Instituto de Investigaciones Socio Económicas

Documento de Trabajo No. 10/03
September 2003

The Effectiveness of Foreign Aid in Bolivia

by

Lykke E. Andersen,
& José Luis Evia

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Lykke E. Andersen
(landersen@ucb.edu.bo)
&
José Luis Evia
(jlaevia@hotmail.com)

La Paz, 23 September 2003

Final Report

* This study was financed by DFID and the Spanish Embassy in Bolivia and institutional support was provided by Fundación Milenio. The authors thank Oscar Antezana, María Molina Álvarez de Toledo and Napoleón Pacheco for comments and ideas expressed during internal discussions as well as all the persons who have provided information and opinions during the interviews. The authors are responsible for the contents of the document, which does not necessarily reflect the official positions of DFID, the Spanish Embassy or Fundación Milenio.

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Executive Summary

During the last five years, Bolivia received more than $US 3,000 million in foreign aid and more than $US 3,500 million in Foreign Direct Investment (FDI). The country also received debt relief with a net present value of $US 1,300 million and implemented a National Poverty Reduction Strategy. During the same period, however, the GDP growth rate fell from an average level of 4.7% between 1993 and 1998 to an average level of 1.7% between 1999 and 2002, relative and absolute poverty increased, and the fiscal deficit increased to 8.7% of GDP in 2002.

These numbers suggest that neither foreign aid, nor debt relief, nor FDI has the capacity to increase growth rates and reduce poverty in Bolivia. This, however, is not necessarily true. It could be the case that without these positive shocks, the situation would have been even worse due to other negative shocks. The only way to separate the effects of different shocks is to use a Computable General Equilibrium (CGE) model, where the effects of changes in one variable can be analyzed while holding all other exogenous variables constant.

The model used for this project contains a variety of sectors and household types which permits the analysis of aggregate effects on the GDP growth rate, the balance of payments, the fiscal deficit, etc, as well as distributional effects indicating who benefits and who is hurt by different policies. The distributional analysis is of particular importance when poverty is a main concern since aggregate GDP growth does not necessarily reduce poverty. Estimations by UDAPE indicate that the elasticities of poverty with respect to changes in GDP are extremely low in Bolivia: Only 0.3% in rural areas and 0.6% in urban areas[1]. This means that during the last decade, growth in Bolivia has clearly not been pro-poor, despite the stated emphasis on poverty reduction.

During the period 1998-2002, Bolivia received on average $614 million in foreign aid per year. For the period 2003-2006, there are commitments implying that this amount will increase to $872 million per year, which means an increase in the level of annual foreign aid of $258 million. This report used the CGE model to simulate the effect of additional foreign donations of $258 million per year for four years, after which the level of aid returns to its "normal" level. Such a simulation allows us to see the effects of the initial expansion, the effect of the subsequent contraction, as well as the long run effects after the temporary increase in foreign aid.

The effects of this extra aid will obviously depend on how the money is used. Applying the combination of public spending and public investment that we consider most likely, the simulations show an increase in the GDP growth rate of approximately 1 percentage point per year during the four years of extra aid, but when the extra aid disappears, the growth rates return to their normal levels. It is important to stress that public investment in the model is assumed to produce public goods, which increase the productivity of everybody.

[1] UDAPE (2002).

The extra aid has a corresponding positive effect on average incomes of the households for four years, but those who benefit most are skilled workers who are already among the richest in Bolivia, while the biggest and poorest group in Bolivia, the rural small-holders, are worse off every year during and after the extra aid, compared to the base scenario (without extra aid). This means that foreign aid, despite the very best intentions, tends to increase inequality and deepen poverty.

This is not due to project failure at the micro level, but rather to adverse secondary effects at the macro level. It is perfectly possible that all aid projects are successful at the micro level, while the impacts at the macro level remain very close to zero. This paradox between the success of projects at the micro level and the lack of success at the macro level can be explained by the following arguments:

First, aid projects distract resources away from other activities. Even when projects are 100% funded by foreign donations (the assumption used in the simulations), the project will use human resources which, in the absence of the project, could have been applied elsewhere. Since foreign aid projects usually skim the cream in terms of local human resources, this may imply a large social opportunity cost. This effect is particularly important in Bolivia, where the public sector (with the heavy support of foreign aid) is so attractive that few professionals are interested in working in the private, productive sector. And since this system appears to be relatively permanent, the new generations of students are demanding education that qualifies them to be politicians and bureaucrats, while few students are planning on working in the private sector, and much less create their own enterprises.

Besides, not all aid projects are fully financed by donations, the majority of projects are financed by loans, and those that include a donation component, usually requires counterpart financing. This means that aid projects not only distract scarce human resources away from other activities, but also scarce financial resources.

The second adverse macroeconomic effect arises through the real appreciation of the exchange rate that invariably follows from a large influx of dollars into the economy. This negatively affects most exporting sectors as their products become relatively more expensive on the international markets, and it negatively affects domestic producers of tradable goods as they have to compete with cheaper imports. The result is a reduction in the domestic production of tradable goods. Theoretically, the Central Bank could neutralize this effect by increasing its reserves of dollars or by paying off foreign debt, but this is unlikely to happen as most aid is tied to specific projects.

The fact that the macroeconomic effects of foreign aid on monetary indicators tend to be small and temporary does not imply that foreign aid is useless. Many non-monetary indicators of well-being have increased substantially during the period, especially the indicators related to school enrollment, health, water, and sanitation.

The Bolivian government is well aware of the asymmetry between progress in the provision of basic services and the lack of progress in the capacity of the population to increase its incomes: The real per capita income in Bolivia is practically the same as it was 50 years ago, despite the advances in education, health and basic services. The government is therefore

changing the focus of its Poverty Reduction Strategy, laying more emphasis on the productive sectors. Fourteen sub-sectors with a high employment generation capacity have been selected for particular interventions in terms of infrastructure, market access, technical assistance, training, etc. Ten of these sub-sectors are part of modern agriculture, a sector whose expansion, according to our CGE analysis, would be beneficial not only because it raises average incomes, but also because it improves the income distribution. This is in contrast to the hydrocarbon sector and the mining sector, whose expansions tend to worsen the income distribution.

Another sector whose expansion is highly desirable from a poverty reduction viewpoint, is the one producing consumer goods, usually through small and medium sized enterprises. The expansion of this sector would benefit the two big groups of poor households in Bolivia: the rural small-holders and the urban informals, and thus have a beneficial effect on both rural and urban poverty.

In order to generate the largest and most sustainable impact possible of future foreign aid, it is recommended that donors and the government revise projects in three dimensions:

- First, they should check to which extent the projects create true public goods that increase the productivity of large groups of people, and to which extent they just generate short run activities which substitute for other, and possibly more sustainable, activities. The larger the public good component, the better the long run impact.

- Second, they should evaluate whether the projects help reduce the scarcity of skilled workers. It is the scarcity of skilled workers and the abundance of unskilled workers that generate high inequality in Bolivia, and projects which improve the quality of unskilled workers would tend to have a positive effect on the distribution of income in Bolivia and thus a beneficial effect on poverty.

- Third, they should check which sectors are likely to benefit or suffer from different projects, as the expansion of the sectors modern agriculture, coca, and consumer goods will have a much better impact on poverty than the expansion of mining, hydrocarbons, and formal services.

It is often difficult to predict the impact of specific projects, and particularly difficult to assess how big the public good component of the project is. In order to learn from the past, it would be interesting to make a detailed retrospective analysis of past aid projects in Bolivia, evaluating which public goods have been created and what has been their impact on productivity. Specifically, donor agencies could provide a complete list of projects completed during the year 2000, and an independent team could analyze the project documentation and visit the project site some years after conclusion in order to evaluate the impact of the project. With a sample of 60-100 projects, it would be possible to make a statistical analysis, identifying what kind of projects would be most likely to generate not only positive impacts at the micro level but also at the macro level.

"It is simply impossible to violate, ignore
or shortcut the development process."

Stephen R. Covey, 1989

1 Introduction

Theoretically, foreign aid can be an important ingredient in the development of a host country. The growth of the economy depends on its productive capacity, that is the amount of capital in a wide sense (physical, human, and social). All these capitals are working together to generate goods and services that the society can consume (or trade). Because of that, the increase in the total capital can have important effects on productive capacity, and thus on incomes. To the extent that foreign aid helps to increase the total amount of capital, it can help push a country to a higher output and income trajectory.

In addition, it has been argued that in poor countries, the process of growth requires a certain level of capital (physical, human, and social). If a society has a stock of capital that is below that level, the returns to investment are decreasing, and the long run equilibrium is reached at a low level of income. On the other hand, if a certain level of capital is reached, the economy moves into a stage of increasing returns, that pushes the rate of growth of the economy to high levels in a permanent way (above the rate of growth of the population), or the economy goes to an equilibrium in which the rate of growth of the economy is equal to the rate of growth of the population, but at higher levels[2].

On the other hand, it is possible that foreign aid can provide necessary resources to reduce liquidity constraints in the poorest economies. In this case, these economies are unable to generate enough saving to generate a higher level of capital, because their needs of consumption exhaust their income, and are not able to finance an increase of capital. In this case, external aid can alleviate the financial restrictions, helping in this way to enhance the resource allocation of the society, and generating more capital and growth in the less developed economies.

After half a century of development aid, a golden rule for development assistance projects at micro level has developed. Around 1/3 of the projects are successful, in the sense that they achieve their goals and local institutions take ownership of them, in such a way that the project can continue once the external cooperation withdraws. Another 1/3 of the projects achieve their goals but do not achieve local ownership, so the project ends quickly once the donors leave. The last 1/3 does not even reach the immediate targets of the projects. Projects in Latin America tend to follow the average, while projects in Africa tend perform considerably worse, and projects in Asia tend to be mores successful[3]. Given these results, one would expect that projects in Bolivia will behave according to the average.

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2 Velasco, A. e Illanes, F. (1994)
3 Banco Mundial (2001).

Even in the worst cases, the projects will have short run benefits, because they create jobs and temporal increases in incomes, at least for some people, so one would expect a positive impact of aid, even if some projects fail. At the macro level, such a positive impact has been difficult to show. Most studies conclude that external aid either does not have any impact on the growth rate, or that its impact is negative[4]. This contradiction between micro and macro impacts is sometimes considered a paradox[5], but the present document shows that there are logic explanations that can explain this contradiction.

The document is organized in the following way: Section 2 shows the distribution and persistence of poverty in Bolivia, while Section 3 summarizes the national strategies to reduce poverty. As the effectiveness of foreign aid depends crucially on the quality of local policies, section 4 discuses the problem of governance and its implication for the decentralization process, while section 5 analyses the fiscal policy and public investment. Section 6 describes the composition of external aid in the last 5 years and tries to connect the disbursed amounts in each sector with the changes in the sector indicators designed to measure the progress. Section 7 uses a general equilibrium model to examine the macroeconomic and distributional impact of external aid, distinguishing these from other positive or negative shocks. Section 8 uses the same model to see the effects of the HIPC II initiative. Section 9 analyses the role of exports and identifies the exporting sectors that have more poverty reducing capacity. Section 10 discusses the impact of direct foreign investment in the development of the country, and section 11 presents the conclusions and recommendations.

4 For example White (1992*a,* 1992*b*), Boone (1996), World Bank (2001).
5 Mosley (1986) was probably the first to point out the micro-macro paradox of foreign aid.

2 Poverty in Bolivia

According to the national Census of 2001, 58.6% of the total population of Bolivia had unsatisfied basic needs (UBN) that year. This reflects an average reduction of only 1.33 percentage points per year since 1992. As shown in Table 1, the regions that were initially less poor have shown sharper reductions in poverty than the initially poorest regions, implying that regional inequality is widening. Potosí continues to be the poorest department in the country, with 79.7% of its population with unsatisfied basic needs, less than one percentage point less than in 1992 (80,5%). Santa Cruz, on the other hand, had the lowest level of unsatisfied basic needs in 1992 and showed the biggest reduction between 1992 and 2001 (22,5 percentage points).

An alternative way of measuring poverty is the income method, which is based on data from the continuous life conditions household surveys, which is part of the program for improving the survey and measurement of life conditions (MECOVI). This poverty measure shows transitory poverty, whereas the UBN method indicates structural poverty. According with this type of measure, poverty has increased between 1999 and 2000 but fallen slightly between 2000 and 2001 (see Table 2).

Table 1 Bolivia: Population with Unsatisfied Basic Needs (UBN)

	Census			Average annual change	
Region	1976	1992	2001	1976-2001	1992-2001
Chuquisaca	90,5	79,8	70,1	-0,82	-1,05
La Paz	83,2	71,1	66,2	-0,68	-0,53
Cochabamba	85,1	71,1	55,0	-1,21	-1,74
Oruro	84,5	70,2	67,8	-0,67	-0,26
Potosí	92,8	80,5	79,7	-0,53	-0,09
Tarija	87,0	69,2	50,8	-1,45	-1,99
Santa Cruz	79,2	60,5	38,0	-1,65	-2,43
Beni	91,4	81,0	76,0	-0,62	-0,54
Pando	96,4	83,8	72,4	-0,96	-1,23
Bolivia	**85,5**	**70,9**	**58,6**	**-1,08**	**-1,33**

Source: INE-UDAPE (2002).

The household survey of 2001 shows that poverty for this year reaches 64.4% at the national level; 54.3% for urban areas and 81.1% for rural areas. Although the level of poverty is higher in rural areas, the growth in poverty between 1999 and 2001 was higher in urban areas, where poverty increased by 3.72 percentage points, compared with an increase of rural poverty of 1.86 points. The improvements during 2001, were not sufficient to bring poverty back down to the levels of 1999.

In contrast to expectations, female headed households are significantly less poor than male headed households. An analysis of the surveys indicate that this is probably due to the higher propensity of saving in female headed households.

Table 2: Monetary poverty in Bolivia, by area, 1999, 2000, 2001

	Poverty			Extreme poverty		
Area	November 1999	November-December 2000	October - November 2001	November 1999	November-December 2000	October - November 2001
Urban	51,72	54,47	54,28	23,65	27,93	26,18
Capital City	46,82	52,03	50,54	20,66	25,69	22,28
Rural	80,12	84,54	81,06	56,72	58,66	55,60
Bolivia	**62,26**	**65,47**	**64,39**	**35,92**	**39,17**	**37,29**

Source: MECOVI surveys 1999, 2000, 2001.

Given the extent of poverty, Bolivia has defined the fight against poverty as one of its priorities, and the government has developed a Bolivian Poverty Reduction Strategy (BPRS) through heavy consultation with national stakeholders. The strategy establishes poverty goals from the base year, 1999, until 2015, but due to the unexpected crisis since 1999, actual poverty reduction is falling way short of targets.

For 2001, the BPRS's goal of national poverty index was 61.4% compared to the actual figure of 64.4%, with substantial shortfalls in both rural and urban areas. For the extreme poverty, the BPRS's goal for 2001 was 35.1% compared to an actual value of 37.3%.

The increase of poverty in the short run is related to the disappointing development of the Bolivian economy in the last four years. After a period of relative high growth between 1993 and 1998, years in which the growth rate of the economy was 4.7% in average, the growth rate of the Bolivian economy fell to an average of only 1.7% between 1999 and 2002. According to UDAPE (2002), given the new projections of growth rates, the goals of the BRPS will be achieved in the year 2025, long after the deadline of 2015.

In addition, estimations made by UDAPE of the elasticity of poverty with respect to changes in GDP show that income increases have only a small effect on poverty. According to the estimations, a 1% increase of per capita income, would lead to a 0.6% reduction in urban poverty and a 0.3% reduction in rural poverty. These very low elasiticities indicate that growth in Bolivia has not been pro-poor and that deep structural changes are needed if poverty goals are to be reached.

3 National Development Strategies

In the early months of 2001, the Bolivian government presented the Bolivian Poverty Reduction Strategy. One of the inputs to the BPRS, was a process of consultation with civil society, called the national dialogue. According to the BPRS, the national dialogue "is a deliberation between the society and its political system for agreeing on the central elements that define the course of a strategy for poverty reduction."

The BPRS shows four actions for poverty reductions: to create opportunities, increase capacities, improve security and protection, and procure more participation and integration. These where conceived as the four pillars of the BPRS. In addition, the strategy outlines three transversal topics: the ethnic and indigenous people problem, gender equality, and the sustainable use of natural resources, preserving the environment.

For each of the four pillars the strategy outlines a series of actions. For the opportunity pillar, it highlights the promotion of rural development, incentives for the development of small and medium sized enterprises, development of micro finance, technological assistance, and increased road infrastructure. In order to increase the productive capacities of the poor, the strategy plans an increase in the quality and access to education and health services, as well as improved sanitation and housing. To increase security and protection for the poor, the BPRS outlines social protection programs, integrated attention to under-fives, emergency programs for natural disasters, and improved ownership rights. To increase the participation and social integration, the Strategy relies heavily on decentralization, and has some vague promises of support for citizen organization and participation and projects that might reduce ethnic discrimination.

The change of government in August 2002, and the disappointing experience in the implementation of the BPRS, generated a series of observations to its original design, stressing the need for a reformulation of the BPRS. In relation to the strategy conception, there is the impression that the BRPS did not place sufficient emphasis on growth, or even examine the sources of growth. There is also a need for prioritizing the actions set forth by the strategy to achieve better results. Finally, it is necessary to generate greater coordination between the different elements of the strategy.

The implementation of the BPRS has not been satisfactory, either. According to UDAPE (2002), in the opportunity component, one can see advances in institutional strengthening, and in some cases in the normative. In contrast to specific policies, programs and plans do not show important improvements. For the capacities component, advances are seen in the increased allocation of resources to education, health, and productive and social infrastructure sectors. However, the following problems have been identified: i) insufficient availability of resources to finance current expenditure, ii) lack of consultation at the municipal level, lack of prioritization of the public agenda, iii) insufficient coordination with other public institutions. In the protection component, the lack of prioritization of the actions in the action plan is highlighted. In the participation component, concrete policies could not be implemented to reduce social exclusion, since the strategy does not specify any concrete actions for advancement in this direction. Some progress in the building of social control institutions is

acknowledged, but these do still not show an effective participation. There are few advances in the cross-cutting themes so far, mainly advances in the elaboration and approval of norms.

In relation to the institutional themes, the BPRS outlines the revision of the allocation of responsibilities of the decentralized levels (prefectures and municipalities), and the strengthening of the social control, but, according to UDAPE, the propositions for judiciary reform and the fight against corruption are very general, and do not give action lines that allow to implement them. An advance in the Institutional Reform Program is acknowledged, and in the implementation of the SIGMA and the SISER (System of assessment of the public management by results).

The assessment of UDAPE outlines the need to reformulate the BPRS, in order to strengthen the components of the BPRS, to readdress the economic growth towards a model with sustainable basis, and to prioritize actions such that the universal goals of health and education can be met. In order to do that, it proposes to strengthen the following components of the BPRS: the coordination between labour demand and the education policies at the secondary level and technical education, the generation of permanent employment, more construction, the creation of a school subsidy, and the universalization of health services. It also stresses the productive transformation, improving productivity through productive chains, the generation of productive municipalities, and the transformation of agriculture and industry.

The new BPRS will be incorporated into the General Plan of Economic and Social Development (PGDES) in order to generate more coherence within these two processes of economic and social development. The PGDES outlines an approach of wealth generation in order to reduce poverty, emphasizing incentives for growth with a wide base, high employement, and high value added. According to the PGDES, the state has to improve the productivity of the economy, promote consultation, institutional development and solidarity in order to create the conditions to promote the private investment.

The Strategy emphasizes 14 productive chains (10 in agroindustry, 3 in industry, and 1 in services), where the activities of promotion of productiveness and competitiveness of the country are coordinated, and productive agreements to invest in productive chains can be achieved. The state will invest in infrastructure, technology, technical assistance, and the development of human capital. It will also assist the production with certification and quality norms and help secure access to financing.

The reformulation of the BPRS will be agreed on in a new version of the National Dialogue, in consensus between government and civil society about the proposals, ending in a productive and social pact. The revised BPRS and the PGDES together with a Fiscal and Financial Strategy, will be the instrument to guide public investment towards fulfilling the targets set out in these two strategies. The planning process of the PGDES will end with the elaboration of a pluri-annual budget, where a national fiscal pact is established. This budget will have not only a national character, but also a departmental and municipal one.

4 Governance and decentralization

The BPRS proposed to manage the main part of the resources for the fight against poverty in a decentralized way. Since the implementation of the Law of Popular Participation, the municipal government have had a fundamental role in the management of the public investment resources. This role increased further with the Law of the National Dialogue, which secures that the resources from the HIPC II initiative will be managed by the municipalities. In addition, municipalities have access to the resources of the Productive and Social Fund.

The results are disappointing. According to UDAPE (2002), between August 2001 and August 2002, municipalities only managed to use 48.1% of the HIPC II resources they received. The low capacity of implementation is thought to be the consequence of the low formulation and execution capacities in the municipalities, political problems within the municipalities, and a flawed design in the legal norms, and the inflexibility of the procedures.

The lack of adequate information on the municipal accounts is an obstacle to assess the efficiency of resource employment in the municipalities. Many municipalities do not make or present financial statements and operative plans. Of the municipalities that do present their financial statements, only a few make them according to acceptable accounting norms. It is urgent to solve the information problems at the municipalities. SIGMA appears to be an answer to the problems of organizing financial information in the municipalities, but its implementation is much delayed.

5 Fiscal Policy and Public Investment

Table 3 shows the evolution of the consolidated accounts of the Non Financial Public Sector for 1998 and 2001, in constant values of 1991.

Total revenues fell by 2.4% between 1998 and 2002, while total expenditures increased by 8.6%, thus turning a small surplus into a large deficit (before pensions). The decrease in revenues is mainly the result of the decrease in incomes from the sale of hydrocarbon derivatives.

Table 3: Consolidated Operations of the Non-Financial Public Sector

	Millions of 1991-Bs.		Change
	1998	2002	1998-2002
Total revenues	**7816**	**7629**	**-2.4%**
Current income	*7496*	*7008*	*-6.5%*
Tax Revenues	3547	3618	2.0%
Income taxes	3138	3309	5.4%
Import taxes	383	286	-25.4%
Mining royalties	26	23	-9.7%
Hydrocarbon taxes	1175	1268	7,9%
IVA and IT	203	0	-100.0%
IEHD	585	636	8.7%
Royalties	387	632	63.2%
Hydrocarbons	1259	880	-30.1%
Other enterprises	273	90	-67.1%
Current transfers	199	306	53.3%
Other current income	1043	847	-18.8%
Capital income	*320*	*621*	*93.9%*
Total expenditure	**8004**	**8696**	**8.6%**
Current expenditure	*6245*	*6377*	*2.1%*
Salaries	2580	2672	3.6%
Goods and services	2168	1774	-18.2%
Interest foreign debt	300	286	-4.7%
Interest domestic debt	50	292	483.8%
Current transfers	620	471	-24.1%
Other current spending	512	845	64.9%
Non-identified spending	15	38	152.0%
Capital expenditure	*1759*	*2319*	*31.8%*
Surplus without pensions	**188**	**-1067**	**-668.5%**
Pensions	-1005	-1353	34.6%
Global surplus	**-1193**	**-2419**	**102.9%**

Source: Own elaboration based on data from UPF.

The increase in expenditure was mainly due to an increase of 31.8% in the capital expenditure and a 438.8% increase interest payments on domestic debt. Spending on goods and services as

well as currents transfers experienced substantial falls, but not enough to compensate for the increase in capital expenditure.

Pension costs have been separated out because of their extraordinary nature. In the transition from a pay-as-you-go system to a fully funded system, there is a whole generation who gets squeezed, and the government has decided to cover these people, although it is putting heavy pressure on the public budget. Pension costs increased by 34.6% between 1998 and 2002 contributing substantially to the dramatic increase in the global deficit, after pensions.

The growth of the global deficit of the public sector is the salient feature of the evolution of the fiscal accounts, and is a peril for the stability of the macroeconomic equilibrium. The fiscal deficit has grown from a level of 3.8% of GDP in 2000, to 6.9 and 8.7% of GDP in 2001 and 2002, respectively. Preliminary projections place the deficit for the current year around 10%. An important part of this deficit is the deficit generated by the pensions reform (69.6% and 58.6% of the total deficit for 2001 and 2002, respectively). This deficit has been financed mainly with foreign resources. According to WB & BID (2002), foreign assistance has played an anti-ciclycal role, increasing their disbursements in recent years. However, it is expected that the disbursements will increase further in the following 4 years, although the Bolivian economy is on its way out of recession.

The government institutions interviewed all agreed that the current expenditures of the public sector are very inflexible, and that, given the current political situation, to increase tax revenues is not feasible. To cover the financing gap, the government is therefore looking for budget assistance from international donors, highlighting the fact that the only alternative would be to cut public investment.

The recent acute fiscal deficit has generated problems in the governmental organization to supply counterpart funds, thus delaying disbursements of promised foreign assistance. WB and BID (2002) indicated the need to review counterpart financing, and reduce it in the cases where it goes beyond the minimum requirements.

The public efforts to fight poverty are sustainable in the long run only if the country makes a genuine effort for achieving fiscal equilibrium and decides to finance an increasing part of the public investment and fight against poverty with its own resources. Nevertheless, in the current political conditions, it seems less probable to achieve significant reductions in fiscal deficits by increasing taxes. It is necessary to find a formula that avoids a fiscal collapse in he short run, and that at the same time creates the incentives to make a genuine internal effort to share the costs of poverty reduction.

Table 4 shows the public investment in Bolivia for the years 1998-2002, by sector. Between 1998 and 2002, $2,828 million was spent on public investment. The bigger part of public investment was addressed mainly to social projects (which for this period represented 47.3% of total public investment), and to the infrastructure sector (35.3%). Public investment to the productive sectors in the period represented only 9% of the total public investment, and the multisectorial projects 6.5%. Within the social sector, education investment was the most important ($425 million), followed by sanitation ($391 million), urban development and housing ($281 million), and health ($238 million).

Table 4: Public Investment, 1998-2002 (million dollars)

	Planned	Executed	% Execution
Productive sectors	**396.1**	**305.3**	**77.1%**
Hydrocarbons	12.5	5.2	41.2%
Mining	28.5	15.3	53.8%
Industry and tourism	29.1	26.3	90.4%
Agriculture	326.0	258.6	79.3%
Infrastructure	**1053.6**	**997.9**	**94.7%**
Transportation	933.9	882.5	94.5%
Energy	68.3	68.6	100.5%
Communication	228.0	368.0	161.4%
Water resources	51.2	52.4	102.3%
Social sectors	**1445.4**	**1336.2**	**92.4%**
Health and social security	284.0	238.4	83.9%
Education and culture	449.6	425.1	94.5%
Basic sanitation	423.9	391.3	92.3%
Urbanization and housing	287.9	281.4	97.8%
Multisector	**205.8**	**183.1**	**89.0%**
TOTAL	**3114.8**	**2828.6**	**90.8%**

Note: Incluyes estimated investment by municipalities.
Source: Viceministry for Public Investment.

In the framework of the fight against poverty, the government of Bolivia decided to push for investment in the social sectors and in infrastructure, and let the investment in the productive sector in private hands. Despite resource restrictions, the public investment related to the BPRS achieved $620 million in 2001, only 1.5% below the amount projected by the BPRS. It has to be highlighted that the domestic resources that financed the public investment related with the BPRS achieved $321 million in 2001, 4% above the amount projected by the BPRS. On the other hand, external financing of the BPRS in 2001 achieved $299 million, 7% below the amount projected by the BPRS.

Table 5 shows the amounts budgeted and executed of the BPRS, by component. This table must be read with caution, because the budgeted amounts do not include the HIPC resources, while the executed amounts do include them (They reach $18 million for 2001). Nevertheless, the table gives insights about the alignment of the public investment with the BPRS. The opportunity component shows an execution very close to that programmed. The capacity component shows an execution 5% above the programmed. The execution of these two components seems to follow the program of the BPRS. These two items of public investment are also the most important in the total volume.

On the other hand, in the smaller components of public investment the differences between the amounts programmed by the BPRS and executed are more important. This is for example the case of the Institutionality component, where only $6.2 million where executed out of the $10.8 million planned.

Table 5: Investment in the BPRS in 2001 (million dolars)

Component	Planned EBRP	Executed EBRP	Difference (%)
Opportunities	**286.6**	**281.1**	**-1.9%**
Domestic resources	146.5	143.6	-2.0%
Foreign resources	140.1	137.5	-1.8%
Capacities	**258.8**	**271.8**	**5.0%**
Domestic resources	138.8	150.1	8.2%
Foreign resources	120.0	121.7	1.4%
Protection	**30.8**	**24.8**	**-19.6%**
Domestic resources	12.4	9.6	-22.3%
Foreign resources	18.4	15.1	-17.8%
Participation	**1.7**	**6.5**	**280.2%**
Domestic resources	1.1	2.0	84.8%
Foreign resources	0.6	4.4	638.5%
Transversal themes	**23.1**	**27.5**	**19.2%**
Domestic resources	8.4	12.2	45.6%
Foreign resources	14.7	15.3	4.1%
Institutionality	**10.8**	**6.2**	**-42.4%**
Domestic resources	1.5	1.6	4.5%
Foreign resources	9.2	4.7	-49.4%
Multisectorial		**2.3**	
Domestic resources		2.0	
Foreign resources		0.3	
HIPC II	**18.3**		
Total	**629.9**	**620.3**	**-1.5**
Domestic resources	308.7	321.2	4.0
Foreign resources	321.3	299.1	-6.9

Source: Own elaboration base don data from the EBRP and UDAPE (2002).

6 Foreign aid and non-monetary indicators of development

This section compares the disbursements of foreign aid in different areas with the changes in the non-monetary indicators of development in each sector. As is shown in Table 6, the sectors with most foreign assistance in the period 1998-2002 where: Economic Programs (17.4%), Rural development (17.3%), Road Infrastructure (16.9%), and institutional strengthening (14.9%). After these followed three sectors of basic services: Education (8.7%), Health (5.9%) and Sanitation (6.5%).

Table 6: Foreign Aid resources, 1998-2002

Thematic areas	Disbursements 1998-2002 (1000 $US)	Disbursement structure (%)
1. Institutional strengthening	414,227	14.9
2. Education	243,112	8.7
3. Health	163,289	5.9
4. Road network	469,232	16.9
5. Rural development	480,232	17.3
6. Sanitation	180,973	6.5
7. Environment	68,247	2.5
8. Financial system	102,669	3.7
9. Urban infrastructure	24,707	0.9
10. Economic programs	483,800	17.4
11. Alternative Development	110,348	4.0
12. Productivity and Competitiveness	38,884	1.4
Total (agencies in study)	**2,779,694**	**100.0**
Other agencies and adjustment	289,850	
Total disbursements	**3,069,544**	

Source: BM & BID (2003).

In the following, we examine each of these thematic areas.

6.1 Institutional strengthening

The important transformation of the Bolivian state during the last 15 years (in which decentralization, privatization and the establishment of a regulatory system stand out), the effort to fight corruption, and the modernization of the state, require big institutional changes. The international cooperation has devoted an important amount of resources to this area (15% of the total), disbursing more than $400 million between 1998 and 2002.

An important part of the effort to strengthen institutions was the attempt to institutionalize employment in the public sector, implementing a system of public service based on meritocracy rather than political favours. The first attempt was the creation of a civil service program, and a superintendency of civil service, for the institutionalization of a series of public positions. In that attempt, 450 public positions where institutionalized between 1999 and 2000.

After that, a program of institutional reform (PRI) was developed, which tried to face institutional problems in an integrated way. In addition, several public institutions made

institutionalization processes of public positions outside PRI. Since the year 2000, these efforts have institutionalized 2000 public sector positions. The PRI program was implemented in three ministries (Housing, Agriculture, and Education), and three other public institutions (Customs, the National Road Service, and the Tax Service). The following table shows the degree of institutionalization of the positions in these institutions.

Table 7: The Institutional Reform Program (PRI)

Institution	Total positions	Positions institutionalized	Share institutionalized
Housing and basic services	38	33	86.8
Agriculture	152	152	100.0
Education	62	0	0.0
Customs	122	96	78.7
Tax Services	514	66	12.8
National Road Services	141	129	91.5
Total	1,029	336	32.4
Total Public Sector	42,417	336	0.8

Source: PRI y SNAP

The achievements, in terms of public positions institutionalized, are still very low considering the fact that, according to the national public servants registry, the total number of public positions are 42,417[6]. Nevertheless, according to the latter registry, 26.5% of public servants declare that they have entered the institution in a public competitive process. It must be highlighted that the BPRS does not establish indicators for the assessment of the progress of the institutionalization process in the country.

The PRI is in the process of reformulation because several flaws have been detected. First, the institutionalization process was associated with an increase in the salary which initially was provided by foreign aid but later should be covered by domestic resources. However, with the present fiscal restrictions, the public sector cannot absorb these costs in a sustainable way. Second, an efficient mechanism for assessing and dismissing inefficient institutionalized servants was missing, thus weakening the link between performance and remuneration. Third, there was a focus on staff and a neglect of rules and procedures which are also necessary for efficient institutions.

6.2 Education

The education sector absorbed 8.7% of foreign assistance between 1998 and 2002, corresponding to $243 million. During the same period, most education indicators have improved systematically (see Table 8). Both gross and net enrolment rates have increased at all levels in the public system. In 2001, 87.9% of primary school age children were inscribed in public primary school. Another 9.0% were inscribed in private primary school, bringing the

[6] This figure comprises the central administration, decentralized and deconcentrated, entities of departmental administration, municipal governments, judiciary power, legislative power, electoral court, and the administrative staff of the health and education sector. It does not include the rural and public teachers, administrative staff and professors of public universities, police, army, and foreign service.

total net coverage rate for primary school up to 96.9%, very close to the goal of universal primary education.

Drop out rates have decreased at all levels of public education, and the promotion rates have increased, which suggest that the quality of public education has improved between 1998 and 2001. The indicator of the educational level of teachers has improved dramatically between 1998 and 2002. The only indicator that showed a deterioration is the pupil/teacher ratio. The empirical evidence in Bolivia, however, suggests that the quality of education is better in schools that have more pupils per teacher, implying that the evolution of the pupil/teacher ratio is not necessarily bad.

Table 8: Public education indicators for Bolivia, 1998-2001

Indicator	**1998**	**2001**
Gross enrollment (%)		
Pre-school	41.9	44.2
Primary	97.0	98.8
Secondary	46.8	54.6
Net enrollment (%)		
Pre-school	30.8	34.9
Primary	86.7	87.9
Secondary	35.1	40.8
Drop-out rate (%)		
Pre-school	8.4	6.8
Primary	7.9	5.9
Secondary	11.5	9.8
	1998	**2002**
Number of schools	13,526	14,646
Number of teachers	82,358	91,518
% of teachers with teacher education	65.7	74.6
Public education spending (% of GDP)	3.6	4.2

Source: Sistema de Indicadores Educativos (SIE).

The number of public schools increased by 8.3% and the number of teachers by 11.1% between 1998 and 2002. The fact that the gross enrollment rate at primary level is very close to 100%, suggests that there is sufficient physical capacity to give education to all children in Bolivia, now and in the future, especially when considering that in this point of the demographic transition, each generation of newborn children is smaller than the previous one.

Bolivia has made important progress in the education area, in terms of quantity, and a big part of this progress can probably be attributed to foreign aid; directly through the financing of educational reform and several other projects, and indirectly through the great emphasis that has been put on education, especially through the Millennium Development Goals. Nevertheless, these goals have focused almost exclusively on universal primary education, overlooking pre-school education and secondary education, as well as the quality in education. In 1997, Bolivian students in public schools where among the worst in Latin America, according to international academic tests for forth grade[7].

[7] Andersen & Wiebelt (2003).

Part of the explanation of the low achievements of public school students, is the fact that the children enter first grade without sufficient preparation. Only a small part of public students have had two years of pre-scholar education, and, especially in rural areas, many children enter the education system for the first time when they are 7 or 8 years old. Empirical studies show that one of the most important factors explaining permanence in the education system is the age of entry. The older children are when they start, the higher the probability that the students drop out prematurely. As the rate of coverage at primary level is already very high, it is probably time to change the focus towards pre-school education, which would help increase the presently very low returns to primary education (see Andersen & Wiebelt 2003).

The intermediate goals of the capacity component of the BPRS are the following: i) the ratio between the number of núcleos[8] with complete primary education and the total number of núcleos in rural areas, ii) the share of total non-financial public spending that goes to basic education, and iii) the share of total education spending that goes to basic education. Table 9 shows the development of each of these indicators together with the BPRS targets, and the degree of fulfilment of each goal.

The degrees of fulfilment of the education goals are very high. In fact the first goal has been surpassed, while the other two goals have been fulfilled by more than 90%.

Table 9: Degree of fulfilment of BPRS goals, Education

Indicators	Observed Goal	2000	2001	2002	Degree of fulfilment
No. of núcleos with complete primary/ total no. of núcleos. (Rural area)	Obs.	80.8%	84.7%	87.9%	103%
	Goal		82.9%	85.0%	
Basic education spending/ Total public spending	Obs.	11%	12%	13%	93%
	Goal		13%	14%	
Basic education spending/ Total education spending	Obs.	72%	69%	70%	94%
	Goal		72%	75%	

Sources: EBRP and UDAPE.

6.3 Health

The health sector absorbed 5.9%, or $163 million, of foreign aid during the period 1998-2002, and it is expected that this proportion will be maintained in the future (WB & BID, 2003).

In order to fight the very high infant mortality rates in Bolivia, a free health system, the National Maternity and Child Health System (SNMN), was implemented in 1994 focusing mainly on pregnant women and children under five years of age. This system was expanded to a Universal Infant and Mother Insurance system in 2003.

Between 1996 and 2001 the indicators of coverage of health services have improved significantly. Table 10 shows that the coverage of institutional births increased from 33% in 1996 to 54% in 2001. This can have a very beneficial effect on both infant and maternal

[8] A nucleo is a group of rural schools consisting of one central school and 5-10 satellite schools. The satellite schools usually only offer the first three or the first five years of primary school, after which children are expected to attend the central school of the núcleo.

mortality, but only if the quality of attention is high. These mortality rates remain high even for institutionalized births.

The direct indicators of health have also improved during the period, part of which may be attributed to health spending, and part of which can be attributed to the fertility drop implied by the demographic transition and general improvements in education.

The reduction in child mortality has had a corresponding beneficial effect on life-expectancy at birth, which increased from 60 years by the beginning of the nineties, to 63.8 years in the year 2000. Life expectancy for women in 2000 was 66 years whereas for men it was only 62 years.

Table 10: Indicators of public health services in Bolivia, 1996-2001

Indicator	1996	2001
Institutionalized births (%)	33	54
DPT3 coverage in infants (%)	70	92
BCG coverage in infants (%)	86	93
Health spending (% del GDP)	3.1	3.8

Source: Bolivia (2002).

Although Bolivia has seen substantial improvements in health, it is still far behind in relation to international standards. The mortality rate for children under 5 years in Bolivia was 92 in 1998, while the average in Latin America was only 38 deaths, and the average for developed countries was 6 deaths for every 1000 children born alive. This leaves a lot of room for improvements, especially for rural areas.

The BPRS goal as well as one of the Millenium Development Goals is to reduce the child mortality rate to 45 by 2015. This is quite a modest goal, and it should be possible to achieve this goal (as well as the maternal mortality goal) just with the voluntary reduction in fertility.

Table 11 shows the health goals included in the BPRS.

Table 11: Degree of fulfilment of BPRS goals, Health

Indicators	Observed Goal	2000	2001	2002	Degree of fulfilment
Share of infant pneumonia cases that are being treated	Obs.	17%	19%	19%	100%
	Goal		18%	19%	
Adequate pre-natal care coverage	Obs.	34%	36%	34%	85%
	Goal		37%	40%	
Institutional birth coverage	Obs.	49%	54%	54%	96%
	Goal		53%	56%	

Source : EBRP and UDAPE.

In the short run, the goals that have been set have not been completely achieved. Pre-natal care is particularly behind targets, despite the implementation of the Universal Infant and Mother Insurance system.

6.4 Road Infrastructure

Road construction is one of the most important components of foreign assistance in Bolivia, with 16.9% of the total disbursed amount between 1998 and 2002, equivalent to $469 million.

The road infrastructure in Bolivia is divided into three groups, according to the level of responsibility.

1. The Fundamental Road Network (RVF), which is the responsibility of the National Road Service (SNC). It currently has 11.858 kilometres of roads that connect the capital cities of the departments.
2. The Departmental Network**,** which is under responsibility of the state governments through the Prefectural Road Service (SEPCAM), and aimed at departmental integration.
3. The Municipal Network**,** which is under responsibility of the municipalities, making connections to the Departmental or the Fundamental Networks.

Table 12 shows the increases in the RVF between 1997 and 2002. The total cost of these additions were $159 million (not all is external financing), corresponding to an average cost per kilometre of $US 278.000.

Table 12: Important roads and bridges constructed in Bolivia between 1997 and 2002

Project (total cost)	**Period**	**Kilometres**
Roads	**1997-2002**	**572**
RFV Santa Cruz, Santa Cruz – Trinidad ($29 million)	1997-2001	114
RFV Beni, Santa Cruz – Trinidad ($28 million)	1997-2001	88
RFV Chuquisaca ($8 million)		35
RFV Tarija ($39 million)	1997-2001	44
RFV Santa Cruz ($7 million)	2000-2002	86
RFV Chuquisaca ($7 million)	1997-2002	17
RFV La Paz, Bolivia - Chile ($17 million)	2000-2002	188
Bridges		**Meters**
Puente Internacional, La Paz ($9 million)	2002	
Puente Llavini, Cochabamba ($1.0 million)		
Puente Candorcito, Santa Cruz ($0.7 million)	2003	20
Puente San Juan del Oro, Santa Cruz ($0.9 million)	2002	70
Puente Quimome ($0.9 million)	2002	48
Puente Maniquí, Beni ($11 million)	2001	
Puente Cocama, Pando ($0.2 million)		30

Source: Servicio Nacional de Caminos (www.snc.gov.bo).

Table 13 shows the roads under construction by July 2003 and their advances. The total cost of these projects is 322 millions of dollars for 712 kilometres of roads, implying an average budgeted cost of $US 452.000 per kilometre.

The short run BPRS goal with respect to the road network was to have 47% of the fundamental network paved by 2002. Actually, only 32.4% were paved implying a very low degree of fulfilment of this goal (see Table 14).

Table 13: Roads under construction, July 2003

Project (total cost)	Kilometres	Progress (%)
Ventilla-Tarapaya ($29 million)	84	61
La Mamora-Km 19 ($75 million)	84	58
Abapó-Camiri ($101 million)	189	38
San javier-Concepción ($9 million)	68	38
Ancaravi-Huachalla ($24 million)	135	70
San José-Taperas-Roboré ($70 million)	138	1
Pte. Sacramento-Pre. Arce ($14 million)	14	1

Source: Servicio Nacional de Caminos.

Table 14: Degree of fulfilment of BPRS goals, Road infrastructure

Indicator	Observed Goal	2000	2001	2002	Degree of fulfilment
Percent of Fundamental Network which is paved	Obs.	36%	34%	32.4%	69%
	Meta		44%	47.0%	

Sources: EBRP and UDAPE.

6.5 Rural development

Because poverty in Bolivia is mainly a rural phenomenon, the development of this area has received high priority in the national strategy and it has also received one of the largest shares of foreign aid. With 17.3% of total disbursements, this sector has received $480 million between 1998 and 2002.

An important part of rural development is the increase in irrigated crop area. In addition, the increase in land with titles is crucial for providing judicial security over rural properties, thus eliminating one of the causes of social unrest. The following table shows the accomplishment of these targets.

Table 15: Degree of fulfilment of BPRS goals, Rural development

Indicators	Observed Goal	2000	2001	2002	Degree of fulfilment
Cultivated land with irrigation (100 Has.)	Obs.	250	266	227	87%
	Goal		253	259	
Hectares with land titles (Million Has.)	Obs.	11.8	13.5	15.5	60%
	Goal		19	26	

Sources: EBRP and UDAPE.

There is an important level of accomplishment of the goals of expansion of irrigation in the short run, whereas the process of land titling is falling behind schedule.

6.6 Basic Sanitation

Foreign assistance to sanitation reached $181 million between 1998 and 2002, corresponding to 6.5% of total aid during the period. In 1992, the coverage of the services of drinking water in urban area reached 86.8% of the households, whereas in rural area this coverage reached

22.4%. By 2001, the coverage of drinkable water services had increased to 91.4% of households in urban areas, and to 40.8% in rural areas. Sanitation services reached 62.9% of households in urban areas and 17.5% in rural areas in 1992. This coverage increased to 80.7% in urban areas and to 37.8% in rural areas by 2001.

The BPRS has goals on the access to piped water and basic sanitation. Table 16 shows the degree of fulfilment of these goals for 2002.

Table 16: Degree of fulfilment of BPRS goals, Water and sanitation

Indicators	Observed Goal	2000	2001	2002	Degree of fulfilment
% of households with piped water	Obs.		62.3%	63.7%	86%
	Goal			74.2%	
% of households with basic sanitation	Obs.		61.7%	62.8%	103%
	Goal			61.0%	

Source: EBRP y UDAPE.

In the short run the goals for basic sanitation have been accomplished, whereas access to piped water is lacking behind schedule.

6.7 Environment

The support of the international community for environment represented 2.5% of total assistance disbursed between 1998 and 2002, equal to $68 million. A great deal of this assistance was addressed to strengthening the evaluation system of the investment projects to grant environmental licenses, the implementation of a series of environmental studies, and in some cases the implementation of specific environmental projects.

The following table shows the quantity of environmental licenses granted according to the type of process and activity between 1997 and 2002. The licenses granted resulting from a process of evaluation of environmental impact are those of dispensation certificates and environmental impact declarations. On the other hand, the licenses granted through a process of quality control of environmental adequacy are the environmental manifesto or the environmental adequacy declaration. In both cases there is a clear tendency to increase the use of these instruments, which shows a greater use of the instruments of environmental management, and more consciousness of the need of use of these by the entrepreneurs.

Bolivia is a country with large amounts of forest, implying that the sustainable management of forest is also a fundamental concern. A system of forestry certification has been implemented and it is expanding rapidly from 448,875 certified hectares in 1998 to more than 803,985 hectares in 2002.

Table 17: Environmental licences issued, by type and sector, 1997-2002

	1997	1998	1999	2000	2001	2002
Environmental impact control process	**32**	**110**	**107**	**65**	**100**	**201**
Agriculture		3	3	7	1	19
Mining	6	3	3	2	3	4
Industry			2		3	3
Hydrocarbons	22	90	85	44	67	34
Energy	2	4	9	1	3	11
Transportation		2		2	6	29
Communication			1		11	35
Public health			1			6
Basic sanitation	2			2	1	18
Urbanization and housing		2	2	4	1	40
Water resources		6		1	2	0
Multisector			1	1	2	2
Other				1		0
Environmental quality control process	**34**	**10**	**625**	**1589**	**82**	
Agriculture	1	3	1	13	4	
Mining	3		2	10	28	
Industry	27	1	26	26	34	
Hydrocarbons		1	138	62	6	
Energy	2	3	2	15	7	
Transportation				5		
Communication	1	1	456	1456	1	
Public health						
Basic sanitation				2	1	
Urbanization and housing						
Water resources						
Multisector		1			1	
Other						

Source: INE.

6.8 The financial system and pensions

Foreign aid for the financial sector and pensions reached $103 million, or 3.7% of total disbursements between 1998 and 2002. An important part of this aid has been devoted to strengthening the institutions in the sector. Another important component of this kind of assistance is the expansion of micro-credit to support the small and micro enterprises, and to the rural financial system.

Table 18 shows the evolution of gross credits from organizations devoted to micro-financing. It is important to note that the gross credits experienced an important growth between 1997 and 1999. Afterwards, the amount of credits has been stagnant, even though the rest of the banking system has reduced its credits, as indicated by the relation between credits of micro-finance organizations and credits of the whole banking sector.

In addition, the micro financing entities show a better performance of their credits. The ratio of arrears to credits for the micro-finance sector in June this year was 9.8%, while this

indicator for the banking sector was 19.3%. In addition, the expansion of micro-finance has allowed small towns without financial services to get access to those. Since 1999, micro-finance entities have been opened in 29 localities with no prior financial entity.

Table 18: Gross credits from micro-finance organizations, 1997-2002

	Million dollars	% of all bank credit
1997	169.12	5.0%
1998	216.72	5.1%
1999	382.72	9.4%
2000	378.57	10.6%
2001	386.73	12.8%
2002	393.19	14.7%

Source: INE and Superintendencia de Bancos.

6.9 Alternative Development

Foreign aid to alternative development exceeded $110 million between 1998 and 2002, representing 4% of international assistance to Bolivia during this period. The aim of this program is to avoid the production of coca for its transformation into cocaine for subsequent export.

The effectiveness in achieving this target substantially increased in the second stage of eradication (1998-2001), compared with the first stage (1986-1997), since the incentives where changed. In the first stage there was an individual compensation policy for each hectare of eradicated coca, which resulted in a vicious circle of eradication ─ individual compensation ─ plantation of new crops. While gross eradication during this period reached 42,224 hectares, net eradication reached only 7,100 hectares implying an efficiency of only 17%. Until July 1997 the total amount for individual compensation reached $83.6 million dollars.

In contrast, during the four years 1998-2001, 46,008 hectares where eradicated, and the net eradication surpassed 90% of the volume of the gross eradication[9]. This is mainly due to decree 24963 of 20th February 1998, which substituted the system of individual compensation gradually with one of community compensation, and a large part in species (vegetal and animal material, agriculture equipment, construction material, etc.). At the same time the amount of compensation decreased from $2,500/ha in 1998 to $500/ha in 2001.

The year 2001 ended officially the voluntary elimination of illegal coca crops in the tropical region of Cochabamba, and any coca crop discovered now will be eradicated, without compensation.

It is estimated that the potential supply of cocaine decreased from 237 tons in 1997 to 12 tons in 2001[10]. However, this dramatic reduction in supply has resulted in an increase of the coca

[9] Viceministerio de Desarrrollo Alternativo (2002).
[10] Ibid, p. 106.

price from $1.5 per kg of coca leaves before 1998 to $5.6/kg in 2001. This is obviously a great incentive to plant coca, and almost all the 21,000 eradicated hectares between 2001 and 2002 where new plantations interplanted with licit crops or camouflaged in other ways.

Table 19 shows some indicators of coca eradication between 1997 and 2002, while Table 20 shows some indicators of alternative development.

Table 19: Indicators of coca eradication, 1997 – 2002

	1997	**1998**	**1999**	**2000**	**2001**	**2002**
Cocaine paste	10.847,7	8.906,5	6.904,8	5.043,7	4.280,5	4.740,8
Confiscation of Cocaine hydrochloride (kg.)	1.477,1	2.439,6	807,1	555,3	334,1	362,3
Coca plant eradication (ha.)	7.026	11.621	15.353	7.653	9.394	11.839

Source: Viceministerio de Defensa Social.

Table 20 shows the expansion of the licit agricultural frontier. Between 1998 and 2001 the expansion of licit agricultural crops in substitution of coca crops was around 15,639 hectares, with the most important substitutes being bananas and annual crops. This is an important expansion, but the area re-planted with licit crops is only 28% of the area eradicated during the same period.

Table 20: Expansion of the licit agricultural frontier (hectares)

	1998	**1999**	**2000**	**2001**
Banana (banano)	13,559	12,450	12,940	25,406
Black pepper	61	163	278	356
Yucca	6,171	8,000	6,125	6,212
Citrus fruits	21,201	22,320	23,110	24,702
Heart of palm	4,876	3,000	2,725	3,160
Passion fruit	788	158	112	148
Pineapple	3,952	1,660	1,840	2,012
Banana (plátano)	9,201	8,300	8,900	
Rice	6,775	8,000	10,110	
Annual crops				12,882
Other	12,826	16,221	18,405	14,650
Pasture	25,678	28,232	29,414	31,199
Total	**105,088**	**108,504**	**113,959**	**120,727**

Source: Viceministerio de Desarrollo Alternativo.

The GDP from coca production fell dramatically from $93 million in 1998 to $16 million in 2001. This reduction in income is not compensated by a corresponding growth of the GDP from alternative agriculture production in the region, since this fell from a level of $110 million in 1998 to $91 millions dollars in 2001[11].

[11] Ibid, p. 128.

7 Macroeconomic and distributional effects of foreign aid

Section 6 compared the disbursements of foreign aid in different sectors during the last five years with various development indicators. However, no cause-and-effect relationships can be established as these indicators would also have changed in the absence of the disbursements. The only way to separate the effects of aid disbursements from the effects of other shocks is to use a Computable General Equilibrium Model (CGE), where it is possible to change one variable while holding all other exogenous variables constant. This is exactly what is done in this and the following two sections.

The model has a variety of sectors and household types, which allows not only a macroeconomic analysis but also an analysis of the distributional effects of foreign aid[12]. This is very important when poverty is a main concern, since negative distributional impacts easily can counteract positive growth impacts in such away that the poor are adversely affected even if growth is higher.

The model is calibrated to the year 1997, and in order to establish a baseline for the following decade, the following assumptions have been made: 1) Given that the year 1997 had unusually high levels of FDI due to the capitalization process, it is assumed that FDI decreases by 20% each year until 2002 and thereafter remains constant. 2) Government spending is an exogenous variable increasing by 2.5% per year, thus maintaining the size of the government more or less constant compared to GDP. 3) Following the trends of the last several years, a smooth nominal devaluation of 6% per year is assumed. 4) International prices are kept constant at their 1997 levels as is the level of foreign aid. 5) The national interest rate is maintained constant at 13%, while the rate of interest on foreign debt is assumed constant at 6%. 6) The year 1997 was not affected by the El Niño phenomenon, and it is also assumed to be absent in the following 10 years of the baseline simulation[13].

With these assumptions and maintaining the structure and characteristics of the economy in 1997, the model predicts an average annual GDP growth rate of 2.5 percent, which corresponds closely to the average observed over the last 50 years, and also corresponds more or less to the population growth rate.

In order to analyze the distributional impacts of foreign aid, it is important to understand the initial composition of the population and the initial level of incomes. Table 21 shows the composition of the economically active population in Bolivia in 1999. The biggest group is "Rural small-holders" (39.5%), and this is also the group with the lowest income; around $40 per month. The second most important group is "Urban informals" (24.6%) who earn around

[12] The model was created as part of the project "Poverty Impacts of Macroeconomic Reforms in Bolivia" financed by the German Kreditanstalt für Wiederaufbau and headed by Manfred Wiebelt from the Kiel Institute for World Economics. The model is explained in detail in Mercado et al (2003), available on the Internet at: http://www.iisec.ucb.edu.bo/pieb/PIEB%20FINAL.pdf.

[13] These assumptions are made to create a "neutral" scenario without positive or negative shocks. Thus, it does not reproduce the crisis during 1999-2003. This has the advantage that we can shift the upcoming aid boom a few years backward in order to be able to see the long run effects, while it does not affect our simulations of the impacts of foreign aid in a significant manner. Aid could have been used to smooth natural growth fluctuations, but then aid should be reduced now that we are finishing the recession, instead it is predicted to increase by more than 40% according to BM & BID (2003).

$70 per month. The last group with below average incomes is "Urbn unskilled workers" with incomes close to $100 per month. These three groups contain the vast majority of poor people in Bolivia and any intervention that improves the situation of these three groups would help to decrease poverty.

Table 21: Employment and incomes in Bolivia 1999

	Employment (Number of persons)	Employment (%)	Average monthly salary (Bs.)
1. Rural small-holders	1,409,313	39.5	244
2. Agricultural workers	66,672	1.8	725
3. Urban unskilled workers	296,451	8.3	651
4. Urban informals	878,203	24.6	415
5. Skilled workers	626,368	17.5	1,240
6. Employers	292,734	8.2	2,683
Economically active population	3,569,741	100.0	704

Source: Thiele & Piazolo (2002).

The two groups with the highest levels of income are "Employers" and "Skilled workers", in this order, and any policy that favors these two groups would tend to worsen the income distribution in the country.

Given the baseline scenario, it is possible to make simulations with the model in order to see the direct and indirect effects of different policies. In the present section, we analyze the effects of an increase in the level of foreign donations, under different assumptions about how these funds are used.

Simulation: Increase in foreign donations

During the period 1998-2002, Bolivia received on average $614 million in foreign aid per year. For the period 2003-2006, there are commitments implying that this amount will increase to $872 million per year, which means an increase in the level of annual foreign aid of $258 million[14].

In this section we simulate the effect of a temporary increase in the level of foreign donations of $258 million per year for four years.[15] In order to see not only the positive effects of the initial expansion, but also the negative effects of the contraction that necessarily follows at some point, we simulate an increase in donations during years 2 through 5, while aid levels return to the baseline levels from year 6 onward. Such a simulation allows us to see the direct and indirect effects of foreign aid in the short and long run, while maintaining all other exogenous variables constant.

By definition, all official aid is for the government, but the effect of this aid depends crucially on how the government decides to spend or invest the money. In this section we analyze to

[14] BM & BID (2003, Table 11).

[15] Donations represent the optimistic case, compared to credit, since donations do not have to be repaid and they don't increase interest payments.

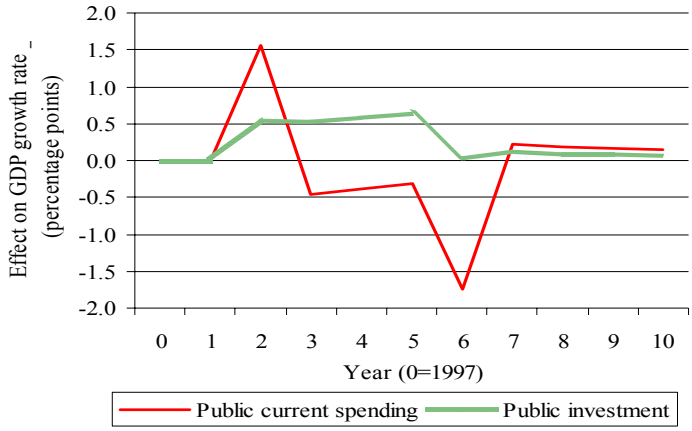
extreme cases: one where the government spends all the extra money on current spending (administration, pensions, etc.), and another where it invests all the money in public capital. The model includes the crucial assumption that public capital (roads, electricity networks, research centres, justice system, etc.) makes private capital more productive[16]. This means that public investment creates true public goods which increase the productivity of all individuals and enterprises in the economy.

Figure 1 shows the impact on GDP growth rates in both cases. The first year of extra aid, the impact is larger in the case of current spending, but the effect is very short lived. Already from the second year, when the economy has had a chance to adjust to the higher aid levels, aid will have a negative impact on GDP growth. This negative effect is due to a series of adverse secondary effects.

First, a strong influx of dollars into the economy will cause an appreciation of the real exchange rate, which will punish exporters by making them less competitive on international markets, and which will punish producers of locally produced tradables, since these will have to compete with cheaper imports. The final effect is a reduction in domestic production[17].

Second, the expansion of the public sector distracts resources away from the productive sectors. The model assumes that skilled workers is a scarce resource, which implies that every time the public sector hires a skilled person, there will be one such person less available for the private sector, thus necessarily reducing the production in this sector.

Figure 1: The impact of extra foreign aid of $258 million during the years 2-5 on the annual GDP growth rate



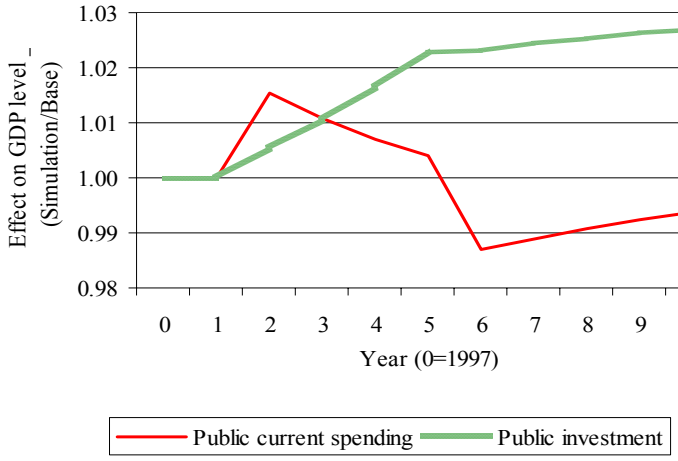
In the opposite case, where all the additional funds are used exclusively for public investment, the expansive effect is initially smaller (because a large part of investment come from imports

[16] Public capital enters the production functions of the private sectors, implying that an increase in public capital increases output, even when holding private capital constant. But private capital would actually tend to increase in order to take advantage of the increase in productivity, so we also see a crowding in effect from public investment.

[17] The appreciation also has a positive effect arising from the fact that imported capital goods become cheaper, which permits more investment and thus higher growth in the future.

rather than domestic production), but it remains positive in the long run. This is due to the assumption that public capital has a positive effect on the productivity of private capital. The results in this scenario are sensitive to the elasticity of public investment on the productivity of private investment (to what degree public investment generates increases in the productivity of private capital). The elasticity used in this simulation takes on a relatively optimistic value, which is only realistic if public investment projects are selected according to their impact on productivity. When the level of aid falls in year 6, a strong contraction is experienced, especially in the case where the funds were used for current spending. In this case, after having received more than $1 billion in extra aid, the level of GDP is smaller than in the case without this aid (see Figure 2). In the case of investments in public capital, on the other hand, there is a permanent positive effect.

Figure 2: The impact of an increase in foreign donations of $258 million per year during years 2-5 on the level of GDP.



In both cases do we observe a positive impact of foreign aid, but in the case of pure current spending, the advantage is temporary, and the longer the influx of aid is maintained, the smaller the impact. This is due to the behavioral adjustments of people when they get used to high levels of aid and public spending. With additional funds, the sectors that include public administration and management of international projects become relatively more attractive for skilled people, which implies that they abandon the productive sectors, and in the long run even adjust their education choices in order to take advantage of the opportunities for rent-seeking that exist in these sectors[18].

In terms of income distribution, the impacts differ greatly between the two extreme cases analyzed. In the case where more aid is used exclusively for current spending, the ones who benefit most are the skilled workers in urban areas, since these account for most of government spending (see Figure 3a). Those who lose most are rural workers and employers. Rural workers lose because they work in modern agriculture, an export sector which gets hurt by the real appreciation. The employers lose because their enterprises become less competitive

[18] To the extent that the education they acquire also is relevant for the productive sectors, this may have a positive effect on GDP in the long run since people are accumulating human capital and savings which can be used for productive purposes when aid levels are reduced.

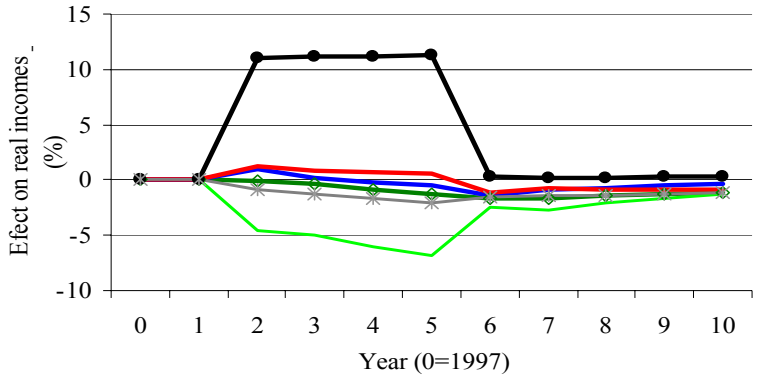
due to the appreciation. In addition, it is difficult for them to retain skilled workers in there enterprises, given the competition from the public sector and the international aid projects. Average incomes are higher than in the base scenario until year 8, but the three large and poor groups, which are our main concern, lose both in the medium and the long run.

In the case where foreign aid is converted fully into public capital, the distributional impact is completely different. The main winners are urban informals, employers, and unskilled workers who are typically employed in public investment projects. The only group that loses in this scenario is rural workers, but even they recover when aid returns to normal levels, and they also benefit in the long run due to the generally higher level of productivity and incomes in the economy (see Figure 3b).

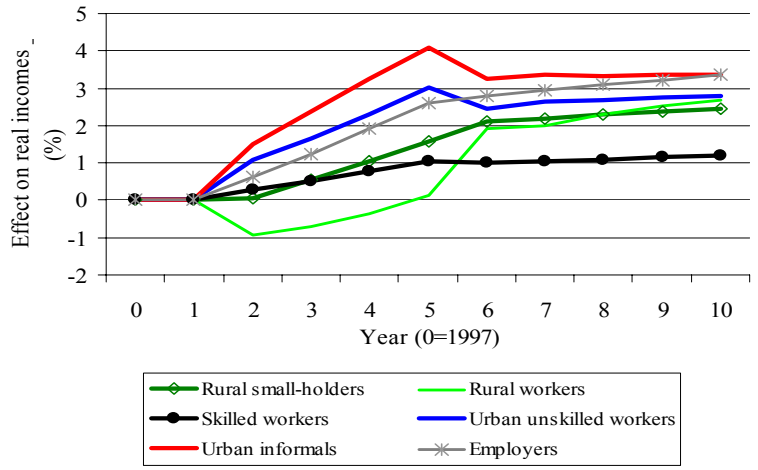
In the case of current spending, the average income in the year 10 is lower than it would have been if no extra aid had been received. In contrast, in the case of public investment, average incomes in year 10 would be about 2.7% higher than in the baseline scenario.

Figure 3: The impact of additional foreign donations of $258 million per year during years 2-5 on real incomes of different types of households

(a) Aid used exclusively for current spending



(b) Aid used exclusively for investment in public capital



Given the very different possible effects of the same foreign donations, it becomes of great importance to know the most likely use of foreign aid.

The Viceministry of Public Investment and External Financing (VIPFE) claims that 100% of foreign aid is destined at public investment[19], but according to World Bank (1998), the fungibility of money implies that "what you see is **not** what you get." When donors increase the funds aimed at public investment, the government can reduce domestic resources for this purpose until the relationship between investment and spending coincides with the preferences of the government. This is not necessarily bad, and in some cases clearly necessary, since investment in physical capital (like schools and hospitals) will not be productive unless it is accompanied by current spending (like salaries for teachers and nurses).

In 1997, the disbursements of foreign aid amounted to $637 million, while the "investment" executed by VIPFE only amounted to $548 million[20]. This clearly shows that external financing substitutes for internal financing, since it is impossible to imagine that the government has preference for zero or negative public investment, especially in a year with GDP growth of 5.0%.

Here it should be mentioned that the official classification between current spending and investment not necessarily correspond to the theoretical counterparts. On the one hand, a substantial part of public investment does not turn into public capital that increases the productivity of everybody (for example the purchase of vehicles for ministers or project leaders), and, on the other hand, a part of current spending is really investment (for example some education spending). It is thus very difficult to distinguish between investment and spending, but in any case it is likely that the ratio corresponds more to the priorities of the government than to the priorities of the donors[21]. The authors estimate that the proportion that really turns into public goods (that increase productivity) is likely to fall in the interval 25-40%.

Figure 4 shows the effect of extra foreign aid on the level of GDP, if the public investment share falls in the range 25-40%. There is a clear positive effect during the four years of extra aid with GDP being about 1% higher than in the case of no extra aid. In the long run there is a clear difference between a 25% investment share and a 40% investment share, with GDP being about 0.5% higher in the latter case. This shows the importance of choosing projects with a large component of public capital[22].

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19 Bolivia (2001, p. 476).

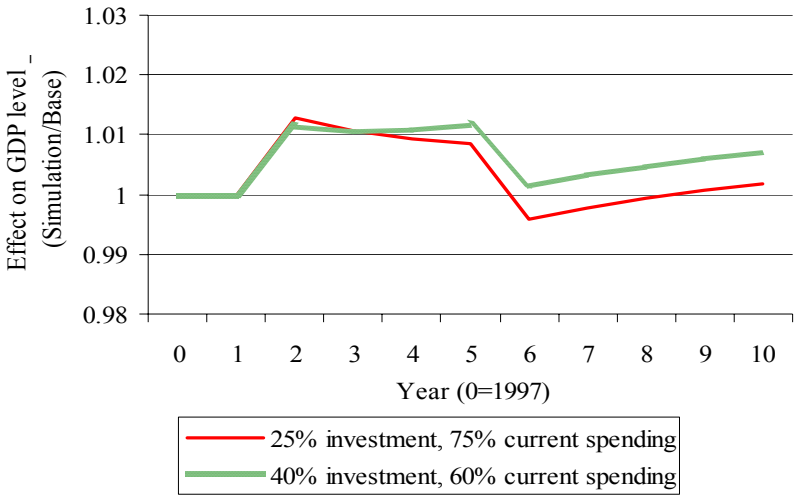
20 VIPFE (2003): www.vipfe.gov.bo.

21 The international cooperation has had great success in forming the priorities of the government, which means that the differences in priorities between donors and government are probably not large, especially at high levels of government. At lower levels, however, project executors tend to be more concerned about their own benefits than the long run impacts of the project. It is also worth having in mind that the level of corruption in Bolivia is among the highest in the World, according to Transparency Internacional (www.transparency.org).

22 In the most optimistic case, GDP would be about 1% higher than the baseline scenario during the first few decades. 1% of GDP corresponds to approximately $75 million, which means that it would take about 14 years to recover the $1,032 million of extra help, if it were to be repaid.

The groups that benefit and the groups that lose are the same as in the case of pure current spending, although the gains and losses are less pronounced (see Figure 5). For both the low and the high level of investment, there will be a worsening in the income distribution in favor of skilled workers and against rural workers, employers, and rural small-holders. With a 25% investment share, the largest and poorest group, the rural small-holders, are worse of during all years, compared to the baseline scenario, implying that the aid contributes to a deepening of rural poverty. In the case of the high investment share of 40%, this group is left with a close to neutral impact. In both cases, there is a slightly positive impact on urban informals, implying that aid will tend to reduce urban poverty.

Figure 4: The impact of an increase in foreign donations of $258 million per year during years 2-5 on the level of GDP.



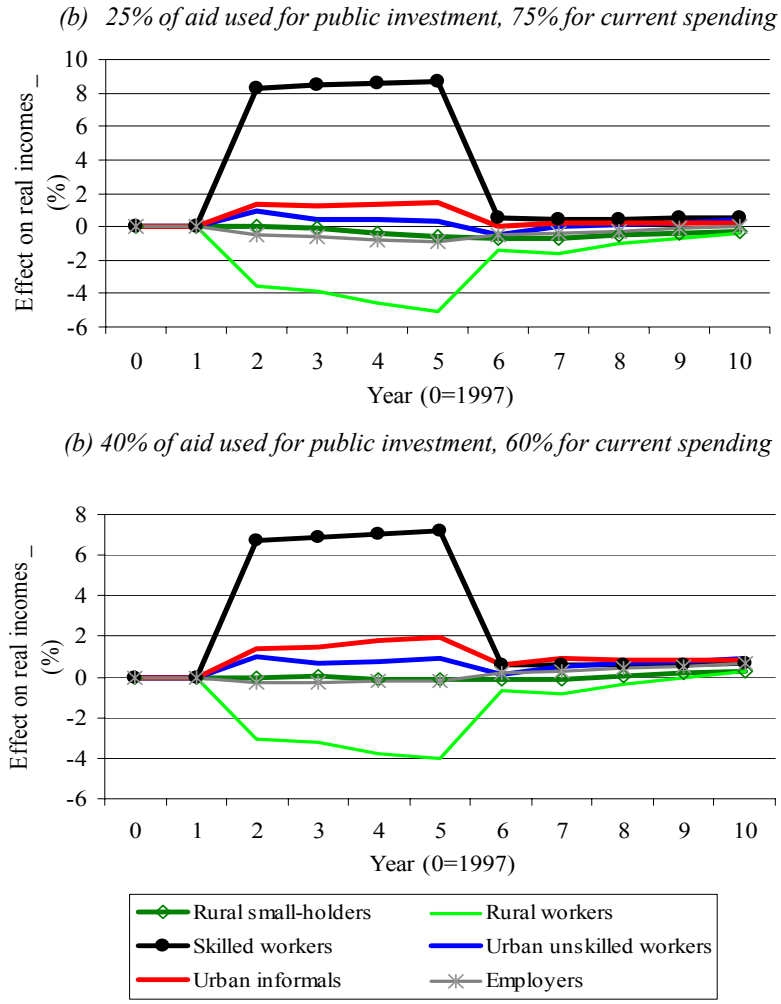
Employers also lose, especially in the case with low investment share. This contributes to an improvement in the income distribution, but it worsens the incentives for private enterprise and private investment, which is clearly an undesirable side-effect of foreign aid.

In the most optimistic case, foreign aid has a permanent positive effect on growth through the creation of public capital and it has a beneficial effect on urban poverty. The model predicts that aid has little capacity to reduce rural poverty, however, and this has pretty much been confirmed by actual experience. Aid has been heavily targeted at rural areas during the last decade, while rural income poverty has barely nudged. There have been significant advances in non-monetary indicators, but the increases in education, the improvements in health services, the expansion of the road system, and the arrival of electricity have not translated into significantly higher income earning capacity in rural areas.

According to World Bank (2001) one of the most important impacts of foreign aid arises from the transfer of technology and ideas: new management methods, new analytical instruments, new technology, and the demonstration of basic principles like integrity, quality, responsibility, punctuality, service, etc.

However, foreign aid can also stimulate the formation of some less desirable values and habits. For example, with a massive influx of aid, people may learn that it is not necessary to sow before you harvest; it is possible to demand and receive without contributing. In fact, when aid is heavily targeted at the poor, the beneficiaries may perceive that the less they sow themselves, the more they will receive. Or still worse, they may get the impression that they themselves are not responsible for and capable of escaping poverty, that change has to come from the outside. This is a very counterproductive mentality, since it justifies the passivity of the poor instead of mobilizing an internal force directed at improvements, growth, and escape from poverty.

Figure 5: The impact of additional foreign donations of $258 million per year during years 2-5 on real incomes of different types of households



Instead of motivating poor people to escape poverty, foreign aid may tend to become like an overprotecting mother who clearly wishes the best for her children, but at the same time as she provides for all their needs and protects them against all dangers, she delays their development and independence.

8 External debt and the HIPC initiative

Bolivia's public external debt has stayed more or less constant at a level of $4 billion during the last decade. This has only been possible due to various rounds of debt forgiveness. Between 1990 and 1997, Bolivia was forgiven about $903 million from the Paris Club creditors. In September 1998, Bolivia reached the completion point for HIPC I and received debt relief with a net present value of $448 million, and in June 2001 it received another $854 million in debt relief through HIPC II (Andersen & Nina 2001).

The purpose of this section is to analyze the impact of the HIPC II initiative, which has been a catalyst for the decentralization process in Bolivia through the Ley del Diálogo Nacional 2000, which destines all the recources from HIPC II to the municipalities through a special account (Cuenta Especial Diálogo 2000) and the Fondo Solidario Municipal. Table 22 shows the relief scheduled under this initiative. The average level of relief between 2001 and 2007 is $91 million per year, but in reality there is a delay in disbursements, and an even bigger delay in spending.

Table 22: Debt relief scheduled and available under HIPC II.

Year	Scheduled relief ($US million)[a]	Available funds ($US million) [b]	Executed investment ($US millones) [b]
2001	45	15.6	5.0
2002	108	88.3	60.9
2003	104	-	-
2004	106	-	-
2005	100	-	-
2006	92	-	-
2007	84	-	-

Sources: a: IMF (2001, Table 17). b: UDAPE (2002).

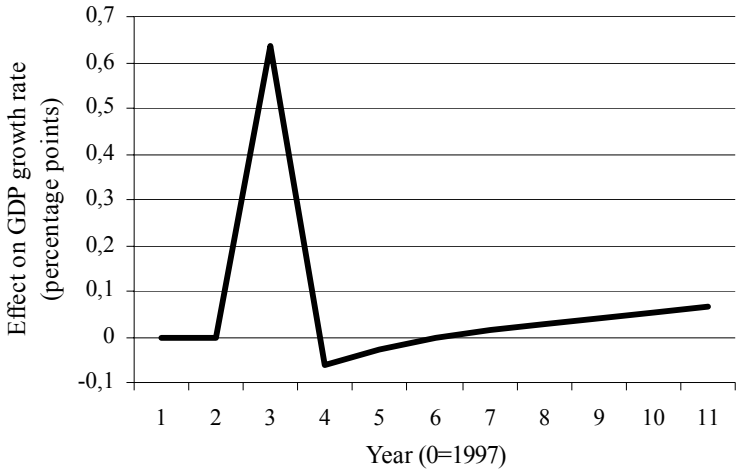
In order to simulate the effect of HIPC II in the CGE model, we assume that the relief increases the resources available for the government by approximately $100 million per year from year 2[23]. In the model, there is no conceptual difference between donations in dollars and debt relief. The government will in both cases have more money available for spending and investment. The only difference would arise if the municipal governments spend the money in a different way than the central government.

It is plausible that the spending taking place in the municipalities will have a smaller public good component, as their circle of concern naturally is smaller. The municipal governments are concerned only about the inhabitants of the municipality, while the central government should be concerned about all inhabitants in the country. In addition, the uses of the HIPC II resources are fixed by law, which means that the municipalities are not free to optimize the use of the resources. Finally, the capacity for project implementation is very low in the poorest municipalities and those are the ones that receive most funds. For all these reasons, it is likely that only a small part of HIPC II resources will be transformed into public capital, and for simulation purposes, we assume that this share is 25%.

[23] This is an approximation which greatly simplifies the simulation without modifying the conclusions.

Figure 6 shows that in this case, the HIPC II initiative will have a positive effect on GDP growth, but only the first year. Thereafter, growth rates return to their normal levels. This is due to the same mix of positive and negative effects mentioned in the previous section. An additional danger with the recurrent rounds of debt relief, is that governments may perceive that there is no danger in getting heavily indebted, because there will always be a chance of having this debt forgiven. They perceive debt as equivalent to donations.

Figure 6: The effect of HIPC II on the GDP growth rate



The distributional effects are exactly the same as in the case of donations, which means a redistribution of incomes in favour of skilled workers to the detriment of rural workers, employers, and rural small-holders. Again, the biggest and poorest group is worse off during all years, compared to the case of no HIPC II relief, implying that the debt relief, contrary to intentions, contributes to increasing and deepening rural poverty. It also contributes to reducing the incentives for private enterprise.

9 The productive sectors and the role of exports

Table 23 shows the composition of the productive sectors in Bolivia in 1997. The biggest sector is "Formal services" which includes commerce, transportation y storage, financial services, hotels and restaurants, and all kinds of formal personal, social and business services. The second biggest sector is "Consumer goods" which includes food, beverages, clothes, leather, wood, paper, wood products, and paper products. Thereafter follows "Intermediate goods" which includes all the products that are neither consumer goods nor capital goods. The fourth sector is "Informal services" which includes domestic services, 65% of trade, 34% of personal and social services, and 29% of hotel and restaurant activities.

The table also shows the exports of each sector. It is clear than the most important export sectors are "Consumer goods", "Formal services" and "Mining". The part of formal services that are counted as export are mainly the services related to tourism and travel. Of less importance follows "Intermediate goods", "Modern agriculture" and "Hydrocarbons." The "Coca" sector was relatively small in 1997, but it is the sector most dedicated to exports (with 81% of production being exported).

Table 23: Productive sectors in Bolivia, 1997

Sector	Production (1000 Bs.)	Exports (1000 Bs.)	Exports (% of prod.)
Traditional agriculture	5593.6	454.1	8.1
Modern agriculture	2922.5	713.5	24.4
Coca	404.5	326.5	80.7
Hydrocarbons	2135.7	525.1	24.6
Mining	2513.2	1586.6	63.1
Consumer goods	16632.5	2221.5	13.4
Intermediate goods	9836.3	1009.0	10.3
Capital goods	6543.1	56.5	0.9
Electricity, water, gas	1790.4	1.9	0.1
Construction	3484.7	0.0	0.0
Informal services	6897.4	0.0	0.0
Formal services	21550.9	1891.7	8.8
Public sector	6375.0	4.9	0.1

Source: Social Accounting Matrix used for the CGE model.

Exports are important for a small, heavily indebted country like Bolivia, because it generates foreign exchange needed to service debt and to import capital goods for investment. With the aim of increasing exports the government is heavily promoting the hydrocarbon sector. This sector, however, has relatively few links with the rest of the economy and is intensive in capital and skilled labor, implying that the expansion of this sector will tend to worsen the income distribution.

In this section we apply the CGE model to show that there are other sectors which have a more beneficial impact on poverty, since they simultaneously increase average incomes and improve the distribution of income. This is done through simple simulations that stimulate

each export sector, one by one, through a 15% increase in export prices, while maintaining all other exogenous variables constant[24]. It is a one-time increase in year 2, after which prices stay constant at the higher level.

In no case does such a positive *shock* lead to permanently higher growth, and even the short run effect is modest because the expansion of one sector's exports will cause a slight appreciation of the real exchange rate, which in turn will cause a slight contraction in all the other export sectors.

While there is virtually no effect on aggregate growth rates, the expansion of one sector at the expense of the others can cause substantial changes in the income distribution, as shown in Table 24. The table shows the main winners and losers arising from the expansion of a particular sector, as well as the change in average income levels for all households in the country and the change in the Gini coefficient.

Table 24: Sectoral impacts on the level and distribution of household incomes

Sector	Export price increase	Winners (change in real incomes)	Losers (change in real incomes)	Change in average real income	Change in Gini
Modern Agriculture	+15%	Rural workers (+14%) Urban informals (+0.7%) Employers (0.5%)	Unskilled workers (-2%)	+1.4%	-0.5
Coca	+9%	Rural workers (+8%) Rural small-holders (+4%)	Unskilled workers (-1%)	+0.6%	-0.9
Hydro-carbons	+15%	Urban informals (+0.4%)	Rural workers (-1%)	+0.0%	+0.1
Mining	+15%	Employers (+4%) Unskilled workers (+3%)	Rural workers (-12%) Rural small-holders (-6%)	+0.7%	+3.2
Consumer goods	+15%	Urban informals (+4%) Rural small-holders (+3%)	Rural workers (-2%) Unskilled workers (-1%)	+0.2%	-0.5
Intermediate goods	+15%	Urban informals (+1%)	Rural workers (-4%)	-0.1%	+0.6
Formal services	+15%	Urban informals (+1%) Employers (+1%)	Rural workers (-1%)	+0.5%	+0.5

Source: Own elaboration based on simulations with a CGE model.

The sector that shows the most beneficial impacts from such a shock is "Modern agriculture" Average incomes increase by 1.4% while the Gini coefficient drops by half a point. The winners are rural workers, urban informals and employers, while the principal losers are unskilled workers in urban areas.

There are only two other sectors which simultaneously increase average incomes and improve the income distribution: "Coca" and "Consumer goods". These two sectors have a particularly beneficial effect on rural poverty since their expansion would significantly increase incomes of the biggest and poorest group of households: Rural small-holders. The "Consumer goods"

[24] The only exception is the "Coca" sector, where the price increase is of only 9% rather than 15%, since the model did not converge with the larger price increase.

sector also has a very beneficial effect on urban poverty as it increases incomes of the second biggest and second poorest group: Urban informals.

Although the expansion of the "Mining" sector would have a positive impact on the average level of incomes, it has a very adverse effect on the distribution of income, increasing the Gini coefficient by 3.2 points. No other sector has such an adverse effect on the income distribution. The fact that rural small-holders lose a lot means that the expansion of mining would tend to increase rural poverty.

The expansion of the "Hydrocarbon" sector will have little effect on average incomes for the households but cause a slight worsening in the income distribution. It causes substantial incomes for the government, but even after these funds have been spent and invested, households are unlikely to be better off.

Based on this comparative analysis of the export sectors in Bolivia, we conclude that the three sectors who have the best possibilities of reducing poverty are: "Modern agriculture", "Coca", and "Consumer goods" since the expansion of these sectors simultaneously increases average incomes and improves the income distribution. In contrast, the mining sector has a very adverse effect on the income distribution, and the hydrocarbon sector only benefits the government.

When export prices change in just one sector, there is no aggregate effect on growth, since the larger exports of that sector will be compensated by smaller exports in the other sectors.
However, if all export prices have a negative long run trend, as has been the case in Bolivia[25], this will have a negative effect on growth. With less exports, we will have less capacity to import, and this is especially critical in the case of capital goods since these are essential for the maintenance and expansion of our productive capital, and for which we have no adequate national substitutes.[26]

[25] Nina & Brooks (2001).
[26] Mercado et al (2003), Jemio & Wiebelt (2003).

10 Foreign Direct Investment

Nina & te Velde (2003) and te Velde (2003) review the effects of Foreign Direct Investment (FDI) on growth and inequality in Bolivia and conclude that the boom in FID during the period 1996-2001 has had a very limited impact on growth and an adverse effect on the income distribution, which implies that FDI has not contributed to the reduction in income poverty. One of the explications for the disappointing results is that FDI has been concentrated in capital intensive sectors and sectors intensive in skilled workers, like hydrocarbons, telecommunications and electricity, while the three sectors which were identified above as having the most capacity to decrease poverty have received very little FDI (see Table 25).

"Modern Agriculture" and "Consumer goods" received 0.1% and 4.5%, respectively, of the approximately $5 billion of accumulated FDI during the period 1996 - 2001. In contrast, the "Hydrocarbon" sector, which has poor linkages to the rest of the economy, received more than a third of all FDI during the period.

The service sectors, especially telecommunications and electricity, received the main part (56.1%) of all FDI during the period. This has caused substantial improvements in the coverage of services, but mostly for the urban middle class, while the benefits for the poor have been quite limited, and in some cases even negative. The negative impact can be exemplified by the Water War in Cochabamaba in April 2000, where the local protests against the negative consequences of privatization forced the government to cancel the contract with the transnational consortium "Aguas del Tunari".

The conclusions of Nina & te Velde (2003) are confirmed by the study by Andersen & Faris (2002), which uses a CGE model to show that the Natural Gas boom in Bolivia has an adverse effect on the income distribution and only a modest long run impact on GDP growth. The study by Jemio and Wiebelt, using another CGE model of Bolivia, arrives at the same conclusion about the impact of FDI in Bolivia.

Table 25: Foreign Direct Investment, by sector, accumulated 1996-2001

Sector	**Distribution of FDI (%)**
Primary	*35.5*
Hydrocarbons	34.1
Mining	1.3
Modern agriculture	0.1
Manufacturing	*8.0*
Consumer goods	4.5
Intermediate goods	3.5
Capital goods	0.0
Services	*56.1*
Telecomunications	14.1
Construction	10.2
Electricity	7.3
Transportation of Natural Gas	5.3
Transportation	3.3
Financial intermediation	4.7
Other services	11.3
Total ($US million)	**4,965**

Source: Nina & te Velde (2003).

However, just like foreign aid has had a positive impact on some non-monetary indicators of well-being, FDI may have had a positive effect on the level of certain services. This is particularly the case with telephony, which with the spread of cell-phones suddenly became accessible and affordable for large parts of the population, including the relatively poor urban informals.

11 Conclusions and recommendations

During the last five years, Bolivia received foreign aid amounting to more than $3 billion, distributed across thousands of projects. The short time period available for this study obviously do not permit us to evaluate the effect of all these projects at the micro level. However, we have tried to make a macro evaluation, taking advantage of the availability of a CGE model which captures the structure and idiosyncrasies of the Bolivian economy.

The results show that even thought there are good results at the micro level and good impacts on non-monetary poverty indicators, foreign aid has little permanent impact on incomes and poverty at the macro level. This is mainly due to the fact that aid is so massive in Bolivia that it distorts incentives against sustainable productive activities.

The projects that are most likely to have a positive long run impacts on growth in Bolivia are those which produce public capital which improves the productivity of large groups of people and their private capital. In this case, aid can help reassign resources away from activities that produce normal goods towards activities that produce public goods, which benefit more people. Examples of this kind of public goods are projects which reduce corruption, research that helps eliminate diseases, systems that fortify ownership rights, and projects that stimulate the adoption of technologies adequate for a land-locked country with low population density.

Projects can help improve the income distribution and reduce poverty if they transform unskilled labor into skilled labor, and thus reduce the scarcity of skilled workers. In this context it is important that the skills learned are relevant and attractive for employers, so that the investment in education and training will actually translate into higher productivity and higher wages.

Finally, projects that help small and medium sized enterprises in the consumer goods sector have a relatively high potential for reducing poverty, as this sector benefits the two big groups of urban and rural poor.

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Persons interviewed

Oscar Antezana	Economic Advisor, DFID
Armando Choque	Public Communicator, Rural Development Program, GTZ
Victor Hugo Bacarreza	Director of Foreign Financing, VIPFE
Rodrigo Castro	Director of Public Investment, VIPFE
George Gray-Molina	Director, UDAPE
Luis Carlos Jemio	Economic Advisor, CAF
Andrea Kuhlmann	Rural Development Program, GTZ
Carlos Felipe Martínez	Resident Coordinator, PNUD
Trine Moensted	Economic Advisor, DANIDA
Gerardo Peraza	Resident Representative, IMF
Miguel Vera	Sub-director, Social Area, UDAPE
Hernán Zenteno Pereira	Technical Director of Civil Service, SNAP, Ministry of Finance