5. Conclusions, policy relevance, and future research

The main message of the country studies included in this dissertation is that the poverty and distributinal impact of external shocks and economic policies depends very much on the exact nature of the shock as well as the structural characteristics of the country in question. Hence, there are no policy blueprints. This may sound trivial, but often enough have policy prescription been based on oversimplifying assumptions without taking into account country-specificities. One such case is the belief that the poor in developing countries in general would benefit from trade liberalization through increased demand for unskilled labor.¹⁰⁵

The Colombian and the Brazilian case studies very well illustrate that the impact of trade liberalization on poverty and the distribution of income depends on the structure of protection in place and how it is modified, i.e. the nature of shock, as well as a number of country characteristics, in particular the functioning of the labor market and the sectoral and skill composition of the workforce. In sum, the studies demonstrate that country-specific empirical research can provide policymakers with insightful analyses to take better-informed decisions.

Of course, three country-studies cannot provide the empirical basis, on which to judge whether globalization, or some of its many facets, are good or bad for the poor. The analyses may however suffice for the general tentative conclusion that globalization, at least in the Latin American context, is neither good nor bad; rather it entails threats and opportunities. In addition, what appears to be a threat at first sight may actually be seen as an opportunity, given the right policy.

Trade liberalization in Colombia, for example, has increased inequality through a rising wage gap between the skilled and the unskilled. If educational policies however allow labor supply to adjust to this increase, productivity gains would be distributed more equally. The case for better policies to make a difference is even stronger in natural resource abundant countries, in particular during boom phases, as illustrated by the Bolivian study. In the latter, current public expenditure policies were even found to aggravate negative side-effects of the resource boom. A worrying tendency, to which there is no obvious policy response, is the increase in informal employment that is identified in both the Bolivian and the Colombian case. If the informal sector involves negative externalities, for example in terms of human capital accumulation, this increase can harm long-term development prospects.

A fairer world trading system is been by many as an important component of a comprehensive development strategy, as reflected by the adopting the attainment of an “open trading and financial system that is rule-based, predictable and non-discriminatory” committed to “good governance, development and poverty reduction as one of the Millennium Development targets. Even non-governmental

¹⁰⁵ The structural adjustment programs of the 1980s and early 1990s are another case of fairly similar policy packages applied to a number of countries, whose problems only appeared to be the same at first sight. For a critical view on these programs see Collier and Gunning (1999).
organizations seem to put great hopes in particular into the effects of cutting-down agricultural subsidies in rich countries. For Brazil however, the preceding chapter suggests that the gains for the poor from a new development-and-poverty-focused round of multilateral trade negotiations would be rather limited. This finding is not limited to the Brazilian case. The other country studies included in Hertel and Winters (2005) also point to moderate effects of a “Doha Development Agenda”. In some countries, poverty even increases slightly. Among the reasons why liberalizing agricultural trade does not help the poor as much as expected is that, in some countries, higher world market prices are not transmitted to poor farmers, while urban households suffer from the price increase. Such findings again demonstrate that the poverty and distributional impact of economic policies depends on a whole range of country-specific factors and that assessing these effects requires very disaggregated analyses.

In terms of methodology, the chapters demonstrate that the “two-step” or sequential approach provides an appropriate framework to link policies or external shocks to poverty and distributional outcomes. This approach first analyzes the impact of shocks on “distributional drivers”, such as changes in prices and factor remunerations, as well as employment shifts between different types of activities or sectors. Using a CGE model in this first stage, allows for a detailed analysis of the transmission channels of the shocks at the “macro” level. In the second step, the final distributional outcome is assessed using a microsimulation model that takes into account the complexities of the income generation process through modelling individual decisions.

The sequential approach brings together two strands of literature, applied CGE models, on the one hand, and poverty and distributional analyses, on the other, which were largely separated from each other. While CGE analyses tend to suffer from being too stylized and not being well informed by micro data, poverty and distributional analyses are often merely descriptive and lack an assessment of the causes of distributional change and the related transmission channels. The sequential approach attempts to get the best out of these two “modeling worlds”. Its main advantage is that while it remains tractable both at the macro and the micro level, it allows for sufficiently detailed and disaggregated analyses.

The microsimulation models based on household income generation models provide a powerful tool to assess the final distributional impact of changes in “distributional drivers”, as illustrated by the validation exercise in the Colombian chapter. Modeling decisions at the individual level implies that household heterogeneity is not only represented in terms of factor endowments and consumption patterns. The welfare implications of discrete changes in individual behavior, such as labor market entry or sectoral movements, can thus be taken into account. The impact of individual transitions out of agriculture in the Brazil study demonstrates the possible magnitude of these discrete individual changes on

106 This is shown by Nicita (2005) for Mexico as well as Arndt et al. (2005) for Mozambique.
household welfare. Here lies the major advantage of such microsimulation models vis-à-vis traditional CGE analyses based on representative household groups.

The shortcomings of the income generation models are discussed at length in each of the chapters and only one major problem should be reconsidered here. It concerns the simulation of occupational transition based on state comparisons. The income generation models for Colombia and Bolivia implicitly assume that the estimated propensity to have a certain occupational status, i.e. to be inactive, or to be employed in the informal/formal or agricultural/non-agricultural sector, is closely related to the propensity to change occupational status. Whether this assumption holds true is an empirical question, which could (and possibly should) be addressed using panel datasets. The Brazilian model relies on employment histories and therefore avoids this problem, but the type of information used reflects to a certain extent short-term behavior.

The Brazilian and the Bolivian chapter use CGE models to trace the transmission channels and quantify the magnitude of the effects of the respective shock. Although widely applied, these models have been criticized for a number of reasons. Analytically, most CGE models rely on the neoclassical framework, although the influence of the “structuralist” school (Taylor 1990) has led to the incorporation of a number of structural characteristics and rigidities in most developing country applications. Which structural characteristics to consider and how to precisely model rigidities, e.g. on factor markets, hence differs between country applications and the research question at hand. The models in this dissertation make an attempt to capture in a realistic way some country characteristics that are key for understanding the transmission of the respective shock. This includes for example the modeling of the gas sector and the related investment flows in the Bolivian model as well as the labor market segmentation in the Brazilian model. Clearly, the two models have their shortcomings. Assuming, for example, neoclassical price setting in the case of traditional agriculture in the Bolivian model, is at best a very rough approximation of reality. In fact, modeling of the rural sector is unsatisfactory in most applied CGE models. Disaggregated input-output data for agriculture are typically not available and agricultural surveys suffer from a lot of problems related to measurement, seasonality, and temporary shocks. In addition to data gaps, the insights from agricultural household models regarding non-separability of production and consumption decisions in rural households (Singh et al. 1986) have not yet entered standard models. More research effort also needs to be dedicated to modeling the informal urban sector. Its heterogeneity in terms of technology, import penetration, and export orientation needs to be addressed. This implies to incorporate the knowledge on the linkages between formal and informal activities into applied

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107 See Löfgren and Robinson (1999), who integrate a rural household model into a standard CGE model, for an exception.
models. However, even with all these improvements, eventually the results of a CGE model will be driven by the assumptions made.

Econometricians challenge the empirical relevance of applied CGE models on grounds of the calibration technique based on very restricted functional forms, typically (nested) CES functions. McKitrick (1998) shows the choice of the functional form to make a considerable difference in the results. Yet, in the developing country context, data to estimate these functions is typically not available and the calibration approach overcomes these data restrictions. Furthermore, it is well known that model results are very sensitive to the assumed trade and production elasticities. Harrison et al. (1993) therefore suggest to perform systematic sensitivity analyses and to provide confidence intervals for the results. The CGE analyses in this dissertation, as most CGE model applications, perhaps do too little sensitivity analysis and rely too much on parameters "typically assumed in the literature".

Yet, an assessment of the validity of CGE model results also depends on the purpose of the model. If the analysis is expected to provide a precise numerical estimate of the effects of a specific policy change, the above criticisms have to be taken very seriously. In contrast, if CGE models are seen as a rather stylized, yet empirically underpinned, analytical tool to better understand the transmission channels of a shock through counterfactual analysis and approximate their relative importance, the critique is less relevant. In this dissertation, CGE models are considered such a tool. This is not to say that the numbers resulting from CGE models are without meaning. They should be taken as the results of a model, given a specific set of assumptions. Claiming that CGE modeling experiments would yield "real world forecasts" appears to be exaggerated.

Instead of using a CGE model, the Colombian study relies on secondary sources and additional descriptive analyses to construct the counterfactual scenarios of "distributional drivers" that can be linked to trade reform. Linking ex-post econometric studies on the impact of policies or shocks on "distributional

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108 See Grimm and Günther (2006) for a recent study on formal-informal linkages in Burkina Faso and a short literature review.
109 See de Maio et al. (1999) and the reply by Sahn et al. (1999) for an exemplary discussion on specific aspects of CGE models applied to developing countries. These aspects include the macroeconomic and labor market closures as well as the assumption on price setting mechanisms. De Maio et al. (1999) challenge the results of a study by Sahn et al. (1997) on the poverty impacts of structural adjustment in Sub-Saharan Africa as reflecting only the assumptions made in the CGE models, and not reality.
110 Admittedly, the CGE applications in this dissertation, in particular the Brazilian chapter, sometimes tend to treat the numbers as being "forecasts".
111 A similar approach is followed by Nicita (2005) who uses his results on price transmission of changes in world market prices in Mexico to simulate the possible effects of trade liberalization on household welfare based on a simple income generation model.
drivers”, such wages or prices, to household income generation models seems to be a promising approach for future research. Quite some studies have examined e.g. the impact of trade liberalization on the distribution of wages and employment.\(^{112}\) The micro analyses in this dissertation have demonstrated that looking at the impact on wages and employment alone does not say much about final distributional outcomes. Increasing female labor market participation provides an example for the complex relationships between employment and wages, on the one hand, and the changes in the distribution of per capita incomes, on the other. Labor market entry of females from poorer households typically worsens the distribution of wages, but may improve welfare of those poorer households considerably. Of course, identifying the effects of a specific shock ex-post is not trivial and requires data with the variation across sectors, regions, and/or time that allows for doing so.

The approach of the Colombian chapter basically combines two “reduced-form” models; a reduced-form model that links trade and labor market outcomes, and a second one that links labor market outcomes and household income. Therefore the exact pathways through which the shocks affect distributional outcomes remain unclear and counterfactual experiments cannot be conducted in such a framework. This would be possible in a general equilibrium model that incorporates heterogeneous individuals. As argued in the introduction, building such an applied model based on a “full-blown, micro-based general equilibrium theory of income distribution and income inequality”\(^{113}\) does not seem to be feasible for developing countries.

Eventually, the appropriate methodology will depend on the shock or policy to be examined and the data available. Data availability and quality is of central importance to measuring progress towards the Millennium Development goals and to the type of analysis conducted in this dissertation. Applying macro and micro simulation models implies working with different types of data sources including national accounts and primary surveys. The experiences gathered during this research hints at large systematic discrepancies between these different sources. As building Social Accounting Matrices for distributional analysis requires the use of household survey data, applied CGE modelers have also noted the considerable inconsistencies between the two data sources (Round 2003, Robilliard and Robinson 2003). The remainder of this conclusion therefore argues in favor of taking data issues much more seriously and putting them at the heart of the research agenda in development economics.

Deaton (2005) illustrates the scope of the problem. Consumption estimated from surveys is typically lower than consumption from the national accounts by approximately 20 percent, with regional differences. Survey income is on average less than 60 percent of GDP. More worrying than these static comparisons are the differences in growth rates. According to the surveys, average annual real per

\(^{112}\) See Arbache et al. (2004) and Winters et al. (2004) for reviews.

\(^{113}\) Quote from James Heckman on the back cover of Bourguignon et al. (2005).
capita consumption growth in the 1990s has been 2.3 percent if the simple average is computed and 1.9 percent if log growth rates are regressed on a time trend. National accounts give growth rates of 3.8 and 4.5 percent, respectively (Deaton 2005). Even if the distribution remains unchanged, consumption growth as measured by the surveys would be too sluggish to make a dent in poverty reduction, while growth measured by national accounts would reduce poverty substantially.

Deaton (2005) provides a discussion of the reasons behind the discrepancies and points to differences that result from differences in definitions, e.g. regarding items to be included into consumption, and differences in meeting those definitions, e.g. in measuring production. National accounts are known to capture production for own consumption, which constitutes an important share of production in poor countries, only to a limited extent. In general, national accounts, in contrast to surveys, are more likely to capture larger transactions than smaller ones (Deaton 2005). As these small transactions are those reflecting the living standards of the poor, Deaton (2005) concludes that poverty can only be measured using household surveys. However, understanding the relationship between growth, inequality and poverty will require a reconciliation of macro and micro data.

In light of these findings, the discipline dedicates astonishingly little effort to data issues. The main problem of basing empirical research on these obviously flawed datasets lies in the fact that the reasons for these differences are likely by to systematic. Yet, as biases are systematic, they can and should be investigated. The described data inconsistencies are not a technical question of interest to insiders, but a key problem when progress towards the Millennium Development Goals needs to be measured: Where is the point of setting quantitative development targets if we lack the means to measure them?

114 See also Robilliard and Robinson (2003) and Ravallion (2001b).