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Poverty, Pro-Poor Growth and Simulated Inequality Reduction

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1. **Introduction**.

Poverty reduction is at the center of policy discussion in every national government, international organization and non-political institution. Given the amount of wealth created in the past century, the main concern for the world is not how to produce goods to feed everyone, but how to ensure that those in most need get their share of the world's riches. Poverty is nowadays more than a practical or technological problem: in the Middle Ages people were bound to starve given the constraints to produce food (or develop remedies to specific health threats); in our time, poverty is an ethical issue and we still need to answer the question: if there is enough food in the world to avoid people dying of hunger, why is this still happening?

In recent years, income poverty has been a major area of analysis in development studies, although it has been agreed that individual welfare does not only depend on monetary terms. Causes and consequences of poverty have been explored all around the world and theoretical models have been developed to explain hitherto obscure causalities. Yet income poverty is still a contested area of study. The basic relationship between poverty, inequality and economic growth has proven to be a hot bed of discussion. Poverty and distribution are closely interrelated, but for many years policy makers focused solely on economic growth and its effect on income deprivation. This view on poverty is changing for good reasons. To achieve the Millennium Development Goals (MDGs) on poverty, a sizeable redistribution process (not necessarily in levels but in growth rates, as we will discuss in this paper) will be needed in some countries (ECLAC 2002). The time horizon of poverty reduction changes drastically if inequality is reduced, and most importantly, the effects of inequality reduction on poverty seem to be larger than the effects of economic growth, as measured by the inequality and growth elasticities of poverty.

Many of the ideas in this paper have been put forward by Bourguignon (2004). This paper contributes to the measurement of the effect of growth and inequality by using real data from several countries. The paper will show that in middle income countries a small redistribution can have large impact on the poverty headcount. It will also show that pro-poor growth, defined as growth patterns that reduce inequality, can save an entire generation of living in poverty in some countries

The paper consists on five sections: section two discusses recent development on poverty, growth and inequality; section three analyses what has been dubbed pro-poor growth; section four presents data methodology and result, and section five concludes.

2. The debate on poverty and inequality

In recent years, the academic and policy making circles have witnessed an intense discussion about income poverty, inequality and economic growth. In particular, inequality is back on the agenda after being neglected for several decades; political, theoretical and practical issues motivated this change of perspective. For many years, discussing and criticizing inequality was tantamount to supporting communist governments, yet the fall of the Berlin Wall and the collapse of the USSR eliminated in some way the ideological aversion to equity in the West. Moreover, economic models developed in the mid nineties (Alesina and Rodrik, Persson and Tabellini, Aghion et al) showed that inequality can negatively affect economic performance –defined as economic growth- through political constraints, limited investment decisions, hindered development of capabilities and social strife. At the same time, new powerful computer systems and software and the expansion of systematic living condition surveys have expanded the chances of studying the complex empirical relations of income inequality and poverty.

There are two main schools of thought in the discussion. On one camp, the partisan of *only* economic growth argue that since we should care about the *absolute* standard of living of the population (a country's or the world's), the relevant variable of analysis is the income of the poor. In other words, since the income of the rich does not affect what the poor are making, we should not be concerned about it. Empirically, some authors have shown that economic growth is equally beneficial for poor and rich (Dollar and Kray 2001), and they have also found that extreme poverty and inequality has been reduced in the past 20 years (Sala-i-Martin)

On the other hand, critics of this approach argue that income inequality does affect the welfare of the poor. Many explanations have come to the fore: the relative deprivation approach and models explaining the negative relationship between income inequality and economic performance due to capital markets imperfections and worsened borrowers' incentives are the most prominent. Also, some authors explain that inequality can generate macroeconomic volatility through political instability or persistent credit cycles (Aghion et al).

This debate is clouded by empirical issues. Measuring the size of inequality and its effects of inequality on growth is not an easy task. Four main methodological questions arise when measuring income: the source of information (individual/household data or national accounts); the definition of the welfare indicator (income or consumption); the adjustments on differences in cost of living and, most importantly, the choice of the unit of analysis (countries, individuals or households). These difficulties are not minor since they affect our view on what has happened in regards to inequality in the past years. Several studies have looked at inequality trends in recent years. The main results are:

Across countries

Classical growth theory predicts conditional convergence in countries' GDP. However, empirical evidence does not support this result. The evidence shows that income gaps between OECD countries and Sub-Saharan Africa are larger than in the recent past (Graph 1). A study (Pritchett 1997) estimates that in a period over a hundred years ending in the mid 1980s, the ratio of incomes in the richest and poorest countries increased sixfold. However, a small number of countries with large population, such as India and China have experienced rapid growth in the past decade.

Across individuals

Milanovic (2002) found an increase in the gap between the richest and the poorest individuals in the world using household survey data. Critics have argued that the time frame of this study - between 1987 and 1998 - is very short and the use of purchasing power parity rates unsuitable.

On the other hand, Sala-I-Martin (2002) demonstrates a sharp reduction on inequality between households in the period 1970 – 2000. Although the results and methodology of this study have been contested, several other researchers have found similar trends (Bhalla, Bourguignon and Morrison). Dikhanov and Ward (1999) show with yet another methodology that inequality measured by the Theil and Gini indices increase from 1970 to 1999; according to these authors, the increase in inequality was clear up to 1990, but for the last ten years of their study the evidence is mixed.

Within countries

Income inequality has been on the raise in the majority of countries in the world, According to PovCalNet from the World Bank, 51 countries or regions within a country experienced an increase in the Gini coefficient in the period 1980 to 2001 (table 2). During the same period, only 30 countries or regions presented a reduction in the income disparities. High income countries saw the gap between rich and poor narrow from the end of the Second World War until the late 1970s, but since then income inequality has increased or remained the same after the 1980s (Cornia 2004). This change in trend started in the mid 1970 in the United States, United Kingdom, Australia and New Zealand followed by the Netherlands and the Scandinavian countries a couple of years later. More recently, Italy experienced an increase in the Gini coefficient by four points in three years during the early 1990s (Cornia).

Some countries in the developing world with low initial income disparity have seen the inequality increase steeply. Such is the case of Argentina and Russia. The Gini coefficient in Great Buenos Aires – home to almost one third of the Argentinean population - went from .345 in 1974 to .538 in 2002. Russia almost doubled its Gini coefficient in 20 years (povcalnet).

Causality

Several studies have focused on the causality between inequality and economic development. The purpose of this paper is not to survey this debate, but rather to present some of the most recent evidence on the literature. A very comprehensive study by Lopez (2004) shows that economic growth does not impact inequality yet when the causality is reversed, he finds that high levels of inequality limits growth. Another relevant finding in this paper is that openness to trade, financial liberalization and a smaller state actually lead to higher growth and an increase in income disparities. Thus, the poor households might not receive any of the benefits of these changes in the institutional framework. The author reports that investment in public infrastructure leads to higher growth rates and lower inequality.

None of these studies will settle the discussion and despite the methodological constraints the debate will most likely continue; the policy question under this debate is making the pie larger or distributing it more evenly? But, why not make a bigger pie more evenly split? This idea is what some authors call pro-poor growth

3. Pro poor growth

Until recently, the relationship between inequality, poverty and growth has not been fully explored. However, in a recent paper, the World Bank's Chief Economist Francois Bourguignon explored the main associations between these three aspects. Bourguignon called this relationship "the Triangle" (Bourguignon 2004) and explained a somewhat evident yet novel policy conclusion: "the rapid elimination of *absolute poverty*, under all forms, is a meaningful goal for development" and to achieve this goal it is needed a "strong, country specific *combinations* of growth and distribution policies". The author continues exploring the main linkages of the "triangle": poverty can be reduced by increasing income (growth) or a better distribution (inequality). A one percent decrease in poverty can be reached via a certain growth rate (the poverty-elasticity growth rate) or by a certain decrease in inequality (the poverty-inequality elasticity). More important, an increase in income is not necessarily a contradiction to a reduction in inequality. This idea has powerful implications: instead of focusing on growth alone to reduce poverty, policy makers can focus on inequality *and* growth *at the same time*.

This idea was dismissed for many years because there seemed to be a trade-off between equity and efficiency. This dichotomy is not that clear anymore in theoretical or empirical grounds. Moreover, it has been found that it is much easier to reduce poverty with a redistributive process in middle income countries[1]. One of the reasons for this is that a large increase in the growth rate needs a massive technological change, in other words, a change in the production function. Mexico, for instance, has achieved a marginal reduction of poverty in the past decade given poor economic performance and an increasingly high income inequality (table 2).

[1] This follows from a well-known result in the standard neo-classical theory of growth: middle income countries will have smaller growth rates than poor countries, a process known as conditional convergence

The best of possible worlds is the one with growth and redistribution. It is evident from the "triangle" that for a given growth rate, a higher decrease in poverty would be achieved if inequality falls. Cornia (2004) mentions that those countries with rising inequality experienced a decrease in poverty of 1.3 % while those countries with smaller disparities achieve a reduction in poverty of 9.8 %.

A recent strand on poverty literature with has developed this idea under the name of "pro-poor growth". This has been defined as "growth that is good for the poor", an extremely broad concept that sheds no light. Moreover, this definition might lead to confusion since any increase in the income of the poorest, marginal as it may be, could be defined as being pro-poor, even if the share of the population on top of the distribution gain much more than the poor. Thus, this characterization of pro-poor growth can be accompanied by increases in relative and absolute inequality. The Department for International Development (DFID) of the United Kingdom proposes two definitions: absolute and relative pro-poor growth. Absolute pro-poor growth "considers only the incomes of poor people"[2]; relative pro-poor growth "compares changes in the incomes of the poor with changes in the incomes of people who are not poor". Under the absolute definition, almost any growth pattern will be pro-poor (provided that the income of the poor increases over time). Relative pro-poor growth, on the other hand, implies a reduction on inequality; in other words, relative pro-poor growth means that the income of the poor grows faster that the income of the non-poor.

An example will clarify matters: Table 3 shows a hypothetical country. Suppose an initial condition where the poorest 20 % of our country earn $10, those between the 20 and the 80 % earn $40, and the top 20 earn $100. We present two growth patters: the first one satisfies the definition of absolute pro-poor growth and the second only the relative definition (although it is also an absolute pro-poor growth pattern). Several conclusions can be drawn from this simple table. First, if the poverty line is $13, we might not reduce poverty at all with our column A ; secondly, despite the fact that the percentage increase in the column B is smaller for the top 20 %, the *absolute* gain ($10) is twice the amount gained ($5) by the poorest 20 %. Third, the overall growth rate in the column A is more than double of column B, yet the effects on poverty might be non-existent. Fourth, inequality dramatically increased in column A, but it was reduced, by some measures, in column B (though not if we use as our inequality measure the ratio between the

[2] DFID acknowledges that this definition was proposed by Ravallion and Chen and it is closely related to the Watt index.

bottom and top quintiles). Advocates of the absolute pro-poor growth definition might say that the poor are better off in both cases.

However, there is a clear difference between these two cases: the welfare of the better off is not affected in any substantive way in either column, whereas for those in the bottom of the distribution it might be a matter of surviving or being able to invest in basic education and health. Moreover, a growth pattern similar to column B will have a larger impact if the main policy objective of national governments and international organization[3] is poverty reduction (as opposed to economic growth).

Recent studies have formalized this idea. Kakwani et al (2004) mention that in terms of poverty decline it is not always the case that maximizing the overall growth rate will be the most efficient method, but then the decision makers should try to maximize what these authors call the "poverty equivalent growth rate". They explain that "poverty equivalent growth rate….takes into account not only the magnitude of growth, but also how much benefit the poor receive from the growth". The idea is very simple, for a given growth rate, several levels of poverty reduction can be observed. But there is one growth rate that will maximize the number of people taken out of poverty. This growth rate will be such that *growth* (not income or wealth) is redistributed to the poor.

In the next section we present some basic simulations that will exemplify the effect on poverty reduction of a static redistribution of income and of different growth patterns.

4. Simulations: method, data and results

The relationship between poverty, inequality and growth can be explained with a simple formula

$$P=F(y, I)$$

Where:

P is the poverty level

[3] This exercise does not show, of course, a third possibility with positive overall growth rate but increasing poverty since it would not be classified as pro poor growth under any of the definitions. However, such a case would still be defended as positive by the advocates of economic growth as the main policy objective.

y is income level

I is the inequality measure

Changes in poverty are determined thus by

$$dP = (\delta F(y^*,I^*)/\delta y)\, dy + (\delta F(y^*,I^*)/\delta I)\, dI + \delta y/\delta I$$

Rearranging terms, we get

$$\Delta\%P = \zeta y * g + \zeta I * \Delta\%I + \delta y/\delta I * 1/P \qquad (1)$$

Where the right hand side is the percentage change in poverty and the left hand side terms include

ζy = elasticity of poverty to income
g = income growth rate
ζI = elasticity of poverty to inequality
$\Delta\%I$ = percentage change in inequality
$\delta y/\delta I$ = correlation between inequality and growth

Formula 1 shows the relationship between changes in poverty as a function of changes in inequality and economic growth and the correlation between income disparities and growth rates.

To explain how a shift in the distribution of income and growth can accelerate poverty reduction empirically, we use simulations using data on income distribution by percentile. These data are usually recorded from living standard surveys and they are the base for most poverty estimates by national governments and the World Bank. We focus on Brazil, Kenya, Malaysia, Mexico, Peru and Russia. The welfare indicator used was generally after-tax income for the household. National computations of poverty incidence were used where available; where this was not the case the standard one or two dollar a day PPP poverty line was used. We utilized in our simulations the 1990-2002 growth rates as reported in the Human Development Report 2004 for those countries with positive per capita growth. For countries with negative growth records (namely Kenya and Russia), we used positive growth rates that were consistent with future possible growth scenarios (based on short term growth projections by the IMF). Table 4 shows the basic indicators for these countries.

We then proceed to estimate the kernel density from these data. The kernel density is a non-parametric estimation of the distribution; thus no assumption about the shape of the distribution is needed. However, other assumptions are needed, such as the bandwidth of the kernel. For this paper, we use the optimal bandwidth[4] with the Epanechnikov kernel (or weighting) function[5].

The exercise is very simple in nature. From the income distribution we can compute inequality measures and poverty incidence. We can also compute the share of income that goes to the top 20 percent and to those below the poverty line[6]. Finally, we can impute growth rates to the income of each percentile and see how income distribution and poverty incidence change.

We present the result of four simulations: one static, three dynamic. These simulations intend to show the effects on poverty of different inequality levels and growth patterns while using real data. They do not go as far as recommend specific policies to achieve these outcomes, but government interventions that redistribute income and focus on inequality are being implemented in many countries.[7]

The simulations can be described as follows:

a) Static redistribution: what would be the poverty incidence if the poor's share of income double due to an income transfer from the top 20 % of the population to those below the poverty line[8].

b) First dynamic simulation: Number of years needed to halve poverty if the distribution of income is to remain unchanged and the per capita growth rate remains the same as in period 1990-2002[9]

[4] The optimal bandwidth was used despite not using the Gaussian kernel function since national income distributions were not expected to be multimodal or highly skewed. The results do not change with different bandwidths.
[5] This function uses quadratic weights.
[6] The lack of reliability in the extremes of the distribution has been widely documented (Szekely and Hilgert 1999). Usually, the top of the income distribution is overlooked and underestimated by surveys due to sample design and size and lack of responses.
[7] Program such as *Oportunidades* in Mexico and *Bolsa Familia* in Brazil have a strong redistributive component
[8] The redistribution rule is important in the final poverty reduction outcome.

c) Second dynamic simulation: Number of years needed to halve poverty if the growth rate of the poor is twice the growth rate observed in the period 1990-2002, yet overall growth rate remains constant[10]

d) Third dynamic simulation: Number of years needed to halve poverty if the growth rate of the poor is twice the growth rate observed in the first year of our simulation. In subsequent years, the overall growth rate increases as inequality falls. This last assumption builds on recent empirical evidence showing that high levels of inequality hamper growth (Cornia 2004)

The dynamic scenarios are based on the following formulation. In the distribution-neutral simulation, the observed growth rate for each country is imputed to each percentile, so that:

$Y_{it+1} = Y_{it} * e^{gi}$ for every percentile i

The pro-poor growth simulation assumes a growth rate of the poor twice the average growth rate observed in the period 1990-2002, with growth rate remaining constant so that:

$Y_{jt+1} = Y_{jt} * e^{gj}$ for every percentile j

Percentile j is defined as those below the poverty line at the initial time t_o

$Y_{it+1} = Y_{it} * e^{git}$ for every percentile i

Percentile i is defined as those above the poverty line at the initial time t_o

The pro-poor growth plus enhanced efficiency simulation is very similar to the pro-poor growth simulation, with the exception that the overall growth rate is not constant over time (given that the reduction in inequality enhances growth). In particular, the growth rate in time t+1 is equal to $gt+1 = gt + \varepsilon$, where ε takes the value of .05 %

[9] There is a methodological issue here, since the observed growth rate for the economy is usually much larger than the income growth rate of households as reported in the living standard surveys (Bhalla)
[10] This assumption have to evident implications: first, inequality will fall every year and to keep constant the overall growth rate, the growth rate for those out of poverty will be smaller every year, as the share of income of the poor increases.

Table 5 shows the main results from the simulations. The first part of the tables shows the main results from the static redistribution exercise. The first evident finding is that in every country poverty would be reduced substantially, even eliminated. But to what cost? The transfer would cost the top 20 % less that 5 % of their current income (except for Kenya); poverty would be cut by more than 10 % on average. This is not small achievement. Under this scenario, most of the countries would meet the Millennium Development Goals for poverty. But it has to be stressed that a redistributive process of this scale might not be feasible and, more importantly, it may not suit every country. Especially, extremely poor countries in Sub-Saharan Africa may not find feasible a redistribution like the one described. But middle income countries with large populations might improve the standards of living of the most destitute with a low cost for the better off. This can also be seen graphically in figure 2. These figures represent the change in the distribution and the location of the median household in poverty. The area between the two curves in the right hand side of the distribution represents the total cost for the top 20 %. As it can be seen, this area is very small, especially when compared to the area gained by the poor.

The dynamic simulations present a different panorama. The main question here is, under the current circumstances, what will take in terms of inequality reduction and economic growth to halve poverty. A study by ECLAC and UNDP analyzed this question for most of Latin America (ECLAC 2002). Our approach is simpler although it contains the same elements as the study me ntioned. Figure 3 show the income level of the median household below the poverty line in our base year. Each of the lines represents a growth pattern as described above. The reduction in the time needed to halve poverty is striking for most of the countries. In Brazil, pro-poor growth would save the median household 20 years in poverty on average relative to just growth without redistribution. Than translates into almost a complete generation escaping from poverty. This is often an overlooked point: It is true that in most cases economic growth alone will lift all boats, but it is also true that it might take a great deal of time to lift the boat of the poorest people in a country. It is hard to imagine a policy maker explaining to a poor community that it will take the government 30 years to lift them out of poverty.

Pro-poor growth policies

How to achieve a growth process that benefits more those in poverty? So far we have focused on what is possible; this section will briefly tackle the main findings on how to achieve it.

A very comprehensive and recent document by the World Bank, DFID and others (2005) enumerate the main successful pro-poor growth policies and provide specific examples in countries where policy-makers have achieved an increase in the standard of living of the poor. The document mentions that with the majority of poor living in rural areas and incomes primarily coming from agricultural activities, it is of extreme importance to increase productivity and growth of this sector can have large impacts in poverty reduction. According to Ravallion and Chen (2004) growth in the primary sector in China has approximately four times the impact on poverty reduction than growth in the secondary and tertiary sectors. In Bangladesh,large increases in agricultural productivity were observed following liberalization of the imports of agricultural inputs allowing farmers to purchase reasonably priced irrigation. This led to the adoption of modern crop varieties and the use of fertilizer by poor farmers. Rising remittances also helped farmers invest in agriculture. All this factors contributed to a 10% drop in poverty rates during the 1990s.

This same DFID-World Bank document analyses food and cash crops. The majority of the population in Uganda and Ghana, it mentions, were involved in food crop production as opposed to export (cash crop) production. As a result, small percentage changes in poverty for food crop farmers yielded the greatest percent share of poverty reduction. In Uganda, 66.6% of the population is involved in food crop agriculture. This group saw only a 13.2% positive change in poverty, but contributed to 48.9% share of poverty reduction. Cash crop agriculture in Uganda employs only 5% of the population, and while their change in poverty was greater (18.8%), they only constituted 5.3% of the share of poverty reduction.

Access to markets is another pro-poor growth policy that has shown some success in countries like Indonesia, Bangladesh and Vietnam. In Indonesia, following the oil revenues earned in the 1970's a sizeable investment in rural roads, communications, irrigation and ports were built to move goods around the country. Roads increased 8.3% annually and trucks registered rose by 16.5% annually. These highly labor-intensive projects also created jobs in the process. The

poverty headcount in Indonesia fell from 40% to 15% in the period 1976-1990. This option is of large relevance for Africa since 60% of the rural population in this continent live in areas of medium to high agricultural potential but have poor or no market access.

Other policy options to achieve pro-poor growth in the agricultural sector include property rights and risk management. Strengthened property rights allow farmers incentives to invest in their own land to raise productivity. The decollectivization of land in 1988 and land use certificates issued to all rural households under the 1993 Land Law helped stimulate and diversify crops in Vietnam. In Africa, a major complaint about the land system there is that it lacks transparency and clarity. In order to address the problems of clarity, a development of new formal systems that strengthen customary land practices is needed.

However, not all poor people are related to the primary sector and nonagricultural growth, more often than not, is much faster than agriculture. Although this category does not account for a majority of poverty reduction (due to a much larger share of the poor involved with agriculture), the chances of emerging from poverty are far greater for those outside the agricultural sector. Increasing enrollment numbers in secondary education as well as education for girls is an important factor in nonagricultural growth and urban poverty reduction. Because labor in the nonagricultural sector requires an increased set of skills, the poor should acquire those skills through education. Improvements in female education have significant effects on lowering fertility rates which in turn has a positive impact on women's ability to enter the labor market. Conditional cash transfers linked to school attendance in Brazil, Bangladesh and Mexico were also beneficial in reducing poverty. It should be noted, though, that quality still needs to remain an important factor as well as enrolment. In Uganda, massive increases in primary enrollment led to a decrease in education quality with a lack of text books and increased class sizes.

5. **Conclusions**

This paper presented some exercises that gauge the extent of the effect of inequality reduction on poverty. Despite arguments about the relevance of inequality in poverty reduction policies, it is clearer every day that growth alone will not eliminate poverty. Moreover, some simple calculations demonstrate that the time horizon of poverty reduction falls dramatically if we reduce inequality.

Contrary to what some authors and newspapers suggest, inequality matters. They argue, correctly, that market economies are not a zero sum game, and thus improvements in the standard of living of the whole population are feasible. But they miss some crucial points: the distribution of the wealth creation (the flow of goods and services being produced every year) can affect the growth path and, most importantly, the distribution of *growth* is important in the timeline of poverty reduction. They seem to imply that it is unimportant if we halve poverty in 70 years, instead of 20

In that context, the results shown in this document are important in the context of the Millennium Development Goals: if the poverty goals are to be met, a large redistribution process is needed. This redistribution might not be in term of income or wealth, but rather in terms of *economic growth*. In other words, to reach the poverty MDGs, the poor must achieve higher growth rates than the non poor. Specific policies should aim at this, depending on the particularities of the country.

What set of policies is a much harder question, but nonetheless extremely urgent. Some countries, such as Mexico and Brazil, have implemented targeted, or smart, transfers that focus on breaking the poverty cycle. These policies focus on the poorest and imply a redistributive process. But more efforts are needed to promote productive sectors from which the poor obtain their income. If poverty is to be history any time soon, policy makers need to focus not only on economic growth, but on income redistribution.

Tables and figures

Table 1

	Changes in income inequality	
	1981-2001	
Decreasing Gini	**No change**	**Increasing Gini**
30 countries or regions	**15 countries or regions**	**51 countries or regions**
Albania	Cambodia	Argentina
Algeria	Central African Republic	Azerbaijan
Armenia	Gambia	Bangladesh
Burkina Faso	Macedonia, FYR	Belarus
Cameroon	Malawi	Botswana
Colombia	Mali	Brazil
Costa Rica	Mozambique	Bulgaria
Dominican Republic	Namibia	Burundi
Ethiopia	Rwanda	Chile
Georgia	Sierra Leone	China-Rural
Guyana	St. Lucia	China-Urban
India-Rural	Swaziland	Cote d'Ivoire
Iran, Islamic Rep.	Tajikistan	Croatia
Jamaica	United Republic of Tanzania	Czech Republic
Kenya		Ecuador
Mauritania		Egypt, Arab Rep.
Mongolia		El Salvador
Pakistan		Estonia
Panama		Ghana
Senegal		Guatemala
South Africa		Honduras
Thailand		Hungary
Trinidad and Tobago		India-Urban
Tunisia		Jordan
Turkey		Kazakhstan
Uganda		Kyrgyz Republic
Venezuela, RB		Lao PDR
Vietnam		Latvia
Yemen, Rep.		Lesotho
Zambia		Lithuania
		Madagascar
		Malaysia
		Mexico
		Moldova, Rep.
		Morocco
		Nicaragua
		Niger
		Nigeria
		Paraguay
		Peru
		Philippines
		Poland
		Romania
		Russian Federation
		Slovak Republic
		Slovenia
		Sri Lanka
		Turkmenistan
		Ukraine
		Uzbekistan
		Zimbabwe
Source: PovCalNet, WorldBank		

Table 2

Mexico poverty and inequality trends							
		1992	**1994**	**1996**	**1998**	**2000**	**2002**
Extreme poverty		22.5	21.1	37.1	33.9	24.2	20.3
Inequality (Gini Index)		54.3	54.8	53.0	55.2	53.9	51.6
Source: Ministry of Social Development, Mexico							

Table 3

Hypothetical country with different growth patterns

	Initial income	Column A: absolute pro-poor	Column B: relative pro poor	Column A growth rate	Column B growth rate
Bottom 20	$ 10.00	$ 11.00	$ 15.00	10%	50%
Mid quintiles (20 to 80 %)	$ 40.00	$ 50.00	$ 50.00	25%	25%
Top 20	$ 100.00	$ 150.00	$ 110.00	50%	10%
Total income	$ 150.00	$ 211.00	$ 175.00	41%	17%
Overall growth rate		41%	17%		

Table 4

	Mexico	Brazil	Kenya	Russia	Malaysia	Peru
GDP per capita annual growth rate 1990-2002	1.4	1.3	-0.6	-2.4	3.6	2.2
Poverty headcount	16	22	23	5	8	18
HDI rank 2002	53	72	148	57	59	85

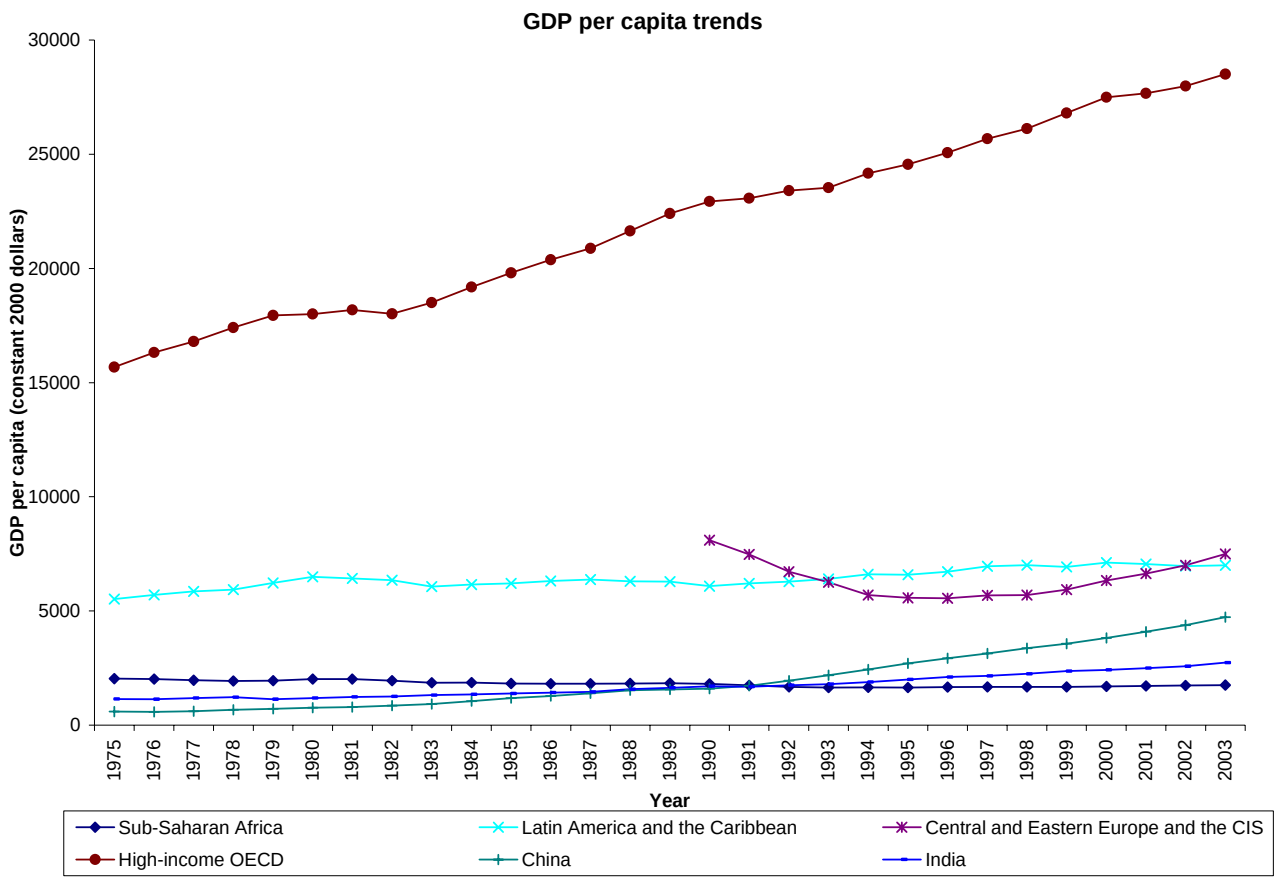
Note: given that growth rates for Kenya and Russia were negative in the period specified, we used an assumption of 1% in Kenya and 3 % in Russia

Table 5

Simulation results: static and dynamic redistribution

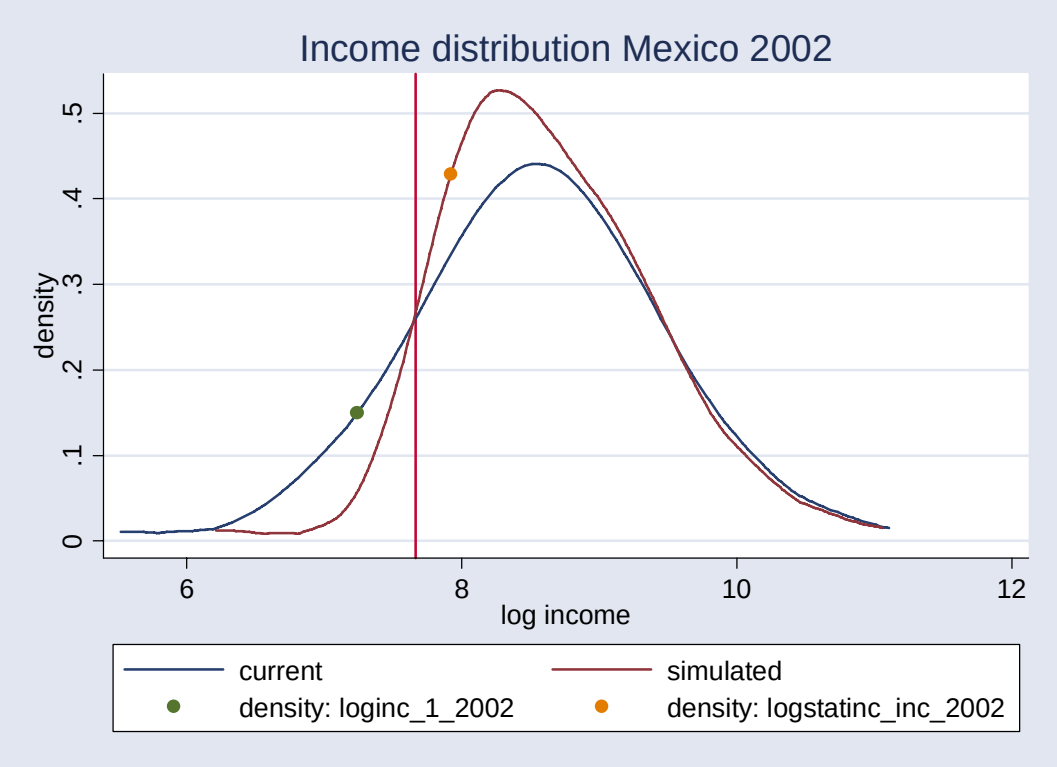
	Mexico (2002)	Brazil (2002)	Kenya (1997)	Russia (2000)	Malaysia (1998)	Peru (2002)
Doubling the income share of the poor. Static transfer from the richest 20 % to the poor						
Poverty rate decline	from 16 to 4 %	from 22 to 7 %	from 23 to 4 %	from 5 to 1 %	from 8 to 2 %	from 18 to 6 %
Number of people out of poverty	12 million	26 million	5 million	5.8 million	one million	3 million
transfer as percentage of total houshold income	2.57	2.91	7.00	0.38	1.70	2.38
transfer as proportion of 20 % richest total income	4.7	4.6	14.2	0.8	3.8	4.0
Years to take the representative houshold out of poverty with different growth patterns						
simulation 1(no change in the distribution)	2032	2041	2030	2014	2004	2025
simulation 2 (pro-poor growth)	2017	2022	2013	2007	2000	2014
simulation 3 (pro-poor growth and inequality-growth interaction)	2015	2018	NA	2007	2000	2013

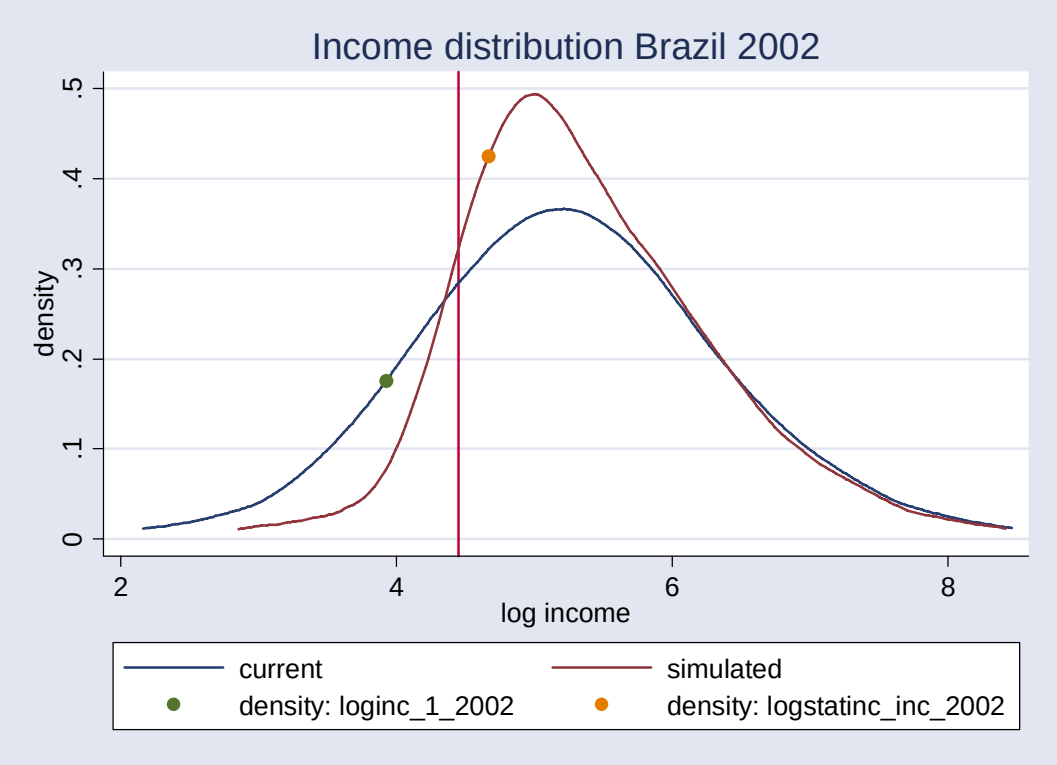
Figure 1

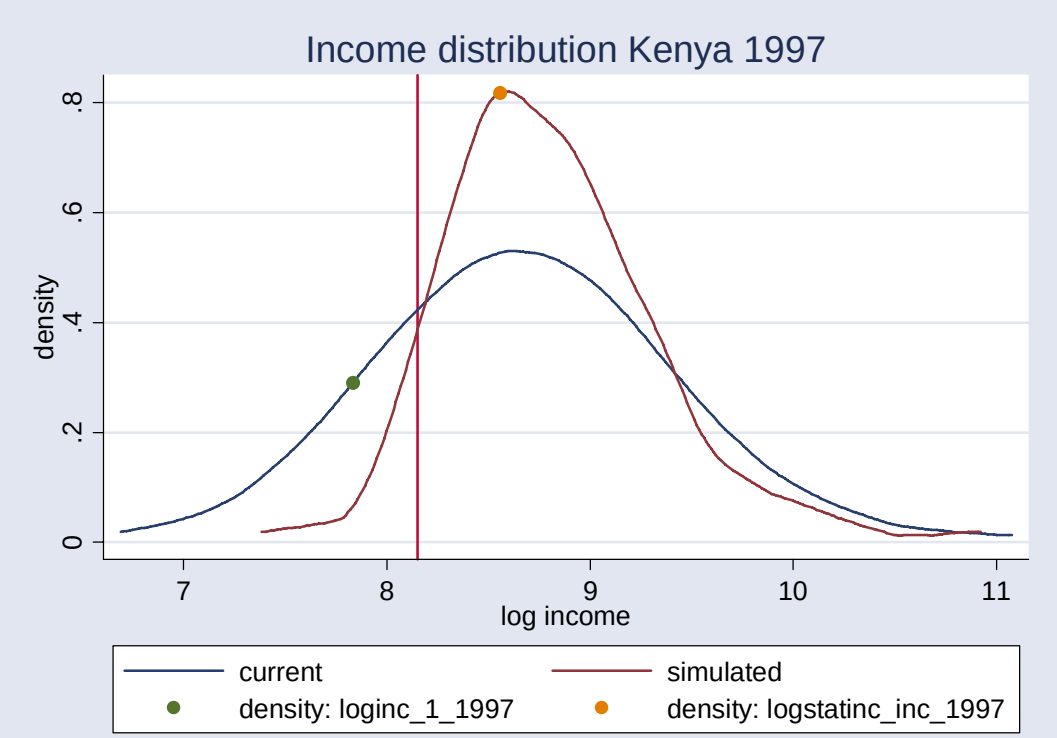


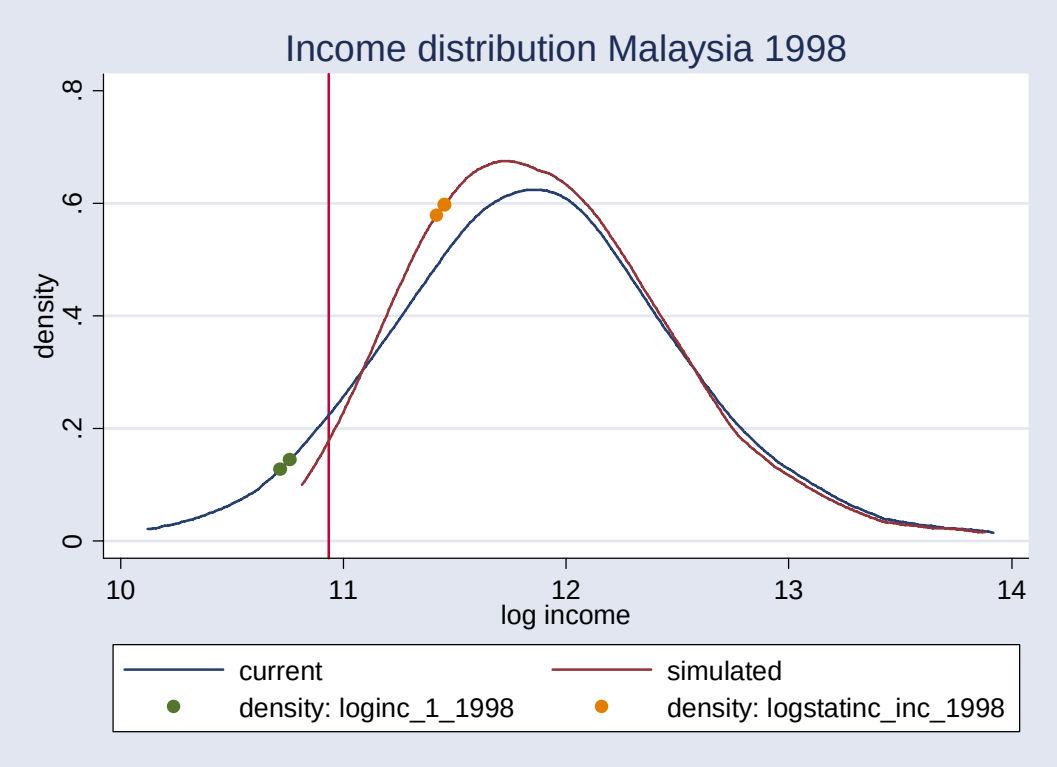
Source: calculated based on data from the World Bank

Figure 1


Income distribution Mexico 2002
density
0
.1
.2
.3
.4
.5
6
8
10
12
log income
current
simulated
density: loginc_1_2002
density: logstatinc_inc_2002


Income distribution Brazil 2002
density
0
.1
.2
.3
.4
.5
2
4
6
8
log income
current
simulated
density: loginc_1_2002
density: logstatinc_inc_2002


Income distribution Kenya 1997
density
0
.2
.4
.6
.8
7
8
9
10
11
log income
current
simulated
density: loginc_1_1997
density: logstatinc_inc_1997


Income distribution Malaysia 1998
density
0
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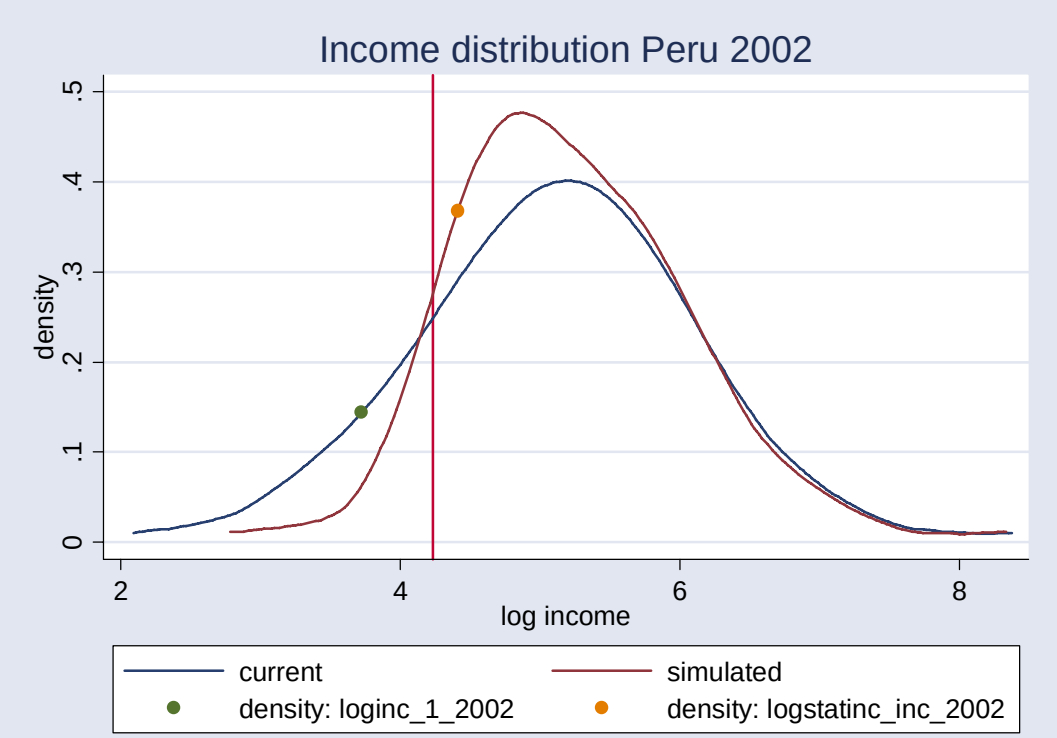
.4
.6
.8
10
11
12
13
14
log income
current
simulated
density: loginc_1_1998
density: logstatinc_inc_1998


Income distribution Peru 2002
density
0
.1
.2
.3
.4
.5
2
4
6
8
log income
current
simulated
density: loginc_1_2002
density: logstatinc_inc_2002

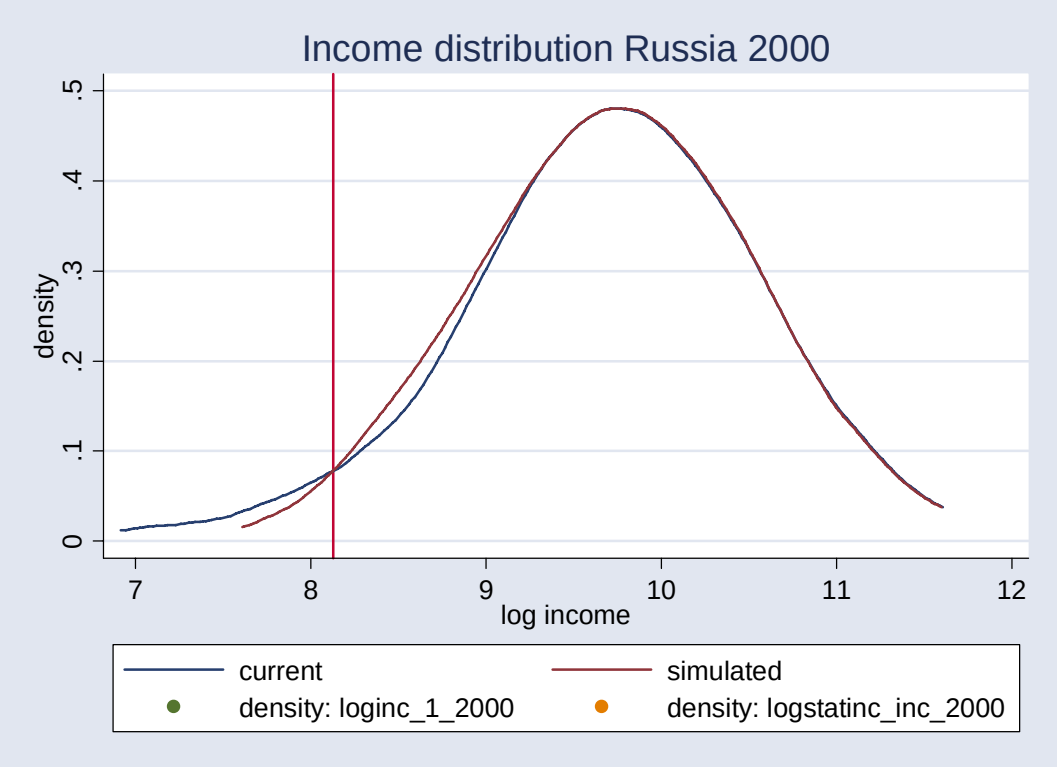
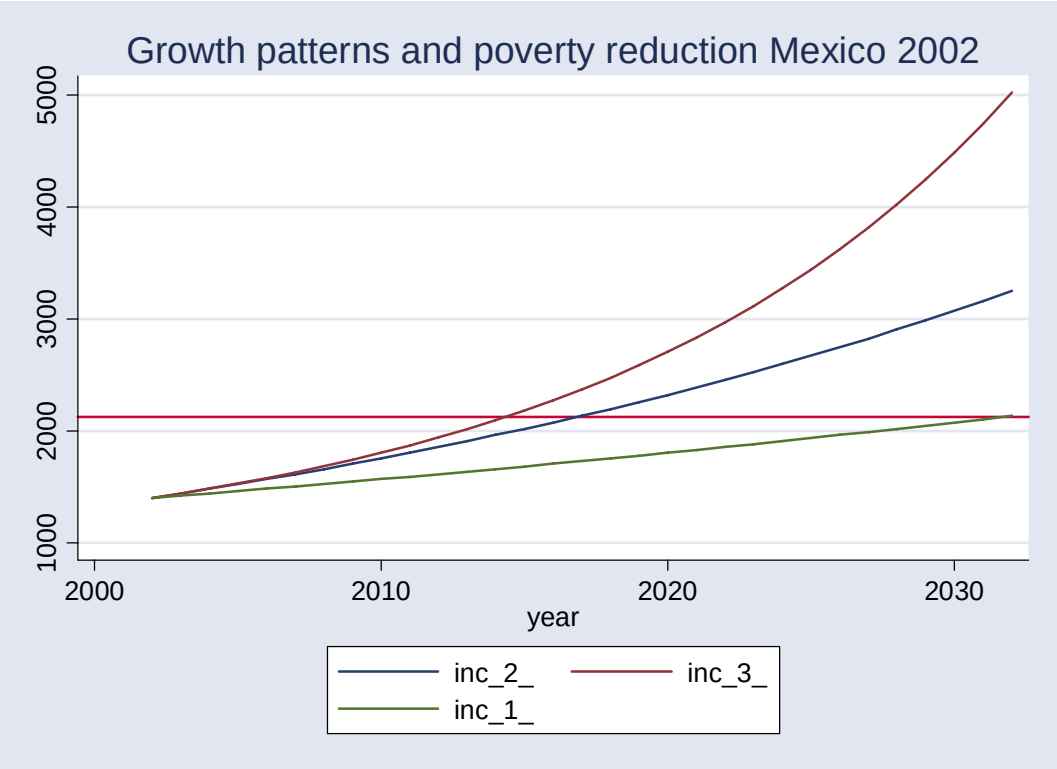
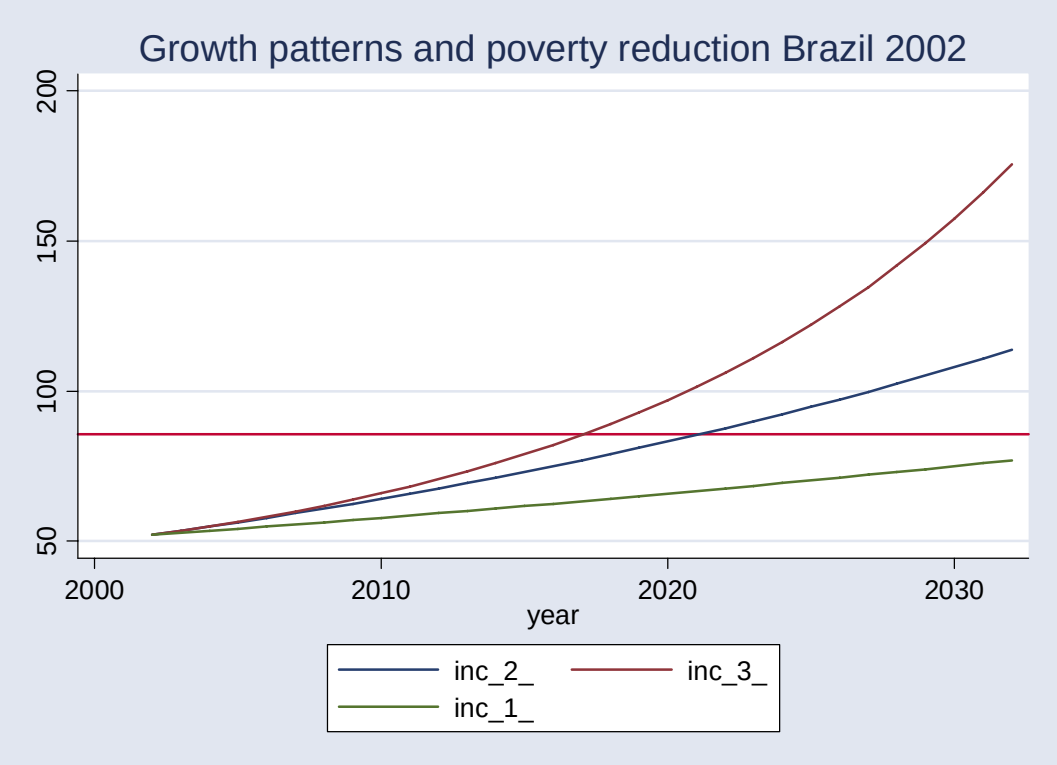
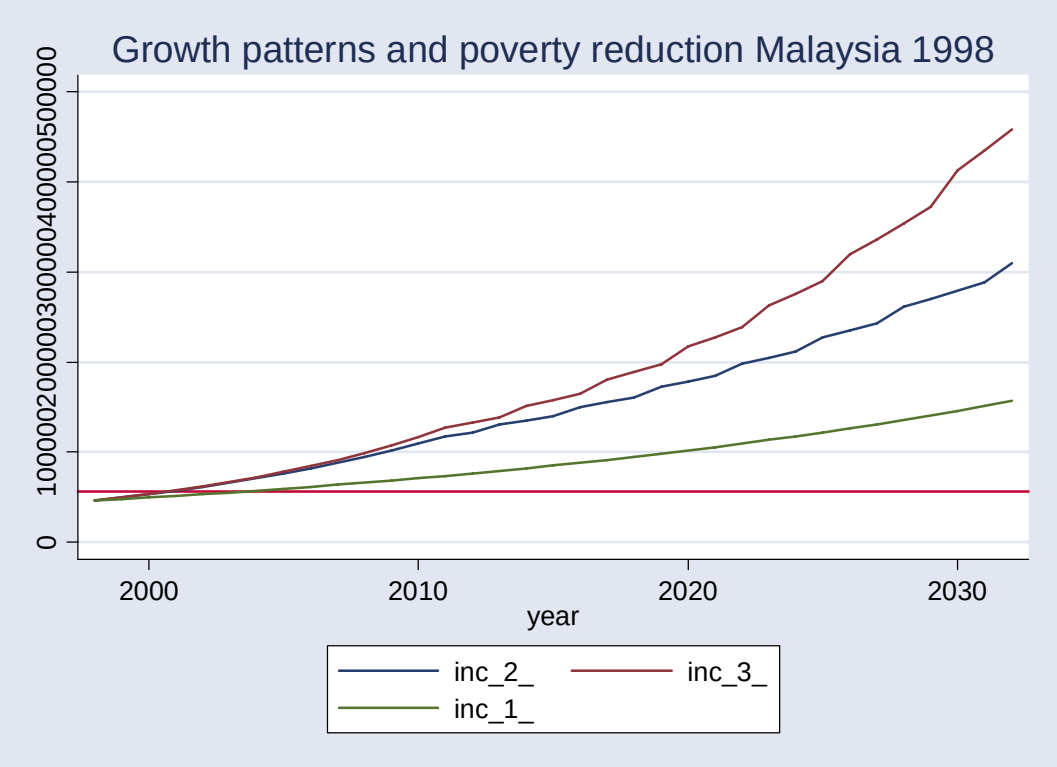
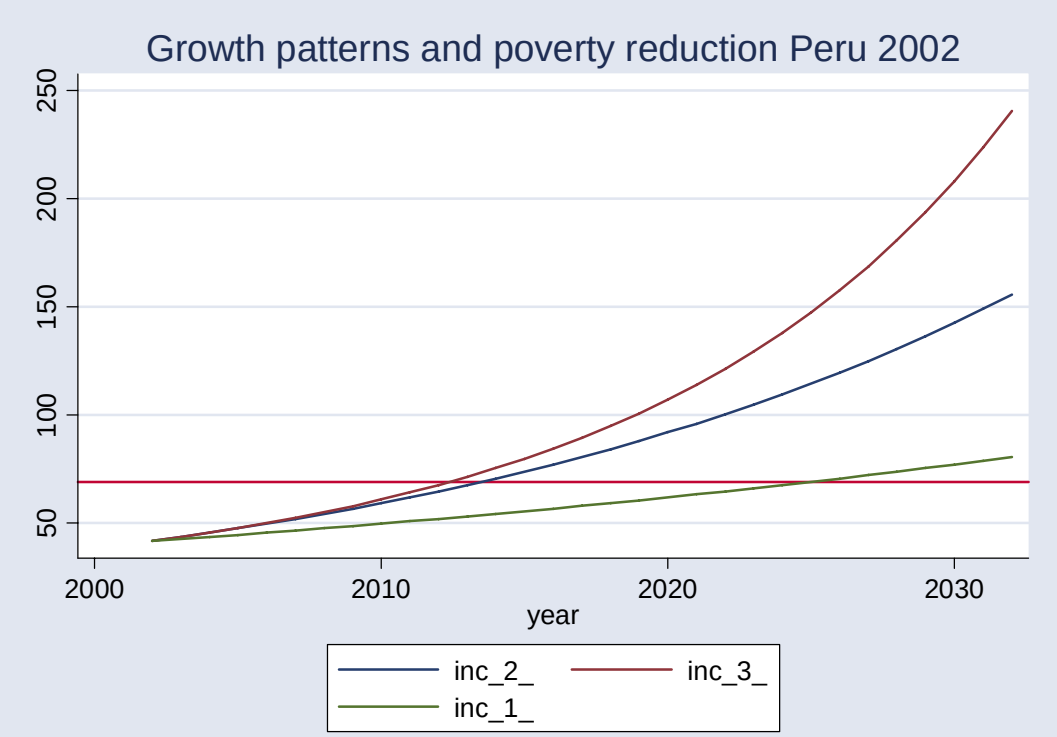

Income distribution Russia 2000
density
0
.1
.2
.3
.4
.5
7
8
9
10
11
12
log income
current
simulated
density: loginc_1_2000
density: logstatinc_inc_2000

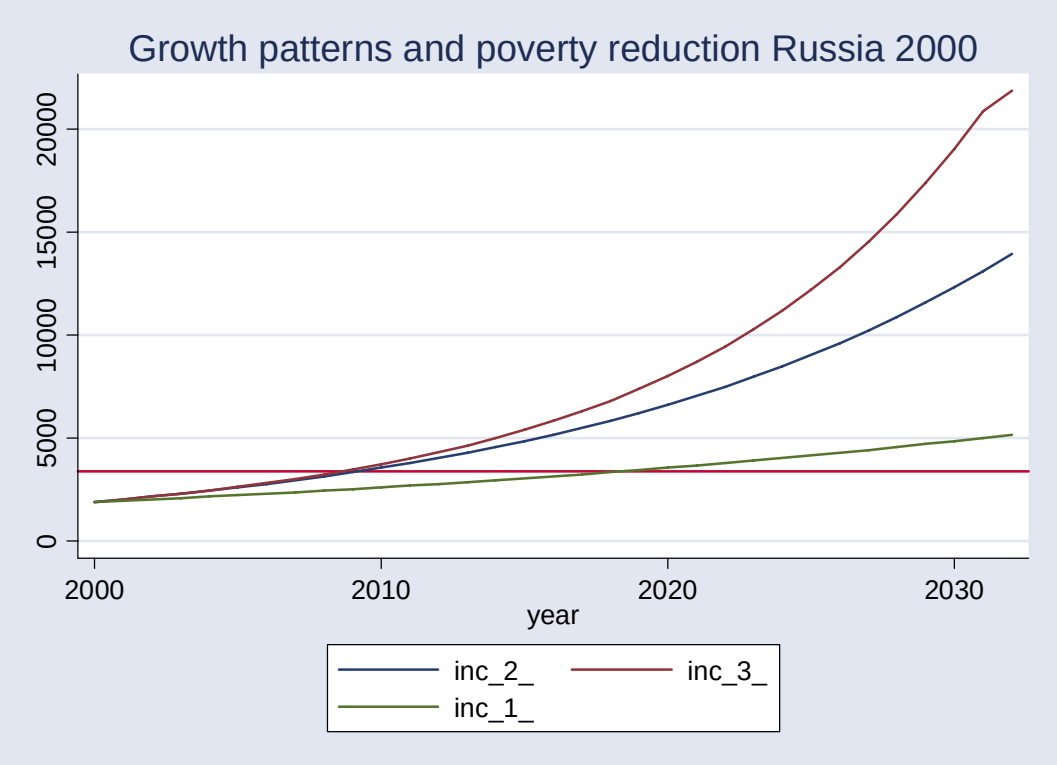
Figure 2


Growth patterns and poverty reduction Mexico 2002
1000
2000
3000
4000
5000
2000
2010
2020
2030
year
inc_2_
inc_3_
inc_1_


Growth patterns and poverty reduction Brazil 2002
50
100
150
200
2000
2010
2020
2030
year
inc_2_
inc_3_
inc_1_


Growth patterns and poverty reduction Malaysia 1998
0
10000020000030000040000050000
2000
2010
2020
2030
year
inc_2_
inc_3_
inc_1_


Growth patterns and poverty reduction Peru 2002
250
200
150
100
50
2000
2010
2020
2030
year
inc_2_
inc_3_
inc_1_


Growth patterns and poverty reduction Russia 2000
20000
15000
10000
5000
0
2000
2010
2020
2030
year
inc_2_
inc_3_
inc_1_

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