

"Understanding reform"
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**Research directions for "Understanding Reforms" :
the need for systematic (extended) distributional incidence analysis**

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Introduction

Development enhancing reforms may be of different type and may focus on different areas : rules of the game (from market regulation and exchange rate management to the legal system and the constitution) and their enforcement; private/public (local/centralized) management of the production and distribution of certain goods or services; volume and structure of taxes and public spending.

In all these fields, analysis is necessary to evaluate the potential impact of reforms on development and possibly to prioritize them. Various issues have to be considered simultaneously : a) how effectively can a given reform be implemented; b) the desired and undesired changes that it may cause in the behavior of agents; c) its aggregate budgetary consistency; d) its aggregate effects on growth and other economic aggregates; e) the number and identity of short-run and long-run winners and losers ;

Point e) is clearly crucial since it deals with the very objective of the reform and development – i.e. improving the welfare of all individuals and in particular the poorest - as well as with the political economy aspects of reforms. A group of losers may block a reform that will appear beneficial overall unless they are properly compensated. Yet, no systematic distributional incidence analysis is made of reforms except for some very specific types of public spending or some particular taxes in a few countries. This is in sharp contrast with the fast development of micro-economic data bases, which precisely should make this kind of analysis much more widely accessible.

This presentation tries to promote the use of distributional incidence analysis - or *micro-simulation* - in the analysis of development enhancing-reforms. This involves a more systematic use of existing tools in standard fields, as well as the extension of these tools to non-standard questions.

1. Standard tools for distributional incidence analysis : 'arithmetic' micro-simulation model for taxes and social spending

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Based on information available in household surveys, tax-benefit models in developed countries, simply apply to each household in the survey the official rules for computing various taxes and benefits. Simulation of tax-benefit systems can be performed by changing the arithmetic calculation rules under some overall budget constraint. It is then possible to identify the losers and winners, the change in the distribution of real disposable income, and also the potential effect of reforms on behavior through appropriately defined 'effective marginal tax rates'.²

An increasing number of developing countries are introducing cash transfers that could be simulated on the same basis as more complex redistribution systems – Progresa in Mexico, Bolsa Escola in Brazil, Bono Solidario in Ecuador, 'food for school' in Bangladesh, etc... . In many other countries, however, redistribution essentially goes through indirect taxation on the side of taxes and social spending on the side of benefits. This requires some adjustments of the preceding models, or a simpler use. As far as indirect taxation is concerned, a first exercise must permit to figure out the effect of changes in the tax system upon consumption prices. Simple rules of thumb or more demanding multi-sector input-output models may be used to do this. Then, applying arithmetically these price changes to (net) household consumption expenditures observed in household surveys leads again to an estimate of the distributional incidence of the policy under analysis.³

Things are a little more complicated for social spending if one wants to aggregate the value of social spending for potential users and their other resources. But it is not necessary to do so. Access to public services, and/or possibly total local expenditures in some service per inhabitant may be considered as a dimension of household welfare and the simulation may bear on a multi-dimensional view at welfare. Winners are those who gain access to a service or who are living in communities where the quality of these services increases whereas an important dimension of their identity is, of course, the level of their own resources, that is their real private income or consumption expenditures.⁴

What is needed to implement this type of distributional incidence analysis essentially is a reliable and complete household survey with information on the characteristics of the community households live in terms of infrastructure and public services (transport, schools, water systems, health care,...) . Such surveys are increasingly available, even though some efforts are still to be done in some countries. It is not clear, however, that they are used by policy makers as systematically as they could be, despite their relative simplicity.

2. Direct extensions of standard micro-simulation tools : 'behavioral' models and mapping techniques

Two complications arise when one tries to go deeper than the analysis of first round effects permitted by the preceding models. The first one has to do with the possibility that the behavior of households will change because of the reform being considered. The second one is concerned with the necessity of introducing some

² For an example of these tax-benefit models in EU countries see Sutherland et al. (2000).

³ This was the essence of the pioneering work on the effect of indirect taxation in developing countries by Stern and several associates. See for instance Ahmad and Stern (1991).

⁴ For an approach of this type in African countries see Sahn and Younger (2000).

geographical dimension in the description of social spending policies, which does not necessarily fit well the sampling frame of the household survey that is available.

There are many ways in which a change in prices induced by a tax or a trade reform or a change in the accessibility to some infrastructure - irrigation water, transports, schools - may change the behavior of households and therefore the real resources they may derive from their own activity. Changes in the (net) consumption budget or in the accessibility of public services thus give only a first approximation of changes in welfare. Changing in the price of an agricultural commodity will modify the production behavior of some households, depending on their production possibilities. Likewise, building schools or improving teaching quality will change the demand for schooling and, possibly the income of the household. Taking these effects into account requires moving from the 'arithmetical models' described above to '*behavioral models*'. The difficulty is of course that various specifications of these models are possible so that choosing between them may require heavy econometric work. As no model will include all behavior of interest, this modification of the original micro-simulation framework may depend on the reform being simulated. Yet, it should be possible to go relatively far with models that simply endogenize the income generation activity of a household, including activity choices by the various members. This first generalization of the original arithmetical framework may not be prohibitively difficult to implement.⁵

A geographical problem arises when simulating policy induced changes in the accessibility of publicly provided services or infrastructure. Assuming that the policy reforms being analyzed are well defined geographically, a simple household survey might not be able to capture differences in the geographical coverage of policies. This is because of its necessarily reduced sample size. Matching techniques between surveys and censuses may then permit to partly solve that difficulty. The idea is to use household characteristics observed in both the census and the survey to predict characteristics which are observed only in the survey. For some purposes, it is then possible to use this virtual information and to use the census- or a sizable sample of it - like household surveys in the tools described above.⁶ Of course, for the analogy to be complete the 'community questionnaire' of the household survey must be substituted by a 'community census' reporting the availability of infrastructure and public goods in all geographical units distinguished in the census. A simple direct application of these mapping techniques consists for instance in superposing 'poverty maps' in a country with maps that describe accessibility to publicly provided services or infrastructure. But the format of the arithmetic micro-simulations described above may also be used.

3. Integrating micro-simulation and macro-economic modeling

In the economic sphere, many development-oriented reforms are likely to be concerned with macro issues or to have their main effects at the macro level. Thus, it is necessary to be able to link the preceding micro-simulation framework with macro-modeling. The problem is similar to the issue of indirect taxation alluded to above. In order to figure out the impact of a reform, it is first necessary to determine the way in

⁵ Models like the ones used in the MIDD project led by Bourguignon, Ferreira and Lustig (2001) should be useful in this respect.

⁶ On these techniques, see Elbers, Lanjouw and Lanjouw (2001).

which this reform will modify economic parameters that directly affect households. As seen above, these were essentially prices in the case of a reform of taxation. Prices will still be the main transmission channel to households if more general macro-economic reforms are considered - like reforms in foreign exchange or trade regimes, in rules for monetary and budgetary policy, in the organization of the financial sector, in macro-economic crisis management, etc... In addition, however, rationing in the formal labor market, or the behavioral response of households to changes in prices and wages are likely to matter for the full distributional incidence of the reform being analyzed.

The standard way of dealing with the distributional impact of macro policies is via multi-sector macro models of the CGE (computable general equilibrium) type where the household sector is disaggregated into Representative Household Groups. Groups differ by the combination of factor endowments they own whereas the distribution of household characteristics within each group is assumed to be constant. These models thus provide a way of analyzing the distributional effect of policy reforms 'between' groups.⁷ In some instances, this may be found sufficient because the population of households may indeed be divided into groups which are fairly homogeneous in terms of economic characteristics, like farmers specializing on a given crop. This may not always be the case, however. Analyses of changes in household income inequality along the development process shows that changes in the inequality 'within' groups are at least as important as changes in inequality 'between' groups.

Some attempts are currently being made at crossing the micro-simulation framework described above with macro scenarios or macro models. There also are attempts at integrating the full detail of household surveys into extended disaggregated CGE modeling.⁸ They are promising as they indeed show that it is possible to take into account the full observed heterogeneity of households and individuals in simulating macro reforms. But more experience must be gathered both across countries and across reforms being simulated. Note also that this kind of method becomes still more necessary when one is evaluating micro-oriented policies which are important enough to have macro implications.

4. Is it possible to micro-simulate reforms in the "rules of the game" ?

The reforms implicitly considered in the preceding paragraphs are very much concerned with economic instruments and not so much with institutional matters or 'rules of the game' - except perhaps when referring to 'rules' for monetary or budgetary policies. Many reforms involve other dimensions. Examples in the economic sphere would involve market regulation policies, privatization or decentralization. In the non-economic sphere, examples would concern social policies, the political decision process, or the legal system.

To what extent is it possible to apply to this type of issues the distributional incidence tools discussed here? Only insofar as the effects of these reforms can be

⁷ See for instance the survey of the models by Adelman and Robinson (1989).

⁸ On the first point see for instance Robilliard, Bourguignon and Robinson (2001), on the second see Cogneau and Robilliard (2000)

expressed in terms of the variables that are used as inputs in the representation of household income generation behavior and welfare determination in the micro-simulation model. This seems to be feasible in some instances, although little has been done for the moment in that direction. For instance, simulating labor market regulation like a minimum wage is a natural extension of the modeling techniques alluded to above. Likewise, figuring out the distributional incidence of privatizing some utilities requires figuring out what this may imply for the accessibility of households to that utility and the price to be paid. In some other instances, things seem much more difficult. More exactly, some methodology must be designed that permits going from institutional reforms to outcomes that are directly meaningful for evaluating household welfare. For instance, if something could be said on the effect of moving from centralized to decentralized decisions upon public goods being available in local communities and the quality of these goods, then it would become relatively easy to estimate the distributional effects of such a reform. The real difficulty is in the first step, however.

Conclusion

There would be a considerable gain for the efficiency and sustainability of reforms in systematically evaluating their full distributional impact. This is relatively easily done in several instances, under the assumption of no behavioral response, as long as satisfactory household and community surveys are available. Simple micro-simulation tools may be developed on that basis and should be used more systematically. Extending the analysis to cover the geographical dimension of public spending, some dimensions of household behavioral response, and the potential macro-economic effects of reforms requires investing more in micro-economic and macro-economic modeling. Several attempts in that direction show the benefit that policy-making could draw from this kind of instruments. These techniques also broaden the range of reforms which can be precisely evaluated from a distributional point of view. Other applications of these techniques must be developed whereas existing methods must be improved. This calls for more research efforts being directed towards this objective. Finally, other reforms, mostly those which are directly linked to institutional changes, may require other types of analytical tools before their distributional impact may be evaluated.

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