

**Evaluation of Poverty-Alleviation Impact of Alternative
Development Strategies and Adjustment Responses in Africa and Asia**

By

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Paper prepared for the 1999 World Bank Conference on Evaluation and Poverty Reduction, Washington, DC, June 14-15, 1999.

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Relative poverty incidence has increased in subSaharan Africa (SSA) and fallen significantly in both East and South Asia according to the large-scale international data sets that have been compiled and analyzed to examine the evolution of poverty over time at least until 1993 (Chen, Datt, and Ravallion, 1994 and Ravallion and Chen, 1997). Subsequently, country level information on the incidence of poverty suggests that throughout Asia the trend towards a reduction in poverty continued unabated until the Asian Financial Crisis of 1997, while the picture in SSA was much more mixed with some countries showing slight improvements and others showing a further increase in the various poverty measures (headcount ratio, poverty gap, and poverty gap square).

The Asian Financial Crisis brought to an end the successful poverty reduction trend in most East and Southeast Asian countries, e.g. the headcount ratio in Indonesia was estimated to have risen from 11% in 1997 to anywhere between 14 and 23% while in South Korea, the proportion of urban households below the poverty line rose from 7.5% in 1997 to 22.9% in the last quarter of 1998 (Subbarao, 1999).

The first question that is explored in this paper is why East and South Asia have been so much more successful in alleviating poverty than SSA and to what extent this performance can be ascribed to different initial conditions and radically different development strategies.

The second objective of this paper is to review critically the various evaluation procedures, techniques and methodologies that are available to estimate the net impact on poverty incidence of alternative development strategies and packages of policy measures and institutions (particularly within the context of adjustment and in response to a financial crisis) while controlling for different initial conditions.

1. Development Strategies Successful in Alleviating Poverty

After a half century of development experience, there is a broad consensus regarding the major strategic elements of that contributed to poverty retreating faster in some regions or countries than in others. These elements are 1) a rapid poverty reduction has been much more likely to occur in countries and periods characterized by rapid economic growth; 2) an outward orientation and a strategy of export-led growth, based on labor intensive manufacturers is particularly conducive to poverty alleviation; 3)

emphasizing agricultural and rural development at an early stage and encouraging the adoption of Green Revolution technologies contribute to productive employment creation and lower food prices thereby benefiting the poor; 4) investment in physical infrastructure and human capital which adds to the resource endowment of the poor unskilled households; 5) institutions that provide the right set of incentives to farmers and entrepreneurs such as property rights and a reliable and transparent judicial system and ,finally; 6) social policies to promote health and education (particularly female primary education) and social capital as well as minimal safety nets to help protect not only the chronically poor but also those households caught in transient poverty (Asian Development Bank, 1997; and World Bank, 1999).

In contrasting the overall development performance of Asia and SSA, one is struck by the very divergent rural development paths followed by these two regions. In fact, a large part of the rather dismal performance of SSA in reducing poverty can be ascribed to the particular rural development path that it adopted. Why did the rural sector in SSA evolve so differently than in other regions and particularly Asia? A combination of different initial conditions, policies, institutions and cultural and community norms would appear to be at the heart of the rural development path followed by Africa. In a recent paper, Platteau and Hayami (1996) provide a comprehensive and systematic explanation of why “subSaharan Africa appears as a perfect counter-model to the East Asian experience” In a nutshell, their thesis is that “differences in population density are responsible, through short- or medium-term physical and economic effects or through (varied) long-term social and cultural effects (effects on cultural values and norms mediated by social and family patterns) for most of the divergence observed between rural development performance in SSA and Asia”. (p. 3)

1.1 Physical and Technological Environment

First, the physical and technological environment in SSA was significantly less favorable to development than that of Asia. The initial resource endowment particularly in terms of access to land is likely to be a crucial determinant of the pattern of agricultural development a country or region will follow. Asia is characterized by scarcity of land resources relative to population and labor force as compared with Africa as Platteau and Hayami (1996, p. 4) argued,

¹ I acknowledge with thanks the research assistance of Yun H. Chung.

“The high population density and the unfavorable land-labor ratio having induced more intensive land use, resulting in high percentages of land used for agricultural production,..., by building better land infrastructure... above all, irrigation. The better land infrastructure created suitable conditions for the introduction of modern land-saving technologies such as high yielding varieties and chemical fertilizer.”

If the amount of arable land per agricultural worker is taken as a measure of access to land, the latter ranged from 0.3 hectares of arable land to agricultural worker in East Asia to 0.8 in South Asia (and 0.5 for the whole of Asia) and 1.2 in Africa in the early nineties.

Africa is also characterized by a great scarcity of physical infrastructure—particularly road networks within rural areas (as well as farm to market roads), and between rural and urban areas. There is also tremendous underinvestment in irrigation projects—only 4.6% of SSA agricultural land is irrigated compared to 38.4% in Asia (Khan, 1997, Table 5). The quantity and quality of the road network play a crucial role in facilitating trade at all levels, intraregional, interregional, and international. This network is tremendously underdeveloped in SSA and is a major cause of 1) the very high transportation costs that prevail, 2) the high price spreads between initial agricultural producer prices and ultimate consumer prices; 3) segmented agricultural product markets; and 4) the very limited market-orientation on the part of the small African farmers who produce largely for subsistence with low marketable surpluses.

In short, the above interrelated factors—together with technological constraints and discriminatory policies against agriculture (that are discussed subsequently)—go a long way in explaining the essentially stagnant agricultural production picture in SSA over the last three decades or so.²

The extent of market integration for agricultural products is much more limited in Africa than in Asia. Evidence to this effect is that 1) average producer prices expressed as a percentage of final consumer prices in the African countries range from 30% to 60%; whilst in Asia they range from 75% to 90% and 2) the regional price differences within countries were also substantially larger in Africa than in Asia (Ahmed and Rustagi, 1984).

As a logical consequence of high transportation costs and segmented markets the relative size of the marketable surplus (i.e. the proportion of farm household output sold out of total farm household production) is significantly higher in Asia than in SSA. In other words, African small farmers tend to be

² The discussion which follows is largely based on Ali and Thorbecke (1998) and Thorbecke (1992).

much more subsistence-oriented than their Asian counterparts. Clearly a number of specific characteristics of the environmental elements such as the previously discussed large price spread from farm gate to ultimate consumer reflecting high transportation and transaction costs and the scarcity of road infrastructure operate as binding constraints on the supply response of small farmers.

Still another crucial constraint faced by Africa is an exceptional diversity of agro-climatic and soil characteristics as well as farming systems and socioeconomic conditions. This diversity is not only across SSA countries but also within countries and even regions. Another characteristic of SSA agricultural production is that it occurs almost completely on rain-fed land. Given these characteristics, Africa is at a great technological disadvantage compared to Asia. The Green Revolution technologies have been extremely successful in creating new and highly productive high yielding varieties of rice, wheat and maize grown on irrigated land but have had only very limited success coming up with improved new varieties applicable to rain-fed land and other crops. Thus, given the diversity of products grown in SSA on rain-fed land that is itself agronomically heterogeneous, a standard technical package comparable to single rice varieties that work so well in Asia has no chance to succeed within the context of Africa.

A final environmental feature worth noting is that land is much more unequally distributed in SSA than in Asia. In many African countries dualism prevails between a sector where small subsistence farmers produce domestic food crops and another sector characterized by large-scale estates (a legacy of the colonial era) producing cash and export crops. It has been well documented that unequal land distribution impedes growth and is a significant explanatory variable contributing to poverty (Deininger and Squire, 1998).

1.2 Policies, Institutions, Cultural and Community Norms Affecting Agriculture and the Rural Sector

The major mechanism to obtain the resources needed for industrialization at an early stage of development is through an intersectoral transfer out of agriculture. Typically developing countries tax their agricultural sector heavily through direct taxation (usually by turning the internal terms of trade against agriculture through such interventions as artificially low consumer prices for food and high input prices); and indirect taxation (mainly through the impact of an overvalued exchange rate on agricultural tradables). In a careful empirical study of intersectoral resource flows, Teranishi (1997) showed that there was no

significant difference in the (high) degree of direct and indirect taxation on agriculture among the four regions, East Asia, South Asia, Latin America, and SSA, but that the regional differences in infrastructure investment in agriculture were enormous. In East Asia and to a lesser extent in South Asia, the adverse effects of indirect taxation and direct taxation of agriculture were counterbalanced by government efforts in agricultural development particularly in the area of infrastructure investment, resulting in a relatively low level of total policy-based resource shift from agriculture.

The explanation that is given for the radically different treatments of agriculture in Asia and in SSA and the consequent very disparate performances is that in SSA government used “divisible benefits” in a very selective way to keep or win over agricultural actors who supported the incumbent political regimes regardless of their contribution to production.

Similar conclusions were reached by a OECD Development Centre large scale research project to evaluate the effects of policies and institutions on agricultural performance over time in six poor developing countries, four in Africa and two in Asia (Thorbecke and Morrisson, 1989). In addition, one interesting finding of the comparative analysis is that in those countries in which foodstuff prices were most depressed as a result of the actions of the government, aggregate output either fell or stagnated. For example, in Tanzania, the sheer magnitude of the burden imposed on both the domestic food crop and cash crop export sectors were shown to have short-circuited the development process and, more specifically, jeopardized the desired industrialization. The ridiculously low regulated food price and the official market led to a blooming parallel market where at one time prices were eleven times higher than the official food price.

East and South East Asian countries, in general, followed an agricultural development-based industrialization strategy, in contrast, with SSA that relied much more on a forced import-substitution industrialization discriminating heavily against agriculture.

Institutions in addition to policies can affect agricultural and rural performance in a major way. In what follows, a few examples of inappropriate institutions within the context of SSA is given that contributed significantly to the dismal performance of the agricultural sector. Perhaps the most extreme example of inappropriate organizations and institutions is the forced villagization and collectivization program imposed in Ethiopia which wrecked havoc with agricultural production incentives (Khan, 1997).

In Tanzania, the Arusha declaration of 1967 signified a complete break with the previous, relatively free enterprise regime. The villagization program led to massive resettlement and dislocation which was compounded by the government intervention on both the production and distribution sides helping to trigger a vicious circle of cumulatively worsening agricultural performance.

Sahn and Sarris (1994) in a study of the evolution of states, markets and civil institutions in rural Africa based largely on four countries (Guinea, Malawi, Mozambique and Tanzania) concluded that state mandated and sponsored systems of production, failed dismally. Production and yields plummeted in some cases and stagnated in others. Clearly Africa in the last few decades was subjected to a lot of social and institutional experimentation largely based on ideological beliefs rather than pragmatic and empirical testing.

Finally, a case can be made that the very different physical and social-economic settings prevailing in SSA and Asia, respectively, have led to the evolution of different norms—in the former case, growth-retarding and in the latter case, growth-enhancing. More specifically, the land abundant conditions and corporate land tenure conditions in Africa constrain capital accumulation and helped foster egalitarian redistributive norms, in contrast with the land-scarce and individual property rights conditions in Asia that encouraged cooperative actions and reciprocity norms (Platteau and Hayami, 1996).

2. Evaluation of Poverty Impact

In a recent methodological note on impact evaluation, a major conclusion that was reached was that “identification of the counterfactual is the organizing principle of a good impact evaluation”. In order to determine the effects of the intervention, it is necessary to identify what would have happened without the intervention. Clearly if the intervention consists of a specific investment or technical assistance project, or safety net there are operational methods to compare the impact on poverty of the intervention with that of the counterfactual of “no-intervention”. The more specific the intervention, the easier the task.

But how do we go about evaluating the effects on poverty alleviation of 1) a long-term development strategy consisting of a whole set of interrelated interventions, policies and institutions; or 2) a medium or short term structural adjustment and stabilization strategy or strategy in response to a financial

crisis combining a variety of fiscal, monetary, trade policies and safety net measures? How do we determine a valid counterfactual and what methodologies, procedures and techniques are available to judge the poverty effects of these strategies?

2.1 Retrospective Historical Comparisons

In the case of a long-term strategy, there does not appear to be any substitute for sound retrospective historical comparisons of the socioeconomic performance of groups of countries over time that followed alternative strategies. The relevant counterfactual scenario, in this case, would be the growth or poverty outcomes achieved under an alternative strategy to the one actually implemented. Here we enter the domain of economic history-cum-political economy where practitioners paint with a broad brush and use a combination of quantitative and qualitative approaches to converge on an overall assessment. The discussion in the previous section comparing the rural development strategies of Africa and Asia is an example of this method.

Perhaps the quintessential example of this approach is the World Bank Report on the East Asian Miracle (World Bank, 1993). At the outset this report raises the key question whether some selective interventions were, in fact, good for growth and by extension for poverty alleviation? As the report made clear, in addressing this question, a central methodological problem had to be faced.

“Since we chose the high performing Asian economies for their unusually rapid growth, we know already that their interventions did not significantly inhibit growth. But it is very difficult to establish statistical links between growth and a specific intervention and even more difficult to establish causality. Because we cannot know what would have happened in the absence of a specific policy, it is difficult to test whether interventions increased growth rates.... Thus, in attempting to distinguish interventions that contributed to growth from those that were either growth-neutral or harmful to growth, we cannot offer a rigorous counterfactual scenario. Instead, we have to be content with what Keynes called an “essay in persuasion”, based on analytical and empirical judgments”. (World Bank, 1993, p. 6)

Such “essays of persuasion” are the more convincing the higher the quality of the underlying information and statistical data and the greater the competence of the analysts. Thus, a good example of an analytical evaluation of the impact of alternative agrarian policies on development over an extended period of time is that of Binswanger and Deininger (1997). On the basis of the semi-formalized approach, these

authors provided a strong rationale for the rural development policies followed by East and South East Asian countries—discussed in section 1 of this paper.

Often pair-wise comparisons of the performance of countries at relatively similar stages of development and similar resource endowments but adopting different strategies can be enlightening. Thus, a comparison of the performance of Tanzania and Kenya in the seventies and early eighties can throw some light on the impact of a socialist strategy based on agricultural collectivization and state sponsored industrialization in contrast with a more free market oriented strategy. More recently, a comparison of the policies and institutions that allowed Taiwan to withstand the onset of the Asian Financial Crisis much more successfully than South Korea again provides potential lessons that might be transferable to other countries in the future (Thorbecke and Wan, 1999).

2.2 Cross-sectional and Time Series Statistical Inferences

In a much more limited sense, statistical inferences regarding poverty alleviation impact can be derived from large scale, cross-sectional and time series (sometimes pooled) observations. In this approach, ideally, an underlying structural and behavioral model should be built yielding a reduced form equation that it is subsequently statistically tested. In many instances, the underlying model is not explicitly presented so that the multiple regression equation specification that is empirically tested appears to be or is ad hoc. In any case, the number of explanatory variables that can be used to estimate the poverty alleviation effects either directly or indirectly is limited so that this approach can only be used to explore the impact of a few specific policies (such as an outward-orientation) and specific initial conditions (such as the extent of inequality in initial resource endowment, e.g. land) on poverty alleviation. This approach is clearly ill-suited in comparing the impact of broad based development strategies.

Again, because of space limitation, only a few examples of this approach will be mentioned here. Ravallion and Chen (1997, p. 380) using household surveys for 67 developing and transitional economies over 1981-94 conclude that “there is a strong association between the greater growth in average living standards and the rate at which absolute poverty fell. In terms of elasticities, the response of the poverty measures to changes in average consumption is even stronger for lower poverty lines. The benefits of

higher total consumption appear to be spread quite widely, on average.” On the basis of a new large-scale data set of 682 observations covering 108 countries, Deininger and Squire (1996, p. 588) concluded that,

“aggregate growth was associated with an increase in the incomes of the poorest quintile in more than 85% of the 91 (growth) cases.... To sum up, our data suggest no systematic relationship between growth of aggregate income and changes in inequality as measured by the Gini-coefficient... especially because changes in inequality tend to be relatively modest, we find a strong link between overall growth and a reduction in poverty. This link supports the hypothesis that economic growth benefits the poor in the large majority of cases, whereas economic decline generally hurts the poor.”

Finally, in another paper Deininger and Squire (1998) regress growth on initial GDP, a measure of initial income inequality, investment, a black market premium, and education. Deininger and Squire, (1998, p. 284) reach the following conclusions:

“First, we find that initial land inequality is important for the poor...but not for the rich whose income growth is not significantly affected by this variable... Second, we find that investment is significant for all individual quintile groups...the poor are likely to benefit disproportionately from aggregate investment... Growth-enhancing policies are..., at least in the medium term, not inconsistent with the goal of poverty alleviation... The policy conclusion that emerges directly from this discussion is that the accumulation of new assets is likely to be a more effective way of reducing poverty than efforts to redistribute existing assets.”

Notwithstanding the robust results yielded by the above studies, one should be aware of the limited and largely ad hoc specification of the regression equations on which they were based. In particular, correcting for fixed country affects includes so many unobserved and omitted variables that one should be careful in interpreting the findings.

2.3 Computable General Equilibrium Models (CGEs) and Macro econometric Models

When the set of actually implemented (or to be implemented) policy measures is not too extensive and occurs during a specific relatively short period of time, CGEs provide an analytical methodology to simulate the impact of a counterfactual scenario and compare it to that resulting from the actual set of policies.

This tool has been fairly widely used to explore the impact of adjustment and stabilization policies on equity and poverty. Perhaps the most well known examples are the OECD research program on “Adjustment and Equity”, and the work of the Cornell team on the effects of the adjustment on poverty in SSA. By using country-specific general equilibrium models reflecting the underlying socioeconomic structure and the behavior of the major actors (including the government) the impact of counterfactual scenarios including the consequences of the country not adjusting, or only marginally adjusting could be

simulated. Under the OCED project, five country models were built (including a large scale Indonesian model integrating a real and financial sector by Thorbecke, 1992 and, in general, it was found that adjustment was not inconsistent with a more equitable income distribution and poverty alleviation (Bourguignon and Morrison, 1992). Likewise the Cornell project based on five CGE models (Cameroon, Gambia, Madagascar, Niger and Tanzania) concluded that adjustment had not hurt the poor (Sahn, Dorosh and Younger, 1996). The CGE methodology potentially corrects for the major drawback of the so-called “before and after” approach. Thus, a worsening of socioeconomic conditions after adjustment, as compared to the prevailing situation before adjustment, cannot necessarily be ascribed to, and causally linked to adjustment. It is quite possible that the conditions might have deteriorated even further in the absence of managed adjustment.

Since CGE models are fully calibrated on the basis of an initial year social accounting matrix (SAM) that provides a set of consistent initial conditions—and the SAM, as such, does not contain information on intra-socioeconomic households group income distribution, it follows that conventional CGEs can only simulate a impact of shock or a package of policy measures on the representative household in each group. This amounts to the implicit assumption that the variance of income within a group is zero. To the extent that poverty is pervasive and is likely to affect many socioeconomic household groups (albeit to different degrees) it appears essential in any analysis of the impact of an exogenous or policy shock on poverty to start with information on intra-group income distribution. Increasingly as more income and expenditure surveys become available, it is possible to generate the within-group income distributions prevailing in the same base year as that of the SAM used to calibrate the general equilibrium model.

Thus a major weakness of existing CGEs used to derive the distributional impact of various macro economic interventions is that they can only derive poverty in an indirect way i.e. 1) through an arbitrary socioeconomic classification distinguishing among such categories as “rural poor households”, “rural non-poor households”, or “urban poor households” and “urban non-poor households”; or 2) solving for the mean incomes of the representative households. Another weakness of conventional CGEs used to derive distributional effects is that the specification does not allow the poverty line to be endogenously determined.

A recent paper by Decaluwe, Patry, Savard and Thorbecke (1999) goes some way towards remedying these drawbacks. This is done by specifying intra-group distributions so as to conform to the different socioeconomic characteristics of the groups; and postulating a poverty line based on a basket of basic needs commodities. Since commodity prices are endogenously determined within their model, the monetary value of the poverty line is also endogenously determined. These innovations help shed more light on the black box pertaining to the behavior of poverty following a shock.

However, it has to be recognized that CGEs, in general, are relatively blunt, inflexible instruments and not very customer friendly; requiring experienced and mature analysts to translate their results so that they are operationally useful to policy makers.

Although, it still may be the best method yielding counterfactual results under certain conditions, one can agree with the conclusion reached by a recent critical evaluation of CGE models by De Maio, Stewart and van der Hoeven (1999),

“We believe there is a place for CGE models in the analysis of the effects of adjustment. They need to be accompanied, however, by extensive use of sensitivity analysis to test how far the conclusions depend on particular assumptions; by consistent, careful, empirical checking of parameters and functional forms; by appropriate categorization of groups for poverty analysis; and by continuous monitoring of the actual changes, checking these against the predictions of the models.” (p. 465)

Bibliography

Ahmed, R. and N. Rustagi (1984). "Agricultural Marketing and Price Incentives: A Comparative Study of African and Asian Countries", International Food Research Institute, May.

Ali, A.A.G. and E. Thorbecke (1998). "The State of Rural Poverty, Income Distribution and Rural Development in SubSaharan Africa", paper prepared for a conference organized by the African Economic Research Consortium on Comparative Development Experiences in Asia and Africa," Johannesburg, November, 1997.

Asian Development Bank (1997). Emerging Asia: Changes and Challenges

Binswanger, H.P. and K. Deininger (1997). "Explaining Agricultural and Agrarian Policies in Developing Countries", Journal of Economic Literature, 35, December.

Bourguignon, F. and C. Morrisson (1992). Adjustment and Equity in Developing Countries, OECD Development Center, Paris.

Chen, S., G. Datt, and M. Ravallion (1994). "Is Poverty Increasing in the Developing World?", Review of Income and Wealth , Series 40, No. 4, December.

Decaluwe, B., A. Patry, L. Savard and E. Thorbecke (1999). "Poverty Analysis within a General Equilibrium Framework", paper prepared for the African Economic Research Consortium.

Deininger, K. and L. Squire (1998). "New Ways of Looking at Old Issues: Inequality and Growth", Journal of Development Economics 57.

Deininger, K. and L. Squire (1996) "New Data Set Measuring Income Inequality", The World Bank Economic Review 10(3).

De Maio, L., F. Stewart and R. van der Hoeven (1999). "Computable General Equilibrium Models, Adjustment and the Poor in Africa", World Development 27(3).

Khan, A.R. (1997). "Reversing the Decline of Output and Productive Employment in Rural SubSaharan Africa", International Labor Office, Geneva, Issues in Development Discussion Paper 17.

Platteau, J-P. and Y. Hayami (1996). "Resource Endowments and Cultural Endowments in Agricultural Development: Africa vs. Asia", paper presented at a roundtable conference on the Institutional Foundation of Economic Development in East Asia by the International Economic Association, Tokyo, December.

Ravallion, M. and S. Chen (1997). "What Can New Survey Data Tell Us About Recent Changes in Distribution and Poverty?", The World Bank Economic Review 11(2).

Sahn, D.E. and A. Sarris (1994). "The Evolution of States, Markets, and Civil Institutions in Rural Africa", The Journal of Modern African Studies.

Sahn, D.E., P. Dorosh and S. Younger (1996). "Exchange Rate, Fiscal and Agricultural Policies in Africa: Does Adjustment Hurt the Poor?", World Development 24(4).

Subbarao, K. (1999). "Financial Crisis and Poverty: Adequacy and Design of Safety Nets for the Old and New Poor in Korea,"

Teranishi, J. (1997). "Sectoral Resource Transfer, Conflict and Macro Stability in Economic Development: A Comparative Analysis", Chapter 10 in Aoki, N., Y.-K. Kim, and N. Okuno-Fujiwara, The Role of

Government in East Asian Economic Development, Comparative Institutional Analysis, Clarendon Press, Oxford.

Thorbecke, E. (1992). "The Anatomy of Agricultural Product Markets and Transactions in Developing Countries," Institute for Policy Reform, Washington, DC, Working Paper No. 43, July.

Thorbecke, E. (1992). Adjustment and Equity in Indonesia, OECD Development Center, Paris.

Thorbecke, E. and C. Morrisson (1989). "Institutions, Policies and Agricultural Performance: A Comparative Analysis", World Development 7(9), September.

Thorbecke, E. and H. Wan (1999). Chapter 19: Government and Market: The Relevance of the Taiwanese Performance (1945-1995) to Development Theory and Policy, Kluwer Academic Publishers.

World Bank (1999). Poverty Reduction in the World Bank: Progress in Fiscal 1998, Poverty Reduction Board, Washington, DC.

World Bank (1993). The East Asian Miracle, Oxford University Press, New York.