. Continuous Policy Effects, Optimal Policy Frontiers, Policy Packages and Returns to Scale in Policy Impacts	49
2.6.1. Continuous Policy Effects	49
2.6.2. Optimal Policy Frontier, Policy Packages and Returns to Scale	50
2.7. Some Additional Questions Regarding Krueger’s Policy Taxonomy	52
2.7.1. Is Time of the Essence?	52
2.7.2. Stability of Taxonomy across Institutions and Development Levels	53
2.7.3. Political Economy Questions	54
2.7.4. Symmetry in Taxonomy?	55
2.7.5. Small-Country Assumption and Focus on Developing Countries	56
3. Illustrative Taxonomy of Changes in Policies, Rules and Regulations and Steps to Improve Policies on the Bases of a Priori analysis and Existing Empirical Studies	57
3.1. Expenditure and Regulatory Policy Changes with the Same Direct Governmental and Governmental Revenue Raising Costs (Figure 4a)	59
(1) Policy Changes that are likely to Reduce Poverty and Increase Efficiency (“Win-Win” Policies in the Northeast Quadrant)	59
(2) Policy Changes that are likely to Increase Poverty and Increase Efficiency (“Lose-Win” Policies in the Northwest Quadrant)	65
(3) Policy Changes that are likely to Reduce Poverty and Reduce Efficiency (“Win-Lose” Policies in the Southeast Quadrant)	66
(4) Policy Changes that are likely to Increase Poverty and Reduce Efficiency (“Lose-Lose” Policies in the Southwest Quadrant)	69
(5) Illustrative Implications for Policy Possibility Frontier	70
3.2. Different Means of Raising Revenues with the Same Direct Governmental Costs but Different Distortionary Costs (Figure 4b)	71
(1) Policy Changes that are likely to Reduce Poverty and Increase Efficiency (“Win-Win” Policies in the Northeast Quadrant)	71
(2) Policy Changes that are likely to Increase Poverty and Increase Efficiency (“Lose-Win” Policies in the Northwest Quadrant)	73
(3) Policy Changes that are likely to Reduce Poverty and Reduce Efficiency (“Win-Lose” Policies in the Southeast Quadrant)	73
(4) Policy Changes that are likely to Increase Poverty and Reduce Efficiency (“Lose-Lose” Policies in the Southwest Quadrant)	74
4. Summary and Conclusions	74
Figures	78
Figure 1. Krueger’s Simple Two-by-Two Policy Taxonomy Regarding Increases in Incomes for Poor and Economic Growth	78

Figure 2a. Private Marginal Benefits and Private Marginal Costs of an Investment for an Individual	79
Figure 2b. Private Marginal Benefits and Private Marginal Costs of Investment for an Individual, with Increased Marginal Benefits (Dashed Line)	79
Figure 2c. Private Marginal Benefits and Private Marginal Costs of Investment for an Individual, with Decreased Marginal Costs (Dashed Line)	80
Figure 3a. Policy Taxonomy with Continuous Measures of Efficiency and Poverty Alleviation	81
Figure 3b. Policy Possibility Frontier for Policy Taxonomy with Continuous Measures of Efficiency and Poverty Alleviation and Constant Returns to Scale	81
Figure 3c. Policy Possibility Frontier for Policy Taxonomy with Continuous Measures of Efficiency and Poverty Alleviation and Constant Returns to Scale: A Case with No “Win-Win” Policies on Policy Possibility Frontier	82
Figure 3d. Policy Possibility Frontier for Policy Taxonomy with Continuous Measures of Efficiency and Poverty Alleviation and Constant Returns to Scale: Optimum Policy Packages with One or Two Policies	82
Figure 3e. Policy Taxonomy with Continuous Measures of Efficiency and Poverty Alleviation with Policies 3 and 5 having Increasing Returns to Scale and Policies 1 and 4 having Decreasing Returns to Scale	83
Figure 3f. Policy Taxonomy with Continuous Measures of Efficiency and Poverty Alleviation with Symmetry of Policy Effects and Constant Returns to Scale	83
Figure 4a. Illustrative Policy Taxonomy with Continuous Measures of Efficiency and Poverty Alleviation for Policies Discussed in Section 3.1	84
Figure 4b. Illustrative Policy Taxonomy with Continuous Measures of Efficiency and Poverty Alleviation for Policies Discussed in Section 3.2	84
References	85

Executive Summary

- Some prominent recent reviewers of development experience associated with the ADB Institute have recently emphasized the importance of economic growth as a means of poverty alleviation. Srinivasan (2001), for example, claims that the early post-independence leaders in many developing countries stressed that growth is an instrument to obtain the objective of poverty alleviation. Quibria (2002) reviews the East Asian “miracle” experience and concludes that there has been a robust association between growth and poverty alleviation. Krueger, in her talk on “Linkage Between Growth and Poverty Reduction” at the ADBI Third Anniversary High-Level Symposium on Alternative Development Paradigms and Poverty Reduction, December 2000, develops a simple two-by-two policy taxonomy between increasing the incomes of the poor and growth.
- Part 1 of this paper summarizes Krueger’s presentation. She argues that both incomes of the poor and economic growth can be enhanced substantially by introducing and increasing “win-win” policies that do both and eliminating and reducing “lose-lose” policies that do neither. She suggests that this simple prescription, if followed, readily would lead to much better policy choices for developing countries and thus better outcomes in these economies. She indicates four simple steps that should be followed to (i) eliminate “lose-lose” policies, (ii) eliminate so-called “anti-poverty” programs that benefit the better off at the cost of growth, (iii) promote “win-win” policies and (iv) target selectively to the poorest of the poor. In addition she suggests that considerable research is needed to clarify tradeoffs between alleviating poverty and stimulating growth for some policies and to clarify the nature of the political economy leading to policy choices. But she suggests that, although there may be high returns to such research, there also are likely to be high returns to implementation, without further research, of her four points. Krueger’s simple two-by-two policy taxonomy between increasing the incomes of the poor and growth and her prescription for four immediate steps without waiting for the outcomes of further research is very attractive because of its apparent simplicity and clarity. The basic purpose of this paper is to consider this framework and possible modifications of it in greater depth.
- Part 2 of the paper considers in further depth a number of aspects of Krueger’s simple two-by-two policy taxonomy between increasing the incomes of the poor and growth. Such considerations suggest, however, that the specifics and the simplicity of her taxonomy may be misleading in some important respects.
- *First*, her choices of objectives are different than the standard policy motives related to distribution (or even of the particular distributional goal of poverty alleviation) and efficiency. Increasing the income of the poor may be but one, albeit an important, aspect of poverty alleviation and economic growth is not the same nor necessarily consistent with the standard economic policy motive of increasing efficiency. Of course her two-by-two objectives can (and in my judgement should) be replaced by poverty alleviation and increasing efficiency. But to do so involves not only re-labeling, but also dealing with more difficult questions of measurement.

- *Second*, there are major empirical questions related to measuring the objectives and policies and with regard to estimating the impact of policies on the objectives. Krueger basically ignores these and assumes that assignments easily can be made of many policies to the appropriate quadrants in her two-by-two policy taxonomy. But even for many of the policies that Krueger suggests can be easily dealt with in her four suggested steps, empirical information about their impacts is very limited and often simple associations between crude measures of the outcomes of interest and of the policies are all too easily interpreted to reflect the causal impact of policies, without controlling for the measurement problems and that the policies themselves are the result of behavioral decisions. And the relatively small number of studies that do compare estimates with and without controls for these estimation problems in some instances report that estimates of policy effectiveness change considerably depending on how the measurement and estimation issues are dealt with.
- *Third*, ignoring the questions of what are the policy objectives and the estimation issues, there is the further question of whether the Krueger dichotomies regarding policy impacts—either increase or decrease incomes of the poor, either increase or decrease growth—gain in simplicity enough to offset the losses due to the same simplicity. To illustrate the methodology is altered to include continuous measures of policy impacts, which permits a number of insights beyond those possible with Krueger’s dichotomized approach: (1) The relative effectiveness of various policies can be shown so that it is clear on which policies to place emphasis and a “optimal policy possibility frontier” can be defined, at least for policies that involve relatively small changes so that there are approximately constant returns to scale. It is possible within such a framework that some “win-win” policies, for example, are not on this frontier and are not desirable to pursue, in contrast to Krueger’s prescription to pursue any “win-win” policy. (2) Some policies that are *not* in the “win-win” northeast quadrant, under such assumptions, may be on the optimal policy possibility frontier and thus desirable to give very high priority to—again, in contrast to Krueger’s prescriptions. In fact it may be the case that the optimal policy possibility frontier is defined entirely by “win-lose” and “lose-win” policies and includes *no* “win-win” policies, again in sharp contrast to Krueger’s prescription. (3) In such cases, if there is a social welfare function defined over the policy objectives, the optimal policy package (that might include only one policy) can be selected by the tangency of the social welfare function with the optimal policy possibility frontier. (4) If there are eventually decreasing returns to scale to devoting resources to each policy (as seems likely a priori), then optimal policy packages are likely to include a larger number of policies than if there is constant returns to scale, but—if there are not important discontinuities—optimal policy packages can be constructed at least approximately by considering the optimal policies for each in a sequence of allocations of resources to policies.
- *Fourth*, there are a number of additional questions that arise with further investigation of Krueger’s proposed taxonomy. (1) Krueger’s presentation is timeless, but time and the time paths of dynamic responses to policies may be critical, particularly with regard to political support for policies (for which reasons policymakers may have relatively high discount rates). (2) Krueger’s taxonomy is presented as independent of

the level of development, but the level of development—and related market and institutional development—may condition considerably whether particularly policies are “win-win” “win-lose,” “lose-win” or “lose-lose.” (3) Krueger notes that it is not clear that the underlying political economy that led to existing policies would imply that her taxonomy would improve policies. One possibility is that policymakers have poor information and the clarity of her scheme would improve their information and therefore their policy choices. But an alternative (and not exclusive) possibility is that policymakers have different objectives and have knowingly made past policy choices to pursue—perhaps very effectively—those objectives. If so, then the clarity offered by Krueger would seem to improve policy choices from the perspective of the social welfare function that she implicitly is using only if the greater clarity increased pressures on policymakers to adopt the policies that she would characterize as “win-win” because relevant domestic or international constituencies could utilize the greater clarity to pressure effectively for such policies. (4) Krueger’s taxonomy seems to imply, at least for a class of policies, symmetry that she does not note explicitly. That is, the policy to increase the use of a policy instrument has the opposite effects as the policy option to lessen the use of that instrument (e.g., increase versus reduce a tax rate by 10%). For this class of policies, the “lose-lose” policies are just the opposite of the negative of the “win-win” policies, so effectively the first and third steps in her prescribed four steps are the same. If such symmetry is incorporated into the continuous policy impact space, there may be some interesting effects. For example, “win-win” policies may be dominated by the elimination of “lose-lose” policies. Also the policy possibility frontier may include both a policy and the negation of that policy, with the optimal policy package including one or the other depending on the tradeoffs between the policy objectives in the relevant social welfare function. (5) Krueger focuses on developing country policy choices under the implicit assumption that these choices are “small country” in the sense that they are not likely to affect international markets. But there may be relatively high returns to developing countries in terms of their policy objectives to attempt to affect international markets through, for example, liberalization of trade in agriculture and textiles/garments through a new World Trade Organization round. Moreover, the Krueger concerns in principle apply equally to evaluation of policies implemented or advocated by developed countries and international organizations, not just to developing countries.

- Part 3 of the paper provides some illustrations of policy assignments to two-dimensional continuous policy outcome space with the two dimensions being poverty alleviation and increased efficiency. Because of the limited empirical basis for such assignments, they are made in substantial part on the basis of a priori frameworks for what determines behaviors and outcomes for the poor (summarized in Part 2) informed when possible by empirical studies. Given factors such as the severe limitations of available empirical studies, that the assignments may be conditional on the level of development and on the time period considered, and the possible problems with returns to scale in devoting resources to policy, these assignments are subject to considerable uncertainty and in some cases may engender considerable debate. Nevertheless, such assignments are illustrative not only of the problems but of the potentialities for using some modification of the Krueger simple two-by-two

taxonomy for policy guidance. They also point strongly to the need for further research with better policy evaluation that (a) controls better for the endogenous nature of policy choices, (b) addresses the impact of policy changes directly on efficiency, (c) addresses the impact of policy changes directly on poverty alleviation, and (d) considers more directly how particular policies compare with alternatives for achieving particular objectives—all of which is additional to the need for further research on the political economy measures and other factors such as information problems that led to the implementation of many current policies that seem questionable in light of a modified Krueger taxonomy.

- *Bottom Line:* The apparent attraction and power of the Krueger simple two-by-two taxonomy for policy guidance is diminished by consideration of the complexities of reality. But yet there seems to be some useful insights through applying a modified version of it—say, with continuous dimensions of poverty alleviation and increased efficiency—in particular contexts with particular institutions and markets. Such applications may provide useful insights about policy priorities. They also are likely to raise important questions about what are the policy impacts in that context and why political economy processes did not lead to “better” policy choices in that context. Both the characterization of the policy choices and the research questions that are raised by such a process may be quite valuable.
- The relations between poverty alleviation and economic growth long have been of considerable interest among both analysts and policymakers. At times this interest has been implicit, but often it has been explicit. There also has been variation regarding the extent to which the emphasis is on poverty alleviation per se or on poverty alleviation as an accomplement of growth. But the interest in some general form has been strong and ongoing. Two recent ADBI studies—Srinivasan (2001) and Quibria (2002)—summarize some important dimensions of these interests.
- Srinivasan (2001, p.1) argues forcefully that “eradication of mass poverty was the overarching objective of economic development of policymakers in most developing countries when they achieved political independence in the two decades at the end of the second World War [and that while these policymakers] were clear about poverty eradication being the overarching *objective*, they were also emphatic about the *instrumental* role of rapid growth in income and its better distribution for achieving the objective.” He further claims that “The oft made assertion that development policymakers confused promoting growth as an instrument for achieving other goals including poverty alleviation with growth as having intrinsic merit as an objective of development in and of itself is based on ignorance of the relevant facts.” He then attempts to illustrate his point with a brief summary of Indian development history—which, of course, is a very important case in part because at least for the last half century India has been second only to People’s Republic of China in terms of population among all countries (and these two countries alone currently constitute about 45% of the population in the developing world).
- Quibria (2002) presents an extensive and thoughtful analysis of the relation between growth and poverty in the East Asian “Miracle” economies. He concludes that “there

seems to be a robust association between sustained growth and poverty reduction in these economies...The main instrument of poverty reduction in these economies was robust growth and not efforts at income or assets distribution, including land reform. Those efforts might have helped but did not play the central role in the economic transformation process. The most important proximate cause of the miraculous transformation of the East Asian economies is rapid capital accumulation, a process that was nurtured and sustained by a combination of market-oriented policies and institutions [that] emphasized...openness of these economies to the external world and a conducive domestic economic environment for production. The former allowed these countries to tap into the virtually unlimited international trading opportunities in the world economy as well as access to new technology. The latter, which was underpinned by a combination of macroeconomic stability, labor market flexibility and conducive legal and political institutions, encouraged production (over rent-seeking), high investment and efficient use of investable resources. Rapid growth ...led to quick dissolution of the poverty problem. [He notes further that] initial conditions such as, low initial inequality of income and assets, high initial educational attainments, and dynamic agriculture were not common to all the miracle economies. To the extent these factors existed, they may have helped...growth and poverty reduction, but were not certainly the forces that unleashed the economic dynamism of these economies. [Finally, he claims that] whether politically autocratic or not, the miracle economies provided an economic framework that allowed critical economic freedoms and a structure of market-supporting institutions needed for the economy to blossom...The policy lesson from this, however, is not to make a transition from a democratic polity to an autocratic regime, but to create an institutional framework for greater constitutional liberalism [his label for such a framework] in the otherwise illiberal democracies.” (pp.91-2)

- Quibria (pp.17-18) also summarizes the growing literature on the growth-poverty relationship using cross-country data. One set of studies describes the growth-absolute poverty relationship, in which absolute poverty is defined relative to some poverty line such as US \$1 per day per person in 1985 PPP terms. The subset of this literature that focuses on Latin American economies finds a poverty elasticity with respect to average per capita income of about unity, so that the head count measure of poverty declines by about one percent for every one percent increase in per capita income (De Janvry and Sadoulet 2000, Morley 2000, Smolensky et al., 1994). The subset that covers all economies finds much higher poverty elasticities with respect to average per capita incomes, more than twice as high (Bruno, Ravallion and Squire 1998, Ravallion 2000, Ravallion and Chen 1997). Another set of studies in the literature uses a relative poverty concept by defining the poor as those who belong to the first quintile of the income distribution (Dollar and Kraay 2000a, Gallup, Radelet and Warner, 1998, Roemer and Gugerty 1997, Timmer 1997). These studies tend to report the poverty elasticity with respect to per capita income to be about unity (though Timmer finds a somewhat smaller value, which is surprising given the use of a common data base in these studies). Thus these studies suggest that the poor gain proportionately in a relative sense and more than proportionately in an absolute sense from average income growth. Of course there is considerable variation from these

average results across countries including, as noted, less gains in surmounting absolute poverty in Latin America than on average for the rest of the world.

- While Srinivasan argues that the early development policymakers were concerned basically with policy alleviation for which economic growth was an instrument, many see growth as an objective in its own right. Quibria's review suggests that in the "miracle" economies as well more broadly, poverty alleviation accompanied growth and therefore if policies successfully lead to growth, considerable poverty alleviation is likely to result on average. But he also emphasizes that there is considerable heterogeneity around the average poverty-growth relation among economies, and that some policy regimes lead to greater poverty alleviation than do others.
- Krueger (2000), in her talk on "Linkage Between Growth and Poverty Reduction" at the *ADB Third Anniversary High-Level Symposium on Alternative Development Paradigms and Poverty Reduction*, argues that it might help analyzing how policies relate to economic growth and increases in incomes of the poor to use a simple "two-by-two" policy taxonomy: One dimension for whether policies increased growth and the other dimension for whether policies increased the income of the poor. Krueger suggests that the four combinations suggested by the dichotomies in these two dimensions would help clarify considerably policy options and thus lead to improved policies.
- The objective of this paper, then, is to help further the research agenda suggested by Krueger through critically exploring in greater depth the taxonomy of policies related to growth and increasing incomes of the poor based on the notions that Krueger put forth and that are summarized in Part 1. Part 2 develops the conceptual framework by summarizing frameworks for analyzing the proximate determinants of poverty at the micro level and how poverty relates to the standard policy motives of efficiency and distribution and discussing measurement and estimation issues and by considering such matters as how the Krueger taxonomy relates to these basic policy motives, what are the implications for the underlying political economy considerations that led to past and current policies, whether it might be desirable to add a third dimension for the level of development or initial conditions to make such a taxonomy more useful, whether dichotomous characterizations of the choices in each of the policy dimensions might not obscure that many policies may affect primarily growth or poverty alleviation but not much both, how should one sort among the policies in any particular cell of a Krueger taxonomy, what are the implications of information imperfections, what is the political economy of policy choices, how does time enter into the analysis, and whether there are some underlying symmetries that are not exploited in Krueger's analysis. This discussion suggests that there are advantages that probably outweigh the costs of considering somewhat more nuanced policy taxonomies and that such taxonomies suggest that in some respects the Krueger taxonomy may be misleading. 3 gives some illustrative classifications of policies on the bases of a priori analysis and existing empirical studies. Part 4 summarizes and concludes.

Increasing Incomes for the Poor and Economic Growth: Toward a Simple Taxonomy for Policies

Jere R. Behrman

1. The Clarity of Simplicity—Krueger’s Proposed “Two-by-Two” Taxonomy for Policies Related to Growth and Increasing Incomes of the Poor and Related Steps to Improve Policies

There long has been considerable debate about possible tradeoffs between economic growth and poverty alleviation in the development literature and development policy world. Some commentators have pointed to examples such as Kerala in India, Sri Lanka, Costa Rica and Cuba as evidence that there can be widespread satisfaction of basic needs and poverty alleviation in economies with low per capita income levels and limited economic growth. Other commentators claim that by far the most effective poverty alleviation efforts experienced in the second half of the twentieth century—or perhaps over any extended period of time—were in the fast growing East and Southeast Asian economies such as the Republic of Korea and Taipei, China. This raises the question of how choices regarding policies, rules and regulations lead to differential success in attaining poverty-alleviation and economic growth goals.

Krueger suggests that it might help analyzing how policies relate to economic growth and increases in incomes of the poor to use a simple two-by-two matrix as in Figure 1. In the vertical direction policies are categorized into two groups depending on whether or not they stimulate growth—sustainable, not just short-term macroeconomic expansions, but genuine policies that improve growth—and policies that do not. In the horizontal direction policies are categorized into two groups, policies that increase incomes of the poor and policies that do not. All policies can be put into one of the four cells of the matrix. There are “win-win” policies that increase growth and increase incomes of the poor in the northeast quadrant. There are “lose-lose” policies that do not increase growth and do not increase incomes of the poor in the southwest quadrant. And there are policies in which there are tradeoffs between these two outcomes, ones that are pro-growth but not pro-poor (northwest quadrant) and ones that are pro-poor but not pro-growth (southeast quadrant). But what Krueger conjectures is that a very large fraction of all feasible policies are in the quadrant either to “promote growth and help the poor,” or in the quadrant of “do not help the poor and do not help growth”. Krueger suggests that starting with her “simple-minded framework, [one] can get...policies sorted out very quickly.” She discusses four illustrative steps.

First, remove those “lose-lose” policies (southwest quadrant) that both hurt growth and hurt the poor. She proposes that, in many countries, if that were done, considerable progress would be made toward getting things sorted out in both the growth and the development dimensions. She provides some examples, two of which are summarized here: (1) India has a small scale reservation law that reserves certain activities to the small-scale sectors. In Krueger’s (2000, p.4) words, “small-scale reservation basically says: ‘you are entitled to do all these things but may not grow more than... and nobody may have a firm unless their grandfather did not from the beginning that indeed produces at a larger scale.’” Most of the small-scale reservation

sector is unskilled labor intensive. What are the effects of this policy? It would seem to prevent much growth of production in general and exports in particular in labor-intensive industries because a firm cannot become big if it is in those industries. So even if it would be profitable it is not legal. If India were to remove this policy there would seem to be increased demand for unskilled labor that would clearly help the poor and would clearly help growth. (2) Until about 1986 Chile had a law that forbade the firing of anyone who had worked in a company for more than six months. As a result, companies were very reluctant to hire new employees and keep them for more than six months, with the result that it discouraged additions at the margin of long-run workers and encouraged substitution of capital for labor. The law had not helped growth and had not helped the poor. After Chile removed this law, employment and growth both increased.

Second, identify and eliminate those so-called anti-poverty programs that benefit the better-off and that hurt growth (southwest quadrant). Krueger notes that there is a great temptation to directly target all kinds of goods and services, but she claims that the evidence is overwhelming that in the vast majority—not all—but the vast majority of cases, targeting has helped the better off who are eligible or get themselves eligible for program benefits. She suggests examples such as: Sri Lankan free rice, in which case World Bank estimates are that about 70 percent of the value of that free rice went to the top 50 percent of the income distribution; in a number of countries the beneficiaries of fertilizer subsidies primarily are better-off landlords; again, in a number of countries rural credit subsidies go primarily to better-off landlords. Such policies do not help the poor much and do not help growth.

Third, adopt and expand “win-win” policies (northeast quadrant) that support growth and help the poor. Krueger suggests that important examples include supporting basic education and stop taxing agriculture—and certainly stop taxing agriculture heavily, and certainly stop suppressing the price of commodities that are grown on many pieces of land where indeed the demand for labor depends very much on the prices of those commodities.

Fourth, target selectively to the very poorest of the poor. Krueger suggests as promising examples immunization clinics for young children and subsidization of some goods such as coarse grains that have very low or negative income elasticities.

Krueger suggests that, beyond these four steps, there are trade-offs between alleviating poverty and stimulating growth (northwest and southeast quadrants) about which a lot of research is warranted because the current state of knowledge is quite imperfect. To the extent to which there are many policies that should be changed in addressing her first two points, there further is an important question of what is the nature of the political economy that has led to such outcomes:

The final part of all this is that we need to ask about the political economy if we are designing anti-poverty programs. We talked earlier...about the predatory government as contrasted with the benevolent government. If you have a predatory government, there is presumably a reason for it. If your government is predatory and if they have devised all these programs where the rich really already get the benefit anyway, what are we doing thinking in terms of devising programs to help the poor? One has to almost rethink one's political economy and rethink the mechanisms that can get things through in circumstances where

the government or some parts of the government are otherwise committed. It seems to me that some of the questions that came up ...in terms of where the corruption is may be important. If it is the petty bureaucrats, we may get very different policy prescriptions, and if it is the politicians themselves or top bureaucrats—if it is a matter of an inability to enforce law—it may be something quite different than in other circumstances. But talking of this system where they are not doing anything for the poor and in fact are hurting the poor, and there is talk of changing one policy and expecting it to bring desired results strikes me as ignoring the background, and the important question is: why is it? What is it in the nature of the political process and in the nature of the delivery system of whatever it is the government is trying to deliver that is giving you that outcome? Until we understand that, devising policies that are especially of the directly-targeted kind seems to me to be a proposition for devising policies that will ultimately probably benefit the very bureaucrats and others who we regard as being in the top half of the income distribution.

She concludes that formulating the issues as she proposes “does, of course, pose a huge research agenda.”

2. The Complexity of Reality—Conceptual Framework, Measurement and Estimation Issues, Social Objectives, Implications for Krueger’s Two-By-Two Policy Taxonomy and Extensions Beyond Krueger’s Two-by-Two Policy Taxonomy

The Krueger two-by-two matrix is a useful way to present in a transparent manner the respects in which policy objectives might conceptually be reinforcing along the northeast-southwest diagonal or have tradeoffs off the diagonal. Part of its strength, of course, lies in its apparent simplicity and transparency. But various aspects of this framework merit further consideration. In this part of the paper I summarize frameworks for analyzing the proximate determinants of poverty at the micro level and the standard policy motives of efficiency and distribution and then discuss measurement and estimation issues that are central for assessing what are the impacts of various policies on poverty alleviation and growth. Next I consider how Krueger’s focus on increasing the incomes of the poor and economic growth relate to policy objectives emphasized by others, whether dichotomous characterizations of the choices in each of the policy dimensions might not obscure or mislead, and how one might sort among the policies in any particular cell of a Krueger two-by-two taxonomy. Finally I turn to such matters as the relation of time to the analysis, whether it might be desirable to add a third dimension for the level of development or initial conditions to make such a taxonomy more useful, and what are the implications for the underlying political economy considerations that led to past and current policies.

2.1. Frameworks for Analysis of Proximate Determinants of Outcomes and Behaviors of the Poor and Basic Efficiency and Distributional Policy Motives

It is almost trivial to say that the poor are poor because they have limited assets and/or the assets that they have generate small returns. But to do so points to the proximate factors that might reduce their poverty through increasing their assets and/or increasing

the returns to their assets and raises the question of what policies might be desirable to do so. This section considers the proximate determinants of the assets of the poor, with focus on schooling and other human resource investments as key examples. It begins with a discussion on why frameworks for analysis are necessary. Then a standard analytical framework for the determinants of human resources is presented, with subsequent extensions to include intrahousehold allocations and information problems. Finally there are some considerations about the implications for analysis of endogenous governmental policies.

2.1.1. *Why Frameworks for Analysis are Necessary*

Good analysis of the impact of policies on education and other human resources based on available data has tripartite foundations: data, modeling and estimation. These three dimensions are critically interrelated. Data, of course, are essential for empirical analysis, limit the extent to which analyses can be undertaken, and shape most of the estimation problems. If there was available data from well-designed experiments,¹ associations between observed human resources and observed determinants or outcomes would reveal the underlying causality directly. But for numerous reasons, including costs and ethical concerns, such experimental data are rarely available. Data may be available from so-called “natural experiments” in which, due to some fortuitous happenstance, all unobserved (by analysts) variables are the same in two groups so that, for instance, differences in observed productivities reflect only differences in observed human capital variables. But though such natural experiments are a conceptual possibility, it is difficult indeed to find two situations in which all unobserved variables are likely to be identical.²

Therefore, while there may be high returns for some aspects of policy analysis to increase experimental data, most analysis has been and will continue to be based on behavioral data. Such behavioral data can “speak for themselves” regarding *associations* between policies and various outcomes. But they generally cannot “speak for themselves” with regard to what observed determinants—policies or otherwise—*cause* human resource differences or to what extent observed human resources *cause* different outcomes. The problem is that most data are the result of a number of behavioral decisions taken in light of a number of factors unobserved by

¹ With random assignment between treatment and control groups, no attrition problems, and in which neither the subjects nor those who provided the experimental treatments knew which subjects received treatments and which received placebos. 2.4.1 discusses experimental evaluations of policy further.

² Many studies that purport to be based on such natural experiments have been subject to considerable criticisms. For example, see Deaton (1995) on Knight and Sabot’s (1990) claim that the difference between Kenyan and Tanzanian labor outcomes is a natural experiment regarding the type of government, Welch’s (1995) comments on Card and Krueger’s (1995) claims that such experiences as differences in state minimum wage laws constitute natural experiments, and Rosenzweig and Wolpin’s (2000) critical appraisal of “natural experiments in economics.” But some of the claims regarding natural experiments are more persuasive in my view. For example the use of multiple births in India as a natural experiment to explore the effect of fertility shocks in Rosenzweig and Wolpin (1980) and of the gender of a new baby to explore the impact of a shock on savings, time allocation, and income in rural India in Deolalikar and Rose (1998).

analysts.³ Good analysis of what causes human capital investments or of what effects such investments have is difficult, and requires a much more systematic approach than simply looking at associations among observed variables.

Modeling provides analytical frameworks for exploring systematically various dimensions of policies and human resources, points to what data are needed for such explorations, and to some of the probable estimation issues that should be addressed given the data used. The analytical frameworks provided by models are essential if the empirical estimates are based on behavioral data generated in the presence of unobservables such as innate ability and family connections. The problem, for example, is that individuals with greater ability and motivation and better innate health may be more productive directly *and* may have more schooling and more nutrition. Therefore it may be difficult to sort out the effect of schooling and nutrition per se as opposed to the fact that these human resources are correlated with unobserved abilities, motivation and innate health.⁴ For such reasons, policy effects can be analyzed satisfactorily with nonexperimental data only within frameworks that incorporate well the essence of behaviors related to the phenomena of interest. To be interpretable, estimates based on behavioral data require some model of the underlying behaviors, though far too often in the literature the models used are not explicit. This means that good analysis of these phenomena requires more than some one running amok with a data set and software such as STATA or SAS; it requires a careful integrated modeling-data-estimation approach. Systematic frameworks are all the more important for questions of interest for this paper for many of which severe data limitations are unfortunately the norm. Those who are not clear about their framework of analysis are not revealing underlying truths unconstrained by such frameworks, but are usually making implicit assumptions that may upon examination not be very plausible.

³ Throughout this paper “unobserved” means unobserved by analysts and policymakers. What is unobserved in this sense, of course, depends on the data set, though there are some widely unobserved factors such as innate ability, innate health, family connections, and preferences. Such factors, while not observed by analysts, are observed (perhaps imperfectly and with learning) by the individuals whose behaviors are being studied, and these individuals make decisions in part based on these factors. Examples of recent studies (or surveys of such studies) that emphasize these unobserved factors and their importance in analysis of behavioral data include Alderman *et al.* (1996a,b, 2001), Behrman (1990a,b, 1996a,b,c, 1997a,b), Behrman and Birdsall (1983), Behrman and Deolalikar (1993, 1995), Behrman and Lavy (1998), Behrman *et al.* (1997a,b, 1999), Behrman and Rosenzweig (1999, 2000, 2001a,b), Behrman, Rosenzweig and Taubman (1994, 1996), Behrman and Wolfe (1987, 1989), Birdsall (1985), Boissiere *et al.* (1985), Bouis and Haddad (1992), Card (1995), Deolalikar (1996), Deolalikar and Rose (1998), Foster (1995, 1997), Foster and Rosenzweig (1993, 1994, 1995, 1996), Glewwe (1996), Glewwe and Jacoby (1995), Hanushek (1995), Heckman *et al.* (1994), King (1995), King and Hill (1993), King and Lillard (1987), King and Ozler (2000), Knight and Sabot (1990), Manski (1993), Miller *et al.* (1995), Munshi (1997), Pitt *et al.* (1990, 1993), Rose (1999a,b), Rosenzweig and Schultz (1985, 1987, 1989), Rosenzweig and Wolpin (1980, 1986, 1988, 1993), Strauss (1990), Strauss and Thomas (1995), Thomas (1990), Thomas *et al.* (1991), and Wolfe and Behrman (1987).

⁴ Moreover, the biases if there is not control for the underlying behavior may be either upwards or downwards so the usual estimates without control for such behavior may not even establish a priori known upper or lower bounds on the true responses.

2.1.2. Analytical Frameworks for the Determinants of Human Capital Investments

Households and the individuals in them are the proximate sources of demands for human capital investments such as schooling, given their predetermined assets (i.e., physical, financial, and human, including endowments⁵), production functions related to human resources, public and private services related to human capital investments (i.e., schools, health clinics), and current and expected prices for the inputs used in human capital investments and for the outcomes of the production process. Policies, of course, may enter directly or indirectly into this process through a number of channels ranging from the accessibility and quality of public schools to the functioning of capital markets for financing school investments to the functioning of markets in which schooling is expected to have returns. It is useful to begin with Becker's (1967) Woytinsky Lecture on human capital investments, a simple framework that captures many of the critical aspects of such investments and has been widely appealed to in rationalizing empirical studies of human resource determinants. In order to highlight the basics and for simplicity, this discussion abstracts from intrahousehold allocations and information imperfections, topics to which the next two subsections turn.

Human capital investment demands, under risk neutrality, reflect the equating of expected marginal private benefits and expected marginal private costs (both in present discounted terms) for human capital investments in a given individual (Figure 2a). The marginal private benefit curve depends importantly, *inter alia*, on the expected private gains in productivity in general and in wages/salaries in particular (which may be related to productivities) due to human capital investments. The marginal private benefit curve is downward-sloping because of diminishing returns to human capital investments (given genetic and other endowments) and because, to the extent that human capital investments take time (such as schooling and training), greater investments imply greater lags in obtaining the returns and a shorter post-investment period in which to reap those returns. The marginal private cost may increase with human capital investments because of higher opportunity costs of more time devoted to such investments (especially for schooling and training) and because of increasing marginal private costs of borrowing on financial markets (if such markets do not permit borrowing for such purposes, at some point the marginal private cost curve may become very steep or vertical). The equilibrium human capital investment for this individual is H^* , where the two curves intersect, with both the marginal private benefit and the marginal private cost equal to R^* . This equilibrium human capital investment is associated with an equilibrium rate of return, i^* , that equates the present discounted value of expected marginal private benefits with the present discounted value of expected marginal private costs.

If the marginal private benefit curve is higher for every level of human capital investment as indicated by the dashed line in Figure 2b, all else equal, the equilibrium human capital investment (H^{**}) and the equilibrium marginal private benefit (R^{**}) both are greater. The marginal private benefit curve may be higher for one of two otherwise identical individuals except for the difference noted below that in most cases may be due directly or indirectly to policies because one individual (or whomever is investing

⁵ "Endowments" means characteristics that are given independent of behavioral decisions. Genetically determined innate ability and innate health robustness are examples.

in that individual, such as the parents of young children):⁶ (1) has greater endowments that are rewarded in schooling and in post-schooling labor markets; (2) has lower discount rates so that the future benefits of human capital investments have greater value at the time of the investment decision; (3) has human capital investment options of higher quality (e.g., access to higher quality public schools or public health services) so that the marginal private benefits for a given level of private investments are higher, and the equilibrium investments greater;⁷ (4) has better health and a longer expected life due to complementary investments, so that the post-investment period in which that individual reaps the returns to the investment is greater and therefore the expected returns greater; (5) has greater marginal private benefits to a given level of such investments because of labor market discrimination that favors that individual due to gender, race, language, family, village, or ethnic group; (6) has returns to human resources investments that are obtained more by the investor or the relevant decision maker (e.g., if traditional gender roles dictate that children of one sex, but not the other, provide old-age support for their parents, parental incentives may be greater to invest in children who are likely to provide such support⁸); (7) has greater marginal private benefits to a given level of investment because of being in a more dynamic economy in which the returns to such investments are greater; (8) has greater marginal private benefits to a given level of such investments because of greater externalities from the human capital investments of others in the same labor market; or (9) lives in a more stable economy so that the discount rate for future returns is lower and thus the marginal private benefit of future returns greater.

If the marginal private cost is lower for every level of human capital investment as shown by the dashed line in Figure 2c, *ceteris paribus*, the equilibrium human capital investment (H^{***}) is greater, with the marginal private benefit (R^{***}) lower at the higher investment level. The marginal private cost might be lower for numerous reasons, again, most or all of which may be affected directly or indirectly by policies. Compare two otherwise identical individuals except that one individual: (1) has lower private cost access to education and health services related to such investments because of closer proximity to such services or lesser user charges; (2) has less opportunity costs for time used for such investments (e.g., due to gender specialization in household and farm tasks performed by children); (3) faces lower utility costs of such investments because of cultural norms that favor some activities associated with such investments more for some individuals than for others (e.g., in some societies, it is not thought desirable that girls past puberty mingle with males outside of the family in transit to school or in school so that the preference costs of schooling are lower for boys than for girls);⁹ or (4) is from a household with greater access to credit because of greater wealth or status or

⁶ For the last three of these comparisons the otherwise identical individuals would have to live in different economies.

⁷ If the investor must pay for greater human resource service related quality, investment does not necessarily increase with a higher quality option. What happens to the equilibrium investment depends upon where the marginal private cost curve for the higher quality option is in addition to the location of the marginal private benefit curve.

⁸ Though this tendency may be offset if, for example, human capital substitutes sufficiently for financial transfers in marriage markets (e.g., Rao 1993 explores this possibility for India).

⁹ For this case the marginal utilities of marginal private benefits and costs are equated.

better connections. While in Figure 2c the social marginal cost curve is drawn to be below the private marginal cost curve for illustration, it should be recognized that there is one possibly important reason why the social marginal cost curve *ceteris paribus* is likely to be above the private marginal cost curve. That is, if public resources are used for human resource investments, raising those resources other than through direct users fees almost surely will introduce distortionary costs elsewhere in the economy that may be considerable (e.g., Feldstein 1995).

This maximization process leads to dynamic decision rules or demand relations for human capital investments in individual i that depend on all relevant prices P , on all relevant resources R and on all the parameters of the relevant production functions, on preferences and on stochastic factors that, say, may enter into production processes (e.g., weather fluctuations) or reflect preference differences:

$$(1) \quad H_i = H(P, R | \text{production parameters, preference parameters, stochastic factors}).$$

The prices include all prices that enter into the investing household's decision-making process, including the prices paid by the household for schooling, other uses of household resources and for transferring resources over time (i.e., the interest rate) and for insuring against uncertainty. At the time that any human resource investment decision is made, these prices include all past and current prices (perhaps embodied in current stocks of human capital), as well as expected future prices (including expected future returns to human capital investments). The resources include all resources of the individual, household (identified by ownership if there is intrahousehold bargaining), educational and health/nutrition institutions, and community that affect any household decisions. These resources include human resources that reflect past investments, financial resources, physical resources, genetic endowments, school characteristics, and general learning environments. Policies may have impacts directly and indirectly through a number of the prices and resources.

Among the constraints for this maximization process, as noted, are production functions such as that for the direct technical/biological link between "inputs" used to produce human capital (X) and human capital "outputs." The assessment of the *direct* impact on specific outcomes (as opposed to the *total* impact in relation 1) of some important policy program components may be attained by estimating these relations. For example, consider a production function for cognitive achievement CA_i for the i th child depending on pre-school human resource investments (PS_i), ability (A_i), health (H_i), nutrition (N_i), school quality (Q_i), time in school (S_i), family background characteristics (F_i) and other factors:

$$(2) \quad CA_i = CA(PS_i, A_i, H_i, N_i, Q_i, S_i, F_i \dots).$$

There are a number of important questions about this production process. For instance how much do resources devoted to schooling and other educational programs improve cognitive achievement? Are resources devoted to schools more effective in their impact on cognitive achievement if a student has better health and nutrition? Greater abilities? Or comes from a better family background? Some of the production inputs, however, are not likely to be observed well or in some cases at all by analysts

and some are likely to be determined together with the human capital outcome, all of which can lead to estimation problems that are discussed in 2.4.

Good estimates of such relations might be very informative regarding, for instance, how policy-related school characteristics and prices related to education affect human capital stock. For example, how responsive are schooling investment decisions to the prices of resources or programs for human resource investments? How important are incomplete markets, particularly for capital and insurance? Do limitations in such markets mean that individuals from poorer backgrounds face relatively severe constraints on schooling because their families have very limited resources for self-financing schooling and cannot readily finance schooling through capital markets? What role do information imperfections play in the household schooling decisions? Are there important interactions between household characteristics and program characteristics? Some of the resources and prices, however, are not likely to be observed well or in some cases at all by analysts, which can lead to estimation problems that are discussed in 2.4.

This simple framework systematizes six critical, common sense, points for investigating dimensions of the determinants and the effects of human capital investments such as schooling—and how these relate to policy choices that are directed towards economic growth and increasing the incomes of the poor, or other objectives.

First, the impacts of changes in either micro or macro policies may be hard to predict by policymakers and analysts. If households or firms or other entities face a policy or a market change, they can adjust all of their behaviors in response, with cross-effects on other outcomes, not only on the outcome to which the policy is directed.

Second, aggregation to obtain macro outcomes will average out random stochastic terms across individuals or households. But such aggregation does not average out systematic behavioral responses at the micro level. Therefore associations among macro variables can reveal, conditional on the overall context, what are those associations—but not causal effects of processes occurring at the micro level.

Third, the marginal benefits and marginal costs of human capital investments in a particular individual differ depending upon the point of view from which they are evaluated: (1) There may be externalities or capital/insurance market imperfections so that the social returns differ from the private returns (2.2.1) and (2) there may be a difference between who makes the investment decision (e.g. parents) and in whom the investment is made (e.g. children). This distinction may not seem central for the concern of this paper with policies related to objectives such as increasing incomes of the poor and growth. But it may be critical for understanding the effectiveness of policies because that effectiveness may depend crucially on what are perceived to be the private effects from the point of view of private decision-makers, and these may differ from the social effects of interest to policymakers.

Fourth, human capital investments are *determined* by a number of individual, family, community, (actual or potential) employer, market and policy characteristics, only a subset of which are observed in data sets such as are available to analyze outcomes such as schooling determinants and effects. To identify the impact of the observed characteristics on human capital investments, it is important to control for the correlated unobserved characteristics. For example, if schools with higher quality tend to be in areas in which expected rates of returns from human capital investments tend to be greater but only indicators of school quality and not expected rates of return are

observed in the data and if there is not control for the unobserved expected rates of return in the analysis, the impact of school quality on such investments is likely to be overestimated because in the estimates school quality proxies in part for unobserved expected rates of return to these investments.¹⁰

Fifth, to identify the *impact* of human capital investments, it also is important to control for individual, family, community, market and policy characteristics that determine the human capital investments and also have direct effects on outcomes of interest. The impact of human capital investments such as schooling is of central interest to this paper because it may affect importantly objectives such as growth and poverty allocation—as well as future human resource investments because they are among the important components of what underlies the private marginal benefit curves in Figures 2a-2c. A major reason that certain changes in schooling may be more attractive than others for a given cost is that they have greater impact on the productivity and other outcomes of interest.

Sixth, empirically estimated determinants of, and effects of, human capital investments are for a given macro economic, market, policy, schooling and regulatory environment in which there may be feedback both at the local and at a broader level. Some critical questions for this paper are how do such environments change with different policy choices and are there likely to be differential effects for the poor than for others.

2.1.3. *Intrahousehold Allocations of Human Capital Investments*

The nature of intrahousehold allocations may modify the basic human capital investment story above. They may introduce questions of who controls command over household resources and additional elements of preferences, beyond the discount rates noted above (e.g., gender preferences regarding in whom investments are made, preferences among various types of investment). Various dimensions of intrahousehold allocations related to human resources extensively in Alderman *et al.* (1995), Behrman (1997b), Hart (1994), Haddad *et al.* (1996), and Strauss and Thomas (1995). Four major points can be summarized briefly.

First, most models of intrahousehold allocations and most empirical studies of these allocations suggest that they are in response to endowments such as innate abilities, thus reinforcing the fifth point in the previous subsection that to obtain estimates of the impact of human capital investments it may be critical to control for all such endowments even though they are not usually observed by data analysts.

Second, if there are different weights in the household objective function depending on who controls resources (i.e., what proportion of household resources women control), in whom investments are made (i.e., girls versus boys), or what form investments takes (i.e., specific human capital investments versus other forms of investments), intrahousehold allocations that maximize the household objective function generally do not lead to the socially most efficient investments in terms of aggregate

¹⁰ If expected rates of return differ across communities or clusters in the sample, they could be controlled in the estimates with community dummy variables (or fixed effects) (e.g., Alderman *et al.* 1996a for an example for Pakistan).

production even if all prices are “right” (i.e., reflect true marginal social benefits or costs).

Third, on the basis of casual observations it would appear that understanding the nature of intrahousehold allocations is quite important in the developing country context and that simple models of nuclear households that dominate in analysis of developed economies miss some important dimensions of actual household arrangements (e.g., division of labor among plots, see Udry 1996) as well as of related interhousehold behaviors (e.g., fostering of children, see Ainsworth 1996).

Fourth, identifying what is the nature of intrahousehold allocations is difficult in the presence of important unobserved variables, including those related to productive endowments and preferences that may in part reflect the nature of matching in marriage markets (e.g., Foster 1997). To examine whether greater command over resources in the hands of mothers affects human resource investments in their children (a maintained assumption with some recent policies, such as the Mexican PROGRESA program that is discussed in 2.4.1),¹¹ for example, one would like data generated from the experiment in which differing resources were randomly distributed to mothers. Data on women’s earnings, schooling, income from past savings (i.e., “unearned income”), etc. are *not* obviously good approximations to the desired experimental data if there are unobserved heterogeneities in productivities or preferences across women. Associations in nonexperimental data between resources controlled by women and human capital investments do not necessarily mean that increasing resources under women’s control would increase human capital investments to the extent indicated by the associations; women’s control over resources may be proxying in part for unobserved productivities or preferences. Also differences in the intrahousehold allocation of resources according to the gender of the recipients does not necessarily mean that the household objective function weighs household members differentially by gender; there may be gender differences in endowments, demands placed on household members, costs of resources and/or human capital investment returns that induce gender differences in intrahousehold allocations. Pitt *et al.* (1990), for example, find for rural areas of Bangladesh that intrahousehold nutrient allocations that *prima facie* might appear to favor adult males in fact are consistent with household “taxes” on adult males once energy use and gender task specialization in the presence of unobserved endowments are included in the analysis.

2.1.4. Information Problems and Human Capital Investments

The discussion to this point ignores the impact of information problems on human capital investments. Investors in human capital in developing countries face a number of information problems. There is likely to be considerable uncertainty among households regarding what schools and other relevant institutions are doing, what their value added is likely to be, and what is likely to be the impact of different school characteristics on long-run productivities of students. Many households in developing countries, further, are subject to substantial shocks from weather and from markets, and considerable

¹¹ For empirical estimates relating to human resource investments in Brazil, Cote d’Ivoire, Ghana, Thailand and the United States that are interpreted to be consistent with mothers’ control over resources being important, see Schultz (1990), Thomas (1990, 1994), and Haddad and Hoddinott (1994).

uncertainty regarding future developments, including the returns to human capital investments. If such shocks cannot be anticipated, and if such households do not have good mechanisms for smoothing over time or insuring against bad future outcomes, behavior is likely to be affected. Schools and other providers of services related to human capital investments also are likely to have considerable uncertainties about future developments in the economy and about preferences of clients including students and their parents.

There are several important implications of such information problems that are mentioned briefly here, but in some cases developed further below.

First, it is probably desirable to develop mechanisms for providing both demanders and suppliers of schooling and other educational services with better information both about the current situation on the other side of the market and about future developments. Were households better informed about what schools and other educational institutions are doing and what are likely impacts of what they are doing, they could make better human capital investment decisions. Were schools and other educational institutions better informed about the preferences and interests of their clients—both households that provide students and potential employers of their students—they could make better decisions about what educational services to offer.

Second, if households are risk averse and uncertainties are relatively large for human capital investments, the private incentives for such investments are less than the socially desirable levels (because many of the risks are pooled from a social point of view). Further, there may be effects on intrahousehold allocations. For instance investments in daughters and higher-birth order children are alleged to be particularly vulnerable to negative shocks (e.g., Behrman 1988a,b, Behrman and Deolalikar 1990 present estimates for India). If so, the extent of such shocks and the coping mechanisms that households have, may have important effects on sex and birth-order differences in intrahousehold human capital investment allocations. Important coping mechanisms may include borrowing in formal and informal markets, selling of assets such as livestock, working in emergency relief schemes, obtaining transfers from other households in the same communities or in other communities, and public welfare programs. The general perception is that risk aversion is greater and coping mechanisms for dealing with shocks are lesser among poorer households. Binswanger (1980) provides some well-known empirical evidence on the former of these points.

Third, uncertainty may affect human capital investments and intrahousehold resource allocations due to information problems. Private incentives for human capital investments may be less than socially desirable, for example, if future dynamism in the economy will increase rates of returns to such investments more than currently recognized by private investors. Intrahousehold resource allocations decisions based on current and past information may be misleading if, for example, labor markets in the future in developing countries continue to change rapidly from rewarding gender traits associated with males (e.g., strength) to rewarding gender traits associated with females (e.g., manual dexterity).

Fourth, uncertainty regarding innate capabilities and preferences may be revealed by human capital investments and improve the information basis for considering further human capital investments. Time in schooling and training programs may help both individuals in whom such investments are made, and others, to learn about abilities and

interests and to form a better basis for assessment of the probable returns to further education. Health examinations may identify conditions for which the expected returns to further health inputs would be high.

Fifth, uncertainty and imperfect information regarding good matches of heterogeneous individuals with heterogeneous jobs may mean that there are high returns to investing in job searches and in improving information about job options. For the same reason, job turnover and searches may not be an indication of labor market failures, but of effective searches for better job matches (e.g., Heckman *et al.* 1994).

Given the apparent great importance of shocks and limited information for many households in developing countries, the returns are likely to be high to understanding better how mechanisms for coping with shocks and obtaining information function in developing countries through undertaking more studies such as those in the literature for Asia and elsewhere on the role of such behaviors as marrying, migrating, altering livestock stocks, changing own nutrition and time allocation, job searching, and adjusting transfers, as well as using formal savings institutes, (e.g., Behrman *et al.* 1997a, b, Deolalikar and Rose 1998, Foster 1995, Foster and Rosenzweig 1993, 1995, 1996, Heckman *et al.* 1994, Rose 1999a,b, Rosenzweig 1988a, Rosenzweig and Stark 1989, Rosenzweig and Wolpin 1993).

2.2. Efficiency and Distributional Considerations and Evaluating Policies

Often analyses of policies are undertaken without consideration of the general rationale for policies. It is just presumed that policies that, say, increase schooling must be good. But such analyses are of little help in convincing skeptics that scarce resources should be allocated for these purposes, given many competing alternative uses. Moreover they may not provide much in the way of guidelines for choosing among policy alternatives. Therefore it is useful to begin by asking why policy interventions might be desirable, again with reference to schooling and human resources investments as a particular concrete example. Below in 2.5. I turn to the question of how these policy motives relate to Krueger's (2000) "two-by-two" focus on increasing incomes of the poor and growth that is outlined in Part 1.

At a general enough level of abstraction, policy should be chosen in order to maximize social welfare. That begs, of course, the critical political economy question of how the social welfare function is determined, to which I return a little in 2.7.3. below. Even if that difficult question is put aside, the practical guidance offered by the injunction to maximize social welfare may seem quite limited. For that reason it often is useful to think separately of the two standard economic justifications for governmental policy interventions: (1) to increase efficiency/productivity and (2) to redistribute resources, first in isolation and then together.¹² Both of these apply to policies that may affect economic growth and the incomes of the poor, including schooling and human resources and the benefits of schooling and human resources.

The policy justifications based on efficiency and on distribution are both firmly rooted in micro dimensions of behaviors as outlined in 2.1. That is the case because

¹² These two justifications include some other common concerns about policies, such as questions of access and quality of services and sustainability of overall economic development and of particular programs as is discussed below (also see Behrman and Knowles 1998a).

both of these standard economic motivations for policy are concerned ultimately with the welfare of individuals as judged by those individuals. This last statement is emphasized by placing it in italics because economic efficiency is viewed by some as a concern about allocation of things and technical and financial concerns, but *not* a concern about people. But this reflects a fundamental misunderstanding. To the contrary, economic efficiency ultimately is a concern with the welfare of people as judged not by policymakers or international experts, but by the individual decision-makers involved. There, in addition, is a separate important concern about the distribution of decision-making powers. But it is important to recognize that the efficiency motive for policy, far from being purely a mechanical or technical concern of “dismal scientists” devoid of concerns about people, is based fundamentally in people’s perceptions of their own welfare.

This section reviews standard economic rationale for policies related to efficiency/productivity and to distribution, concerns that interact. Though such discussions are the standard fare of economic textbooks, these motivations are reviewed here because they often seem to be downplayed or ignored in discussions of appropriate policies and policy analysis and, as discussed in 2.5, they may differ in some important respects from Krueger’s emphasis on economic growth and increasing the incomes of the poor.

2.2.1. *Efficiency/Productivity*

Resources are used efficiently in the economic sense of the term if they are used to obtain the maximum product possible given the quantities of the resources and the available production technologies at a point of time, and over time, and if the composition of that product increases the welfare of members of society as much as is possible given the resource and technological constraints and the distribution of resource ownership. It is important to note that efficiency is not just a concern about the static use of resources at a point in time, but also is a concern about the use of resources over time and thus productivity and productivity growth over time. An investment (or expenditure) is efficient if the marginal *social* benefit of the last unit of that investment just equals its marginal *social* cost.¹³ If the marginal social benefit of a particular investment is greater (less) than the marginal social cost, society is not investing enough (is investing too much) and would benefit from increasing (decreasing) the level of investment until the marginal social benefits and costs are equalized.

Although applying the above rule maximizes social gains, private maximizing behavior leads to investments including those related to human resources at the level at which the marginal *private* benefit of the investment equals its marginal *private* cost under the assumption that, given the information available to them and the constraints that they face, individuals act in what they perceive to be their best interests, as is

¹³ Three points should be noted. First, economic efficiency is not the same as engineering efficiency because of the incorporation of marginal benefits and marginal costs rather than focusing exclusively on technological efficiency. Second, these marginal conditions for efficiency may not hold if there are, for example, large discontinuities in production processes. In such cases choices may have to be made among a number of different alternatives, using an explicit welfare function to compare among the alternatives. Third, the considerations noted above in 2.1.4 about uncertainty holds for this discussion as well.

discussed in 2.1.2. Figure 2a provides an illustration for investments related to one individual decision-maker.

Now consider what happens if the private incentives for investments related to human resources differ from the social incentives for such investments, first with respect to the marginal benefits and then with respect to the marginal costs.

Let the dashed line in Figure 2b now represent the marginal *social* benefits for investments related to human resources that are drawn to be greater than the marginal *private* benefits (rather than the changed marginal private benefits as in the discussion in 2.1.2).¹⁴ In this case the private incentives are to invest at level H^* , which is less than the socially-optimal (efficient) level of investment at level H^{**} . Therefore there is an efficiency argument for policies to induce or to require private investments at level H^{**} instead of level H^* .

Why might marginal social benefits exceed marginal private benefits for schooling investments, to continue with the same illustration used in 2.1.2? Among the most frequent answers to this question are: (1) Investments in education are thought to have not only private benefits to the person being educated, but, by adding to society's stock of knowledge, social benefits beyond the private benefits (positive "externalities" in the form of effects that are transferred external to markets). (2) Information on which schooling decisions are made may misrepresent the private rates of return to these investments because it is incomplete or incorrect. The "public good" nature of information (i.e., that the marginal cost of providing information to another consumer is virtually zero) leads to under-production of information from a social point of view by private markets because private providers cannot cover their costs if they price information at the social marginal cost as required for efficiency. (3) The combination of uncertainty, risk aversion and imperfect insurance markets may result in private incentives to underinvest in human, financial and physical assets that enhance economic development from a social point of view because from a social point of view the risks are pooled.¹⁵

Now let the dashed line in Figure 2c represent the marginal social costs for schooling investments that are drawn to be less than the marginal private costs.¹⁶ In this case the private incentives are to invest at level H^* , which is less than the socially-optimal level of schooling investment at level H^{***} . Therefore there is an efficiency argument to consider the possibility for policies to induce schooling investments at level H^{***} instead of at level H^* .

Why might marginal social costs be less than marginal private costs for schooling? (1) There may be capital market imperfections for human resource

¹⁴ The marginal social benefits also could be lower than the marginal private benefits so that the marginal social benefits curve are below the marginal private benefits curve, and policies to attain efficiency would have to reduce the private incentives to the social levels.

¹⁵ These are the three major reasons for a divergence to arise between private and social marginal benefits for human resource investments related to schooling. There may be others as well (e.g., the social discount rate may be lower than the private discount rate, wage and price rigidities may preclude wages and prices from reflecting social marginal benefits and costs, income taxes may cause private marginal returns to schooling investments to be lower than social marginal returns).

¹⁶ The marginal social costs also could be higher than the marginal private costs, in which case the marginal social cost curve would be above the marginal private cost curve, and policies to attain efficiency would have to reduce the private incentives to the social levels.

investments (in part because human capital is not accepted as collateral) such that the marginal private costs for such human resource investments exceed their true marginal social costs, which probably is more relevant for individuals from poorer families who cannot relatively easily self-finance such human resource investments. (2) The sectors that provide schooling may produce inefficiently because institutional arrangements do not induce efficient production of an efficient basket of commodities. School teachers and staff, for example, might be oriented towards rewards established by the Ministry of Education, not towards satisfying the demands of clients. (3) The sectors that provide human resource services may produce inefficiently because regulations preclude efficient production of an efficient basket of commodities. For example, regulations that limit hours during which schools are open, or limit textbook choices, or that impose quality standards based on different conditions in other economies or that limit provision of services to public providers, all may result in much greater costs of attaining specific outcomes related to human capital investments than would be possible with less regulations (also see Chomitz and Birdsall 1991). This is not to say that all regulations are bad. In some contexts regulations may be the most efficient means of attaining a goal, particularly if there are certain types of information problems (e.g., those related to the quality of goods and services that cannot be easily discerned by consumers). But often regulations, no matter how good might be their intent, are not very effective policy tools (see 2.2.3 for further consideration of policy choices).

2.2.2. Distribution

Distribution is a major policy motive distinct from efficiency. Distributional concerns, at least officially in pronouncements of governments and of international agencies, often focus on the command over resources of the poorer members of society, as is the concern in Krueger's (2000) "two-by-two" matrix in which one dimension is defined by increasing incomes of the poor.¹⁷ Society might well want to assure, for example, that everyone has basic schooling even at some efficiency cost. Though distributional concerns are often characterized by focus on the distribution of income or other resources *among* households, there may also be important distributional considerations *within* households (also see 2.1.3). Household decision-makers are not likely to consider equally the preferences of all household members in allocating household resources. For example, if women have preferences for using more resources to invest in children than do their husbands, these preferences may not be weighed equally as those of their husbands in decisions made by their husbands. Moreover, even if some households as aggregates have sufficient resources to cover what society considers to be basic needs, certain types of individuals in households may not be allocated what society considers to be sufficient resources for their individual satisfaction of basic needs.

¹⁷ Many policies, whatever their official justification, however, distribute resources to middle and upper class households. Krueger cites the example of Sri Lankan rice subsidies (also see Part 1 above). For some examples for human resource-related policies in Viet Nam, see Behrman and Knowles (1998b, 1999) and World Bank (1995).

2.2.3. Policy Choices to Increase Efficiency and to Improve Distribution

Consider first efficiency. If all other markets in the economy are operating efficiently and there are differences between marginal private and social incentives in markets related to schooling so that private incentives are to invest at level H^* instead of at level H^{**} in Figure 2b or level H^{***} in Figure 2c, policies that increase schooling to the socially efficient levels increase efficiency. If all other markets in the economy are *not* operating efficiently, then policies that narrow the differences between private and social incentives in markets related to schooling do *not* necessarily increase efficiency and productivity. But, in the absence of specific information to the contrary, such as the existence of two counterbalancing distortions, a reasonable operating presumption is that lessening any one distortion between social and private incentives is likely to increase efficiency.

That still does not indicate what policies would be best to induce human resource investments related to schooling at level H^{**} in Figure 2b or level H^{***} in Figure 2c. There is a large set of possibilities, including governmental fiats, governmental provision of schools at subsidized prices, price incentives in school markets, price incentives in other markets, and changing institutional arrangements in various markets. To choose among alternatives, there are two important considerations.

First, it is necessary to realize that policies have costs. These costs include the direct costs of implementing and monitoring policies and the distortionary costs introduced by policies that may encourage socially inefficient behavior (including rent-seeking by both public and private entities). Often policymakers focus only on the direct costs and ignore the distortionary costs that may be much greater because only the direct costs have obvious and visible direct ramifications for governmental budgets. In fact the costs may be sufficiently high that it is not desirable to try to offset some market failures by policies.¹⁸ But, if it is desirable to do so, there is a case generally for making policy changes that are directed as specifically as possible to the distortion of concern because that tends to lessen the distortion costs. An *efficiency policy hierarchy* can be defined in which alternative policies to attain the same improvement in efficiency are ranked according to their social marginal costs, including direct and distortion costs. This hierarchy indicates the preferential ordering of policies to deal with particular divergences between private and social incentives. For example, it sometimes is argued that female schooling should be subsidized because more-schooled women have fewer children, which relieves budgetary pressures on subsidized schooling and health services. But in this case increasing female schooling through such subsidies would not seem obviously to be high in the efficiency policy hierarchy. It would seem that higher in the efficiency policy hierarchy might be the elimination of any public subsidies for education and health that are not warranted by the marginal social benefits exceeding the marginal private benefits.

Second, there are tremendous information problems regarding exactly what effects policies have, particularly in a rapidly changing world. This is an argument in favor of

¹⁸ If the policies involve public expenditures as do most policies, it is important to consider the cost of raising the necessary tax revenue to finance the policy as noted in 2.1.2. For example, it has been estimated that the distortionary cost (often called the “deadweight loss”) of raising a dollar of tax revenue in the United States ranges from \$0.17 to \$1.00, depending on the type of tax used (e.g., Feldstein 1995).

policies that are as transparent as possible, which generally means higher in the efficiency policy hierarchy with regard at least to distortion costs because more direct policies are likely to be more transparent.¹⁹ Information problems also provide an argument for price policies (taxes or subsidies) because if there are shifts in the underlying demand and supply relations they are likely to be more visible in a more timely fashion to policymakers if they have impact on the governmental budget than if they only change the distortions faced by private entities as tends to happen with quantitative policies.²⁰ Finally information problems in the presence of heterogeneities across communities point to the possible desirability of decentralization and empowerment of users of social services in order to increase the efficacy of the provision of those services, though such considerations must be balanced off against possible economies of scale, higher quality of staff and possibly lower levels of corruption at more centralized levels, as well as intercommunity distributional concerns. Thus, for efficiency/productivity reasons, particularly given that in the real world information is imperfect and changes are frequent, there is an argument generally for choosing policies as high as possible in the efficiency policy hierarchy defined by the extent of marginal direct and distortionary costs—and thereby using interventions that are as focused directly on the problem as possible. Note that this means that, for example, if there is a good efficiency reason for public support for human resource investments related to schooling, that does *not* mean that the best way to provide that support is through governmental provision of the relevant services. Higher in the efficiency policy hierarchy than direct governmental provision of such services, for example, may be subsidies or taxes that create incentives for the efficient provision of these services whether the actual providers are public, private or some mixture. On the other hand, policies that discriminate against one type of provider—for example, by making the availability of such subsidies dependent on whether the provider is public—are generally likely to be lower in the efficiency policy hierarchy than policies that do not have such conditions.

Now consider distribution. Generally speaking the subsidization of specific goods and services (and even less, the direct provision by governments of goods and services at subsidized prices) is *not* a very efficient way of lessening distributional problems. Because subsidies are designed to lower prices to consumers, they induce inefficient consumption behavior. Instead, it generally is more efficient (and thus less costly in terms of alternative resource uses) to redistribute income to consumers, allowing them to allocate the income in ways that lead to efficient patterns of consumption.²¹ Nevertheless, there are some cases in which subsidization of selected goods and

¹⁹ This also is an argument for considering an experimental approach to evaluating policy alternatives when possible—e.g., rather than introducing a reform country-wide, introduce variants of reforms for schools (and other social services) in randomly selected sites with careful monitoring of the results for both the experimental groups and the control groups. See 2.4.1. for discussion of the use of one such experimental approach to policy evaluation in a developing country context.

²⁰ Nevertheless there are likely to be some cases, such as providing information regarding the quality of goods and services related to human resource investments related to schooling, for which quantitative regulations may be higher in the efficiency policy hierarchy than price policies because of the nature of the information requirements.

²¹ However, even redistributing income may lead to inefficiency because it can affect the work effort of those on both the tax-paying and tax-receiving sides.

services may be defensible to attain distributional objectives. For example, in cases where it is difficult (and therefore costly) to target the poor households or poor types of individuals within households, subsidizing certain goods and services that are mainly consumed by the poor may be the most efficient policy alternative. Krueger suggests, for example, that subsidizing coarse grains merits consideration for such reasons (also see 3.1. below).

Rather than being concerned with the general command over resources of its poorer members, as noted above, society may deem it desirable that everyone enjoy basic human resource related (and other) services, including basic schooling. Such an objective might be obtained through many means. But presumably it is desirable to assure that everyone have these basic options at as little cost in terms of productivity as possible so, rather than ignoring efficiency considerations, it is desirable to choose policies as high as possible in the efficiency policy hierarchy and still assure that the basic service objectives are met. Thus, to obtain a given distributional objective it is possible to define a *distributional policy hierarchy* in which policy alternatives that obtain that objective are ordered in from lowest to higher marginal costs, including both direct and indirect costs. Efficiency goals thus play an important role in interaction with the pursuit of distributional goals, not as independent considerations.

2.3. Empirical Issues—Measurement of Poverty, Income Growth and Policies

To be able to assess choices regarding policies related to increasing incomes of the poor and growth, as in the Krueger “two-by-two” matrix, we need to be able to (1) measure what we mean by poverty and growth and (2) estimate the impact of policies on these measures. These are not trivial tasks. This section considers some of the measurement difficulties and 2.4. then turns to estimation problems.

The key variables for Krueger’s “two-by-two” matrix include, of course, poverty and growth. But to assess the impact of policies on these two outcomes, also key are empirical measures of policies. Moreover, to estimate that impact of policies on poverty or on growth, it may be necessary to control for other variables that may affect poverty and/or growth and be correlated with policies, given that policies themselves reflect behavioral choices (e.g., see 2.4.3.). For all these variables there are questions at both the micro and the macro levels.

2.3.1. Measurement of Poverty

Poverty generally is defined to be having consumption (or command over resources or income) below some poverty line. The most commonly used standard “headcount” poverty measure is the number of people in a society with consumption below the poverty line. Fairly widely used alternative poverty measures refer to the amount by which individuals are below the poverty line (“depth of poverty”) and the “intensity of poverty” that weighs more those people with consumption far below the poverty line than those who are just below the poverty line.

The evaluation of consumption/income/command over resources for individuals typically is based on household survey or census data. There are a number of problems is using standard data to estimate consumption/income/command over resources for individuals that in many cases are exacerbated for poor individuals:

- (1) Those who are missed by such surveys and censuses tend to be concentrated among the poorest members of society, including, for example, those without permanent homes. Such individuals are likely to be missed differentially across different surveys and different societies, as well among different areas within a society (e.g., in some societies homeless are likely to be much more prevalent in large urban metropolises than in less populous communities). Therefore data sets are likely to understate the extent of poverty. Moreover the surveys used for estimating poverty often were designed only for estimating accurately a national or a regional mean, and not the higher moments of the distribution. As a result, estimates of the part of the distribution below some poverty cutoff from such surveys (as well as other characteristics of the distribution) are likely to be subject to large sampling errors.
- (2) There are several dimensions of the question of what prices indices to use to value consumption of those who are likely to be relatively poor. It is very difficult to value the consumption of many items, particularly items that are self-produced and leisure. The evaluation problems are likely to be greater for poorer people because they are more likely to depend on self-provision for substantial parts of their consumption and are more likely to participate in segmented markets. If it is the case, as often claimed, that self-produced items are likely to be undervalued, this in itself means that measured poverty is likely to be overstated. There also may be items that are provided with substantial subsidies or free from other community members or governmental organizations, such as food in kind or rationed food or health services. If these are not included as part of the consumption of the poor, their total consumption is likely to be underestimated. If there are significant variations across space in prices of key items in the consumption basket of the poor, such as food and shelter, and price indices are used that weight relatively heavily urban areas in which these prices are relatively high, the purchasing power of the poor in rural areas (where most of the poor are in most developing countries in Africa and Asia, though less so in Latin America) is likely to be understated and the extent of poverty overstated. On the other hand, if unit prices for goods of a given quality are inversely associated with the number of units purchased in monetary terms or in terms of the time cost of shopping, the usual price indices are likely to understate relatively the prices paid by the poor and thus understate the extent of poverty. Yet another problem is that the weight in the price indices that are available often do not reflect very well the consumption bundles chosen by the poor—and, if they do at a point of time, they at times are quite dated (e.g, Srinivasan 2001 notes that until 1988 the Indian Consumer Price Index for Industrial Workers was based on expenditure patterns in 1958/9 and that until 1995 the Consumer Price Index for Agricultural Laborers was based on expenditure patterns in 1960/1).
- (3) It also is very difficult to collect exhaustive information on consumption or income.²² There are some reasons why this is likely to be more difficult for the

²² Deaton (1989, p.63) describes the problems in estimating income in developing countries through a survey: “The concept of income is itself extraordinarily complex, and most people in developing

poorer than for those better off: the poorer are likely to make more small irregular purchases (or receive income more erratically), more likely to be paid in kind, likely to be less numerate/literate, and less likely to keep records for their own or other purposes (e.g., taxes). These factors in themselves are likely to mean that the consumption/income of the poor is undermeasured, and poverty overstated. There also may be conscious under-reporting to attempt to conceal income from authorities or from neighbors. Even though such under-reporting problems occur more (certainly in absolute value) for those who are better off than for those who are poor, to the extent that they occur for the poor they in themselves also tend to result in exaggerating poverty. There further may be problems in maintaining comparability across surveys, particularly if the focus of surveys changes.²³

- (4) The data that are collected are generally at the household level, but the notion of poverty refers to consumption per person. If household size is inversely related to consumption per person,²⁴ the use of household consumption tends to understate the extent of inequality among consumption per person and the depth and intensity of poverty among the poorer members of society. Even if household size is positively associated with consumption per person, household consumption is likely to be a noisy indicator of the extent of poverty. Therefore it is important to use consumption per capita. But because consumption usually is measured at the household or possibly family level, that raises at least three more questions. *First*, should every household member be treated equally in the division of household consumption among household members—should, for example, a prime-age adult male be treated the same as an infant? Some have argued that instead adult equivalency scales should be used in which the weights of different household demographic types are proportional to average food or nutrient consumption by those types. With such scales, children are weighed less than adults and infants less than children. If such weights are appropriate but not

countries have little reason to distinguish between business and personal cash transactions...Even in developed countries the measurement of self-employment income is notoriously inaccurate. The problems are not entirely solved even by the detailed questioning of more sophisticated surveys, in which the surveyor, not the respondent, calculates income. And the national accounts data for household saving are not themselves reliable enough to provide a good cross-check that will show what sort of surveys do best or how they should be redesigned to do better.”

²³ For example, the focus of the Indian National Sample Survey (NSS) has varied from one annual round to the next. Although consumption expenditure data are always collected from a subset of households, even in rounds in which these data are not the focus, the sampling and non-sampling errors of estimated average consumption are higher in such rounds than in rounds in which the primary focus is consumption expenditure, both for the reason of a lower sample size and because of it not being the primary focus of the survey. The data collected on consumption expenditure are likely to be of poorer quality as well.

²⁴ In many societies the number of children tends to be inversely associated with the incomes of parents—perhaps because of child quantity-quality tradeoffs and higher costs for the number of children in terms of the opportunity costs of parents in families in which the parents have higher human capital and higher income (e.g., Becker and Lewis 1973, Willis 1973), which in itself tends to mean that there is an inverse association between family income and the number of family members. On the other hand, in many societies the probability that families are extended and the size of extended families both increase with income—perhaps because of the greater attraction for relatives of wealthier households, which tends to lead to a positive association between household income and the number of household members.

used, individuals in households with relatively large proportions of children appear poorer than they actually are, which tends to make it appear that more individuals are living in poverty than actually is the case because of the relatively large proportion of children in poor households. *Second*, there is a question of economies of scale. If there are economies of scale or public goods within the household for some important facilities (e.g., common areas such as kitchens) and activities (e.g., cooking, shopping) then larger households may be better off in comparison with smaller households than would appear by comparing consumption per person. *Third*, is there systematic discrimination against certain demographic groups such as females, children or the elderly in intrahousehold and intrafamilial allocations. There is a claim that often is made in the popular press, for example, that 70% of those living in poverty in the developing world are females. Were such a claim true, it would require very different allocations within households of females versus males because most of each live in households with both sexes, and such allocations would have to be taken into account in going from household to individual consumption. Systematic studies, not surprisingly, show that there is no basis for this claim of such large discrepancies by gender in intrahousehold allocations (e.g., King and Mason 2000, Quisumbing, Haddad and Peña 2001). But there may be smaller differences in intrahousehold allocations that might affect who within households is below or above the poverty line in households that on the average are close to the poverty line.²⁵

- (5) The duration of the time period may make substantial differences in the estimates of poverty, particularly in societies with considerable fluctuations in income generation, which is not uncommon for many poor societies due for example, to seasonality in rural production conditions and weather shocks across years. Most estimates are based on annual income or poverty because an annual period is the period for which by convention many surveys and censuses attempt to measure income or consumption (though the underlying direct measures often are based on shorter time periods and extrapolated for the year in many cases). But within a year there may be substantial fluctuations, for which reason, for example, Behrman, Foster and Rosenzweig (1997a) find elasticities of demands for calories around unity during the planting season but insignificantly non zero in the post-harvest period for poorer households in rural Pakistan in a context in which nutrition has direct productivity effects on harvest net profits that are not observed and thus not rewarded completely in planting season labor markets and capital markets permit carrying resources across seasons only at considerable costs. Also across years there may be considerable fluctuations in who is

²⁵ Even for such allocations the evidence is less clear than many claim. Many suggest, for example, that intrahousehold allocations of nutrients and health care discriminate against females in many parts of South Asia. Pitt, Rosenzweig and Hasan (1990), however, provide a provocative counter-illustration for Bangladesh. They find, as is reported in other studies, that adult males receive more calories than other household members. But they also find that, when there is control for unobserved heterogeneity and heterogeneity of work efforts, adult males are actually taxed to the benefit of other household members. Therefore, in this case, focus on the distribution of energy consumption alone without attention to energy use appears to be fundamentally misleading.

estimated to be living below the poverty line. Gahia and Deolalikar (1993), for example, find that in semi-arid tropical India the majority of households are below the poverty line in terms of income for at least one year in a decade but a much smaller percentage is for every year. As a result the poverty that is measured in many contexts varies considerably depending on the time period over which the measurement is relevant and depending on whether poverty is defined to be below the poverty line for any subperiod or for the entire period (or for some other subset). What time period and what criteria should be used? There is no right answer—it depends on how the policy objective is defined. Krueger suggests that longer-run poverty should be paramount, but nevertheless most poverty measures that are used are for relatively short time periods.

- (6) A related question is whether households can smooth consumption over time through savings/dissavings and the timing of changes in other assets. If so, then the use of consumption data to measure poverty may give a different picture than the use of income data. There is some evidence for rural India that adjustments in livestock are used to counter income fluctuations across years (Rosenzweig and Wolpin 1993), though a replication does not find the same in Africa (Czukas, Falfchamps and Udry 1998). And as noted above, there is evidence that consumption smoothing is limited across stages of the agricultural production cycle in rural Pakistan. The appropriate generalization from these and other studies seems to be that even very poor households generally can smooth consumption somewhat over time, but that market imperfections mean that such possibilities are costly and thus actual smoothing is limited, both within years and across years. What does this mean for the measurement of poverty? A number of scholars argue that consumption measures are preferable to income measures and that the choice often makes a considerable difference (e.g., Behrman and Knowles 1999, for example, report that the association between household income and child schooling success is much larger in Viet Nam with longer-run consumption measures (estimated on the basis of annual consumption that is instrumented with assets; see also World Bank 1995) than with short-run income measures. Nevertheless for many poverty estimates income is used, in a number of cases because income estimates, but not consumption estimates, are available. It seems natural to ask whether the use of annual income measures systematically biases the estimate of consumption poverty or longer-run income poverty up or down. The answer is that it depends. Suppose that all individuals have stable longer-run income at different levels across individuals but that their respective annual incomes equal their longer-run incomes plus a stochastic shock that is drawn from the same distribution (symmetric around a mean of zero) for everyone. Suppose that for a given individual long-run income is slightly below the poverty line; in this case, using annual income will understate the number of years in which this individual is below the poverty line in a longer-run income sense (and in terms of consumption if complete smoothing is possible, as I will assume for the moment to abstract from the smoothing question that is discussed above) because in years in which this individual experiences positive income shocks of sufficient magnitude, s/he will be observed above the poverty line. But the reverse holds for individuals who have long-run income a little above the

poverty line. Therefore for head-count poverty measures, the use of annual income instead of longer-run income/consumption understates longer-run income/consumption poverty if there is a relatively large concentration of individuals with longer-run income right below the poverty line (relative to those right above) and *vice versa* if the concentration right above is relatively large. For poverty depth measures as usually calculated there is a parallel effect because whether individuals transitorily are above or below the poverty line affects whether they are included in the calculation or not. For poverty intensity measures, ignoring possible smoothing over time by using annual income to estimate longer-run poverty almost surely biases upwards the estimated longer-run poverty intensity.

- (7) There is a persistent thrust in the poverty literature that consumption or income alone does not determine poverty, but there are certain basic needs or minimal consumption of specific items that must be satisfied—adequate food, shelter, health, water and education. For this reason many efforts to measure poverty include direct indicators of these items in addition to or instead of consumption/income measures. One possible rationale for doing so is that consumption/income measures do not, or cannot satisfactorily be extended to, include well such items because of problems of measuring the quantities and relevant prices (see above). This, however, does not seem to be the basic rationale for including such indicators separately. Instead it seems to have at least three underlying possible bases. *First*, there often seems to be view that the poor do not choose to use their resources to purchase the right goods and services—they purchase too many expensive foods rather than more basic calories, etc. because of imperfections in information markets so that the poor do not have the right information with which to make the right choices. In this case, the direct implication would seem to be to improve information markets, which might be “win-win” in the Krueger sense of alleviating poverty and increasing efficiency and thus productivity. *Second*, even if there are no such information problems, some policymakers and development experts simply claim that the poor do not make the right choices. But this claim often seems to arise from an elitist paternalistic/maternalistic position that the poor simply do not want to use their resources in what policymakers and others think is the best way. I do not find this position tenable because it attempts to impose the preferences of the elite on the poor which, to the extent that it is successful, may increase the consumption by the poor of the items that the elite advocates at the cost of reducing the welfare of the poor. *Third*, there is an intrahousehold or intrafamily distribution problem in that certain types of household members (e.g., women, children) do not have sufficient weight in making intrahousehold allocations so that from a perspective of a concern with equity or poverty alleviation, too little consumption is allocated towards these individuals. There is a growing literature that attempts to estimate empirically the nature of intrahousehold allocations in developing countries, some of which is interpreted, for example, to mean that shifting resources from men to women is likely to increase human capital investments in children, which in itself is likely to increase for given resources some of the indicators of poverty

alleviation other than consumption or income such as those related to health and education.²⁶

- (8) Estimates of private consumption expenditure from household surveys often differ from national accounts. Srinivasan (2001, Figure 1) shows that ratio of per capita consumption expenditure from India's national sample survey (NSS) and national accounts (NAS) fell from 75 percent in 1974 to 50 percent in 1998. While there are many legitimate reasons for the difference at a point of time between the two sources (e.g., Mukherjee and Chatterjee 1974, Srinivasan et al. 1974), such differences raise the question about how reliable are the household surveys for measuring poverty. Moreover, the increasing difference over time causes a strong presumption that one or both estimation methods have deteriorated in reliability.²⁷ Atkinson and Brandolini (2001) also give illustrations of how inferences about significant positive association between inequality and average inflation in OECD countries over the period 1970-90 depend on the data used.
- (9) If estimates of consumption/income do not include all of the relevant components that contribute to welfare and some of the components from one's family or local community in ways that are not measured directly in the data, then the extent to which these unobserved factors are idiosyncratic versus correlated affects the extent to which poverty is mismeasured. The more that such factors covary, the greater is likely to be the actual poverty for any given level of measured poverty. Given a good measure of consumption/income on the individual level, the various poverty indices generally are defined by the number of people below the poverty line (headcount measure) and how far they each are below the poverty line (poverty depth, poverty intensity). For such measures a poverty line must be established. As Srinivasan (2001, p.15) notes: "There are serious (and contentious, if not insurmountable) problems in defining meaningfully a poverty line income that could be used to distinguish the poor and non-poor, regardless of time and space." Efforts to establish an absolute poverty line within countries often start with estimates of resources needed to consume basic foodstuffs and then scale up the measure to include other consumption. But there are serious conceptual and measurement problems in defining such basic energy requirements in the presence of unobserved heterogeneity across individuals in energy use (e.g., Srinivasan 1992). The World Bank and other international institutions including the Asian Development Bank, publish estimates of the extent of poverty in individual countries and regions using alternative absolute poverty lines of \$1 a day or \$2 a day at 1985 purchasing power parity (PPP) terms. These have a

²⁶ For example, see Thomas (1990, 1994), Alderman, et al. (1995), Haddad, Hoddinott and Alderman (1996) and Quisumbing and Maluccio (1999). Many of these estimates are more problematic than often is realized because they do not control well for unobserved heterogeneities in preferences and productivities (see Behrman 1997b for a discussion; also see 2.1.3 above).

²⁷ Srinivasan (2001) also notes: "... if the increasing discrepancy is solely or largely due to increasing non-response of and under reporting of their consumption by non-poor households, it would not affect poverty analysis. On the other hand, if it is largely due to under reporting by all groups, it would." He provides illustration of the latter using the means from the two sources and the distribution from the former.

number of problems, some of which are suggested by the discussion above and some of which are covered by Srinivasan (2001). For example, the Summers-Heston PPP data set uses actual price comparisons for computing PPP only for certain benchmark countries and years, with extrapolation and interpolations to other countries and years using procedures that even the authors themselves admit to being rough and ready. These price comparisons are at best of national average prices, not of the poverty bundle of goods and services that the poor face (with the problems noted above of home-produced goods and services, segmented markets, and unit prices depending on quantities purchased).^{28, 29}

2.3.2. *Measurement of Income and Economic Growth*

The rate of growth in real national income/product per capita is the most widely used indicator of economic growth. Real national income/product per capita is the ratio of the estimated deflated nominal national income (or value added) in any period divided by the estimated average size of the population during that period. To estimate nominal value added, all activities that add value should be included so that coverage is complete. For each such activity, outputs and non-factor inputs in the relevant period need to be quantified and properly valued. Unfortunately, coverage is never complete and there are serious problems with the methods used for quantification and valuation. The biases and errors associated with incomplete coverage and methods of quantification and valuation are likely to vary over time within a country and probably become less serious as data gathering capacities improve. Further, the extent of biases

²⁸ Srinivasan (2001, p.16) also adds the following problem: "... the only plausible reason for using a common poverty line is that it enables aggregation over countries and regions, *allegedly* on a comparable basis. But the policy relevance of such aggregate estimates is moot: policies that affect poverty are largely national and sub-national. Only the somewhat naive would believe that international policies that determine foreign aid and assistance from multilateral institutions to developing countries are *largely* driven by their levels of poverty. Under the circumstances aggregate poverty estimates are of limited, essentially propagandistic rather than analytical, value." This criticism by Srinivasan seems to miss the point that it may be possible to learn about the associations of national and sub-national policies with poverty (and possibly their effects on increasing incomes of the poor) if there are comparable measures of poverty (and of policies) across nations and over time within nations. In fact it is difficult to know how one can learn about the associations of macro variables and poverty without comparable poverty measures over time and/or across countries.

²⁹ I am unaware of systematic comparisons of poverty measures across countries, but some of the comparisons of inequality measures are suggestive. Fields (1994) reports that half of the 70 data sets for developing economies available to him at the time of his study had to be rejected for not satisfying minimal standards that the data are national in coverage, concepts of income and recipient unit are the same over time, and the data base is a national census or household survey. Deninger and Squire (1996) collected more than 2600 observations on inequality measures, such as Gini coefficients and quintile shares, from a wide range of studies for 112 developed and developing countries for the period 1947-94. They identified what they call a 'high-quality' set of 700 observations and labeled them as acceptable for users. Atkinson and Brandolini (2001) subject the Deninger and Square 'acceptable' data for a sub-set of OECD countries to a careful scrutiny as to their sources, methods of compilation, definitions of income and the unit (e.g. household, individual etc.) of measurement and other relevant aspects. They conclude: "we are not convinced that at present it is possible to use secondary data sets safely without some knowledge of the underlying sources, and we strongly caution against mechanical use of such data sets" (Atkinson and Brandolini, 2001, p.796). Further, the surveys that are not rejected through such examination might be unrepresentative in that they are more likely to be from richer and advanced countries of the world.

and their time trends are unlikely to be comparable across countries. For example, at low levels of development families and households perform many activities that tend to be marketized in the development process (e.g., Ben-Porath 1980, Pollak 1985). Because the value of such activities is likely to be underestimated when they are performed by families and households, the marketization of these activities is likely to lead to a measured income growth in a country that is greater than the true increase in per capita income/consumption.

Growth rates of real income are often compared within countries over time and across countries. Because the relative price structure shifts over time as development proceeds and as different sectors experience different rates of technical progress within and across countries, the growth rate of conventional real income estimates over a given period depend on whether the initial or the terminal year is used as the base and on the method of deflation.³⁰ For international comparisons, in addition, an exchange rate conversion is involved. Thus if some (official, black market, purchasing power parity (PPP) or whatever) exchange rate is used to compare the levels of income at a given time between two countries and growth rates for each for a period preceding that time are computed using a constant domestic relative price structure, anomalous results can arise.³¹ For many goods and services in most developing economies, moreover, the opportunity costs of commodities are their world market prices, though domestic resource allocation decisions are driven by often-distorted domestic prices. If distortions are severe, and domestic transformations of imported inputs into tradable outputs are inefficient, it is possible that value added at world prices (computed by valuing tradable inputs and outputs at world prices) in some activities could be, and indeed have been estimated to be negative, in some developing countries (Soligo and Stern 1965 for Pakistan, Bhagwati 1968 for India). From a welfare perspective, only value added at world prices is the appropriate measure (Little and Mirlees 1974). In any case under such circumstances the levels and growth rates of national income (i.e. value added) at world prices differ from those at domestic prices (Bhagwati and Hansen 1973). Such problems are compounded even for comparisons across time for the same economy by changes in such distortions over time.

The measurement errors and biases in components of GDP, particularly those that have figured prominently in the recent cross country growth regression literature such as

³⁰ These problems in part can be addressed. For instance, through chain-linking the problem of using a single base year can be alleviated. And as the base year is changed to a more recent one, the opportunity can be used to expand coverage and use more recent information with an ad hoc revision in the past data for the difference in coverage as compared to the old base year. Such revisions could be quantitatively large. Srinivasan (2001) gives as an illustration that the fiscal deficit of India's central government was estimated to be 8.3% of GDP with 1980-1981 as base and 7.1% of GDP using the revised series with 1993-94 as base (Government of India 1999, Table 2.1).

³¹ Srinivasan (2001) provides a "prime example" from the World Bank (1999a, Tables 1.1 and 1.4). According to these tables, in 1997 India and PRC had GNP per capita of US\$370 and US\$860 (based on exchange rates of the Bank's "Atlas" method) respectively and the average annual rate of growth of GNP per capita during 1965-1997 was 2.3% in India and 6.8% in PRC. Taken together, these levels and rates of growth imply that PRC's per capita GNP in 1965 was about 90 percent of India's. Srinivasan claims that "No knowledgeable observer of the two countries would subscribe to this ranking." Ahmad (1994) illustrates a similar problem by comparing the actual PPP exchange rate converted GDP's of a year with forecasts obtained by applying the domestic GDP growth rate to the PPP converted GDP of some previous years. The differences seem substantial for many countries (see also Heston 1994).

savings, investment, foreign trade, foreign capital flows, demographic variables, labor markets and human capital indicators are serious. This means that not only are there substantial problems in measuring and comparing over time or space real per capita income growth, but also in measuring and comparing most of the alternatives that have been proposed by those who doubt the values of conventionally-measured per capita income growth, such as direct indicators of changes in human resources including those for health and education. These issues are discussed extensively in a special issue on Data Base for Development Analysis in the *Journal of Development Economics* edited by Srinivasan (1994).

2.3.3. *Measurement of Policies*

It might seem strange to include policies among the key variables for which there are measurement problems. But there are serious measurement issues regarding to what we know at both the micro and the macro level. At the micro level, for example, there is considerable emphasis on the potential for higher growth and better poverty alleviation through policies that improve education. But the empirical foundation for these claims in substantial part relates associations between years of schooling and outcomes that are viewed as desirable. Years of schooling is *not* a policy variable, but the behavioral outcome that reflects the schooling market interaction between household/individual demands for time in schooling and various aspects of schooling supply that are indeed conditioned by policies.

Similar problems exist at the macro level. For most empirical explorations, the representation of policy is by aggregate variables that reflect a multitude of behavioral decisions in addition to policies. Two examples of common proxies used in the literature are exports plus imports over GDP as an indicator of trade liberalization and M2 over GDP as an indicator of financial market reform. A major problem with these proxy variables is that they reflect not only or necessarily policies, but reactions to policies by individuals and entities in both the private and the public sectors. As representations of policies, they are contaminated by responses to the policies and do not necessarily represent the policies *per se*. And the distinction between policy changes and changes in related behavior variables may be important for our understanding. For example, Behrman, Birdsall and Székely (2001) report that policy changes related to opening up to international trade flows significantly increased wage variations by schooling levels in Latin America (even with control for our all time varying and fixed unobserved country characteristics and cohort variables) but that, controlling for such policy changes, increases in the actual international trade relative to product reduced the spread of wages across schooling levels.

2.4. *Empirical Issues—Estimation of Policy Effects*

This paper basically is concerned with Krueger's (2000) policy taxonomy, which presents a simple framework for choosing among policies on the basis of their impact on increasing incomes of the poor and on growth (see Part 1 above). But to make assignments of policies to the four categories proposed by Krueger or to some alternative taxonomy, some combination of *a priori* reasoning and empirical estimates must be used. Often *a priori* reasoning is not sufficient for policy evaluation because the

impact of policies depends on empirical magnitudes of a complex set of responses by various entities. But estimation of empirical policy effects generally is not easy, in part because of the measurement problems discussed above and in part for other reasons to which I now turn. I first consider the possibility of policy evaluation through experiments and then through econometric estimates using nonexperimental (behavioral) data.

2.4.1. Experimental Evaluation of Policies

To assess policy impact, the ideal would be double-blind experiments with random assignment to treatment and control groups for the policies of interest. To evaluate some policies in some contexts, some experiments have been conducted.

For example, in 1997, the federal government of Mexico introduced the Programa de Educación, Salud y Alimentación (the Education, Health, and Nutrition Program), known by its Spanish acronym, PROGRESA, as part of an effort to break the intergenerational transmission of poverty. PROGRESA has a multiplicity of objectives, primarily aimed at improving the educational, health and nutritional status of poor families, and particularly of children and their mothers. PROGRESA provides cash transfers linked to children's enrollment and regular school attendance and to clinic attendance. The program also includes in-kind health benefits and nutritional supplements for children up to age five, and pregnant and lactating women. By the end of 1999, PROGRESA covered approximately 2.6 million families or about 40% of all rural families and one-ninth of all families in Mexico. At that time the program operated in almost 50,000 localities in more than 2,000 municipalities and 31 states. PROGRESA's budget of approximately \$777 million in 1999 was equivalent to 0.2% of Mexico's GDP. In early 1998, the International Food Policy Research Institute (IFPRI) was asked to assist the PROGRESA administration to "determine if PROGRESA is functioning in practice as it is intended to by design." The evaluation is based on longitudinal data collected from 24,000 households from 506 localities in seven states who were interviewed periodically between November 1997 and November 1999. Of the 506 localities, 320 localities were assigned to the treatment group and 186 localities were assigned as controls. Specifically, the 320 treatment localities were randomly selected using probabilities proportional to size from a universe of 4,546 localities that were covered by phase II of the program in seven states. Using the same method, the 186 control localities were selected from a universe of 1,850 localities in these seven states that were to be covered by PROGRESA in later phases. Statistical tests confirm that indeed assignment to treatment versus control was random at the community level (Behrman and Todd 1999).³² As originally planned the localities serving the role of a control group started receiving PROGRESA benefits by December 2000. A number of evaluation studies have been carried out using these data, in most cases exploiting some dimension of the experimental design of the study (Skoufias 2001 provides a synthesis of many of these studies and of the overall program).

³² The same study reports that there are somewhat more significant differences in some variables than would be expected by chance at the household and individual level. But most of these differences, though significant due to the large sample size, are not very substantial.

PROGRESA has several striking and unusual features from the perspective of social scientists and policy analysts.

- (1) PROGRESA based some of its essential components on the outcomes of social science research in the literature. Transfers were given to women, for example, because previous research on intrahousehold allocations suggested that income directed towards mothers had larger associations with human resource investments in children than income directed towards fathers (see 2.1.3. above).
- (2) PROGRESA used modern social science tools in order to guide its decisions. For instance discriminant analysis was used on census data in the initial stages of identifying target communities and households within those communities and GIS systems were used to systematize information on location of schooling and health services relative to the communities.
- (3) PROGRESA recognized that baseline data and longitudinal household and service-provider data with treatment and control groups were essential to serious evaluation of the program and implemented the collection of baseline data (prior to the introduction of the program, which always is the stated intent but often not the realization in various developing country contexts) with longitudinal follow-up and random assignment to treatment and control communities.
- (4) PROGRESA, as noted, contracted an outside research agency, IFPRI (a member of the CIGAR group of international agricultural research institutions, with a strong history of data analysis and evaluation in developing countries), to undertake an extensive evaluation of the program.

These are considerable and important features of PROGRESA. Moreover PROGRESA and the key individuals behind PROGRESA not only incorporated such features into their program plans, but—which is much more difficult—gave them sufficient priority that they were carried out reasonably well during the very difficult time of program development, implementation and rapid expansion, all within an environment with not inconsiderable political pressures. PROGRESA already has been a model for development of related programs elsewhere. Hopefully these and other programs will build not only on the substantive aspects of PROGRESA, but also learn from and improve upon the program evaluation that has been given considerable thought and high priority by PROGRESA.

Other programs, first of all, usefully could emulate the strengths of PROGRESA in terms of building on existing social science research, data collection and evaluation that are noted above. These are considerable strengths and require substantial commitments to give sufficient priority to these matters in the presence of all of the great pressures and unanticipated problems that a new program inevitably faces. But the result is the potential for much better evaluation of the program and how it or other programs can be modified to improve the attainment of the objectives.

But beyond emulating the strong points of the PROGRESA in the above regards, other programs could improve upon PROGRESA in some respects that would enhance more the evaluation possibilities. Of course some of these improvements from the point

of view of evaluation may have political and other costs. I recognize that there are such costs, but have no special insight regarding them, so I do not discuss them here.

- (1) The evaluation design could explore a number of aspects that are difficult to explore with the present PROGRESA data or that require imposing a lot of structure to do so. There could be randomly assigned variations (perhaps across communities to avoid invidious comparisons within communities), for example, in the payment schedule for attending different grades of school by gender; in whether the payments are made to mothers, fathers or the children themselves; in whether payments are made to the demand side (households, individuals) or to suppliers (e.g., schools) directly; in whether other components of the PROGRESA package were included; in whether these payments are conditional on attending schooling;
- (2) The data collection/evaluation process could be made more independent of the implementing agency. The evaluating agency could be contracted by some other part of the government (not by the implementing agency) and have direct responsibility for collecting the data to be used (rather than having the implementing agency in charge of data collection). Data could be made available for public use earlier. These changes would increase credibility regarding the degree of independence of the evaluation.

But even with such changes, the possibilities for using such experiments for policy evaluation are limited in several respects. *First*, most such experiments cannot be double-blind, with neither the subjects nor the evaluator knowing who received treatment (though some medical experiments can be if, for example, the placebo appears to human senses to be identical with the treatment). That those who are treated know that they are treated may create better performance (i.e. the “Hawthorne effect”). That those who are not treated know that they are not treated may create incentives to obtain treatment through migration, political pressure, market purchases or other means. *Second*, the argument often is made that new programs cannot easily be introduced at the same time throughout a country, so it may be effective in terms of evaluation, as was attempted with PROGRESA, to introduce them in a random set of treatment communities and only later in a random set of control communities. But if the control group knows that they will eventually be affected by the program and if they can transfer resources over time, they should immediately adjust their behavior to reflect their changed command over resources due to the expected eventual future direct program impact. If so, the comparison between the program and the treatment groups should underestimate the program impact. Of course this is not a problem if the control group does not know that they eventually will be affected by the program, but such ignorance may be difficult to maintain because of interactions between members of the treatment and control groups and general information about the new program. In fact in some cases the administrators of the program may tell the control group directly that they will be included eventually in hopes of obtaining their agreement to serve in the control group and to enhance a sense of fair treatment. *Third*, many experiments cannot be conducted because they are unethical or too costly. Imposing randomly some human resources, particularly related to health and nutrition but also to education, for example,

is likely to be viewed as unethical. Even if some such possibilities are not viewed as unethical, they may be very costly in terms of resources or in terms of political costs. Consider, for example, the possibility of randomly assigning schooling levels with regard to micro policies or randomly assigning exchange rate policies at the macro level. *Fourth*, even for the policies for which good experiments can be conducted at a reasonable (resource, ethical and political) cost, they would reveal only the gross changes induced by the experimental treatment conditional on a particular situation, not what would happen in somewhat different circumstances.

For such reasons, though it probably would be desirable to increase experimental evaluation of policies and to assure that the experiments that are undertaken are of high quality (e.g., with good baseline data and random assignment of treatment versus control groups), there are severe limits on what policies can be evaluated by experimental means. Nevertheless, the experimental design is an important benchmark against which other means of evaluation should be compared and judged to aid in understanding what are the probable biases that may arise from nonexperimental evaluation.

2.4.2. *Econometric Estimates of Policy Impacts*

Econometric or statistical methods are used to attempt to circumvent some of the limitations of the data, including that most data that are available for policy evaluation are behavioral data.

2.4.2.1. Relations to be Estimated

Econometric analyses of policy impacts should be based on relations such as those implied in the discussion in 2.1.2 in which the determinants of human resource investments is considered as an example, with which I continue here to make the discussion specific. Such relations can be used (i) to estimate directly the underlying structural relations that determine human resource investments or their impact (e.g., human resource production functions analogous to relation 2) and (ii) to estimate dynamic decision rules or demand relations for human resource investments or for inputs used to produce human resource investments (e.g., expressions that are analogous to relation 1).

Structural Relations—Production Functions: Structural relations are the basic underlying relations in the models of behaviors such as in 2.1.2. The most commonly-estimated structural relations are production functions. A linear or log-linear approximation to a general production function of the type discussed in relation (2) above with cognitive achievement (CA_i) produced by two categories of variables relating to the i^{th} individual and his/her household (XI) and to the s^{th} school (XS) and by an explicit stochastic disturbance term (U_i) is:³³

³³ Linear approximations are used here because they are the simplest forms but they still permit characterization of various estimation issues. Log-linear forms in which all of the variables are replaced by the logarithms of their values (which implies interactions among all the right-side variables) are identical in representation once the variables are redefined. In empirical studies linear and log-linear specifications are very common, but other functional forms also are used at times. For other functional forms the essence of the estimation issues is the same. If the functional form that is used is not a good
(cont.)

$$(2A) \quad CA_i = a_{XI}XI + a_{XS}XS + U_i.$$

The school variable includes aspects of school management and curricula that may be affected directly by policies related to the supply side of schooling. The stochastic term captures random effects that are not correlated with any of the other predetermined right-side variables. Generally each of the types of variables may be a vector that represent a whole set of variables. It is useful for the discussion below of estimation issues to distinguish among four different subgroups of variables: the superscripts “o” and “u” refer to “observed in the data used” and “unobserved in the data used”, the superscript “b” refers to variables that are behaviorally determined within the model used, and the superscript “p” refers to variables that are predetermined within the model used so that the variable list in the general production function relation is XI^{ob} , XI^{ub} , XI^{op} , XI^{up} , XS^{ob} , XS^{ub} , XS^{op} , XS^{up} , U_i . If these were substituted into (2A) each would have its own coefficient “a” with an appropriate superscript to indicate its impact on CA_i . The distinctions among these different variable groups are important because some of the most substantial and most pervasive estimation problems arise from unobserved variables or behaviorally determined variables (see below).

The parameters (a’s) in the production function give the direct impact of the right-side variables—some of which, as noted, may reflect directly policies, for example those related to the nature of public schools. With good estimates of the appropriate production functions the direct determinants of many outcomes determined by behaviors could be evaluated with considerable confidence to answer many of the questions of interest about direct policy impacts. If good estimates of production functions are embodied in overall models of optimizing behavior, moreover, simulations can be made of the impact of policies given all the relevant behavioral adjustments and of counterfactual policies changes, all conditional on the model. Note that the possibilities of simulating the impact of counterfactual policies exist with the use of structural models even though they are not possible with experiments and may be very difficult to undertake with reduced-form dynamic decision rules. Good production function estimates may be difficult to obtain, however, because of estimation problems discussed below.

Reduced-Form Dynamic Decision Rule or “Demand” Relations: A second set of relations that can be estimated to explore the determinants of human resources and the impact of policies (as well as of various family, household, community and school characteristics) on human resource investments are dynamic decision rules or “demand” relations. These relations give some behavioral outcome in the current period as dependent on all predetermined (from the point of view of the entity making the decisions) prices and resources and on the parameters in the underlying production functions and preferences. These are the relations that are most commonly estimated. These demand functions in principle are derived explicitly from the constrained maximization behavior of families that is discussed in 2.1.2. As such they incorporate all of the underlying structural parameters that are involved in that process. But all of the choice variables during the period of interest are substituted out, so the demand

approximation to the true functional form, there is a misspecification error that is akin to omitted variable bias discussed below (with the unobserved variable being the variable that would have to be added to transform the assumed specification to the true functional form).

functions are so-called reduced-form relations because the maximizing behavior that determines such variables has been combined and “reduced” to the relations that give the behavioral outcomes as a function of purely predetermined and expected prices, resources, policies and of the underlying preferences and technologies. In some empirical studies, the underlying structural parameters can be identified from estimation of the demand relations. In most cases, however, demand functions are just posited to result from constrained maximization and the underlying structural parameters are not identified in the estimates, though the demand parameters still are some combinations of these parameters. In such cases, demand functions permit the estimation of the total effects of predetermined variables on the behavioral variables of concern, but not estimation of the exact mechanisms through which determinants act.

On a general level, demand functions can be written with a vector of behavioral outcomes (Z) dependent on a vector of prices broadly-defined (P) and a vector of resources (R). Both the prices and the resources may reflect policies. If there are uncertainties regarding relevant future prices, policies and shocks, then the characteristics known at the time of the decision of interest regarding the distributions of those outcomes should be included. A linear approximation for a family facing prices PF and with resources RF_f and a vector of stochastic terms (V_f) is:

$$(1A) \quad Z_f = b_{PF}PF + b_{RF}RF_f + V_f.$$

The stochastic term in each relation includes all the effects of all the stochastic terms in all of the production activities in which the family is engaged (i.e., all of the elements of the vector U_i), plus perhaps other chance events. Both prices and resources may be observed or unobserved in the data, so it is useful to indicate that distinction here as above in the discussion of production function inputs (again, using superscripts “o” and “u”). There is one such demand relation (or one element in the vector Z_f) for every behavioral outcome of the family (and similarly for firms or other entities), including all human resource investments and all behavioral inputs that affect human resource investments through production relations such as (2A). Each of these demand relations conceptually includes the same identical right-side predetermined variables so that any predetermined variable that affects any one behavioral outcome may affect all other behavioral outcomes.

Conditional demand functions: Conditional demand functions, as contrasted with the unconditional ones in relation (2A), include among the right-side variables some variable(s) that are determined by the behavioral model for the decision-making unit under examination. For example, the cognitive achievement of a student at the end of 2001 depends on the cognitive achievement of the student at the end of 2000 and the schooling and other experiences of the student during 2000. If the included behavioral variable(s) on the right side is determined at least in part by past behavior(s), its effect(s) may be estimated in such relations by including its start-of-the current period value(s) instead of the past prices, resources and stochastic terms that determine this value. In such a case, the start-of-the-period stocks of different human resources are just other right-side variables that are predetermined with respect to current prices and (other) resources in the demand relation in (1A). That relation also includes *all* of the current prices. An unbiased estimate of the coefficients of the stocks of different human resource investments gives the impact of the start-of-the-period stocks of i^{th} 's human

resources on the current-period cognitive achievement. That the start-of-the-period stocks of human resources were determined by past behavior poses some estimation problems discussed below, but the interpretation of unbiased coefficients of these variables as reflecting their impact on current cognitive achievements is clear.

2.4.2.2. Estimation Problems

There are a number of possible problems in obtaining good estimates of the role of policies in the determination of human resources and of other outcomes related to increasing incomes of the poor and growth. Therefore what are presented as estimates of relations such as those that are discussed in 2.4.2.1. may be biased. These estimation problems share a common characteristic: the disturbance term in the relation actually estimated is *not* simply an element in U_i or V_f that is distributed independently of all the right-side variables in the relation being estimated, but instead is correlated with right-side variables (e.g., because it is a compound disturbance term that includes unobserved variables as well as U_i or V_f or because of the way that U_i or V_f is defined for the sample used in the estimates).

Measurement error: Measurement error may contaminate any of the observed variables used for estimates of the relations (1A) and (2A). Random measurement error occurs if what is observed is not the true variable, but the true variable plus a random error.³⁴ As is well known, random measurement error in a right-side variable tends to cause bias in the coefficient estimate of that variable towards zero. Intuitively, if the observed teacher/student ratio is a noisy measure of the true school quality effect, the true dependence of cognitive achievement on school quality is masked, and the result is an underestimate of the school quality effect on cognitive achievement. The bias is greater the larger is the variance in the measurement error relative to the variance in the true value. Random measurement error can be reduced with better measurements of the desired concept. Random measurement error can be controlled with instrumental variable estimates if the error in the instrument used is independent of the error in the observed variables of interest, as may occur, for example, with different measures of the same concept.³⁵

Omitted variables: In both production function estimates and demand function estimates there may be variables that should be included among the right-side variables but that are not observed and therefore not included. For the production function estimates, for example, there may be unobserved inputs such as inherent ability, motivation, and school management capabilities. In terms of relation (2A) with the subcategories of variables, the basic estimation problem is that the observed right-side variables (XI^{ob} , XI^{op} , XF^{ob} , XF^{op}) may be correlated with the unobserved variables (XI^{ub} , XI^{up} , XF^{ub} , XF^{up}) that are included in the compound disturbance term with U_I .³⁶

³⁴ Random measurement error is what usually is emphasized, and is what I discuss here. Measurement error also may be systematically related to the true variable, with implications that depend on the exact nature of the systematic relation.

³⁵ For example, schooling reports from adult siblings or from adult children could be used for this purpose if schooling is a right-side variable as in some recent estimates of the impact of schooling on wages (Ashenfelter and Krueger 1994, Behrman, Rosenzweig and Taubman 1994).

³⁶ The compound disturbance term includes all the unobserved variables unless their effects are controlled in some way.

Therefore the estimates of the impact of the observed variables include not only their true effects but also part of the effects of any correlated unobserved variables. For the demand relations (1A), the compound disturbance term includes, in addition to V_f , the other unobserved variables (PF^u , RF^u). If any of the observed variables on the right-side of relation (1A) is correlated with any of the unobserved variables, its coefficient estimate is biased because, in addition to its own effects, it is representing in part the effect(s) of the correlated unobserved variable(s).

As is well known, the sign and magnitude of omitted variable bias depends on the effect of the omitted variable(s) and on its correlation with included variables. Five means of dealing with omitted variable bias are (i) to measure variables that often are unmeasured (e.g., “ability” could be measured using Raven’s tests, as in Knight and Sabot 1990), (ii) to use fixed effects to control for unobserved variables (which requires multiple observations at the level of aggregation at which the fixed effects are used) as in Behrman and Rosenzweig (1999, 2001a,b), Behrman, Rosenzweig and Taubman (1994, 1996), Behrman, Foster and Rosenzweig (1997a,b), Behrman, et al. (1999), Foster and Rosenzweig (1994, 1996, 1996), Miller, Mulvey and Martin (1995), Pitt, Rosenzweig and Hassan (1980), Rose (2000), Rosenzweig and Schultz (1983, 1985, 1987), Rosenzweig and Wolpin (1986, 1993), (iii) to replace right-side variables with their instrumented values by using identifying instruments that do not appear in the relation being estimated and are not correlated with the disturbance term in the relation being estimated as attempted by Alderman, et al. (1996b, 2001), Angrist (1990), Angrist and Lavy (1999), Card (1995, 1999), (iv) to compare the behaviors or the “before and after” changes in behaviors of beneficiaries of policies with those of individuals who would be eligible but are in the control group (perhaps with matching on observed characteristics as in Heckman, Ichimura and Todd 1997), and (v) to use experimental data as in Angrist, et al. (2000), Behrman and Hoddinott (2001), Behrman, Sengupta and Todd (2001), Skoufias (2001) and Schultz (2000). All of these approaches have their limitations. Some variables are very hard to measure at reasonable costs. Fixed effects do not permit the estimation of the linear effects of observed variables at the same level of aggregation as the fixed effects (though the effects of interactions among observed variables, such as family background and program characteristics, can be estimated) and exacerbate the impact of measurement errors. It often is difficult to find identifying instruments that (a) do not appear in the relation being estimated, (b) are independent of the compound disturbance term in the relation being estimated (which includes all of the unobserved variables), and (c) are sufficiently correlated with the observed right-side behavioral variables (though lagged price and other shocks are candidates for panel data). The control group comparisons depend on good assignments of households to the actual and potential beneficiary groups versus those who are not eligible; if there are incorrect assignments, misleading comparisons may be made (though matching may reduce this problem considerably). Matching controls only for observed variables but not unobserved ones. Experiments often are costly, hard to maintain (i.e., keeping control and treatment groups separate), and in some cases not politically possible or ethical (see 2.4.1. above).

Simultaneity: Simultaneity bias occurs when a variable that is determined in the current period within the model appears as a right-side variable in some other relation. Among the relations discussed above, production functions are the ones for which

simultaneity most obviously might be a problem because the right-side variables include some behavioral inputs (e.g., health and nutritional status in relation 2A). Included on the right side of that relation is a stochastic term (V_f) that, as noted above in 2.4.2.1., includes the stochastic terms from all of the production function relations in the model—including those for health and nutritional status. This results in a correlation between health and nutritional status in the current period and the stochastic term in the cognitive achievement production function that causes biases in the estimated impact of health and nutritional status on cognitive achievement production. The sign and the magnitude of the bias depend upon the exact structure of the model. If there are no unobserved behavioral inputs in the production function, prices and any other variables that enter into the reduced-form demand relations in (1A), but not directly in the production function, can serve as identifying instruments for controlling for simultaneity.

Selectivity: Selectivity bias may result if observations are available only for a selected subset of the sample. A relevant example is for estimating the impact of school characteristics on cognitive achievement tests given at the secondary school level. Such test scores are not observed for everyone in most samples from most developing countries because not everyone attends secondary school. These test scores are only observed for individuals whose expected gains from attending secondary school exceed the cost of attending secondary school. The problem is that this subsample is not randomly selected. The subsample selection procedure, with its systematic relation between the disturbance term in the true relation and test scores, creates a correlation between the disturbance term and test scores for the subsample for which estimates of the relation can be made. As a result, if the relation is estimated using only this subsample, a biased estimate of the true relation between test scores and school characteristics is obtained. The standard means of controlling for selectivity is to incorporate the behaviors that cause selectivity explicitly into the model, though in some cases identification may be difficult.

2.4.3. *Implications for Analysis of Endogenous Policies*

Governmental policies of all sorts—including those related to economic growth and increasing the incomes of the poor—are not predetermined, but are made by individuals or groups of individuals with various objectives in mind, including accommodating to pressures from and needs of constituents. This means that it may not be possible to evaluate the impact of governmental policies on human resources or other outcomes without controlling for the fact that governmental policies themselves are determined, implemented and monitored as part of a larger set of behavioral decisions. The failure to control for the determinants of governmental policies may cause substantial mis-estimates of their effectiveness. These mis-estimates, moreover, may either *overestimate* policy effectiveness or *underestimate* policy effectiveness, depending on what is the nature of the governmental decision. Therefore the usual estimates of policy effectiveness that do not control for the determinants of policies generally cannot be assumed to give either lower or upper bounds on the true effects.

Rosenzweig and Wolpin (1986) formally develop these points. But the basic intuition is clear from considering the simple example of evaluating the impact on child learning of special educational programs from cross-sectional data from a number of communities. If the resources devoted to such special educational programs tend to be

concentrated in communities that have greater political power, wealth and better-prepared children net of the effects of the special educational programs and of characteristics that are observed in the data, the association between child education and resources devoted to special educational programs without control for resource allocation among special educational programs in different communities *overstates* the effectiveness of the programs on child education. Those communities that receive more special educational program resources would have had better child education for other reasons that are correlated positively with the allocation of special educational program resources (as for the dashed line in Figure 2b), and *vice versa* for those communities that receive less special educational program resources (as for the solid line in Figure 2b). On the other hand, if the resources devoted to such special educational programs tend to be concentrated in communities that have poorer educational environments, greater poverty and less healthy children net of the effects of the special educational programs and of characteristics that are observed in the data, the association between child education and resources devoted to special educational programs without control for resource allocation among special educational programs in different communities *understates* the effectiveness of the programs on child education. In this case those communities that receive more special educational program resources would have had poorer child education for other reasons that are correlated negatively with the allocation of special educational program resources (as for the solid line in Figure 2b), and *vice versa* for those communities that receive less special educational program resources (as for the dashed line in Figure 2b). As a result, even if the special educational programs are effective in improving child education, the simple cross-sectional association between special educational program resources in various communities and child education *may* be negative (and, if positive, is an underestimate of the effectiveness of special educational program resources).

Some important dimensions of governmental allocations, the difficulties of determining what underlies such allocations, and the difficulties in determining the impact of such allocations can be illustrated by assuming that a governmental agency (e.g., Ministry of Education) allocates resources across subgroups of the population as if it were maximizing some objective function, subject to production function and budget constraints. To make the discussion concrete, consider the allocation of schooling resources among regions by the Ministry of Education, with focus on the tradeoff between maximizing income generated by schooled labor and the extent of equity in average per capita regional income in the economy (in addition to concern about the level of and distribution of schooling per se because of the role of schooling in enriching human resources). Estimates of this model for Brazilian and Mexican schooling resource allocations, for example, indicate that the governmental objective function has a tradeoff between productivity and equity in such allocations, but does not weigh equity enough to make compensating larger investments in poorer than in richer areas (Behrman and Birdsall 1988, Gershberg and Schuermann 1999)³⁷ These results,

³⁷ For these estimates particular functional forms must be assumed. Both studies assume that the earnings production functions are quasi log linear and that the governmental objective functions are constant-elasticity-of-substitution (CES). The Brazilian study does not control for the choice aspect in the right-side variables, which Behrman and Taubman (1986) show biases the estimate towards productivity rather than equity. The Mexican study attempts to control for such choices by using instrumental variables.

thus, suggest that governments are responsive in their allocations of human-resources-related expenditures not only to productivity considerations, but also to equity. However the equity response is not so strong to offset endowment differentials across regions, just to lessen somewhat their impact on earnings differentials. Therefore in these cases, if there were not control for the endogeneity of school resource allocations across regions, the effectiveness of these resources would be overestimated because better-endowed regions are favored.

The impact of not controlling for what determines the nature of governmental policies on estimates of program effectiveness also has been explored directly in a few recent studies. Pitt *et al.* (1993), in particular, present illustrative estimates of such effects using pooled time series-cross sectional data for about 3,000 Indonesian subdistricts. In some instances the cross-sectional data without control for program placement are quite misleading. For example the cross-sectional data for 1980 resulted in an underestimate by about 100 percent of the effect of being close to a grade school on school attendance for both males and females ages 10-14 as compared with the pooled data with control for the determinants of the location of new schools (which tended to be in poorer areas). The study also explored what determined program placement. For instance, communities with higher fertility propensities received less family planning support, suggesting that such support was provided where it was most desired (which would result in an overestimate of its effectiveness if the nonrandom program placement were not controlled in the analysis). Thus these results indicate that control for endogenous policy choices can affect substantially the estimated effectiveness of policies on human resources.

While the studies of the impact of endogenous program placement to date are largely framed above in terms of program placement by a central authority, finally, the effects that are estimated could arise from decentralized choices regarding program placement, with parallel problems in terms of estimating policy effects, whether on a micro or macro level. Efforts to estimate the impact of macro policies on aggregate outcomes such as economic growth or aggregate poverty measures, for example, have moved in recent years from the presentation of associations with fairly crude indicators of policies to efforts to control at least for unobserved fixed country characteristics by exploiting time series of aggregate cross sections and to use, at least in some cases, more direct measures of policies that are not so confounded by behavioral responses to policies. But there still are very few studies of the impact of macro policies that control for time-varying aspects of the political economy within countries that result in policy changes occurring and having effects even though they do control for fixed country characteristics.³⁸

³⁸ There are a few exceptions. For example, Behrman, Birdsall and Székely's (2001) investigate the impact of aggregate policy changes (based on direct indicators of policies, such as tariff rates, that are not confounded with behavioral responses to policies as, for example, measures of economics openness such as exports plus imports/product) on the differential returns to schooling in Latin America and the Caribbean with control for both fixed and time-varying country characteristics and robustness tests of the estimates to additional controls.

2.5. Increasing Incomes of the Poor and Economic Growth as Policy Objectives

Two natural questions about Krueger's (2000) exclusive emphasis on increasing incomes of the poor and economic growth are: (1) How does this emphasis relate to the emphasis of others? (2) How does it relate to the basic policy objectives of efficiency and distribution that are discussed above in 2.2?

2.5.1. Increasing Incomes of the Poor and Growth as Objectives within the Broader Literature

The development literature and policymakers in developing countries, as noted in the introduction, long have had concern about the relation between poverty alleviation and growth, though with some variation in regard to what was fundamental and what was instrumental. As also noted there, Srinivasan (2001) argues strongly, with explicit illustrations from the important Indian experience, that poverty alleviation was central in the objectives of policymakers in post-Second World War newly independent countries and growth was only instrumental. Nevertheless, in the first two post-war decades or so growth appears to have been given increasing emphasis relative to poverty alleviation.

But then there seemed to be somewhat of a shift towards emphasis on poverty alleviation, at least in the international community, that is summarized in a recent ADB paper by Deolalikar, et al. (2001b). For example in 1970, the United Nation's Committee for Development Planning, in preparing for the United Nation's Second Development Decade, declared that "... the efforts needed are best characterized by what is sometimes called the necessary 'war on poverty'" (United Nations 1970). The Committee declared poverty reduction through accelerated development, improved income distribution and other social changes (including employment, education, health and housing) as the paramount objective of an appropriate international development strategy. In 1974, Chenery (1974), then Chief Economist of the World Bank, edited an influential book on *Redistribution with Growth*, which argued that wealth redistribution towards greater equality is conducive to growth. The suggestion that there was no trade-off between economic growth and the fight against inequality and poverty quickly won acceptance in many policy circles. During the 1980s, the International Labor Office (ILO) launched the World Employment Program (WEP), under which a number of studies on income distribution and poverty were undertaken. Many of Sen's early writings on the entitlement-capability approach (e.g. Sen 1981) were published under the ILO WEP program. The World Bank (1990) took this concern with poverty further by focusing its *World Development Report 1990* on poverty. According to this report, a successful attack on poverty needed to be mounted simultaneously on three fronts:

- broad-based (labor-intensive) economic growth that generates employment and incomes for the poor;
- development of human resources (education, health and nutrition) of the poor, which allows them to better exploit the opportunities created by economic growth; and

- a social safety net for those among the poor who are unable to benefit from growth and human development opportunities owing to physical and mental disabilities, natural disasters, civil conflict, and physical isolation.

The Asian Development Bank's (1999a) poverty reduction strategy, although broadly similar, differs from the World Bank (1990) in that it explicitly considers the importance of governance. According to ADB (1999a), the three pillars of a poverty-reduction strategy are:

- pro-poor, sustainable economic growth;
- social development, comprising human capital development, social capital, improving the status of women, and social protection; and
- sound macroeconomic management and good governance, which would be required for successful achievement of the first two pillars.

Even more recently, the World Bank's (2000b) *World Development Report 2000* has presented a new framework to attack poverty that is (once again) built on three pillars—empowerment, security and opportunity. Empowerment is the process of enhancing the capacity of poor people to influence the state institutions that affect their lives, by strengthening their participation in political processes and local decision-making. It means removing social barriers to poverty reduction via good governance, accountability, and inclusion of previously excluded groups. Security is the protection of the poor against adverse shocks, both via better management of macroeconomic shocks as well via more comprehensive safety nets. And opportunity is the process of increasing the access of the poor to physical and human capital and increasing the rates of return to these assets.

Deolalikar, et al. (2001b, p.5) summarize this history: “Despite their superficial differences, the various approaches to poverty alleviation are actually very similar. All the approaches emphasize the importance of broad-based, labor-intensive and inclusive growth; good governance and accountability; human and social capital development; and social protection and special poverty-alleviation policies.”

Krueger's (2000) emphasis on increasing incomes of the poor and growth clearly is related as well. But it is more narrow than some of these concerns. In comparison with the ADB (1999a) strategy noted above, for example, it shares emphasis on “pro-poor, sustainable economic growth,” but is related to “social development” and “sound macroeconomic management and good governance” only to the extent that these are means to help attain “pro-poor, sustainable economic growth.” While the latter is characterized explicitly in part as means to attain “pro-poor, sustainable economic growth” and “social development,” the stability that comes from “sound macroeconomic management and good governance” can be viewed as a goal in itself because unless individuals can shift resources costly over time, their welfare is likely to be greater with greater stability around the same mean. And while “social development” in part might facilitate “pro-poor, sustainable economic growth,” it seems to be an objective in itself in addition to such a facilitating role. Likewise, the World Bank (2000b) triumvirate of “empowerment, security and opportunity” certainly relates to

Krueger's emphasis on increasing incomes of the poor and growth, but seems more inclusive with regard to involvement in political processes broadly defined and stability than Krueger's emphasis.

Thus one conclusion that comes out of comparing Krueger's emphasis on increasing incomes of the poor and growth with the objectives emphasized by some leading international development organizations is that her emphasis is narrower and thus its clear simplicity of objectives comes at a cost in terms of some of the objectives that are emphasized by others. Of course the Krueger "two-by-two" approach could be extended to other dimensions such as "governance" or "social development" or "stability" to incorporate these other objectives, but the addition of these other dimensions would complicate considerably Figure 1, and weaken considerably the effectiveness of the simplicity of Krueger's approach.

How important is this shortcoming of Krueger's approach? It depends on how important the other objectives are. This question is not subject to much of an analytical answer, though from a standard micro economic framework stability would seem relevant given the probable high costs of transferring resources across time. And there are some who would argue that objectives such as "social development," "governance" and "empowerment" are quite important independently from their possible instrumental roles in increasing incomes of the poor and growth. If so, then the Krueger reduction to two dimensions might be a quite misleading simplification. Some might argue, for example, that if there is to be a simplification to two dimensions, increasing incomes of the poor should be one but "growth" should be replaced by "social development," "governance" or "empowerment."

2.5.2. Increasing Incomes of the Poor and Growth as Related to the Standard Policy Objectives of Efficiency and Distribution

In 2.2. I discuss what I perceive to be the standard economic motivations for policy, efficiency and distribution, based on the underlying maximization of the social welfare function. A natural question is how does Krueger's exclusive emphasis on increasing incomes of the poor and growth relate to these standard policy motivations?

The answer is that these two standard policy objectives certainly are *related* to those emphasized by Krueger—growth and increasing incomes of the poor—but they are not identical. Increasing the incomes of the poor certainly is a widespread distributional goal that is endorsed by many. But many also would claim that poverty alleviation involves more than increasing the income of the poor. As noted in 2.5.1., they would claim that improvements also need to be made in characteristics such as human capital, capabilities and empowerment. Also increasing efficiency contemporaneously and inter-temporally often increases growth. But maximizing growth is not the same as maximizing efficiency. Growth maximization is likely to lead to a strategy of much greater current investment and less current consumption than maximizing efficiency. If there are no inefficiencies (including intertemporal ones) on a given growth path and the government intervenes successfully to increase growth, then that growth is likely to be obtained only by reducing welfare.³⁹ In economies in which

³⁹ One exception to this statement would be if the governmental intervention simply moves the economy from one efficient growth path to another efficient growth path (or from the neighborhood of one efficient

per capita income is growing secularly, such as in most of Asia in recent decades, moreover, increasing growth through increasing current investment and reducing current consumption effectively transfers consumption from poorer to better-off generations, which is likely to inter-temporally increase poverty and inequality.

2.6. Continuous Policy Effects, Optimal Policy Frontiers, Policy Packages and Returns to Scale in Policy Impacts

Krueger dichotomizes both dimensions of the policy objectives that she considers: policies either stimulate growth or not; they either increase the income of the poor or not. This has the attraction of simplicity and power in terms of communication.

But it is an obvious (and acknowledged) simplification. For the same marginal resource costs to society, there is likely to be continuum of degrees to which different policies ‘stimulate-have no effect on-retard’ growth. Likewise for the same marginal resource costs to society, there is likely to be continuum of degrees to which different policies stimulate-have no effect on-retard increasing the incomes of the poor. A related consideration concerns the ordering of policies within the cells of the matrix. To obtain any particular objective, or combination of objectives, generally various policies could be used. But they would vary in terms of their marginal direct and indirect (distortionary) costs, for which reasons the concepts of an *efficiency hierarchy* of policies to obtain a specific end (or, in acknowledgment that efficiency and growth are not the same objectives, a *growth hierarchy* of policies) and a *distributional hierarchy* of policies to obtain a specific end, each of which give ordering in terms of increasing marginal costs, are useful (see 2.2.).

One way to attempt to account for these considerations would be to indicate in the Krueger two-by-two matrix roughly the likely priority of policies in each cell. An alternative, and arguably preferred strategy, is to allow for a continuous spectrum of policies results in each dimension. This section explores this alternative and shows that it points to some ways in which the Krueger two-by-two policy taxonomy may be misleading.

2.6.1. Continuous Policy Effects

Figure 3a illustrates the alternative of allowing for continuous policy effects. The axes refer to the extent of success for each policy objective (negative or positive) that would result from dedicating fixed resources to particular policies.⁴⁰ “Win-win” policies again

growth path to the neighborhood of another efficient growth path) in an economy in which there are multiple efficient growth paths. Conceptually such a possibility is very interesting and are suggested from time to time in the theoretical literature (e.g., Murphy, Shleifer and Vishny 1989a,b), but it is difficult to know how important such options are in the real world. And, of course, if there are initial inefficiencies, a growth-oriented strategy may tend to reduce them. M.G. Quibria has suggested to me, for example, that if economies have Lewis-Fei-Ranis “surplus” labor due to downward rigidities in market wages, some growth-oriented strategies may increase employment to more efficient levels.

⁴⁰ For policies that involve expenditures, these fixed resources here are defined to include the direct governmental resources used for the policy plus any distortionary costs of raising governmental revenue to finance the policy that is assumed to be the same per unit of resources independent of how the resources are used (if the latter were ignored all of the policy points in the figure would be shifted to the northeast by the amount of those costs, and policies would appear more promising than they in fact are, in

(as in Krueger's matrix in Figure 1) are in the northeast quadrant, "lose-lose" policies again are in the southwest quadrant and "win-lose" and "lose-win" policies are again in the northwest and southeast quadrants. For reasons discussed in 2.5, I use here the policy objectives of poverty alleviation and efficiency rather than the Krueger objectives of economic growth and increasing the income of the poor, but parallel points could be made with the objectives on which Krueger focuses. Figure 3a seems to maintain substantial simplicity, as in the Krueger two-by-two matrix in Figure 1.

But Figure 3a has several advantages over Figure 1: *First*, it indicates better the relative effectiveness of various policies. For example, policy 1 is preferred over policy 2 even though they both are in the same "win-win" cell in the Krueger matrix. *Second*, it allows for the possibility that some policies may have virtually no effects or negative effects on one of the two objectives, but still be worth considering. For example, policies 3 and 4 would be in the second-priority "win-lose" off diagonal Krueger cells, but might be very high in the policy priority if the social welfare function places sufficient weight, respectively, on efficiency or on poverty alleviation. *Third*, a related point is that there is a long-standing literature that focuses on the need to have at least as many policy instruments as policy objectives in order to have an effective policy bundle. From this perspective the dichotomization of policy effects may be misleading in an important way because the optimal policy bundle may involve policies that have large effects on improving efficiency with little or no effects or small negative effects on poverty alleviation together with policies that have large effects on poverty alleviation and little or no or small negative effects on efficiency. That is, perhaps it would be preferable to devote half the policy resources to policy 3 and half to policy 4 rather than to policy 2. The Krueger dichotomization results in such policies as 3 and 4 being viewed as "tradeoffs" that require extensive research in particular contexts, but in fact they may be optimal. *Fourth*, a social welfare function could be imposed on the figure to resolve ambiguous cases. For example, without weights on the two respective objectives, it is not clear whether policy 1 or policy 5 is preferred. But if an iso social welfare curve is like the solid line P with a high marginal rate of substitution between efficiency and poverty reduction, policy 2 is preferred over policy 5 (and *vice versa* for the dashed line social welfare curve E with a lower marginal rate of substitution between efficiency and poverty reduction. (2.6.2. further develops the last two points with reference to optimal policy packages.)

2.6.2. Optimal Policy Frontier, Policy Packages and Returns to Scale

The Krueger two-by-two taxonomy results in four groups of policies: "win-win" that should be undertaken, "lose-lose" that should be eliminated or not undertaken, and "win-lose" and "lose-win" for which the pros and cons need to be balanced off. While

some cases even in northeast "win-win" quadrant rather than in the southwest "lose-lose" quadrant where they should be). They do not include other distortionary costs of the policies. For policies that involve raising governmental revenues, the direct distortionary costs of raising unit revenues varies depending on how they are raised. Therefore in 3 below I discuss policies that focus on expenditures separately from those that change the means of raising governmental resources. Krueger intermixes her discussion of expenditure and revenue-raising policies but does not explicitly discuss the direct and distortionary costs of policies.

the categorization is limited, it seems clear that those in the “win-win” cell should be undertaken and those in the “lose-lose” cell should not be undertaken.

If the dimensions for the two policy objectives are considered to be continuous as in Figure 3a, then it no longer necessarily is the case that the “win-win” policies all should be undertaken nor, for that matter, that all the “lose-lose” policies such as 6 and 7 should be eliminated. I here focus on the former point that it is no longer the case that all “win-win” policies should be undertaken. But the latter point follows for similar reasons, as perhaps is most clear for policies for which there is symmetry in the taxonomy, as is discussed in 2.7.4. below.

Consider, to make the point, the policy options in Figure 3b under the assumption that for all policies there are constant returns to scale. Each point in the figure represents the policy impact of using one unit of governmental resources⁴¹ to undertake that policy alone. That means, with constant returns to scale, that all options on straight lines connecting these points are possibilities. This has several interesting implications. *First*, an optimal policy frontier can be defined by the straight lines that are most to the northeast as in Figure 3b. *Second*, only policies that are at the end points for the segments that constitute this frontier should be considered for selection because their implementation dominates all other policies. It never pays to undertake 8 for example rather than a linear combination of 3 and 5. *Third*, not all policies in the “win-win” northeast quadrant in general are on this frontier—for example, policy 2 is not. Those that are not should not be undertaken because there are higher returns to undertaking other policies. This is in sharp contrast, as noted, to the implication of Krueger’s taxonomy that all the “win-win” policies should be undertaken. *Fourth*, the optimal policy frontier need NOT include only “win-win” policies. It might include one or more “win-lose” or “lose-win” policies, as in Figure 3b. *Fifth*, the optimal policy choices might not include any “win-win” policies. All such “win-win” policies might be dominated by a linear combination of a “win-lose” policy and a “lose-win” policy, as in Figure 3c. The contrast is sharp with the Krueger suggestion, once again, that “win-win” policies should be implemented and “win-lose” and “lost-win” policies judged on their merits. Thus the optimal policy combination, which depends on the tangency of the social welfare function and the optimal policy frontier, will include one or two policies (Figure 3d gives an example of only policy 1 being optimal if the dashed iso-social welfare line is appropriate and a combination of policies 3 and 5 being optimal if the solid iso-social welfare line is appropriate), may include one or two policies not in the “win-win” quadrant (Figure 3d for the solid iso-social welfare line includes one such policy, Figure 3c includes two), and does not necessarily include any of the policies in the “win-win” quadrant (e.g., Figure 3c).

The discussion to this point depends on there being constant returns to scale. If there are increasing returns to scale, the policy possibility line for combinations of two policies will be bowed inwards, as between policies 3 and 5 in Figure 3e—and *vice versa* if there are decreasing returns to scale as between policies 1 and 4 in the same figure. And the possible combinations of two policies for one of which there is increasing returns to scale and for the other of which there is decreasing returns of scale is a S shaped curve as between policies 5 and 1. For the allocation of a unit of direct

⁴¹ Again, including the distortionary costs of raising revenue for those resources, that are assumed to be the same independent of how the resources are used.

resources among various policies, the possibility of returns to scale other than constant does not change in important respects the optimal allocation of that unit of resources. A policy frontier can be defined and the optimal policy combination located. Wherever there is a segment connecting two policies each with increasing returns to scale, the policy frontier will have convex segments and if the optimum is in that neighborhood it is likely to involve only one policy. Where ever there is a segment connecting two policies each with decreasing returns to scale, the optimal policy frontier is constituted of a number of concave segments, and if the optimum is in that neighborhood it is likely to involve two policies.

If there are eventually decreasing returns to scale to devoting resources to each policy as more and more resources are devoted to that policy (as seems likely *a priori*), then optimal policy packages are likely to include a larger number of policies than if there is constant returns to scale, but—if there are not important discontinuities—optimal policy packages can be constructed at least approximately by considering the optimal policies for each in a sequence of allocation of resources to policies.

If a number of units of resources are to be used for direct policy purposes and all policies have constant returns to scale, then, as noted above, all resources should be devoted to the same policies as is indicated in the consideration of the allocation of one unit of resources. If there is everywhere increasing returns to scale, then it is more likely with a given number of units of resources that they should be concentrated on one policy with relatively high returns to scale. But at least eventually decreasing returns to scale would seem to dominate because of other fixed resources and because, for the efficiency objective, if the policy is directed towards remedying some market failure, eventually it should be remedied. The more pervasive is decreasing returns to scale, of course, the greater the desired diversity among policies at the optimum.

All this discussion is under the assumption that policy effects are known with certainty. If there is uncertainty concerning the policy effects as in the real world, but risk neutrality, nothing essential changes. If there is risk aversion, however, the optimal policy package for given resources devoted to policies is likely to include more policy diversification.

2.7. Some Additional Questions Regarding Krueger's Policy Taxonomy

The strength of simplicity is that it ignores messy details. And a strength of Krueger's policy taxonomy, and arguably of the continuous extension that I propose in 2.7, is simplicity. But "the devil may be in the details"—they may be critical for determining how useful these taxonomies actually are as guides for policy choices, leaving aside questions discussed above such as what should be the policy objectives and whether they should be limited to two (2.5). In this section I consider some of these details.

2.7.1. Is Time of the Essence?

Krueger's policy taxonomy and my continuous alternative are timeless—in the sense that they ignore time, if not in the sense that they are for all ages. But there is the question of to what time period do the objectives refer? Generally growth is used to refer to longer-run sustained growth over a number of years if not decades, and that certainly is what Krueger has in mind. Likewise, she seems to have in mind longer-run

sustained increases in incomes of the poor. But there still are questions regarding what are the dynamics of the processes that may be important both in terms of empirical estimates and in terms of the relative desirability of various policies.

With regard to empirical estimates, studies may not represent well what are the effects on the relevant objectives unless they have the lag structure for dynamic responses specified correctly. And this may be difficult both because a priori reasoning generally provides very little guidance for such responses and because high quality panel data with which to estimate such lag structures is rare.

With regard to the relative desirability of different policies, a set of policies may have the same long-run effects on the policy objectives, but result in very different paths to the long-run values. For example, even if policy liberalization leads to long-run income gains for the poor, if the poor previously had received rents from various policy restrictions, the removal of those restrictions might cause a deterioration in their position for the interim (e.g., Behrman, Birdsall and Székely 2001). Therefore there may be questions that have to be faced about the short-run versus the long-run benefits of policy changes—and the answers may differ considerably depending on the discount rate. In certain contexts, moreover, policymakers may have very high discount rates, and thus opt for policies that have higher very short-run positive effects. Certain policies, furthermore, may have significant present discounted values for family dynasties, but little benefit for current adults living in poverty. Subsidized high quality schooling effectively directed towards the poor in the absence of good capital markets or other mechanisms for transferring resources across time and across generations, for example, may not help much currently poor adults—and taxing currently adults to finance human resource investments in their children in a growing economy may increase current poverty and intergenerational inequality.

2.7.2. Stability of Taxonomy across Institutions and Development Levels

Krueger is silent on the question of whether she thinks that her two-by-two policy taxonomy is likely to lead to classifications that apply broadly across many developing countries or only as a guideline for thinking about policies within a country. It would seem possible, for example, that a given policy would be in a different cell depending on the level of development of the economy. In a similar spirit, Quibria (2002, p.39) argues that “the important contingent conditions relate to labor market flexibility, macroeconomic stability and the nature of economic governance”—conditions that differ among countries, perhaps related to their levels of development. Arguably, to illustrate, a policy that established an effective minimum wage for the formal sector would be pro-poor (and in the northeast or southeast quadrant of Figure 1) if there were not negative employment effects in an economy in which almost everyone works in the formal sector, but anti-poor (and in the northwest or southwest quadrant of Figure 1) in an economy in which the majority of the population works in the informal sector. A related point is that the effectiveness of any one policy change may depend on what the nature of other policies are. The beneficial impact of openness to international markets, for example, may depend on the extent of flexibility in the labor market, as is suggested by Hasan’s (2000) analysis of panel data on the manufacturing sectors of 48 countries (also see Quibria 2002 and Winters 2000). Such considerations suggest that it is worth considering whether there are other critical dimensions, such as the level of

development, that are necessary to make the approach effective. If so, then it may be fruitful to add as a third dimension the level of development and then, conceptually at least, the policy taxonomy relevant for a particular level of development is the plane in the poverty alleviation-growth dimensions for that level of development.

2.7.3. Political Economy Questions

Krueger suggests that many, perhaps most, policies would not satisfy her first two steps because they in reality are “lose-lose” policies. She also notes that this raises some difficult political economy questions (see the long quotation from the end of her talk at the end of Part 1 above). What does this mean about the nature of the political economy? Does this mean that past policymakers were misinformed or naive (e.g., thinking that if policies are labeled as “anti-poverty” that is sufficient for them to be pro-poor without investigating what the true distribution of benefits are)? If so, then perhaps the simple clarity of Krueger’s two-by-two matrix will be a revelation that will lead to following her four steps to improve policies. But an alternative possibility is that past policymakers have not been so ill informed or naive, but just had different objectives. If so, what are those objectives? How will the insights provided by expansion and application of Krueger’s approach lead to policy change given those objectives? Does this imply, for example, that there are likely to be high returns to policy changes that make policymakers more responsive to the situation of the poor? Besley and Burgess (2001), for example, suggest that, in the presence of opportunistic politicians, expansion of freedom of the press may serve such a function. Yet another related question is what is the role of international organizations such as the Asian Development Bank if they have a different welfare function regarding the poor than do the policymakers in a particular country? In such a situation should ADB attempt to induce the country to adopt more pro-poor policies (which may be futile if resources are sufficiently fungible)? Ignore the country? Encourage the development of political institutions that it thinks will better represent the poor?

A somewhat different political economy question relates to Krueger’s second step of eliminating targeted anti-poverty programs that transfer more resources to the nonpoor than the poor. It would seem that if the social welfare function at the margin weights incremental income more for the poor than the nonpoor as is the case if poverty alleviation is a social objective, optimal targeting in a world in which information imperfections, transaction costs, and political economy considerations preclude perfect targeting well might involve large leakages to the nonpoor. And under some conditions it would seem to be the case that optimal anti-poverty policies might involve even larger transfers to the nonpoor than the poor. Also it might be the case that the scope for using self-targeting programs to transfer income to the poor such as subsidizing coarse grains that she advocates might be fairly limited because of the limited demands even by the very poor for “inferior” goods. In any case more consideration needs to be given to the question of whether targeting towards the poor can be an effective mechanism (see, for example, Behrman 2001).

Like Krueger, I more raise than answer questions about these political economy issues. But how well they can be answered is likely to be critical for how promising is her policy taxonomy—or modifications of this taxonomy—for improving policy from her or my or the ADB’s perception.

2.7.4. Symmetry in Taxonomy?

Under certain conditions, at least for small enough policy changes, there would seem to be symmetry in policy effects. If removing an existing subsidy to the wealthiest members of society is a “win-win” policy in the northeast quadrant, there is likely to be a symmetrical “lose-lose” policy in the southwest quadrant of introducing such a subsidy in an economy that is identical except that it does not already have such a subsidy. If a policy introducing a transfer to the poorest conditional not working (that creates disincentives for the poor who are capable of working) is in the southeast quadrant, there is likely to be symmetrical policy in the northwest quadrant of removing such a transfer in an economy that is identical except that it already has such a subsidy.⁴²

To illustrate further, Krueger suggests that important examples of “win-win” policies in the northeast quadrant include supporting basic education, stopping taxing agriculture, and stopping suppressing the price of labor-intensive commodities. She suggests that “lose-lose” policies in the southwest quadrant include the Indian “small scale reservation” law and the Chilean law that forbade the firing of anyone who had worked in a company for more than six months. It would seem equally consistent with her point to classify as “lose-lose” policies that reduced support for basic education, increased taxes on agriculture, and suppressed the prices of labor-intensive commodities and to classify as “win-win” ending the Indian “small scale reservation” law and the Chilean law that forbade firings after six months. Similar possibilities exist for the presentation of continuous policy effects as in 2.6. Figure 3f illustrates by using “-“ before policy options to indicate the reverse policy for the policies that are included in Figure 3a.

Is this just a question of semantics? Is it simply arbitrary to call increasing subsidies to basic education “win-win” versus reducing subsidies to basic education “lose-lose”? To a certain extent, the answer is yes. But there are some implications that might be missed if there is such symmetry but it is not recognized explicitly. *First*, the first and the third of Krueger’s illustrative steps are to eliminate “lose-lose” and to promote “win-win” policies. But in an important sense, these are identical for any policies for which symmetry holds once that symmetry is recognized. In Figure 3f, one could conceive of either eliminating the “lose-lose” policies (policies 6, 7, -1, -2, and -5) or promote the “win-win” policies (policies -6, -7, 1, 2 and 5), but these are the same so it would be redundant to do both. *Second*, if all policies have such symmetry, effectively all the information is in any two adjacent quadrants of the matrices that incorporate such symmetry—nothing is added by including the other two quadrants. *Third*, the true optimal policy frontier should recognize any symmetry that exists. In Figure 3f, for example, without recognition of the symmetry, it would appear that the optimal policy frontier is the dashed line with policies 3, 5, 1 and 4. But once the symmetry is recognized, the optimal policy frontier really is determined by policies -4, -7, -6 and 4 because, in this example, they have greater positive effects per unit of policy resource

⁴² Krueger does not discuss the possibility of symmetry in policies, nor what may make some policies symmetrical and others not. The lack of discussion of the latter distinction possibly is related to the abstraction from time noted in 2.7.1 in that a major difference between, say, introducing a given policy where it did not exist before and eliminating it if it existed in otherwise identical circumstances is that the introduction, but not the elimination, is likely to involve ongoing marginal costs and have ongoing impacts.

used on reducing poverty and increasing efficiency. *Fourth*, with such symmetry (though symmetry is neither a necessary nor a sufficient condition), both the policy and its negation can be on the optimal policy frontier. How can these both be on the optimal policy frontier? An example is provided by policy 4 and policy -4 in Figure 3f. If the social welfare function at the margin weighs heavily reducing poverty relative to increasing efficiency, policy 4 may be in the optimal policy package (probably with policy -6). On the other hand, if the social welfare function at the margin weighs less reducing poverty relative to increasing efficiency, policy -4 may be in the optimal policy package (probably with policy -7). Of course for the situation illustrated in this figure at most policy 4 or policy -4 would be in the optimal policy package, but they both are on the optimal policy frontier.

Are all policy changes symmetrical? The answer to this question surely is no. For a policy change to be completely symmetrical it must have the same absolute magnitudes of the present discounted values of benefits in both dimensions and of fixed and marginal direct governmental resource costs (inclusive of the distortionary costs of raising revenues for expenditures). Some policy changes indeed might be approximately symmetrical. Changing by small percentages up or down the user fees (prices) charged for some governmental services, for example, might qualify. But some other policy changes almost for sure are not be symmetrical. Introducing a new policy such as a minimum wage or other price restriction almost surely is not completely symmetrically with eliminating the same price restriction in a context in which it already existed even if that context in all other respects was identical. Even if the fixed costs of the change were the same (e.g., the cost of recording the change in office documents and publicizing the change), the ongoing marginal costs would almost surely differ since in the former case they would persist but in the latter case they would be zero. Nevertheless there are enough policy changes that probably are approximately symmetrical that it is desirable to recognize the implications of symmetrical policy changes.

2.7.5. Small-Country Assumption and Focus on Developing Countries

Krueger focuses on policy choices of developing countries under the assumption that they are “small” in the sense of not having perceptible impact on international markets directly or through policy changes. But developing countries acting collectively may have important impact on international markets through international policy changes. For example, expanding the World Trade Organization to include liberalization in agricultural and textile/garment production may have relatively high payoffs in terms of policy objectives of developing countries relative to changes in their own economies.

Further, it would appear that the logic of raising questions about policy choices applies not only to developing countries on which Krueger seems implicitly to focus exclusively, but also to developed economies and international organizations—certainly from the perspective of a concern about poverty alleviation and economic efficiency on a global level.

In recent years, for example, the issue of globalization and poverty has been brought to the forefront of international attention. Proponents of globalization assert that globalization offers enormous opportunities to developing countries through easier access to the world’s knowledge, better technologies for delivering products and

services, and expanded markets. Opponents insist that by requiring developing countries to lower tariffs and other trade barriers, globalization destroys domestic industries, traditional crafts, and threatens the food security of poor families. A recent review by DFID (2001) points to some serious concerns, including the fact that, although globalization has an important role in promoting economic prosperity, it has not influenced much the lives of the poor living in remote or inaccessible areas so far. In addition, globalization has also exposed developing countries to systemic risks from international markets, as illustrated by the Asian crisis of 1997. On the other hand, integration into international markets provides insurance against domestic shocks by increasing smoothing possibilities. Also the damaging effects of such international crises could be lessened through sound macroeconomic positions, adequate domestic regulation, and transparency in relationships between companies and banks. That is, the potential benefits of market reforms and globalization are not realized in the absence of an appropriate regulatory framework, and this means that the poor are often subjected to acute hardships during the process of liberalization.

3. Illustrative Taxonomy of Changes in Policies, Rules and Regulations and Steps to Improve Policies on the Bases of a Priori Analysis and Existing Empirical Studies

2 raises a number of questions about how applicable Krueger's two-by-two policy taxonomy for growth and increasing the incomes of the poor might be to policy guidance on the basis of available empirical information. For starters, but quite fundamental, what we know with confidence from systematic empirical studies is quite limited both because of measurement and estimation issues. This holds for increasing the incomes of the poor and growth on which Krueger focuses. It holds even more for more inclusive measures of poverty alleviation, such as ones that include empowerment and social capital, and for concerns about efficiency and related issues of market failures that I argue would be preferable policy objectives. Moreover it appears that the context, the nature of institutions and market development, matters so that there may not be a simple two-dimensional taxonomy that holds across a range of development experiences. Further, for serious policy guidance, there may have to be much more attention to the time dimension. For such reasons, for a general discussion of policy taxonomies such as is the focus of this paper, any illustrative efforts at classification have to rely on a priori analysis, limited empirical associations, and, in some cases, a few good systematic empirical studies. For specific policies in specific countries, in contrast, specific systematic analysis that is sensitive to the particulars of the context may be much more informative.

In this part of the paper, I consider in a very rough way an illustrative range of policies and how they might be classified with regard to the policy objectives of alleviating poverty and increasing efficiency using the continuous representation of policy effects introduced in 2.6. I focus on these objectives and use the continuous representation of policies because of the arguments that are presented in 2.5-2.7 that such a strategy is preferable to that suggested by Krueger—dichotomies for the two objectives of increasing the income of the poor and growth. To keep matters relatively simple, I consider only occasionally other policy objectives (also see 2.5). Because of the difficulties in measurement and estimation that are discussed in 2.3 and 2.4, though I

make some references to empirical studies, I also rely substantially on a priori analysis such as outlined in 2.1 and 2.2. For poverty alleviation, for example, what do those frameworks suggest will increase the assets of the poor and the returns to those assets or reduce the costs to the poor? For increasing efficiency, what are the likely market and policy failures? Because it is preferable to consider the extent of policy impact along a spectrum of possibilities in each dimension in order to make more informed policy choices, for this general presentation I express my judgement regarding where a policy falls in both dimensions by where I place it in Figure 4. Of course, given the measurement and empirical difficulties mentioned above (to say nothing of other problems that are discussed above), these guesstimates are only meant to be suggestive, and there is considerable uncertainty regarding their placement. But it would make the figures too hard to read were, say, confidence intervals placed around policies. For a particular policy in the particular context of a specific country, such uncertainty could be lessened considerably, though generally not eliminated.

Attempting such an exercise may be foolhardy for a number of reasons. *First*, as noted above, factors such as the level of development may be critical, but the task would become overwhelming if I were to attempt systematically to incorporate different levels of development for every policy option. So, though I make selected comments about how the level of development might be important, I do not attempt to address this question for every policy that I mention. *Second*, as also noted above, the empirical basis for policy assessment is fairly weak, with many studies that purport to be related to policy evaluation that are not very persuasive because they do not include good measures of policies or do not deal well with estimation problems due to the fact the policies themselves are behavioral choices. *Third*, there is far from unanimity among analysts about the impact of many policies—in part because they may be weighing different objectives differently, in part because different analysts start with different priors, and in part because the paucity of systematic empirical policy evaluation leaves open a wide range of interpretations. Consider, for example, the assessment of policy effectiveness as presented in institutional publications of international agencies such as the World Bank and the Asian Development Bank in comparison with recent assessments by Amsden (2001), Easterly (2001) and Taylor (2001). One implication is that there may be some, perhaps many, who will disagree with where I place policies in the taxonomies below. Such disagreements, of course, may point to fruitful areas for systematic empirical research. *Fourth*, the range of existing policies is enormous, even if the possibilities of returns to scale (2.6.2) and symmetrical policies (2.7.4) are ignored for simplicity.⁴³ They may impinge on any of many types of markets—labor, capital, insurance, product, human resource, marriage—as well as on whole sets of markets for

⁴³ For simplicity, I ignore the possibility of symmetrical policies, but just discuss the option of two possibly symmetrical policies that is most likely to be relevant for most low-income developing countries. That is, I consider the possibility of eliminating minimum wage rates rather than introducing minimum wage rates because most such countries have minimum wage laws (even if they are effective only for parts of the formal sector). I should note, however, that this strategy does not always provide definite guidelines. For example, most such countries could either reduce the variance in tariff rates that I place in the northeast quadrant or increase the variance of tariff rates that I would place in the southwest quadrant, but I consider just one of these symmetrical options. Also for simplicity I ignore questions of returns to scale. This is consistent with considering the devotion of limited resources to the policy changes so that there are approximately constant returns to scale.

some macro policies. Therefore, while I attempt to cover a number of different markets as well as macro policies, unavoidably I am selective in my coverage.

To organize this undertaking, in 3.1. I first consider alternative expenditure and regulatory policies for given direct governmental resource costs and costs of raising the resources to finance the policy changes. That is, in this section I am assuming that the distortionary resource costs of generating such financing is the same no matter how the resources are used. Then in 3.2. I consider alternatives for raising resources for governmental expenditures for the same direct governmental direct costs—but in this case, not including the distortionary costs of raising the resources because those are what make these different options have different effects on efficiency. In each of these sections I consider four groups of policy changes that relate to the four quadrants in Figure 4: (1) policy changes that are likely to reduce poverty and increase efficiency (northeast quadrant); (2) policy changes that are likely to increase poverty and increase efficiency (northwest quadrant); (3) policy changes that are likely to reduce poverty and reduce efficiency (southeast quadrant); and (4) policy changes that are likely to increase poverty and reduce efficiency (southwest quadrant). Some policy changes have relatively strong effects in one dimension and relatively weak or no effects in the other. Such policy changes are included in the figure close to one of the axes. Given the uncertainty associated with the impact of any policy, if it is located within the dashed lines parallel to the axis then in my judgement there is a substantial probability (say, at least 0.3) that it might in fact be on the other side of the axis.

3.1. Expenditure and Regulatory Policy Changes with the Same Direct Governmental and Governmental Revenue Raising Costs (Figure 4a)

(1) Policy Changes that are likely to Reduce Poverty and Increase Efficiency (“Win-Win” Policies in the Northeast Quadrant)

(1a) Policy changes that lessen labor market rigidities: Labor market rigidities that preclude labor mobility often emanate from policies though some times from unions and generally are effective primarily in the formal sector. Regulations mandating severance pay, precluding firing workers after they have been employed for some initial period of employment (as in the example that Krueger gives for Chile, see Part 1 above) or excluding workers from certain jobs on the basis of characteristics such as sex or age are examples, as are restrictions on wages. Those who favor such regulations or restrictions argue that, in their absence, these workers would not have sufficient protection from capricious or exploitative behaviors of employers. It is not clear that such regulations and restrictions benefit the workers employed in the formal sector because they lessen market pressures to compete for workers. But, to the extent that such policies provide such protection, it is provided primarily to relatively well-off workers in the formal sector. And such regulations and wage restrictions tend to decrease labor demand in the formal sector, which both increases inefficiency and increases poverty among those workers who would have been employed in the formal sector in the absence of such regulations and restrictions. Quibria (2002, p.41), for example, notes that “Korea, which achieved one of the highest growth in real wages in recent history, did not institute a minimum wage policy until 1988, when Korea had already achieved the status of an NIE. It also lacked other labor protection, including

freedom of association and many other employment protection statutes.” Heckman and Pages-Serra (2000), for another example, investigate the impact of job security regulations in 15 Latin American and 28 OECD countries. They conclude “that job security regulations have a considerable impact on employment and turnover rates...and that they substantially affect the efficiency of the labor market...there is no evidence that job security provisions reduce income inequality. Indeed, given that job security reduces the employment prospects (and possibly wages) of younger and less experienced workers, ...it is likely that regulation widens earnings inequality...” (p.137)⁴⁴

(1b) Policy changes that improve capital and insurance markets, or provide substitutes, for basic human resource investments: On a priori grounds, imperfect capital and insurance markets would seem to limit basic human capital investments, particularly of the poor. If so, then policy changes directed towards improving such markets or towards subsidizing the human capital investments of the poor are likely to be “win-win” in terms of increasing both efficiency and alleviating poverty.⁴⁵ However empirical evidence is limited on the relevance of such market imperfections on human capital investments. What is available primarily are studies that tend to show some limited associations between family income and investments in children’s schooling that are relevant if schooling is purely an investment and if better-off families are not so constrained by capital markets as are poorer families because better-off families more likely can self-finance such investments (see Behrman and Knowles 1999 for an example and a brief survey) and a few studies that present more direct assessments (e.g., Foster 1995, Jacoby 1994, Jacoby and Skoufias 1997). And there is no empirical evidence of which I am aware that on its own permits an ordering among some of the leading policy interventions that might deal with what appears to be a “win-win” situation—that is, to provide confident guidance regarding the effects of devoting a given level of resources to improving markets versus providing vouchers for human capital investments to the poor versus providing unconditional transfers to the poor versus providing subsidies for providers of related human capital services. Therefore what empirical evidence that there is must be interpreted considerably within a priori frameworks.

(1c) Policy changes that privatize goods and services production: The incentives under which public enterprises generally operate make efficient production difficult and not very common. Often there are considerable pressures to utilize too many employees at various skill levels, to use political criteria in hiring employees and to protect rents received by employees. Usually most of those employed are fairly high in the earnings and income distributions, particularly if benefits such as access to better health services and pension plans are included. Privatization, therefore, may increase efficiency and reduce poverty. Among five areas of policy reform examined for 18 Latin American

⁴⁴ M.G. Quibria has noted to me that there is a well-known study by Card and Krueger (1995) that reports no significant negative employment effects of increasing the minimum wage in the United States (and possibly even significantly positive effects). Of course it is not clear that, even if such results are correct, they would carry over to the much different labor markets in developing countries. Moreover, there is considerable controversy over whether these results are valid for the United States economy or merely reflect aspects of the data and empirical strategy (e.g., see Welch 1995, Neumark and Wascher 2001).

⁴⁵ This relates to one of Krueger’s “win-win” policies of supporting basic education (see Part 1), though she does not articulate why there might be efficiency gains from doing so nor justify the limitation to basic education except insofar as basic education is more directed towards the poor.

countries with control for all fixed and time-varying country effects, in fact, only privatization significantly reduced income disparities among schooling levels and increased earnings of those with limited schooling, who tend to be relatively poor (Behrman, Birdsall and Székely 2001).

(1d) Policy changes that increase macroeconomic stability: Increased macroeconomic stability is likely to increase longer-run efficiency related to economic growth by increasing the incentives for investments if there is risk aversion and by reducing the impact of inefficiencies in insurance markets. Moreover, the incidence of macro shocks tends in some contexts to be greater on poorer households, though this may depend importantly on the nature of the shock. Easterly and Fisher (2001), for example, using panel data from 38 countries, find that high inflation tends to lower the share of the bottom income quintile, reduce the real minimum wage, and increase poverty.⁴⁶ Romer and Romer (1998) likewise find that high inflation and macroeconomic instability are inversely associated with the income of the poor. Gaviria (2001) documents that the poor were hit hardest in seven Latin American countries in which unemployment increased considerably in response to the shock. On the other hand some aspects of the Asian financial crisis that started in 1997 seem to have hit hardest in physical and financial investment sectors, in which those employed prior to the crisis for the most part were not those thought to be among the most vulnerable. For example, in Thailand the sectors that were hit hardest by the 1997 crisis included construction and finance, so that some of the allegedly most vulnerable groups (e.g., women, rural residents, older workers) were affected much less than young and prime-age adult urban males working in relatively high-paid construction and financial sectors (Behrman, Deolalikar and Tinakorn 2000, 2001, Behrman and Tinakorn 2002). And South Asia has tended to have relatively great macroeconomic stability, but generally without attaining the extent of poverty reduction and growth attained by a number of East and Southeast Asian economies (Quibria, 2002). In some cases, further, households cope with such shocks in part by withdrawing children from school so that they can work which may have longer-run negative effects on growth and poverty alleviation (e.g., Behrman, Duryea and Székely 1999, Gaviria 2001), but other studies for other contexts find that schooling enrollment increased in macro crises (e.g., Behrman, Deolalikar and Tinakorn 2000, Shady 2001). While it is clear, thus, that the effects may differ across contexts, quite often on a priori grounds increased macro stability would seem to be likely to increase efficiency through offsetting limitations in insurance markets and to reduce poverty because the poor tend to have the least good insurance options. And, of course, there is far from agreement about the most effective means of increasing macro stability.

(1e) Policy changes that increase information about goods and services used by the poor, the quality of which is hard to judge from the point of view of purchasers: The qualities of many goods and services are difficult to discern from the point of view of individual purchasers, and generally all the more so from the point of view of relatively poor purchasers who tend to have less education and less access to information. Examples include drugs, educational options, medical care, and the nutrition embodied in different foods. Because of public good aspects of information, private markets are

⁴⁶ Even though, as argued above, the reduction in the real minimum wage itself may be to the benefit of the poorer workers in many societies.

unlikely to provide socially optimal levels of information. Therefore there are likely to be efficiency arguments for using public resources to improve information about such goods and services through such means as labeling requirements, reporting requirements, quality monitoring and dissemination of test results and other means. And to the extent that these are focused on goods and services used by the poor, the poor are likely to benefit relatively because they are likely to have greater problems in acquiring such information.

(1f) Policy changes that increase agricultural research and improve infrastructure, both directed towards the poor: There is an efficiency argument for public support for research and for physical infrastructure if the producer of the research or the owner of the infrastructure cannot capture much of the productivity gains so the private incentives are inadequate to induce socially-desirable research and infrastructure levels. In part for such reasons—but also because of concerns about food security and because of strong political lobbies in many countries—considerable public resources have been devoted to agricultural research and rural infrastructure. Available empirical studies suggest that the social rates of return to resources devoted to agricultural research (and, in fewer cases, to rural infrastructure) have been high, though conventional wisdom on this topic may be biased by greater attention to great success stories than to other experiences. There has been ongoing controversy, however, about the extent to which this research and infrastructure has benefitted the poor. The poor as producers are likely to be less able to adopt such new technologies that come from such research as quickly as do better-off farmers both because they are likely to have the information with greater lags and because they are likely to have less in the way of complementary inputs and to be more constrained by imperfect capital and insurance markets in obtaining these inputs. To the extent the primary motivation of such research has been to increase food supplies and industrial inputs, moreover, the research has been directed towards products that tend to be produced less by poorer than by better-off farmers. On the other hand, the poor have gained in many cases from increased labor demands in rural areas that have been associated with greater agricultural productivity due in part to agricultural research. And the poor also may benefit considerably as consumers, particularly from the expanded supplies of basic staples such as rice and maize from such research. Looking forward, Hazell and Haddad (2001) review the relation between agricultural research and rural infrastructure on one hand and the poor in developing countries, on the other, and identify some key topics for future pro-poor agricultural research and rural infrastructure: “1. Increasing production of staple foods in countries where food price effects are still important and/or have comparative advantage in growing these crops...2. Increasing agricultural productivity in many less-favored lands...3. Helping smallholder farms in all kinds of areas to diversity into higher value products...4. Increasing employment and income-earning opportunities for landless and near-landless workers in labor-surplus regions...5. Developing more nutritious and safer foods to enhance the diets of poor people by investing in agricultural technology that reduces the price of micronutrient-rich foods..., increases access in remote rural areas, or increases the nutrient content of food staple crops via traditional or transgenetic technologies...6. Undertaking agricultural research in ways that are more empowering to the poor.” (p.26) They elaborate a fair amount on these topics, and argue that there are a number of policy changes that would be “win-win” in terms of reducing poverty and growth.

Though they do not very directly address the efficiency policy motive and do not address extensively how one should choose among policy options in particular circumstances, they are persuasive that there are a number of interesting policy options in this area.

(1g) Policy changes that increase responsiveness of governments to shocks that hit the poor: The political process can change in how responsive it is to shocks that hit the poor through direct political movements towards more responsive political processes or through indirect effects such as greater pressure from the media. Improved governmental responsiveness in such respects is likely to reduce poverty and to increase efficiency, with the latter effect due to market failures in insurance markets that may be very costly to address more directly. Besley and Burgess (2001), for example, develop a model in which in a democracy one significant set of politicians is opportunistic and responsive to citizens' concerns and those concerns are amplified through the media. Within this model, efforts by opportunistic politicians are greater if voters have greater media access, if there is a higher turnout in elections, if there is a larger population that is vulnerable to the shock, and if political competition is more intense. They then present empirical estimates of the determinants of the public distribution of food and calamity relief systems in India based on state panel data for 1958-92. They find that public distribution of food and calamity relief increased significantly more, controlling for other factors including unobserved fixed state characteristics, for a given negative shock the higher is newspaper readership—which they interpret to reflect an important means of increasing the responsiveness of governments to shocks that hit the more vulnerable members of society.⁴⁷ Of course there are a number of other means through which greater governmental responsiveness might be engendered—increasing education of the electorate, deregulating the media, moving towards more democratic political processes. They do not explore whether deregulating the media is likely to be more effective than alternative means for increasing governmental responsiveness. Also, while such changes might increase the responsiveness of governments ex post to shocks that hit the poor, there is a question of at what point the political process leads to the right balance between shorter- and longer-run concerns. For example, governments also might take steps to reduce ex ante the probability of negative shocks (e.g., through improved irrigation systems). But if politicians have a discount rate that is higher than the social discount rate due to the pressures of forthcoming elections, there may be a tendency to devote too many resources to dealing with ex post shocks that receive much greater media attention than ex ante reducing the probability of shocks. They also do not explore such issues. Nevertheless, they suggest an interesting general category of policy changes that might reduce poverty and increase efficiency.

(1h) Policies that liberalize international trade: Trade liberalization is likely to increase efficiency through inducing production and consumption entities to make their decisions on the basis of prices that are closer to the true opportunity cost from the point of view of an economy.⁴⁸ But there may be countervailing forces on income distribution

⁴⁷ While they do control for unobserved fixed state characteristics, they do not control for some varying characteristics that might affect governmental actions and be correlated with newspaper readership such as education.

⁴⁸ The evidence on the growth enhancing effects of trade liberalization in developing countries is mixed. Greenaway, Morgan and Wright (2002) argue that problems with mis-specification and with the measurement of liberalization account in part for the inconclusive natures of previous studies. They report

and poverty alleviation that trade policy change induces. On one hand, liberalization reduces wage differentials if product market changes shift production towards a country's comparative advantage, which within the assumptions of the classical framework would seem to benefit less-schooled workers relative to more-schooled workers in most developing countries. But a number of possible counter-effects could widen wage differentials. For instance the pre-liberalization framework might have protected unskilled workers. Or, intermediate inputs of a given quality may become cheaper with low-schooled workers being (at least relatively) substitutes for intermediate inputs. Capital goods of a given quality are also likely to become cheaper and more-schooled workers tend to be relatively complements with physical capital. Additionally, new, more-schooled-worker intensive technologies may become available through trade and increase the demand for skills. Further, the gains from learning about new markets and new technologies may also increase due to more rapid changes in markets and technologies, for which schooling may have high returns. Behrman, Birdsall and Székely (2001) investigate the impact of trade liberalization in Latin America on the variation in the returns to schooling and on the returns to schooling of those laborers with less schooling with an approach that controls for all fixed and time-varying country characteristics. They find no significant effects, perhaps because of such countervailing factors. More specific concerns in the context of rural poverty alleviation emerge from the IFAD (2001) Report on Rural Poverty. Trade liberalization affects the rural poor in diverse ways. Removing or reducing biases against farm prices may help food sellers among the rural poor but harm net food buyers. However, access to competitive market channels matters as well. If, for example, monopsonistic marketing boards are replaced by a private monopsonist, the gains from trade liberalization to smallholders may remain limited. Moreover, supply responses are conditional upon infrastructural support (e.g., roads and communication networks). Further, trade liberalization may be associated with not just higher food crop prices but also higher variances of these prices, though this is not entirely clear a priori because trade liberalization permits diversification that lessens the impact of domestic shocks even as it may amplify the impact of international shocks. But possibly, even if smallholders benefit under certain conditions from higher prices, they may also be exposed to greater variability of farm incomes.⁴⁹ On the other hand, Behrman and King (1999) investigate the impact of international trade liberalization on female-male wage rate gaps in 16 countries with control for unobserved fixed country and industry factors and find that (poorer on average) female workers gain significantly (though not hugely) relative to males in terms of wage rates with more trade liberalization. Finally, the basic question in the longer run may be how much does trade liberalization increase growth. To the extent that it does, longer-run poverty reduction almost surely follows (e.g. Quibria 2002).

(li) Policy changes that provide/improve information regarding skills of workers, particularly those with limited schooling, through accreditation or certification programs: Labor markets are characterized by imperfect information about heterogeneous workers. This results in more productive workers shifting into self-

robust estimates of modest positive effects of trade liberalization on growth with a J-curve effect when they use a dynamic framework and panel country data.

⁴⁹ For illustrations, see Lustig and Stern (2000) and Gaiha (2000a).

employment in cases in which their marginal products might be greater in wage employment simply because they cannot signal to employers that they are relatively productive—particularly for populations in which schooling does not serve to provide such signals (e.g., Behrman, Foster and Rosenzweig 1997a, Foster and Rosenzweig 1993, 1994). Improving information regarding currently difficult to observe workers' productivities would increase efficiency. And because most of the workers who do not have established schooling credentials to signal their productivity tend to be relatively poor, for such workers poverty will be reduced.

(1j) Policy changes that improve information that farmers have about future weather: The majority of the poor in most developing countries live in rural areas and their options are conditioned strongly by agricultural production, which often is subject to considerable weather shocks. Improved weather information is likely to reduce poverty and to increase efficiency, with the latter effect due to market failures in insurance markets that may be very costly to address more directly in addition to those in information markets. Agricultural production typically occurs in stages within agricultural seasons. Early in the season a number of production factors have to be committed to particular crops under uncertainty about what subsequent weather conditions will be. Therefore the ex ante optimal composition of production may differ substantially from what would have been optimal ex post. Ex ante certain products may be avoided that have high returns conditional on good subsequent weather outcomes, but that have low or negative returns if weather is not good. Instead, more emphasis may be placed on lower-variability but lower mean crops. Harris and Robinson (2001), for example, explore the impact of improved weather forecasting on the economy-wide effects of El Niño in Mexico. Their estimates indicate gains of about 3% of agricultural production improving weather forecasting that accrue in some general sense to poorer members of society who are predominately in rural sectors—though not the poorest who do not have as many complementary production factors so that they are able to adjust as much as those who are better off. Though they do not address the question of how improving weather information stands in the efficiency policy hierarchy in comparison with other alternatives (e.g., improving irrigation systems so that farmers had more control over water whatever the weather), on a priori grounds dealing directly with the probable failure in the information market about weather would seem to be fairly high in this hierarchy.

*(2) Policy Changes that are likely to Increase Poverty and Increase Efficiency
("Lose-Win" Policies in the Northwest Quadrant)*

(2a) Policy changes that induce the adoption of new capital-intensive technologies that are complementary with skilled/schooled workers but substitutes for low-skilled/low-schooled workers: There may be efficiency arguments for subsidizing the adoption of such technologies on the grounds that those who adopt such technologies not only have private gains or losses, but others also learn from them about the value of the new technologies, so there is a learning externality that warrants consideration of subsidies on efficiency grounds. But as a result of such a subsidy, the demand for low-skilled labor may decline, which contributes to poverty. There is some empirical evidence that is consistent with such a possibility (e.g., Behrman, Birdsall and Székely 2001 for 18

countries in Latin America). Of course the efficiency argument for subsidizing new technologies is likely to hold for labor-intensive as well as capital-intensive technologies. But many, probably most, new technologies may be capital-intensive because they are developed primarily in higher-income countries in which relative factor prices induce concentration on labor-saving technologies.

(2b) Policy changes that reform capital markets in a general sense: Improving capital markets, in part by integrating better domestic and international capital markets and in part through reducing impediments to their functioning within countries, is likely to increase efficiency. A priori such improvements might benefit the poor more because they have less access to capital markets. Or they may hurt the poor because those who are better-off may be able to exploit more effectively the new opportunities, including the wider adoption of new capital-intensive technologies that may be complementary with highly skilled labor but substitute for less-skilled labor. Behrman, Birdsall and Székely (2001) investigate the impact of capital market reforms in 18 countries in Latin America and find that they are disequalizing and probably lower the returns to low-skilled labor. They conclude that: “A lower cost of borrowing or improved access to financing apparently favors skilled labor, possibly because skilled labor is complementary to capital, and effective domestic capital market liberalization is likely to facilitate financing of both current production and of longer-run investments in capital and technology.” Their study refers to fairly general capital market reforms. As noted above (see 1b), some more targeted efforts to compensate for capital market imperfections may benefit more the poor.

(2c) Policy changes that increase information about goods and services with high income elasticities, the quality of which is hard to judge from the point of view of purchasers: The efficiency arguments here are identical to those made in (1e) above. But for high-income-elasticity goods and services—such as some forms of tertiary medical care, higher education, and personal computers—the beneficiaries are likely primarily to be those high in the income distribution, not the poor.

(3) Policy Changes that are likely to Reduce Poverty and Reduce Efficiency (“Win-Lose” Policies in the Southeast Quadrant)

(3a) Work schemes for unemployed: Self-targeting public works employment schemes are advocated by many to help the poor, particularly to cope with seasonal downturns and negative shocks. Such programs conceivably might have efficiency gains because they in part replace imperfect insurance markets. On the other hand, they may have efficiency costs through introducing wage rigidities in the labor market and through creating incentives for rent-seeking by the operators of the program. Ravallion (1991) is an influential evaluation of such programs, with emphasis on the Maharashtra Employment Guarantee Scheme and the Bangladesh Food for Work Program (both of which provide unskilled manual labor employment on small-scale projects with employment typically at the level of 100 million person days). Though there has been much debate about how well these programs have reached some of the poor (e.g., landless laborers), several studies suggest that there has been relatively little direct leakage to nonpoor (e.g., Ravallion’s estimate is that 60% of the participants in the Bangladesh program come from the poorest quarter of rural households). The shares of

the budgets of these programs that do not go to workers employed by them are estimated to be in the 20 to 40% range. The net income gains to the participants from these programs on average are estimated to be about half of the gross wage payments, with the other half reflecting foregone income in order to participate in the programs.⁵⁰ Thus about 35% of the program costs are net gains to the participants. There also are likely to be indirect benefits from increasing the level of economic activities in geographically fragmented markets, from reducing risks for the poor and from the productivity of the infrastructure or whatever is created. Ravallion suggests that the lessons that can be learned from these programs include: (i) well-run public works employment gains can be useful tools for reducing poverty of some of the poor generally and when they are faced with an adverse economic shock in particular; (ii) such programs should be complemented by other, perhaps categorically-targeted programs that are directed towards groups that because of age or health cannot enter into public work employment, (iii) wide coverage at low wages is preferable to narrower coverage at higher wages because there are less incentives for corruption through selecting beneficiaries, there are social and political gains from covering more people and there is less spillover to the nonpoor; and (iv) some rules of thumb that have been suggested (e.g., minimizing foregone income of participants by focusing on unemployed, maximizing proportion of participants who are poor, maximizing employment of unskilled labor or of landless labor) should be avoided and, instead, project selection should be conditioned on the objective of maximizing the reduction of poverty given the program resources.

(3b) Subsidies for goods and services consumed largely by the poor: Krueger, and many others before her, advocate self-targeting through subsidies for goods and services that are consumed primarily by the poor in order to improve the targeting of the subsidies towards the poor. Of course there may be efficiency costs of such procedures if marginal decisions are affected by these subsidies. Probably the largest programs that have been rationalized for such reasons are programs that have subsidized food. Alderman and Lindert (1998) review some of this experience in Africa, where there has been an effort in a number of countries such as Egypt, Morocco, South Africa and Tunisia to move from universal to more self-targeted food subsidies by eliminating subsidies on high-income elastic items and shifting them to items with low or negative income elasticities, such as coarser grades of flour. They report that such shifts reduced substantially the governmental budget costs of food subsidies—e.g., in Egypt from 19.5% to 5.3% of total governmental expenditures and in Tunisia from 15% to 8% of governmental expenditures. In Tunisia the program shifted food subsidies from

⁵⁰ I again thank M.G. Quibria for pointing out to me that there may be additional gains to the poor if they increase their consumption of nutrients with increased income due to these programs and there are productivity effects of the enhanced nutrition, as emphasized as an important possibility in the “efficiency wage” literature by Leibenstein (1957), Bliss and Stern (1978, 1982), and Dasgupta and Ray (1986, 1987). This may mean that although workers in these programs lessen other activities in order to participate in this program, they may be more productive per unit time in other activities. Moreover, due to increased household income, this effect may carry over to other household members. A number of recent empirical studies report evidence of significant productivity effects of improved nutrition in poor populations (e.g., Behrman, Foster and Rosenzweig 1997a, Behrman and Deolalikar 1989, Deolalikar 1988, Foster and Rosenzweig 1994, Haddad and Bouis 1991, Sahn and Alderman 1988, Schultz 1993b, Strauss 1985, 1986). But I also note that increased economic productivity due to better nutrition does not necessarily mean increased economic efficiency.

benefitting more the richest income quintile than the poorest to 1.2 larger benefits to the latter. Simulations suggest that this could be increased to over two times as large benefits for the poorest quintile than for the richest by eliminating remaining subsidies on foods not consumed disproportionately by the poor. While these effects are considerable, the extent of targeting is not as great as in some other programs that have been studied. Grosh (1994), for example, reports that a means-tested food stamp program in Jamaica and a geographically-targeted food supplementation scheme in Peru each transferred about 15 times more benefits to the poorest quintile than to the richest quintile of the populations. The amounts transferred to the poor in these food subsidy programs, however, were not all that large: the subsidies on food products subsidized that were consumed more by the poorest quintile than richer quintile in Tunisia totaled 4% of their income and the VAT exemptions on maize and kerosene in South Africa totaled less than 2% of the income of the poor. Alderman and Lindert conclude that “the effectiveness of self-targeted commodity subsidies is limited” because even under the best of circumstances for their targeting, at least a third of such transfers leak to nonpoor and the relatively small share of commodities in the budgets of the poor for which the income elasticities are very small or negative means that they can have only limited impacts on the consumption of the poor. There also is the political economy question of the tradeoff between better targeting towards the poor such programs and maintaining political support for them.

(3c) Subsidies for micro credit programs: Micro credit programs directed towards the poor with group monitoring have spread rapidly in many developing countries. A priori it would appear that the group monitoring reduces an information problem for lenders and a related insurance/capital market problem for borrowers, and the relatively high repayment rates experienced suggests that this is an effective mechanism for increasing efficiency in these senses. Though many empirical investigations of these programs do not credibly inform us about their possible causal effects, a few careful studies report fairly persuasive evidence that they have had positive impact on the poor (e.g., Pitt and Khandker 1998, Pitt et al. 1999). But based the studies that I know, I concur with Morduch’s (1999, p.1609) summary: “But the ‘win-win’ rhetoric promising poverty alleviation with profits has moved far ahead of the evidence... In particular, the movement has shown that, despite high transactions costs and no collateral, in some cases it is possible to lend profitably to low-income households. The experiences have shown as well that many relatively poor households can save in quantity when given attractive saving vehicles... But the experiences have also confirmed how difficult it is to create new institutions, even those that are ultimately profitable. In Bolivia, Bangladesh, and Indonesia it took strong leadership and special legal accommodations. Elsewhere it has taken persistent prodding by donors and microfinance advocates...The programs are highly cost-sensitive, and most rely on subsidies.” As Morduch (1998, 1999, 2000) emphasizes, the micro credit movement has promise for experimentation and new developments. But at present the “win-win” claim does not seem to be justified.

(4) *Policy Changes that are likely to Increase Poverty and Reduce Efficiency*
(“Lose-Lose” Policies in the Southwest Quadrant)

(4a) *“Cheap food” policy changes:* Price ceilings or tariff structures that keep the price of food low have at times been implemented with the purpose of keeping food prices low for urban laborers. Some, though much more frequently in the immediate post Second World War decades than more recently, have argued that this is an effective way to promote urban industrialization at little cost in terms of discouraging food production because low-income agriculture is not very price responsive. However such policies reduce incentives for producing such products and lower the incomes of producers. Numerous empirical studies suggest that, contrary to previous assertions that had been used to justify such policies, peasant farmers in developing countries tend to be about as responsive to market opportunities as farmers in developed economies (e.g., Behrman 1968, Diebold and Lamb 1993, Krishna 1963). So there are likely to be efficiency costs of such policies. In addition, in most countries high proportions of the poorer members of society are involved in food production either on their own small farms or as laborers working for larger landowners, so such policies are likely to increase poverty.

(4b) *Subsidies for higher education and curative health services, particularly in major urban hospitals, beyond the levels warranted by market failures such as externalities:* Market failures may mean that private incentives would be to underinvest in some human resources were the price charged equal to the true social marginal costs. But actual subsidies often appear to be much larger than can be warranted by demonstrated market failures, so such subsidies are likely to increase inefficiencies (e.g., by, from a social point of view, inducing too many students to specialize in areas such as law and inducing too much use of resources in expensive specialist hospitals). For higher education and urban curative health care, moreover, the beneficiaries tend to be concentrated among those from the middle and higher parts of the income distribution. Moreover, even for more basic services for which part of the rationale for subsidization is to help the poor, as Krueger notes, often larger benefits go to those who are in the middle or the top of the income distribution than to those in the bottom.

Viet Nam, for example, is a society in which equity is advocated as a governmental goal much more strongly than in many societies. Nevertheless, for important basic social services, the distribution favors those who are better off (Behrman and Knowles 1998a,b, 1999, World Bank 1995). For instance, school fees are progressive, but school fees are only about a third of what households pay directly to schools, and a much smaller proportion of total household school-related expenditures. All household expenditures paid directly to schools increase with household income much less proportionately than do school fees alone, so the overall structure of such payments is much less progressive than is the structure of school fees alone. Because school enrollments are positively related with household income, moreover, the extent of progressivity in school fee structures is less for the entire population than it is for the selected subset that has children enrolled in school. Further, the school quality measures that are most strongly positively associated with child school success are allocated so that they are significantly more available for higher-income households, which means that part of the higher household school expenditures of higher-income households is

because they are obtaining higher-quality schooling and not because of progressive charges for the same quality schooling across income classes. In Viet Nam's family planning program, the poorest per capita consumption quintile receives 15 percent of the total governmental family planning benefits (i.e., public subsidies). Although this is substantially more than their share of total private consumption (9 percent), it is less than their share of the population (20 percent, by definition of a quintile). The poorest two quintiles receive 36 percent of the total family planning benefits, almost as much as their share of the population (40 percent), though only 28 percent of curative health subsidies. These results for the poorest 40 percent of the population are directly comparable to similar benefit incidence estimates for public health programs in other Asian countries (Pradhan 1996)—which indicate some instances in which the poor receive more than their proportional share of expenditures though still substantial shares go to those who are better off (e.g., 47 percent in Malaysia in 1974, 46 percent in Sri Lanka in 1978) but other cases in which, as in Viet Nam, the poor receive less than their proportional share (e.g., 27 percent in the Philippines in 1975, 19 percent in Indonesia in 1978).

(4c) Reserving production for particular groups or firms, whether defined by demographic characteristics, family background, or firm characteristics such as size: Reserving production for particular groups reduces entry and competition and almost surely reduces efficiency. But it also often has costs for poverty reduction by eliminating some options for the poor. That may occur through restrictions that exclude the poor due to some characteristics—such as excluding females from some occupations. But it also may occur through restrictions that ostensibly are designed to help the poor. Krueger gives an example of the latter in the Indian small-scale reservation scheme, which she suggests discourages growth in labor-intensive industries and thus reduces the demand for the labor of the poor and introduces distortions (see Part 1). Of course any such restrictions are likely to create distortions that are inefficient, and even ones that might appear to be beneficial to those who are poorer in the short run well may limit increases in the incomes of the poor from a longer-run perspective—such as in the case of the Indian small-scale reservation scheme.

(4d) Policy changes that require or allow the imposition of minimal credentials (e.g., in terms of schooling) on employees in various activities: Such credentials are often advocated as part of efforts to control quality of various services. In many economies they are common particularly in governmental agencies, but also in larger, formal sector units. While they potentially have gains in terms of improving information, they often appear to be fairly loosely related to productivity and are likely to introduce distortions in labor hiring that is anti-poor because those who do not have such credentials are likely to be poorer than those who do.

(5) Illustrative Implications for Policy Possibility Frontier

The locations in Figure 4a of various policies are guesstimates, as noted, based on a number of unstated assumptions about the particular context being considered that would be too long and tedious to discuss. But they give some flavor of what might be done for the particular context of a particular country. They also illustrate several of the points that are discussed in 2.6 and 2.7. *First*, some “win-win” policies are likely to be

dominated by others and therefore should not be pursued if resources limited to policies are sufficiently limited so that there is approximately constant returns to scale. In Figure 4a, (1e) policy changes that increase information about goods and services used by the poor the quality of which is hard to judge from the point of view of purchasers and (1i) policy changes that provide/improve information regarding skills of workers, particularly those with limited schooling, through accreditation or certification programs should not be pursued because resources are better used to pursue options such as (1f) policy changes that increase agricultural research and improve infrastructure, both directed towards the poor, (1b) policy changes that improve capital and insurance markets, or provide substitutes, for human resource investments, and (1a) policy changes that lessen labor market rigidities. *Second*, some “win-lose” or “lose-win” options may be on the policy possibility frontier. In Figure 4a, the “win-lose” option of (3c) subsidies for micro credit programs is on the policy possibility frontier because the linear combination of (3c) subsidies for micro credit programs and (1f) policy changes that increase agricultural research and improve infrastructure, both directed towards the poor dominates “win-win” options such as (1e) policy changes that increase information about goods and services used by the poor the quality of which is hard to judge from the point of view of purchasers, (1i) policy changes that provide/improve information regarding skills of workers, particularly those with limited schooling, through accreditation or certification programs, (1j) policy changes that improve information that farmers have about future weather and (1g) policy changes that increase responsiveness of governments to shocks that hit the poor. Likewise the “lose-win” option of (2b) policy changes that reform capital markets is on the policy possibility frontier. *Third*, if there is symmetry, changes that reverse some “lose-lose” policies may be higher priority than many or most “win-win” options. In Figure 4a, reversing the “lose-lose” (4c) option by reducing reserving production for particular groups or firms, whether defined by demographic characteristics, family background, or firm characteristics such as size is on the policy possibility frontier. *Fourth*, indeed, if (4c) is symmetrical, the policy possibility frontier in Figure 4a is defined by (2b), -(4c), (1f) and 3(c)—so that there is, in a sense, one policy change from each of the four quadrants on the policy possibility frontier. That means that the optimal policy package might include policy changes from any of the four quadrants and does not necessarily include any “win-win” policy.

3.2. Different Means of Raising Revenues with the Same Direct Governmental Costs but Different Distortionary Costs (Figure 4b)

(1) Policy Changes That Are Likely to Reduce Poverty and Increase Efficiency (“Win-Win” Policies in the Northeast Quadrant)

(1a) Policy changes that reduce levels and variance of tariffs/subsidies on internationally-traded goods and services: Tariffs raise revenues. But they also serve as barriers to international trade and distort price signals for both producers and consumers regarding the true opportunity costs of different goods and services to an economy in the form of alternatives available in international markets. Therefore reducing the levels and the variance in tariffs is likely to lead to increased efficiency. The impact on poverty is likely to be more ambiguous, depending on what happens as a result to

relative prices for goods in the production and/or consumption of which the poor are concentrated. On the production side the poor often are concentrated in agriculture and in nontraded goods and services. Therefore reducing taxes on agricultural exports or increasing taxes on imports of labor-intensive goods would seem to increase prices on goods in the production of which the poor are concentrated. Reducing import taxes on basic food staples and commodities such as clothing would seem to benefit the poor as consumers. Therefore, as for the more general question of trade liberalization (see 3.1-1h above) of which changes in the tariff level and structure generally are a key component, the impact on poverty is likely to depend on the composition of the changes and the distribution of the poor as producers and as consumers among various affected sectors. If the efficiency gains contribute to longer-run growth, however, the longer-run effects are likely to be on the average to reduce poverty as measured by a fixed or absolute standard.

(1b) Policy changes that increase to efficient levels prices on governmentally-provided goods and services such as water, fertilizer, transportation, health services and education—perhaps with targeted exclusions/subsidies for the poor: In most developing countries certain goods and services are provided by governments at fairly subsidized prices—almost always these include a range of services related to education, training, health, transportation, sanitation, electricity and water, and at times they include goods such as fertilizers. Increasing the prices of such services to the social marginal costs would increase governmental revenues. At the same time, it probably would increase efficiency by inducing people to use the true social marginal costs in making their use decisions. Moreover, it probably would reduce poverty through increasing access of the poor to such services because in current systems with nonmarket rationing it often is the poorest members of society that have least access—or, at least, least timely access or access to such services of relatively low quality.⁵¹ And it also might benefit the poor through facilitating increasing the quality of such services to desired levels in the sense of what quality levels would individuals like to obtain if they make their decisions on the basis of the true social marginal costs. In many cases these changes might most effectively be accomplished through privatization (3.1-1c). Whatever the nature of ownership of service provision, if there are distributional reasons for subsidizing the access of the poor to such services, these often could be accomplished more effectively through targeted subsidies to the poor than through universally subsidized often poor-quality services.

(1c) Policy changes that increase to efficient levels taxes on pollution: There are substantial negative production and consumption externalities in many developing countries that contaminate particularly water supplies and the air. Taxing the production of these effluents so that the private marginal cost equaled the social marginal cost would tend to increase efficiency. While it may be that the tradeoff between the negative effects of such externalities and market goods and services is lower for very poor people than for those who are better off, taxing such externalities also would probably result in welfare benefits for the poor because they typically incur substantial negative effects from such pollutants that not only are directly welfare reducing but also

⁵¹ Though the provision of low-quality services that primarily the poor elect to use can be viewed as a means of self-targeting such services to the poor.

increase disease risks (Pernia 1994, Quibria 1993). On the production side and on some aspects of consumption, however, there may be some negative effects on the poor including reduction in the demands for their labor and increases in the cost of some of their consumption (e.g., home cooking and heating).

(2) *Policy Changes that are likely to Increase Poverty and Increase Efficiency*
(“Lose-Win” Policies in the Northwest Quadrant)

(2a) *Policy changes that reduce wage and income tax rates:* Such changes reduce governmental tax revenues. Because such taxes typically are collected only on selected incomes, such as wages and salaries in multinational firms and some other large formal sector firms, ceteris paribus, the resulting effective tax structures distort incentives for hiring workers among different types of firms and for supplying labor to different types of firms. Therefore reducing such taxes is likely to increase efficiency. But the direct beneficiaries are likely to be those who are better off. The poor may be disadvantaged if this increases incentives to substitute more-skilled for less-skilled labor.

(2b) *Policy changes that increase taxes on poor workers:* This change could increase governmental revenues, though the collection costs might be substantial. Given the present incidence of wage taxes noted in (2a) primarily on high-skilled and high-paid formal sector workers, such a change would increase efficiency by reducing the variance in taxes on different types of labor. But they also would tend to reduce the demand for unskilled labor, the major asset of most of the poor.

(3) *Policy Changes that are likely to Reduce Poverty and Reduce Efficiency*
(“Win-Lose” Policies in the Southeast Quadrant)

(3a) *Policy changes to subsidize the employment of poor or low-skilled workers:* The introduction of such subsidies would reduce governmental revenues, but would tend to increase demands for poor or low-skilled workers. They also would appear to increase inefficiency by, at a minimum, distorting labor demands among different types of labor. There might be further distortions introduced, depending on the nature of the subsidies. For example, if the subsidies are given not directly for hiring poor or low-skilled labor but for producing goods or services that use such labor intensively, there would be additional distortions in the product market for such goods and services and in the factor markets for the other inputs that these production sectors utilize. However, if there are information problems among employers so that they underestimated the productivities of poor or unskilled workers due, for example, to emphasis on formal credentials, a subsidy for poor or low-skilled workers might increase efficiency (also see 3.1-1i).

(3b) *Policy change to reduce user charges on publicly-provided low quality services:* Reducing user charges on low-quality services such as low-quality public health clinics and primary schools would have negative revenue implications for the government. The poor would be among the beneficiaries of such changes in a direct sense because they tend to use such services relatively extensively. But if such users charges are reduced below the social marginal costs of providing such services, inefficiency is likely to be increased.

(4) *Policy Changes that are likely to Increase Poverty and Reduce Efficiency*
(“Lose-Lose” Policies in the Southwest Quadrant)

(4a) *Policy change to increase consumption taxes on basic commodities:* This policy change is likely to increase revenues. But it also would tend to increase inefficiencies by distorting consumption choices away from basic commodities. Moreover, it would tend to be anti-poor in a cross-sectional sense because the poor tend to have larger shares of their expenditures on basic commodities than do those who are better off. Further, it would tend to be anti-poor in a dynamic sense by encouraging shifts from consumption to investment, effectively shifting consumption to the future when, if there is secular growth in income, on the average people will be better off.

(4b) *Policy change to increase import and export taxes on basic agricultural products:* This policy change may or may not increase governmental revenues (depending on the internationally-traded quantity responses to the price changes). But it is likely to have a negative impact on the poor because of their concentration in most developing countries in rural areas and in agricultural production and other work related to agriculture. Increases in these taxes also increase the distortion between international and domestic prices, which is likely to increase inefficiency.

4. Summary and Conclusions

Some prominent recent reviewers of development experience associated with the ADB Institute have emphasized the importance of economic growth as a means or at least as a correlate of poverty alleviation. Srinivasan (2000), for example, claims that the early post-independence leaders in many developing countries stressed that growth is an instrument to obtain the objective of poverty alleviation. Quibria (2002) reviews the East Asian “miracle” experience and concludes that there has been a robust association between growth and poverty alleviation.

Krueger, in her talk on “Linkage Between Growth and Poverty Reduction” at the *ADB Third Anniversary High-Level Symposium on Alternative Development Paradigms and Poverty Reduction*, develops a simple two-by-two policy taxonomy between increasing the incomes of the poor and growth that is summarized in Part 1 of this paper. She argues that both incomes of the poor and economic growth can be enhanced substantially by introducing and increasing “win-win” policies that do both (the northeast quadrant in the Figure 1 representation of her taxonomy) and eliminating and reducing “lose-lose” policies that do neither (the southwest quadrant). She suggests that this simple prescription, if followed, readily would lead to much better policy choices for developing countries and thus better outcomes in these economies. She indicates four simple steps that should be followed to (1) eliminate “lose-lose” policies (southwest quadrant), (2) eliminate so-called “anti-poverty” programs that benefit the better off at the cost of growth (also southwest quadrant), (3) promote “win-win” policies (northeast quadrant) and (4) target selectively to the poorest of the poor (southeast quadrant). In addition she suggests that a lot of research is needed to clarify tradeoffs between alleviating poverty and stimulating growth (northwest and southeast quadrants) and to clarify the nature of the political economy leading to policy choices. But she suggests that, although there may be high returns to such research, there also are likely to be high returns to implementation, without further research, of her four points.

Krueger's simple two-by-two policy taxonomy between increasing the incomes of the poor and growth and her prescription for four immediate steps without waiting for the outcomes of further research is very attractive because of its apparent simplicity and clarity. The basic purpose of this paper is to consider this framework and possible modifications of it in greater depth.

Part 2 of the paper considered in further depth a number of aspects of Krueger's simple two-by-two policy taxonomy between increasing the incomes of the poor and growth. Such considerations suggest that the specifics and the simplicity of her taxonomy may be misleading in some important respects.

First, her choices of objectives are different than the standard policy motives because increasing the income of the poor is claimed to be but one, albeit an important, aspect of poverty alleviation and because economic growth is not the same nor necessarily consistent with the standard economic policy motive of increasing efficiency. Of course her two-by-two objectives can, and in my judgement should, be replaced by poverty alleviation and increasing efficiency. But to do so involves not only re-labeling, but also dealing with more difficult questions of measurement.

Second, there are major empirical questions related to measuring the objectives and policies and with regard to estimating the impact of policies on the objectives. Krueger basically ignores these and assumes that assignments easily can be made of many policies to the appropriate quadrants in her two-by-two policy taxonomy. But in my judgement, even for many of the policies that Krueger suggests can be easily dealt with in her four suggested steps, empirical information about their impacts is very limited and often simple associations between crude measures of the outcomes of interest and of the policies are all too easily interpreted to reflect the causal impact of policies, without controlling for the measurement problems and that the policies themselves are the result of behavioral decisions. And the relatively small number of studies that do compare estimates with and without controls for these estimation problems in some instances report that estimates of policy effectiveness change considerably depending on how the measurement and estimation issues are dealt with.

Third, ignoring the questions of what are the policy objectives and the estimation issues, there is the further question of whether the Krueger dichotomies regarding policy impacts—either increase or decrease incomes of the poor, either increase or decrease growth—gain in simplicity enough to offset the loses due to the same simplicity. To illustrate I alter the methodology to include continuous measures of policy impacts, which permits a number of insights beyond those possible with Krueger's dichotomized approach: (1) The relative effectiveness of various policies can be shown so that it is clear on which policies to place emphasis and an "optimal policy possibility frontier" can be defined, at least for policies that involve relatively small changes so that there are approximately constant returns to scale. It is possible within such a framework that some "win-win" policies, for example, are not on this frontier and are not desirable to pursue, in contrast to Krueger's prescription to pursue any "win-win" policy. (2) Some policies that are *not* in the "win-win" northeast quadrant, under such assumptions, may be on the optimal policy possibility frontier and thus desirable to give very high priority to—again, in contrast to Krueger's prescriptions. In fact it may be the case that the optimal policy possibility frontier is defined entirely by "win-lose" and "lose-win" policies in the northwest and southeast quadrants and includes *no* "win-win" policies in

the northeast quadrant, again in sharp contrast to Krueger's prescription. (3) In such cases, if there is a social welfare function defined over the policy objectives, the optimal policy package (that might include only one policy) can be selected by the tangency of the social welfare function with the optimal policy possibility frontier. (4) If there are eventually decreasing returns to scale to devoting resources to each policy (as seems likely a priori), then optimal policy packages are likely to include a larger number of policies than if there is constant returns to scale, but—if there are not important discontinuities—optimal policy packages can be constructed at least approximately by considering the optimal policies for each in a sequence of allocations of resources to policies.

Fourth, there are a number of additional questions that arise with further investigation of Krueger's proposed taxonomy that are largely independent of whether dichotomous or continuous policy impacts are considered (though the fourth one below is sharper with continuous policy impacts). (1) Krueger's presentation is timeless, but time and the time paths of dynamic responses to policies may be critical, particularly with regard to political support for policies (for which reasons policymakers may have relatively high discount rates). (2) Krueger's taxonomy is presented as independent of the level of development, but the level of development—and related market and institutional development—may condition considerably where particularly policies are located in the policy impact space. (3) Krueger notes that it is not clear that the underlying political economy that led to existing policies would imply that her taxonomy would improve policies. One possibility is that policymakers have poor information and the clarity of her scheme would improve their information and therefore their policy choices. But an alternative (and not exclusive) possibility is that policymakers have different objectives and have knowingly made past policy choices to pursue—perhaps very effectively—those objectives. If so, then the clarity offered by Krueger would seem to improve policy choices from the perspective of the social welfare function that she implicitly is using only if the greater clarity increased pressures on policymakers to adopt the policies that she would characterize as “win-win” because relevant domestic or international constituencies could utilize the greater clarity to pressure effectively for such policies. (4) Krueger's taxonomy seems to imply, at least for a class of policies, symmetry that she does not note explicitly. That is, the policy to increase the use of a policy instrument has the opposite effects as the policy option to lessen the use of that instrument (e.g., increase versus reduce a tax rate by 10%). For this class of policies, the “lose-lose” policies are just the opposite of the negative of the “win-win” policies, so effectively the first and third steps in her prescribed four steps are the same. If such symmetry is incorporated into the continuous policy impact space, there may be some interesting effects. For example, “win-win” policies may be dominated by the elimination of “lose-lose” policies. Also the policy possibility frontier may include both a policy and the negation of that policy, with the optimal policy package including one or the other depending on the tradeoffs between the policy objectives in the relevant social welfare function. (5) Krueger focuses on developing country policy choices under the implicit assumption that these choices are “small country” in the sense that they are not likely to affect international markets. But there may be relatively high returns to developing countries in terms of their policy objectives to attempt to affect international markets through, for example, liberalization

of trade in agriculture and textiles/garments through a new World Trade Organization round. Moreover, the Krueger concerns in principle apply equally to evaluation of policies implemented or advocated by developed countries and international organizations, not just to developing countries.

Part 3 of the paper provided some illustrations of policy assignments to two-dimensional continuous policy outcome space with the two dimensions being poverty alleviation and increased efficiency. Because of the limited empirical basis for such assignments, they are made in substantial part on the basis of a priori frameworks for what determines behaviors and outcomes for the poor (summarized in Part 2) informed when possible by empirical studies. Given factors such as the severe limitations of available empirical studies, that the assignments may be conditional on the level of development and on the time period considered, and the possible problems with returns to scale in devoting resources to policy, these assignments are subject to considerable uncertainty and in some cases may engender considerable debate. Nevertheless, hopefully such assignments are illustrative not only of the problems but of the potentialities for using some modification of the Krueger simple two-by-two taxonomy for policy guidance. They also suggest that over time there probably has been a move away from lose-lose policies, though some still remain. They further point strongly to the need for further research with better policy evaluation that (a) controls better for the endogenous nature of policy choices, (b) addresses the impact of policy changes directly on efficiency, (c) addresses the impact of policy changes directly on poverty alleviation, and (d) considers more directly how particular policies compare with alternatives for achieving particular objectives—all of which is additional to the need for further research on the political economy measures and other factors such as information problems that led to the implementation of many current policies that seem questionable in light of a modified Krueger taxonomy.

And what is the bottom line for this paper? The apparent attraction and power of the Krueger simple two-by-two taxonomy for policy guidance is diminished by consideration of the complexities of reality. But yet there seems to be some possibility of useful insights through applying a modified version of it—say, with continuous dimensions of poverty alleviation and increased efficiency—in particular contexts with particular institutions and markets. Such applications in some cases may provide useful insights about policy priorities. They also are likely to raise important questions about what are the policy impacts in that context and why political economy processes did not lead to “better” policy choices in that context. Both the characterization of the policy choices and the research questions that are raised by such a process may be quite valuable.

Figures

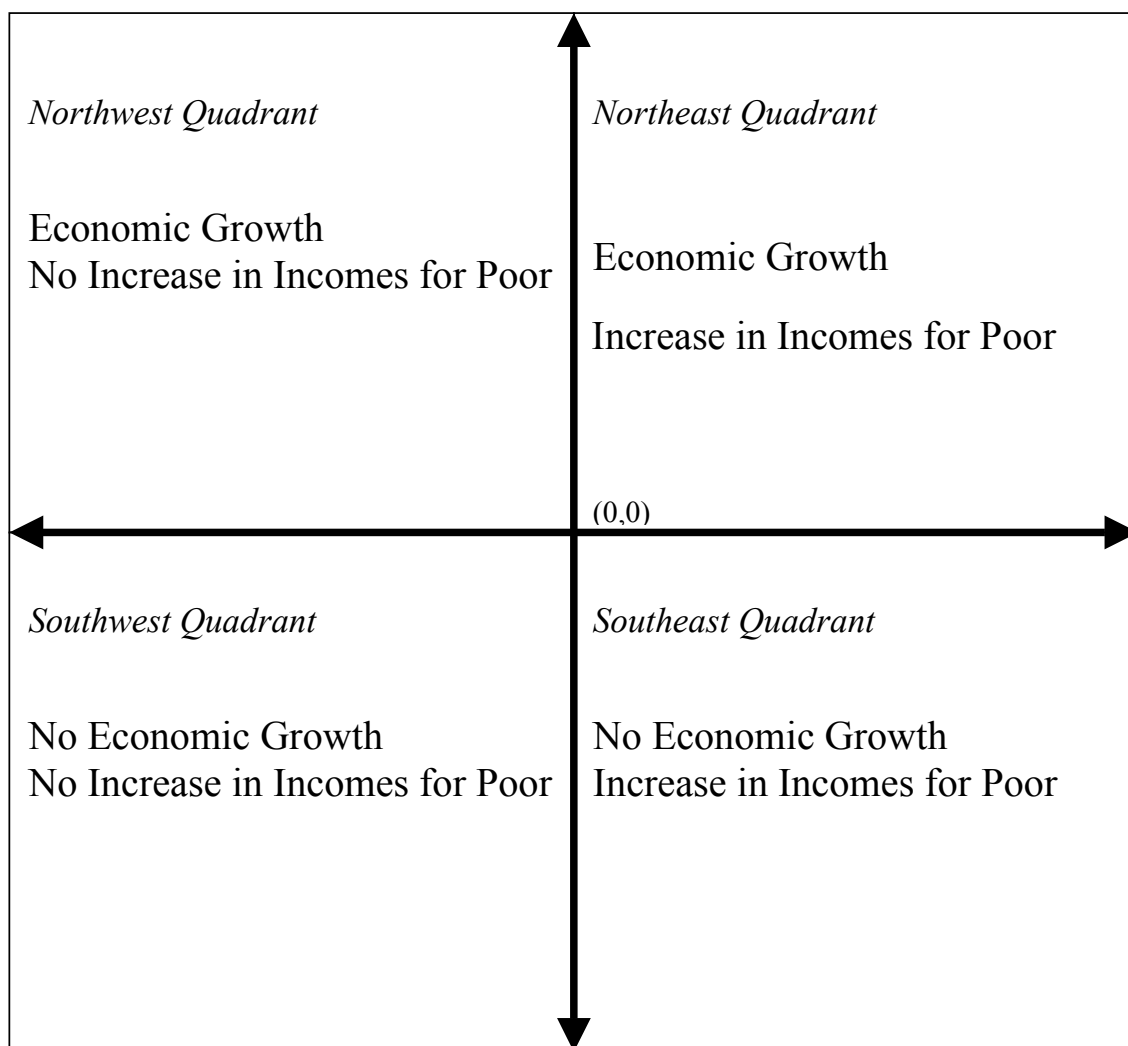


Figure 1. Krueger's Simple Two-by-Two Policy Taxonomy Regarding Increases in Incomes for Poor and Economic Growth

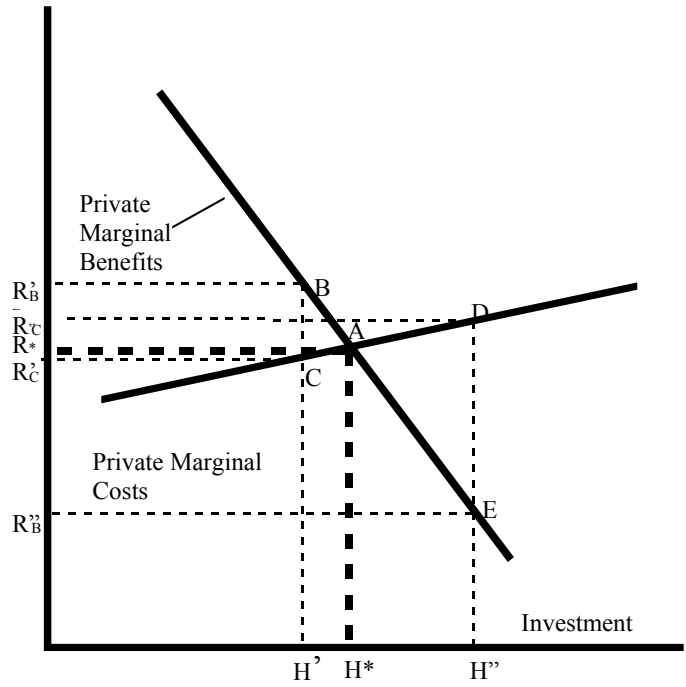


Figure 2a. Private Marginal Benefits and Private Marginal Costs of an Investment for an Individual

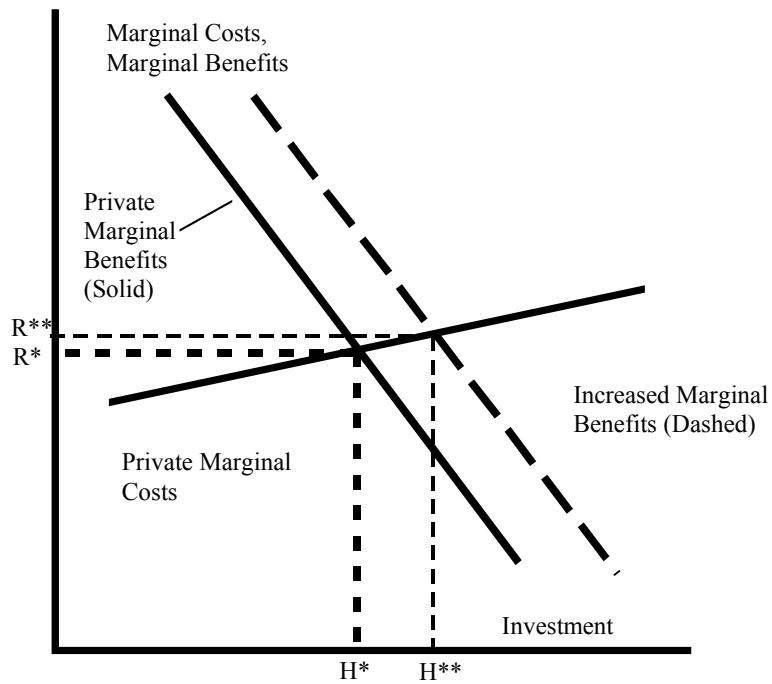


Figure 2b. Private Marginal Benefits and Private Marginal Costs of Investment for an Individual, with Increased Marginal Benefits (Dashed Line)

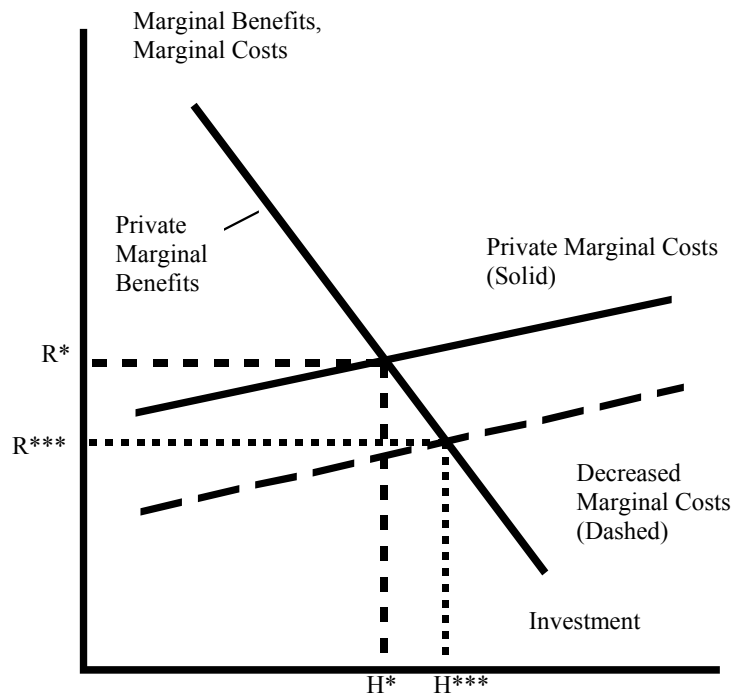


Figure 2c. Private Marginal Benefits and Private Marginal Costs of Investment for an Individual, with Decreased Marginal Costs (Dashed Line)

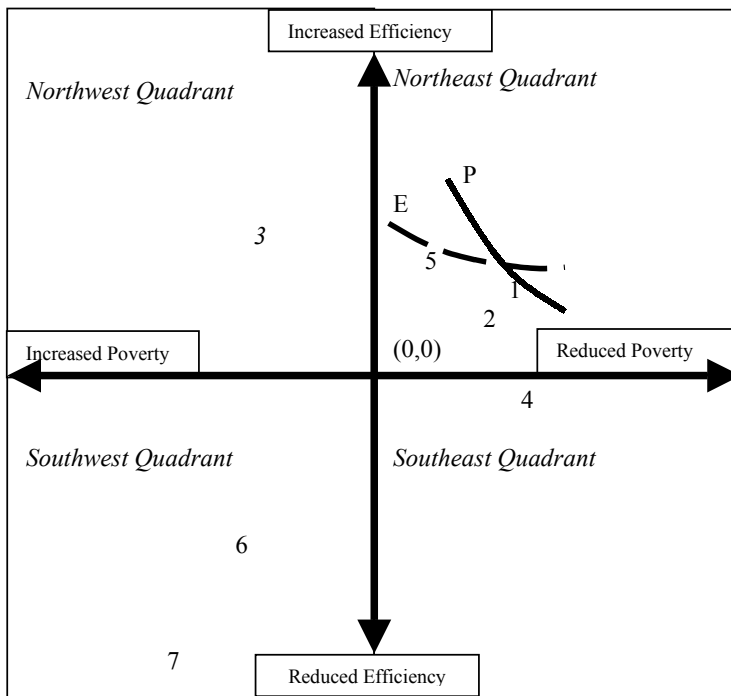


Figure 3a. Policy Taxonomy with Continuous Measures of Efficiency and Poverty Alleviation

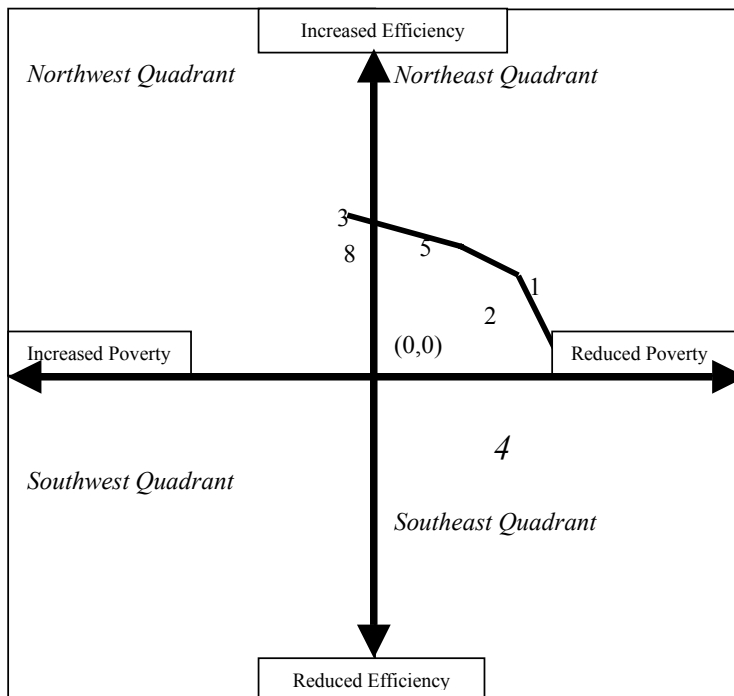


Figure 3b. Policy Possibility Frontier for Policy Taxonomy with Continuous Measures of Efficiency and Poverty Alleviation and Constant Returns to Scale

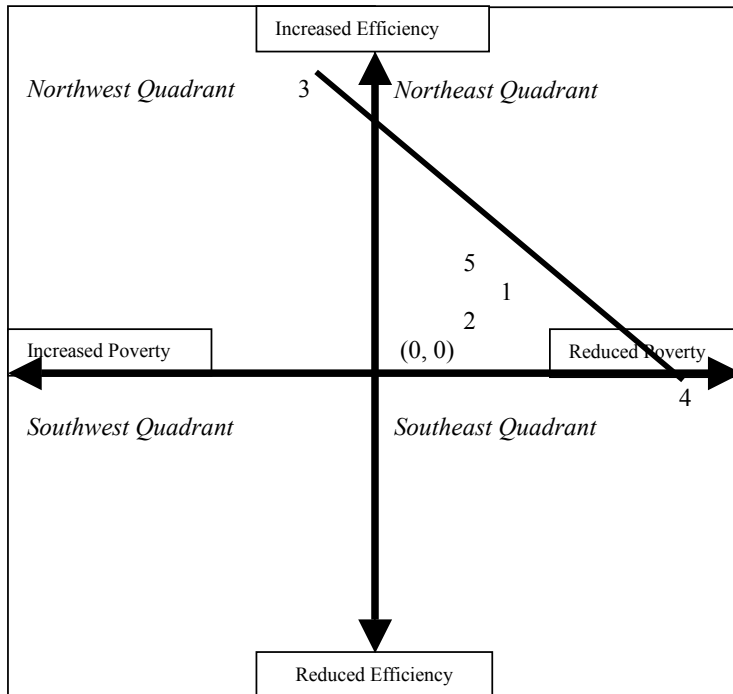


Figure 3c. Policy Possibility Frontier for Policy Taxonomy with Continuous Measures of Efficiency and Poverty Alleviation and Constant Returns to Scale: A Case with No “Win-Win” Policies on Policy Possibility Frontier

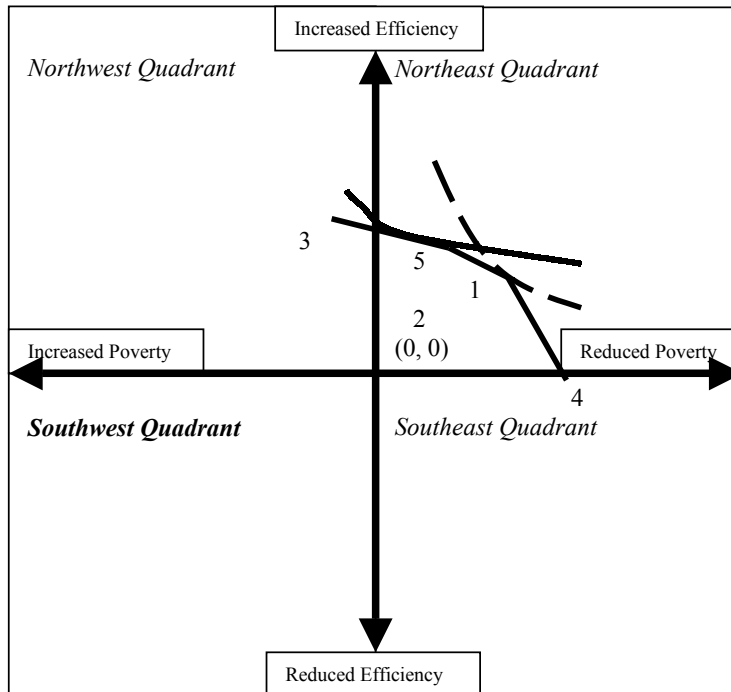


Figure 3d. Policy Possibility Frontier for Policy Taxonomy with Continuous Measures of Efficiency and Poverty Alleviation and Constant Returns to Scale: Optimum Policy Packages with One or Two Policies

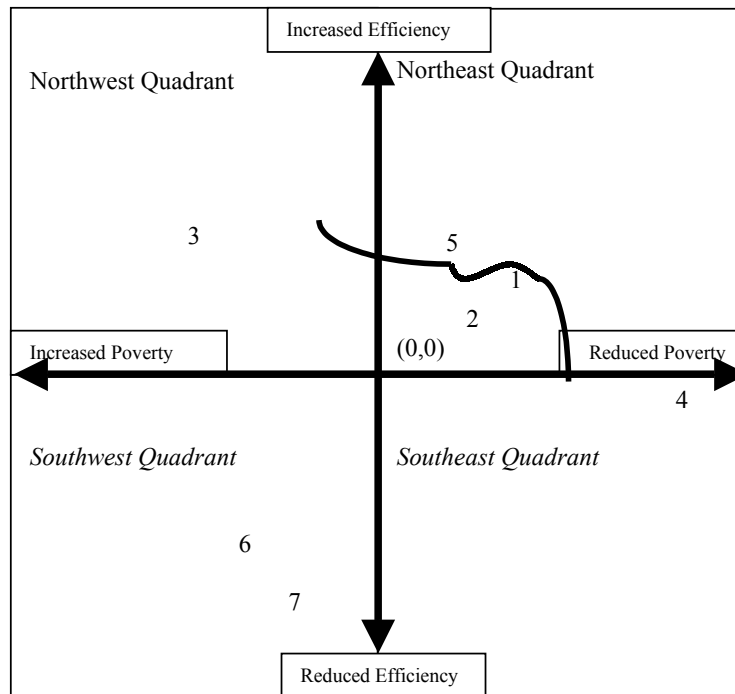


Figure 3e. Policy Taxonomy with Continuous Measures of Efficiency and Poverty Alleviation with Policies 3 and 5 having Increasing Returns to Scale and Policies 1 and 4 having Decreasing Returns to Scale

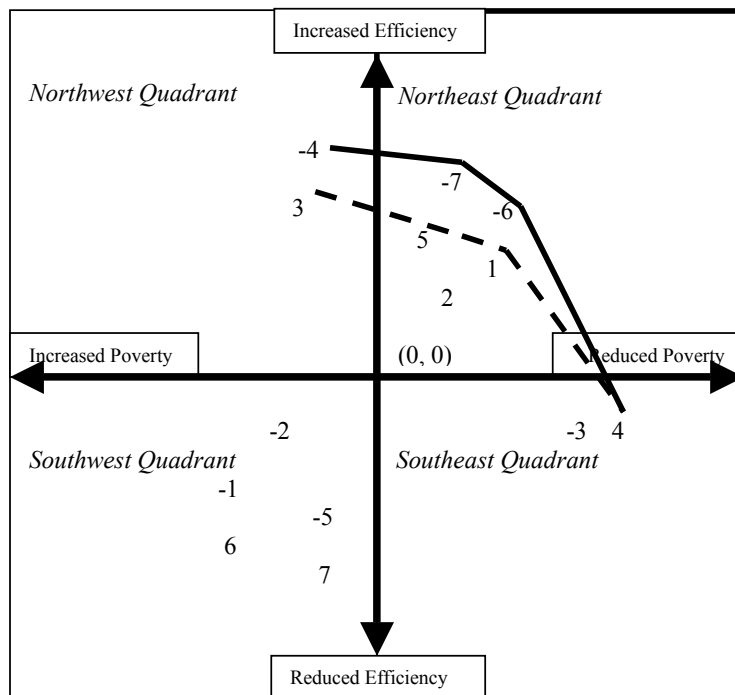


Figure 3f. Policy Taxonomy with Continuous Measures of Efficiency and Poverty Alleviation with Symmetry of Policy Effects and Constant Returns to Scale

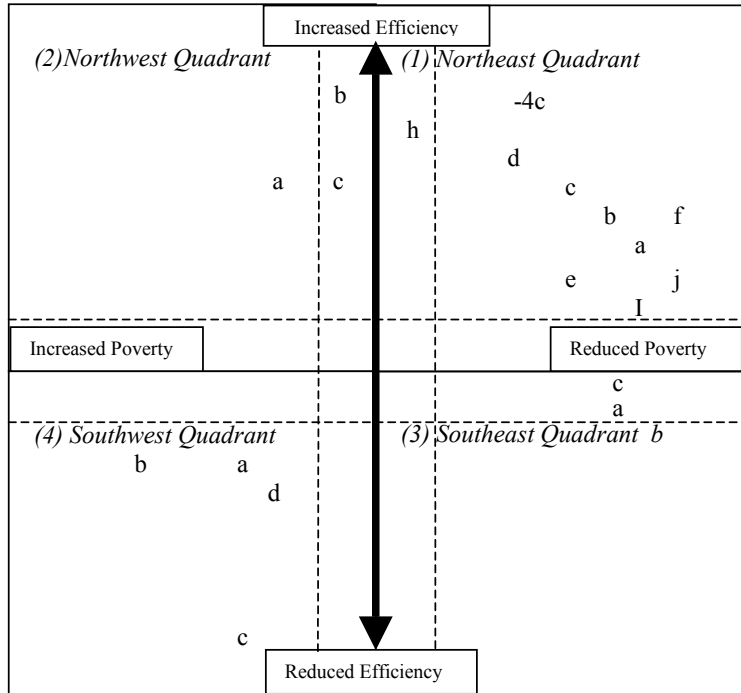


Figure 4a. Illustrative Policy Taxonomy with Continuous Measures of Efficiency and Poverty Alleviation for Policies Discussed in Section 3.1.

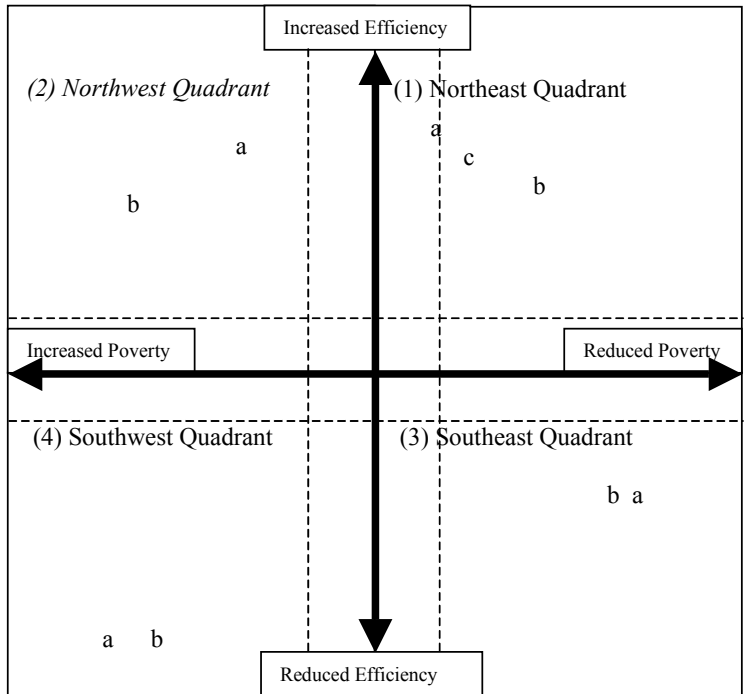


Figure 4b. Illustrative Policy Taxonomy with Continuous Measures of Efficiency and Poverty Alleviation for Policies Discussed in Section 3.2.

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HOW TO CONTACT US?

Asian Development Bank Institute
Kasumigaseki Building 8F
3-2-5 Kasumigaseki, Chiyoda-ku,
Tokyo 100-6008 Japan

Tel: +81 (03) 3593-5500
Fax: +81 (03) 3593-5571
E-mail: info@adbi.org
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