

The views expressed in this paper are those of the author and do not necessarily reflect the views or policies of the Asian Development Bank. The Asian Development Bank does not guarantee the accuracy of the data presented.

Assessing the Poverty Impact of Policy and Sector-based Lending

JOHN WEISS

John Weiss is a professor in the Development and Project Planning Centre, University of Bradford. This paper is to be delivered at the *Asia and Pacific Forum on Poverty: Reforming Policies and Institutions for Poverty Reduction*, to be held at the Asian Development Bank, Manila, 5-9 February 2001.

I. Introduction

With the current shift by international agencies into lending to support broad policy change and sectorwide interventions rather than specific projects, an important methodological issue is how feasible it will be to assess such loans based on their impact on poverty reduction. Although the assessment of the poverty impact of individual projects is empirically challenging there is a reasonably well-established methodology that analysts can draw upon. Some of the conceptual and practical problems involved are discussed in Fujimura and Weiss (2000). However when one considers the impact of loans that support change at the macroeconomic or sector level the difficulties are magnified considerably. This paper aims to bring out the key issues. It begins with a conceptual discussion of the links between policy change that enhances economic growth and poverty reduction. It then considers methodologies available to assess the consequences of policy change both ex-post and ex-ante. The rigorous approaches that have been used by researchers in this area provide insights for analysts who need to focus on the immediate impact of particular loan-financed reforms, but rarely will these approaches be feasible in an operational context constrained by time and resources. Hence the paper considers a simple framework that distinguishes between the poor in their different possible roles—for example, as consumers, producers, employees, and recipients of public services. It discusses how different types of lending can be assessed in this way and stresses that analysts need to be explicit about the assumptions underlying particular interventions that are required to hold for these to improve the position of the poor.

II. Policy Change and Poverty Reduction

There is now considerable empirical evidence that economic growth is a necessary but not always sufficient condition for significant and sustained reductions in poverty. The widely cited paper by Dollar and Kraay (2000) is only one of several cross-country studies that come to this conclusion. Hence the main link between macro or sector policy change and poverty will be expected to be an indirect one through the mediation of higher growth. Policy reform is expected to improve economic growth and in turn growth will reduce poverty. It is desirable however to extend the discussion a little further since although by definition growth raises real income it is not obvious that all or much of this will

go to the poor. It is clear that the more unequal a society, the lower will be the poverty impact of a given rate of growth. In addition, however, growth itself may cause increased inequality that weakens its poverty effect. There is evidence of this latter process at work in some of the high-growth economies of East Asia, for example, where despite an overall reduction in poverty rising inequality weakened the impact of economic growth (Ahuja et al. 1997, Kakwani and Pernia 2000). Further, the poverty reduction impact of a given rate of economic growth will vary with the form growth takes. It has been shown that different sectoral patterns of economic growth have different poverty consequences. For example there is evidence that generally growth in agriculture tends to have a higher poverty impact than growth in manufacturing and that rural income growth is generally more poverty reducing than growth in urban incomes (see Ravallion and Datt 1996 for India, and Thorbecke and Hong-Sang 1996 for Indonesia).

Given this ambiguity concerning the precise growth–poverty reduction relationship it is worth considering the possible mechanisms through which poverty reduction may occur in response to reform. First and most directly there is the effect of reform on employment creation. If economic activity responds positively to reform the poor can find their wage employment increasing. It is this link that has led to the focus on labor-intensive growth in discussions of poverty reduction (World Bank 1990). The East Asian experience is usually held out as a model of how poverty can be reduced greatly through a tightening labor market (World Bank 1993). However it is often not the chronic poor who benefit from such employment creation but those just below the poverty line with the skills or physical strength to take up these opportunities. In terms of employment creation, it should also be remembered that even successful policy reforms can lead to negative short-run employment effects, the most obvious example being the closure of import substitution activities prior to the emergence of successful export-oriented production. In the short run the numbers below the poverty line may rise, not fall, and even where successful employment reallocation occurs this may take a significant period of time, so there will be transitional poverty effects that cannot be disregarded.

A second important aspect of the reform–growth–poverty link is the significance of macroeconomic stabilization. It is often argued that while inflation is a tax on the whole society it falls most heavily on the poor, whose monetary incomes are not just low but relatively inflexible. A significant

source of income for the poorest is likely to be casual employment or the monetary equivalent of government provided services, both of which may rise sluggishly at a time of accelerating inflation. Hence the implication is that if inflation can be stabilized through, for example, fiscal and monetary policy this loss of real income can be avoided.

The poor should be disproportionate beneficiaries of government expenditure, in the sense that the monetary value of government-supplied services are a higher proportion of their income than for those above the poverty line. This is despite the fact that recent incidence studies show the relatively rich receiving a share of benefits from government education and health expenditure well above their share of population (World Bank 2000). Thus any real decline in government expenditure on such services, as part of the fiscal retrenchment required for macro stabilization, can have serious short-run consequences for the poor, as may measures to introduce cost-recovery pricing that do not make adequate exemptions for the poor. However insofar as rising growth makes it easier to finance public social expenditures, in the longer term the poor should benefit from rising expenditure on these services.

The third and potentially most complex area in which macro reform can interact with poverty is through the relative price shifts that it entails. In most macro adjustment or stabilization programs two important relative price shifts can be expected. One is a rise in traded to nontraded prices where a real exchange rate depreciation is required to remove internal and external imbalances. The other is within the nontraded sector where a rise in prices for publicly supplied services relative to privately supplied activities can be expected where government bodies are required to raise prices to meet a cost-recovery objective. How the poor will be affected by such shifts will depend upon their situation as net producers or consumers of the goods concerned. Where the poor are net producers of traded goods (that is, their production of such goods exceeds their consumption) they should benefit from the relative price shift, although they can always be exceptions since in practice not all traded and nontraded prices will shift uniformly. Similarly where the poor are net consumers of nontraded goods (that is their consumption of such goods exceeds their production) they should benefit, again with the caveat for possible shifts within the two categories. Distributional consequences of reform programs in Latin America have been explained from this perspective, for example, Morley (1995). For

the price shifts within the nontraded category, as noted above, unambiguously the poor will lose where prices for government-supplied services rise relative to other nontraded activities. However these relative price shifts will occur at a time when real incomes are also changing, hence, the full impact on the poor will be determined by the net effect allowing for both income and price changes as they affect the poor. In the short run at least this can be difficult to predict.

Finally, in recent years reforms have focused in particular on various aspects of institutional change, since it is recognized that market relations operate with widely different levels of efficiency in different institutional contexts. Such institutional change has been widespread in some economies covering enterprise restructuring and privatization, financial sector reform, civil service downsizing and reorganization, and various forms of change to social service delivery mechanisms and organization. These so-called “second generation reforms” are intended to strengthen the growth impact of more conventional macroeconomic adjustments, and insofar as they succeed in this, they should have some positive impact on poverty alleviation. However it is far from clear how such changes will impact on the poor in the short run. For example, while financial sector reform is widely seen as essential for sustained economic growth, it is not immediately obvious that the commercialization of development banks and the end of subsidized credit will affect the poor¹.

III. Methodologies for Assessing the Impact of Reform on the Poor

During the 1980s with the widespread adoption of structural adjustment and International Monetary Fund (IMF) stabilization programs, considerable literature built up in assessing ex-post the impact of policy change on growth. The basic approach can be summarized by an equation that makes growth a function of a number of variables such as initial income, human capital stock, and growth of factor inputs, plus a variable reflecting policy reform. Hence

$$G = f (X_1, P) \quad (1)$$

Where G is the rate of economic growth

Xi is a vector of independent variables

1. See Aron (2000) for a survey of the literature on institutions and economic growth.

and P is a variable reflecting policy change

Equations such as (1) were estimated normally on a cross-sectional basis across groups of economies and the impact of reform was captured by the sign and significance of variable P. P itself was specified in various ways. In the simplest form it was a dummy taking a value of 1.0 in the presence of policy reform. In more sophisticated analyses P can refer to specific measures of policy such as real exchange rate movements (Dollar 1992) or indicators of openness to trade (Sachs and Warner 1995). The theoretically most rigorous version of equation (1) follows the “generalized evaluation estimator” approach (Goldstein and Montiel 1986). This is based on the insight that a full assessment of policy change must be a with-without comparison to pick up the incremental impact of policy. This is addressed econometrically by extending equation (1) to incorporate both past performance and past policy variables as a guide to what things would have been like without reform. The incremental policy impact is captured by a dummy variable. Thus equation (1) becomes

$$G = f (X_1, G_{-1}, P_{-1}, D) \quad (2)$$

where D is a dummy variable taking 1.0 when reform is present and $_{-1}$ indicates a lagged value.

Examples of this approach are Khan (1990) and Corbo and Rojas (1992). An alternative that attempts to address the same problem is to identify countries with similar situations prior to introducing reform, and to compare the performance of those that enter into IMF stabilization agreements with that of those that do not (Garuda 2000).

The difficulty with this type of analysis for assessing lending activity is that first it is exclusively ex-post. Second, it rarely is able to distinguish precisely between different policies, so that what one can pick up is normally only the effect of the existence of a reform program or some broad measure, like shifts in the real exchange rate. Hence although lessons from country experiences are clearly useful in designing programs, there is a clear limit to how far this methodology can go in a direct assessment of the poverty consequences of reform.

Some of these problems are overcome by the other methodology widely used to assess poverty impacts of policy change. This involves using either a Social Accounting Matrix (SAM) or in a more dynamic form a computable general equilibrium (CGE) macro model based on a SAM. The SAM model is a square matrix with columns for expenditure and rows covering income accounts. The SAM

combines input-output data with the national accounts to reflect the circular flow of income at a particular point in time. In this context its key use is to assess the direct and indirect income effects of a particular exogenous impact, such as a policy change leading to different expenditure patterns (for recent application to policy analysis see Iqbar and Siddiqui 1999, and Khan 1999). Since SAMs can be constructed with different groupings of households they can be used to assess how the poorer households are affected. SAMs are typically static systems with fixed coefficients and prices. However they can be extended to more dynamic models by the incorporation of a number of behavioral equations relating to key markets in an economy. These combined with key parameters relating, for example, to various demand and supply elasticities, can be developed into a full macro model. These normally assume optimizing behavior with flexible prices clearing all markets. The great advantage of these models is that they can be designed to incorporate features of individual economies and can be run for different policy simulations. Such models are conceptually the only rigorous means of assessing the counterfactual—what would have taken place in an economy without a particular policy reform. Versions of such models have been used in a number of countries to assess the poverty impact of policy change; in Asia these economies include Indonesia (Thorbecke 1991) and Malaysia (Demery and Demery 1991).

SAM and CGE models provide a first-best methodology for ex-ante assessment of policy change. However, their practical relevance remains a subject of considerable debate. Even relatively sophisticated models based on the data from a large and recent SAM must of necessity be a major simplification of reality. Key parameters will often be assumed or simply taken from work on other economies. Also the structure used for the models can itself influence their results.² In addition such models can normally only cope with the impact of precise policy change such as a devaluation, a fall in aggregate government expenditure, a change in interest rates, or the removal of a particular subsidy. The effect of more general measures such as strengthening the financial sector, institutional change in the civil service, or a new road building program may be difficult to express in exact macro terms and hence difficult to incorporate in models. Finally, and perhaps critically in the present con-

2. Relevant here is the debate on the usefulness and accuracy of CGE models in assessing the relationship between poverty and adjustment in Africa; see de Maio et al. (1999) and the reply by Sahn et al. (1999).

text, accurate modelling of this type is demanding in data and skills, and without a major research effort such models cannot be expected to be widely or readily available for individual countries.

A short-cut approach is to establish “generic” models for particular economy types. For example one could be for a low-income, labor-surplus economy as found in South Asia or the poorer parts of East Asia and another for transitional economies. Such models could be based on “typical” data of an assumed nature and used to assess the possible consequences of different interventions for poverty. Their results can be no more than suggestive since the models themselves are not based on an individual economy, but they can give policymakers an insight into possible poverty outcomes under different scenarios and assumptions.

IV. A Poverty Impact Matrix

Operational work at international agencies can draw useful lessons from the data derived from the application of the approaches noted above. However, a simpler, more pragmatic approach is likely to be essential in dealing with ex-ante discussions of different policy packages. A useful starting point for work in this area is the so-called Papanek matrix, developed in the early 1990s and recently revived.³

The logic of the analysis is that income for a poor household will be determined by three parameters: the labor earnings of household members in the workforce, the return on the nonlabor assets of the household, and their net receipts of public and private transfers. Hence all policy change can be evaluated in terms of how it affects labor earnings, return on assets, and transfers. This discussion is formalized in Behrman (1993). The importance of these three dimensions will vary between different poor groups and any framework for poverty impact assessment must be sufficiently broad to cover a range of different possible scenarios.

The matrix itself involves two dimensions or axes: one, the channels or mechanisms through which policy change impacts on the poor and two, the timing and degree of impact. The channels specified on the vertical axis are the obvious ones of the labor market, prices, access to government-

3. For an illuminating discussion of this matrix and its use in policy assessments at the ADB, see Bolt and Fujimura (2000).

provided services, and net transfers. The impacts on the horizontal axis are subdivided into direct effects, indirect effects, macro effects, and impact on the nonpoor.

Figure 1 illustrates the framework.

Channel	Impact on Poor			Impact on Nonpoor
Labor Market Prices	Direct	Indirect	Macro	
Access to Public Services				
Transfers				
Critical Assumptions				

Source: Bolt and Fujimura (2000).

This basic framework was never intended to be any more than a means of organising thoughts on how particular policy changes might impact on the poor. Of critical importance is to set out clearly the underlying assumptions required to achieve the forecast outcomes. In this sense the matrix is similar to the now widely used logical framework applied ex-ante in project work. The merit of this tool is simply that it sets out objectives that a project is to achieve and the assumptions that must hold for these to be met. The realism of the critical assumptions must then be tested and if necessary measures applied to ensure that, as far as is practicable, reality matches these assumptions. A precisely analogous procedure is useful in poverty analysis. In general one can fairly safely venture the proposition that the longer the chain of assumptions required, the more dubious the poverty effect that is being purported to hold.

Insofar as the poverty impact matrix offers a simple nth best approach to the poverty consequences of particular sector and policy loans, it is worth attempting to sharpen up some of the categories it uses. Considering first the mechanisms on the vertical axis a few simple points of clarification may be made.

First, in relation to labor market and employment consequences, it is sometimes helpful to distinguish between formal (and by implication regular) employment and jobs in the informal sector since policy change can affect these differently. Much of the criticism of public sector reform programs for example is that they may replace the first type of formal sector employment.

Second, in line with the earlier discussion on theoretical expectations of poverty impacts, it may in some cases be important to distinguish between relative price effects that impact on the poor as either producers or consumers. A particular change, such as decontrol of agricultural prices, may benefit poor farmers who are affected as producers, but hurt other groups of the poor who are net consumers of the goods concerned. In addition some important price effects may arise from a general, not a relative, price effect. In other words, the mechanism through which the poor are affected may be through the impact of policy on inflation. Hence as a further refinement, which helps to bring out the potential ambiguity in price changes, one can decompose the price mechanism category into three subgroups relative price changes for producers, relative price changes for consumers, and general price changes.

Third, the mechanism of access of the poor to publicly provided services, such as schools, hospitals, and clinics, should strictly cover nonmarketed services for which only a nominal or zero charge is made. This is because if the poor are to be provided with public services on commercial terms then these will be equivalent to any other commodity and should logically be covered under the prices category.

Fourth, the mechanism of transfers will largely refer to private transfers to the poor since government programs will rarely provide cash. Transfers are implicit in any subsidized system of supply but these will be picked up by the previous category of publicly supplied services. An exception will be workfare programs, as used in Maharashtra state in India for example, where the poor are given work, when they wish it, on publicly organized infrastructure and related schemes.

In terms of the impact or horizontal axis of the matrix, it is clear that there will be ambiguity in trying to distinguish between direct, indirect, and macro effects on the poor. The original thinking appears to be that for markets related to a particular policy intervention it is possible to think of direct and indirect effects. For example, removing a fertilizer subsidy will have a direct effect on rais-

ing farm costs and thus directly lowering wage employment among hired farm laborers. However if the removal of the subsidy stimulates higher production, because of the greater availability of the fertilizer there may be positive indirect employment effects. Any employment consequences under the macro heading would arise from the way in which the subsidy had been financed and the use to which the saved funds are put. This direct–indirect–macro distinction may make sense when there is a clearly defined market involved, but once one considers more broadly based policy interventions and in particular various institutional reforms, the distinction between an indirect and a macro effect becomes highly blurred. Arguably since all macro effects can be seen as indirect the justification for maintaining separate categories is weak. Conceptually a more justifiable distinction is between short-term and medium-term effects on the poor—with what have been called direct effects in the first category—and all subsequent effects arising from other related markets and macroeconomic consequences coming under the medium term heading. We deliberately omit reference to the longer run since so many other factors will be at work that isolating long-run policy impacts in such a simple framework is hardly sensible.

Most policy change will affect those above as well as those below the poverty line, hence the use of a category for the impact on the nonpoor. Where positive effects on the latter can be identified, while at the same time, there are losses for some of the poor, there is the issue of compensatory adjustments in favor of the latter. If any mitigatory measures are needed to offset the negative consequences on the poor identified elsewhere in the matrix, a reference to these can also be added.

The original use of the matrix appears largely to have been qualitative. Responses are given to the question, Does a policy impact positively or negatively on the poor? Cells in the matrix are either completed with a narrative, or more simply, with positive or negative signs to indicate direction of impact on the income of the poor. This is a starting point, but for major interventions it should be possible to go a little further and quantify some of their consequences. This need not involve a formal modelling exercise but rather, ad-hoc estimates such as job creation, product or service demand, and fiscal cost. This is the type of data that economists might reasonably be expected to derive as part of the overall justification for a particular policy intervention. These figures can be added to

the basic narrative in the policy matrix to sharpen the discussion, and projected outcomes must be assessed in relation to underlying assumptions that are critical for their achievement.

Figures 2 and 3 illustrate the general approach taking two alternative cases, one a narrowly defined intervention, removal of a fertilizer subsidy, and the other a much broader program of financial sector reform. The former lends itself to approximate quantification, while the assessment of the latter must be much more speculative. In this latter instance the role of the matrix is to highlight the key issues and thus to require analysts to draw on a combination of a-priori theorizing and empirical evidence from recent experience to assess whether the critical assumptions required for a positive impact on poverty reduction are likely to hold.

Figure 2: **Modified Poverty Impact Matrix: Removal of Fertilizer Subsidy Illustration**

Channel	Impact on Poor		Impact on Nonpoor
	Short Term	Medium Term	
Labor Market Formal Informal	N/A Job losses due to higher cost (thousands)	N/A Job gains with more efficient use (thousands)	N/A Net job change (thousands)
Prices Producer Consumer Inflation	Fertilizer prices rise by x% Only small direct effect on farm prices Lower inflation by y%	More efficient use creates higher farm output Reduction in budget deficit benefits poor	Higher farm output Lower inflation benefits all
Access to Public Services	N/A	N/A	N/A
Transfers Public Private	N/A	N/A	N/A
Note: Previously fertilizer was not scarce at the subsidized price prior to reform and was sold to benefit both poor and nonpoor farmers. Removal of subsidy is large enough to allow reduction in budget deficit, which in turn lowers inflation. Higher price of fertilizer stimulates more efficient use and higher output.			

Figure 2: **Modified Poverty Impact Matrix: Financial Sector Reform Illustration**

Channel	Impact on Poor		Impact on Nonpoor
	Short Term	Medium Term	
Labor Market Formal Informal	N/A Job losses due to higher interest rates (thousands)	N/A Job gains with more efficient intermediation (thousands)	Net job gains (thousands)
Prices Producer Consumer Inflation	Interest rates rise by x% Higher inflation by y%	Higher incomes due to higher savings and investment Lower prices due to reduced financial margins	Higher incomes Lower prices
Access to Public services	N/A	Improves due to higher government income	N/A
Transfers Public Private	N/A	N/A	N/A
<p>Critical Assumptions: Reform of financial system leads to more efficient intermediation and growth. Benefits of higher government income spent on poor. Poor can gain access to credit in new reformed financial sector.</p>			

Conclusions

In the area of poverty assessment we are a long way from having an agreed operational methodology for linking lending in support of policy and sector programs with poverty reduction. Formal modelling and accumulated empirical evidence from individual country cases provide the main source of information for analysts seeking to assess the ex-ante consequences of particular loans. The poverty impact matrix provides a helpful way of organizing information of both a quantitative and qualitative nature. However it should be clear that the matrix is only a means of telling a particular story, based on a set of critical assumptions. The story itself will be based on a-priori logic and this will always require checking. The accumulated evidence of the past two decades has shown that policy prescriptions based on apparently impeccable economic logic often have not had their expected effects in poor adjusting economies. Sensible policy change requires a serious assessment of program impact on a case by case basis and in this context the matrix can be used to highlight the critical elements in any particular story.

References

- Ahuja.V, Bidani.B, Ferreira.F and Walton. M (1997) *Everyone's Miracle: revisiting poverty and inequality in East Asia*, World Bank, Washington DC.
- Aron.J (2000) "Growth and Institutions: a review of the evidence" *World Bank Research Observer*, vol 15, no 1.
- Behrman.J (1993) "Macroeconomic Policies and Rural Poverty" in Quibria.M (ed) *Rural Poverty in Asia*, Oxford University Press for ADB.
- Bolt.R and Fujimura.M (2000) *Policy Based Lending and Poverty Reduction: an introduction to processes, options and assessments*, mimeo ADB (working draft).
- Corbo.V and Rojas.P (1992) "World bank Supported Adjustment Programs: country performance and effectiveness" in Corbo. V, Fischer . S and Webb.S (eds) *Adjustment Lending Revisited*, World Bank, Washington DC.
- Demery.L and Demery.D (1991) "Poverty and Macroeconomic Policy in Malaysia" *World Development*, vol 19, no 11.
- Dollar. D (1992) "Outward-Oriented Developing Economies Really Do Grow More Rapidly: evidence form 95 LDCs" *Economic Development and Cultural Change*, vol 40, no 3.
- Dollar. D and Kraay.A (2000) *Growth is Good for the Poor*" mimeo World Bank, Washington DC.
- Fujimura. M and Weiss. J (2000) *Integration of Poverty Impact in Project Economic Analysis: Issues in Theory and Practice*, Mimeo ADB.
- Garuda, G (2000) "The Distributional Effects of IMF Programs: A Cross-country Analysis" *World Development*, vol 28, no 6.
- Goldstein. M and Monteil.P (1986) "Evaluating Fund Stabilization Programs with Multi-Country Data" *IMF Staff Papers* vol 29, no 2.
- Iqbar.Z and Siddiqui.R (1999) "Impact of Fiscal Adjustment on Income Distribution in Pakistan" *Pakistan Development Review*, vol 38, no 1.
- Kakwani.N and Pernea.E (2000) "What is Pro-Poor Growth?" mimeo ADB.
- Khan.M (1990) "The Macro Economic Effects of Fund-Supported Adjustment Programs" *IMF Staff Papers*, vol 37, no 2.
- Khan, H (1999) "Sectoral Growth and Poverty Alleviation: a multiplier decomposition technique applied to South Africa" *World Development*, vol 27, no 3.
- de Maio L, Stewart. F and Hoeven van der R (1999) "Computable General Equilibrium Models, Adjustment and the Poor in Africa" *World Development*, vol 27, no 3.
- Morley. S (1995) *Poverty and Inequality in Latin America: the impact of adjustment and recovery in the 1980's*, John Hopkins, Baltimore.
- Ravallion.R and Datt.G (1996) "How Important to India's Poor is the Sectoral Composition of Economic Growth" *World Bank Economic Review*, vol 10, no 1.
- Sahn.D, Dorosh. P and Younger.S (1999) "A Reply to de Maio, Stewart and van der Hoeven" *World Development*, vol 27, no 3.
- Sachs.J and Warner.A (1995) "Economic Reform and the Process of Global Integration" *Brookings Papers on Economic Activity* no 118.
- Thorbecke.E (1991) "Adjustment, Growth and Income Distribution in Indonesia" *World Development*, vol 19, no 11.
- Thorbecke.E and Hong-Sang. J (1996) "A Multiplier Decomposition Method to Analyse Poverty Alleviation" *Journal of Development Economics*, vol 48, no 2.
- World Bank (1990) *World Development Report 1990*, Oxford University Press, New York.
- World Bank (1993) *East Asian Miracle*, Oxford University Press, New York.
- World Bank (2000) *World Development Report 2000/01- Attacking Poverty*, Oxford University Press, New York.