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POVERTY AND DUALISTIC GROWTH IN PARAGUAY

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ABSTRACT

Almost unnoticed among the violent economic upheavals of its neighbors, Paraguay's economy over the last twenty-five years has produced a quite remarkable period of relatively rapid, debt-free growth. There has been little pressure to implement structural adjustment policies and only a modest start with economic reforms has been made in the mid-1990s. Economic growth seems to have brought substantial benefits to the poor. Growth was pro-poor, one of the very few cases in Latin America where that is true. However, as analyzed in this paper, the 'trickling down' has benefitted the population in urban areas. In rural areas, the story is completely different. Agriculture has been a mainstay of Paraguayan growth. It grew rapidly during the 1980's, suffered several years of drought during the 1991-92 crop years and is now recovering. Yet benefits of agricultural growth have acrued to a small sector of large landowners producing for export markets. Rising poverty is observed among the vast majority of small landholders.

In this paper we look first at the sectoral and macroeconomic characteristics of growth in Paraguay since 1980, then we present a detailed analysis of urban and rural poverty over the same period. The analysis confirms the dualistic trend of falling urban poverty and rising rural poverty. However, Paraguay's challenge ahead seems to be enormous. The shift towards a democratic government after more than thirty years of military dictatorship has brought the challenges of modernizing the economy and institutions to operate within a democratic framework, to mobilize investment resources to adjust the economy to take advantage of growth opportunities in the context of Mercosur, to invest more in education and to improve living standards, particularly in rural areas.

The paper argues that such reforms are likely to hurt Paraguay's growth performance in the short run and hence will slow-down or even reverse the downward trend in urban poverty. This is explained by the fact that traditionally a large share of economic activity is taking place informally and outside the legal framework, including illegal border trade and a majority of enterprises not paying taxes or complying with government regulations. Firms and investors hence sense the absence of benefits from formality and the deeply rooted informal practices are unlike changed overnight. Mercosur and intents toward modernization have already affected growth and urban incomes since 1995. More sustainable and equitable growth in the medium run will require a substantial increase in productivity. This will require large investments in infrastructure and education as well as far-reaching reforms in agriculture. This will require huge economic and political sacrifice in the short run, but without it prospects for growth and poverty reduction are gloomy.

Poverty and Dualistic Growth in Paraguay

Samuel Morley and Rob Vos[1]

Introduction

Almost unnoticed among the violent economic upheavals of its neighbors, Paraguay's economy over the last twenty-five years has produced a quite remarkable period of relatively rapid, debt-free growth. What is more, this growth seems to have brought substantial benefits to the poor. Until recently the only data available to measure changes in poverty were for the urban sector. Growth was pro-poor, one of the very few cases in Latin America where that is true.

Thanks to two recent surveys now also data is available for the rural sector where half of Paraguayans and 70% of the poor live. There the story is completely different. Agriculture has been a mainstay of Paraguayan growth. It grew rapidly during the 1980's, suffered several years of drought during the 1991-92 crop years and is now recovering. This development has not brought rising living standards to all or even a majority of those who work in the sector. To the contrary, the evidence both statistical and anecdotal suggests a rising pool of extremely poor peasants within a generally prosperous and expanding agricultural sector. It thus appears that growth in Paraguay has been dualistic, bringing substantial benefits to the urban sector and to the relatively modern, large scale part of agriculture that produces soybeans and cattle, while at the same time leaving behind or possible causing a reduction in the already low living standards of a large pool of semi-landless peasants.

The nature and sources of Paraguay's growth and her development strategy are strikingly different from the other countries in the region. Paraguay never had a state-led import substitution program, never relied on foreign direct or portfolio investment, never created a large state enterprise sector, never ran large government deficits, and never had a serious balance of payments or debt crisis during the 1980's. In the last five years, Paraguay has begun to adopt the reform components of the 'New Economic Model' (NEM). However,

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1 We are grateful to José Antonio Mejía for his excellent assistance in the survey data analysis.

given where its economy was when the process started, these reforms imply far less wrenching structural changes than they have in most of the other countries of the region. For one thing, little trade reform has been required as Paraguay always had a relatively liberal trade regime which provided rents to the economy (both legal and illegal) channeling merchandise between its big neighbours Argentina and Brazil, both with longstanding protectionist regimes. The shift towards trade liberalization and the creation of a common market (Mercosur) in the Southern Cone has taken away a good deal of Paraguay's 'comparative advantage' in non-agricultural trade and seems to be a factor behind the recent slowdown of urban sector growth and poverty reduction.

In this paper we look first at the sectoral and macroeconomic characteristics of growth in Paraguay since 1980, then we present a detailed analysis of urban and rural poverty over the same period. The analysis confirms the dualistic trend of falling urban poverty and rising rural poverty. However, Paraguay's challenge ahead seems to be enormous. The shift towards a democratic government after more than thirty years of military dictatorship has brought the challenges of modernizing the economy and institutions to operate within a democratic framework, to mobilize investment resources to adjust the economy to take advantage of growth opportunities in the context of Mercosur, to invest more in education and to improve living standards, particularly in rural areas. As we shall argue, taking up these challenges may hurt Paraguay's growth performance in the short run. A large share of economic activity is taking place informally and outside the legal framework, including illegal border trade and a majjority of enterprises not paying taxes or complying with government regulations. Firms and investors hence sense the absence of benefits from formality and the deeply rooted informal practices are unlike changed overnight. Mercosur and intents toward modernization have already affected growth since 1995. Raising productivity and reducing inequality and poverty will require large investments in infrastructure and education and major reforms in agriculture, all of which should support more equitable growth in the medium run, but requiring economic and political sacrifice in the short run.

Macroeconomic and sectoral growth trends

Macroeconomic growth performance in Paraguay reflects cycles in investment and

agriculture, rather than foreign investment, capital inflows and manufacturing. During the 1970's the country had one of the fastest growth rates in Latin America. That growth was investment-led. The investment rate rose from 12.2 in 1970 to 26.8% in 1980, and the share of construction in GDP rose from 3.5% in 1970 to 8.9% in 1980. Much of this investment boom can be explained by the construction of the massive Itaipú dam on the border with Brazil. But there were also ambitious programs of highway construction, rural electrification and an expansion of the agricultural frontier.

Like the rest of Latin America, Paraguay had a recession in the early 1980's. But unlike the other countries, this recession was not caused by a balance of payments crisis. Rather it was a classic accelerator cycle caused by the sharp contraction of investment as the Itaipú project was completed. Real investment fell by seven percentage points of GDP, and had it not been for agriculture, a leading sector throughout the 1980's, the recession would have been far more prolonged and severe (see Table 1). During the last decade per capita income growth has dramatically slowed down to less than 0.6% per year compared to gains of 5.6% per year during the boom years of the 1970's. Paraguay has been unable to find another sector to replace agriculture as a leading sector, and its development has been hampered by the closing of the agricultural frontier and a failure of the country to invest in the sector.

Growth has slowed down in the mid 1990s. Growth in 1996 fell to a dismal 1.3% triggered by falling commodity prices (particularly cotton), tighter border controls imposed by the Brazilian government affecting the re-export trade and contraband traffic in the border town Cuidad del Este and the effects of a banking crisis following improved bank supervision. These immediate causes of course are but a manifestation of deeper rooted problems of the Paraguayan economy and which relate to its dual economic structure, its reliance on few agricultural crops, and its wide spread informality.

The past decade did show a noticable expansion of electricity production, an offspring of the 1970s investment boom, producing a 6.0% annual growth rate of the combined construction and electricity sectors (see Table 1). However, the electricity sector is labour-extensive as the sectoral employment data in Table 3 show. The urban services sector did expand significantly

in terms of GDP growth and employment between 1985 and 1995 (Tables 1 and 3). An important part of the urban poor are found in this sector, providing an explanation to the overall decline in urban poverty. Since 1992 there has been a substantial slowdown in the key urban economic sector, commerce and transportation, showing negative growth rates in 1994 and 1996. This downfall is likely associated with Paraguay's loss of 'comparative advantage' following Mercosur's trade liberalization. At the same time, employment has grown tremendously in this sector, doubling its share in total employment to 23.4% between 1982 and 1995 (see Table 3). This combination of high labour absorption and slow output growth implies that average incomes must have dropped significantly in the commerce and transportation sectors. This sector-specific recession partially has offset gains in urban poverty reduction as we show in the next section.

These patterns add up to a relatively stable macroeconomic balance with, as indicated, the investment rate falling after the end of the construction boom at Itaipú and stabilizing around 22% of GDP during the rest of the 1980s and 1990s (see Figure 1a). The financing of investment is a more complex story. It is true that Paraguay did not accumulate excessive amounts of external debt. Yet foreign savings fluctuated around 5% of GDP in the period of the investment boom, then appear to have accelerated to rates close to 10% in the mid-1980s. A major share of the officially recorded foreign capital inflows is from private sources and of a short-term nature. However, a closer analysis learns that most of Paraguay's external deficit (and hence foreign savings) disappears after making a correction for unrecorded trade at the borders with Argentina and Brazil. We assume this illegal trade is somehow reflected in the 'errors and omissions' account of the balance of payments. Comparison of Figures 1a and 1b show the macroeconomic importance these net 're-exports'. These private foreign exchange earnings have made the need for foreign savings virtually non-existent, in particular over the past decade. Only starting 1995-6 there is a renewed shift towards a larger external deficit (also after correction for unrecorded trade; see Figure 1b), which seems consistent with the earlier observation of the possible negative impact of Mercosur on Paraguay's trade advantages after the virtual elimination of rents that Paraguay could earn from protection rate differentials and lack of border controls.

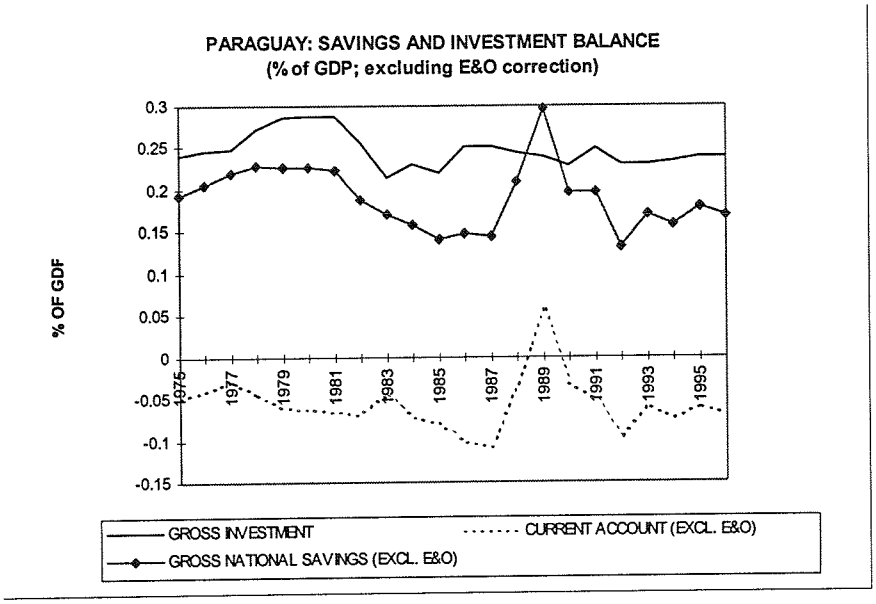

Figure 1a

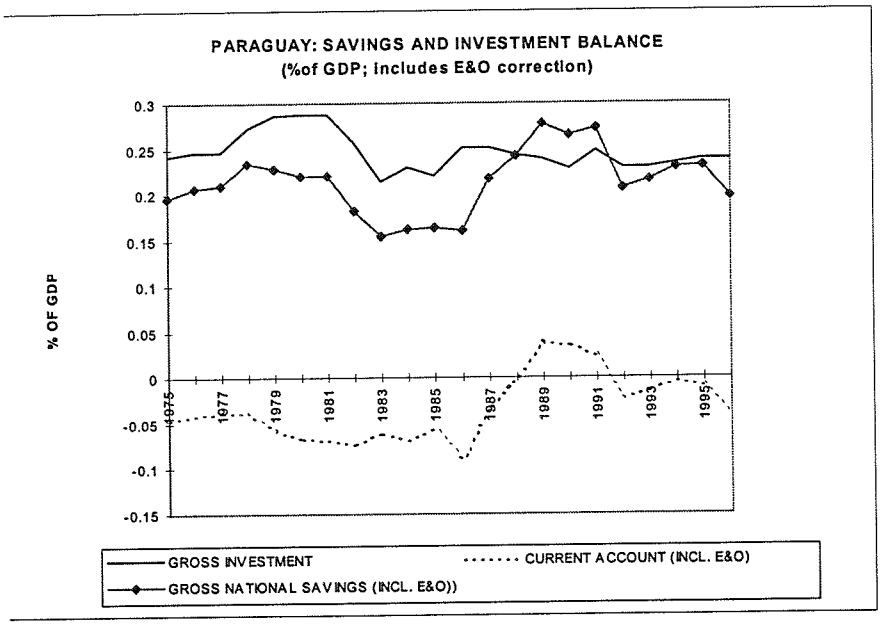

Figure 1b

The private sector typically has run a savings surplus (again, as apparent after correcting official national accounts data for unrecorded trade), but this surplus dissipated around the mid-1990s. Even with relatively small fiscal deficits, foreign capital inflows seem to become more critical if Paraguay wishes to sustain even a very modest investment rate into the next century.

Table 1 Paraguay: Sectoral Growth and Economic Structure, 1960-96

Sectoral shares (%)	**1960**	**1970**	**1980**	**1985**	**1990**	**1995**	**1996**
Agriculture	36.4	31.6	26.0	27.7	28.3	28.1	26.1
Industry	15.8	19.2	18.6	17.5	17.0	16.2	16.2
Commerce and other urban non-traded sectors	47.8	49.3	55.4	54.8	54.7	55.6	57.7
Construction, electricity	*2.5*	*3.5*	*8.9*	*8.7*	*8.7*	*11.2*	*12.1*
Commerce and transport	*34.8*	*31.6*	*32.4*	*31.7*	*31.8*	*26.4*	*25.3*
Public administration	*4.3*	*6.0*	*3.9*	*4.6*	*4.6*	*5.4*	*5.8*
Other services	*6.2*	*8.3*	*10.3*	*9.9*	*9.6*	*12.6*	*14.6*
TOTAL GDP	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sectoral growth rates(%)	**1960-70**	**1970-80**	**1980-85**	**1985-90**	**1990-95**	**1996**	
Agriculture	3.0	6.7	3.6	4.4	2.4	1.3	
Industry	6.5	8.5	1.1	3.3	1.7	-2.0	
Commerce and other urban non-traded sectors	4.8	10.1	2.1	3.9	4.1	2.2	
Construction, electricity	*8.0*	*19.6*	*1.7*	*4.0*	*8.0*	*8.0*	
Commerce and transport	*3.5*	*9.6*	*1.9*	*4.0*	*3.0*	*-1.0*	
Public administration	*8.0*	*4.2*	*5.7*	*4.2*	*5.7*	*10.0*	
Other services	*7.4*	*11.3*	*1.6*	*3.4*	*2.8*	*1.9*	
TOTAL GDP	4.5	8.8	2.3	3.9	3.2	1.3	

Source: Central Bank of Paraguay, *National Accounts*; Inter-American Development Bank, *Economic and Social Data Base* (ESDB).

Note: Sectoral shares are based on constant price GDP figures. Sectoral growth rates are annual averages for the period (geometric means).

The government sector in Paraguay is relatively small, but has grown significantly larger since the overthrow of Stroessner in 1989 (see Table 2). Revenues and expenditures have both risen by three percentage points of GDP, and there has been a substantial increase in

social expenditures, which prior to 1989 were among the lowest per capita in the region.[2] Even with this expansion, government is still only half to a third the size of government in other countries in the region. Furthermore, government finance in Paraguay has always been conservative. Government deficits have been relatively small, and have rarely been a source of significant inflationary pressure. Therefore in contrast to most other countries, when Paraguay implemented the NEM, it did not have to compress its government sector or reduce deficit spending, both of which have tended to push other economies into recessions during their fiscal reforms. Indeed the government share of GDP under General Rodriguez went from an average of 10.1% in 1985-90 to 13.3% in 1990-95. The fiscal situation in 1996 deteriorated further mostly due to a surge in expenditures caused by an increase in wages and salaries. In response, the government introduced expenditure ceilings to control the situation.

Paraguay is one of the very few countries in the region which managed to raise its minimum wages during the 1980's (see Figure 2). In the 1990's the minimum wage has fallen a bit, but is still 22% higher than it was in 1983 and 15% higher than 1980. The evidence on wage differentials in Paraguay is fragmentary. We have two series, one on average wages in manufacturing, the other average income of workers in agriculture.[3] For what it is worth, it appears that the agriculture-minimum wage differential narrowed between 1983 and 1990 and then widened, while the differential between the minimum wage and the average wage in manufacturing stayed roughly constant in the 1980's, then widened somewhat in the 1990's. If the data is accurate, both wages in manufacturing and agriculture rose in real terms in the 1990's while the minimum wage fell by around 10% (Figure 3).

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[2] According to a recent CEPAL study, Paraguay in 1990 was spending only $26 per year per capita, or 2.6% of GDP the lowest of any country in their survey except Peru. By 1995, social spending had jumped to 6.6% of GDP or $66 per year per capita. ECLAC, *The Equity Gap*. (Santiago, 1997), table V.1.

[3] The agriculture wage comes from the urban surveys (and more in particular those covering the metropolitan area of Asuncion only), and therefore only reflects the wage of those who live in the urban centers and work in agriculture. This may or may not be representative of wages in the rural sector itself.

Table 2 Macro Data for Paraguay, 1970-96

	1970	1980	1985	1990	1992	1994	1995
Investment rate (%GDP)	14.6%	27.2%	22.0%	22.8%	22.9%	23.4%	24.0%
- public	*4.0%*	*4.6%*	*6.2%*	*3.6%*	*4.8%*	*6.6%*	*4.7%*
- private	*10.5%*	*22.6%*	*15.8%*	*19.2%*	*18.1%*	*16.8%*	*19.3%*
GDP per capita (index, 1980=100)	56	100	95	100	98	99	101
Period Averages	**1970-80**	**1980-84**	**1985-89**	**1990-95**	**1996**		
Govt Revenue/GDP		8.6%	10.1%	13.3%	14.9%		
Govt Deficit/GDP		- 2.0%	0.4%	0.4%	-0.8%		
Inflation rate	13%	16%	28%	18%	10%		
Interest paym. on external debt (% of exports)		13.2%	14.1%	4.5%	4.4%		

Source: IDB, *Economic and Social Data Base*

Table 3 Paraguay: Employment by main activities, 1972-95

Sector	1972	1982	1995
Total	***100.0***	***100.0***	***100.0***
Agriculture	51.0	43.2	38.9
Industry	14.1	12.2	11.3
Mining	*0.1*	*0.1*	*0.1*
Manufacturing	*14.0*	*12.1*	*11.2*
Non-traded goods sectors	32.9	37.0	43.7
Electricity, gas, water	*0.3*	*0.3*	*0.4*
Construction	*3.9*	*6.8*	*5.3*
Commerce	*8.2*	*8.3*	*20.5*
Transportation	*2.8*	*3.0*	*2.9*
Financial services	*0.8*	*1.7*	*2.6*
Other services	*16.9*	*16.9*	*17.3*
Unspecified	2.1	7.7	0.8

Sources: DGEC, *Censos de Población*, 1972 and 1982; DGEEC, *Encuesta de Hogares* 1995

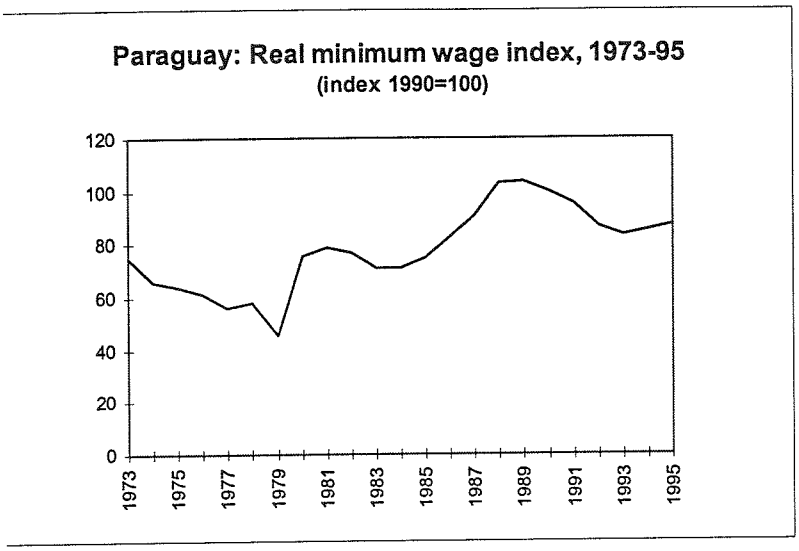


Figure 2

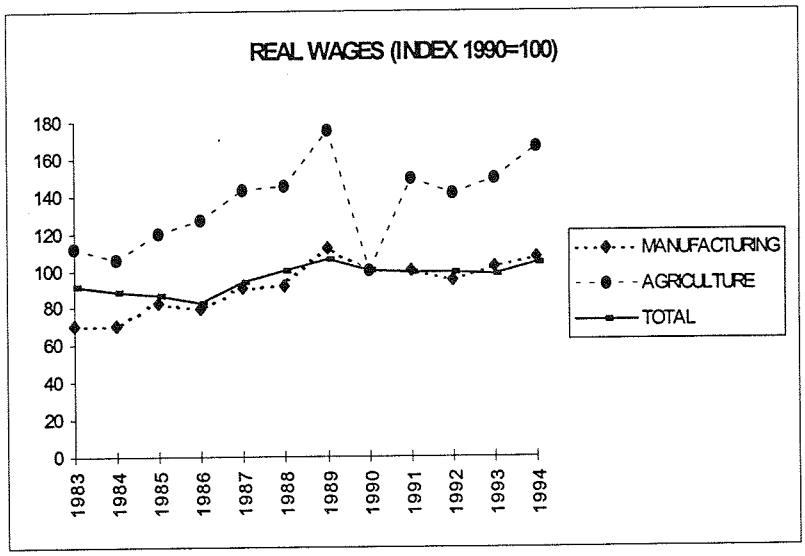
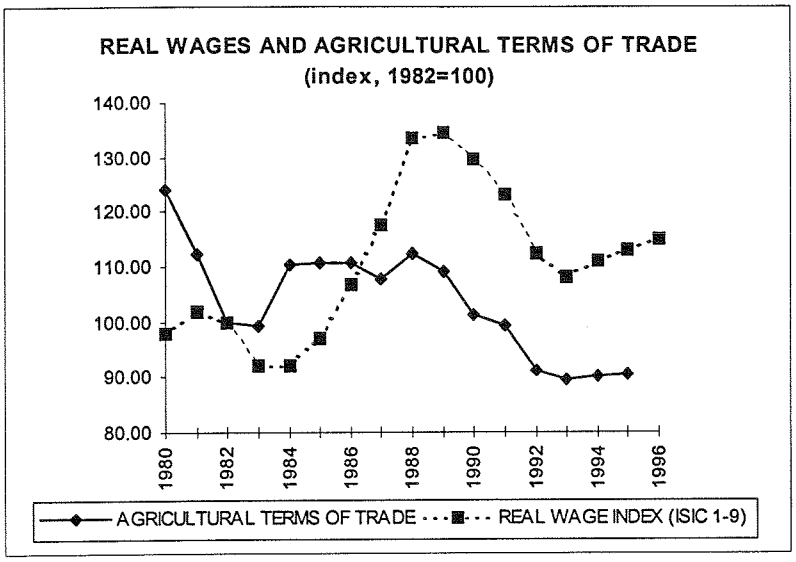


Figure 3

Most wage earners are found in urban areas, however, while self-employment predominates in rural areas. Hence a comparison of the agricultural terms of trade and real wages may be more indicative of trends in the sectoral distribution of primary incomes. As Figure 4 shows, the long-term trend since the 1980s has been clearly against agriculture, with deep slide since the late 1980's. Urban wages showed major gains between 1983 and 1989, but stagnation in parts of the non-agricultural sector provoked a downfall in wages in the early 1990's.



Poverty and income distribution: concepts and measurements

Paraguay counts with only few poverty studies. Available estimates show a wide range of estimates of the magnitude of poverty, yet only few provide comparable estimates over time. Table 4 gives a summary of available estimates. The estimates seem to coincide in showing declining urban poverty incidence (Asunción). Only three sources provide data for the rural population (Miranda, 1982; Sauma 1993; and DGEEC EH 1995) and suggest widespread and increasing rural poverty. Unfortunately, these estimates are based on different types of surveys and poverty line definitions which make these estimates difficult to compare (see Sauma 1993 for a comparison of surveys).

Table 5 in turn provides an attempt at obtaining more comparable poverty estimates. From the available surveys, poverty was estimated using uniform poverty lines. It shows results for two poverty lines: the 'low' poverty line which is the international 'standard' of US$ 60 per person per month in PPP's of 1985 (see Mejía & Vos 1997 for a discussion of this poverty line) and the 'high' poverty line which could be considered the most up-to-date 'national' poverty line. The latter poverty line is also used in recent official publications of the statistical office (DGEEC) and is based on a basic food basket analyzed by a study of the

Centro de Documentación y Estudios (CDE, 1989) and updated with an analysis of the 1990/1 Family Budget Survey (see DGEEC 1997 and Lee, Mejía & Vos 1997). On the basis of the same nutritional value (2195 Kcal per person per day), but different consumption habits, poverty lines were established for Asunción (Metropolitan Area, AMA), other cities and rural areas. As it turns out, the 'high' poverty line for AMA is about double the international or 'low' poverty line, while those for other cities and the rural area are respectively 80% and 67% of the high poverty line for Asunción.

The empirical basis for the estimation of the basic food basket is admittedly weak, because of biases in the basic survey (CDE 1989) and the lack of rural consumption data (see Lee, Mejía & Vos 1997 for details). Yet we will work with these poverty lines, as - more than quantifying the magnitude of poverty as such - our interest here is to study trends in poverty over time and the identification of poverty groups and link the results to the observed growth pattern of the economy. Working with two poverty lines helps to establish whether trends and poverty profiles appear to be 'robust' or not.

A more important limitation for our analysis is the lack of consistent household surveys covering rural areas. Table 5 shows rural poverty poverty estimates for two points in time, related to the usable surveys for that purpose:[4] an IDB funded socio-economic survey of 1992 (Sauma 1993) and the regular household survey of the DGEEC which covered rural areas for the first time in 1995. Both surveys have serious drawbacks to measure poverty in rural areas. They do not provide consumption estimates (DGEEC has only started measuring consumption from from 1996 onwards), while income measurement suffers from serious limitations. For instance, analysis of the 1995 EH of DGEEC showed about a third of occupied rural workers not reporting income, while also the survey did not consider self consumption (see Lee, Mejía & Vos 1997 for details). Due to such limitations the rural poverty estimates in Table 5 are still not strictly comparable despite using the same poverty line and therefore our conclusions about the trends in rural poverty are less secure than those

[4] An earlier rural survey funded by US-AID and conducted in 1977 (Laird 1977) is not included here because of too large methodological differences with the ones reported here. In the section on rural poverty trends we do show some comparison with another survey conducted in 1980 (Miranda 1982).

for urban poverty. We turn to this in more detail further below, but the short story is that our interpretation of the available evidence is that there has been a rise in rural poverty since 1980, which is in sharp contrast to the reduction in urban poverty and as a consequence, poverty is a predominantly rural problem in Paraguay.

The urban poverty estimates confirm the declining trend indicated by other studies and is much more pronounced than what the scarce data sources indicate about rural poverty. The regular household survey (a fairly standard labor force survey until 1994) provides comparable estimates for the Metropolitan Area of Asunción (AMA) from 1983 onwards, but the rest of the urban areas has been covered from 1994 onwards only. Hence the key trends can only be analyzed for the capital region. The data in Table 5 indicate the steep decline in urban poverty since 1983 and this trend is consistent whether using the 'high' or 'low' poverty line. According to the 'low' poverty line the poverty incidence in Asunción had fallen in 1996 to one sixth of its 1983-level: from 14.0 to 2.4%. The share of the population that lived below the 'high' poverty line had dropped by more than half in the same period. It should be noted, however, that the pace of urban poverty reduction has slowed down in recent years. We turn to this further below.

It is important to emphasize that the estimates refer to 'unadjusted' survey data for incomes, that is without adjustment for alleged underreporting. A crude method for such adjustment would be to compare per capita income estimates of the survey with that of the national accounts. This can make sense for certain purposes, but also has important drawbacks in terms of introducing additional assumptions into the analysis (see Mejía & Vos 1997 for a discussion). Comparison of the average income as estimated by the surveys and average income of urban (non-agricultural) sectors show a declining pattern of alleged underreporting of incomes: from around 100% in the mid-1980s to around 10% in recent years. Consequently, the poverty estimates after adjustment for national income accounts would suggest a much less pronounced decline in urban poverty (see Appendix 1). Yet, we stick here to the unadjusted survey data, as in the first place the DGEEC surveys applied the same methodology and questions to capture income data between 1983 and 1995, so that trends may be assumed to be adequately picked up from this source. In the second place,

some doubts exist regarding the quality of Paraguay's national income accounts which may bias the adjustment factor (see Monges, et al. 1993 for a critique of the national accounts). The IDB estimates reported in Table 4 include figures using the same poverty line ('low') as in Table 5, but also show results after adjusting incomes for underreporting. The magnitude of urban poverty drops further, but the overall trend in poverty remains a steady decline though less pronounced.

Poverty in the Metropolitan Area of Asunción is substantially lower than in other urban areas as clearly indicated by Table 5. In 1995 the poverty incidence ('low' estimate) in cities outside the metropolitan area was 13.9%, that is more than four times the rate in the capital region. This is in part explained by the greater dependence on agricultural activity of the population in secondary cities. Little can be said about the trend in poverty for this part of the population due to a lack of survey data. Most recently, between 1994 and 1995, the household survey data suggest a slight increase in urban poverty outside the capital region (from 11.9 to 13.9%), while poverty dropped in Asunción. This may be associated both with the poor performance of the traditional agricultural sector in which also many poor in secondary cities find employment and with the slowdown of the smuggling business.

High Gini coefficients confirm the perception of great inequalities in income distribution in Paraguay. In 1995, the overall Gini was 0.588 and that for urban areas about 0.505 and that for rural areas 0.566 (see Table 5). There are no indications that, like poverty, there is a declining trend in inequality. Rather, inequality seems to have risen during the first half of the 1990s. The Gini coefficients shown here are substantially higher than those reported in several earlier studies. Many of those studies (cf. Sauma 1993) estimated inequality based on household incomes rather than on per capita incomes, which is the basis for the calculations reported here. The overall Gini of 0.588 for 1995 reflects in part the wide urban-rural income gap. However, due to the likely underestimation of rural incomes in the 1995 survey, as explained above, this Gini may overstate inequality by some degree, but undoubtedly Paraguay's income inequality is among the highest in the region, which amounts to saying a lot.

Table 4 Available poverty estimates for Paraguay, 1980-95: various studies

Source	Region	Unit of analysis	1980	1983	1986	1990	1992	1994	1995
1. DGEEC and Lee, Mejía & Vos	AMA Other Urb	indiv. hhlds indiv. Hhlds							15.7 12.2 24.1 20.0
2. World Bank	AMA	indiv.				20.5			
3. IDB (adjusted income data)	AMA All Urban	indiv. Indiv.		4.3	3.8	1.8	2.4	3.0 8.0	1.9 6.0
4. IDB (non-adj. income data)	AMA All Urban	indiv. Indiv.		14.0	12.8	5.8	4.6	4.7 8.0	2.2 8.0
5. CEPAL	AMA	hhlds			46.0	37.0	36.0		
6 Psacharopoulos, et. al.	AMA	indiv.		34.9		20.5			
7. CDE/Sauma	AMA Other Urb Rural	hhlds hhlds hhlds					11.7 26.0 45.1		
8 Miranda/Sauma	AMA Other Urb Rural	hhlds hhlds hhlds	44.0 55.4 78.7				43.9 60.4 84.7		

Sources and notes: AMA = Area Metropolitana de Asunción.

1. DGEEC (1997) and Lee, Mejía & Vos (1997), using the same 'high' poverty line as defined in this paper; 2. World Bank poverty report (World Bank 1994); 3. IDB Basic Socio-Economic data (ESDB) using adjusted income estimates (to national accounts) with US$ 60 PPP poverty line and updated PPP's (from Penn World Tables Mark 5.6). Also reported in Mejía & Vos (1997); 4. Same as 3, but using non-adjusted survey data; 5. CEPAL, Panorama Social 1996 (CEPAL 1997); 6. Psacharopoulos et al. (1993), using adjusted incomes and the same poverty line as IDB, but with older set of PPP conversion factors; 7. Sauma (1993), using CDE (1989) poverty line; 8. Miranda (1982) and Sauma (1993), using Miranda's poverty line.

TABLE 5
PARAGUAY: COMPARATIVE POVERTY ESTIMATES (USING UNADJUSTED INCOME ESTIMATES FROM SURVEY DATA)

	source	year	LOW POVERTY LINE P0	P1	P2	HIGH POVERTY LINE P0	P1	P2	GINI Yp.c.	POVERTY LINES low	high
										(Guaranies per capita per month, curr.prices)	
AREA METROPOLITANA DE ASUNCION (AMA)											
Encuesta de Hogares	DGEC	1983	14.0	4.6	2.3	50.8	20.1	10.8	0.473	5,156	12,208
Encuesta de Hogares	DGEC	1984	14.9	5.1	2.4	54.5	22.4	12.2	0.463	6,204	14,734
Encuesta de Hogares	DGEC	1985	13.6	4.0	1.8	46.5	19.2	10.2	0.479	7,767	19,449
Encuesta de Hogares	DGEC	1986	12.8	3.7	1.6	47.4	18.6	9.6	0.489	10,233	22,817
Encuesta de Hogares	DGEC	1987	10.9	3.6	1.7	42.1	16.8	8.9	0.449	12,465	27,784
Encuesta de Hogares	DGEC	1988	8.7	1.9	0.8	38.6	13.7	6.8	0.463	15,280	34,604
Encuesta de Hogares	DGEC	1989	5.5	1.4	0.6	32.7	10.8	5.1	0.483	19,318	47,906
Encuesta de Hogares	DGEC	1990	5.8	1.3	0.5	31.5	10.3	4.8	0.412	26,693	60,199
Encuesta de Hogares	DGEC	1991	6.0	2.1	1.0	31.3	11.2	5.6	0.445	33,179	76,785
Encuesta de Hogares	DGEC	1992	4.6	1.5	0.7	29.2	10.0	4.8	0.454	38,198	90,508
Encuesta Socio-Economica	*Sauma*	*1992*	*6.7*	*2.2*	*1.2*	*27.7*	*10.0*	*5.2*	*0.507*	*38,198*	*90,508*
Encuesta de Hogares	DGEEC	1993	4.6	1.3	0.6	27.6	9.3	4.4	0.472	45,165	103,306
Encuesta de Hogares	DGEEC	1994	4.7	1.3	0.5	22.3	3.3	3.8	0.482	54,648	124,438
Encuesta de Hogares	DGEEC	1995	2.2	0.6	0.3	21.8	6.1	2.5	0.503	61,767	140,183
Encuesta de Hogares	DGEEC	1996	2.4	0.7	0.4	20.8	5.6	2.4	0.483	67,814	153,906
OTHER URBAN											
Encuesta Socio-Economica	*Sauma*	*1992*	*19.5*	*7.3*	*3.7*	*36.6*	*15.6*	*8.8*	*0.485*	*38,198*	*66,113*
Encuesta de Hogares	DGEEC	1994	11.9	3.7	1.7	30.4	11.3	5.7	0.489	54,648	94,586
Encuesta de Hogares	DGEEC	1995	13.9	5.1	2.7	31.0	12.2	6.7	0.509	61,767	106,907
Encuesta de Hogares	DGEEC	1996	12.8	3.8	1.7	28.0	10.4	5.3	0.479	67,814	122,692
RURAL											
Encuesta Socio-Economica	*Sauma*	*1992*	*44.0*	*18.3*	*10.3*	*53.0*	*23.3*	*13.5*	*0.491*	*38,198*	*45,782*
Encuesta de Hogares	DGEEC	1995	47.5	21.9	13.3	59.5	31.4	20.2	0.566	61,767	89,873

Source and notes:
Estimations by the authors based on the primary survey data, except for the 1992 Encuesta Socio-economica for which case poverty rates were estimated using the POVCAL program and a decile income distribution reported in Sauma (1993).
See text for discussion of data sources and poverty line definition. 'Low' poverty line refers to US$ 60 per month per capita at 1985 PPP. High' poverty line refers to poverty line established by DGEEC (see DGEEC 1996 and Lee, Mejia and Vos 1997).

Urban poverty and inequality

The Income Elasticity of Poverty

The declining trend in urban poverty is strongly associated with growth in average per capita incomes. Figure 5 shows the declining trend in poverty in Asunción for the high and low poverty lines, while Figure 6 shows the close link between the poverty incidence ('high' poverty line) and average incomes. The precise elasticity between poverty reduction and average income growth appears to be somewhat sensitive to the choice of the poverty line, but is high nevertheless: between 2.6 and 1.4, depending on whether one uses the 'low' or the 'high' poverty line, respectively.[5] This range for the income elasticity applies also for the poverty gap (P_1) and the FGT (P_2) poverty index.

Measures stimulating growth of urban economic sectors thus likely have a large impact on further reducing the urban poverty rate. Remarkably, given that the elasticity is higher when using the 'low' poverty line, the average income growth benefits those at the lower end of the income scale the most. However, this 'trickling down optimism' has its caveats: the same regression analysis shows that each percentage increase in income inequality (as measured by the Gini coefficient) will more than offset the impact a 1 percent increase in average per capita income (see footnote 5).

---

[5] This elasticity was estimated through a log-linear regression function with the (log of the) poverty incidence (P_0) as dependent and (log) income per capita (YPC) and (log) Gini as independent variables. The regression results for the period 1983-96 are the following:

'Low' poverty line:

$\ln P_0 =$ 35.1 - 2.6 lnYPC + 3.1 lnGINI $R^2 = 0.90$ D.W.= 1.64 F=58.8
(11.8) (-11.1) (2.6)

'High' poverty line:

$\ln P_0 =$ 21.2 - 1.4 lnYPC + 1.9 lnGINI $R^2 = 0.96$ D.W.= 1.65 F=144.6
(18.6) (-18.8) (3.7)

t-statistics are in parentheses; all coefficients significant at 1% level.

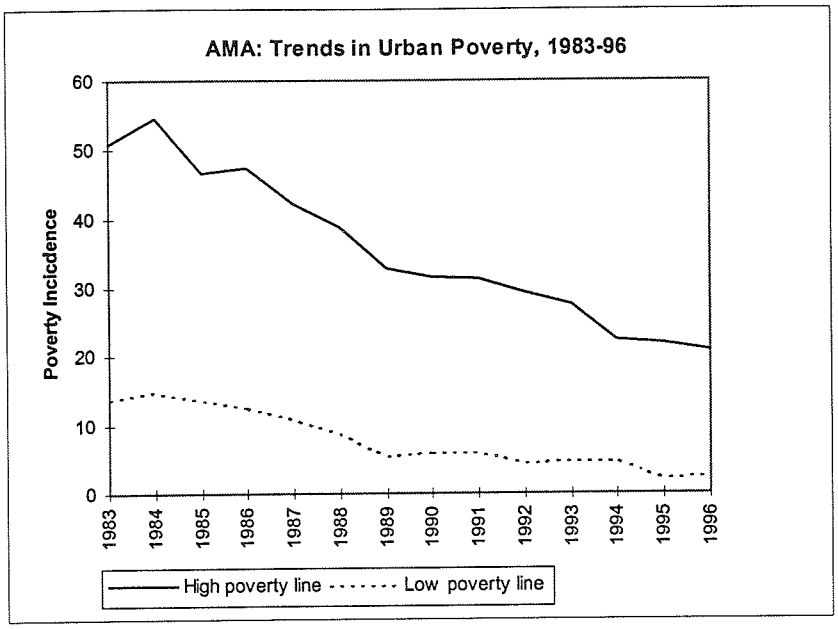
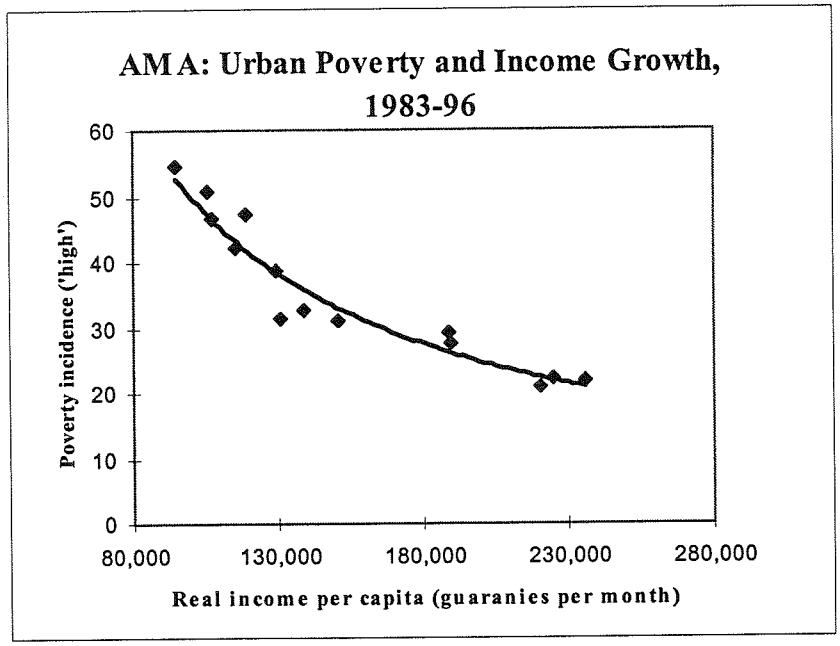


Figure 5



Growth and redistribution both contributed to the decline in poverty in the 1980s, while in the first half of the 1990s rising inequality would have contributed to an increase in poverty in Asunción were it not that this was more than offset by overall income growth. Table 6 shows the decomposition of the change in poverty by growth and distribution effects.

Table 6 Decomposition of the change in poverty in Asunción (AMA), 1983-96

	Change in poverty	=	Distribution effect	+	Growth effect	+	Interaction effects
1983-89	-18.1		-2.4		-15.0		-0.7
1989-92	-3.5		3.2		-5.2		-1.5
1992-95	-7.4		3.4		-9.6		-1.2
1995-96	-1.0		-1.6		2.2		-1.5

Source: Authors' estimations based on DGEEC *Encuestas de Hogares*, 1983 to 1996.

Note: Estimates refer to changes in poverty for 'high' poverty line. Signs are the same for each period when using the 'low' poverty line. Methodology based on Datt and Ravallion (1992) who define the change in poverty as:

$$P_t - P_{t-1} = D + G + R$$

where:
D = distribution effect = $P(z/y_t, L_t) - P(z/y_t, L_{t-1})$
G = growth effect = $P(z/y_t, L_t) - P(z/y_{t-1}, L_t)$
R = interaction effects (residual)
P_t = poverty index for period *t*
z = poverty line
y_t = average income of total population for period *t*
L_t = Lorenz curve of income distribution for period *t*

This 'aggregate' result suggests that the pattern of growth matters, also in the case of urban Paraguay. Hence the need to identify poverty groups by their socio-economic characteristics in order to establish the required link to the dynamics of the economy and labour markets.

Employment and the urban poverty profile

The dual character of the Paraguayan economy also has its bearings on urban poverty. A major share of the urban poor find employment in the traditional agricultural sector and this holds in particular for the smaller cities. About 8 percent of the urban labour force finds its primary employment in the agricultural sector, but this share is only 3 percent in the Metropolitan Area of Asuncion while over 14 percent in other cities (see Table 7). The poverty incidence for urban households headed by agricultural workers was 46 percent in 1995, more than double that for the urban average (using the 'high' poverty line). This is where extreme urban poverty is located. While poverty among individuals living in

Table 7 Employment by sectors and regions, 1995 (Percentage shares)

	NATIONAL			ASUNCION[1]	CENTRAL DEPARTMENT			REST OF COUNTRY		
	TOTAL	URBAN	RURAL		TOTAL	URBAN	RURAL	TOTAL	URBAN	RURAL
Total (thousands)	***2,448***	***1,225***	***1,224***	***297***	***508***	***397***	***111***	***1,643***	***530***	***1,113***
Agriculture, livestock, fishing	38.9	8.1	69.7	1.9	7.7	4.1	20.3	55.2	14.5	74.6
Mining	0.2	0.0	0.3	-	0.2	-	0.9	0.2	0.1	0.2
Manufacturing industry	11.2	14.5	7.8	12.0	20.4	19.3	24.1	8.2	12.4	6.2
Electricity, gas and water	0.4	0.7	0.1	0.8	0.5	0.6	0.1	0.3	0.8	0.1
Construction	5.3	7.8	2.8	5.3	10.2	9.9	11.3	3.8	7.6	2.0
Commerce	20.5	30.8	10.2	25.5	28.3	29.9	22.8	17.2	34.6	9.0
Transport and communications	2.9	4.8	1.0	5.9	4.3	4.7	3.1	1.9	4.2	0.7
Financial services, real estate	2.6	4.8	0.3	9.8	2.9	3.2	1.8	1.2	3.2	0.2
Other services	17.3	27.2	7.5	37.5	24.2	26.8	15.1	11.6	21.8	6.7
Unemployed first-time labor market entrants	0.8	1.2	0.4	1.2	1.4	1.6	0.7	0.6	1.0	0.3

Source: DGEEC, *Encuesta de Hogares*, 1995.

Note: 1. Asunción refers to main city only, does not include peripheral areas of (urban) Central Department which are part of the metropolitan area.

households headed by agricultural workers contributes only 13 percent to the overall urban poverty incidence, it contributes to nearly half of the poverty intensity (P_2). [6]

Next to the 'spill-over' of rural poverty to the cities, urban poverty is further associated with the highly segmented nature of urban labour markets. There is a clear division in economic welfare between what one might label as the modern and traditional urban sectors. In 1995, most of the urban poor lived in households headed by self-employed (contributing over 60 percent of the urban poverty rate) and/or worked in small firms with less than five workers (see Table 8). Typically such employment is concentrated in commerce and services. Blue collar workers in manufacturing and construction are next in line, though their chances to be among the poor are substantially smaller than the self-employed.

These groups of urban workers did not fare equally well during the 1980s and 1990s, as we indicated in the section on macroeconomic trends. While income growth was across the board, welfare increased at a much faster pace in the urban non-traded goods sectors than in the traded goods sectors, as Figure 7 clearly indicates. Non-traded goods sectors are defined here as to include construction, commerce, domestic transportation, public administration and other services. Economic growth has been particularly strong in the construction sector (see Table 1). Its contribution to poverty reduction may have been less pronounced though as the greater wealth in this sector had to be shared by a disproportionally larger work force (see Table 3). Commerce and services showed a steady growth until the early 1990's, but in more recent years these sectors start to show some stagnation with a consequent slowing

[6] This would be over 70 percent of the poverty intensity in urban areas if we use the 'low' poverty line.

Table 8

Paraguay: Poverty Profile for 1995, Urban Areas

(Poverty estimates refer to individuals and are based on the 'high' poverty line and non-adjusted survey income estimates)

Socio-demographic characteristics of the household head		Poverty Incidence P0	% contr.	Poverty Gap P1	% contr.	Severity of Poverty P2	% contr.
Language/ethnicity	Guaraní	35.6%	44.1%	15.3%	74.9%	9.2%	77.3%
	Guaraní and spanish	16.9%	43.0%	5.4%	24.5%	2.7%	20.8%
	Spanish	7.7%	10.4%	2.2%	2.5%	1.3%	2.4%
	Other	15.7%	2.5%	9.8%	2.5%	7.6%	3.4%
Gender	Males	17.7%	72.5%	6.8%	69.5%	4.0%	72.4%
	Females	22.7%	27.5%	7.9%	30.5%	4.0%	27.6%
Economic activity	Agriculture	45.8%	13.4%	26.5%	40.5%	18.6%	46.0%
	Mining	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Manufacturing	16.1%	18.4%	5.6%	11.7%	3.3%	11.3%
	Electricity	8.4%	1.4%	4.1%	0.7%	2.8%	0.7%
	Construction	23.1%	15.5%	9.5%	16.8%	6.0%	17.1%
	Commerce	15.7%	17.6%	6.2%	12.4%	3.3%	10.7%
	Transport	8.4%	4.1%	2.2%	1.0%	0.8%	0.6%
	Financial services	7.8%	2.3%	3.2%	0.8%	2.0%	0.8%
	Other services	15.0%	27.3%	5.2%	16.1%	2.5%	12.7%
Occupational category	Blue collar	17.6%	28.2%	5.1%	21.5%	2.1%	17.8%
	White Collar	4.1%	5.0%	1.6%	1.2%	0.9%	1.4%
	Employer	16.6%	0.5%	4.7%	0.4%	2.1%	0.3%
	Self-employed	20.8%	60.7%	7.3%	66.2%	3.9%	70.3%
	Other	32.1%	5.5%	13.1%	10.7%	6.3%	10.2%
Household size	1 to 3	11.1%	21.8%	4.7%	12.8%	3.1%	15.5%
	4 to 5	19.2%	36.8%	7.0%	32.4%	3.7%	31.4%
	6 to 9	28.2%	36.1%	10.2%	46.4%	5.5%	45.8%
	more than 10	38.1%	5.3%	12.5%	8.4%	6.0%	7.3%
Sector	Public	5.2%	9.4%	1.4%	2.5%	0.5%	2.0%
	Private	13.9%	76.3%	4.3%	62.1%	2.0%	61.4%
	Domestic servants	32.1%	14.2%	13.1%	35.4%	6.3%	36.6%
Educational level	No education	35.5%	7.6%	15.9%	12.9%	10.0%	14.4%
	Primary incomplete	30.6%	44.9%	12.4%	59.2%	7.0%	59.6%
	Primary complete	22.1%	27.3%	7.0%	20.4%	3.5%	18.2%
	Secondary incomplete	13.2%	12.9%	4.3%	5.9%	2.5%	6.0%
	Secondary complete	6.5%	4.9%	2.3%	1.2%	1.4%	1.3%
	More than secondary	3.7%	2.5%	1.7%	0.4%	1.3%	0.6%
Age of head of household	15 to 19	12.8%	0.7%	6.2%	0.6%	4.5%	0.8%
	20 to 29	15.2%	11.9%	5.3%	8.8%	2.9%	8.7%
	30 to 39	21.0%	28.5%	7.9%	31.4%	4.3%	30.4%
	40 to 49	19.0%	23.6%	6.7%	22.2%	3.4%	19.9%
	50 to 59	18.0%	15.2%	7.4%	15.8%	4.8%	18.1%
	60 to 64	15.2%	4.9%	5.5%	3.7%	3.2%	3.9%
	65+	21.8%	15.2%	8.2%	17.5%	4.8%	18.2%
Firm size	One employee	30.3%	7.2%	15.0%	19.8%	8.3%	24.4%
	2 a 5	22.2%	47.3%	6.5%	56.5%	2.7%	51.3%
	6 a 10	16.2%	15.5%	4.6%	13.2%	1.9%	11.8%
	11 a 20	7.0%	8.2%	2.5%	3.7%	1.4%	4.5%
	21 a 50	5.8%	5.9%	1.8%	2.0%	1.1%	2.7%
	50 +	5.1%	15.9%	1.7%	4.8%	0.8%	5.3%

Source: DGEEC, Encuesta de Hogares, 1995

Note: P_0 = poverty incidence (i.e. share of poor in total population); P_1 = poverty gap (i.e. shortfall of actual income vis-á-vis poverty line times poverty incidence); P_2 = FGT or severity of poverty index (as P_1, bur gives double weight to income shortfall). "Contribution" refers to contribution of each sub-group to poverty index for total population.

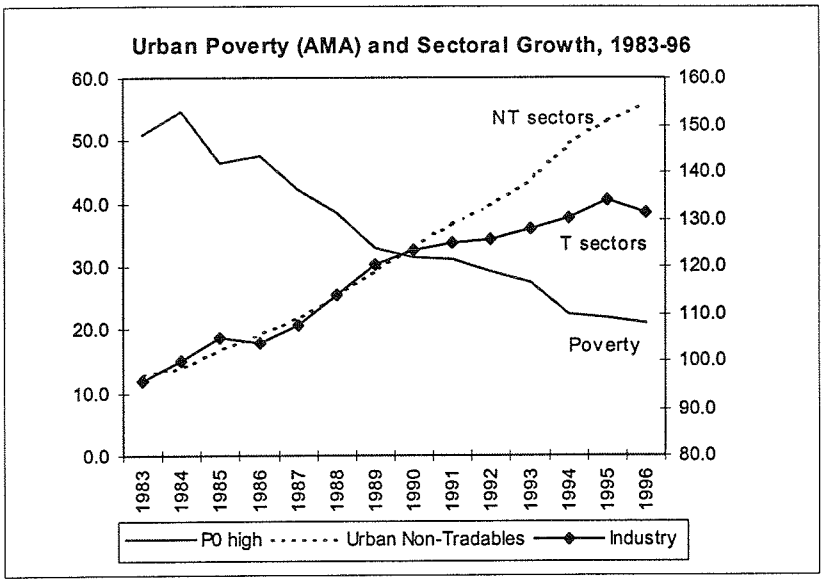


Figure 7

down in urban poverty reduction. Expansion of urban-based traded goods production (manufacturing) has been rather anemic over the past decade, showing an average growth rate below that of the population.

Income differentials and poverty cannot be merely explained by sectoral growth patterns, however. Education, gender and etnicity are key factors that determine wide income differentials in urban labour markets and the likelihood of being poor or not. As the poverty profile in Table 8 clearly indicates, the probability of being poor increases if the household head has primary education or less, if guaraní is the main language spoken in the household or (to some extent) if the household is headed by a female.

A detailed analysis of the structure of the labour market in 1995 (Lee, Mejía & Vos 1997) showed that the returns to education are somewhat higher for male workers than for female workers and that the average pay for men is about 50% higher than that for women. Key determinants of the income gap by gender are education and occupation. In Asuncion about half of the wage differential can be explained by the fact that a substantial proportion of women are employed as domestic servants at very low pay. This employment structure is partly associated with educational levels which show that women in working age had on average one year less of education than men in the mid-1980s. This educational gap is on the decline (Figure 8) and the differential has dropped to less than half a year on average. If we

look at the age profile of educational achievement in urban areas, we find that women under 35 years now systematically outperform men. The closing wage gap (Figure 9) is largely due to this educational improvement of female workers.

A final point regarding urban poverty has to do with an apparent vicious circle between household size, low education and poverty. Table 8 shows that poverty increases with household size. However, as analyzed in greater detail in Lee, Mejía and Vos (1997), this relation is particularly strong for urban households with a relatively large share of young children (under ten years). The relevant detail here is that poverty in urban Paraguay tends to decline with the number of income earners per family. There are about 3 income earners in non-poor families, while poor households on average have only two income earners. Hence a larger household with more children in working age gives an extra degree of freedom to escape poverty conditions. However, as pointed out by Lee, Mejía and Vos (1997), the cost maybe high for those living near the poverty line. These groups tend to show by low rates of school assistance and high desertion rates among young working members of the household.

In sum, urban economic development has brought greater prosperity and clearly has helped to reduce poverty. Educational development has helped to reduce wage differentials between males and females and in general has raised income earning opportunities. Yet, it is hard to be overly optimistic about Paraguay's prospects. Growth in the traded goods sector (manufacturing) has been rather dismal, while also the further expansion of the large informal and illegal commerce and services sectors seems to have come to an end with the trade liberalization of Mercosur. Further, the liberalization of the financial sector has come with greatly improved banking supervision which has led to several collapses of major banks in 1996 and 1997. While improving, the average educational level of the Paraguayan labor force is still considered too low compared to industrial zones in Brazil or Argentina to provide a competitive edge for the further development of manufacturing and to attract foreign investors. Finally, urban growth has become less equitable in the 1990s in a situation where wealth distribution is already characterized by great disparities. In consequence, poverty reduction has slowed down.

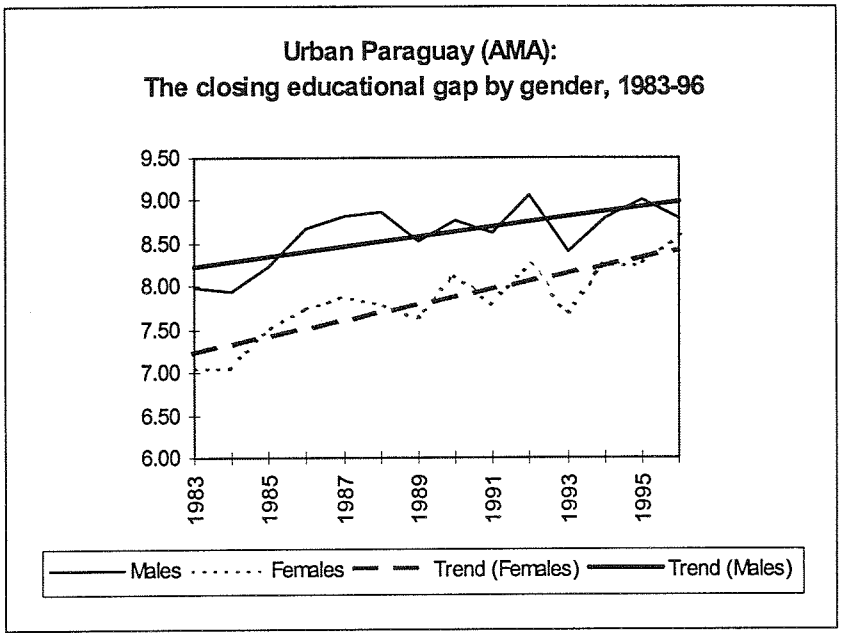


Figure 8

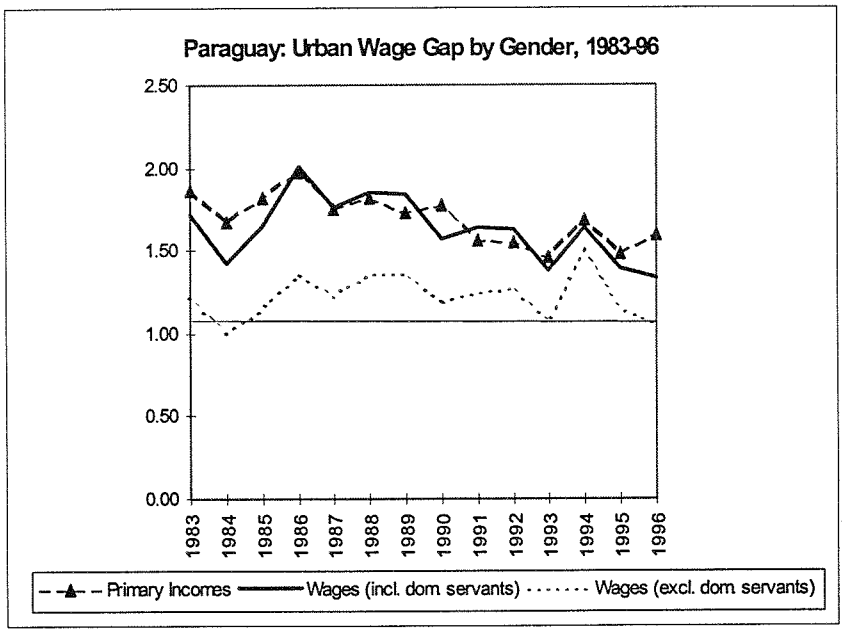


Figure 9

The Rural Sector and Rural Poverty

Agriculture is a central component of the Paraguayan economy. It generates about one-fourth of GDP, employs almost one-half of the labor force and supplies 90% of registered

exports. Since 1980 agriculture was a leading sector with a growth rate in excess of GDP as a whole, showing a steady growth of between 3 and 4 percent per annum (see Table 1). Agriculture's strong response to real devaluation and its ability to replace the stimulus of the Itaipu dam construction project is one of the main reasons why Paraguay avoided the deep recessions that afflicted many of its neighbors during the 1980's.

Agricultural exports more than tripled over the decade, giving Paraguay the fastest growth rate of registered exports in all Latin America. This boom in exports was led by two exportable crops, soybeans and cotton. The area devoted to these two crops more than doubled over the decade so that by 1990 the two comprised almost 80% of total registered exports. (World Bank 1994a, p.1).

Soybeans and cotton have entirely different production characteristics and relevance to our discussion of rural poverty. Soybeans are a crop grown on relatively large farms. Like wheat and other cereals soybeans are easy to harvest and cultivate mechanically. As a consequence they do not require large inputs of labor per hectare planted or per ton harvested. Also as a consequence, poverty is not a major problem in the soybean part of agriculture, except possible among landless part-time workers.

Cotton, in contrast is the main cash crop of the so called campesino economy.[7] It is produced mainly on small plots of land by owner-operators who farm in a very traditional, labor intensive way.[8] They use few modern inputs such as improved seed, fertilizer or machinery and they rely on their families for most of the labor of cultivation and harvest. They get little help from the government either in the form of subsidized credit, help with land titling, or agricultural research.

As we will see in the next section, rural poverty is highly correlated to the size of the farm

[7] In a special survey of the sources of income of campesino farms, Paolino reports that in the areas where cotton is grown, it comprises anywhere from one-third to almost one-half of total farm income, including the value of home consumption. (Paolino, Annex 2).

[8] In 1981 average crop size in cotton was 1.76 hectares, sugar cane averaged 1.2 hectares while soybeans and wheat averaged 13.39 and 16 hectares respectively. (Weisskoff, p. 1534.)

owned or operated by the rural family. Because that is the case, rural poverty is closely related to what happens to cotton. When one thinks about the problem of rural poverty in Paraguay, one must look first at cotton (and sugar cane), second at non-exportable food crops such as corn and manioc and third at the availability of land for small farmers.

Since 1990 the entire agricultural sector suffered through a sharp contraction in output during 1991-92 due to drought. Subsequently the sector as a whole has recovered, but the recent evidence suggests that the differences between the modern soy- wheat-cattle component and the traditional, campesino component have widened.

Table 9 shows the available data for the sector. While it is too early to draw firm conclusions, what appears clear from the table is the declining role of agriculture in Paraguayan exports, and the increasing difficulties of the cotton component. Cotton production has fallen by almost 50%, due partly to a reduction in the area planted and partly by a steep decline in yields. Since cotton is such an important crop for the rural poor, this sharp change in production and apparent profitability since 1990 obviously has significant implications for poverty trends. Note that yields for soybeans show no such downtrend after 1990. Neither does the production of cattle, another output of the large unit component of the agriculture sector.

Rural Poverty

In all countries there are groups that are left behind by growth, and for whom there is no 'trickle-down'. But in most cases those groups are small. Unfortunately that is not the case in Paraguay. Half of the population is rural, and half of them are poor. More them half of these poor or between 600,000 and 700,000 people are living in extreme poverty. What is more serious is that despite generally good conditions in both the overall economy and in agriculture, anecdotal accounts and what evidence there is suggests that this situation is getting worse.

Table 9: Agricultural Production and Exports, 1982-95

	1982	1988	1989	1990	1991	1992	1993	1994	1995
agri/GDP (%) (const.prices)	26.7	28.0	28.5	28.3	27.4	27.0	27.4	27.3	28.1
quantum index of Ag Crops 1979-81= 100	113	179	189	187	163	139	148		
Agric Exports in $millions	$222	$387	$751	$653	$494	$353	$400		
Cotton exports, in $millions			$304	$333	$314	$209	$165		
Cotton production in 000 tons	317	630	642	631	391	420	379	461	330
cotton yield t/h	1.31	1.43	1.21	1.52	.90	1.79	1.00	1.39	1.07
cotton, cultivated area in 000 hec.	243	441	533	415	437	235	381	332	307
soybeans,production in 000 tons	769	1615	1795	1033	1192	1793	1796	2212	2395
soybeans yield t/h	1.94	1.88	1.98	1.87	2.00	2.82	2.59	3.01	2.87
soybeans, cultivated area in 000 tons	397	860	907	552	595	635	694	735	833

Source: ECLAC, *Statistical Yearbook for Latin America and the Caribbean*, various years. Figures on cotton exports are from ECLAC, *Estudio Económico de América Latina y el Caribe*, various years. Production figures for 1988-92 from Banco Central del Paraguay, *Estimación de la Producción Agropecuaria* (various years), for 1993-95, Banco Central del Paraguay, *Producción Agropecuaria: Síntesis Estadística* (various years).

Thus the problem of extreme rural poverty, particularly among the landless or semilandless peasants is a serious social problem for Paraguay. It is serious partly because the problem is big and getting bigger, partly because it will not go away even if Paraguay continues to grow in the manner it has up to now, and partly because if the problem is not solved, it is going to reappear in the cities in the form of a wave of migrants looking for work. Since the urban economy is having trouble providing jobs for those already living there, it is unlikely that new rural migrants can get out of poverty by moving to the city. Instead they are likely to pull down the urban poor to their low level, generating a rise in urban misery and crime that the country has been spared so far.

We turn now to what the latest survey can tell us about rural poverty (see Table 10).

We note several characteristics here. First the poor are mainly to be found in families speaking only Guarani whose head works in agriculture, and has less than a primary school education. Most (89%) of the poor are self-employed not employees. Even though this group lives in or near the urban economy, its livelihood does not directly depend on the formal, modern sector. The poor come from large families with high dependency ratios. Because of all these characteristics, it is unlikely that modern sector growth alone will do much to significantly reduce this component of poverty in Paraguay.

The relationship of farm size to poverty

In thinking about the characteristics of rural poverty, a key point is the high correlation between the size of landholding and poverty. Sauma in his 1992 study of poverty estimated that around 195,000 rural families were poor (Sauma, p. 37). Without going into the argument of whether the poverty line he used in making this estimate was too high, we note that his figure corresponds closely to an independent estimate done by FIDA for 1990 (FIDA, n.d.). What is useful about the FIDA estimate is that it relates poverty to landholding. Overall in 1990 FIDA estimates that there are 189,000 poor families in Paraguay. All of those families own or farm less than ten hectares of land. 31,000 families, or 17% were landless, and 105.7 thousand had between one and five hectares. But, to emphasize the main point here- the rural poverty problem is exclusively limited to those with less than ten hectares of land.

Campesino agriculture is a combination of subsistence farming and a cash crop or crops for the few necessities that cannot be produced on the farm. Most observers estimate that a family with ten hectares of land is able to produce enough to get out of poverty, so long as one includes the value of food produced and consumed on the farm. If this is accurate, and if cotton prices and production conditions remain as they have been (both large assumptions as can be seen in yield trends in table 9), then the problem of rural poverty could be solved by the transfer of around one million hectares of land, at least half of which would have to be

Table 10

Paraguay: Poverty Profile for 1995, Rural Areas

(Poverty estimates refer to individuals and are based on the 'high' poverty line and non-adjusted survey income estimates)

Socio-demographic characteristics of the household head		Poverty Incidence		Poverty Gap		Severity of Poverty	
		P0	% contr.	P1	% contr.	P2	% contr.
Area	Central Rural	17.7%	3.6%	6.2%	0.8%	3.0%	0.6%
	Other rural	55.5%	96.4%	29.2%	99.2%	19.1%	99.4%
Language/ethnicity	Guaraní	60.6%	85.6%	32.3%	95.5%	21.1%	95.7%
	Guaraní and spanish	30.9%	9.1%	13.5%	4.2%	8.4%	4.0%
	Spanish	17.1%	1.3%	5.5%	0.3%	3.2%	0.2%
	Other	25.5%	4.0%	12.6%	1.7%	8.2%	1.7%
Gender	Males	52.5%	84.4%	27.4%	86.3%	17.8%	86.1%
	Females	46.9%	15.6%	23.7%	13.7%	15.6%	13.9%
Economic activity	Agriculture	46.9%	62.2%	24.0%	81.1%	15.5%	82.8%
	Mining	54.7%	1.1%	14.3%	0.0%	4.4%	0.0%
	Manufacturing	21.1%	11.1%	8.3%	5.0%	5.3%	5.1%
	Electricity	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
	Construction	13.7%	3.9%	5.0%	1.0%	2.2%	0.7%
	Commerce	29.1%	5.5%	10.7%	3.2%	5.7%	2.7%
	Transport	27.6%	2.2%	5.6%	0.7%	1.3%	0.2%
	Financial services	10.5%	0.4%	1.5%	0.0%	0.2%	0.0%
	Other services	24.4%	13.6%	10.9%	8.1%	6.9%	8.1%
Occupational categor	Blue collar	31.9%	13.8%	13.3%	6.3%	7.4%	5.4%
	White Collar	12.5%	0.8%	4.2%	0.1%	1.9%	0.1%
	Employer	41.9%	0.2%	32.4%	0.3%	26.8%	0.3%
	Self-employed	59.3%	84.0%	31.8%	92.5%	20.8%	93.4%
	Other	42.6%	1.2%	19.6%	0.8%	11.8%	0.7%
Household size	1 to 3	33.8%	21.2%	16.0%	11.5%	10.3%	11.3%
	4 to 5	48.0%	28.3%	24.6%	23.6%	16.1%	23.6%
	6 to 9	68.4%	40.8%	36.5%	50.3%	23.5%	49.8%
	more than 10	76.7%	9.7%	44.5%	14.6%	30.3%	15.2%
Sector	Public	9.3%	2.9%	2.1%	0.4%	0.8%	0.3%
	Private	31.4%	89.8%	13.1%	88.7%	7.2%	87.9%
	Domestic servants	42.6%	7.3%	19.6%	10.8%	11.8%	11.7%
Educational level	No education	64.5%	10.5%	36.1%	13.5%	25.5%	14.6%
	Primary incomplete	55.9%	63.8%	29.3%	66.4%	19.0%	65.9%
	Primary complete	49.4%	19.9%	24.3%	17.2%	15.4%	16.7%
	Secondary incomplete	30.8%	5.0%	15.9%	2.8%	10.0%	2.7%
	Secondary complete	11.4%	0.5%	2.6%	0.0%	1.4%	0.0%
	More than secondary	11.9%	0.3%	7.3%	0.1%	4.9%	0.1%
Age of head of housel	15 to 19	40.5%	0.3%	30.3%	0.3%	26.9%	0.4%
	20 to 29	48.2%	13.2%	25.1%	12.3%	16.6%	12.6%
	30 to 39	52.5%	25.5%	27.9%	26.5%	18.3%	26.7%
	40 to 49	54.4%	24.7%	28.5%	26.2%	18.5%	26.1%
	50 to 59	49.4%	14.8%	25.8%	14.2%	16.5%	13.9%
	60 to 64	53.0%	7.1%	28.4%	7.5%	18.5%	7.5%
	65+	50.5%	14.6%	24.0%	13.1%	15.3%	12.8%
Firm size	One employee	47.2%	10.9%	25.2%	19.1%	15.9%	21.3%
	2 a 5	36.9%	62.8%	15.3%	66.6%	8.5%	65.6%
	6 a 10	26.3%	13.2%	10.6%	9.7%	5.8%	9.5%
	11 a 20	17.6%	6.7%	5.4%	2.5%	2.0%	1.7%
	21 a 50	14.5%	3.1%	7.3%	1.6%	4.6%	1.7%
	50 +	8.7%	3.2%	2.4%	0.5%	0.8%	0.3%

Source: DGEEC, Encuesta de Hogares, 1995

Note: P_0 = poverty incidence (i.e. share of poor in total population); P_1 = poverty gap (i.e. shortfall of actual income vis-á-vis poverty line times poverty incidence); P_2 = FGT or severity of poverty index (as P_1, bur gives double weight to income shortfall). "Contribution" refers to contribution of each sub-group to poverty index for total population.

arable.[9]

Unfortunately the distribution of land to small holders is shrinking rather than increasing. Prior to 1980 Paraguay solved its land problem by distributing public land on the agricultural frontier. But that easy solution to the land problem is no longer available to the government because most of its land has already been distributed. The Institute de Bienestar Rural (IBR), the government entity in charge of land reform distributed state owned land in 20 hectare parcels prior to 1984. That was reduced to ten hectares up to 1990, and then virtually discontinued since that time. (World Bank, 1994a, p. 12)

As a result there has been a sharp rise in ownership inequality and a proliferation of small plots. Consider Tables 11 and 12. Table 11 shows the data for the smaller holdings (less than 100 hectares). It shows that after 1981 there has been both an increase in the absolute number of farms of less than ten hectares which as we have seen is where the poverty problem is, and a reduction in the average farm size (for farms less than 20 hectares) from 6 hectares in 1981 to 5.75 hectares ten years later. Table 12 gives the overall land distribution in 1991, showing the extreme inequality in access to land, with the large rural estates of 1,000 or more hectares occupying almost 80 percent of the arable land.

The situation of campesino agriculture is precarious. Thirty years ago the campesino essentially practiced subsistence agriculture. The shift into commercial cotton production and into a closer relationship with the modern export sector all has happened since 1970. But there is little that is modern within the sector. Functional illiteracy among peasants has been estimated at 80% (World Bank, 1994a: p.11).

Agricultural practices are rudimentary. Farmers use almost no productive capital. They make limited use of fertilizers, improved seeds, modern cultivation methods or pesticides. Nor do they get much support from the government. Public services such as access to

[9] The Ministry of Agriculture estimates that 40,000 rural families were without land. IBR estimates that in all about 150,000 families need land. See World Bank 1994a, pp. 23-4. But even if we take the 1991 figures from table three, and make up the difference between actual holdings and ten hectares, to total land need for distribution is only 1.1 million hectares.

secondary education or good health care are rare.[10] There is no extension services which might teach peasants how to increase yields on cotton, or to diversify their crop selection. Nor is the government making any effort to develop better credit channels, or speed up the titling process.

Table 11
Distribution of Landholdings smaller than 100 hectares in Paraguay (1943-1991)
(In thousands of farm units and hectares)

	1943		1956		1981		1991	
	Number	Area	Number	Area	Number	Area	Number	Area
< 5 ha	45.4	124	68.7	163	90.0	169	114.8	231
5 - 10 ha	24.7	162	34.9	230	49.3	321	66.6	431
10 - 20 ha	15.5	196	25.2	317	56.2	691	66.2	807
20 - 50 ha	6.3	165	13.0	341	36.0	941	31.5	858
50 - 100 ha	1.2	80	2.8	183	7.0	469	7.6	503

Source: FIDA, page 4. Original source is the Agricultural Census. For 1991, source is the Agricultural Census 1991.

Table 12
Overall Land Distribution, 1991
(in percentage shares)

	thousands		% shares	
size	**farms**	**ha**	**farms**	**ha**
0-5	114.8	231.3	38.4%	1.0%
5-10	66.6	430.7	22.3%	1.8%
10-20	66.2	806.8	22.1%	3.4%
20-50	31.5	857.9	10.5%	3.6%
50-100	7.6	502.6	2.5%	2.1%
100-1000	9.3	2061.0	3.1%	8.7%
> 1000	3.2	18927.4	1.1%	79.5%
TOTAL	299.3	23817.7	100.0%	100.0%

Source: Agricultural Census, 1991

[10] Borda reports the results of a survey of poor farmers. Among the most frequently cited serious problems listed were poor roads, lack of health services, lack of credit, and lack of education facilities. See Borda et al, p. 30.

Access to credit and land are serious problems for the campesino. Seventy percent of small holders (< 20 hectares) receive no credit, and of those that do, almost all comes from local middlemen, usually on terms unfavorable to the grower. (World Bank, 1994a: p.11). FIDA estimates than no more than 7% of campesinos are served by the formal credit system. There is no credit for land purchases, only for crop preparation (FIDA: p. 13).

Most small holders lack clear title to the land they farm (60% of farms with less than 5 hectares do not have clear title), and IBR the agency resolving title disputes, now has a backlog of 120,000 cases (World Bank 1994a: p. 24). Since land is the collateral for loans from the formal sector, lack of title closes access to credit on more favorable terms to the majority of campesino farmers.

Small holders get a significant proportion of their total family income from off-farm activity, varying from around 15% in most of Eastern Paraguay to over half in Itapua. (Paolino, p. 22). Peasant families send family members to work in construction projects when those are available, seasonal labor on other farms, or temporary urban jobs. This is an important characteristic of the peasant economy both because it diversifies and supplements sources of income, and also because it slows the flight of rural families to the urban sector and helps make the system sustainable.

Sauma (1993), as we shall see in a moment, found a significant increase in extreme poverty between 1980 and 1992. One reason for that must have been the sharp decline in crop yields due to drought in the latter year. There appear to be three main reasons:

(1) Declining yields due to soil erosion and declining fertility. Agricultural development in Paraguay has always been extensive, based on expanding the agricultural frontier and clearing forest cover. There has been little attempt to control soil erosion or to use fertilizers either by growers or by the government.[11] But after 30 years of this sort of expansion in cultivated area, the frontier is pretty much gone which means that production will have to come from land already in use. Unless peasants learn how to renew the fertility of their land and control erosion, yields per hectare and

[11] World Bank, 1994a, p. 22.

income per farm will both suffer.

(2) The boll weevil: Until the mid-1980's the boll weevil was not a problem in Paraguay. It apparently entered the country with Brazilian cotton seed at that time and has since been spreading rapidly. It now infects 70% of the cotton producing area and certain to reach the remainder in a short time. It is a serious threat to the cotton economy and to the campesinos because if left untreated it will decimate cotton yields. But to treat it effectively is expensive and takes concerted action by both the peasants and the government. It is estimated that control takes four to eight applications of insecticides per year each of which costs about $25 per hectare.[12] Aside from the cash expense, peasants have to learn to do focused spraying at very precise times in the life cycle of the pest, and the government has to develop a plan that encompasses the entire area in which cotton is grown and where the pest has appeared. An individual acting alone is powerless to stop the weevil if his neighbors fields are infected, because the infestation is sure to spread, despite his best efforts.

Look back at the cotton yield data in Table 9. Per hectare yield averaged over 1.4 tons in the 1980's. Yield fell to 0.90 tons in 1991. That could have been the results of a temporary drought. But the continued decline in 1993-95 suggests that something else is going on. It suggests that the boll weevil and declining fertility are taking a severe toll on the cotton economy with serious implications for the entire campesino economy. Note that no such decline in fertility can be seen in the more modern soybean sector.

At the present time there is no concerted effort to confront this challenge. The government has not organized any offices in the field to coordinate spraying or to teach peasants. Peasants do not have the cash to buy spray nor do they have the training to know how and when to apply it for maximum effect. The net result is that the weevil is spreading more or less unchecked across Paraguay reducing the already

[12] See the Technical Cooperation project document on technical assistance to campesinos for plague control, May 1995, p. 3.

limited earning potential of those small landholders who depend on cotton as their main cash crop.

(3) Rising inequality in the distribution of land and an increasing share of landless or semi-landless campesinos. As we have seen (tables 11 and 12) the distribution of land in Paraguay is highly skewed and has become more so over time. In 1956 47% of farms were less than 5 hectares and they comprised 10.3% of the total farming area. In 1991 that group had shrunk to 41% of farms and to only 2% of total area. That tells us that the big expansion in the area cultivated in agriculture in the 1970's and 80's was in relatively large farms.

Of more importance than the distribution of land is the absolute number of those in need of land. That has quite clearly increased in recent years. Families with less than 5 hectares have increased from 90,000 in 1981 to 122,000 in 1991. Those with less than the ten hectare minimum that would provide a non-poverty income have risen from 140,000 to 190,000 over the same period. (See Table 11) Borda reports the results of a survey of the rural poor. Eighty percent list a lack of land as a principal problem (along with bad roads, lack of access to health posts, high prices for consumer goods, and lack of off-farm work opportunities). (Borda et al, p. 30).

The situation is volatile. There is no unsettled state land to distribute. Landless peasants have begun to occupy portions of underutilized private farms hoping to force IBR to buy out owners and sell them title. Violent clashes between landholders and occupying peasants have occurred and can be expected to continue unless the government does something to mitigate the problem.[13] Formally, land can be reclaimed from a private landowner if it can be proved that the land has been underutilized during a certain period of time. One proof of that is if the land is forested. In addition to attempting to drive peasants off their lands, owners have taken to cutting down the forest cover, which is contributing to deforestation and soil erosion.

[13] For a more complete description of the rising problem of land distribution in the campesino economy see Carter and Galeano, 1995, chapter 1.

Off farm employment is a critical supplement to farm earnings for the rural poor. While we do not have had data to prove it, it is likely that there has been a significant shrinkage in off-farm employment opportunities since the 1980's. In 1980 when the first study of rural poverty was made by Miranda, Paraguay was still in the midst of the boom generated by Itaipu. There were numerous construction projects available to temporarily employ farm family members. But construction spending peaked in 1981, growing by less than 1% per year over the 1980's before recovering slightly in the 1990's.

Trends in Rural Poverty

To attempt to estimate changes in rural poverty, we are forced to use different sources from those we will use for urban poverty, because until 1995 there were no official household surveys outside the urban area. But there are two earlier surveys, one in 1980 and a second in 1992, from which we will attempt to draw some tentative conclusions. Assessing the accuracy of these surveys and making them comparable with the 1995 survey is a difficult task. The 1980 survey of Miranda used a very high poverty line and made no adjustments to income for home consumption or imputed rent. The reported distribution of rural income was so skewed (a Gini of over .75) that it would be easy to dismiss the entire survey. The Sauma survey in 1992, financed by the IDB, did make adjustments for imputed rent and home consumption, but that makes it difficult to compare with the 1995 survey which did not.

What we have done in Table 13 is to report the most internally consistent estimates we could produce over the two time periods, 1980-1992 and 1992-95. The 1980-92 estimates are taken directly from the Sauma report, (Sauma, p. 41). For the 1992-95 comparison, we applied the Sauma poverty line, adjusted for inflation, and used Sauma's income figure excluding imputed rent. Note that the absolute level of poverty at any of the three points may differ from those reported elsewhere in the paper. That is primarily because we are using different poverty lines here so as to guarantee intraperiod consistency.

Table 13: Comparable Estimates of Rural Poverty in Paraguay

	1980	1992	1995	Poverty line (guaranies per capita per month at 1992 prices)
Miranda-Sauma				
Poverty	78.7	84.7		86,939
Indigence	48.7	70.8		57,150
Sauma-DGEEC				
Poverty		55.3	55.7	48,780
Indigence		29.1	33.6	27,874

Source: For 1980-92 comparisons Sauma, p.41. For the poverty lines, Sauma, p. 34, 36. The 1995 poverty estimates are taken directly from the DGEEC household survey, using Sauma's poverty line. Please note that the poverty lines used here differ from those used in Table 5.

The striking message that emerges from Tables 5 and 13 is that poverty appears to have steadily increased in the countryside since 1980, and that the largest increases have been in extreme poverty.[14] This is in striking contrast with what has happened in the urban sector, particularly in Asuncion. Asuncion, as we have seen, has done fairly well with poverty rates declining throughout the period since 1983. But this relatively optimistic picture disappears if one looks outside Asuncion or at what was happening to extreme poverty. We have not shown the 1980-92 Sauma estimates for the urban sector because of difficulties in comparability. But what is significant for us here is the divergence he finds between Asuncion and the rest of the country. Sauma shows total poverty in Asuncion as roughly constant between 1980 and 1992, but extreme poverty rising by one-third. For the rural areas shown in table five the increase in extreme poverty was even greater (45%).

There was a recovery in agricultural production after 1992. But clearly that did not help those at the bottom of the income pyramid. Rural poverty continued to increase, although at a slower rate than before. Of greater policy significance, the divergence between the

[14] Weisskoff (1992) attempted to estimate changes in income distribution between 1982 and 1988 using various rural and urban partil household surveys. He found a significant worsening in the distribution of income within agriculture, consistent with the Sauma survey.

conditions for the very poor and for everyone else continued to widen as extreme rural poverty grew at a rate significantly higher than that for any other group.

Prospects for growth and poverty reduction

Past growth in Paraguay has been dualistic. The urban sector and the modern part of agriculture grew and there were substantial reductions in poverty. But the situation was completely different for the very poor, particularly for those who lived in the countryside. Under the current growth model not even sustained double-digit growth rates would enable erradication of poverty in Paraguay within a generation.[15] However, the dualistic growth model has already reached its limits and further growth prospects are slim.

Will these growth prospects be much better with the beginning of the economic reforms, modernization of economic institutions and Paraguay's integration in Mercosur? A recent study by the Inter-American Development Bank (IDB 1997) seems to believe so and projects a growth potential for Paraguay at an annual rate of well over 7%. To achieve this rate, the IDB report argues, the government would have to enhance its reform efforts (further financial reforms, labor reforms, etc.) and invest more in education. Our projections of Paraguay's growth potential for the coming decade would be much more modest. As we have argued in the above, we expect the market-oriented economic reforms accompanied by the required modernization of institutions to have negative growth implications in the short run, while prospects for accelerated growth are limited even if important reforms were to start now. There are a number of good reasons for this.

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[15] If the past experience is a good guide, one could make the back-of-the-envelop calculation using the time-series estimate of the income elasticity of urban poverty reported above. For rural poverty (given the lack of observations in time) we could use the parameters of the Lorenz curve to say something about the relation between income growth and poverty Using a general quadratic Lorenz curve specification for the 1995 survey data, we estimate the following elasticities of rural poverty (for the 'high' poverty line): -0.6 with respect to average income growth and +0.3 with respect to the Gini coefficient. Using these parameters, and all other things being equal, the required sustained growth rate to erradicate urban poverty by the year 2017 would be 15% per year, while average rural incomes would have to grow at 35% annually. Even doubling the time horizon would imply growth rates which seem well beyond Paraguay's current potential.

One is the current reliance on illicit border trade and informal practices in most economic activities (also in what one would call the modern sector). As we have seen, there has been a noticeable deterioration in the growth performance in the mid-1990s as a consequence of the impact of Mercosur, stricter border controls in Brazil and auditing of banks as part of an improvement of supervision practices. All this has had a depressing effect on, particularly, urban incomes affecting in particular trade and commerce sectors and earnings of small businesses, being affected by both the reduction of re-export activities and related commerce and the squeeze of credits following the collapse of several banks.

Second are the supply constraints in the agricultural sector and continued dependence on few export crops. Falling cotton prices have slowed export earnings and incomes of the rural poor. Unequal land distribution and precarious farming practices in most of the rural sector are key sources of rural poverty. Without major agrarian reform the economic reforms are unlikely to enhance the growth potential of agriculture and other rural activities and even if implemented, such reforms will take time to mature.

Third, also educational investment takes time to mature. The IDB projection of the growth potential assumes additional investment in education to increase the average educational level of the work force by one year. Taking - optimistically - educational performance in Asunción over the past decade as a reference, this would take about ten years with the existing educational policies. Steps toward educational reform have been taken since 1995, but it is unlikely that the gestation lag between educational investment and improved educational levels will be drastically shortened in the short run.

So, what are the real prospects and policy reform requirements? The dualistic growth model has brought substantial reduction in urban poverty, but has failed to improve the living conditions of the rural poor. It is now also clear that this growth pattern has outlived itself as as a means of stable economic growth and reason to postpone most needed reforms.

The limits to growth sketched above imply that the still widespread rural poverty cannot be resolved by relying on further expansion of urban activity. The prospects for a boost in urban

activity are simply not there. Also judging by the further evidence from the urban labor market one cannot expect the urban labor market to become the exhaust valve for rural poverty. A recent study found that around 45% of labor force of Asuncion was either unemployed, underemployed or working for less than the minimum wage (Amadeo 1995: table 2). In a separate calculation the study estimates that over 16% of the potential labor force of the entire urban sector in 1994 was comprised of discouraged workers who had dropped out because of the lack of jobs. Furthermore, a very large part of the labor force (55%) that did work, did so in small enterprises of less than five workers and additional 11% were domestic servants, all occupation with the higher probability of being poor. As indicated in this paper and elsewhere (Lee, Mejía and Vos 1997), urban households try to escape poverty by getting more of its members into the labor market at the cost of less investment in human capital. The recent financial crisis and economic slowdown has made the absorption capacity of the urban labor market even weaker than it was in 1994 and urban unemployment has doubled since.

Urban employment is already affected by the emerging recession in the commerce sector and which is spilling over into the services sector. This is likely to affect the urban poor most severely. Instead of providing an opportunity for growth, Mercosur appears to have deprived Paraguay of an important source of growth. Manufacturing industry is underdeveloped in Paraguay and has shown a very poor growth perfromance since 1980 (see Table 1). The quality of infrastructure should be considered extremely poor when compared to Paraguay's Mercosur partners. Similarly, educational standards are low. Under the circumstances, foreign investors are unlikely to bring major new impulses to a structural transformation of the urban economy. Nor should one expect major growth impulses from reforms in labor legislation. Labor markets in Paraguay have always been fairly "flexible" as employers have championed evasion of taxes and regulations. Modern urban development will require not only the modernization of institutions which is currently under way,[16] but will also require the creation of the conditions that will enable a restructuring and diversification of the

[16] This includes the approval of a new Central bank charter and passage of a Banking Law which provide instruments to deal with difficulties in the financial sector; improvement of the financial administration of the public sector; reform of the tax administration; and legislation to reform social security, capital markets and trade.

productive apparatus. Education and infrastructure, as well as credit availability to small firms seem to be key areas of reform. Enhanced investments in all of these areas are urgent, but at the same time it should be clear that the economic returns will not be there instantaneously and that it may take several years before these become visible.

Yet, the solution should start in the rural sector. Having reached the land frontier dictates that further growth will need to emphasize an increase in agricultural productivity, particularly among smallholder farmers producing domestic food crops and cotton, so as to expand and diversify production. This will require a major agrarian reform involving land redistribution, improved input and credit availability for small farmholders, technical assistance, raising educational levels among the rural population and substantial expansion and improvement of infrastructure (rural roads, irrigation and so on).

Finally, raising living standards will require improved delivery of basic social services, especially in rural areas. Social expenditure increases in recent years have been mainly absorbed by an increasing wage bill. Social services delivery (education, health, drinking water, etc.) is highly centralized and most benefits are concentrated in the Metropolitan Area of Asunción. More decentralization and better targeting of social expenditures, as much as incentives to enhance the quality of services seem to be appropriate directions to recommend.

Clearly, the development challenge is enormous and probably even larger than many of the countries that went through the pain of large macroeconomic instability and high social costs of structural adjustment. Paraguay's apparent advantage of having avoided such pain, now turns out as the disadvantage of initializing the road to reform just now. We expect this road to be a long and politically difficult one.

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Appendix A.1:

Poverty lines and robustness of poverty estimates

Poverty lines

As indicated in the text Paraguay counts with only few poverty studies. Available estimates show a wide range of estimates of the magnitude of poverty, yet only few provide comparable estimates over time.

Table 5 of the text provides an attempt at obtaining more comparable poverty estimates. From the available household surveys, poverty was estimated using uniform poverty lines. Two poverty lines: the 'low' poverty line which is an international 'standard' of US$ 60 per person per month in PPP's of 1985 (see Mejía & Vos 1997 for a discussion of this poverty line) and the 'high' poverty line which could be considered the most up-to-date 'national' poverty line. The latter poverty line is also used in recent official publications of the statistical office (DGEEC) and is based on a basic food basket analyzed by a study of the *Centro de Documentación y Estudios* (CDE, 1989) and updated with an analysis of the 1990/1 Family Budget Survey (see DGEEC 1997 and Lee, Mejía & Vos 1997). On the basis of the same nutritional value (2,195 Kcal per person per day), but different consumption habits, poverty lines were established for Asunción (Metropolitan Area, AMA), other cities and rural areas. As it turns out, the 'high' poverty line for AMA is about double the international or 'low' poverty line, while those for other cities and the rural area are respectively 80% and 67% of the high poverty line for Asunción.

Table A.1 provides the detail for the estimation of the time series for the DGEEC poverty line. Table A.2 shows the series for the international ('low') poverty line with the base value of US$60 at purchasing power parity (PPP) of 1985 and valued at current prices in local currency after using the 1985 PPP conversion factor for consumption (see Penn World Table Mark 5.6), converted to guaranies using the 1985 nominal exchange rate (yearly average market rate) and adjusting this line for the weighted food and non-food CPI relevant for the reference period of

the income recording of the household survey in each year.

Robustness of poverty estimates

The text concludes at a strong decline in urban poverty. This trend is consistent whether using the high or low poverty line. A first-order dominance test is a more rigorous test on whether this conclusion holds for a plausible range of poverty lines (see Ravallion 1994). A graphical exposition of this test is the simplest but clearest exposition of this sensistivity analysis. Figures A.1a-d show the income distribution lines for cumulative population shares (Y-axis) for a range of poverty lines (X-axis; showing per capita incomes as a proportion of the 'low' poverty line). The distribution lines do not intersect for the years 1983, 1989, 1992, and 1995 and the end-of-period line is always below the beginning-of-period line, meaning the conclusion that poverty decreased in any of the sub-periods is robust, independent of the choice of the poverty line. For 1995-96 the lines do intersect, but we could also say roughly coincide, meaning we should most savely conclude that poverty in Asuncion did not change in 1996 as compared to 1995.

Similar tests were performed for the poverty profiles (tables 8 and 10) for different poverty lines, so as to check whether the identification (or ranking) of poor would change depending on the poverty line. With one unimportant exception this did not show to be the case. Hence we consider the poverty profiles presented in the text to be "robust".

Income definitions

The DGEEC surveys use a consistent income definition for the whole period under investigation. It comprises monetary income (salaries, self-employed income, transfers and pension payments, rents and other capital income) and some non-monetary income (payments in kind by employers). No estimates are included for self-consumption, imputed house rents for owners or imputed rents of durable goods purchases. Such estimates are possible using the EH of 1996, but are not considered in this paper in order to preserve comparability. The data collection method has been by and large the same, i.e. based on reporting by the interviewed household members.

The surveys themselves do not provide built-in checks for possible underreporting of income

(again the EH 1996 does include some). Hence some external source must be used to check for this. The typical approach is to look at the national accounts. As indicated in the text, the crudest method for adjusting for alleged underreporting of incomes in the surveys is to compare per capita income estimates of the survey with that of the national accounts. This can make sense for certain purposes, but also has important drawbacks in terms of introducing additional assumptions into the analysis (see Mejía & Vos 1997 for a discussion). Comparison of the average income as estimated by the surveys and average income of urban (non-agricultural) sectors show a declining pattern of alleged underreporting of incomes: from around 100% in the mid-1980s to around 10% in recent years. Consequently, the poverty estimates after adjustment for national income accounts would suggest a much less pronounced decline in urban poverty (see Figure A.1e).

Yet, we argue that it is better to use the unadjusted survey data, as in the first place the DGEEC surveys applied the same methodology and questions to capture income data between 1983 and 1995, so that trends may be assumed to be adequately picked up from this source. In the second place, some doubts exist regarding the quality of Paraguay's national income accounts which may bias the adjustment factor (see Monges, et al. 1993 for a critique of the national accounts).

Table A.1: DGEEC Poverty Line Projection for Paraguay ('High' poverty line)

Year	Household Survey		CPI		Asuncion (Metropolitan Area)			Other Urban		
	Interview period	Reference for income data	Food	Non-food	Food poverty line	Implicit Engel coefficient	Poverty line	Food poverty line	Implicit Engel coefficient	Poverty line
			(base = December 1990)							
1983	Sept - Nov	October	14.7	20.5	4,959	0.406	12,208	4,426	0.459	9,637
1984	Aug - Oct	September	18.5	24.0	6,246	0.424	14,734	5,575	0.477	11,676
1985	Nov - Dec	November	25.3	30.9	8,517	0.438	19,449	7,602	0.492	15,460
1986	June - Aug	July	31.5	34.6	10,599	0.465	22,817	9,460	0.519	18,242
1987	July - Sept	August	38.5	41.9	12,984	0.467	27,784	11,589	0.521	22,227
1988	July - Sept	August	48.9	51.3	16,467	0.476	34,604	14,697	0.530	27,735
1989	Oct - Dec	November	66.2	72.5	22,297	0.465	47,906	19,900	0.519	38,310
1990	June - Aug	July	90.1	84.4	30,360	0.504	60,199	27,097	0.558	48,546
1990	Jul'90-Jun'9	Dec. '90	100.0	100.0	33,691	0.488	69,039	30,070	0.542	55,480
1991	Oct - Nov	October	107.3	115.0	36,152	0.471	76,785	32,266	0.525	61,475
1992	Oct - Dec	November	127.5	134.5	42,965	0.475	90,508	38,348	0.529	72,524
1993	Sept - Oct	September	142.0	156.9	47,849	0.463	103,306	42,706	0.517	82,571
1994	Aug - Sept	August	172.8	187.3	58,221	0.468	124,438	51,964	0.522	99,564
1995	July - Nov	September	192.7	212.9	64,921	0.463	140,183	57,944	0.517	112,045
1996	July - Dec	September	206.1	239.0	69,422	0.451	153,906	61,961	0.505	122,692

Sources: 1/ Banco Central, *Encuesta de Presupuestos Familiares, 1990-1991*.
2/ DGEEC, *Encuesta de Hogares, 1983-96*.
3/ Centro de Documentacion y Estudios (CDE), *Encuesta de gastos y ingresos familiares*, 1988-89.

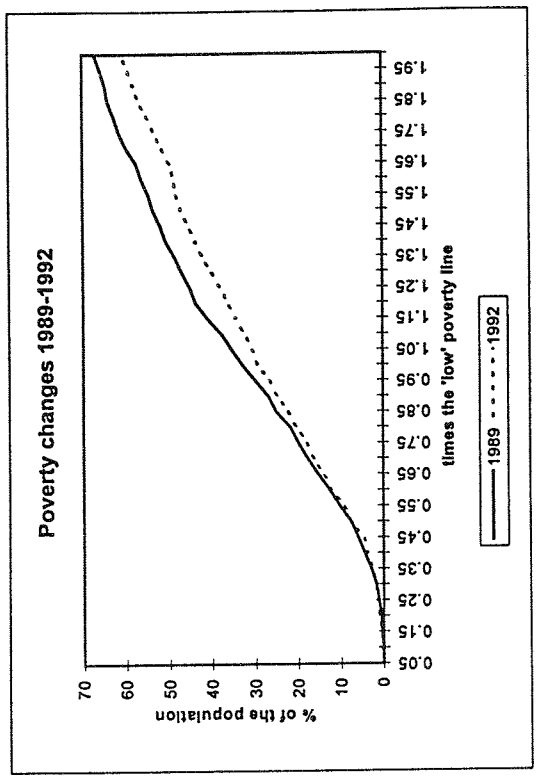
Notes: 1/ The basic food basket is derived from the study by Centro de Documentacion y Estudios (CDE). The cost of this basket as quoted in Sauma (1993) was updated using the CPI for food as provided by the *Departamento de Operaciones de Mercado Abierto* of the Banco Central del Paraguay. The nutritional value of the basic food basket is 2,195 K Cal per person per day.
2/ The Engel coefficient is estimated based on the food consumption behaviour with respect to total expenditures, using the Income and Expenditure Survey of 1990/91: 0.488 for Asuncion and 0.542 for other urban areas.

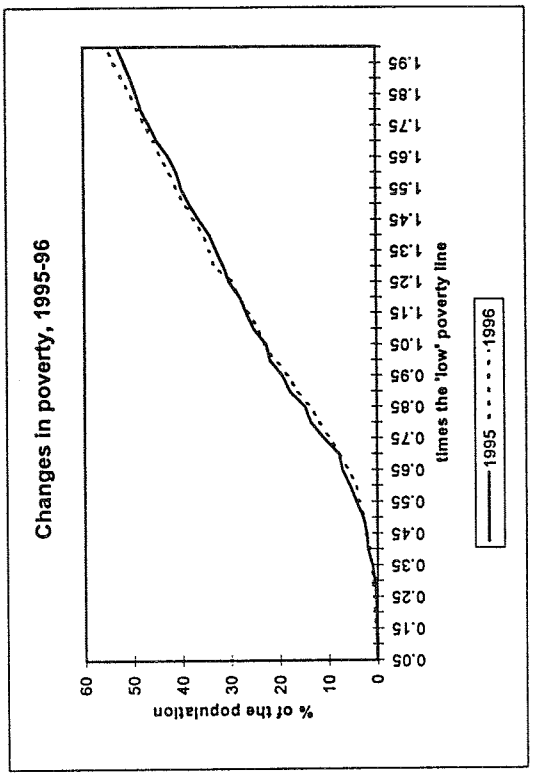
Table A.2: International Poverty Line Projection for Paraguay ('Low' poverty line)

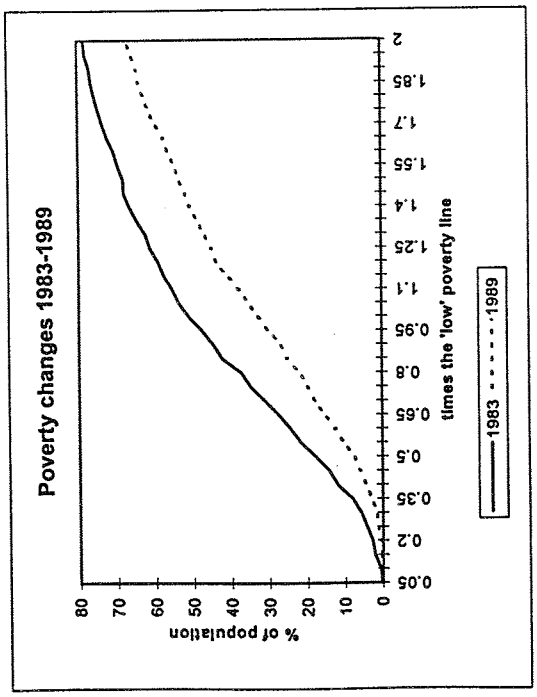
(Poverty line of US$ 60 at 1985 PPP, per capita per month)

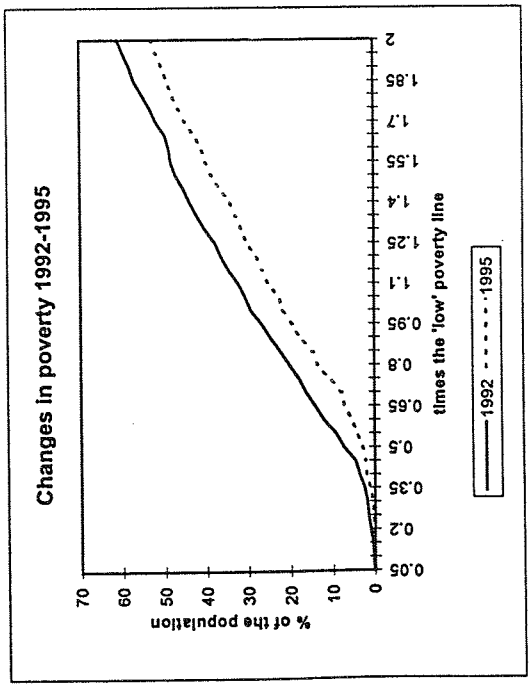
Year	Household Survey		CPI		All Areas
	Interview period	Reference for income data	Food	Non-food	Poverty line (current prices)
			(base = December 1990)		(guaranies/person/month)
1983	Sept - Nov	October	14.7	20.5	5,156
1984	Aug - Oct	September	18.5	24.0	6,204
1985	Nov - Dec	November	25.3	30.9	7,767
1986	June - Aug	July	31.5	34.6	10,233
1987	July - Sept	August	38.5	41.9	12,465
1988	July - Sept	August	48.9	51.3	15,280
1989	Oct - Dec	November	66.2	72.5	19,318
1990	June - Aug	July	90.1	84.4	26,693
1990	Jul'90-Jun'9	Dec. '90	100.0	100.0	
1991	Oct - Nov	October	107.3	115.0	33,179
1992	Oct - Dec	November	127.5	134.5	38,198
1993	Sept - Oct	September	142.0	156.9	45,165
1994	Aug - Sept	August	172.8	187.3	54,648
1995	July - Nov	September	192.7	212.9	61,767
1996	July - Dec	September	206.1	239.0	67,814

Source: See Table A.1 and see Mejía & Vos (1997) for a discussion of the poverty line of US$ 60 PPP.









Figures A.1a-d

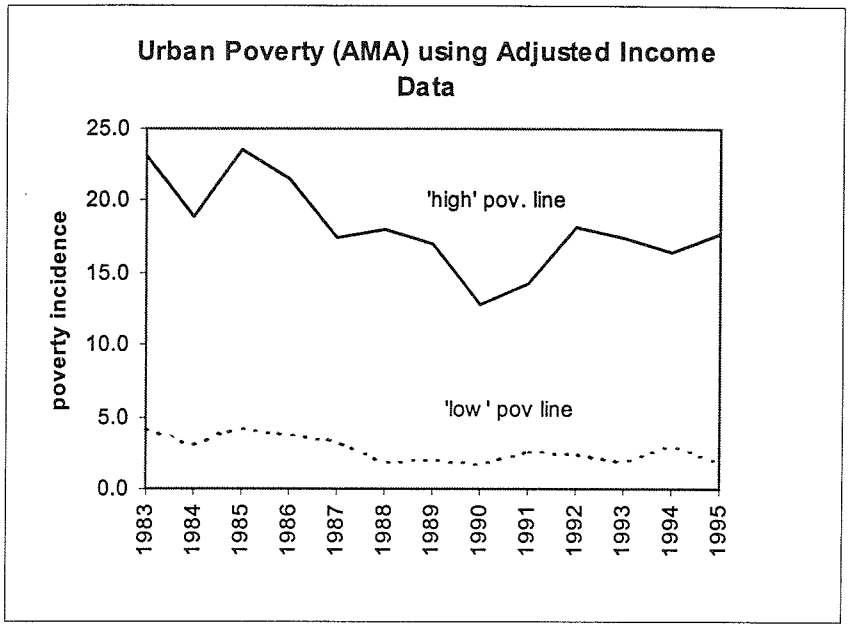

Urban Poverty (AMA) using Adjusted Income Data
poverty incidence
25.0
20.0
15.0
10.0
5.0
0.0
'high' pov. line
'low ' pov line
1983
1984
1985
1986
1987
1988
1989
1990
1991
1992
1993
1994
1995

Figure A.1e