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Poverty, inequality, and
social policies in Peru:
As poor as it gets

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Resumen

This paper analyzes trends in poverty, income inequality and social policies in Peru in the last twenty years. Our objective is to explain what lies behind the generalized perception and complain by Peruvians that welfare and living standards have not got any better in at least two generations.

We find problems in several fronts: lower expenditure than the average in the region, which could explain restrictions in coverage and quality of services, but also problems related to targeting, delivery of services, and overlapping, and deficient design and choice of effective programs. We also discuss why is that social policies have failed to deliver crucial assets for short, and specially, long term poverty and inequality alleviation in Peru, and present some guidelines to improve social policy design and implementation in Peru given past lessons, with special emphasis on the Millennium Development Goals (MDG) framework as a tool for policy planning, design, and costing.

Key words: Inequality, poverty, social policies, Millennium Development Goals.

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1 Introduction

This paper analyzes trends in poverty, income inequality and social policies in Peru in the last twenty years. Our objective is to explain what lies behind the generalized perception and complaint by Peruvians that welfare and living standards have not got any better in at least two generations. Poverty and unemployment have been, recurrently, at the top of the chart of the main concerns considered by Peruvians of all socioeconomic levels (APOYO, 2006) surpassing corruption, security, bad education and other common problems in any developing country[1].

We first explore the empirical relationship between persistent poverty, economic stagnation and inequality trends in recent years in Peru. We believe the absence of sustained growth explains a good deal of poverty persistence but also that, due to the growing discrepancy between household survey data and national accounts, not enough emphasis has been given to increasing inequality in Peru, which is another important factor explaining lack of progress in poverty reduction. Secondly, we discuss the weaknesses of public social expenditures to help reduce poverty and inequalities in the short and medium run. We find problems in several fronts: lower expenditure than the average in the region, which could explain restrictions in coverage and quality of services, but also problems related to targeting, delivery of services, overlapping, and deficient design and choice of social programs. Finally, we discuss why is that social policies have failed to deliver crucial assets for short, and specially, long term poverty and inequality alleviation in Peru, and present some guidelines to improve social policy design and implementation in Peru given past lessons, with special emphasis on the Millennium Development Goals (MDG) framework as a tool for policy planning, design, and costing. There is a sense of urgency because of strong popular pressure to improve and deliver better results. However, urgency should not imply just spending more in policies and programs which have proven to be ineffective so far.

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[1] With the exception of some years in the early nineties where terrorism climbed to the top of this same chart. It is also surprising that high inequality itself is not considered a main problem.

2 Medium run poverty persistence in Peru: Uncovering the roles of economic stagnation and increasing inequality

There has not been any major progress in poverty reduction in the last decades in Peru. On the contrary, medium run comparable series of monetary poverty measured with per capita household consumption produced at the World Bank (Loayza and Polastri, 2004), show an upward shift from a 40.7% incidence in the mid-eighties (living standards household surveys began in 1985-86) to over fifty percent in this decade (51.6% in 2004)[2].

There are no annual series of poverty incidence for the eighties and nineties but the five points in time available (Table 1) show that short run poverty evolution has followed closely (in an anti-cyclical manner) economic performance in Peru. Two recessions were accompanied by sharp increases in poverty incidence. The hyperinflation and recession in the late 80s produced a huge increase of poverty incidence from 40.7% in 1985 to 54.8% in 1991. The moderate recession between 1997 and 2001 caused another significant increase in poverty from 46.4% to 54.8%. Poverty has been reduced only during periods in which the economy has experienced a boom or a recovery. A fall from 54.2% to 50.7% between 1991 and 1994 and another reduction to 46.4% in 1997 (yet, this poverty incidence was still higher than in 1985 despite the fact that per capita GDP had fully recovered from the 1980s crisis). Finally, we observe a small reduction from 54.8% in 2001 to 51.6% in 2004 (which was still higher than in 1997 in spite of the fact that per capita GDP in 2004 was much higher than in 1997)[3].

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[2] This paper worked with datasets for years 1985 to 2004 available up to December 2006.

[3]* The reduction is even smaller when the comparison is made between comparable quarters of the year: poverty incidence was 54.8% in 2001-IV and 53.2% in 2004-IV (Casas and Yamada, 2005). Poverty-growth elasticities in boom periods are between 0.6 and 0.7, lower than the average international figure (around 1) found by Dollar and Kray (2001) and other authors. Nevertheless, a breakdown by regions shows that poverty fell between 2001 and 2004 more rapidly in rural areas off the coastal region, partly due to investment in extractive activities but also because of the development of new agricultural export products. This is a welcoming trend which, if sustainable, could reduce wide and persistent geographical disparities in Peru.

Table 1: Peru, Poverty incidence, Per Capita GDP and Private Consumption

Year	Poverty incidence[1/]	Av.Yr. Var%	GDP per capita	Av.Yr. Var%	Per capita private consumption	Av.Yr. Var%
1985	40.7%	-	7,526	-	5,369	-
1991	54.2%	4.9%	6,079	-3.5%	4,571	-2.6%
1994	50.7%	-2.2%	6,775	3.7%	4,900	2.3%
1997	46.4%	-2.9%	7,644	4.1%	5,496	3.9%
2001	54.8%	4.2%	7,399	-0.8%	5,343	-0.7%
2004	51.6%	-2.0%	8,091	3.0%	5,706	2.2%

Source: First column: World Bank; third and fifth column: Central Bank of Peru (BCRP).
1/ Poverty incidence was estimated with the ENNIV household surveys from 1985 to 1994 and with the ENAHO household surveys from 1997 to 2004. In order to make a times series strictly comparable in levels, Loayza and Polastri (2004) applied backwards the variations registered in ENNIV surveys to the absolute level estimated with the 1997 ENAHO survey, and estimated the effect of sample upgrading in 2001.

The bottom line for the entire period is a significant poverty increase with almost unchanged trends in per capita macro figures (per capita GDP grew only 7.5% and per capita private consumption increased by 6.3%). Macroeconomic stagnation combined with extreme volatility should be blamed for no progress in poverty reduction but not necessarily for a significant increase in poverty. Unpleasant poverty arithmetics would tell us that a further deterioration in income distribution is the missing link to explain the full picture[4]. Is this so?

To propose an analytical answer to this question we will limit ourselves to the trend observed between 1997 and 2004, which replicates (with smaller variations) the same stylized facts of the last twenty years: there has been an increase in poverty incidence from 46.4% to 51.6% despite the fact that per capita private consumption in national accounts has not fallen (actually, there was a net increase of 3.8%; see the last two columns in Table 2).

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[4] Poverty incidence is measured using household expenditure which includes social transfers. Therefore, deterioration in the distribution could be due both to market forces and the lack of effectiveness in social programs.

Table 2: Poverty incidence, Gini coefficient, average spending and private consumption per capita

Year	Poverty incidence[1/]	Extreme poverty incidence	Gini coefficient (expenditure)	Average per capita expenditure [2/]	Av.Yr. Var%	Per capita private consumption [3/]	Av.Yr. Var%
1997	46.4%	18.2%	0.409	5,095	-	5,496	-
2001	54.8%	24.1%	0.406	4,113	-5.2%	5,343	-0.7%
2002	54.3%	24.2%	0.421	4,350	5.8%	5,507	3.1%
2003	52.2%	21.9%	0.388	4,128	-5.1%	5,596	1.6%
2004	51.6%	19.2%	0.376	4,137	0.2%	5,706	2.0%

Source: Columns 1 to 5: ENAHO 1997-IV, 2001-IV, 2002-IV, 2003, 2004; Columns 6 and 7: BCRP.
1/ Loayza and Polastri (2004). 2/ Provided by household surveys, soles of Metropolitan Lima of 2004. 3/ Provided by national accounts, soles of 2004.

When one tries to square this kind of picture, the first hurdle faced is the usual divorce between macro figures and micro level household data. Income and consumption inequality measures are estimated relying almost exclusively on households surveys. In this sense, Gini coefficients[5] coming from the ENAHO household surveys show a reduction of expenditure inequality from 0.409 in 1997 to 0.376 in 2004. How can poverty increase in a context of inequality reduction and relatively constant per capita consumption macro figures? Actually, ENAHO figures are internally consistent by definition: per capita consumption measured in household survey has fallen by 18.8%. The discrepancy is between consumption captured in household surveys and consumption measured in national accounts.

Indeed, the first concept amounts to 73% of the second one in 2004. There are some consumption items not included in both variables. Consumption in household surveys does not include imputed rents (although it is usually estimated) nor durable goods. However, the literature on the topic stresses selective survey non compliance as the main reason for discrepancy in this case (Deaton 2004, Korinek, Mistiaen, and Ravallion 2005). Households at the upper levels of income distribution opt out of the survey trying to avoid revealing total incomes and consumption. In the case of the lower segments of income distribution, the main argument is usually underreporting of income

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[5] The Gini coefficient is the inequality indicator mostly used in economic research and public debate. It goes from 0 (total equality) to 1 (total inequality). It accounts for the relative size of the area between the Lorenz curve and the 45 degree line of perfect equality (Sen, 1973). Following the usual methodology used to calculate poverty incidence, these Gini coefficients were estimated directly from the ENAHO surveys and, thus, capture all market provided and self-produced goods and services plus self reported public transfers.

because of their volatile nature and association with self employment activities. However, consumption levels captured with detailed questionnaires have proven not to be a problem (this is why consumption levels usually exceed income levels in the first deciles of the distribution).

National accounts might have problems on their own, for instance they may not fully capture all informal activities in the society, while the way in which consumption is usually measured (by residual) may cause a chain of measurement errors (Deaton, 2004; Francke, Iguíñiz and García, 2005).

Our take from this discussion is that since there is no significant underreporting in the lower part of the consumption distribution, poverty incidence is reasonably captured by household surveys. However, due to underreporting of rich households, micro level surveys do not measure accurately the true consumption or income distribution of the society (the one to be matched with national accounts)[6]. Hence, our prior is that Gini coefficients estimated using household surveys are biased downwards.

Economists and statisticians have used the lognormal distribution (that corresponds to a random variable whose log is normally distributed) as a good approximation of the actual income and consumption distributions in different places and times[7]. Figure 1 shows the consumption distribution of Peru in 2004 (the actual data used to estimate monetary poverty) smoothed out with the Kernel procedure. It looks indeed like a lognormal distribution with the usual left skewness due to consumption inequality (i.e.: high concentration of population in low consumption levels). To see this more explicitly, we took logarithms to consumption figures and plot them again in Figure 2, which resembles a reasonably behaved bell-shaped normal distribution.

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[6] Other authors have tried alternative adjustments like correcting labor income proportionally to all households to match national account numbers, assigning all capital income to the upper quintile and recomputing the Gini coefficient for income distribution (see references in Szekely, Lustig, Mejía and Cumpa, 2000). However, no adjustment has been tried for the consumption distribution.

[7] Classic work using this parametric approach to model the size income distribution dates back to Pareto (1897) and, more recently, it has been implemented by Singh and Maddala (1976) and Bourguignon (2003). See additional references in López and Serven (2006).

Figure 1: Kernel Distribution of Per Capita Consumption (2004)
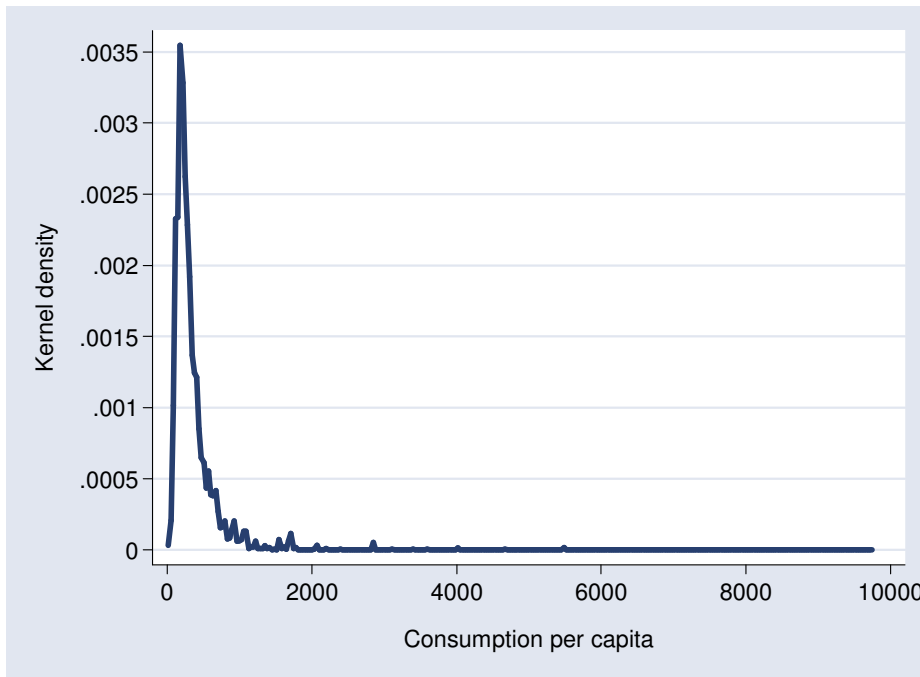
Source: ENAHO 2004-IV.

Figure 2: Kernel Distribution of the Logarithm of Per Capita Consumption (2004)
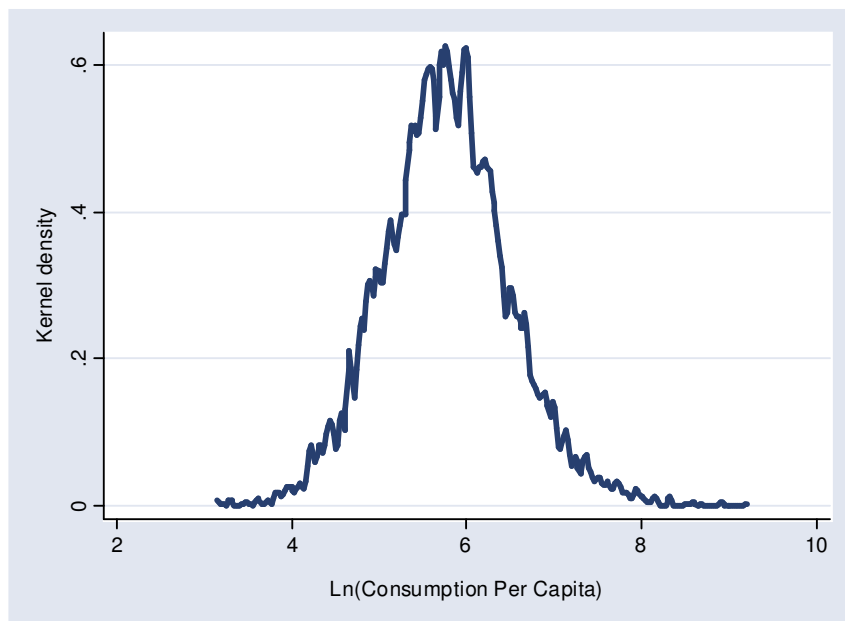
Source: ENAHO 2004-IV.

Despite this observational equivalence, and following Lopez and Serven (2006), we were unable to actually prove lognormality in income and consumption distributions as captured in the 2001, 2002, 2003 and 2004 surveys (see Appendix A). However, the statistical procedures allowed us to verify that 99% of the actual spread of the income

and consumption data can be correctly predicted with the theoretical properties of a lognormal distribution. This finding is the empirical base to our approach to estimate alternative values and trends of the Gini coefficient which can be consistent simultaneously with poverty figures and macroeconomic trends (national accounts).

The World Bank has recently assumed log normal distributions and has used data from household surveys to compute poverty levels, mean consumption and incomes, and Gini coefficients in order to decompose poverty changes into a growth (due to changes in mean consumption and income) and a distribution (due to changes in inequality) component.

We assume lognormality too and further consider that poverty incidence is already reasonably measured. Based on this, we replaced mean consumption from household surveys with its counterpart from national accounts, and then recomputed adjusted Gini coefficients. In this way, we can build a more consistent macro-micro picture of recent trends in poverty, growth and inequality in Peru (see Appendix A).

Table 3 shows our results. As expected, Gini coefficients obtained with the procedure outlined above are higher than those calculated exclusively with household surveys in both consumption and income terms[8]. What is more important for this analysis, the trend in the Gini coefficients differ. While the traditional Gini coefficients have experienced a reduction between 1997 and 2004 (though failing to generate any important poverty reduction), our alternative coefficients have witnessed a significant increase that helps to explain why is that the recent expansion in both per capita income and consumption have failed so far to deliver a significant poverty reduction at the national level[9].

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[8] In the case of consumption, we tried to reduce a potential upward bias due to the absence of measurement of durable goods in the following way. The household survey for 2000 has a module with estimated values of durable goods and the year of purchase. Hence, we were able to compute an estimated flow of expenditure in durable goods for all households and express this as a percentage of total consumption. With this, we subtracted the estimated aggregate expenditure in durable goods from total consumption reported in national accounts.

[9] We were not able to undertake a similar exercise at the regional level due to the absence of macro data series at this level in Peru.

Table 3: Gini coefficients for consumption and income per capita derived from household surveys (HS) and national accounts data (Macro)

Year	Consumption		Income	
	HS	Macro	HS	Macro
1997	0.409	0.428	0.486	0.614
2001	0.406	0.545	0.490	0.652
2004	0.376	0.566	0.477	0.687

Source: ENAHO 1997-IV, 2001-IV, 2004-IV; BCRP.

According to our estimates, inequality has increased drastically in recession times (while official numbers show stability), and has failed to decline in recovery times (contrary to what official numbers show).

We do not want to overstress the meaning of the absolute number of the coefficients because of data limitations already discussed. Most important for us is the overall consistency with the trend in the economy as a whole. For instance, and regarding the recent debate in Peru about whether there has been "trickle down" or not, now it can be argued that the "trickle down" effect was weakened by the increase in inequality which we could not observed directly in household surveys.

In any case, these absolute numbers could be considered an upper bound for the true Gini coefficient if we relax our assumption that household surveys capture indeed all the consumption of the poor. It might still be missing some items and values of durable and non durables consumption. Hence, poverty might be somewhat lower and inequality somewhat lower too. On the other hand, current estimates of Gini coefficients based solely on household surveys seem to be the lower bound of the true Gini coefficient for the reasons explained above.

As already mentioned, another important use of this lognormality assumption is the fact that we can analytically decompose the contribution of economic growth and inequality changes to poverty reduction. Table 4 presents our results using the evolution of Gini coefficients and mean expenditure captured in household surveys and compares them with those obtained using the evolution of macro data mean expenditure and our recalculated Gini coefficients (those reported in Table 3 above)[10].

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[10] Changes in poverty are consistent with those captured in ENAHO 1997-IV, 2001-IV, 2004-IV. The results obtained using formulae provided in Appendix A were normalized in order to fit these changes.

Table 4: Growth and distribution components explaining total change in poverty (average annual percentage changes)

	1997-2001		2001-2004	
	Household surveys	Macro data	Household surveys	Macro data
Growth component	6.6%	0.7%	-0.2%	-3.8%
Distribution component	-0.1%	5.8%	-0.8%	2.8%
Total change in poverty	6.4%	6.4%	-1.0%	-1.0%

While the overall change in poverty remains the same, the evolution exhibited by our new Gini coefficients allows us to tell a story different from that captured with household surveys alone, and more consistent with the trend of the aggregate economy. In fact, and while household surveys would blame a fall in mean expenditure as the main culprit behind the significant poverty increase occurred between 1997 and 2001, our calculations put the blame on inequality and provide a story more consistent with the mild recession experienced between those years. If we refer to the period 2001-2004, household surveys would explain the small reduction in poverty incidence and the lack of "trickle down" arguing that, in fact, there was almost no growth to be "trickled". Our exercise, on the other hand, reveals that growth indeed occurred (as anyone revising macro data would have to admit) but that it failed to be "trickled".

3 The failure of public social spending to reduce income inequality in Peru

Public social spending in Peru finances the free provision of education and health services and supplementary food and nutrition programs which should benefit mainly the poor population. As such, it should reduce market-based inequalities in final consumption in the short run, and help create more egalitarian opportunities of income generation in the long run, through human capital accumulation.

Figure 3 pictures the evolution of per capita social spending in real terms in the last 35 years. Several features are worth mentioning. First of all, there has not been any major progress in the real amount provided of social spending per capita. The annual value of 278.5 soles (around 84 US dollars) in 2004 was only 30% higher than the amount in 1970 (0.8% of average annual growth). This is not a welcoming trend in a country with

such a high level of income inequality as discussed in Section 2. Secondly, social spending has been quite volatile following the evolution of the economy in a pro cyclical and amplified manner. The periods when social spending has fallen sharply (1978-79, 1982-1985, 1987-1991) have been clearly associated with economic crises in Peru. Only recently we note a more stable growth pattern and much smaller reductions in social spending during times of economic recession (1997-98 and 2000)[11].

Figure 3: Per Capita Public Social Spending in Peru, 1970-2004
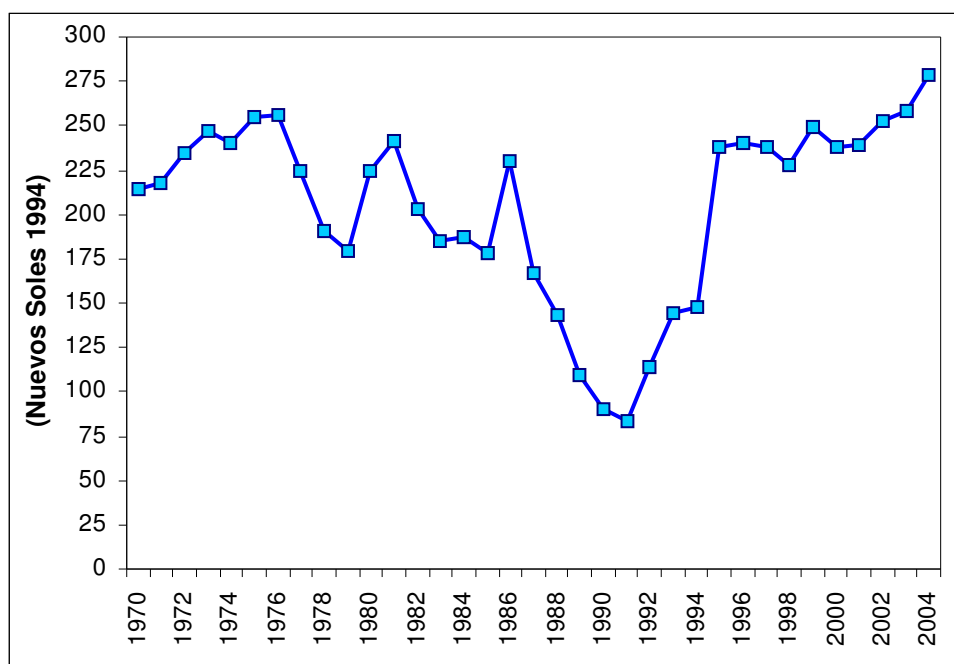
Despite this, social expenditure still exhibits a procyclical behavior that jeopardizes the possibilities of, at least, maintaining the coverage of social spending during recessions. In fact, and following Wodon *et. al* (2000), it is possible to decompose the elasticity of social spending per poor (SS/HN) with respect to per capita GDP $\left(\varepsilon_{SS/HN,y}\right)$ into three components: (i) the elasticity (with respect to growth) of the participation of total spending (TS) in GDP $\left(\varepsilon_{TS/Y,y}\right)$; (ii) the elasticity of the participation of social spending in total spending $\left(\varepsilon_{SS/TS,y}\right)$; and (iii) the elasticity of the incidence of poverty $\left(\varepsilon_{H,y}\right)$. Formally:

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[11] However, it took 27 years (up to 2003) to recover the real levels of social spending already achieved in 1976.

$$\varepsilon_{SS/HN,y} = 1 + \left(\varepsilon_{TS/Y,y} + \varepsilon_{SS/TS,y} \right) - \varepsilon_{H,y}$$

Where $\varepsilon_{TS/Y,y} + \varepsilon_{SS/TS,y} = \varepsilon_{SS/Y,y}$. Given the above, we require $\varepsilon_{SS/HN,y} \leq 0$ during recessions if we are to talk about a social spending scheme that protects the poor when their consumption is most affected. For this to be true, and given an elasticity for the incidence of poverty with respect to growth during recessions $\varepsilon_{H,y}^R$, the following must hold:

$$\varepsilon_{TS/Y,y}^R + \varepsilon_{SS/TS,y}^R \leq \varepsilon_{H,y}^R - 1$$
$$\varepsilon_{SS/Y,y}^R \leq \varepsilon_{H,y}^R - 1$$

and this condition crucially depends on the possibility of observing an anti-cyclical behavior for social spending that guarantees that its participation in GDP raises during recessions $\left(\varepsilon_{SS/Y,y}^R < 0 \right)$. Regarding this, estimations presented in Castro (2006) for the period 1994-2004 show that the ratio of social spending to GDP exhibits a positive (and symmetric[12]) elasticity with respect to growth of around 2.3%. This, together with the empirical regularity of an elasticity of poverty incidence with respect to growth smaller than –1% (see Section 2 and Loayza and Polastri (2004)), means that the pro-cyclical behavior of social spending implies that its coverage during recessions (social spending per poor) falls about 4% for each 1% reduction in per capita GDP.

3.1 The composition of public social spending

Currently, more than half (57%) of total social spending finances all levels of public education, 29% goes to support health services of different complexity levels, and the remaining 14% finances dozens of small social assistance programs which provide mainly food support to the population (see Table 5). This distribution has changed significantly overtime. In the 1970s, almost three fourths (74%) of spending went to education, roughly one fourth (22%) financed health and only 4% went to social assistance programs. Hence, there is a worrying sign that even with the same amount of real resources per capita, the capacity of social spending to provide more egalitarian opportunities of income generation in the long run has weakened, specially considering

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[12] Understood as being the same during recessions and expansions.

the fact that most Peruvian food programs have not been effective in reducing child malnutrition, providing only short term poverty alleviation (see, for instance, Gajate and Inurritegui, 2001; Stifel and Alderman, 2003). Moreover, this time trend also reflects the political response to the long term economic crisis and poverty persistence in Peru which has provoked a strong demand for more short term poverty alleviation.

Table 5: Composition of Social Public Spending

Years	Education	Health	Social Assistance	TOTAL
70's	73.9%	21.8%	4.4%	100%
80's	70.9%	24.3%	4.8%	100%
90's	59.4%	24.4%	16.1%	100%
2000-2004	57.2%	29.2%	13.6%	100%

Source: BCRP, World Bank.

Another debatable issue is whether the composition of spending within categories responds consistently to criteria of equity and efficiency. For instance, Table 6 shows that tertiary education takes one fifth of the total education budget despite the evidence that it benefits mainly the middle and upper deciles of the income distribution (see later discussion on targeting). However, from the point of view of efficiency, recent evidence (Yamada, 2006) shows that this level of education has the highest social rates of return. This result reflects to some extent the remedial character of higher education in a country where basic education is so ineffective (potential workers have to compensate low quality in basic education with more years of education up to university levels and this is paid accordingly by the market).

Table 6: Public spending in education by program in 2004

Destination	Share of Total Public Spending in Education
Primary education	36.4%
Secondary education	31.1%
Tertiary education	19.5%
Pre-primary education	8.4%
Special education	1.1%
Assistance to pupils	1.1%
Infrastructure	1.1%
Physical education and sports	0.6%
Training	0.6%

Source: SIAF-MEF.

3.2 Decomposing trends in per capita social spending

More formally, we can discuss the medium term evolution of public social spending per capita (SS/P) as influenced by three components: the share of total public spending devoted to social items (SS/TS), which shows the "fiscal priority" given to social spending; the ratio of total public spending as percentage of output (TS/GDP), which pinpoints the "budget pressure" exercised by the government over the economy; and the trend in per capita output (GDP/P), which measures the economic performance of the country. This is true because:

$$\left(\frac{SS}{P}\right) = \left(\frac{SS}{TS}\right)\left(\frac{TS}{GDP}\right)\left(\frac{GDP}{P}\right)$$

An increase in any of these three components, holding fixed the other two, will be translated into a higher level of public social spending per capita. The exact numerical formula is:

$$\Delta\%\left(\frac{SS}{P}\right) = \Delta\%\left(\frac{SS}{TS}\right) + \Delta\%\left(\frac{TS}{GDP}\right) + \Delta\%\left(\frac{GDP}{P}\right) + \text{Interaction Term}^{13}$$

Table 7 shows that during the 1970s and the 1980s in Peru per capita social spending fell on average 1.7% per year during the 1970s. This was mainly due to declining budget pressure (because of the first fiscal adjustments undertaken in the late 70s) (1.0% of average fall per year), and also because of lower fiscal priority -demonstrating that social spending usually fell more than other public expenditures during crises (average fall of 0.6% per year). Output growth barely helped in the picture growing only 0.3% per year during that decade.

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[13] This is equal to:

$$\left[\left(\Delta\%\left(\frac{SS}{TS}\right)\right)\left(\Delta\%\left(\frac{TS}{GDP}\right)\right)\right] + \left[\left(\Delta\%\left(\frac{SS}{TS}\right)\right)\left(\Delta\%\left(\frac{GDP}{P}\right)\right)\right] + \left[\left(\Delta\%\left(\frac{TS}{GDP}\right)\right)\left(\Delta\%\left(\frac{GDP}{P}\right)\right)\right] + \left[\left(\Delta\%\left(\frac{SS}{TS}\right)\right)\left(\Delta\%\left(\frac{TS}{GDP}\right)\right)\left(\Delta\%\left(\frac{GDP}{P}\right)\right)\right]$$

Table 7: Decomposition of trends in social expenditure per capita

| Years	GDP per capita	Budget pressure	Fiscal priority	Interaction	Social expenditure per capita
70's	0.3%	-1.0%	-0.6%	-0.3%	-1.7%
80's	-1.7%	0.0%	-1.0%	-0.4%	-3.1%
90's	1.4%	3.5%	5.2%	0.6%	10.7%
2000-2004	1.9%	-1.4%	1.9%	0.0%	2.4%

Source: BCRP, World Bank.

The situation was worst in the following decade: per capita social spending dropped 3.1% on average per year, but this time the lion's share explaining the trend was the output fall (-1.7% per year), specially during the hyper recessions of 1983 and 1988-89. There was not further fall in budget pressure but still lower fiscal priority (1.0% fall per year) contributed to the drastic fall in per capita social spending.

Economic recovery during the 90s helped to sustain a 10.7% average increase per year in per capita social spending. However, it was not the most important factor on average, given a 1.4% growth per year. The boost in social spending was explained, firstly, by the increase in fiscal priority (5.2% per year) and, secondly, by the recovery in fiscal pressure (3.5% increase per year). The current decade is witnessing an average increase in per capita social spending of 2.4% per year, equally explained by economic growth and rising fiscal priority (1.9% of growth per year). Budget pressure is actually falling during this decade.

Figure 4 shows that there has been a sustained increase in the fiscal priority given to social spending during the last fifteen years. When this positive trend is combined with good economic performance such as the one observed during the first half of the 90s and during this decade, the result is a rising trend in per capita social spending (Figure 3). Moreover, when the government recovers its tax and spending capacity (this happened during the early nineties due to the successful stabilization program and the tax administration reform), there can be a triple dividend benefiting social spending. However, let us recall that we are just recovering our way lost with continuous crises in the past and that there is no indication of better quality in the expenditures.

**Figure 4: Social Spending, Fiscal Priority and Budgetary Pressure
as percent of GDP (2004)**
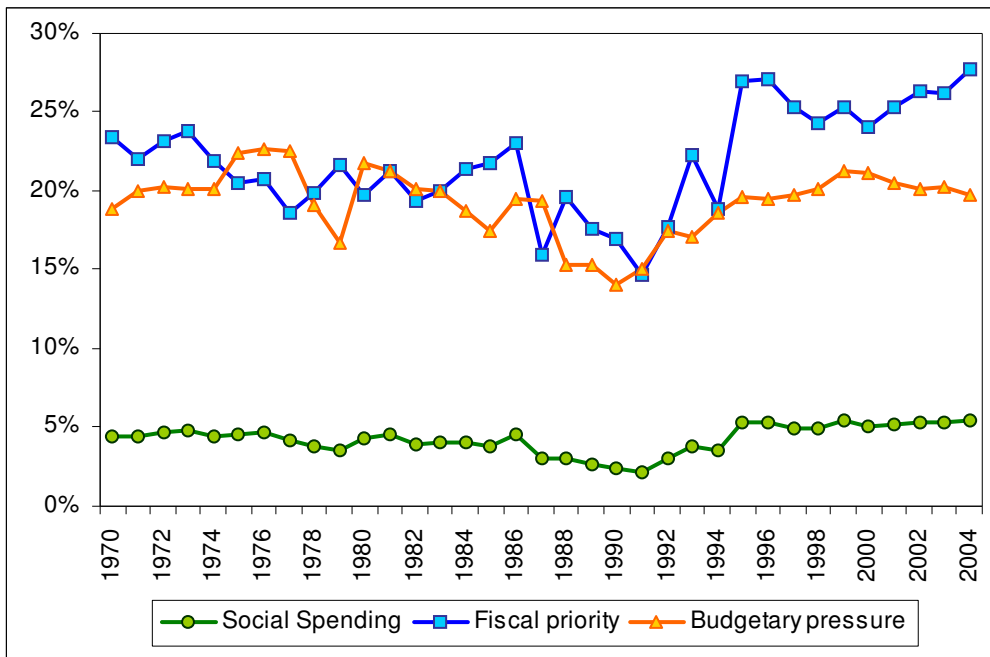
Source: BCRP, World Bank.

3.3 Comparison with other Latin American countries

How are we doing currently compared with other countries in the region? Peru devotes
to social spending comparatively less than most countries in Latin America (see Figure
5). In 2004, total social spending was equivalent to 5.5% of GDP in Peru whereas the
average (unweighted simple average for 16 countries with comparable data) allocation
to these concepts in Latin America was 8.2% of GDP (Cotlear, 2006). Only Ecuador
and Guatemala spend comparatively less than Peru (as percentage of GDP). This lower
than average performance happens in all three concepts. In public education, Peru
spends 3.2% of GDP compared to a regional average of 4.2%. For public health, Peru
devotes 1.6% of GDP while the region as a whole devotes 2.7% of GDP. In the case of
social assistance, Peru finances programs amounting to 0.7% of GDP whereas the
average Latin American country spends 1.3% of GDP in this kind of programs.

Figure 5: Public Social Spending as Percentage of GDP in Latin America, 2004
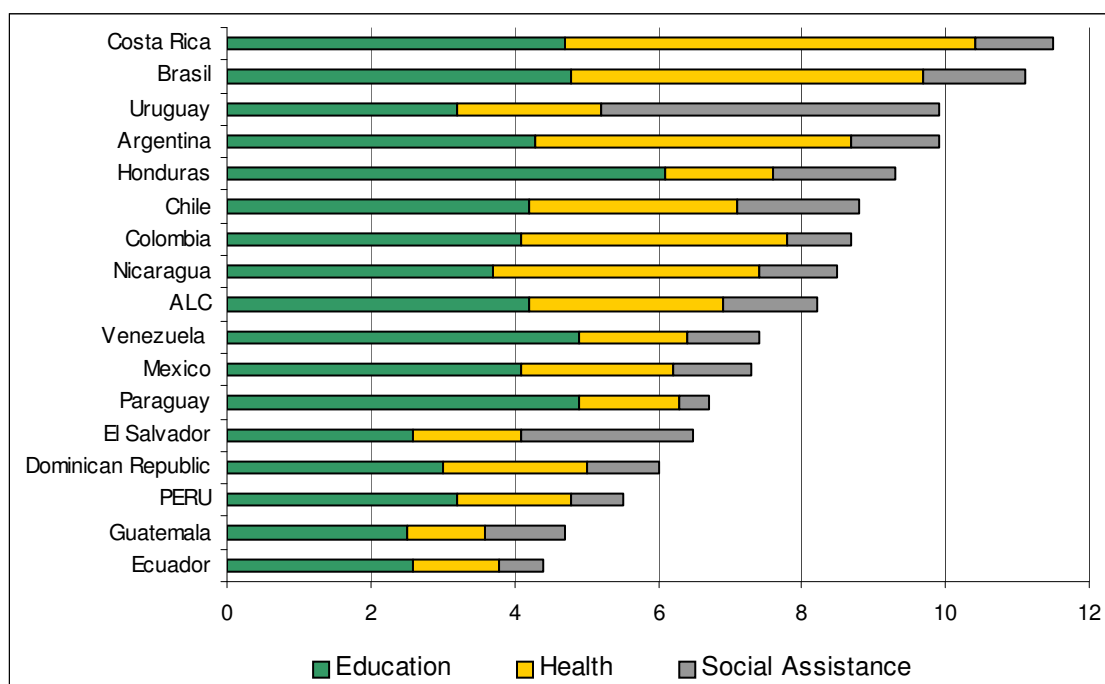
Source: Cotlear, 2006, p.50.

A regional comparison to explain this underperformance (using a breakdown similar to the one considered above for explaining trends in social spending) by Lindert, Skoufias and Shapiro (2005), shows that Peru is in the bottom part of the region in terms of fiscal priority given to social spending (less than 34% of total budget devoted to these items), and also in terms of total budget pressure (total public expenditure amounts to less than 19% of GDP). This last issue is related to the historically low capacity in Peru to raise enough tax revenues due to high levels of informality and evasion (the tax burden in Peru is currently around 15% of GDP while the average in Latin America is around 18% of GDP) (ECLAC, 2006). On the other hand, Latin America as a whole devotes between 34% and 40% of its total budget to social spending and between 19% and 24% of GDP as total public expenditure (Lindert, et.al, 2005).

3.4 Reducing inequalities in the short run

Section 2 showed that income and expenditure inequalities in Peru, both based in household surveys and corrected with national accounts, are among the highest ones in the region. What is the actual contribution of social policies to reduce these market based inequalities in the short run? Based on a simple methodology which uses budget numbers on actual public spending in education, health and social assistance, and

distribute these amounts according to the access and use of these public services by the population (information captured in the household surveys), we estimate the quantitative short run impact of public spending in reducing market income inequalities.

Table 8 shows how Gini coefficients change from an estimated initial market-based inequality index of 0.502 for the case of income and 0.389 for the case of expenditure[14], to 0.463 and 0.353 after including all public interventions in education, health and social assistance. Hence, income inequality falls by 7.8% (3.9 base points in the Gini coefficient), and expenditure inequality falls by 9.3% (3.6 base points in the Gini).

Table 8: Gini coefficient before and after public intervention (2004)

Type of intervention	Average per capita income	Var %	Average per capita spending	Var %
Market-based Gini	0.502		0.389	
+ policy intervention in pre-primary education	0.500	-0.5%	0.387	-0.7%
+ policy intervention in primary education	0.482	-3.5%	0.368	-4.7%
+ policy intervention in secondary education	0.478	-0.9%	0.364	-1.2%
+ policy intervention in non-university tertiary education	0.477	-0.1%	0.364	-0.1%
+ policy intervention in university tertiary education	0.477	-0.1%	0.365	0.3%
+ policy intervention in post-degree education	0.477	0.0%	0.365	0.0%
+ policy intervention in the Glass of Milk program	0.475	-0.3%	0.364	-0.4%
+ policy intervention in the Soup Kitchens program	0.474	-0.3%	0.363	-0.3%
+ policy intervention in the School Breakfast program	0.471	-0.7%	0.359	-0.9%
+ policy intervention in health services	0.463	-1.6%	0.353	-1.7%
Total variation		**-7.8%**		**-9.3%**

Source: ENAHO 2004-IV; SIAF-MEF; PRONAA, MINEDU.

Why do not we get more significant results with this whole set of social policies? Consider that four points of reduction in the Gini coefficient at best, taking into account our estimations in Section 2, would possibly mean that even after including all public subsidies in social services Peru has an effective Gini coefficient of around 0.5 in consumption, situation that most Peruvians would judge as unfair and possibly unsustainable under democracy. One first obvious answer would be the insufficient amount of resources devoted to social services in Peru. However, problems of targeting,

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[14] These figures work exclusively with the 2004 household survey and the corresponding numbers from the public budget and, as such, do not include the national account adjustment to revise upwards the absolute value of the Gini coefficients. In any case, the purpose of the exercise is to assess the relative power of social spending to reduce inequality in Peru.

overlapping, poor planning and faulty program design, and consequently, lack of effectiveness are also part of the picture.

In the case of Venezuela, Freijas (2006) cites a study by Seijas which estimates that public social expenditures in that country reduce the Gini coefficient from 0.378 to 0.301 (20.4% of inequality reduction). Freijas' work shows social spending in Venezuela amounting to around 10% of GDP in 2003, and the comparative work by Cotlear (2006) referenced before indicates a figure close to 8% of GDP for the total social spending undertaken by the government in Venezuela. Moreover, calculations for a sample of OECD countries estimate reductions in the Gini coefficient ranging from 9 basis points in Australia (19% reduction of inequality) to 21 basis points in Sweden (38% of inequality reduction) as a result of social spending and other public transfers (OECD, 2005).

There is indeed a strong pressure in Peru for the governments to increase the public budget devoted to social spending along with constant public outcry against the SNIP (*Public Investment National System*) whose role is to assess the viability of public projects. For instance, the *Acuerdo Nacional* (National Accord) signed by all political parties and representative organizations of the civil society in Peru has pledged to increase every year the education budget in relative terms up to 6% of GDP (instead of the 3.2% allocated currently). Stakeholders in the health and social assistance sectors are also arguing for substantially more resources in real terms. What would be the short term inequality reduction of those actions? For instance, if we assume that Peru could increase its relative social spending to match the Latin American average, we have simulated that inequality could be reduced further by 4% (1.3 more basis points of Gini coefficient reduction) (see Table 9). From our view point, this quantitative result is a clear indication that more money is important but its effectiveness in reducing inequality would be poor if it is not accompanied by bold institutional reforms in the social sectors.

Table 9: Gini coefficient before and after public intervention in a scenario where social spending reaches the Latin American average (2004)

	Average income per capita	Var %	Average spending per capita	Var %
Market-based Gini	0.502		0.389	
+ policy intervention in pre-primary education	0.498	-0.8%	0.385	-1.1%
+ policy intervention in primary education	0.473	-5.1%	0.359	-6.8%
+ policy intervention in secondary education	0.466	-1.4%	0.353	-1.7%
+ policy intervention in non-university tertiary education	0.466	-0.1%	0.353	-0.1%
+ policy intervention in university tertiary education	0.466	0.0%	0.355	0.5%
+ policy intervention in post-grade education	0.466	0.0%	0.355	0.0%
+ policy intervention in the Glass of Milk program	0.464	-0.4%	0.353	-0.6%
+ policy intervention in the Soup Kitchens program	0.462	-0.4%	0.352	-0.4%
+ policy intervention in the School Breakfast program	0.458	-0.9%	0.347	-1.3%
+ policy intervention in health services	0.448	-2.2%	0.340	-2.2%
Total variation		**-10.9%**		**-12.8%**

3.5 The extent of mistargeting in social transfers

Table 10 shows the estimated effect of public transfers in the lives of different segments of the Peruvian society. Transfers in the poorest quintile expand their consumption basket in 22.5% and their total income in 27.5%. In Chile, country known for both a higher amount of social spending but also for better organization and targeting of its programs, Raczynski (2002) informed that the relative contribution of social spending to the total spending of the first quintile was 75% in 1996. Table 9 shows some progressivity in the government intervention (public transfers received by quintiles decline monotonically as proportion of total consumption or income along both distributions and this is why the Gini coefficient falls) but some is not good enough and the relative contributions are misleading in this case. In fact, the absolute amount transferred to the first four quintiles is practically the same (it ranges from 30.4 soles per capita per month for the fourth quintile to 33.4 soles for the second quintile) and even the richest quintile gets 25.7 soles (80% of the amount received by the poorest quintile)! We must do much better than this!

Table 10: Monthly spending and per capita income before and after public intervention, by quintiles, 2004

Q	Spending per capita					Income per capita				
	Before	After	%Var	Average transfer amount	Public grants/ Total spending	Before	After	%Var	Average transfer amount	Public grants/ Total income
1	109.5	141.3	29.0%	31.8	22.5%	82.0	113.1	37.9%	31.1	27.5%
2	178.8	212.2	18.7%	33.4	15.7%	159.9	193.0	20.7%	33.1	17.2%
3	248.6	280.0	12.6%	31.4	11.2%	247.7	280.8	13.4%	33.1	11.8%
4	351.2	381.6	8.7%	30.4	8.0%	395.2	426.2	7.9%	31.1	7.3%
5	752.5	778.2	3.4%	25.7	3.3%	1071.6	1095.9	2.3%	24.3	2.2%
Total	328.0	358.5	9.3%	30.5	8.5%	390.8	421.3	7.8%	30.5	7.2%
Q5/Q1	6.9	5.5				13.1	9.7			

Source: ENAHO 2004-IV; SIAF-MEF; PRONAA, MINEDU.

Where are the main government failures in providing more progressive social transfers? Take the case of the incidence of education spending shown in Table 11. The best targeting happens at the primary level of education where almost three fourths of spending goes to the extreme and non extreme poor. Still, more than one fourth of primary public education benefits the non poor population in Peru. Targeting problems are more noticeable at the pre-primary education level where more than one third (36.2%) of the children come from non poor households. A similar situation happens at the secondary level, where 40.1% of students are non poor.

Table 11: Enrolment rates in public education and poverty status, 2004

	Pre-primary education	Primary education	Secondary education	Non-university education	University education
Extreme poor	23.1	31.3	19.9	7.3	1.9
Non-extreme poor	40.7	40.8	40.0	28.7	18.4
Non-poor	36.2	28.0	40.1	64.0	79.7
Total	100.0	100.0	100.0	100.0	100.0

Source: ENAHO 2004.

The worst reality happens at the higher education, non university and university levels. In the first case, two out of every three students (64%) come from non poor households. In the latter case, almost eight out of every ten students (79.7%) are non poor! Recent

studies show that achieving basic education for all may not be enough to get out of poverty at a desirable fast pace (Castro and Yamada, 2006). Some post secondary education seems to be needed in today's economy to make the permanent leap out of poverty more likely. For instance, Table 11 shows that almost half of Peruvian workers with secondary education live in poverty (42.1%). It is only with tertiary education where the chances to be poor are reduced substantially (20% in the case of non university higher education, and 10% in the case of university level). The combined results of Table 11 and 12 show that the current educational system in Peru is contributing to perpetuate poverty across generations.

Table 12: Labor force by educational level and poverty status (2004)

Education level	Extreme poor	Non-extreme poor	Non poor	Total
No education	33.8	37.2	29.0	100.0
Primary	25.6	36.2	38.2	100.0
Secondary	9.4	32.7	57.9	100.0
Non-university tertiary education	1.9	17.4	80.7	100.0
University education	0.8	9.5	89.8	100.0

Source: CUANTO (1991) Perú en Números; ENAHO 2004.

If we establish a ranking of social programs from the most regressive to the most progressive one, we will discover that next to education at the university level, the second most regressive social program in Peru is curative health: 78.3% of the patients in public hospitals without fees are non poor (see Table 13). Preventive health does better in terms of targeting and could be considered mildly progressive because the proportion of patients in its facilities which are poor (58.4%) is higher than the proportion of poor in the total population (51.6%). *Comedores Populares* (soup kitchens) and *Vaso de Leche* (Glass of Milk) programs are also generally progressive although they still benefit 38.8% and 31.3% of non poor individuals, respectively. This significant level of leakage to the non poor has a high opportunity cost because it could mean more extreme and non extreme poor population who could be alternatively benefited with these programs (Vasquez, 2005a and 2006).

Table 13: Ranking of social programs according to their degree of progressiveness, 2004

Program	Poverty condition			
	Extreme poor	Non-extreme poor	Non poor	Total
University education	1.9	18.4	79.7	100.0
Curative health	3.2	18.6	78.3	100.0
Preventive health	20.9	37.5	41.6	100.0
Soup kitchens	16.3	44.9	38.8	100.0
Glass of milk	28.6	40.1	31.3	100.0
Primary education	31.3	40.8	28.0	100.0
School breakfast	40.0	37.7	22.3	100.0

Source: ENAHO 2004.

The *Desayunos Escolares* (school breakfasts) program is the most progressive intervention in the ranking of Table 13. Only one out of every five beneficiaries is non poor. Its degree of progressiveness is higher than public primary education itself (facilities used to deliver the food supplement) because there is an additional targeting effort choosing communities and particular primary schools which concentrate more vulnerable infant population. Moreover, impact evaluation has shown that this program achieves important development objectives (see below).

In any case, and in terms of short term poverty reduction, if we consider the official definition of poverty as the incapacity to consume a basic bundle of goods, the social programs to be considered in the calculation ought to be the food assistance programs. In this sense, we have estimated in Table 14 that the incidence of extreme poverty falls 1.7 percentage points (from 20.1% to 18.4%) due to the food transfers provided by the government[15]. The incidence of total poverty falls 0.9 percentage points (from 54.1% to 53.2%) for the same reason. Nevertheless, the proportion of non extreme poverty increases 0.8% because 1.7% of population moves in from extreme poverty and 0.9% of population moves out of poverty. The bottom line is a very small aggregate effect achieved with the 0.7% of GDP of public resources invested in these interventions.

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[15] Total household consumption was estimated using the ENAHO 2004-IV survey. Resources associated to social assistance transfers were computed using allowance values reported in administrative records.

Table 14: Poverty incidence before and after social assistance spending, 2004

	Before transfers	Considering social assistance transfers
Extreme poor	20.1	18.4
Non extreme poor	34.0	34.8
Non poor	45.9	46.8
Total	100.0	100.0

Source: ENAHO 2004-IV.

3.5 Simulating better targeting and more resources for social assistance

In order to assess the potential impact of better targeting together with an increase in the amount of resources devoted to social assistance, we conducted a series of simulations using household's total consumption before transfers as our baseline. In particular, we built a unique social assistance bundle consisting of a glass of milk, soup kitchen and school breakfast allowance. Resources associated to this bundle were randomly distributed considering: (i) that the proportion of non-poor and non-extreme poor beneficiaries ranged from 0% (perfect targeting) to 100% (total leakage); and (ii) that the number of beneficiaries (coverage) experienced an increase from 0 to 100%. This exercise was repeated 35 times[16] for each leakage-coverage combination and we computed the mean headcount index using the moderate and extreme poverty lines, when targeting the poor and the extreme poor, respectively. Figures 6 and 7 summarize our results.

When targeting the poor, little can be accomplished by reducing leakage and/or increasing coverage. If the number of beneficiaries remains constant, total poverty would only fall 0.8 percentage points (from 53.2% to 52.4%) if social assistance achieved perfect targeting. On the other hand, and if leakage remained constant, increasing coverage by 100% would only imply a reduction of 1.1 percentage points in total poverty (from 53.2% to 52.1%). If we combine both effects and achieve perfect targeting with a 100% increase in coverage, poverty would fall from 53.2% to 50.7%. This mild reduction in total poverty confirms that resources associated to a basic social assistance bundle are not sufficient to expand households' expenditure level above a

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[16] We verified that this number of repetitions allows an adequate characterization of the distribution of headcount indexes.

moderate poverty line, even if coverage is doubled and targeting problems are completely solved.

More promising results are obtained if we target the extreme-poor as main recipients of the assistance. In fact, and as revealed in Figure 7, we can achieve a reduction of 2.8 percentage points in extreme poverty (from 18.4% to 15.6%) by minimizing leakage with the same number of beneficiaries. If, on the other hand, we double resources and retain the same targeting problems, extreme poverty would fall almost 2 percentage points (from 18.4% to 16.5%). Finally, an improvement in both directions would further reduce extreme poverty down to 11.5% which, coincidently, corresponds to the target value of our first Millennium Development Goal (MDG 1).

Figure 6: Social assistance programs. Simulated impact on poverty incidence with alternative degrees of leakage and coverage
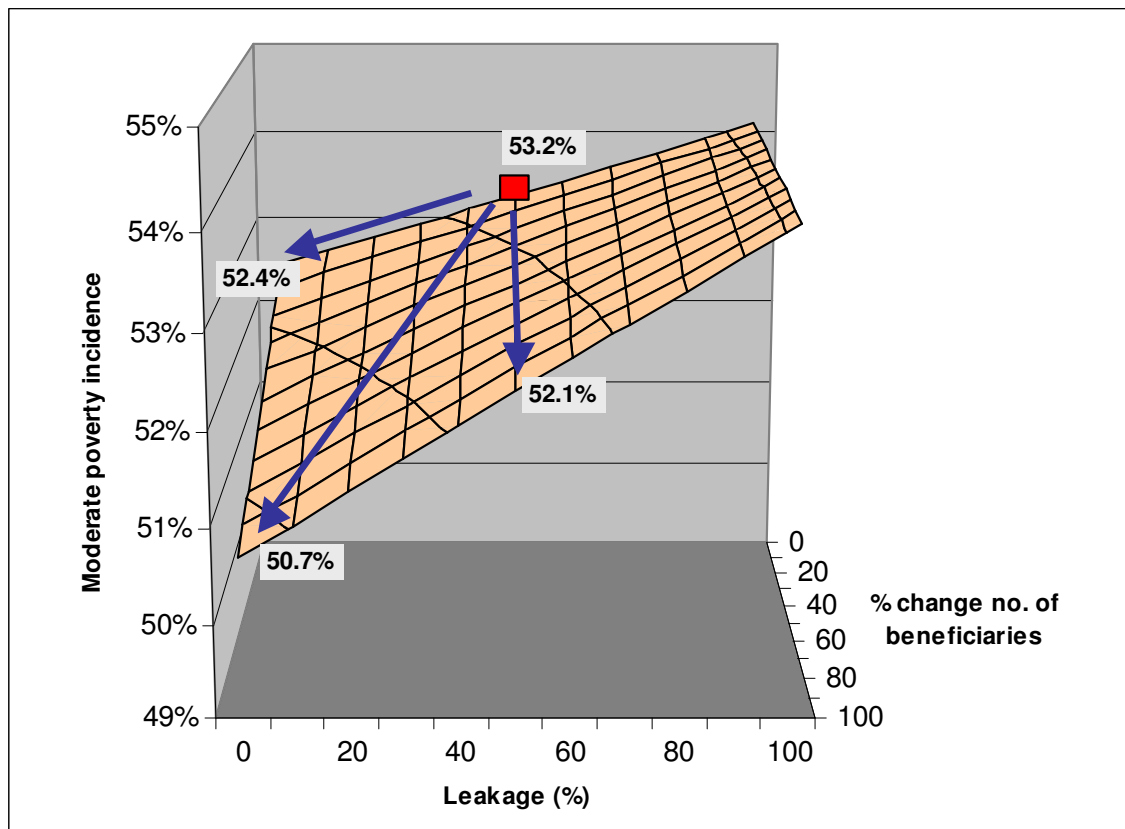
Figure 7: Social assistance programs. Simulated impact on extreme poverty incidence with alternative degrees of leakage and coverage
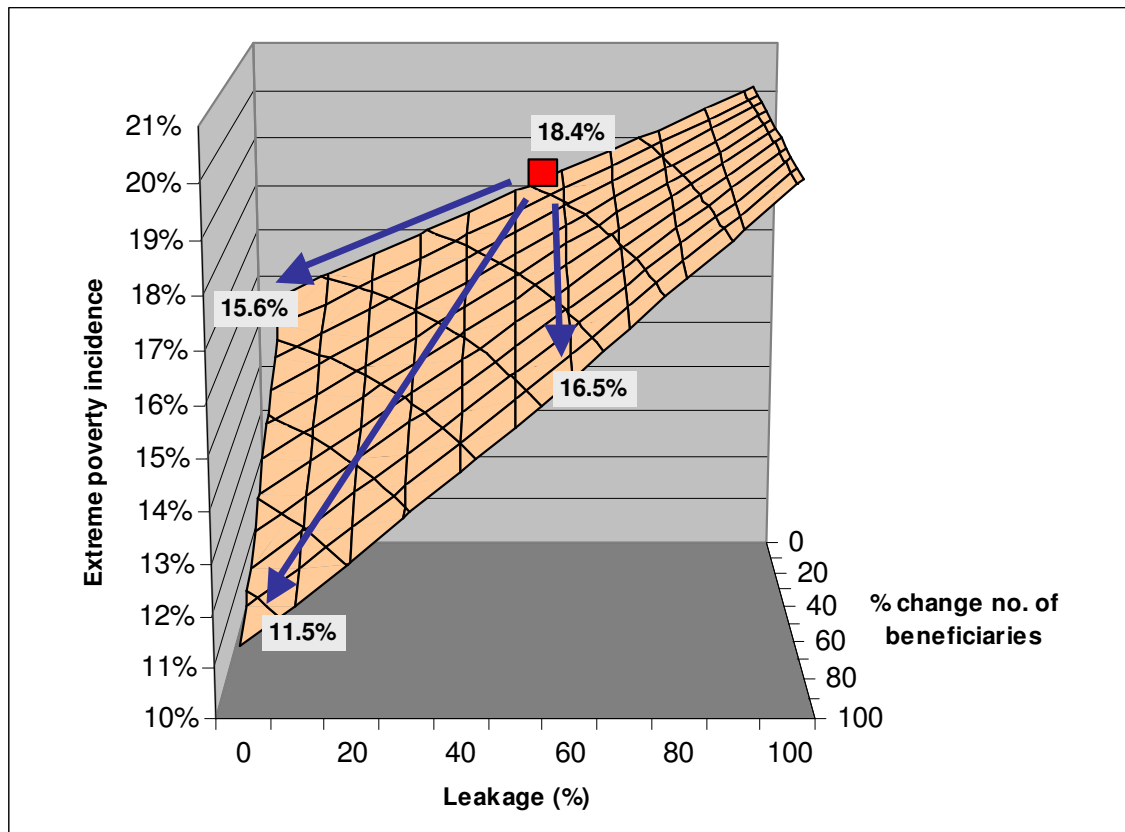
3.6 Program evaluations

The lack of evaluation culture in public programs in Peru has also prevented social policies to have more effective results. Yamada and Perez (2005) show that rigorous impact evaluations of public programs started only a decade ago mostly for relatively small youth training programs such as *Projoven*. Still, there is enough evidence of lack of results in reducing malnutrition in the case of *Vaso de Leche*, one of the largest social assistance programs in Peru which spends a hundred million dollars every year (Gajate and Inurritegui, 2001; Stifel and Alderman, 2003).

Besides the significant problems of mistargeting, leakage, and corruption in this program, nutritionists consider that it is not the most cost-effective intervention to reduce child malnutrition in Peru and should be replaced by more appropriate nutritional programs. Other programs such as *Desayunos Escolares* have proven to be more effective in reducing acute malnutrition, and improving school assistance, although no positive effects were found for longer term indicators such as chronic malnutrition and school performance (Pollit, Cueto and Jacoby, 1998; Cueto and Chinen, 2001).

3.7 Public education investments and inequality reduction

Public investment in education should be the premier intervention for reducing inequalities in the long run. Has investment in public education in Peru during the last decades produced a more educated labor force? If we consider the standard measurement of human capital (years of education achieved by the labor force), the answer is positive. The average years of schooling in the Peruvian labor force (age 14 or more) in 1985 was 7.13 years. Twenty years later, this same indicator has increased to 8.77 years (2004). Has this same public investment also contributed to reduce the inequality in educational achievement of the labor force? The answer is, again, positive. The Gini coefficient of inequality in schooling years of the labor force has fallen from 0.343 in 1985 to 0.290 in 2004. However, why has this positive result failed to reduce income inequality?

We argue that increased coverage and attainment financed with the same relative amount of spending over GDP (or over total population) means lower spending per pupil and potentially lower education quality. An indication of the quality deterioration in public education is a substantive reduction in the effective number of teaching hours. Up to the 1960s, Peruvian public schools had full day schedules from 8 a.m. to 5 p.m. Monday to Friday (and included Saturday mornings). Nowadays, in order to accommodate to all potential students with limited physical and human infrastructure, there are three daily shifts averaging less than 5 hours a day per student. National results of school performance for 2004 show that only 12% of students complete primary school with an appropriate level of reading comprehension and only 8% of the same group can solve correctly basic logical and mathematical problems (MINEDU, 2005). Similarly, Peruvian students ranked last in reading comprehension results of the Program for International Student Assessment (PISA) undertaken to nationally representative samples of 41 developed and developing countries in 2002.

We have shown recently that the linear average Mincerian rate of return to education has been relatively constant in the last twenty years in Peru, which should imply a neutral effect in terms of changing income inequality (Yamada, 2007). However, linear returns to education is not the most appropriate way to picture earnings potential in Peru. Returns are convex and there has been a process of further convexification of returns, which means lower returns to basic levels of education and higher returns to

upper education levels. The explanation we propose for this trend is that demand for qualified workers has increased but also, because of lower quality of education, individuals have had to extend their education cycles up to tertiary levels to compensate higher quantity for lower quality and in this way to reap off the convexification benefits. What matters for our discussion here is that this convexification process has been one of the factors behind the increase in income inequality.

To shed light on this potential effect, we have computed an index of potential income based on the highest educational level achieved and the market returns to each year of schooling received (considering the non linear returns explained above). This potential income is simply the product of the two elements. Its average has decreased from 2.03 in 1985 to 1.70 in 2004, because the effects of the lower returns in the basic education levels have been stronger that the effects of increase in schooling for the whole population. More importantly, the Gini coefficient of this index of potential income has increased from 0.248 in 1985 to 0.264 in 2004 because of further convexification in the returns to education. This is why education, which is supposed to be the most important social policy for improving opportunities and reducing inequalities in any society, has failed to deliver its goals in the last twenty years in Peru.

Additional support for this hypothesis is presented in Figure 8, which shows the probability of being poor for different levels of educational attainment predicted via a probit regression estimated using household surveys for 1985 and 2004[17]. Clearly, and besides the expected downward slope, the striking result is that the 2004 curve falls above the 1985 schedule for all basic levels of education. This means that the contribution of every level of education (except tertiary) to poverty reduction has declined in the last two decades.

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[17] These probit regressions were built considering the sample of adult individuals with 25 or more years of age, and included also gender and location variables as control regressors.

Figure 8: Predicted probability of being poor according to the educational attainment of the adult population, 1985 and 2004
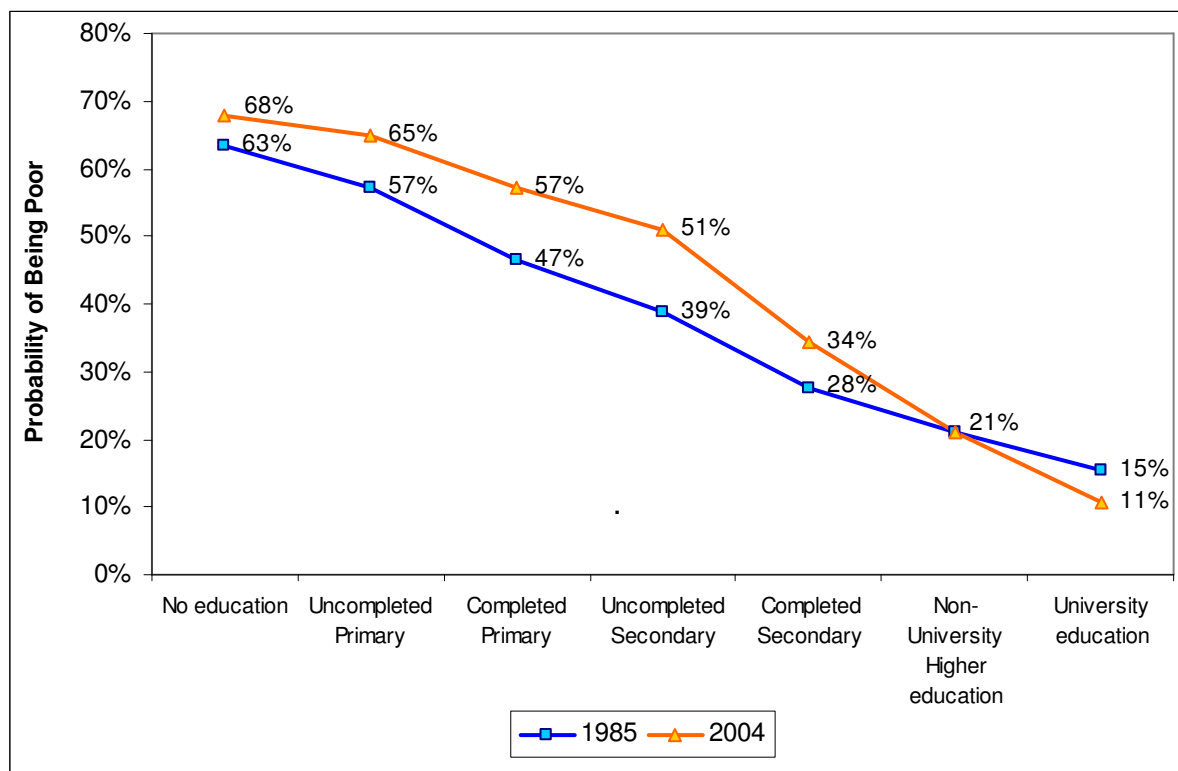
4 Towards a more effective social policy strategy

The analysis presented in Section 3 revealed that social spending has been unable to deliver a sustained reduction in poverty due to problems related to: (i) the low quality of the services provided (e.g.: only around 10% of students complete primary education having achieved appropriate reading, logical and mathematical skills); (ii) the design and targeting of social programs (e.g.: one of the largest social assistance programs *Vaso de Leche* has failed to deliver significant results in terms of child malnutrition); (iii) its opportunity (e.g.: social spending is not protected during recessions and, to the contrary, exhibits a pro-cyclical behavior); and (iv) its volume (e.g.: despite the fact that it has increased somewhat in the last fifteen years, social spending in Peru exhibits a low fiscal priority when compared to the rest of the region). As a result, social policy interventions in Peru have not fully delivered what they should, to the appropriate people, with the appropriate timing, and in the appropriate amount.

Regarding this, we believe overcoming the first of these four limitations is both the most demanding and compelling challenge for the design of a more effective social policy strategy. In fact, the question of what should social policies deliver is far from trivial, since the answer will shed light to uncover their role and provide the appropriate means for their evaluation.

4.1 Are social policies delivering what they should?

Quite naturally, one could argue that, on a short run basis, social programs should aim at transferring the necessary (monetary) resources to prevent a large proportion of the population from falling below a pre-established poverty line. In fact, social assistance (such as cash or food transfers) directly pursues this goal and, to the extent in which this expenditure is adequately targeted, it will yield the desired result: after accounting for these transfers less households will exhibit a per-capita expenditure level below the poverty line. Moreover, the effectiveness of this type of programs will be enhanced if social assistance exhibits a counter-cyclical behavior: more protection is provided when the poor (or potentially poor) need it the most.

Designing and evaluating social policies in the terms explained above, however, entails a significant risk. In fact, it should not be difficult to expand social assistance while the economy is booming and observe a decline in poverty headcount indexes as a result of their combined effects. Poverty dynamics analyzed in Section 1 show how the economic recovery experienced between 1991 and 1997 was accompanied by a significant reduction in poverty incidence from 54.2% to 46.4%. However, this improvement will only be temporary if social programs have failed to deliver the necessary assets for households to be able to attain and secure a larger income generation potential. In fact, the moderate recession period experienced between 1998 and 2001 wiped away the achievements attained during the first half of the 90's and poverty was again as high as 54.5% by the end of year 2001.

So, what are social policies supposed to transfer? As long as households remain unable to pledge their future income gains against access to improved health and education services (there is no market for this), there will be space for public intervention offering such services. In other words, social expenditure in health and education can be regarded as an "opportunity equalizer" in the absence of a market solution that grants

access to the necessary means for households to start accumulating human capital. The latter, obviously, being closely related to the income generation potential of the population.

Regarding this last issue, evidence discussed in Section 3 has revealed that social assistance has gained a significant share in total social spending in the last 30 years. Obviously, one could argue that a stabilization program such as the one implemented at the beginning of the last decade should be accompanied by this type of short run intervention. However, the problem is not about how much is expended (which is, in any case, still low when compared to other countries in the region) but about what is effectively being transferred to the population.

As explained in Section 3, one could easily engineer a way to account for the access to publicly provided education and health services in terms of current monetary transfers and recalculate inequality indicators. However, the effectiveness of such interventions should not be measured in these terms. In fact, and although income inequality falls by 9.3% after considering (in monetary terms) all public interventions, our claim is that, for the case of education, the combination of a relatively constant per capita social expenditure and increased coverage has lead to a decline in the quality of these services and that this has, in turn, provoked a deterioration in the distribution of human capital earnings capacity.

Thus, our claim is that, after 20 years of social programs, these have failed to deliver what they should if we seek a permanent reduction in poverty. In fact, high and persistent inequality measures (as revealed by our recalculation of the Gini coefficient discussed in Section 1) not only (statistically) explain why poverty still affects half of the Peruvian population, but are also a sign that a large proportion of households is still unable to connect with the market and enjoy the benefits of an historically high GDP growth. If we are to talk about growth (the main topic of this book) and about why Peru has been unable to move towards a more stable and equitable growth path, we believe this forward-looking perspective plays a crucial role.

In fact, the ability of social policies to redistribute income generation capabilities will determine the survival of the economic arrangement which is expected to deliver growth in the long run. In other words, for growth to be sustainable it must also be inclusive or

pro-poor, in the sense of fostering an improvement not only in the incidence of poverty but also in the distribution of income and, more importantly, in the distribution of those assets that allow the generation of income. Due to the existence of the market failures discussed above, it will be difficult for growth (understood as an acceleration in mean income) alone to foster an equalization of opportunities. Therefore, a sustainable growth strategy (understood in a broader sense) must be accompanied by social policy interventions aimed at the redistribution of these assets, in particular a better distribution of human capital.

4.2   Today's or tomorrow's poverty?

If all of the above constitutes a conceptually sound argument (and most policymakers will be happy to agree with it) the question is why have social policies not been designed in these terms: why is that deeds fail to follow words when it comes to the design of social policy interventions?

If we think of the social policymaker in terms of a planner facing a loss function (to minimize) and a budget constraint (to be satisfied), the question above can be restated in terms of an intertemporal discount rate, the arguments included in the loss function, and the availability (planners' knowledge) of policy instruments that have an impact on these arguments.

Given a sufficiently large discount rate (we can think of our planners impatientness being determined by the duration of the political cycle and potential beneficiaries' impatientness) and if we measure the effectiveness of social policy intervention only in terms of the level and distribution of income (being these the main arguments of the loss function), it is not difficult to see why is that social policies seem to lack more of a forward-looking perspective. In fact, there is, in principle, no major problem in summarizing the impact of social policy intervention in terms of a poverty headcount index (which can, in turn, be decomposed as a function of the mean income and a Lorenz curve), the question is which date's poverty headcount index we are looking at.

In fact, we would like our planners decisions (the intervention that minimizes the loss function for a given budget constraint) to be a function of today's and also future poverty incidence, the latter with a sufficiently large weight. Our claim is that planners' impatientness implies that future poverty fails to receive a sufficiently large weight for

the planner to consider as optimal engaging in social policy interventions to satisfy forward-looking objectives. In terms of the discussion presented above, the lack of a forward-looking objective prevents social policy interventions from transferring the necessary assets to create more egalitarian opportunities of income generation in the future.

So, and given our planner's impatientness, the question is how to provide the incentives for intervention to take into consideration the response of future poverty. In other words, what other variables' current level should be included in a planner's loss function so that a static optimization also accounts for (at least indirectly) the future path of poverty.

Regarding this last issue, we believe that the definition of a broader set of indicators to assess the impact of social policy interventions plays a crucial role, and that these indicators should include sound measurements of the access to and, specially, the quality of public health and education services as predictors of future poverty. Obviously, the definition of these indicators is not enough, we explicitly need them to be included in the planner's loss function, meaning that she "feels" accountable for their behavior.

4.3 MDGs: a basic template for a forward-looking and systemic social policy design

Regarding the above, explicit planners' compromises as the Millennium Development Goals (MDGs) constitute an important first step.

MDGs entail the definition of targets for a comprehensive set of indicators related to a wide range of socio-economic aspects such as poverty (on its monetary dimension), hunger, education, discrimination against women, infant and maternal mortality, access to adequate water and sanitation services, etc. These targets involve an explicit numerical value for each indicator and a time horizon for its achievement (year 2015).

As such, MDGs have contributed to the debate regarding the multidimensional nature of poverty, and can be understood as an important effort towards a consensus regarding the minimum set of arguments that a social planner's loss function must include. In fact, and faced with the need to simultaneously pursue a large number of goals, social

policymakers now have to assess the potential impact of their intervention not only in terms of a single objective but also in terms of their positive (or negative) spillovers onto other social and economic indicators now and across time.

Given the above, efforts related to the analysis of MDG achievement have moved towards a systemic and forward-looking perspective, so the debate regarding the impact and cost of social policy intervention is now embedded in a general equilibrium intertemporal framework. This implies the need to exploit micro-macro linkages and feedbacks, and reconcile information at the aggregate and household level.

Due to the difficulties associated to this kind of analysis, most of the research efforts devoted to MDG assessment in Peru have been centered on the first five goals. In fact, these goals include many of the indicators involved in the social policy debate in developing countries, and provide a comprehensive framework to assess the objectives that should be pursued as part of a general development strategy: the accumulation of human capital (via health and education) as a long run "opportunity equalizer", its impact on household's income generation potential and its distribution, and the subsequent reduction in poverty headcount indexes.

In the case of Peru, there have been several research efforts devoted to the assessment of MDG achievement. Beltrán, et al. (2004) proposes a model that integrates into a system of equations: (i) functional forms and parameter estimates from partial equilibrium microeconometric models based on household survey data; (ii) a macro scenarios model which accounts for the effects of (distribution neutral) economic growth and the redistribution on household's income; (iii) a linear total cost function which takes into account unit costs related to policy variables identified in (i). Given this system of equations (which represents the restrictions faced by the planner), it proposes a static linear loss function which depends on the distance between each MDG indicator's level in 2015 and its exogenous target. This model allows the identification of the most cost-effective combination of specific policy interventions aimed at MDG achievement by year 2015: minimize loss function for a given total budget, or achieve targets at the minimum total cost.

Another contribution can be found in Castro and Yamada (2006). This model (based on Lofgren and Diaz-Bonilla, 2005), integrates a dynamic CGE (calibrated to replicate a

baseline Social Accounting Matrix (SAM) and exogenous growth trends) with a set of functions that link MDG indicators to a number of predetermined policy variables. Elasticities that characterize these functions are calibrated by combining results from partial equilibrium microeconometric models (based on household survey data) with exogenous information regarding the expansion required in policy variables in order to achieve MDGs. This model can be simulated under the restriction that MDG indicators reach their targets by year 2015 and that the rest of equations that characterize the macro equilibrium hold each period. Thus, it allows the analysis of the feasibility of MDG achievement in terms of the effects that required policy efforts have on the rest of the economy: it accounts for the manner in which planner's efforts aimed at MDG achievement transpire into the rest of the economy and the way in which these effects aid or hinder her policy objective.

The main quantitative conclusion of these models is that MDG achievement would require additional resources of around 1% of GDP each year devoted to the expansion in education, health and water and sanitation services. Also, and particularly relevant in terms of the importance of a systemic perspective and the need for a coordinated effort among sectorial planners, the analysis presented in Castro and Yamada (2006) reveals that total costs would be around 40% larger if each target is pursued separately ignoring the synergies that exist among the indicators related to education, health and access to water and sanitation.

Obviously, and despite covering a wide range of socio-economic aspects, many of the indicators involved in the first five MDG are still imperfect measures to track if social policies are effectively delivering what they should. For example, in the case of education, one of the key official indicators is referred to the access to primary education (measured by the net enrollment rate), which is no longer a relevant issue in a country like Peru. In fact, household surveys reveal that nearly 90% of the children between 6 and 12 years of age are enrolled in this instruction level. Less optimistic results are obtained in terms of a more refined indicator (also included among those related to the first five MDGs and explicitly targeted in Castro and Yamada (2006)): according to the 2004 ENAHO, only 39% of the children finish primary education at normative age (12 years of age). Improvements in terms of this indicator are much more challenging since they imply not only that more children enroll in primary education at

the age of 6, but also that they do not drop out or repeat any of the six years involved in this instruction level.

Having more children finishing primary education when then should, however, is only part of the story. In particular, and as revealed in Castro and Yamada (2006) improvements in the proportion of children who start grade 1 and reach grade 6 at normative age have only a marginal contribution in terms of reducing the incidence of monetary poverty by year 2015[18]. In fact, more should be expected in terms of future poverty reduction if improvements in this indicator are accompanied by: (i) a larger probability of progressing to secondary and, specially, tertiary education[19], which will grant a much larger return in the labor market[20]; and (ii) improvements in the quality of education at all levels (which should translate into larger returns in the labor market). Not surprisingly, and due to the fact that neither (i) nor (ii) are still explicitly considered in a general equilibrium framework, results that stem from the model proposed in Castro and Yamada (2006) reveal that only international poverty targets (using US$1 and US$ 2 PPP poverty lines) would be met by year 2015, while monetary poverty would remain above its target if measured using national moderate and extreme poverty lines[21].

Given the above, one of the basic missing links (not explicitly considered in Beltrán, et al. (2004) nor in Castro and Yamada (2006)), lies in the connection between improvements in education indicators, the accumulation of human capital and household's long run income generation potential (which should translate into larger overall economic growth). Obviously, this requires the definition of a broader set of indicators related to education performance, in order to account for the extent in which social policies are effectively delivering those assets that offer a permanent escape route from poverty. Regarding this, and for a given set of market-based returns to education (i.e. holding quality constant), Yamada, Castro, Beltran and Cardenas(2007) are currently extending previously built models in order to explicitly target the probability

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[18] Castro and Yamada (2006) assess the impact on the incidence of poverty of reaching the MDGs related to education, health and water and sanitation using a microsimulation methodology similar to that proposed in Ganuza, Paes de Barros and Vos (2002). In particular, the effects of improvements in the proportion of children who finish grade 6 at normative age transpire into the incidence of poverty via improvements in the qualification of the labor force.

[19] According to the 2004 ENAHO, only 25% of the population who finish secondary education at normative age progress to tertiary education.

[20] Specially when market returns exhibit a convex behavior with respect to years of schooling.

[21] Moreover, the reduction in the incidence of monetary poverty is mainly due to a sustained 4.8% GDP growth per year, with no positive distributional effects related to improvements in the MDG indicator related to education.

of attaining secondary and tertiary education and, most importantly, account for the way in which current policy options aimed at these targets translate into an acceleration in the rate of accumulation of human capital, overall economic growth, and future poverty incidence reduction.

Besides its relevance in terms of a research agenda, the discussion presented above should provide some lessons to improve social policy design and implementation in Peru. As already mentioned, and despite vast consensus regarding the need to improve the quality of publicly provided health and, specially, education services (if social policies are to deliver what they should), incentives to engage in these type of interventions are scarce: their effects (in terms of a poverty headcount index) are relatively uncertain and take time to materialize, while the population demands results on a short run basis increasing our planner's impatientness.

Thus, the suggested approach to secure that both policymakers and potential beneficiaries perceive the benefits of such interventions implies a twofold strategy: (i) extending (and reaching a consensus regarding) the set of indicators used to assess the current effectiveness of social policies, so this assessment is done in terms of the provision of assets that grant access to larger and more egalitarian income generation opportunities; and (ii) uncovering the impact of potential policy interventions on these indicators, and the static and dynamic interrelations between them. In this way, short and medium term improvements in variables that serve as predictors of long run poverty will be perceived as improvements in current welfare, while uncertainty regarding their impact on future poverty will be minimized. Though still perfectible in terms of the indicators involved, the discussion presented above reveals how MDGs provide a basic template to foster this forward-looking and systemic perspective when designing and evaluating social policy interventions, in particular, the kind of perspective that will ultimately secure that social policies deliver what they should.

Regarding this, the national debate has currently moved towards the kind of consensus required to assess the short run impact of specific policy interventions in terms of indicators that serve as better proxies of their capacity to transfer crucial assets (the first element of the twofold strategy discussed above). In practical terms, and in line with that proposed in Cotlear (2006), we need to design explicit and simple standards to measure the quality of publicly provided services, update them and disseminate their

results. For example, in the case of basic education, more emphasis must be given to indicators that measure student's ability to understand what they read (using, for instance, a benchmark of 60 words per minute) and less emphasis to those that measure per-capita public expenditure or enrollment rates. These new standards, in turn, should be the base for assessing teachers performance and a key indicator for defining further progress in their professional careers (including selective performance-based wages increases).

In the case of tertiary education, a recently approved law provides some basic guidelines to start an accreditation process for all public and private universities which seems to be a misguided way to do it. Together with sound periodic faculty evaluations, this process must be based on transparent market-based indicators that reveal to all clients what are the potential gains (in terms of increased earnings) of studying a particular career in a specific university (provided that the final good that these institutions offer is nothing but increased future consumption) as proposed in Yamada (2007).

Obviously, the twofold strategy discussed above (which seeks to improve the long run impact of social policy interventions) must be complemented with an improvement in the design and targeting of short term poverty alleviation programs (i.e. social assistance). For this, and in line with the analysis presented in Section 3, special emphasis must be given to the institutionalization of impact evaluation analysis of specific interventions[22], so resources can be concentrated on those programs that prove to be more cost-effective

Likewise, bold administrative reforms are needed to reduce mistargeting, eliminate overlapping, and increase transparency and accountability of the programs. Vasquez (2006) and Vasquez and Franco (2007) has proposed merging all social assistance and infrastructure programs into a Social Inclusion Fund which should be run by an independent board of directors appointed by Congress, the Executive Power and representative civil society organizations. This fund would design and execute social policies targeted at the extreme poor with a medium run and national perspective, eliminating short run political use of assistance programs to benefit the party in charge of government. In this sense, a technical and transparent identification of beneficiaries

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[22] Regarding this, the majority of programs are still implemented without a baseline study, severely affecting the possibility of conducting an impact evaluation in the future.

of these policies at the household and individual level (poor and, specially, extreme poor population) is an important step forward in this direction. Moreover, and as in the case of the recently launched conditioned cash-transfer program *Juntos*, short term poverty alleviation can (and must) go hand-by-hand with the delivery of assets that serve as "opportunity equalizers".

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Appendix A

Lopez and Servén (2006) propose an interesting framework to: (i) test for lognormality of the distribution of per capita income and consumption; and (ii) assess the contributions of growth and inequality to poverty changes based on the lognormality result. In fact, lognormality allows to derive closed-form analytical solutions for the elasticity of poverty changes with respect to growth (changes in mean per capita income or expenditure) and inequality (changes in the Gini coefficient). In the analytical appendix of their paper, the authors show how these elasticities depend on the Gini coefficient, revealing that inequality hampers poverty reduction not only because of its negative impact on the growth elasticity of poverty but also because of its negative impact on the inequality elasticity of poverty.

These results are derived from two basic equations. If we let G, σ and P_0 denote the Gini coefficient, the standard deviation of log income, and the poverty headcount index, respectively, lognormality implies that:

$$G = 2\Phi\left(\frac{\sigma}{\sqrt{2}}\right) - 1 \tag{A1}$$

$$P_0 = \Phi\left(\frac{\ln(z/v)}{\sigma} + \frac{\sigma}{2}\right) \tag{A2}$$

where z and v refer to the poverty line and the mean per capita income/consumption, respectively, and $\Phi(\ )$ denotes the cumulative normal distribution. Under the assumption that underreporting in household surveys affects mainly the upper tail of the income and consumption distributions, and if these can be approximated using a lognormal distribution, it is not difficult to see how (A1) and (A2) can be used to recalculate the income and consumption Gini coefficients using: (i) a nationwide poverty line (z); (ii) official (based on household surveys) estimates of the poverty headcount indexes (P_0); and (iii) per capita disposable income and per capita consumption provided by national accounts (v).

In what follows, we present the results of the lognormality test proposed in Lopez and Servén (2006) using household survey data for the period 2001-2004. Given that lognormality implies a one-to-one mapping between the Gini coefficient and the Lorenz curve:

$$L(p) = \Phi\left(\Phi^{-1}(p) - \sigma\right) = \Phi\left(\Phi^{-1}(p) - \sqrt{2}\Phi^{-1}\left(\frac{1+G}{2}\right)\right) \tag{A3}$$

it is possible to build theoretical income/consumption shares of the different quintiles of the population (j = 1, 2, 3, 4) in different points of time (t) and space (i), following:

$$Q_{20j}^{it} = \Phi\left(\Phi^{-1}(.2j) - \sqrt{2}\Phi^{-1}\left(\frac{1+G^{it}}{2}\right)\right) - \Phi\left(\Phi^{-1}(.2(j-1)) - \sqrt{2}\Phi^{-1}\left(\frac{1+G^{it}}{2}\right)\right) \tag{A4}$$

These shares can then be compared with their empirical counterparts $\left(E_{20j}^{it}\right)$ in order to validate if the lognormal distribution provides an adequate characterization of the size distribution of income/consumption. For this, Lopez and Servén (2006) propose evaluating the joint null hypothesis $\alpha = 0; \beta = 1$ in:

$$E_{20j}^{it} = \alpha + \beta Q_{20j}^{it} + v_j^{it} \tag{A5}$$

The following table presents the results of these test using household survey data from 7 geographical dominions (i = Lima, urban and rural coast, urban and rural highlands, and urban and rural jungle) and four years (t = 2001-2004). As discussed in the main text, 99% of the variability exhibited by the empirical quintiles can be explained by those built using the assumptions that stem from a lognormal distribution, although it is possible to reject the null even with a 1% significance. As discussed by the authors, rejection of the proposed null should not necessarily imply that income/consumption fail to follow a lognormal distribution, since it could be displaced (being lognormal above some unknown minimum level) which would lead to a positive intercept and a slope less than unity in (A5). Our results suggest that this could be the case for the distribution of both income and consumption as captured in household surveys.

Table A1: Lognormality test (consumption per capita)

Number of obs =   112
R-squared =   0.9909
Adj R-squared =   0.9908

Variable	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Qc	0.8914944	0.0081664	109.17	0	0.8753106	0.907678
_cons	0.0140556	0.0012878	10.91	0	0.0115036	0.016608

Test of the joint hypothesis
 (1) _cons = 0
 (2) Qc = 1
 F(2, 110) = 95.26
 Prob > F = 0.0000

## Table A2: Lognormality test (income per capita)

Number of obs =   112
R-squared =   0.9921
Adj R-squared =   0.9921

Variable	Coef.	Std. Err.	t	P>t	[95% Conf.	Interval]
Qi	0.8922867	0.0075709	117.86	0	0.877283	0.90729
_cons	0.0127576	0.0011102	11.49	0	0.0105574	0.014958

Test of the joint hypothesis
(1) _cons = 0
(2) Qi = 1
F(2, 110) = 105.65
Prob > F = 0.0000

Graph A1: Empirical vs. theoretical quintiles (Consumption per capita)
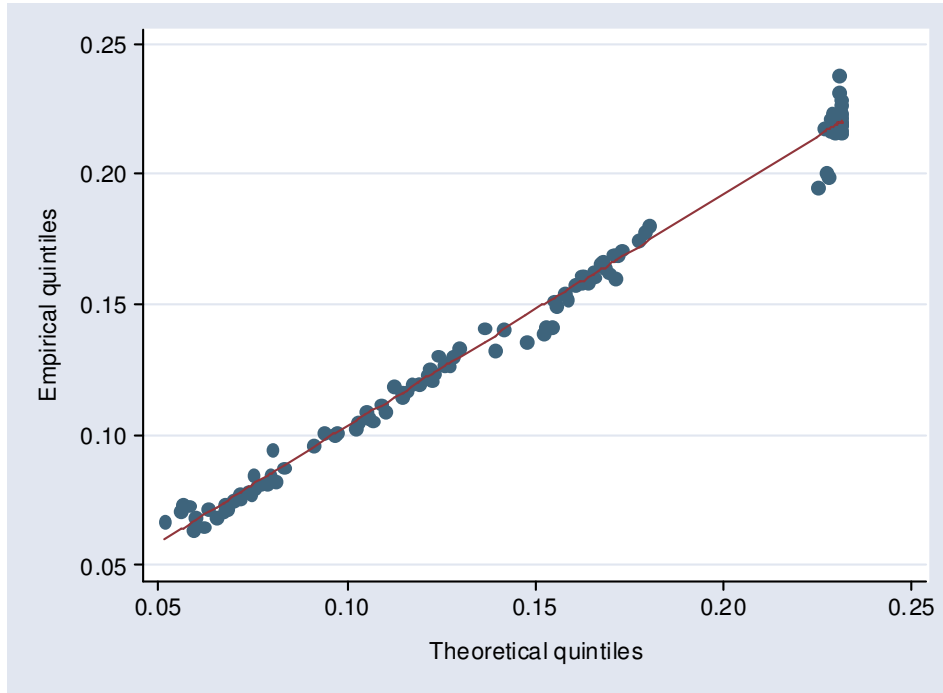
Source: ENAHO 2001-IV, 2002-IV, 2003-IV and 2004-IV.

Given these empirical findings, results presented in the main text follow the application of formulae given in (A1) and (A2) to recalculate the Gini coefficient using the mean disposable income and mean consumption levels provided by national accounts. The decomposition of the change in poverty incidence into a growth and inequality component also follow the implications of a lognormal distribution as discussed in Lopez and Servén (2006). Formally:

$$\frac{dP_0}{P_0} = \eta_v^0 \frac{dv}{v} \eta_G^0 \frac{dG}{G}$$

$$\eta_v^0 = -\frac{1}{\sigma} \lambda \left[\frac{\ln(z/v)}{\sigma} + \frac{\sigma}{2} \right] \tag{A6}$$

$$\eta_G^0 = \lambda \left[\frac{\ln(z/v)}{\sigma} + \frac{\sigma}{2} \right] \left[\frac{\sigma}{2} - \frac{\ln(z/v)}{\sigma} \right] \bigg/ \left[\frac{\sqrt{2}\sigma}{G} \phi(\sigma/\sqrt{2}) \right]$$

where $\lambda(\ ) = \phi(\ )/\Phi(\ )$, and $\phi(\ )$ denotes the standard normal density.