1. General introduction and main findings

The extent to which economic growth reduces poverty has always been a central issue in development economics. Obviously, the extent depends on the distribution of the benefits of growth. Already by the late 1950s, it became apparent that growth in “underdeveloped countries” did not trickle down to the population at large, but was instead accompanied by massive underemployment and unemployment. This “employment problem” implied that growth did not necessarily translate into poverty reduction, but rather to increasing inequalities between those who remained poor and those who were lucky enough to find employment in modern urban sectors. This was consistent with the Kuznets’ (1955) hypothesis of an inverted U-shaped relationship between inequality and development, according to which inequality would tend to increase in the early stages of development. Kuznets (1955) admits that his often cited paper is “perhaps 5 percent empirical information and 95 percent speculation, some of it possibly tainted by wishful thinking.”

Despite these observations, it took until the 1970s and the work of Adelman and Morris (1973) and Chenery et al. (1974) until the question of income distribution within a country explicitly entered the debate. Adelman and Morris (1973) even reached the conclusion that “development is accompanied by an absolute as well as relative decline in the average income of the very poor”, although they were challenged by Cline (1975) and Lal (1976) that this finding was not borne out by their data. Lal (1976) harshly criticized these studies and argued that the “concern with distributional issues amongst the international agencies and American development economists marks more their acknowledgement of their neglect of what a number of Third World governments and many development economists have for a long time recognized to be a major area of concern”. This assessment certainly contained some truth, but these studies had a significant influence on the research agenda. Lal (1976) went on to conclude that these studies “may perhaps do indirect damage to the prospects of the poor by not emphasizing enough that efficient growth, which raises the demand for labor is probably the single most important means available for alleviating poverty in the Third World”. The latter statement illustrates the ideological nature of the discourse between those who “emphasized” growth and others who “emphasized” distribution. This is mainly owed to the fact that the debate of the 1970s still rested, to stick to Kuznets’
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wording, on very little empirical information, a lot of speculation, and possibly even more on wishful thinking.

The emphasis on distributional and poverty issues however was relatively short-lived. With the arrival of the debt crisis in the early 1980s, the focus of both development policy and research shifted towards structural adjustment to current and capital account imbalances. As this went along with the arrival of conservative governments in OECD countries, the view that development and poverty reduction could best be reached through economic growth and free markets dominated. In this environment, little research effort was dedicated to resolve the issues raised by earlier empirical studies on the relationship between the distribution of income and economic development and it took until the early 1990s to put the issue back on the agenda.²

In the late 1980s, concerns were raised that the costs of structural adjustment programs, which were implemented in most developing economies, were disproportionately borne by the poor (Adelman and Robinson 1989).² In the course of the 1990s, this concern was replaced by the worries, in particular voiced by non-governmental organizations, that the benefits of globalization would be concentrated on the rich in the developing world. In the policy arena, the adoption of the Millennium Development Goals in 2000, which put poverty reduction at the centre of development policies, created demand for detailed micro datasets necessary to monitor progress on the poverty reduction goals. Possibly, the major reason why income distribution was back on the research agenda is related to data availability. Investigators could rely on more data of much better quality, in particular on household survey data, thereby dramatically reducing the degree of speculation contained in earlier studies.⁴

In recent years, a burgeoning literature has significantly improved our understanding of the relationship between growth, poverty, and inequality. Today, it is widely acknowledged that on average growth is distribution-neutral and hence reduces poverty (Ravallion and Chen 2003, Dollar and Kraay 2002). In that sense, “growth is good for the poor” (Dollar and Kraay 2002). Ravallion (2001a) however suggests that one needs to look “beyond averages”, as the impact of economic growth on poverty differs substantially across countries. In addition, he notes that this impact can also vary among the poor in a given country. That it is indeed worthwhile to look “beyond averages” is confirmed by many country studies that in recent years have cast light on the very different income distribution

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2 Exceptions include a major research project by The World Bank initiated in 1985, the results of which are summarized in Fields (1989), and some country studies e.g. on Malaysia by Anand (1983).

3 The UNICEF study “Adjustment with a human face” that examines the poverty impact of structural adjustment with a focus on children and other vulnerable groups received a lot of attention at that time. See Cornia, Jolly, and Stewart (1987).

4 See Deaton (1997 and 2003) on data issues.
dynamics during growth both across countries and across time. These dynamics vary case by case, which almost makes it impossible to draw any general conclusions from this literature, not even by region or confined to a specific time-period. The only exception is the increase in inequality throughout the late 1980s and 1990s. Inequality measured by the Gini-coefficient, increased in 6 out of 7 country cases presented in Bourguignon et al. (2005a) covering the 1980s to the mid-1990s and in 8 out of 14 cases in the OPPG project covering the 1990s.

The differences in country experiences of course raise the question of why is this so. It turns out that even more diversity can be found when one attempts to identify the drivers of distributional change. The studies in Bourguignon et al. (2005a) employ microsimulation methods to decompose historical changes in income distributions into “fundamental sources”: (1) Changes in the resources at a household’s disposal, including human capital accumulated through education, as well as socio-demographic changes, such as changes in the area of residence, age structure, and households composition (endowment or population effects), (2) changes in market remuneration of the factors of production (price effects), and (3) changes in the occupational structure of the population, in terms of labor market participation and formal or informal sector of employment (occupational effects).

The main general lesson from the country studies is that observed changes in the distribution of income result from a number of sources, which may offset or reinforce each other. Since country experiences differ considerably, only few common patterns can be identified. One of these patterns is that price effects, i.e. changes in returns to education, were typically inequality increasing. Some

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5 See Christiaensen, Demery, and Paternostro (2003) for a review of a number of Sub-Saharan cases, the country studies on pro-poor growth in the 1990s in World Bank (2005b) and Grimm, Klasen, and McKay (2006), and the collection of East Asian and Latin American experiences in Bourguignon, Ferreira, and Lustig (2005a).

6 “Operationalizing Pro-Poor Growth” was a joint research program undertaken by The World Bank and the French, German, and British donor agencies. The results can be found in World Bank (2005b) and Grimm, Klasen, and McKay (2006).

7 In the tradition of Oaxaca (1973) and Blinder (1973), poverty and distributional changes between two (or more) points in time are decomposed using two (or more) cross-sections of households. This is achieved via simulating counterfactual distributions on the basis of household income generation models that will be described in more detail below. See Bourguignon, Fournier and Gurgand (2001) and Grimm (2005) for further applications of this technique.

8 It should be noted that this empirical operationalization of distributional drivers implicitly reflects the insights from the grand long-term theories of development and distribution from Lewis (1954) and Kuznets (1955) with their focus on intersectoral movements out of a traditional subsistence into a modern enclave sector to recent models originating from endogenous growth theory where externalities, such as parent-to-child human capital or economy-wide technological externalities, drive accumulation, growth and inequality dynamics (Kanbur 2000). It also mirrors short-to-medium term distributional adjustments to external shocks and policy changes that can be explained in a simple neoclassical trade model with fixed factor supplies.
conditional findings include the distributional effect of increasing female labor market participation that is found to be very positive when mainly females from poorer households entered the labor market. Increasing informality generally contributes to increases in inequality and is shown to very strong impoverishing effects on the poor in Brazil. Educational expansion improves the income distribution in some cases, but it can also be inequality increasing in the presence of earnings that are highly convex in years of schooling despite improving the distribution of education.

These findings illustrate the wealth of insights into the microeconomics of income distribution obtained by this type of decomposition analysis. Yet, such an approach leaves many questions open. First and foremost, these questions concern the factors that explain changes in what Bourguignon et al. (2005b) call the "fundamental" sources of distributional change. In other words, which are the factors that explain the increase in wage inequality in many countries, the increase in female labor market participation, increases/decreases in informality, the patterns of educational expansion, and socio-demographic changes? Possible explanatory factors can be grouped into phenomena related to socio-economic development in general, such as demographic changes and human capital accumulation, external shocks, and economic policies. In particular external shocks and policies related to globalization, such as increased trade and capital flows, the related pattern of technological change, and external liberalization, have recently received a lot of attention as possible reasons for the observed increase in inequality in many countries. The empirical assessment of these "fundamental causes" of distributional change is by no means trivial. It implies to analyze the poverty and distributional impact of specific external shocks, economic policies, or other relevant events, rather than analyzing the reduced-form relationship between changes in the distribution of income and economic growth. Such analyses are extremely policy-relevant, in particular when development policies are geared towards poverty reduction.

The chapters in this dissertation therefore address the short to medium run poverty and distributional impact of economic policy changes and external shocks for three Latin American countries. More specifically, chapter 2 examines the impact of trade liberalization in Colombia in the early 1990s. Chapter 3 looks at the poverty and distributional implications of the gas boom in Bolivia. While these two chapters "ex-post" analyze past experiences, the third chapter attempts to assess "ex-ante" the possible effects of multilateral trade liberalization on poverty and the distribution of income in Brazil.

The country case studies included in this dissertation hence analyse the "micro" impact of "macro" events, which raises the question of the appropriate methodology to do so. In the short to medium run, macro policies as well as external shocks affect household incomes and consumption primarily through two channels; (1) through changes in returns to factors of production, in particular to

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9 The short-to-medium run corresponds to 5 to 15 years.
labor, and in employment, and (2) through changes in relative goods prices. The empirical challenge now lies in linking the policy or external shock to these variables in a first step, in order to assess their impact on household welfare, i.e. the distribution of income and poverty, in a second step. In some cases, where a clear link between the shock and household welfare exists, this can be achieved relatively easily. Tax or price reforms, for example, directly affect real household income. Therefore, the distributional impact of such reforms can be evaluated relatively simply on the basis of household survey data.

In most instances, however the analysis is complicated by the fact that there is no direct link between the shock and real household income. Another complication arises from general equilibrium effects that are ignored in the former approach. As a result, most analyses of the poverty and distributional impact of policies and external shocks have turned to Computable General Equilibrium (CGE) models. CGE models based on Social Accounting Matrices (SAM) provide a coherent analytical framework for understanding the complex mechanism through which economic policies and shocks affect household income distribution. Most CGE models applied to evaluate distributional impacts in developing countries are extended neoclassical models that incorporate important structural characteristics of these countries by assuming (a) limited substitution elasticities in various economic relationships and (b) various markets not to work properly. They can be used for ex-ante assessment as well as for ex-post analysis in order to disentangle the effects of different shocks.

CGE models for distributional analysis incorporate different representative household groups representing “classes” defined by area of residence (rural vs. urban), skill level (unskilled vs. skilled), socio-political factors (organized vs. unorganized workforce), or power and wealth (factor endowments, wealth, tenancy of land). In terms of distributional outcomes, the main defining features of

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10 See Sahn and Younger (2002) for a short introduction into this approach. Often, such analyses do not account for behavioral responses, but this shortcoming could be remedied by estimating an appropriate empirical model that could be used to simulate behavioral change.

11 See Robinson (1989). Taking into account these structural characteristics was emphasized by the “structuralist” tradition of CGE modelling (see e.g. Taylor 1990). Only some “macro-structuralist” (Robinson 1989) features, such as markup-pricing and Keynesian multiplier effects did not make it into mainstream CGE modelling. The IFPRI (International Food and Policy Research Institute) standard model (Löfgren et al. 2002) in the tradition of Dervis et al. (1982) represents this current mainstream. Similar models have been applied to a number of countries. See Wiebelt (1996) for a detailed description of such a model for Malaysia.

12 The first big wave of studies using applied CGE models was motivated by the concern about the poverty and distributional impact of structural adjustment programs. A series of country studies undertaken by the OCED Development Centre tried to assess the impact of actual and (hypothetical) alternative structural adjustment packages on the poor (Bourguignon, de Melo, and Morrisson 1991). Sahn et al. (1997) contains a number of country studies from Sub-Saharan Africa.
these household groups in most CGE model applications are differences in their factor endowments and hence the incomes they receive. Possibly, household groups also differ in labor supply, consumption, and savings behavior.

When a shock is applied to a CGE model, sectoral production changes, as do resource reallocations, factor and goods prices, as well as real income and consumption of the respective household groups. To translate the changes in real incomes of the respective household groups into poverty and distributional outcomes, one needs to specify the within-group income distributions. Two approaches have been proposed in the literature (Löfgren et al. 2002). The first, in the tradition of Adelman and Robinson (1978), is to fit (or to estimate) parametric distributions for each household group, e.g. the log-normal distribution that fits empirical income distributions reasonably well. This implies to categorize households in different groups according to the main sources of income or to other important socioeconomic characteristics of the head of the household. The change in mean real income of the respective household groups is applied to this within-group distribution, which is “shifted” accordingly. The within-group distributions are finally summed to give the overall income distribution. The second approach uses disaggregated household survey data, classifies households according to the CGE model household groups, and directly applies the changes in real household group income from the CGE to the survey. The calculation of poverty and inequality changes is then straightforward. This approach is also referred to as micro-accounting.

The representative household group assumption implies that income distribution variations only result from changes between household groups, given that within household groups the variance is fixed. Yet, recent empirical findings on distributional change indicate that changes within the typical representative household groups of CGE models account for an important share of overall distributional change. At first sight, an obvious way out of this problem would be to increase the number of household groups, or even to incorporate all households from representative household surveys. The latter has been done e.g. by Harrison et al. (2000) in an assessment of Russia’s accession to the World Trade Organization (WTO). They find the differences in price effects between a model with 10 representative household groups and a model with 55000 households to be negligible. This finding is not too surprising, as the failure of CGE models to capture some of the distributional dynamics is not grounded in the failure to account for household heterogeneity in terms of factor endowments and/or consumption patterns. The problem is rooted in the fact that CGE models do not account for decisions taken at the individual level. These individual decisions, for

13 See Lay, Thiele, and Wiebelt (2006) for an application.
14 For a detailed discussion of the problems of the representative household group assumption see Bourguignon, Robilliard and Robinson (2005).
15 See again the findings in Bourguignon et al. (2005a) and similar studies cited above.
16 Cockburn (2006) is another CGE application that incorporates all households from a survey.
example entry into the labor market, falling into unemployment or switching between sectors or occupations, are important drivers of distributional change. In other words, the CGE model treats the factor endowments of a household or household group as fixed (although these endowments may grow at an exogenous rate) and fails to represent individual decisions that may alter these endowments dramatically. Of course, CGE models can be extended to include, e.g. unemployment and/or endogenous labor supply. Yet, in order to capture the income distribution implications, decisions would have to taken by “real” individual household members. This implies to introduce individual “fixed effects” into the model and requires the estimation of structural labor market models (Bourguignon et al. 2005b).

Two approaches have been proposed to overcome these shortcomings of applied CGE models. First, individual behavior can be fully integrated into CGE models. There have been attempts to build such fully integrated models (Cogneau 2001, Cogneau and Robilliard 2001), but the results are mixed. In particular the formidable identification problems in estimating the structural labor market equations cast doubts on the robustness of this approach. Second, traditional CGE models have been sequentially linked to microsimulation models based on household income generation models that are estimated from household survey data. Using this approach, a pioneering study by Robilliard et al. (2002) examines the poverty and distributional effects of the Asian crisis. A comparison of the results to those obtained under the representative household group assumption reveals the superiority of using a microsimulation model. In the sequential approach, a shock is first simulated in the CGE model and then the microsimulation adjusts micro data so that values for its aggregate variables (wages and employment) are consistent with the CGE macro equilibrium. The “degree of consistency” between the macro and the micro model however differs between applications of the approach, but in a narrow sense a sequential model is confined to be inconsistent both theoretically and empirically. Theoretically, the changes, e.g. in wages and employment are driven by relative price changes, whereas the microsimulation typically only features a reduced-form representation of labor market behavior where prices do not appear as explanatory variables. Empirically, problems arise from the large differences in national accounts and household data, in particular with regard to labor value added, although some authors, e.g. Robilliard et al. (2002), manipulate survey weights to reach “empirical consistency”. Yet if the analyst were able to reach complete theoretical and empirical consistency between the micro and the macro model, why not build an integrated model anyway.

The strength of the sequential approach lies in the combination of a structural macro model that allows tracing the transmission channels from macro shocks to prices and quantity changes relevant to distributional outcomes and a microsimulation model that provides a detailed account of the household income generation process. The microsimulation model used by Robilliard et al. (2002) follows Bourguignon, Fournier, and Gurgand (2001) and is similar to the one used
in the country studies in Bourguignon et al. (2005a). In this model, household income is defined as the aggregation of earnings of individual household members, earnings from joint household activities and non-labor income, such as transfers or capital income. The econometric specification underlying the income generation process is composed of two types of equations, those describing occupational choices of the household members and earnings/profit equations. Household members typically choose between inactivity, wage employment and participation in a joint household activity, depending on individual and household characteristics. Decisions by household members are modeled sequentially, i.e. the household head’s choice and related earnings enter the decision function of other household members, whereby the simultaneity of occupational choices within a household is taken into account. Of course, simulating poverty and distributional changes based on this type of household income generation models is not without shortcomings. Typically, the behavioral equations, e.g. those governing occupational choices, are estimated from cross-sectional data. It is hence assumed that the observed variation in behavior between individuals is used to simulate behavioral change of (other) individuals in time. Yet, even if panel data was available, constant parameters would have to assumed for the simulation period, which apparently becomes an increasingly problematic assumption the longer time horizon of the analysis.

Two of the three country-studies in this dissertation, Bolivia and Brazil, use the sequential methodology that links a CGE and a microsimulation model – despite its imperfections. Both the CGE and the microsimulation model are adapted to the investigated shock as well as to the structural characteristics of the country in question. The studies explore the advantages of this innovative approach, but also hint at its shortcomings and suggest possible areas for improvements. The Colombia study uses a methodology that is similar in spirit. Counterfactual income distributions are generated using a household income generation model that is shocked by changes in earnings, employment, and relative goods prices. Yet, instead of using a CGE model to construct the counterfactual changes in these distributional drivers, we rely on other studies and additional descriptive analyses to identify the changes that can be related to the trade liberalization shock.

The issues addressed in the three following chapters are highly relevant and hotly debated in the Latin America context, but also beyond this sub-continent. Most Latin American countries are known for their very unequal income distributions and even the middle-income countries including Brazil and Colombia therefore exhibit relatively high levels of poverty. In such an environment, the evaluation of the poverty and distributional impact of policies and external shocks is key for the design of socially sustainable (and politically feasible) economic policies. In the case of external shocks, such knowledge can be important to

17 Although this assumption seems to be very restrictive, it can be plausibly made e.g. in the context of occupational choices, which are explained mainly by individual educational attainment, age, and household composition variables.
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cushion possible adverse distributional and poverty effects. Economists have
developed adequate tools for informing policy-makers ex-ante, i.e. before
decisions are taken. The Brazil study contained in this dissertation is one example
of such an ex-ante policy evaluation. Of course, much can be learned from looking
at past experiences, which is what the other two chapters do.
The biggest “external” shock that has hit developing countries undoubtedly is
globalization. As an integration process, it encompasses increased trade and capital
flows as well as technology transfer. Eventually, globalization and increased
interdependence in world markets are triggered by technological change and both
domestic and multilateral policies, in particular trade and capital account
liberalization. Hence, globalization has many facets.
The chapters in this dissertation shed light on the role of some of these facets in
explaining distributional change. Whether trade liberalization, which is dealt with
in chapters 2 and 3, is good for the poor and whether it increases inequality has
been a major concern of many observers of developing countries.\(^\text{18}\) The resource
boom examined in the chapter on Bolivia may not be directly related to
globalization, but the study’s current relevance for many other developing
countries stems from the fact that the globalization-related economic rise of China
and India has fuelled world demand for commodities that are often exported by
poor countries.

The remainder of this introduction shortly summarizes the main findings and
major methodological features of the country studies. The following chapter
examines the impact of trade liberalization in the early 1990s on income
distribution and poverty in urban Colombia. It first analyzes the effects on the
urban labor market, i.e. on labor earnings and employment, and relative goods
price changes. Using a microsimulation model of the type described above, the
chapter then analyzes how these changes have shaped the distribution of income
and how they ultimately affect poverty outcomes. Increasing informality is found
to have rather small effects, although very poor groups are affected
disproportionately. The increase in the unskilled-skilled wage gap however has
major negative distributional implications and lowers considerably the poverty
reduction potential of growth. The relative price shifts for consumer goods have an
unexpectedly strong positive distributional impact. Finally, the analysis
demonstrates that two factors related to a non-tradable boom, increasing female
labor market participation as well as an increase in informal profits, have played
an important role in cushioning the possible adverse labor market effects of trade
liberalization, in particular for the very poor.

The Bolivian chapter addresses the question of whether the gas boom of the
1990s has bypassed large parts of the poor population, thereby leading to
increasing inequalities in an already unequal society. The chapter examines the

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\(^{18}\) See Winters et al. (2004) for a very comprehensive review of the empirical evidence
on trade and poverty. Some recent evidence with a focus on Latin America can be
found in Harrison (2005).
transmission channels through which the large resource inflows related to the gas boom, both initial foreign investment in the sector and the subsequent export earnings, as well as large public transfer programs affect the distribution of income. These transfers may well be interpreted as a means of redistributing resource rents. The CGE model explicitly models the gas sector and takes into account its enclave character. The focus of the analysis is on the second round labor market impacts of Dutch disease type effects, in particular on shifts between formal and informal employment and changes in relative factor prices. The microsimulation model is specified accordingly. The simulation results suggest that the gas boom induces a combination of unequalizing and equalizing forces, which tend to offset each other. As net distributional change is limited, growth generated by the boom reduces poverty despite increasing informality.

For the Brazilian case, the next chapter intends to evaluate the poverty effects of possible trade liberalization outcomes of the Doha round in the medium run. This implies to assess the poverty impact of a Doha Round (and a Full Liberalization) counterfactual scenario against a scenario that incorporates some of the main features of medium run structural change. The chapter thus examines whether the effects of trade liberalization, in particular on poverty and the distribution of income, are still prominent in the medium run. The main poverty-relevant transmission channels incorporated in the simulation exercise are changes real factor prices and changes in the sectoral composition of the workforce, focusing on employment movements between agricultural and non-agricultural sectors. Structural change is driven by changing consumption patterns, differentials in productivity growth rates across sectors, educational upgrading of the workforce, and, finally, the trade shocks. The methodology combines again a sequentially dynamic CGE model with a microsimulation model that takes into account educational expansion on the micro level. The analysis suggests that the economic effects of the Doha round, even of an “optimistic deep” liberalization scenario, are rather limited for Brazil. Accordingly, poverty would remain largely unaffected by this trade reform, which does not appear to be biased in favor any of particularly poor groups. Yet, through a slight improvement in the urban income distribution the Doha scenario has some positive effect on poverty. In contrast, a full liberalization scenario that implies drastic domestic tariff cuts causes quite substantial welfare gains that are concentrated among some of the poorest groups of the country, in particular those in agriculture. Yet, relatively strong contractions in manufacturing sectors give reasons for concern.

\footnote{This chapter forms part a major research program of The World Bank to assess the poverty impacts of a possible WTO agreement (“Doha” round). World market price changes caused by multilateral liberalization were calculated using a global CGE model and then passed to a number of single country cases. The results of all country case studies as well as a summary can be found in Hertel and Winters (2005). This book also contains a shorter summary version of chapter 3.}