Gender and Cost-Effectiveness in Public Work Programmes in Bolivia 2004-2006

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Abstract

Public work programmes (PWP) are a popular part of development strategies and poverty reduction schemes and Bolivia were receivers of international aid for two workfare programmes during 2004 and 2006. To analyse how well those two programmes have functioned I decided to look at cost-effectiveness and female participation in both programmes. The main reason to look at female participation is that according to one of the main financiers of both PWP, the Inter-American Development Bank, investing in women can have great effects on economic growth and poverty reduction. I investigate the four variables (labour intensity, targeting performance, net wage gain, and indirect benefits from the assets created) determining the cost-effectiveness of PWPs. I then compare the results with Ravallion´s theoretical model for cost-effectiveness in PWPs.

In my study it became clear that the PLANE programme had better cost-effectiveness than PROPAIS, with much higher labour intensity and lower cost per worker. But the indirect effects of PROPAIS seem to have been much higher, just as the objective of the programme indicates.When it comes to the female participation it has become very clear that the characteristics of the programmes affect the outcome. Both programmes was carried out in the same context and at the same time and still the results differ from 82% in PLANE to just 19% in PROPAIS.A simple targeting criterion with a fixed salary doesn't affect the cost-effectiveness of the programme in general but can have a huge impact on female participation and thereby have effects on growth and poverty reduction.

Chapter 1 Introduction

1.1 Background

At the time researching for this thesis Bolivia was one of the poorest countries in Latin America with 65 per cent of the population living in poverty (below 2 USD/day) and as much as 83 per cent in rural areas considered poor. In addition, income inequality increased significantly during 1997-2002, making Bolivia one of the countries in the region, along with Brazil and Chile, with the highest income inequality. (World Bank, 2006)

Public work programmes are a popular part of development strategies and poverty reduction schemes. Bolivia is one of the receivers of international aid for their public workfare programmes. Workfare is more labour intensive than a programme which simply maximizes the present value of the assets created, because the workfare programme attaches positive value to the employment of poor people, independently of the gains to society as a whole from the outputs obtained from that employment. So a workfare programme will tend to operate at a point where there is a trade-off between the value of the assets created and employment. There are two ways in which a workfare programme might reduce poverty; the first is by providing paid work for the unemployed from poor households, and the second is by producing things of value to poor families.(Ravallion, 1998)

During 2004 and 2006 there were two different workfare programmes in Bolivia: theNational Emergency Employment Programme (PLANE) established in September 2001 and from January 2004 the Programmeagainst Poverty and for Solidarity Investments (PROPAIS).PLANE was launched as a temporary intervention, and then extended and incorporated as a permanent anti-poverty intervention, with the objective of generating employment for poor families in urban and rural areas. It is important to point out that the activities or projects that could take place with the financing of PLANE, were not part of the goal in itself, but were simply the instrument for generating employment. PROPAIS was created to finance small, temporary projects requested by community and neighbourhood organisations in order to create jobs in the rural areas. (DUF/BTCCTB, 2006)

To analyse how well those two programmes have functioned I decided to look at cost-effectiveness and female participation in both PLANE and PROPAIS.

1.2 Researchquestions:

1. How cost-effective are PLANE and PROPAIS?
2. Do the programmes succeed to target female workers?

1.3 Purpose

To evaluate the cost-effectiveness of PLANE and PROPAIS I will look at labour intensity, targeting, cost per worker, cost per dollar transferred and indirect benefits for the poor. I will compare these results with both Subbarao's cross-country data and Ravallion's theoretic model for cost-effectiveness in public work programmes. Together it will show the cost-effectiveness in PLANE and PROPAIS.

The main reason for the second question is that according to one of the main financiers of both the PLANE and PROPAIS, the Inter-American Development Bank, investing in women – improving their access to information, resources, opportunities and spheres of political decision-making – contributes to poverty reduction, economic growth and good governance at the local and national levels. (Inter-American Development Bank, 2003) Surprisingly there are hardly any investigations on the gender effects of public work programmes. A lower female participation rate in the workfare programme could have negative effects on poverty reduction, economic growth and good governance. (Del Ninno et al. 2009, Ravallion 1999)

1.4 Structure

The thesis is structured as follows: Chapters 2 and 3 are theory and methodology; chapters 4 and 5 focus on labour intensity, targeting, cost per worker and cost per dollar transferred and indirect benefits of PLANE and PROPAIS, and; Chapter 6 and 7 focuses on the female participation rate. Then, in Chapter 8, follows reflection and conclusion of the study.

Chapter 2 Theory

2.1 Theoretical Background

As mentioned earlier public workfare programmes (PWPs) is a popular part of development strategies and poverty reduction schemes. According toSubbarao (2003) there are four variables determining the cost-effectiveness of PWPs. These are a) labour intensity, b) targeting performance, c) net wage gain, and d) indirect benefits from the assets created. In some cases, government requires co-financing from non-poor communities for the implementation of subprojects that benefit their neighbourhoods. In such cases, the budget leverage or the share of the government outlay that actually benefits the poor can be an additional determinant of the cost-effectiveness of the programme. But Ravallion´spoints out that there rarely are any private co-funding in PWP in low income countries, and that is the same in the cases of PLANE and PROPAIS so I will therefore look at the four variables to determine the cost-effectiveness of the programmes. I will then compare the figures with Ravallion´s theoretical model for cost-effectiveness in PWPs. But it is important to bear in mind some of the limitations of the cost-effectiveness calculations and associated simulations. So it may be helpful to obtain similar numbers for other programmes and to compare the cost-effectiveness ratios across programmes and counties. I will therefore also calculate the Cost per Worker in the two programmes and compare this with Subbarao´s cross-country data on Cost per Worker to get a picture of how the Bolivian programme costs stand in international comparison.

To get a broader picture of the effectiveness of the programmes I will also add a gender dimension to the analysis. The overarching goal is to reduce poverty is closely linked to a development that includes both men and women. From a gender perspective, this means ensuring that both women and men are able to benefit from the new opportunities that development brings, that both have access to the resources needed to be productive members of society, and that both share in a higher level of well-being. (World Bank, 2002)

PWPs can be classified into four main categories according to the way they address the objectives of employment and income generation to the participating individuals or communities and the creation of economic and social capital (Clay, 1986). First, there is relief works for rapid response to food crises. Second, there are the programmes which primarily target seasonal fluctuations in incomes. Third, there are long-term employment generation programmes, designed to cater for employment needs among the unemployed and underemployed, particularly those caught up in structural unemployment where alternative livelihoods are problematic. The final group comprises low-cost infrastructure programmes, with emphasis on the creation of infrastructure rather than income augmentation. (Chirwa et al, 2001)

Both PLANE and PROPAIS are in the third category – long-term employment generation programmes. It is worth mentioning that the objectives of a public works programme may well change over time. For instance, the Bolivia´s PLANE was launched as a temporary intervention with the objective to generate employment for poor families in urban and rural areas during the economic crisis. Afterward, PLANE was extended and incorporated as permanent anti-poverty intervention instrument in Bolivia's national social safety net programme (Red Proteccion Social, RPS), created by the government in 2004 due to the prolonged difficult economic and social situation.

The PWPs focus on income generation through employment as a poverty reduction strategy. Ravallion (1999) asserts that public works programmes can reduce poverty by providing paid work for the unemployed from poor households and by producing goods and services that the poor families value. Subbarao (1997) argues that PWPs as safety nets confer transfer and/or stabilisation of benefits to the poor, and using the poor's labour to build infrastructure for development. The use of PWPs to foster rural development and as a poverty-alleviation strategy is evident in most developing countries in Asia, Africa and Latin America, and this dates back as far as the eighteenth century (Ravallion, 1991b)

In countries where poverty is widespread, it becomes difficult to adopt a specific targeting criterion for public works employment due to imperfect information about the poor available to implement the programmes. Many, however, argue that the use of the wage rate for public works projects that is not greater than the minimum wage acts as a self-targeting device that eliminates those that are not poor in the community by targeting those with low reservation wage rates (Ravallion, 1991a). It is important to strike a balance between the objectives of self-targeting and ensuring that workers receive a meaningful transfer. Too low a wage keeps the overall participation rate low, while at the same time the poor workers stay poor. There will therefore be no effect on poverty if the salary is too low. The wage rate also affects the labour intensity of the programme and thereby the percentage of the labour cost in the overall cost of the project. (Subbarao, 1997)

The output of the public work programme is twofold: jobs of short duration for workers to increase their income, and creation of public goods in the form of new infrastructure or improvements of existing infrastructure, or delivery of services. Inputs are wage cost, managerial cost and material costs. The outputs in turn are expected to lead to three final outcomes (impacts): a) increased income and consumption-smoothing, b) a reduction in poverty and poverty gap ratio, and c) infrastructure development. (Del Ninno et al. 2009)

2.2 Cost per Worker

According to Subbarao the programme features (especially the level of the wage rate and the timing of the programme) and the design features (implementing agencies and the institutional framework) together determine the programme´s efficacy as an anti-poverty

intervention and its cost-effectiveness. The cost-effectiveness of the programme can be gleaned from the cost per job created, and the cost per dollar transferred to the poor. There are not much data available on cost per job days created, and the only international comparison belong to late 1980s or early 1990s, are shown in Table 2.1. Even though the data is old it gives us I picture of the cross-country variation – from as low as USD1 per person day of employment created in Bangladesh to USD8 in Bolivia.

Table 2.1 Subbarao´s Cross-country data

Country/Year/ Programme	Scale of operations (million person days annual)	Total Cost (wage &non-wage) per person day of employment created USD	Labour intensity rate (Ratio of Wage Cost to Total Cost %)
Bangladesh: 1991-92 FFW	15	1.6	0.5
India: 1991-92 CFW (JRY) 1991-92 MEGS	850 100-180	1.3 1.2	0.6 0.51
Pakistan: 1992, CFW	5.15	2.8	0.6
Philippines: 1990, CFW	0.3	3.2	0.5
Botswana: 1992-92, CFW	7	1.7	0.63
Ghana: 1988-91, CFW	0.5	3.4	0.2
Kenya: 1992-93, CFW	0.6	3.0	0.3-0.4
Bolivia: 1982-90, CFW	8-9	8.0	0.4
Chile: 1987, CFW	40-45	0.5	--
Honduras: 1990-91, CWF	2.5	1.0	0.4
Costa Rica: 1991-94	8.9	4.0	---

Note: FFW – Food For Work; CFW – Cash for WorkSource: Subbarao (1997)

Average public work programmes have a cost per worker of 2.5 USD per day. In Subbaraos data the cost for PWP in Bolivia is much higher than the other countries. He doesn´t gives any detailed explanation for why the cost in Bolivia is so much higher. Some is due to the labour intensity which is a little low, but not much lower than the others. The Labour intensity of PWPs is calculated by the labour cost as percentage of total cost of the programme. Del Ninno, Subbarao and Milazzo (2009) suggestthe following measures: Low labour intensity– less than 40%; Medium: between 41% and 59%; High: higher than 60%. It seems that the PWP in Bolivia 1982-90 was rather ineffective and did not managed to create jobs at low cost. I will see if the cost-effectiveness in the new Bolivian programmes is better.

2.3 Cost per Dollar Transferred

PWPs need to meet certain minimum requirements in order to ensure that they are effective and efficient, and do not yield perverse incentives. Ravallion (1997) suggest a model to

calculate the cost-effectiveness in PWPs. To estimate the share of the government's outlay which benefits the poor – the cost-effectiveness ratio – it can help to disaggregate the ratio into various components which can either be estimated from the data available, or can be calibrated from seemingly plausible assumptions. He calculates the ratios for two different cases – one low income country (LINC) and one middle income country (MINC). I will just focus on the LINC case as Bolivia is a low income country.

The proportion of total public expenditure on the programme which determines the net income gain to poor workers and can be disaggregated into the following five variables:

i. The budget leverage. Let government (central plus local) spending be G, and let this be leveraged up to result in a total budget of G (+C) (if includingprivate co-financing (C))
ii. The labour intensity. Some of the participants may not be poor; so let the share of all wages paid in total operating costs be (W+L)/(G+C), where W is the wage received by the poor and L denotes leakage to the non-poor.
iii. The targeting performance. This is given by the proportion of the wages paid out, which goes to poor workers, W/(W/L).
iv. The net wage gain. This is the share of the gross wage received by the poor which is left after subtracting all cost to them of participating, including any forgone income; it is NW/W where NW stands for net wage.
v. Indirect benefit. IB/NW where IB is indirect benefits to the poor, which occurs when the assets created are in poor neighbourhoods.

The net gain to poor workers as a proportion of public spending on the programme, namely B/G, is then given by:

$$\frac{B}{G} = \frac{G+C}{G} \cdot \frac{W+L}{G+C} \cdot \frac{W}{W+L} \cdot \frac{NW}{W} \cdot \left(1 + \frac{IB}{NW}\right) \qquad (1)$$

It is useful to also disaggregate the last ratio as:

$$\frac{IB}{NW} = \frac{IB}{SB} \cdot \frac{SB}{G+C} \cdot \frac{G+C}{NW} \qquad (2)$$

(vi) (vii) (viii)

This gives IB/NW as the product of three ratios:

vi. Poor people´s share of the social benefits from the assets created by the project; this is given by the ratio of the indirect benefits to the poor (IB) to the social benefits (SB) where the latter are assessed without distributional weighs.
vii. The benefit-to-cost ratio for the project: the ratio of SB to cost, G+C.
viii. (The inverse of the share of net wage gains to total cost. This can also be written in terms of three of the rations in equation (1) above, namely:

$$\frac{NW}{G+C} = \frac{NW}{W} \cdot \frac{W}{W+L} \cdot \frac{W+L}{G+C}$$

(iv) (iii) (ii) (3)

in which the labels (iv, iii and ii) correspond to the ratios from equation (1).

Some of these benefits accrue in the future; this is likely to be true of the bulk of the indirect benefits from the assets created.

With regard to Ravallion's model there is no private funding or private cost-recovery (C=0) in PWPs. The wage rate is normally tied to a statutory minimum wage rate for agricultural labour. This wage attracts casual, unskilled, agriculture labourers who are not necessary poor and un-employed, according to Ravallion. There are therefore leakages to the non-poor although the forgone income is probably low. Ravallion assume the figure 0.75 for both the targeting performance (W/W+L) and the net gain (NW/W).

In Ravallion's model are there few indirect benefits to the poor, and he suggest that non-poor landowners capturing most benefits from the assets created. However, there are some indirect benefits to the poor, notably through second-round effects on employment from higher farm productivity. Ravallion assume that the poor obtain one quarter of the benefits from the project. However, the high labour intensity means that the social benefits are only sufficient to cover one half of the cost (so B/NW=1.33).

Table 2.2 Cost-Effectiveness of Workfare Programme under Base-Case Assumptions

Budget leverage: (G+C)/G	1.0
Labour intensity: (W+L)/(G+C)	0.50
Targeting: W/(W+L)	0.75
Net wage gain: NW/W	0.75
Poor people's share of total benefits: IB/SB	0.25
Benefit/cost ratio: SB/(G+C)	0.50
Gains to the poor per $ of spending: B/G	0.41
Current earnings gain per $of programme spending: CB/G	0.28
Cost of $1 gain to the poor	$ 2.50

Source: Ravallion (1998)

On plugging these numbers into equation (1) the value B/G = 0.4, so transferring USD1 to the poor costs about USD2.5. The current benefit ratio is 0.28 (this is CB/G, as given by the value of B/G when IB=0). Recall that the poverty rate in this example is 50 per cent.

2.4 Gender Theory and PWPs

The gender dimension of public works participation covers several concerns. First the need to provide women access to direct wage employment and to protect them from loss of

earnings. Second, women's participation in the labour force and their control over resources is associated with substantially larger improvements in child welfare, and, women's health and status. But women doesn´t just benefit directly from the PWPs, but the indirect benefits from assets created by PWPs can also affect men and women differently.(Del Ninno et al. 2009, Dejardin, 1996; and Swamy, 2003).Swamy (2003) points to large variations in women's participation in such programmes, depending on the general characteristics of the labour markets and the specific characteristics of the programmes considered.

Gender equality is a factor that can affect effectiveness of development programmes. It is not just a matter of political correctness or kindness to women. The *World Bank Report 2000-01* and *Integrating Gender into the World Bank Work* demonstrate that when women and men are relatively equal, economies tend to grow faster, the poor move more quickly out of poverty, and the well-being of men, women, and children is enhanced. The overarching goal is to reduce poverty by promoting inclusive development. From a gender perspective, this means ensuring that both women and men have a voice in the development of their community and country, that both are able to benefit from the new opportunities that development brings, that both have access to the resources needed to be productive members of society, and that both share a higher level of well-being. (World Bank, 2002) Theories point out that the key factors for evaluation of the efficacy of self-targeting in public works projects is through wage setting even though sometimes complementary targeting factors can be useful to ensure a gender balance. (Del Ninno et al. 2009, Ravallion 1999)

Several major World Bank reports provide strong empirical evidence that the gender-based division of labour and the inequalities to which it gives rise tend to slow development, economic growth, and poverty reduction. Gender inequalities often lower the productivity of labour, in both the short term and the long term, and create inefficiencies in labour allocation in households and the general economy. It also contributes to poverty and reduces human well-being. These findings make it clear that a gender issue is an important dimension of the fight against poverty. (World Bank, 2002)

2.5 Gender Conditions in the Labour Market in Bolivia

In Bolivia, in the period of 1992-2001 the participation of women in the labour force has increased, in both the formal and informal, paid and unpaid sectors. However, the continuous gender gap in income and in terms of gender segregation of the labour market results in a majority of women with lower quality employment and jobs in the informal sector. The relative progress recorded in the country in terms of GNI and other social indicators hides the evidence that Bolivian women, like those in the rest of the region, have had to endure further impoverishment than men and the greatest burden of the negative social consequences of economic reform policies, despite their increasing economic

participation. The gap in access to the formal labour market favours the male population (only 31% are women). In the informal sector the proportion of women is a bit higher, while in domestic work, women are 96% (INE 2003.) There are gaps unfavourable to women in terms of income, the national average labour income for men are 889 Bolivianos (Bs.) and 483 Bs. for women and in rural areas 346 BS for men and 95 Bs. for women. According to a study by the Vice Ministry of Women (2005), 50% of the economically active women are in conditions of underemployment, 43% have low level of education, and a heavy family burden. 60% of women employed are engaged in domestic work, trading or selling on the streets.

Table 2.3 Gender Gap in Average Monthly Income

Gender Income Gap = Women's income –Men's Income (in Bs.) in adjusted prices

Labour Market	1999	2000	2001[(p)]	2002	2003-2004[(1)]	2005	2006
TOTAL	**-378**	**-367**	**-354**	**-406**	**-334**	**-504**	**-624**
Domestic	-154	-262	-110	-222	-47	-6	-288
Public	-212	-298	-564	-432	-316	-739	-720
Family	-179	-154	-175	-211	-150	-230	-280
Small Business	-30	-138	-120	-131	-165	-94	-450
Business	-394	-484	-233	-506	-282	-196	-759
Urban	**-521**	**-509**	**-520**	**-578**	**-497**	**-646**	**-843**
Domestic	-79	-195	-119	-310	-22	55	-23
Public	-259	-327	-661	-525	-450	-933	-745
Family	-398	-279	-351	-402	-351	-463	-484
Small Business	30	-97	-145	-142	-192	-113	-540
Business	-482	-564	-269	-598	-344	-270	-802
RURAL	**-159**	**-177**	**-179**	**-251**	**-196**	**-263**	**-331**
Domestic	-761	-629	210	106	-275	-405	-566
Public	28	-220	-119	-189	-125	-229	-441
Family	-93	-121	-117	-175	-115	-133	-208
Small Business	-346	-383	-174	-388	-182	-424	67
Business	-317	-414	-350	-342	-504	-727	-1 020

Source: INE (2006) data refer to the Continuous Household Survey, conducted between November 2003 and October 2004

In Bolivia, as in many developing countries, it's difficult to measure unemployment because many people remain outside the official labour market, and work as self-sufficient smallholders or in the informal market. During 2007, nearly 261,000 people were unemployed in the cities. This equates to 9.5% of the Economically Active Population. There

is no valid data for the unemployment rate in rural areas, partly due to a lack of information, partly because the vast majority of the population that lives in the rural area are self-sufficient**.** For these reasons, the national unemployment rate is not calculated, and there are only the rates for urban areas. (CEDLA, 2007)

According to the Centre of Investigation ofLabour and AgrarianDevelopment(CEDLA) the rate of open unemployment in July 2010 was 7.6 per cent among males and 10.7 per cent among women. Unemployment is much higher in lower income groups and the gaps between men and female even higher. Among males in low income groups, the unemployment rate is 8.7 per cent and among women, the unemployment rate reached 14.4 per cent. The study is an update (2010-2011) of the study conducted in 2005-06, with the conclusion that after five years, there was no significant change in the gap between supply and demand in the Bolivian labour market.(CEDLA, 2011)

According to Inter-American Development Bank (2003) *"underemployment in Bolivia affects more people than open unemployment, partly due to the expansion of informality, which in turn increased employment in low productivity activities".*Poor people can generally not afford to be unemployed and therefore often engage in forms of economic activity with very low productivity (planting on infertile land etc.) and provide very little income. Depending on the definition used, these people are not classified as unemployed, but their situation is often as dire as that of the unemployed. (Lal et al. 2010) About 80 per cent of the labour force in Bolivia works in the informal sector and 65 per cent of informal workers are women. This is the highest figure in Latin America. Also, the value added generated by enterprises in the informal sector could be more than two thirds of GDP, and the World Bank calculates that is could be the highest level of informality in the world. Women entrepreneurs are more often in the informal sector, with smaller businesses that generate less revenue, all this due to their family obligations, lower level of education, personal skills etc. But the gender differences is not just in the informal sector, men's and women's participation in the official labour market also shows big differences – the women work mostly in domestic sector. (World Bank 2007)

Table 2.4Labour Market

	1992				2001			
	Total	Men	Women	Women %	Total	Men	Women	Women %
Total	100	100	100	42%	100	100	100	47%
Public	15.5	17.5	12.7	34%	11.9	12.9	10.8	43%
Business	21.0	27.7	11.6	23%	23.0	31.2	13.8	28%
Small business	18.7	24.8	10.3	23%	14.4	19.2	9.1	30%
Family business	38.8	29.3	52	56%	45.2	36.2	55.3	58%
Domestic	5.9	0.6	13.4	94%	5.4	0.5	11.0	95%

Source: Berger (2003) Inequidades, Pobreza y Mercado de trabajo Bolivia y Perú

Chapter 3 Method

3.1 Background

There have been various PWPs in Bolivia over the past 20 years, many funded by large international donors. Swedish Sida (Swedish International Development Cooperation Agency)has contributed to the financing of PLANE together with BTCCTB (Belgian Development Agency) and CAF (CorporaciónAndina de Fomento). PROPAIS is financed by CAF and IADB (Inter-American Development Bank). The overall goal has been to create jobs and reduce poverty in Bolivia. However, there is very little material about the real effects of programmes. There is much documentation relating to the implementation, budget and decision-making and accountability, but almost nothing about the actual participants and effects of programmes. I will therefore examine PLANE and PROPAIS with regard to their effectiveness at creating jobs and creating positive effects for the poor. Although all donors stress the importance of gender in all activities there is almost no material about what impact the programmes had on men and women in Bolivia.

3.2 Data

I began this investigation by traveling to Bolivia in August 2007. Once in place, I met representatives of the RPS (Red Proteccion Social)/DUF (DirectorioUnico de Fondos), the responsible government institution for the implementation of both PLANE and PROPAIS. PLANE had recently ended, but I got a lot of information and data from DUF. I also interviewed several workers who participated in either PLANE or PROPAIS. My original plan was to do a larger survey with interviews concerning PROPAIS, but unfortunately the programme was on pause during the months that my research was conducted. This made it difficult for me to find workers to interview, but thanks to some contacts at DUF I did ten interviews with participants in the programmes. Three of the interviews were made with former workers in PLANE and seven who had recently participated in PROPAIS. Two of the PLANE workers were female, all the others men. I also interviewed Christian Rivero, National Coordinator at DUF.

Due to the difficulties to conduct the large survey I decided to base my study mainly on quantitative data such as statistics from both the RPS and the INE (National Institute of Statistics), the economic reports from the donors and research about PWPs in general. One of the problems I faced was that there is very little available data about the participants in the programmes. DUF previously had had a website which was no longer working. During my trip to Bolivia I received some reports, excel files of participants and internal evaluations. Through INE, I received information on wages, working conditions and estimated unemployment for men and women.

Another problem with the collection of data for the investigation is the reliability. For example the estimated figures from DUF regarding workers in PROPAIS differ significantly from the actual data reported for 2007 and several of the sources reported number of registered workers rather than those who actually participated in the programme. This shows the difficulty of accurately ensuring the actual effectiveness of the programmes.

3.3 Model of Cost-Effectiveness

I am going to use a comparative method to investigate the cost-effectiveness in the two PWPs in Bolivia. Through comparison with cost-effectiveness in other PWPs I will see how the Bolivian programmes compare internationally. The comparative method also allows me to investigate the differences in female participation within the two programmes. The cost-effectiveness depends on following factors: labour intensity, targeting, cost per worker, cost per dollar transferred and indirect benefits for the poor. I will also add a gender dimension to the comparative analysis, with main focus on the female participation rate in the two programmes.

Table 3.1 Model of Cost-Effectiveness of Workfare Programme

	LINC - Base Case Assumptions	PLANE III	PROPAIS
Budget leverage: (G+C)/G	1.0	1.0	1.0
Labour intensity: (W+L)/(G+C)	0.50		
Targeting: W/(W+L)	0.75		
Net wage gain: NW/W	0.75		
Cost per worker*	2.5		
Gains to the poor per $ of spending: B/G	0.41		
Current earnings gain per $of programme spending: CB/G	0.28		
Cost of $1 gain to the poor	$ 2.50		
Indirect benefits to the poor: IB/NW	0.13		
Female participation as share of total participation: W_F/W_T			

*Subbarao's cross-country data

The calculations will be based on Ravallion´s equation:

$$\frac{B}{G} = \frac{G+C}{G} \cdot \frac{W+L}{G+C} \cdot \frac{W}{W+L} \cdot \frac{NW}{W} \cdot \left(1 + \frac{IB}{NW}\right)$$

3.4 Definitions of Poverty

To be able to measure direct and indirect benefits to the poor I need a definition of poverty. There are many ways of measuring poverty, from the World Bank definitions in absolute terms, to non-monetary indicators as Human Development Index, Life expectancy, Female literacy, Percentage of children not in the labour force etc. But the most common international measurement is the concept of "USD1 per day", an approximate economic value needed to acquire the necessities of life, as calculated by the World Bank. According to the World Bank Bolivia is one of the poorest countries in Latin America. (World Bank, 2006)

Many countries use a national poverty line based on population-weighted subgroup estimates from household surveys and thereby the definitions of the poverty line may vary considerably between nations. In this study I will use the National Poverty Line in Bolivia from 2007 that define poverty as minimum income needed to satisfy basic needs, and Extreme poverty as Minimum income needed exclusively for buying food and meet minimum nutritional requirements. This gives the following numbers:

	Urban	**Rural**
Poverty:	463 Bs. (67 USD)/month	360 Bs.(52 USD)/month
Extreme poverty:	253 Bs.(37 USD)/month	205 Bs.(30 USD)/month

3.5 Limitations

I will investigate the programmes cost-effectiveness and female participation rate in PLANE and PROPAIS between May 2004 to December 2006. I will just investigate the transfer benefits. The risk-benefits, that is, the benefits of reduced risks due to consumption smoothing, are rarely factored into calculations of cost-effectiveness. Subbarao (2003) have noted that these risk benefits may be extremely important for poor people who lack access to risk-coping instruments or who cannot afford to insure themselves against potential risks of income/consumption shortfalls. If work is easily obtained at sites close to the homes of participants, workfare programmes can respond to risks of sudden shortfalls in consumption of poor households better than most other safety net programmes.

Another possible method would be to calculate the effectiveness by comparing the programmes with other types of transfer programmes (food etc). But for this study, as I mention, the focus will be only on transfer benefits.

Chapter 4 PLANE

4.1 Background PLANE

The National Emergency Employment Programme (PLANE) was established in September 2001 for a period of 14 months (PLANE I). The difficult economic situation in Bolivia led to a prolongation on two occasions, in November 2002 for one year (PLANE II) and in December 2003 for two years (PLANE III). Since 2004 it is part of, along with PROPAIS, the Social Protection Network. Both programmes where aimed to conclude the implementation phase during 2007, but the timeline for PROPAIS was prolonged with two more years. (DUF/BTCCTB, 2006)

Since 2001 when PLANE was launched as a temporary intervention, and then extended and incorporated as permanent anti-poverty intervention, it had the objective to generate employment for poor families in urban and rural areas. It is important to point out that the activities or projects that could take place with the financing of PLANE, are not part of the goal in itself, but were simply the instrument for generating employment.This means that neither the work itself nor its utility was part of the objective, unlike it would in the PROPAIS. (Sierra et al. 2006)PLANE had two types of projects – one for urban areas (PES) and one for rural (PER). (DUF/BTCCTB, 2006)

Although PLANE has undergone several expansions since 2001, the overall objective remains the same, that is: *"Helping to create conditions that reduce social tension in order to strengthen governance and foster economic recovery in favour of the poorest sectors of the country through the creation of temporary income for the benefit of that population."* (Ministerio de Desarrollo, 2006)

The design of PWPs as safety net instruments depends on the ability of the programme to provide additional source of income to the most vulnerable population when it is most needed. This means that the design of public works programmes should pay close attention to the need for additional or complementary targeting method in addition using the wage rate as the key self-targeting instrument as well as length and timing of work. Specific design features also have an impact on the objectives of increasing female participation into the programmes. Lastly, community participation and involvement are crucial for determining the usefulness and impact of projects locally. (Del Ninno et al. 2009)

According to DUF (2006) PLANE used the following tools:

- Monthly salary below the market rate, (Bs.480 or about USD60)
- Reduced hours (35 hours a week) so that beneficiaries may have additional alternative revenue

- Restricting the age range of beneficiaries, so as to maximize the likelihood that they will be heads of households with school-age children (age range between 25 and 55 years for the PES)
- In the PES, a lottery system chose those who would work between the listed participants. This allows a greater number of beneficiaries, while reducing their dependence on the programme
- 70 per cent of resources available for allocation to projects of urban municipalities "PES", according to the percentage of registered people that were unemployed
- 30 per cent of the allocation of resources for rural projects in the municipalities "PER", as defined in formulated in Poverty Law of Dialogue 2000.

In the third phase of PLANE (between 2004 and 2006) approximately 120 000 people worked in the programme, many of them for more than one period. This could appear to be very few participants but the population in Bolivia is small (about 9.5 millions) and the total number of unemployed in the cities 2007 was actually no more than 261 000 persons. This equates to 9.5% of the Economically Active Population (CEDLA, 2007). So PLANE actually created jobs for nearly every second unemployed urban worker.

4.2 Labour intensity

The labour intensity of a public works operation reflects the percentage of the labour cost on the overall cost of project. It depends on a number of factors including the choice of the asset to be rehabilitated, the wage rate and the ability of the agency implementing the programme to budget adequately for non-wage costs. The Labour intensity of PWPs is calculated by the labour cost as a percentage of the total cost of the programme. Del Ninno2009)

The third phase of PLANE was conducted between May 2004 and December 2006, and during this period the total cost for PLANE III was USD 20,169,490. According to DUF/BTCCTB 89 per cent of the total sum were workers' wages and only 11 per cent other costs as listed in Table 4.1. The 89 per cent is equivalent to USD 18,030,175.(DUF/BTCCTB, 2006) This means that the labour intensity of PLANE III was very high.

In Subbarao's cross-country data the share of wages of total cost in most programmes varied between 0.30 and 0.60. While a higher share is desirable for higher transfer benefits to be conferred on the poor, many factors determine this ratio including the nature of the assets to be created, the duration and timing of the works, and most of all, the availability of technically and economically feasible labour-based methods of production. (Subbaro, 1997) In PLANE the assets created were very basic – mostly maintenance and paving of roads. (see 4.6)

Table 4.1 Summary of Budget Execution in USD

	2004	2005	2006	%	Total US $
Contractors	82,156	262,732	289,245	3.1 %	634,134
Supervisors	96,502	151,251	123,298	1.8 %	371,052
Administration CTB	300,000	630,842	115,339	5.2 %	1,046,182
Insurance	4,323	51,525	0	0.3 %	55,848
Administration BCB	262	2,777	228	0.0 %	3,268
Wages	2,889,429	15,053,983	86,762	89 %	18,030,175
Other costs	7,941	20,095	791	0.1 %	28,827
Total	3,380,615	16,173,208	615,667	100 %	20,169,490

Source: DUF (2006) "PROPAIS PLANE Red de Proteccion Social – Informe Final Primera Fase"

During the period 4,265 projects where implemented with a total number of 178,810 workers employed. However, several of the workers participated more than once, so the total number of people who participated in PLANE in the period is estimated to 120,000 workers. The number of projects across the country was not evenly distributed, with a dominance of completed projects in La Paz (28 per cent versus 14 per cent in Santa Cruz that has almost the same population). (DUF/BTCCTB, 2006)

Table 4.2Completed Projects

Province	**Number of projects**	**Number of workers**	**Total Cost**
Beni	256	12,860	1,353,140
Chuquisaca	479	17,150	1,865,721
Cochabamba	644	33,360	3,328,919
La Paz	1,088	52,240	5,442,753
Oruro	392	13,990	1,413,914
Pando	106	3,070	305,824
Potosi	370	13,110	1,426,082
Santa Cruz	724	24,360	2,707,500
Tarija	206	8,670	890,322
Total	**4,265**	**178,810**	**18,734,175**

Source: DUF (2006) "PROPAIS PLANE Red de Proteccion Social – Informe Final Primera Fase"

The difference between the total cost of wages in Table 1 (USD18.03 million) and total costs per project in Table 4.2 (USD 18,740,000) is due to not yet paid salaries and other transactions that have not been implemented when the tables were made.(DUF/BTCCTB, 2006)

4.3 Targeting

The targeting performance is given by the proportion of the wages paid out which goes to poor workers: W/(W/L). In PLANE the salary, Bs. 480 (USD60) for 35 hours a week, is equal to the country minimum salary and below the market rate. According to Ravallion (1997) a salary tied to a statutory minimum wage rate for agricultural labour attracts casual, unskilled, agriculture labourand there are therefore leakages to the non-poor. But, even if PLANE would attract casual rural workers the probability that they are poor are high because a wage at USD60/month is close to the national rural poverty line, and it seems highly unlikely that many non-poor persons would work at that wage.

Of the 42,401 workers in PLANE III over 82 per cent were women. According to Sierra and Calle (2006) most of the women entering PLANE had never previously had a monthly wage. Female workers in PLANE had only exceptionally had paid work before, working mainly as domestic servants or in temporary jobs like laundresses, cooks, cleaning ladies, and pension or restaurant helpers or in informal self-employment such as street venders. (Sierra 2006)

A survey conducted by MKT Marketing and PRISMA (2004) with 1,039 participants from PLANE, shows that the average participant in PLANE is a woman between 36-45 with 4 to 7 children and with a monthly family income of less than 200 Bs.

Table 4.3 Who participated in PLANE III? (In percentage)

	PLANE III		
	TOTAL	**Urban**	**Rural**
Total	100	79.2	20,8
Male	16.4	14.7	22.7
Female	83.6	85.3	77.3
Age			
<25	2.1	1.2	5.6
26-35	29.4	29	30.6
36-45	42.6	44.2	36.6
46-55	25.9	25.5	27.3
>55	0	0	0
Nr. of children			
<3	12.1	11.8	13.4
4 to 7	70.2	69.5	72.7
8 to 12	17.7	18.7	13.9
Average Family income per month			
<200	78.8	80.1	74.1
201-500	15.3	13.5	22.2
>500	5.9	6.4	3.7

Source: MKT Marketing 2004

With a salary level equal to the country minimum salary and below the market rate and with the results from both Sierra et al. and MKT Marketing it seems to have been very little leakage to non-poor in PLANE III. This confirms by a study by Landa (2007) that shows that 89% of the participants in PLANE uses their income mainly to buy food. 5.6 % uses the income to pay for their children's school and 2.2 % pays their debts.

It seems to be some, but not much leakage to non-poor in the targeting and I therefore assume that the targeting is 0.79 and the net wage gain 0.75.

4.4 Cost per worker

Various factors influence the cost per job created including the mix of locals and expatriates involved in the implementation of subprojects; the delivery mechanism selected; particularly the modalities of hiring private contractors; the wage rate; the capital-intensity of operations; and administrative capacity. Disaggregated information on the above factors is hard to come by; so it is difficult to disentangle the various factors underlying the variations in cost per job created.

I start by calculating Total Cost per job created in the PLANE programme between 2004 and 2006 as follows: Number of jobs created in PLANE III is 178,810 and the project cost $18,734,175.

$$PC/W_m = 104$$

The cost of jobs varies between 99 in Cochabamba and Pando to 111 in Santa Cruz and has an average value of USD104/worker.

Table 4.4 Statistics for the total project cost per worker in PLANE III

Province	Number of project	Number of workers	Total cost	Project cost per worker
Beni	256	12,860	1,353,140	105
Chuquisaca	479	17,150	1,865,721	108
Cochabamba	644	33,360	3,328,919	99
La Paz	1,088	52,240	5,442,753	104
Oruro	392	13,990	1,413,914	101
Pando	106	3,070	305,824	99
Potosi	370	13,110	1,426,082	108
Santa Cruz	724	24,360	2,707,500	111
Tarija	206	8,670	890,322	102
Total	4,265	178,810	18,734,175	104

Source: DUF (2006) "PROPAIS PLANE Red de Proteccion Social – Informe Final Primera Fase"

Total Cost for PLANE 2004-05 are $ 20,169,490 gives:

$$C_T/W_m = 112.8$$

Total Cost per Worker a month 112.8 dollar

$$C_T/W_d = 5.64$$

Total Cost per job created (C_W)= 5.64 dollar

Available data of cost per job created, which relate to the late 1980s or early 1990s, show much cross-country variation – from as low as USD1 per person day of employment created in Bangladesh to $8 in previous programmes in Bolivia.The value of USD 5,64 is a clear improvement from the previous programmes in 1982-90, but still quite high in an international comparison. But to put cross-country comparisons in perspective, mean consumption per person per month has to be considered. The main finding is that not all countries manage to create jobs at low cost. Low-income developing countries in Asia and Africa – Bangladesh, India, Botswana, and Tanzania – have incurred a cost per day in the (modest) range of USD1-2. (Subbarao, 2005) But at this low cost it is hard to ensure that workers receive a meaningful transfer. Therefore it can be of more interest to investigate Cost per dollar transferred.

4.5 Cost per dollar transferred

Cost per dollar transferred or Current earnings gain per USD of programme spending: CB/G is calculating how much the poor will gain from the programme. There are few studies have examined the cost per dollar of income transferred through public work programmes. One of the studies are released by Concurrent Evaluation Report, the Ministry of Rural Development of India, shows that India´s nationwide programme (JRY) transferred one unit of income to participants at a cost of 1.9 (including the amount of transfer) in 1991. It is well-known that JRY participants included the poor as well as the non-poor, largely because the programme wage was higher than the market wage. Taking into account the extent of mistargeting, the programme required an expenditure of 4.35 (including the amount of transfer) to transfer one unit of income to a poor participant.(Subbarao, 2005)

In PLANE the monthly salary was set below the market rate, with reduced hours. 480 Bs. is approximately 60 USD/month[1] . 60 dollars a month gives a salary of 3 dollars a day for the workers of PLANE.

So according to my calculations the Cost per dollar of income transferred in PLANE is the monthly cost of project divided by the salary transferred to the workers:

[1] Average year rate USD/Bs 2004-06

$$C_W/PW = 1.88$$

This means that although the cost per job created seems to be quite high compared to Subbarao's cross-country comparisons, the Cost per dollar transferred in PLANE appears to be very low compared with Ravallion's (1999) simulation analysis in a low income setting where the cost of transferring one dollar to poor people in low income with an average poverty rate of 50 per cent is equal to USD2.5 if future gains from the assets created are taken into account and USD3.6 if only current benefits are considered.

With a cost per dollar transferred at 1.88 I then calculate the Gains to the poor per USD of spending

B/G= 0.53

Current earnings gain per USD of programme spending

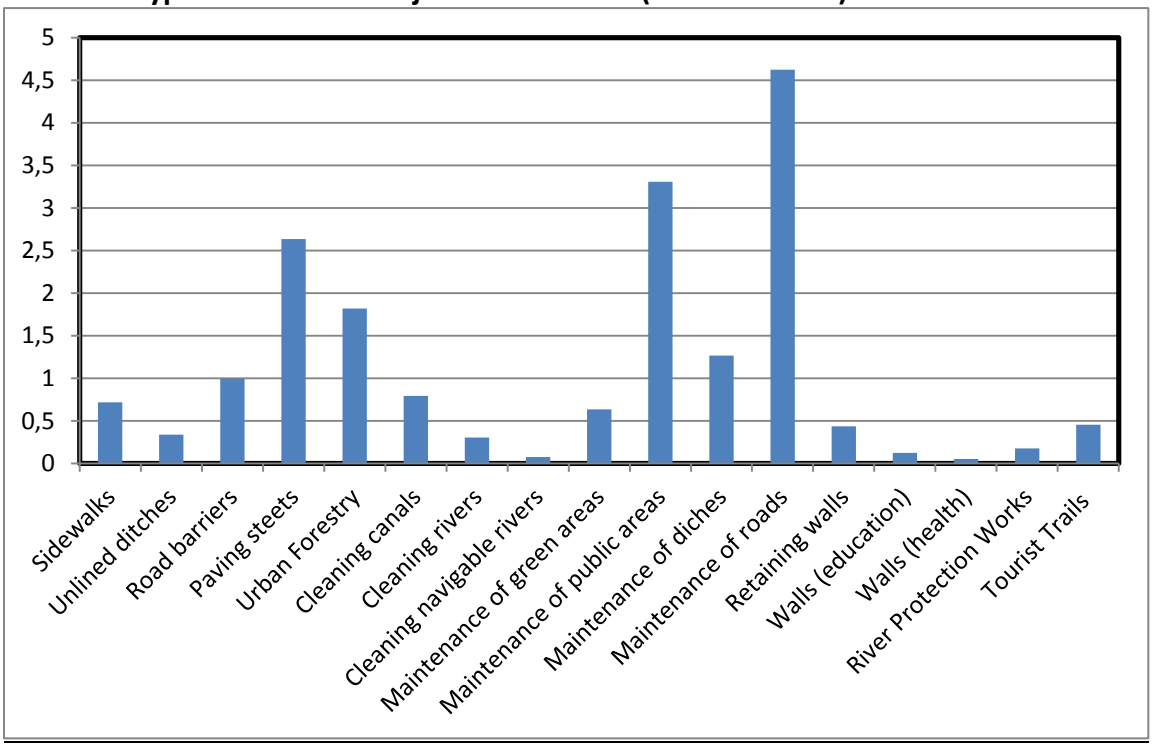
CB/G=0.89

4.6 Indirect benefits

In the design of PLANE it was decided not to finance investment activities by the municipal governments, with the purpose of preventing that the programme had served to replace investments that had been already planned, in order to ensure that the impact on employment would be additional. Thus it declared that only maintenance would be eligible, while maybe some of them could have been performed by municipals governments, most municipalities were facing major budget constraints, especially in times of crisis. In addition maintenance activities do not require skilled labour, thereby avoiding the exclusion of less skilled, especially women that typically is done in investment works. (DUF 2006)

The major types of projects executed by PLANE were: firstly the Maintenance of roads in rural areas, with a grant of $ 4.63 million, then the Maintenance of public areas with $ 3.31 million and thirdly Pavement works with $ 2.63 million. The work itself or its utility was not part of the goal, differing in this aspect from PROPAIS. This should indicate a low indirect benefit for the poor.

Table 4.5 Type of Executed Projects in PLANE III (in million USD)



Source: DUF (2006) "PROPAIS PLANE Red de Protección Social – Informe Final Primera Fase"

Inserting these figures into Ravallion´s equation

$$\frac{B}{G} = \frac{G+C}{G} \cdot \frac{W+L}{G+C} \cdot \frac{W}{W+L} \cdot \frac{NW}{W} \cdot \left(1 + \frac{IB}{NW}\right)$$

I get $\frac{B}{NW}$= 0.06

4.7 Results

PLANE seems to have achieved its overall objective: *"Helping to create conditions that reduce social tension in order to strengthen governance and foster economic recovery in favour of the poorest sectors of the country through the creation of temporary income for the benefit of that population."* (Ministerio de Desarrollo, 2006)

A very high percentage of the total costs were used for workers' wages which gives labour intensity at 0.89. The wage rate in PLANE was equal to the minimum wage and this guarantees that the programme self-targets poor participants. This results in a good targeting (0.79) and just a little leakage to non-poor participants. The cost per worker seems high comparing to Subbarao´s cross-country data, but the gains to the poor per 1 USD of spending is high (0.53 comparing to 0.41 in LINC) and the cost per transferring 1 USD to the poor is just 1.88. So the cost effectiveness in PLANE III seems to be very good. But the indirect benefits to the poor are low. The IB/NW is just 0.06 which is not so surprising due to

the fact that the work itself or its utility was not part of the goal in PLANE and was mostly paving and maintenance work.

If we insert in the numbers we get the following results:

	LINC - Base Case Assumptions	**PLANE III**	**PROPAIS**
Budget leverage: (G+C)/G	1.0	1.0	1.0
Labour intensity: (W+L)/(G+C)	0.50	0.89	
Targeting: W/(W+L)	0.75	0.79	
Net wage gain: NW/W	0.75	0.75	
Cost per worker	2.5	5.64	
Gains to the poor per USD of spending: B/G	0.41	0.53	
Current earnings gain per USD of programme spending: CB/G	0.28	0.89	
Cost of USD1 gain to the poor	$ 2.50	1.88	
Indirect benefits to the poor: IB/NW	0.13	0.06	
Female participation as share of total participation: W_F/W_T			

Chapter 5 PROPAIS

5.1 Background

On the 31st of January 2004 the government created Red Protección Social (Social Protection Net) in order to execute programmes and projects benefiting the poorest parts of the population. The RPS had three programmes – the already existing PLANE, the new PROPAIS (Programme against Poverty and Solidarity Investments) and PAN (National health care programme for children under 6 years). (Decreto Supremo 27331, 2004) PROPAIS was created to finance small, temporary projects requested by communities and neighbourhood organizations in order to create jobs in the countryside. (DUF/BTCCTB, 2006)

The programme objective was to help create conditions that reduce social tension and seek economic recovery benefitting the poorest sectors of the country, using construction projects with planning and implementation at the community level to improve the infrastructure conditions. The projects had to be rapidly implemented (maximum 3 months) and labour intensive in the poor municipalities. In the case of PROPAIS contractors who were not from the community were not accepted, which restricted potential contractors outside the target groups. (DUF/BTCCTB, 2006)

According to DUF (2006) the budget for PROPAIS during the period 2004-2006 was USD 18,057,169. Of this 92.92 per cent was used to execute projects. In total 1,348 projects were financed by the PROPAIS programme from May 2004 until December 2006, for a total sum of USD16,928,958.

Table 5.1 Summary of Budget Execution in USD

	2004	2005	2006	%	Total US $
Contractors	2,302	23,171	786	0.16 %	26,259
Supervisors	5,141	316,983	17,245	2.00 %	339,369
Administration CTB	248,397	248,000	43,603	3.30 %	540,000
Administration BCB	249	0	137	0.00 %	386
Evaluations	52 ,36	182,281	28,563	1.50 %	262,880
Material	0	799	0	0.00 %	799
Execution	2,751,992	13,872,171	257,944	92.92 %	16,882,108
Other costs	362	5,006	0	0.03 %	5,368
Total	3,060,479	14,648,411	348,279	100.00 %	18,057,169

Source: DUF (2006)"*PROPAIS PLANE Red de Proteccion Social – Informe Final Primera Fase"*

The programme also had guidelines to target the focus groups. PROPAIS financed small infrastructure projects and/or equipment of neighbourhood or community public goods, located in marginal urban or rural areas, which contain an important component of labour.

- The total project cost should not exceed USD20,000
- The execution time should not exceed three calendar months
- Projects must be located in areas of low income
- Projects should be simple in design and implementation
- The projects could not be part of the municipality annual plan

Table 5.2 Completed projects

Province	Number of projects	Number of minimum Wages	Total cost
Beni	51	5,835	836,160
Chuquisaca	101	11,530	1,652,244
Cochabamba	277	24,885	3,566,155
La Paz	500	44,599	6,391,233
Oruro	114	7,399	1,060,257
Pando	12	863	123,644
Potosi	151	11,793	1,689,979
Santa Cruz	98	7,005	1,003,854
Tarija	44	4,225	605,433
Total	1,348	118,133	16,928,958

Source: DUF (2006)"*PROPAIS PLANE Red de Protección Social – Informe Final Primera Fase"*

The difference between the total cost of wages in Table 5.1 (USD16,882,108) and total costs per project in Table 5.2 (USD16,928,958) is due to not yet paid salaries and other transactions that have not been implemented when the tables were made.(DUF/BTCCTB, 2006)

5.2 Labour intensity

All the projects funded by PROPAIS was planned to be labour-intensive but in the report *PROPAIS PLANE Red de Proteccion Social – Informe Final PrimeraFase,* the organisation responsible for the project (DUF) calculates that at least 38 per cent of the project execution budget was used for wages. This level of labour intensity in a public works programmeis considered low according to the scales by Del Ninno, Subbarao and Milazzo (2009) The PROPAIS labour intensity is low also compared with the data in Subbarao's cross-country report where the share of wages of total Cost in most programmes varied between 0.30 and 0.60 and much lower than PLANE.

5.3 Targeting

PROPAIS did not accept contractors which were not from the same communities as the beneficiaries, (DUF/BTCCTB, 2006) But this did not guarantee that the contractor or his workers are neither poor nor un-employed. The fact that there are no guiding principles regarding wages open up for the possibility that non-poor had participated in PROPAIS. The targeting performance given by the proportion of the wages paid out which goes to poor workers, W/(W/L) is difficult to calculate in the case of PROPAIS due to the fact that there are no established wage levels in the programme.

DUF makes the assumption that the 6.4 million USD used for wages was divided into 118,000 minimum wages.(DUF/BTCCTB, 2006) In fact, the assumption made by DUF when calculating that 118,000 persons were working in 1,348 projects results in an average of 87 workers per project. But from the data I got from Red Proteccion Social I calculate that there were 42,583 workers registered in 2,810 projects in 2007, which indicated a much lower number of workers per project (15.15).[2] This of course affects the cost-effectiveness of the programme.

The lack of salary restrictions combined with a type of project that may attract skilled labour probably resulted in leakage to non-poor workers. Ravallion's (1998) results from field trips suggest that it is not always the case that the poor workers are favoured by local scheme administrators or contractors when deciding who gets work. I assume the leakage in PROPAIS will be at least the assumed numbers for LINC = 0.75 and the net wage gain the same (0.75).

5.4 Cost per worker

To compare the Cost per worker in the two programmes I will do the same calculations as for PLANE. In the PROPAIS programme between 2004 and 2006 the Total cost per job created was as following:

Number of job created in PROPAIS (according to DUF) 118,000 divided in 19 months
→6,210.53 jobs/month

$$PC/W_m = 143$$

Total Cost for PROPAIS USD18,057,169

$$C_T/W_m = 153.03$$

Total Cost per Worker a month USD153 /

$$C_T/W_d = 7.65$$

[2] *Excel file "Trabajadores registrados PROPAIS 2007" (2007) RPS*

Total Cost per job created = USD7.65

But according to the numbers I got from DUF for year 2007 the actual number of workers seems to be much lower. If I do the calculations with only 15 workers per project (as in my calculations for 2007) the Total Cost per job created are as high as 41 dollar a day.

$$C_T/W_d = 41$$

But as my study is for 2004-06 I will use the sum 7.65

5.5 Cost per dollar transferred

According to the report"*PROPAIS, PLANE, Red de Protección Social, Informe final – Primera*fase" DUF calculates that a minimum wage was paid to all the workers (PW =MNW) which gives USD2.7 per worker a day in salary.

The Cost per USD of income transferred in PROPAIS is

$$C_W/PW = 2.83$$

This number 2.83 (TC) can be compared to PLANE 1.88 (TC) and shows that PLANE is more cost effective than PROPAIS. But in comparison with Ravallion's simulation calculations of USD3.6 even PROPAIS seems quite cost effective in terms of transfers to the poor.

But this cost per USD of income transferred in PROPAIS can actually be much higher if the number of workers is as few as in documents from 2007. With those numbers I got a cost per dollar transferred at 15.19 which shows that the actual cost effectiveness in PROPAIS can be very poor. According to Christian Rivero at DUF it's also risky to assume that the project wage always is equal to minimum wage, when there are no rules regulating wages in PROPAIS. So if the PW>MW the transfers to poor can be even lower.

But with the statistics from DUF for this period the cost per dollar transferred is 2.83 which gives a gains to the poor per USD of spending

B/G= 0.35

Current earnings gain per USD of programme spending

CB/G=0.21

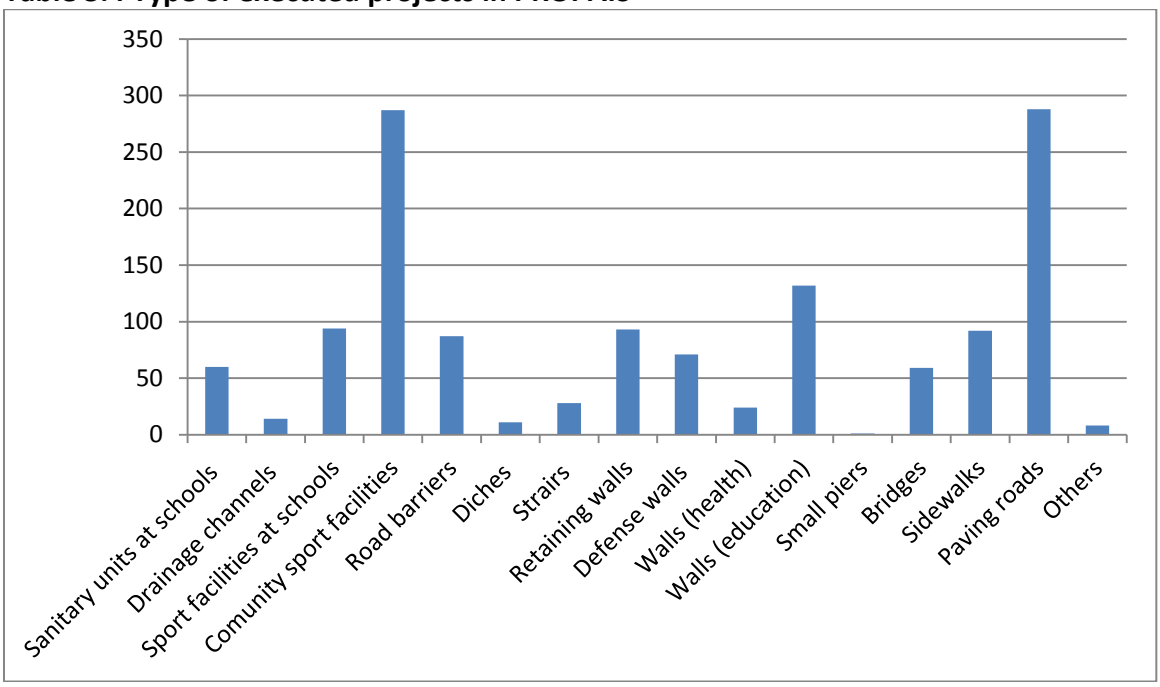
5.6 Indirect benefits

PROPAIS financed small infrastructure projects and/or equipment of neighbourhood or community public goods, located in marginal poor urban or rural areas. PROPAIS had among its main objectives to create a rapid response to the demands of Community-based organizations through small infrastructure works and equipment contributing to its financing, and with the projects generating temporary employment among the country's poorest people. Also the PROPAIS aimed that through the submission and approval of projects to benefit the popular sectors, an establishment of relationships between grassroots organizations and the central government could be possible. Looking at the type of projects demanded by the communities, there is a significant concentration (28%) in Paving roads with 2,379 projects (reaching USD35.9 million) and multifunctional sport courts (12%) with over 1,980 projects (equivalent to USD15.8 million). (DUF 2006)

According to Sierra y Calle (2006) it is reported that PROPAIS is highly valued by the communities in rural areas. It doesn't just generate employment but also respond to perceived needs in faraway communities. This means that the indirect benefit to the poor could be higher than in PLANE.

Plugging in the numbers in Ravallion's equation gives $\frac{IB}{NW}$= 0.64

Table 5.4 Type of executed projects in PROPAIS



Source: DUF (2006) "PROPAIS PLANE Red de Protección Social – Informe Final Primera Fase"

5.7 Results

PROPAIS' objective was to help create conditions that reduce social tension and seek economic recovery benefitting the poorest sectors of the country, using construction projects with planning and implementation at the community level to improve the infrastructure conditions. There was no regulation of the wage rates in the programme and in the first implementation period there were no statistics on numbers of workers participating in the programme. There was much lower labour intensity in PROPAIS than in PLANE (0.38 comparing with 0.89 in PLANE). In fact, the labour intensity can be even lower, since the information I gathered about the participants in the programme 2007 shows that there was much fewer workers and that the salary appears to vary much within the programme. The targeting was at the same level as in Ravallion's example, with just a little more leakage to non-poor than PLANE. The projects were executed in poor communities but with the lack of wage regulations there was some leakage to non-poor. The Gains to the poor per USD of spending (B/G) and Current earnings gain per USD of programme spending (CB/G) was much lower than in both PLANE and Ravallion´s LINC programme.

But the PROPAIS programme had much stronger focus on the indirect benefits which resulted in a much higher value on IB/NW. This confirms the idea of PROPAIS not just generating employment but also respond to perceived needs in faraway communities. Regarding Sierra and Calle (2006) it is reported that PROPAIS is highly valued by the communities in rural areas. Overall the PROPAIS had less cost-effectiveness than PLANE, but still quite acceptable comparing to the LINC case.

	LINC - Base Case Assumptions	**PLANE III**	**PROPAIS**
Budget leverage: (G+C)/G	1.0	1.0	1.0
Labour intensity: (W+L)/(G+C)	0.50	0.89	0.38
Targeting: W/(W+L)	0.75	0.79	0.75
Net wage gain: NW/W	0.75	0.75	0.75
Cost per worker	2.5	5.64	7.65
Gains to the poor per $ of spending: B/G	0.41	0.53	0.35
Current earnings gain per $of programme spending: CB/G	0.28	0.89	0.21
Cost of $1 gain to the poor	$ 2.50	1.88	2.83
Indirect benefits to the poor: IB/NW	0.13	0.06	0.64
Female participation as share of total participation: W_F/W_T			

Chapter 6 Gender & PLANE

6.1 Female Participation

Design features of a PWP can be adopted in a number of ways to encourage female participation (Subbarao, 2003). Women may be given priority at the design or recruitment stage. In a number of projects analysed, a minimum percentage of women participation is set in the project guidelines. The guidelines in PLANE had restrictions on the age range of beneficiaries, so as to maximize the likelihood that they will be heads of households with school-age children (age range between 25 and 55 years for the PES). And according to DUF (2006) PLANE has been effective in targeting fathers and mothers, including many heads of household in low-income sectors. But the guidelines had no gender analysis and lacked conditions to assure female participation. Despite this, over 74 per cent of the 9,608 workers registered in PLANE III (PES) were women. And among the people actually working in PLANE III (PES) the number of women was even higher. Of the 42,401 workers over 82 per cent was women. (Sierra et al. 2006) In the activities in the rural areas (PER) there are no statistics for the workers.

I find the high level of female participation interesting, especially regarding the fact that the main activities in PLANE were construction work, which often is considered hard work and a masculine activity. I will in this chapter focus on the possible explanations behind these numbers. I will look at wage rates in the programme and in Bolivia in general regarding gender differences and the labour market and differences in unemployment between men and women.

Table 6.1 Participation in PLANE III

	PLANE III (PES) Workers Registered	PLANE III (PES)Workers % Registered	PLANE III (PES)Workers Hired	PLANE III (PES)Workers % Hired
Women	74,197	74,4%	34,997	82,5%
Men	25,411	25,6%	7,404	17,4%
Total	99,608	100%	42,401	100%

Source: Sierra et al. (2006) "Estudio sobre los efectos de los programmeas de empleo de emergencia en las condiciones de las mujeres participantes"

6.2 Salary

In PLANE the salary, Bs. 480 for 35 hours a week, is equal to the country minimum salary and below the market rate. From the information gathered in interviews made by Sierra and Calle (2006) in *"Estudiosobre los efectos de los programmeas de empleo de emergencia en lascondiciones de lasmujeresparticipantes"* one of the main reason for the low male participation in PLANE, was the low level of wages. Indeed, for men the incentive to

participate in PLANE is less when they can earn more in other occupations. For women, who generally has much lower salaries the incentive to participate in PLANE is much higher. According to the National Statistical Institute 2006 men generally earn over 600 Bs. (USD75) more than women. In the rural business sector they earn over 1,000 Bs. (approximately USD140) more than women. (INE, 2006)

According to a study by the Labour Investigation Institute Cedla, men represent 56.5 per cent of the employed in Bolivia; however, they receive 67per cent of labour income, while women represent 43.5per cent of employed, but received only 32per cent of the total income. The share of income that remains in the hands of women is less than half of the share received by men. (CEDLA, 2007) According to Sierra and Calle, the men who work in PLANE especially in urban areas, usually were people who have a harder time getting jobs; among other reasons because of their age, and many of the men participating in PLANE were about 50-55 years, which is the upper age limit in PLANE. In many of the interviews made by Sierra and Calle, the participants especially in urban areas, mention that is not always considered positive when men work in PLANE. The low wages are associated with a low value attachedto the work. (Sierra et al. 2006)

In urban areas a high number of the female workers are heads of a household with no other sources of income than their own, as single mothers, abandoned, widows, and women with sick, old or disabled and unemployedhusbands. For most women entering PLANE it was their first time in their life they received a monthly salary. Female workers in PLANE had only exceptionally had paid work before, mainly domestic servants and temporary jobs like laundresses, cooks, cleaning, pension or restaurant helpers and or informal self-employment like street venders etc. For those women the wages are in a few cases equivalent to those in PLANE, but mostly they will earn more by participating in PLANE. (Sierra et al. 2006)

"In PLANE they willhire us women, butelsewherethey do nothire us"(Female worker in PLANE,ruralLa Paz)

6.3 Gender effects of the programme

The massive incorporation of women into the work of PLANE had a double effect. On the one hand it has created a temporary relief of the poverty of their families. While you cannot expect families moving out of poverty permanently through PLANE, the programme has helped to solve the economic situation for tens of thousands of low-income families, at least temporarily. On the other hand, it has opened employment opportunities for women, which may lead to longer-lasting improvements of living conditions. According to Sierra and Calle (2006) the chances of obtaining employment after working in PLANE significantly increased for women. This is in line with the studies that show that PWP can work as a bridge to employment for women. Some PWP include training as a core component in addition to the

income transfer to encourage workers to acquire the needed skills to gain more permanent employment or become self-employed. (Del Ninno et al. 2009)

After 4 years of existence PLANE had benefited tens of thousands of very low income workers each year, mostly mothers and including a large number of heads of households. Some of these people repeatedly entered the PLANE programme, and have developed a degree of dependence on these revenues.Despite its temporary nature it has begun to open spaces for women in formal wage employment. Most of the women in PLANE work more than once a year in the programme, which allows some learning and enhanced job skills. Besides the technical aspects, which are very basic, they learn how to work together and the functioning of a workplace, to coordinate efforts for a final product. Generating learning and experience for women with no work experience or previous training, and entering non-traditional spaces, PLANE has opened up opportunities for women, not only for programme workers. It is increasingly common that women are hired as labourers in public works, which may indicate a contagion effect of PLANE. The PLANE work has shown that women can work in construction, public works and other works of common good (forestation, etc.). It can be argued that this is a rather perverse effect of PLANE to the extent that women do hard work for very low wages, helping to keep women in areas of poor quality jobs. But taking into account the options available, women valued work in PLANE as an alternative that can open opportunities in the future.(Sierra et al. 2006)

6.4 Results

The investigations made by Sierra and Calle show that PLANE has attracted mostly underemployed labour or those engaged in the informal sector, mainly women.This is in line with the investigations made by Professor Gutierrez de la Vega, (2006) who points out the underemployment and informal work as the biggest labour problem in Bolivia, and that it especially affect women. About 80 per cent of the labour force in Bolivia works in the informal sector and 65per cent of informal workers are women.

Of the 42,401 workers in PLANE III over 82per cent were women, despite the fact that the main activities in PLANE were construction work, which often is considered hard work and a masculine activity. But the women as a group in Bolivia are more unemployed, poorer and receive lower salaries in the normal labour market and therefore are the incentives higher for women to participate in PLANE. So the high female participation rate in PLANE depends on various factors. First, the minimum salary resulted in self-selection of women to PLANE because Bolivian women generally earn less than men and thereby had more incentive to participate in PLANE. Secondly, the simple tasks do not require any qualification or prior experience, which open up the possibilities for women who never before had a paid job. And finally, it seems that the low salary and simple tasks led to low valuation of the PLANE work.

This kind of attitudes seems to have had an impact in the incentives of who decided to participate in PLANE.

Chapter 7 Gender & PROPAIS

7.1 Female participation

There is very little documented information about the PROPAIS workers. The database of the RPS had no individual data on the women workers in the early stages PROPAIS and at the time of this study no evaluation of PROPAIS had been done that would provide additional information. In an evaluation study from IADB that was published in 2012 (finished 2009) the PROPAIS has generated 5,688 jobs during 2006. 4,266 of them were occupied by men and 1,442 of women. (Sax &Cep, 2009)

Also the information I received from DUF regarding the participation in PROPAIS 2007 shows a very low level of female participation. According to my calculations only 19 per cent of the workers were women. And in some parts of the country the participation rate is as low as 1.3 per cent (Santa Cruz), where out of 8,984 workers, only 119 were female. When I look closer at the participation of workers in the PROPAIS project I find 324 projects without one single female worker and 249 of them in Santa Cruz region. But even though the male dominance appears to be greater in Santa Cruz, the gender differences are to be found in all nine regions. In a project in La Paz there were 395 male workers in a project, no female. But there are also some exceptions. In one singe project it was almost equal participation between men and women, and it was in a project in Oruro with 59 female workers and 63 male workers.

Table 7.1 Participation Rate PROPAIS 2007

REGION	Number of projects	Women	Men	Total number of workers	Average number of women per work	Average number of men per work	Per cent of women per work
Chuquisaca	183	579	1,852	2,431	4	13	**23,8%**
La Paz	821	3,319	8,384	11,703	9	22	**28,4%**
Cochabamba	528	706	4,988	5,694	4	31	**12,4%**
Oruro	176	580	1,198	1,778	4	9	**32,6%**
Potosi	362	2,220	5,740	7,960	17	45	**27,9%**
Tarija	148	87	2,144	2,231	1	40	**3,9 %**
Santa Cruz	610	119	8,865	8,984	1	45	**1,3 %**
Beni	137	549	1,253	1,802	7	16	**30,5%**
Pando	12	-	-	-	-	-	**-**
Total	**2,977**	**8,159**	**3,4424**	**42,583**	**5**	**25**	**19,2%**

Source: Data from DUF (2007) with my calculations

The differences between PLANE and PROPAIS show how the participation can vary depending of the design of the programme.

Women in Bolivia often have higher incentives to participate in public works due to the fact that they are more often unemployed, receive lower salaries and often work in the informal sector. With this background it seems strange that in the same period very few women participated in PROPAIS. I will in this chapter look at some of the possible explanations.

7.2 Salary

In PROPAIS, unlike PLANE, there are no guiding principles regarding to wages paid by contractors. The contractor is the sole prerogative of selecting the workers to the project has been awarded, and decides the level of salaries. (DUF, 2006) DUF estimates that 118,000 persons worked in PROPAIS between 2004 and 2006 and received a minimum salary. But those estimations are made without any actual information about the participants and their wages. In fact, the information I gathered about the participants in the programme 2007 shows that there was much fewer workers and that the salary appears to vary within the programme. When the PW>MW the incentives for non-poor people entering the programme raise. The same will probably happened with the men, who choose not to participate in PLANE because of the low salaries. With higher salaries there are more incentives for men to participate. With higher salaries the possibilities for women (with no or little work experience) will be fewer.

In PLANE the workers themselves could apply to participate in the programme. In PROPAIS however, it is the contractor who select his workers. In construction work, according to Christian Rivero, National Coordinator at DUF, the male labour force is generally considered to have better performance, so the contractors are not likely to hire women. However, there is a small increase in the number of women in the sector and according to DUF (2006) this is because, among other reasons, PLANE has contributed greatly to giving many women labour experience.But the overall male dominance in the programmecomes as no surprise that without any special incentives it will look as the construction market in general, with very little presence of women.

The difference relative to PLANE, where the wage always was the same for men and women, there is no guidelines in PROPAIS on wages paid by contractors, which according to Rivero at DUF, has resulted in lower salaries for female workers than male workers for equal work by some contractors.

7.3 Targeting criteria

Subbarao (2003) points to the importance of the design features of a Public work programme in order to encourage female participation. Women may be given priority at the

design or recruitment stage. In a number of Public works programmes a minimum percentage of women participation is set in the project guidelines. In PROPAIS there are no conditions to influence the female participation as a quota of workers is based on gender or other criteria.(DUF, 2006) The guidelines in PLANE had restrictions on the age range of beneficiaries, so as to maximize the likelihood that they will be heads of households with school-age children. And according to DUF (2006) PLANE has been effective in targeting fathers and mothers, including many heads of household in low-income sectors. In PROPAIS there are no criteria at all regarding the workers.

The division of labour between the sexes occurs in several ways in the labour market. The first is referred to occupational segregation and horizontal segregation. By analogy with the term "glass ceiling" this would be called "glass walls". It means that the distribution of men and women between the professions in the labour market is not the same, Women and men are unevenly spread between sectors of the economy. (Boschini, 2005) The kind of construction work that exists in PROPAIS is usually considered a masculine profession.

"It'sgood experience for awomanto do men's work" (Woman in PLANE, urban La Paz)

Another form is vertical segregation - often called "glass ceiling". It means that the distribution of men and women in various positions in sectors and occupations is not the same. (Boschini, 2005) According to Christian Rivero, DUF, the glass ceiling effect exists in PROPAIS. When there is some female participation among the workers, he had never heard about a female contractor in the programme.

"I would never hire a woman for construction work. I have never done it and I never will. They don't have what it takes to work here. (PROPAIS Contractor, La Paz)

7.4 Results

The very low female participation rate in PROPAIS is a result of the programme's design. The lack of fixed salary and targeting criteria combined with high requirements of work experience resulted in a situation like the labour market in general, where few women work in construction sector. Unlike PLANE, where everyone could participate, the PROPAIS workers were selected of a project manager.

Chapter 8 Conclusions

8.1 How Cost-Effective are PLANE and PROPAIS?

The PLANE programme had better cost-effectiveness than PROPAIS, with much higher labour intensity and lower cost per worker. But the indirect effects of PROPAIS seem to have been much higher, just as the objective of the programme indicates.

In PLANE a very high percentage of the total costs were used for workers' wages which gives a labour intensity of 0.89. The wage rate in PLANE was equal to the minimum wage and this guarantees that the programme self-targets poor participants. This results in a good targeting (0.79) and just a little leakage to non-poor participants. The lack of regulation of the wage rates in PROPAIS resulted in a much lower labour intensity in PROPAIS than in PLANE (0.38 comparing with 0.89 in PLANE). In fact, the labour intensity in PROPAIS can be even lower, since the information I gathered about the participants in the programme 2007 shows that there was much fewer workers who actually participated in the programme. The targeting was at the same level as in Ravallion's example, with just a little more leakage to non-poor than PLANE.

In PROPAIS the Gains to the poor per USD of spending (B/G) and Current earnings gain per USD of programme spending (CB/G) was much lower than in both PLANE and Ravallion´s LINC programme. The cost per worker seems high in both programmes comparing to Subbarao´s cross-country data, but the gains to the poor per 1 USD of spending is high in PLANE (0.53 comparing to 0.41 in LINC) and the cost per transferring 1 USD to the poor is just 1.88. So the cost effectiveness in PLANE III seems to be very good.

The indirect benefits to the poor are quite different in the two programmes. The IB/NW is just 0.06 in PLANE comes as no surprise due to the fact that the work itself or its utility was not part of the goal in PLANE and was mostly paving and maintenance work. The PROPAIS programme had much stronger focus on the indirect benefits which resulted in a much higher value on IB/NW. This confirms the idea of PROPAIS not just generating employment but also respond to perceived needs in faraway communities.

Overall the PROPAIS had less cost-effectiveness than PLANE, but still quite acceptable comparing to the LINC case.

8.3 Do the ProgrammesSucceed to Target Female Workers?

When it comes to the female participation it has become very clear that the characteristics of the programmes affect the outcome. Both programmes was carried out in the same context and at the same time and still the results differ from 82% in PLANE to just 19% in

PROPAIS. In Bolivia where the unemployment and earnings are much lower for the female population the effect on poverty reduction a programme that target women will have better results.

It surprises me that the donors (IADB and others) who talk much about gender mainstreaming and the importance of gender equality do not analyse their own programmes and with regards to their gender impact. In an evaluation from 2009 IADB points out that maximum 25 per cent of the participation in PROPAIS during 2006-07 were women. But they do not ask themselves what effect this can have, despite that IADB states that *"investing in women – improving their access to information, resources, opportunities and spheres of political decision-making – contributes to poverty reduction, economic growth and good governance at the local and national levels".* (Inter-American Development Bank, 2003)

A simple targeting criterion with a fixed salary doesn't affect the cost-effectiveness of the programme in general but can have a huge impact on female participation. And regarding the World Bank report *Integrating Gender into the World Bank Work* when women and men are relatively equal, economies tend to grow faster, the poor move more quickly out of poverty, and the well-being of men, women, and children is enhanced.

	LINC - Base Case Assumptions	**PLANE III**	**PROPAIS**
Budget leverage: (G+C)/G	1.0	1.0	1.0
Labour intensity: (W+L)/(G+C)	0.50	0.89	0.38
Targeting: W/(W+L)	0.75	0.79	0.75
Net wage gain: NW/W	0.75	0.75	0.75
Cost per worker	2.5	5.64	7.65
Gains to the poor per $ of spending: B/G	0.41	0.53	0.35
Current earnings gain per $of programme spending: CB/G	0.28	0.89	0.21
Cost of $1 gain to the poor	2.50	1.88	2.83
Indirect benefits to the poor: IB/NW	0.13	0.06	0.64
Female participation as share of total participation: W_F/W_T		0.82	0.19

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Christian Rivero National Coordinator PROPAIS– DUF	15 September 2007
Woman, 35 years, urban La Paz, worked in PLANE	25 September 2007
Man, 45 years, urban La Paz, worked in PLANE	25 September 2007
Woman, 34, rural La Paz, worked in PLANE	25 September 2007
Man, 34 years, rural La Paz, worked in PROPAIS	5 October 2007
Man 28 years, rural La Paz, worked in PROPAIS	5 October 2007
Man, 43 years, rural La Paz, Contractor PROPAIS	5 October 2007
Man, 40 years, rural La Paz, worked in PROPAIS	5 October 2007
Man, 41 years, rural Oruro, Contractor PROPAIS	20 October 2007
Man, 28 years, rural Oruro, worked in PROPAIS	20 October 2007
Man, 34 years, rural Oruro, worked in PROPAIS	20 October 2007