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THE ASSETS OF THE POOR IN PERU

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ABSTRACT

The document analyzes the possession and access to assets on the part of the poor in Peru. It is found that during the last ten years the average level of access to education increased while and inequality of access to this asset decreased. The access to other public services has also increased, though the inequality levels are still very high. The same happens with the access to credit and other assets that can serve as collateral. The econometric analysis shows a positive effect of the access to public assets on the profitability of key private assets like education and land, evidencing the role of the provision of public services and infrastructure as a mechanism for boosting the profitability of private assets. It is also found that changes in assets tenure are not sufficient to explain transitions toward and outside poverty, thought they are crucial to explain the permanency in poverty or the permanency out of this state.

JEL Classification: 132, D31

I. Introduction

Both income distribution and poverty levels have experienced important modifications during the last four decades in Peru. Setting aside the problems of compatibility between surveys and methodological differences associated with the calculation of these indicators, the evidence suggests that over the last 40 years the dispersion of income distribution has decreased. Additionally a significant reduction in poverty levels took place especially in the 1970s. In the 1980s and 1990s the dispersion in income distribution continued to fall, although at lower rates with however important fluctuations in poverty levels, associated with abrupt changes in the macroeconomic context. Although the most important changes in poverty and distribution of income and spending occurred between 1960 and 1980, important modifications in patterns of poverty have taken place since the mid-1980s. The availability of a database formed by four Household Surveys (1985-1986, 1991, 1994 and 1996) as well as a panel of households from 1991 to 1994 opens the way for an exploration of the changes in the possession of assets by the poor population and their impact on poverty and income distribution.

The approach adopted by this document is to analyze the problems of possession and access to assets by the poor. Private, public and organizational assets are the principal determinants of household spending and income flows, and are thus crucial in determining whether a family is successful in leaving poverty. In this respect, public policies need to be carefully designed to resolve unequal access to certain assets that are suitable for state intervention and which facilitate access, accumulation, and higher returns on household assets. For this reason, the document evaluates first the nature, characteristics and recent trends in poverty in Peru, as well as trends in the distribution of income/spending and assets. Next, a taxonomy of the assets of the population is made, illustrating the existing dispersion and the differences in possession and access to assets by the poorest sector. Using these tools, relationships are established between the different types of assets and the status of poverty, as well as the mobility of households on the scale of income/spending. Additionally, the effect is determined of ownership or access to some public or organizational assets on the return from private assets.

II. Poverty in Peru

In the 1960s and 1970s, the empirical literature that analyzed income and spending focussed on the analysis of income distribution, neglecting estimates of the magnitude of poverty. In general, the trend in income distribution, changes in welfare and poverty were implicitly treated as biunivocally interrelated concepts (i.e. an increase

in income concentration would necessarily result in an increase in poverty). It was sufficient to establish that a high percentage of low-income families would receive a decreasing proportion of total income or spending to affirm that poverty was increasing. Implicitly, the existence of a national poverty line was presumed without taking into account the disparity of regional baskets and relative regional price structures, which mean that the same level of spending can be associated in one region with a poor family, and with a non-poor family in another region. Moreover, there was no discussion of more complex relationships such as the possibility of distributive improvements in contexts of increases in poverty or of more unequal distributions in contexts of reductions in poverty.

The National Food Consumption Survey (ENCA) of 1971-1970 was used to estimate the long-term change in the poverty rate, applying the regional poverty lines calculated by Amat and León (1991a and 1991b). To compare the poverty rates derived from this survey with poverty rates calculated from the National Surveys of Standard of Living (ENNIV) for recent years, the lines were adjusted to make them methodologically comparable with the lines associated with the ENNIV[1]. Note that both surveys are reasonably comparable: both use family spending and the coverage of spending is similar. Table II.I shows a strong reduction in poverty levels between the early 1970s and 1985, in particular in the rural sector[2]. Since then, most information reveals a clear pro-cyclical pattern in the poverty rate, which increases dramatically in 1991, followed by three years

Table II.l
Poverty indicators by region: 1971,1985,1991,1994 and 1996

(By family spending - Percentages)

Region	1971-72	1985	1991	1994	1996
Peru	64.0	43.1	59.0	53.6	50.5
Urban	39.6	36.0	53.3	46.3	45.5
Rural	84.5	55.2	80.7	70.6	68.0

Authors' own figures based on ENCA (1971-72) and ENNIV 1985-86, 1991, 1994 and 1996.

[1] Two adjustments were made to the data from Amat and León: homogenization of calorific consumption of both surveys to construct a basic spending on food; and, use of the same method to extrapolate the global spending required (i.e. the line) from the basic food spending.

[2] The methodology on which the calculations of poverty are based were obtained from the ENNIV is shown in Escobal, Saavedra and Torero (1998) and is available from the authors. It is possible to introduce some additional modifications to the lines estimated by Amat to strengthen their comparability with the results derived from the ENNIV since the data of Amat and León is based on a normative basket that contains not only a minimum calorific consumption such as the ENNIV, but also protein and other lesser nutrients.

of declining product during the implementation of a drastic macroeconomic stabilization program. In 1994, after the economic recovery, poverty fell by five points, a trend that continued until 1996. Thus, although in 1996 there was still no return to the 1985 poverty rates, poverty was 15 points below the rates of 25 years earlier.

The results also show that poverty in Peru, in addition to having fallen, has drastically modified its composition. While in the early 1970s poverty was largely rural - two-thirds of the poor were rural dwellers - the picture was reversed in the mid-1990s, when two-thirds of the poor were urban dwellers. In the 1970s most low-income individuals and families lived in rural areas and worked in agriculture; in the 1990s poverty ceased to be a largely rural phenomenon and became important in the urban environment. While urban poverty rates have increased six points in the last 25 years, in the rural sector poverty fell 16 points; thus the entire long-term reduction in poverty could be a rural phenomenon, in the context of a major migratory process .

Webb (1975) and Figueroa (1982) have suggested that income distribution in the 1960s was very unequal and that this inequality deepened in subsequent decades. The works of Amat and León (1981a and 1981b), based on the National Food Survey of 1971-1972, allowed us to calculate indicators of the distribution of family income and spending based on published tabulations [4] which can be compared with our own figures based on the ENNIV. The results of these calculations are presented in Table H2, along with the information reported by Webb (1971) for the early 1960s. Strictly the 1961 data are not comparable with the other indicators presented in Table n.2 since they relate to personal income while the data from ENCA for 1971-72 and from the National Standard of Living Surveys of 1985-86, 1991, 1994 and 1996 reported in the table relate to family income.

The Gini coefficient fell three points between 1961 and 1971. However, taking into account the fact that the Gini coefficient for personal income is higher than the coefficient obtained from family income, it is not possible to state that there has been a reduction in income dispersion. Rather, it is most likely that the concentration levels of 1961 are similar to those of 1971-1972 [5]. Since 1971 a clear pattern of reduction in

[7] The 1991 survey does not include the tropical forest areas and rural coast, while the other surveys are representative at national level. Estimates were made limiting the sample of the 1985, 1994 and 1996 surveys to the domains of the 1991 survey and the results did not vary significantly.

[4] Unlike the calculations presented in the rest of the document, the indicators presented here are based on published aggregate figures from which the Gini coefficients were calculated, as well as the indicators of the incidence, gap and severity of poverty. A quadratic functional form was estimated in each case for the Lorenz curve. For the specific method used see Datt (1992).

[5] For example, in 1985-86, the Gini based on family income is 0.48 while that based on income per capita is 0.495.

dispersion has been observed. As shown in Table II.2, the Gini coefficient of family income fell from 0.55 to 0.40 between the early 1970s and the 1990s. The percentage of total income received by the poorest half of the population rose from 10.7% to 24.5% in 1996, while the share of richest half fell from 61% to 43%.

The trend in income distribution from the 1970s can also be corroborated by the estimate of indicators of concentration based on family spending [6]. It is also interesting to note that the reduction in the dispersion of family or personal income or spending could have taken place both in periods in which average income was falling (e.g. 1985-86 to 1991) and in periods in which it was rising (1991 to 1994 or 1996). Bruno, Ravallion and Squire (1998) demonstrate that the empirical support for Kuznets' suggested systematic relationship between growth and inequality is very weak. The Peruvian case also shows that there is no evident association between the economic cycle and inequality [7].

Table II.2
Concentration of Income in Peru

	1961	1971-1972	1985-1986	1991	1994	1996
50% POOREST	12.3	10.7	18.8	21.0	22.9	24.5
20% RICHEST	77.3	60.9	51.4	46.6	45.4	42.9
GINI	0.58	0.55	0.48	0.43	0.41	0.38

SOURCE: The 1961 data relate to personal income and are reported by Webb (1977); the 1971-1972 data is of family income, according to Amat and León (1981). The other indicators are the authors' own calculations based on family income utilizing information from ENNIV.

Londoño and Birdsall (1997) suggest that one of the fundamental causes of income inequality is unequal access and possession of assets. In this respect, it should be possible to find modifications in the distribution of key assets that underlie these long-term changes in income distribution. Although no detailed information (by household) is available on possession of assets before the 1980s for making a systematic evaluation of their relationship, the evidence presented below suggests that the improvement in the distribution of the two key assets of land and human capital played an important role in reducing the concentration of income/spending and in poverty reduction, as will be seen later.

[6] These results are shown in a more complete version of this document (see Escobal, Saavedra and Torero (1998)).
[7] More evidence on the time trend of inequality of income and spending using different databases is found in Saavedra and Diaz (1998).

Thus, along with the reduction in the dispersion of income and in poverty from the 1960s to the 1980s, an increase occurred in the average endowment of land and education simultaneously with a reduction in the dispersion of these assets. For example, between 1961 and 1971 the Gini coefficient of land distribution fell from 0.94 to 0.81, and then to 0.61 in 1994[8]. Simultaneously, between 1971 and 1994 the average endowment per farmer rose from one to two hectares (standardized in equivalent units of irrigated coastal land). This occurred because of a substantial expansion of the agricultural frontier (irrigation in the desert coastal strip and expansion of the agricultural frontier in forest areas) and because of an increase in farming hectares under irrigation.

At the end of the 1960s in Peru, the military government began an agrarian reform process. However before redistributing the land expropriated from large landowners, the government collectivized agriculture, creating large cooperatives on the coast and in the sierra. The failure of this reform, which became evident in the late 1970s, led to the splitting up of the cooperatives. In 1980, the Belaúnde administration formalized this process, which continued during the 1980s. In 1994, according to the Agricultural Census, Peruvian agriculture consisted predominantly of highly atomized small holdings, excluding the peasant communities of the sierra which retained large areas of relatively infertile land. On the coast, approximately 50% of agricultural holdings were under three hectares, and 62% in the sierra. Further, each producer had an average of three non-contiguous plots of land, with is characteristic of the sierra where almost one-third of producers have five or more plots averaging less than one hectare.

The other important change in average ownership and asset distribution was in education. School enrolment has increased massively since the 1950s. The proportion of school age children who attended educational institutions rose dramatically. In 1940 30% of children aged six to 14 attended school, by 1993 this figure had risen to 86%. Starting in the early 1970s this expansion extended to post-secondary education. These changes in enrolment had an impact on the level of education of the population and labor force. While almost 60% of the population aged over 50 had no education in 1948, in 1996 the rate had dropped to 15%. In 1940 less than 5% had completed secondary level, by 1996 one third were achieving this level of education. Average years of schooling have risen consistently from two in 1940 to six in 1981 and eight in 1996.

[8] The 1961 figure comes from Webb and Figueroa (1975), those for 1970 to 1994 are the authors' own calculations based on information from the Agricultural Census.

Table II.3
Distribution of the population aged 15 and over by level of education

	1940	1961	1972	1981	1985-86	1993	1996
No education	57.3	38.9	27.5	16.0	14.2	12.1	15.3
Initial and primary	37.1	47.8	47.0	42.9	37.8	32.9	30.0
Secondary	4.7	11.5	21.0	31.0	36.3	34.9	33.3
Higher	0.9	1.8	4.5	10.1	11.7	20.1	21.4
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Average years of education	1.9	3.1	4.4	6.0	6.6	---	8.0

Source Population and Housing Census (1940,1961,1972,1981 and 1993) and authors' own figures based on ENNIV (1985-1986 and 1996)

It is clear that the educational expansion and redistribution of land resulted in a change in the pattern of asset ownership among the poor population. As the return on these assets has not fallen over time, it can be expected that these structural transformations raise, at least partially, the average income of the poorest sector and improve income distribution. In the case of land there is evidence of a reduction in the return on the asset associated with the restrictions that the agrarian reform imposed on trading in this asset. This could have affected farmers' opportunities for using land as a means of raising their income and reducing poverty. In contrast, for education the evidence provided by Psacharopoulos and Woodhall (1985) for rates of return in the 1970s and early 1980s, as well as Saavedra (1997) in the mid-1980s and early 1990s, shows little probability of a fall in the private return on education in the last three decades. The notable increase in urban and rural educational levels and the reduction in the dispersion of these assets indicate that the educational transformation over the last few decades is one of the variables that explain the changes identified in poverty and income distribution.

The Ravallion Decomposition

Using the methodology proposed by Ravallion (1991), a decomposition was made of the changes in the poverty rates. The changes are partly attributable to economic growth - approximated by changes in average spending ~ maintaining constant distribution of spending, and partly to changes in the distribution of spending maintaining constant parameters that define its distribution and a residual. Table n.4 shows that the changes in both average spending and distribution are important for understanding changes in the poverty indicators. At national level, between 1971 and

1985, 52% of the 21 point reduction in poverty was attributable to an increase in average family spending, while 26% was attributable to a reduction in the dispersion in the structure of family spending.

Table II.4
Decomposition of the Changes in the Poverty Rate, by Region

(Percentage points)

Region/Period	Total	Growth Effect	Distribution Effect	Interaction Effect
Peru				
1985-71	-20.9	-11.0	-5.5	-4.4
1996-71	-13.6	-2.7	-8.7	-2.2
Rural				
1985-71	-29.2	-23.6	-0.9	-4.8
1996-71	-16.5	-13.0	3.8	-7.3
Urban				
1985-71	-3.6	1.0	-4.8	0.1
1996-71	5.9	14.1	-12.7	4.5

Authors' own figures based on ENCA (1971-72) and ENNIV 1985-86 and 1996.

When the period of analysis is extended to 1996, the relative importance of the distribution effect increases drastically, explaining 64% of the 14 point reduction in poverty between 1971 and 1976[9] Thus in a period of 25 years the reduction of poverty is largely attributable to a reduction in the dispersion of the purchasing power of Peruvians. At macroeconomic level between 1971 and 1985, GDP per capita was almost constant, although by 1996 it had fallen by almost 3%. Despite this, average spending per family used in the decomposition from the same survey grew slightly. If this trend had been similar to that of total income per capita, the entire reduction in poverty would have been due to the distribution effect.

When a separate decomposition is done for the urban and rural sectors, the results are qualitatively different. In the rural sector the increase in family purchasing power resulted in a reduction in poverty. In the urban sector until 1985 poverty fell basically because of a redistribution effect. Expanding the analysis period to 1996, poverty worsened because the redistribution effect reduced the impact of the growth effect on

[9] The decomposition of the indicators of gap and the severity of poverty - not reported - for the 1971-1996 period make the role of the reduction in the dispersion of family spending even more evident.

poverty. The difference between the results for rural and urban areas, and the fact that the redistribution effect predominates in the national analysis, reveals a convergence of income and spending between urban and rural sectors.

It can be concluded that income dispersion has clearly fallen during the last 25 years, In the periods when spending grew, it contributed to a further reduction in poverty, and in the periods when spending fell, poverty intensified. In terms of wellbeing, although the reduction in dispersion of spending had a positive effect producing less poverty in the long run, this took place in a context in which average spending and income per capita were stagnant - although with fluctuations - for 25 years. The average Peruvian is in the same condition as 25 years ago but all incomes are nearer the average. It is clear then that the Peruvian problem, rather than distribution, is one of low average incomes. While in the 1960s inequality was sufficient to prevent growth having a positive impact on poverty reduction, in the future initial inequality could have a less negative impact on the poverty-growth interaction (Ravallion, 1998).

III. Distribution of Assets

The dispersion of spending or income, as well as the probabilities of individuals and families being poor or non-poor, depends on their stock of assets and its return or market price. Assuming, for the moment, that aside from possible interactions between different assets, the return on possession of a unit of an asset of physical, human, financial, public or organizational capital does not depend on its level, the distribution of the assets plays an important role in the determination of the distribution of income and spending.

Table IH.2 shows the average level of possession or access to different assets in the urban sector by spending quintile for 1985 and 1994. For example in 1985, when the average years of education of heads of household were 6.9 the same value was only 4.9 for heads in the poorest quintile and 10.5 in the richest quintile. Access to a private educational institution, which on average reaches 10% of heads of household, clearly increases with the level of spending and triples in the richest quintile compared with the poorest quintile. Potential experience, which approximates an individual's time in the labor market, together with specific experience, which measures time in a firm or a job, does not show a clear pattern of variation by income quintile[10]. On the other hand, for

[10] These data are based on the characteristics of the head of family. When the same analysis is done for income distribution including all active members - heads and other family members who work - a very clear relationship is observed between experience and position in the income scale.

age the youngest heads of household tend to be in the poorest income quintiles. Family size, which in large measure can approximate levels of human capital of the family not observed with other variables, does change dramatically by quintile, dropping from 7.2 members in the poorest quintile to 5.3 in the richest. Migration, which is an asset that represents the investment made to find a place where other assets are more productive, has a growing relationship with income. Thus, among the poorest, 30% of household members have migrated, the figure is 51% for the rich. Other assets show much greater polarization. Only 21% of families in the poorest quintile have access to credit, rising to 50% in the richest quintile. For durable goods, average ownership for their richest decile was 15 times the figure for the poorest decile. Access to electricity, telephone, water and sewerage has a clear positive relationship with the position in spending distribution.

Table III.l

Average value of assets, by quintile of income per capita: Urban Peru:

Assets/	Quintiles					
1985	Average.	I	II	III	IV	V
Years of education of head of household	7.74	5.51	7.01	7.28	8.43	10.45
Average years of education of family	6.92	4.92	5.98	6.82	7.68	9.22
Educational institution of head of household 2/	0.10	0.07	0.07	0.09	0.11	0.19
Age of head of household	46.02	44.28	44.13	46.70	46.78	48.19
Labor experience	10.06	9.48	10.40	9.61	10.94	9.89
Potential experience	32.28	32.77	31.12	33.42	32.35	31.74
Family size	6.40	7.20	7.01	6.74	5.85	5.22
Migrants in the household (%)	0.41	0.31	0.36	0.41	0.43	0.51
Access to credit	0.37	0.22	0.28	0.42	0.44	0.50
Value of financial savings 1/	465.52	45.50	103.69	201.04	577.11	1400.26
Value of durable goods 1/	6438.49	1430.70	3081.01	4532.87	6353.57	16794.32
Have water in home	0.71	0.54	0.65	0.70	0.79	0.89
Have sewerage in home	0.69	0.44	0.60	0.70	0.80	0.89
Electric power	0.86	0.72	0.81	0.86	0.92	0.97
Have telephone	0.14	0.03	0.05	0.08	0.17	0.37

1/ Monetary values are expressed in 1996 dollars.

21 Percentage of people who attend a private educational institution.

(continues....)

Assets/	Quintiles					
1994	Average.	I	II	III	IV	V
Years of education of head of household	8.57	6.19	7.54	8.28	9.26	11.59
Average years of education of family	8.09	5.68	7.24	7.95	8.93	10.66
Educational institution of head of household ***21***	0.07	0.05	0.04	0.05	0.06	0.17
Age of head of household	49.37	46.11	48.01	49.57	51.19	51.95
Labor experience	9.14	9.14	8.85	9.05	9.78	8.90
Potential experience	34.80	33.92	34.47	35.30	35.94	34.36
Family size	6.08	7.35	6.52	6.01	5.70	4.84
Migrants in household (%)	0.26	0.18	0.25	0.26	0.29	0.32
Access to credit	0.16	0.15	0.16	0.12	0.17	0.21
Value of financial savings 1/	203.23	16.50	90.96	40.41	132.20	736.06
Value of durable goods 1/	1532.11	390.50	614.28	897.34	1589.47	4168.94
Have water supply in home	0.83	0.66	0.81	0.82	0.90	0.96
Have sewerage in home	0.70	0.43	0.63	0.69	0.85	0.92
Electric power	0.94	0.81	0.94	0.97	0.98	0.99
Have telephone	0.18	0.02	0.06	0.11	0.21	0.51

1/ Monetary values are expressed in 1996 dollars.

2/ Percentage of people who attend a private educational institution.

Obviously the stock of assets is not a totally endogenous variable. The possession of assets depends on the possession of other assets, on changes in acquisition prices and in the expected return on the assets. However, about 1994, patterns of possession and access to assets by position on the scale of spending were relatively similar, although the average in some cases had changed. For example, access to water increased, while access to electric power had become almost universal, with the exception of the poorest quintile. Access to telephones, average level of education, average years' experience and the age of the head of household also rose, although the distribution did not varied substantially [n].

To capture the level and the changes in the disparities in the ownership of assets, Gini coefficients were calculated for the group of assets in the urban sector (see Table EH.2). The assets with the highest degree of dispersion are possession of durable goods and the labor experience of the head of household. The education variables reveal

Access to public services was expected to increase significantly by 1997 under commitments made by the companies that acquired the privatized companies.

relatively low dispersion, observing that the process of expansion of the educational system, which began in the 1970s, is continuing. Between 1985 and 1996, the expansion of access to educational opportunities was maintained [12]. The calculations presented are for the urban and rural sectors. If these calculations were at national level, the inequality of many of these assets would be greater because of the large gap in access to education and in infrastructure between urban and rural sectors.

Table III.2
Distribution of selected assets: Urban Peru

Assets	Gini Coefficient Years	
	1985-86	1994
Years of education of head of household	0.338	0.299
Age of head of household	0.157	0.169
Labor experience of head of household	0.567	0.624
Potential experience of head of household	0.260	0.278
Family size	0.236	0.244
Proportion of migrants (%)	0.350	0.528
Value of durable goods 1/	0.708	0.716

1/ The monetary values are expressed in 1996 dollars.

Table III.3 shows the distribution of different assets by quintile for the rural sector. In the rural case, the changes in the averages and in the pattern of ownership and assets between 1985 and 1994 are well marked. In 1985, the level of schooling of heads of household was very low and unequal in the rural sector. A decade later, average years of education had increased from 2.9 to 5, and inequality had declined: among the poorest sectors the schooling of the head almost doubled while among the richest the increase was 50%. The average family size in the poorest quintile was 50% higher than the average in the richest quintile. On the other hand, access to credit was relatively segmented, being very low in the poorest quintile. The 1994 survey revealed that although global access to credit had fallen from 23% of farmers to 16%, it had increased for the poorest quintile and fallen for the other quintiles, particularly the richest. This is

[12] The Gini for years of schooling of all family members is lower because it includes younger members. In general the younger the cohort, the lower the dispersion of years of education.

explained by the disappearance of the development banks, which concentrated on larger scale agriculture. In the case of access to basic services (light, electric power, and water and sewerage), levels of access were low and not very equitable in 1985. In contrast in 1994, at least in the case of water and electricity, access had doubled: 27% and 24% of households had access to these services, respectively. However dispersion in access by spending decile is now much more pronounced.

Table III.3
Average value of assets, by spending quintiles per capita: Rural Peru

Assets /		Quintiles				
1985	Average.	I	II	III	IV	V
Years of education of head of household	2.92	2.28	2.45	2.88	3.28	3.72
Average years of education of family	2.78	2.15	2.38	2.87	2.96	3.54
Age of head of household	46.96	47.70	45.90	47.23	45.54	48.43
Labor experience of head of household	21.29	22.90	21.86	21.20	19.19	21.30
Potential experience of head of household	38.04	39.43	37.45	38.35	36.26	38.71
Family size	6.49	7.30	7.18	6.60	6.31	5.08
Migrants in household (%)	0.26	0.23	0.22	0.26	0.26	0.33
Access to credit	0.23	0.09	0.25	0.23	0.31	0.28
Value of financial savings 1/	74.74	4.63	22.36	48.23	78.63	219.85
Value of durable goods 1/	924.87	285.32	708.78	786.95	984.34	1858.97
Have water in home	0.12	0.10	0.12	0.13	0.12	0.14
Have sewerage in home	0.03	0.01	0.01	0.03	0.04	0.05
Have electricity	0.12	0.04	0.07	0.13	0.17	0.18
Stock of livestock 2/	25.54	17.27	19.21	31.78	23.14	36.31
Stock of land 2/	8.20	4.24	5.10	9.64	10.87	11.14
Use of fertilizers ***21***	18.87	16.48	19.10	20.08	18.77	19.92
Value of agricultural equipment ***21***	633.13	27.37	53.58	467.60	184.15	2432.94
Value of livestock ***21***	3977.11	1932.70	2650.81	5000.43	3856.92	6444.69
Value of land ***21***	8020.46	3338.84	5396.56	6682.89	6930.81	17753.18

1/ Monetary values are expressed in 1996 dollars.

21 The sample is restricted exclusively to agricultural producers.

(continues....)

Assets / 1994	Quintiles I	II	III	IV	V
Years of education of head of household	3.28	4.02	4.32	4.93	6.11
Average years of education of family	4.21	4.50	4.63	5.15	6.32
Age of head of household	45.16	44.05	44.44	46.08	48.79
Labor experience of head of household	19.83	17.83	17.01	18.46	18.11
Potential experience of head of household	34.96	33.55	33.81	34.92	36.47
Family size	7.67	6.98	6.06	6.02	4.88
Migrants in household (%)	0.08	0.08	0.11	0.12	0.16
Access to credit	0.10	0.15	0.20	0.17	0.19
Value of financial savings 1/	17.42	2.28	4.80	33.32	214.85
Value of durable goods 1/	71.28	179.72	146.01	490.20	1071.92
Have water in home	0.26	0.26	0.21	0.26	0.34
Have sewerage in home	0.00	0.00	0.00	0.02	0.09
Have electricity	0.09	0.21	0.19	0.28	0.41
Stock of livestock ***21***	20.47	15.32	19.14	16.30	23.74
Stock of land ***21***	2.70	3.19	3.18	12.00	6.90
Use of fertilizers ***21***	42.33	47.07	47.39	50.37	54.37
Value of agricultural equipment ***21***	79.77	79.55	120.33	468.28	407.22

With respect to the variables for agricultural activity, the sample is limited to agricultural producers. Dispersion of the ownership of livestock - measured in sheep equivalents - is relatively low since the richest decile owns only double the poorest decile, although the disparity is greater when the value of livestock is used. A reduction of 35% was found in the average size of livestock unit, not observed among producers in the poorest quintile but much more in the upper 60% of the distribution because producers closest to the market were obliged to reduce their capital to cushion fluctuations in consumption in a context of falling real agricultural prices. The ENNIV also reveals that income from livestock forms a higher proportion of total income for the poorest producers, so it is more difficult for them to cushion consumption.

In the case of land, the differences in ownership between rich and poor are more marked than for livestock, while the disparity is even more evident for the value of agricultural equipment. For land, drastic changes took place in average levels of ownership between 1985 and 1994; however, the distribution of land ownership did not change significantly.

Table III.4 shows Gini coefficients for selected assets in the rural sector. Inequality is higher for durable goods, financial saving and agricultural equipment. For land, inequality was constant between 1985 and 1994. These figures for inequality are higher than those obtained from the 1994 Agricultural Census (0.61), which implies said that the ENNIV did not collect accurate information on smaller rural properties. In the rural sector, educational inequality is higher than in the urban sector, but it is the only asset whose dispersion fell consistently during the last decade

Table III. 4

Distribution of selected assets: Rural Peru

	Gini Coefficient	
	Years	
Assets	1985-86	1994
Years of education of head of household	0.53	0.42
Age of head of household	0.16	0.17
Labor experience of head of household	0.42	0.46
Potential experience of head of household	0.21	0.26
Family size	0.22	0.22
Migrants in household (%)	0.49	0.75
Value of durable goods	0.74	0.82
Stock of livestock *21*	0.59	0.65
Stock of land *21*	0.87	0.87
Value of land	0.82	n.a.
Value of livestock	0.68	n.a.
Value of agricultural equipment *21*	0.99	0.78
Use of fertilizers 1/ and *21*	0.61	0.37

1/ Percentage of households in the conglomerate which use inputs.

21 The sample is restricted to agricultural producers.

IV. Relationship between Assets and Poverty

IV.l The Assets of the Poor

In first place the ownership of assets is analyzed as a determinant of the status of poverty; in other words, is possession of certain private assets or access to certain public or organizational assets a good predictor of the status of poverty? Table IV.l shows the proportion of poor urban households that possess certain assets. It is important to normalize these figures with respect to the poverty rates in each region, which are reported in the last line of the table. For example, in 1985, of urban households with water in the home, 28% were poor, a lower figure than the poverty rate of 33% for that year which indicates that access to water is proportionately less among poor households.

Table IV.l
Proportion of poor who have specific assets
Urban Peru

Variables	1985	1994
Water in home	27.5	36.4
Sewerage in home	24.0	31.0
Make donations	21.2	13.7
Use electric power	28.3	38.7
Use kerosene	60.8	82.6
Have telephone	9.5	7.5
Have savings	17.3	13.9
Have over 770 soles in durable goods 1/	24.4	14.5
Have access to credit	22.3	32.2
Head has primary education	43.1	57.1
Head has secondary education	28.8	37.4
Head has higher education	10.0	11.9
Head has over 6 years' education	22.8	35.4
Family size of 7 or more	48.3	60.8
Poverty rate	33.0	41.3

1/ Monetary values are expressed in soles of June 1994
Authors' own figures based on ENNIV 1985-86 and 1994.

The figure for access to water rises to 36% in 1994; however the poverty rate in that year was 41.3%, so the relative access of the poor to this public service increased only slightly. In several public services such as electricity, water and sewerage, an

increase occurred in the proportion of poor with access to these services and in relative access to the service by the poor [13]. On the other hand, as the gap between the proportion of poor with access to an asset and the poverty rate widens, the asset becomes more discriminated between the poor and the non-poor. For example, kerosene -- an inferior fuel to electricity or gas - is used by a majority of the poor: in 1994, 82.4% of users were poor, with poverty rates of 41.3%. In this case, kerosene use increases the probability that a family be typified as poor. Consistent with the results obtained by Saavedra and Diaz (1997), higher education reduces the probability of belonging to the poor segment of the population, while primary level increases it. A family size of seven or more members is a clear predictor that the family has high probabilities of being poor. Finally, a very low percentage of families that have telephones, or over 770 soles (US$350) in durable goods or savings can be defined as poor.

Table IV.2
Proportion of poor who have specific assets
Rural Peru

	Survey	
Variables	1985	1994
Obtain water from river or ditch	56.5	70.5
Use electric power	31.4	49.9
Use kerosene	55.2	73.6
Have over 750 soles in durable goods 1/	34.8	29.0
Have over 300 soles in agricultural equipment 1/	35.9	56.5
Have livestock	50.6	69.3
Have over two hectares	53.2	58.2
Have access to credit	39.3	63.6
Have savings	34.1	33.4
Head has over 6 years' education	29.7	63.0
Head has primary education	52.3	70.2
Head has secondary education	32.7	56.6
Head has higher education	7.1	38.5
Family size of 7 or more members	66.1	81.4
Poverty rate	51.5	66.8

1/ Monetary values are expressed in soles of June 1994
Authors' own figures based on ENNIV 1985-86 and 1994.

That is, the percentage of poor who have access to the service grew more rapidly than the poverty rate.

Table IV.2 shows the results of a similar analysis for the rural sector. Many assets in the rural sector do not "discriminate" in themselves, in the sense that a high percentage of the poor own livestock, possess over two hectares of land, and use seeds and fertilizers.[14] As observed, the percentage of poor among those who own land or livestock is similar to the poverty rate. Assets that do seem to clearly differentiate the poor from the non-poor are education, savings and possession of durable goods. There was also a clear increase in access to electric power by the poor.

Poverty and demographic characteristics

The incidence of poverty is not uniform between individuals with different characteristics. As Table IV.3 shows, the incidence of poverty is greater among the less educated as expected. For example, in 1994, at urban level, the poverty rate, which averaged 41.5%, exceeded 57% among individuals with primary or lower education, and 40% of the poor had this educational level. In contrast, the incidence of poverty among individuals with higher education is only 10%, and this group constitutes only 14% of all poor. In 1991, when the poverty rate rose, participation of the more educated - completed secondary or higher education - in the total poor also increased. This could be counter intuitive, if it is assumed that the more educated are better prepared for macroeconomic crises. There is evidence, however, that during the period immediately after the hyperinflation, the return on educational assets declined. What determines the probability of being poor is not only possession of certain assets but also their market price at any given time. On the other hand, the poverty gap is much greater among of the less educated.

Unlike other countries, in Latin America the incidence of poverty is lower in households headed by women. Since 1991, the incidence of poverty has been lower in households headed by women, which is consistent with the increase in the rate of activity of women and the increase in their income relative to men. [15]

This problem can be resolved by a joint analysis of the impact of access or possession of several assets on levels of poverty, as seen later.

[15] This does not necessarily mean that gender differences, *ceteris paribus,* are important in explaining differences in the state of poverty or in the transition between non-poor and poor. This requires "control" through possession of the other assets.

Table IV.3
Poverty indicators by access to assets: URBAN

	1985				1991				1994			
Variables	%	FGT0	FGT1	FGT2	%	FGT0	FGT1	FGT2	%	FGTO	FGT1	FGT2
Educational level of head												
No education	5.2	48.8	19.7	11.7	4.7	70.3	30.6	16.8	5.7	69.5	26.7	14.0
Primary-initial	43.7	43.1	14.8	7.3	34.2	63.3	23.3	11.2	36.9	57.1	20.3	9.6
Incomplete Secondary	14.1	33.2	9.5	4.1	14.6	59.1	20.9	10.2	13.5	48.2	14.3	5.8
Complete Secondary	20.4	25.8	6.1	2.7	26.4	45.7	14.1	6.1	23.4	31.1	8.7	3.4
Incomplete higher	4.2	17.4	7.4	5.0	5.8	35.1	10.1	4.1	6.0	15.6	3.1	0.9
Complete higher	12.3	7.5	3.1	2.1	14.4	21.3	4.3	1.3	14.4	10.3	2.0	0.9
Gender												
Women	14.5	33.1	11.4	5.9	16.3	47.6	16.7	8.2	17.6	37.2	12.3	5.6
Men	85.5	33.0	10.7	5.3	83.7	51.3	17.5	8.1	82.4	42.2	13.8	62

Table IV.4
Poverty indicators by access to assets::RURAL

	1985-86				1991				1994				
Variables	%	FGTO	FGT1	FGT2	%	FGTO	FGT1	FGT2	%	FGTO	FGT1	FGT2	%
Education of head													
No education	27.3	59.1	26.8	16.4	13.3	79.6	33.5	17.2	15.3	79.2	31.3	16.5	15.4
Primary-initial	63.2	52.3	22.1	12.4	60.9	74.0	35.1	20.3	59.9	70.2	28.7	15.0	61.3
Incomplete Secondary	5.0	30.9	12.6	7.3	11.3	78.9	40.7	24.7	13.2	61.2	20.7	9.7	11.1
Complete Secondary	3.2	35.5	12.4	5.8	11.0	63.6	29.5	16.5	8.9	49.9	16.4	7.6	9.9
Incomplete higher	0.7	12.9	1.4	0.2	1.5	43.8	17.6	10.9	1.2	62.8	23.0	11.7	1.3
Complete higher	0.6	-	-	-	2.0	30.4	10.0	3.5	1.5	19.8	5.5	1.6	1.0
Gender													
Women	11.3	44.1	21.3	13.1	9.5	65.8	26.2	13.7	8.0	52.7	19.1	9.5	9.1
Men	88.7	53.0	22.4	12.8	90.5	73.5	34.9	20.1	92.0	69.0	27.2	14.0	90.9
Land													
Yes	19.0	50.9	22.8	14.2	6.2	75.2	34.2	18.6	8.2	69.5	28.7	14.9	11.3
No	81.0	52.2	22.2	12.5	93.8	72.7	34.1	19.5	91.8	67.6	26.3	13.5	88.7
Total	100.0	52.0	22.3	12.9	100.0	72.8	34.1	19.5	100.0	67.7	26.5	13.6	100.0

1/ This variable is only defined for 1994

Table IV.4 shows similar indicators for the rural sector. In this case poverty is much more concentrated among individuals with a lower educational level. Only 10% of the poor have completed secondary or further education. However, given the high incidence of poverty in general in the rural sector, the incidence only falls below 20% in the case of individuals with a completed higher education. The poverty gaps between the more and less educated is much larger in the urban areas. In the case of gender in rural areas, the incidence of poverty is a lower among families headed by women.

ÍV.2 Relationship between assets, returns and poverty: a static analysis

Depending on the conceptual framework, the relationship between possession or access to certain assets and the condition of poverty can be seen either as a profile of poverty or an attempt to understand its determinants. Based on the static model of optimization of household decisions on production and consumption, it is possible to derive a relationship between household spending and possession of assets, which is susceptible to empirical evaluation.

In fact, assuming that households as producers maximize benefits subject to the usual technological restrictions (i.e. production function) and as consumers maximize their welfare by optimizing their consumption and work decisions given the level of gains obtained, it is possible to establish a direct connection between possession and access to assets and levels of spending by the household. The reduced form of this problem of optimization can be represented in terms of the following spending equation:

$$G = G(p;A) = G(p;A_{hum}, Af_{is}, Af_{in}, Apub\&or_g) \qquad (2)$$

where *p* is the price vector and A is the vector that includes all the assets that the household has access to. These assets can in turn be classified as assets associated with human capital (A_{hum}), physical capital (Afi_s), financial capital (Af_{in}) and public and organizational capital ($A_{pub\&org}$)-

This equation establishes a direct connection, given an economic context, between possession or access to assets by a household and its spending capacity. If our definition of poverty is based on the indicator of household spending, it is possible to rewrite equation (1) as follows:[16]

[16] Assuming separability between the price vector and the assets, equation (5) can be expressed as $G^* = G^*(A_{hum}, A_{fi}, Afi_{in}, A_{pub}, Aorg)$ where the regional price vector is included in the spending calculation; that is, the spending is expressed in this case at constant values of the city of Lima,

$$P = P(A_{hum}, A_{fis}, A_{fin}, A_{pub\&org}) \quad (2)$$

where P indicates the probability of a household being poor or non-poor.

Tables IV.5 and IV.6 show the estimates of equation (6), which has been done as an estimate of a probit model at urban and rural levels for each year for which information from ENNIV is available. In general the results for the 1985-1986 period are consistent. Variables of human capital such as years of education of the head and members aged over 14, family size, financial capital (financial saving, durable goods or own home), access to public services and organizational capital (water, sewerage and electricity, along with membership of organizations) are consistently significant with the correct sign. Migratory experience in times of crisis also appears as significant (e.g. in 1991).

In the urban sector, the variables of access with guarantees to the capital market are significant (durable goods and own home), as well as the variables of human capital mentioned in the last paragraph. In the rural sector, the variables associated with public and organizational capital are important (access to water and sewerage and membership of associations) followed by variables associated with financial capital (financial savings and durable goods). It is interesting to note that, confirming the mention in the last section, access to land does not discriminate between poor and non-poor in the rural sector. No differences were found by gender of head of household. In the latter case, the gender difference identified in the preceding section was diluted when controlled by possession and access to the other assets.

The negative sign of the variable of family size is very strong[17]. A possible interpretation is that smaller families are better able to increase their assets to leave poverty. However this variable could also be appearing as a proxy of other variables of human capital not observed.

[17] The negative relationship appears in both the spending equations and the probit equations. This relationship between larger families and lower spending or greater probability of being poor, maintains its sign and significance even when economies of scale in consumption are incorporated, although it can obviously change in magnitude. Simulations with a parameter of economies of scale in consumption from 0.5 to 1 confirmed this statement, since economies of scale would require an implausible magnitude to reverse the signs of the relationships. See annex 2 of Escobal, Saavedra and Torero (1998).

Table IV.5
Estimates of the determinants of poverty: urban sector
(Marginal effects)

Variables	1985-1986	1991	1994	1996
Intercept	0.1409	0.7232	0.3995	0.0214
	(2.789)	(4.750)	(4.399)	(0.105)
Years of education of head	-0.0109	-0.0156	-0.0204	-0.0195
	-(2.142)	-(1.346)	-(2.452)	-(1.570)
Years of education of head squared	0.0002	-0.0001	-0.0001	0.0000
	(0.683)	-(0.103)	-(0.120)	(0.005)
Years of education of rest of household	-0.0090	-0.0361	-0.0245	-0.0135
(aged over 14)	-(4.773)	-(8.081)	-(7.597)	-(2.829)
Potential experience (head)	0.0000	-0.0015	-0.0003	-0.0026
	-(0.084)	-(1.219)	-(0.386)	-(2.075)
Marital status (married)	-0.0002	0.0959	0.0695	0.1132
	-(0.008)	(1.861)	(1.766)	(2.040)
Gender of head of household	-0.0120	-0.0542	0.0160	-0.0925
	-(0.502)	-(1.006)	(0.386)	-(1.596)
% of migrants in household	-0.0559	-0.1353	-0.1221	0.0004
	-(2.426)	-(2.719)	-(3.043)	(0.005)
Days of illness (head)	-0.0070	0.0076	-0.0029	-0.0314
	-(1.606)	(0.717)	-(0.339)	-(0.999)
Family size	0.0328	0.0802	0.0675	0.0864
	(10.000)	(11.650)	(12.692)	(10.604)
Proportion of people with 6 years or more	-0.0724	-0.3040	-0.1848	-0.0505
	-(1.756)	-(3.028)	-(2.635)	-(0.394)
Financial savings	-0.1190	-0.1023	-0.1417	-204.8
	-(6.922)	-(2.781)	-(3.246)	-(2.357)
Durable goods	-0.0124	0.0001	-0.0084	-0.0940
	-(8.647)	(1.230)	-(2.536)	-(5.440)
Own home	-0.0018	0.0707	-0.0370	-0.0661
	-(0.143)	(2.341)	-(1.680)	-(1.986)
Potable water in home	-0.0480	-0.0787	-0.1187	-0.0343
	-(2.611)	-(1.367)	-(3.045)	-(0.578)
Sewerage in home	-0.0394	-0.0631	-0.0850	-0.0630
	-(2.595)	-(1.302)	-(3.340)	-(1.463)
Have electric power	-0.0600	-0.2642	-0.1121	0.1215
	-(2.140)	-(2.624)	-(2.047)	(0.791)
Have telephone	-0.0411	-0.3091	-0.2424	-0.1959
	-(1.816)	-(7.275)	-(6.205)	-(4.779)
Membership of associations	-0.0700	-0.1211	-0.1132	-0.0540
	-(3.897)	-(2.281)	-(2.269)	-(0.794)
Pseudo R2	0.265	0.246	0.318	0.347
Prediction rate	0.821	0.746	0.802	0.810

Note: The Z statistics are in brackets.

Authors' own figures based on ENNIV 1985-86, 1991, 1994 and 1996

Table IV.6
Estimates of determinants of poverty: rural sector
(Marginal effects)

Variables	1985-1986	1991	1994	1996
Intercept	-0.2318	0.2578	0.4114	0.4851
	-(2.456)	(1.470)	(3.625)	(1.951)
Years of education of head	-0.0116	-0.0308	-0.0315	-0.0692
	-(1.153)	-(1.643)	-(2.471)	-(2.686)
Years of education of head squared	-0.0004	0.0000	0.0002	0.0030
	-(0.409)	-(0.030)	(0.242)	(1.490)
Years of education of rest of household	-0.0177	-0.0318	-0.0264	-0.0301
(aged over 14)	-(3.668)	-(4.352)	-(5.331)	-(2.991)
Potential experience (of head)	0.0005	-0.0061	-0.0019	-0.0009
	(0.560)	-(3.534)	-(1.554)	-(0.362)
Marital status	0.0238	-0.1262	0.0143	0.0674
	(0.599)	-(1.584)	(0.228)	(0.537)
Gender of head of household	-0.0076	0.1182	0.0754	-0.0693
	-(0.168)	(1.236)	(1.077)	-(0.482)
% of migrants in household	-0.0273	-0.0685	-0.1895	-0.1425
	-(0.666)	-(0.594)	-(2.791)	-(0.804)
Days of illness (head)	0.0106	-0.0341	-0.0045	-0.0608
	(1.306)	-(1.790)	-(0.385)	-(1.025)
Family size	0.0709	0.1186	0.0875	0.1434
	(12.665)	(8.464)	(11.241)	(8.258)
Proportion of people with 6 or more years	-0.0343	-0.2220	-0.5144	-0.7783
	-(0.429)	-(1.353)	-(5.105)	-(3.418)
Financial savings	0.0055	-1.2029	-0.2038	-421.6
	(0.374)	-(1.229)	-(3.154)	-(2.278)
Durable goods	-0.0492	-0.0001	-0.0002	-0.2784
	-(8.305)	-(0.832)	-(0.145)	-(4.321)
Size of land	-0.0001	-0.0029	-0.0001	0.0020
	-(0.844)	-(1.037)	-(0.171)	(0.359)
Own home	-0.0311	0.0656	-0.0079	0.0342
	-(0.989)	(0.888)	-(0.213)	(0.443)
Potable water in home	-0.0133	0.1025	-0.0324	0.0870
	-(0.546)	(1.981)	-(1.070)	(1.382)
Sewerage in home	-0.0586	0.0217	-0.1461	-0.1301
	-(1.409)	(0.448)	-(3.461)	-(1.614)
Have electric power	-0.0113	0.0224	0.0310	0.0414
	-(0.242)	(0.318)	(0.667)	(0.410)
Membership of associations	-0.2248	-0.2000	-0.0871	-0.2339
	-(6.580)	-(1.840)	-(1.361)	-(2.932)
Pseudo R2	0.155	0.249	0.219	0.316
Prediction rate	0.696	0.757	0.731	0.796

Note: The Z statistics are in brackets.

Authors' own figures based on ENNIV 1985-86, 1991, 1994 and 1996

The estimate of the spending equations [18], as specified in equation (5), permits the calculation of an indicator of the asset elasticity of spending, as follows:

Tables IV.7 and IV.8 present precisely these calculations for the urban and rural sectors, respectively [19].

To simplify the interpretation of these results, they are presented in terms of the additional spending permitted by one unit of each asset (e.g. one more year of education or an additional hectare). The indicators have been evaluated at the average values of each quintile. For the urban sector all the asset elasticities of spending for the 1985-86 survey are progressive (i.e. highest in the poorest quintile). In 1996 the progressivity is maintained for the variables associated with education, labor experience and financial saving, while the other variables analyzed show relatively similar elasticities throughout the spending quintiles. The elasticity rises notably between 1985-86 and 1994 for critical assets such as education, labor experience and financial saving. For example 1,000 additional *soles* in durable goods or one year of labor experience raises on average per capita spending by over 10% while one year extra of education raises per capita spending by 5% to 7%. Lastly the elasticities associated with the provision of public goods or community capital are very low and even insignificant in many cases.[20]

Likewise in the rural sector, all the variables analyzed show a progressive pattern in the 1985-86 survey, except the "membership of associations" variables (proxy of community capital) which shows a regressive pattern, and the land variable which has the same elasticity in all quintiles. In this period the elasticity or return on agricultural machinery is high: 1,000 additional soles of this asset can raise the spending per capita of the poorest quintiles by over 40%. Next in importance are access to public goods and financial savings: access to sewerage and 1,000 additional soles of financial savings

[18] The estimates of the spending equations for urban and rural households are reported in Escobal, Saavedra and Torero (1998) and are available from the authors.

[19] Both these elasticities and the cross elasticities reported in Table IV.9 were calculated omitting the parameters of the spending function that were not significant.

[20] As shown in the next section, the indirect impact of this type of asset is significant because of the higher return on the private assets.

raise the per capita spending of the poorest quintile by 15% and 13% respectively. In general, the magnitude of the elasticity was constant between 1985-1986 and 1994.

A common element in the estimates of the spending elasticities reported for both the urban and rural sectors is the high value of the family size variable: one extra member in the family reduces per capita spending *(ceteris paribus)* between 11% and 15% in the urban sector and 4% and 17% in the rural sector, affecting most the poorest quintiles.

Table IV.7
Elasticities of assets in urban sector
(Percentages)

Variable	Quintile 1	2	3	4	5
			ENNIV 1985-86		
Additional 1,000 soles of durable goods	2.9	3.0	2.7	2.8	2.3
One additional year of potential experience	1.1	1.1	1.2	1.1	1.0
One additional day of illness	4.4	4.5	4.6	4.3	4.6
One additional year of education of head	3.7	3.4	3.6	3.5	2.8
Additional 1,000 soles of financial savings	8.4	7.5	7.2	6.8	6.3
One additional member in family	-11.6	-12.4	-13.6	-15.0	-16.0
			ENNIV 1994		
Additional 1,000 soles of durable goods	11.6	11.7	11.2	11.8	12.2
One additional year of potential experience	0.0	-0.2	-0.5	-0.7	-1.7
One additional day of illness	-1.7	-0.7	0.2	1.1	3.9
One additional unit of community capital	0.5	0.5	0.3	0.4	0.5
One additional year of education of head	7.6	8.0	8.2	7.5	5.4
Additional 1,000 soles of financial savings	7.2	7.3	7.7	7.9	5.6
One additional member in family	-12.0	-12.0	-12.0	-12.0	-12.0

Note: The elasticities measure the percentage change in the spending per capita in view of a discrete change in the variables. The results are evaluated on the average values of the quintiles. The quintiles are arranged from lower to higher spending per capita.

Authors' own figures based on estimates of semi-logarithmic spending equations.

Another interesting indicator that can be derived from the per capita spending equations is the "cross elasticity" between asset i and asset j:

$$\varepsilon_{A,A_j} = \frac{\partial\left(\frac{\partial G}{\partial A_i}\right)}{\partial A_j} x\, A_{jover} \frac{\partial G}{\partial A_i} \qquad (4)$$

Table IV.8
Elasticities of assets in the rural sector
(Percentages)

Variable	Quintile 1	2	3	4	5
			ENNIV 1985-86		
One additional member in family	-14.1	-14.5	-14.7	-15.5	-17.2
Additional 1,000 soles of durable goods	5.4	5.4	5.5	5.3	4.7
Membership of associations	1.2	4.4	5.3	7.5	12.2
One additional hectare of land	0.1	0.1	0.1	0.1	0.1
Additional 1,000 soles of agricultural equipment	44.5	44.7	44.0	35.9	2.2
Access to sewerage in home	16.4	15.4	15.7	15.7	15.7
One additional year of education of head	4.1	3.9	3.5	3.4	3.2
Additional 1,000 soles of financial savings	14.0	13.7	12.4	11.2	6.6
			ENNIV 1994		
One additional member in family	-18.7	-17.4	-16.9	-12.3	-8.1
Additional 1,000 soles of durable goods	6.3	6.5	6.3	6.9	7.5
Membership of associations	0.5	0.7	0.6	0.8	0.5
One additional hectare of land	0.7	0.7	0.8	0.6	0.5
Additional 1,000 soles of agricultural equipment	18.2	18.3	17.8	16.4	43.3
Access to sewerage in home	15.5	16.2	15.9	16.0	15.9
One additional year of education of head	4.1	4.0	4.4	4.9	4.2
Additional 1,000 soles of financial savings	2.6	0.4	1.0	0.9	-1.7

Note: The elasticities measure the percentage change in per capita spending in relation to a discrete change in the variables. The results are evaluated in the average values of the quintiles. The quintiles are arranged from lower to higher spending per capita.

Authors' own figures based on the estimates of semi-logarithmic spending equations.

As $\frac{\partial A_i}{\partial A_j}$ is a proxy for the return on asset A_i, $\varepsilon_{A_i A_j}$ it simulates the percentage rise in return on one asset in relation to a percentage increase in the possession of the other assets.[21] The estimated spending equation is semi-logarithmic and includes the interactions between assets. Given the functional form chosen, the elasticities vary throughout the range of interest of the assets, which although complicating the

[21] This "return" is approximated by the effect generated by an additional unit of an asset on the value of its marginal product, measured in terms of household spending.

calculation gives much more flexibility, permitting the estimate of different values for the elasticities at the average values of each quintile.[22]

Table IV.9 shows these estimates for the return on the assets of education and land in relation to changes in the possession of other assets of human capital (family size) and access to public assets (sewerage, electric power, roads). In all cases, except in relation to changes in family size, the cross elasticities are positive, and the changes in the return on education and land in relation to a change in the access to public goods are greater in the richest strata. Family size is again negative and "progressive" in the sense that the reductions in the return on education are higher in the richest quintile. Finally, the simulations show that one more year of education increases the return on the land by 3% to 4%, evidence of the complementarity of both assets.

IV.3. Assets and transition between states of poverty

Access to assets of human, physical and financial capital and public or organizational capital would not only raise the return on private assets but have an effect on the process of asset accumulation. Thus, the original possession of assets, their process of accumulation and the existence of external shocks would be the determinants of the transition of households along the scale of income or spending. Under this criterion, it is possible to derive an equation that represents the transition of a household from one level of spending to another, or alternatively from states of poverty or non-poverty:

$$\Delta P = P(A_{i0}, A_{j0}, A_{k0}, A_{l0}; \Delta A_i, \Delta A_j, \Delta A_k, \Delta A_l, \eta); \quad i \in A_{hum}, j \in A_{fis}, k \in A_{fin}, k \in A_{pub\ \&\ org} \qquad (5)$$

where all the variables have been defined, except $r\backslash$ which represents a vector of short-term shocks that affect current income/spending. In our case we introduced two variables to capture short-term shocks: the spending of the Compensation and Social Development Fund (FONCODES) between 1991 and 1994 and the change in the labor status between both years (the difference between the household occupation rate measured as the number of members of the household who work compared with the number of members aged over 14). Both variables attempt to capture short-term modifications in the macro-environment which have not yet resulted in changes in the possession of assets.

If a double-logarithmic functional form of the parameters of the cross products had been used the elasticities would be constant, but this would obviously be less interesting because the effect of a change of assets would be the same between rich and poor.

Table IV.9
Change in the return on education and land in relation to an increase in selected assets
(Simulation)

	Quintile				
Variable	1	2	3	4	5
Urban 1985-86					
	Return on education				
One additional member in family	-12.0	-12.3	-13.1	-14.0	-16.2
Access to sewerage in home	8.1	8.7	10.3	10.5	10.9
Access to electric power	14.1	14.2	14.8	14.2	15.6
Urban 1994					
	Return on education				
One additional member in family	-12.1	-12.7	-12.1	-12.7	-12.9
Access to sewerage in home	8.0	11.3	13.4	14.5	14.4
Access to electric power	13.8	14.0	15.6	15.1	15.1
Rural 1985-86					
	Return on education				
	-15.6	-16.6	-17.5	-18.1	-22.6
One additional member in family	0.5	1.0	1.4	2.3	2.5
Access to sewerage in home	2.4	0.9	1.1	1.2	1.0
One additional hectare of land					
	Return on land				
One additional year of education	4.1	3.8	3.6	3.5	3.2
Rural 1994					
	Return on education				
One additional member in family	-29.6	-30.2	-29.6	-30.0	-29.0
Access to sewerage in home	1.3	1.5	1.8	2.1	4.3
Access to electric power	11.3	9.4	6.4	4.6	-0.6

Note: The values show the percentage change in the profitability of education and land in relation to a discrete change in their variables selected. The results are evaluated on the average values of each quintile. The quintiles are ordered from lower to higher.
Authors' own figures based on the estimates of semi-logarithmic spending equations.

To evaluate the transition between states of poverty, a panel of 1,316 households surveyed in 1991 and 1994 was used. To see how representative the panel is with respect to the 1991 sample, the panel information for the principal variables under study was compared with data that does not form part of the panel because the households were not present in the 1994 survey. The coverage of the panel represents 71.5% of the 1991 sample. The results, based on the principal variables under study, show that the

information at panel level does not contain significant differences in relation to the global sample of 1991. However, the panel assigns greater weight to the urban north coast and lesser weight to metropolitan Lima. In relation to the poverty rate, the panel captures the distribution of the total sample, although with a slight bias since it captures 74% of the poor and only 71% of the non-poor.

Table IV.10
Distribution of household panel between 1991 and 1994
(Percentages)

	URBAN	RURAL	TOTAL
Poor to poor	23.9	42.9	29.3
Poor to non-poor	20.8	21.7	21.0
Non-poor to poor	8.6	13.4	10.0
Non-poor to non-poor	46.8	22.0	39.7
Number of cases	943	373	1316

Source: ENNIV 1991 and 1994

The estimate of equation (10) requires the use of a discrete variable to indicate the changes between the different states, and the use of a multinomial logit to estimate the effect of the possession of different types of asset on the probability that for example a household remains in poverty or makes a successful transition. The estimate of the transition matrix from the multinomial logit is asyntotically equivalent to the direct estimate of the transition matrix by maximum verisimilitude. The advantage of the option used here is that it explicitly identifies the effects of the possession of different assets on the transition process.

Since certain changes in the possession of assets can be considered endogenous to the process of household decision-making, the changes have to be instrumentalized, especially for changes in key assets such as education, financial saving, land or livestock. The changes in public assets are considered exogenous to the process of household decision-making and are not therefore instrumentalized. For the instrumentalization, the endowment of initial assets is used both those that appear in the estimate and others not considered in the estimated model (e.g. education of the rest of the household).

Since the set of explanatory variables shows an important degree of collinearity, certain restrictions were imposed. In particular the estimated model assumes that the changes in possession of assets helps explain the transitions but does not affect the households that remained in the same state between 1991 and 1994. It is also assumed that the asset levels help explain why certain households remain poor or non-poor but

are less important in explaining the transition. Additionally, because of the small number of panel observations for the rural sector, the model was estimated for the entire sample.

Table IV.11 shows the results obtained from the proposed multi-nominal logit model. The model maintained 15 explanatory variables previously analyzed which are indicators of the assets of human capital (education of head of household, potential labor experience, gender differences, migratory ability, illnesses in the household and family size), assets of physical and financial capital (financial saving, durable goods, land, livestock), and of public and organizational capital (access to water, electricity, sewerage, telephone and membership of social organizations). The prediction rate of the model is reasonably high for households that remain in their initial state (poor or non-poor). In contrast, the prediction rate for households that make the transition from states of poverty is low, reflecting inability to capture adequately all the short-term shocks that affect the transitory income or spending of the households:

Table IV.12
Prediction rate of model

STATES	Correct	Incorrect
Poor to poor	67.5%	32.5%
Poor to non-poor	20.9%	79.1%
Non-poor to poor	13.0%	87.0%
Non-poor to non-poor	81.6%	18.4%

The multivariate logit-type models have the property of independence of irrelevant alternatives (HA), that is to add or reduce alternatives or states does not affect the relative probabilities of the state maintained in the model. This property could be undesirable in a model such as that proposed here because the states are conditional on the initial position of each household. To verify that this property does not generate important biases in the results obtained, the statistical test developed by Hausman and McFadden (1984) was used. As shown in Table IV.13, in our case the tests show that the estimates of the proposed model were not affected by this assumption.

These assumptions appear reasonable in the light of the results of the unrestricted logit model, with the sole exception of the educational variable in the equations that explain the transitions (variable that was introduced in the model). It should be noted that due to the high collinearity verified between the changes in the assets and their levels, these restrictions were imposed ex ante.

Table IV.ll

Multinomial analysis of changes in states of poverty (Marginal effects)

I: IN TRANSITION

	POOR TO NON-POOR		NON-POOR TO POOR	
	Coefficients	**z**	**Coefficients**	**z**
Education of head of household	-0.002	-0.519	-0.006	-2.500
Gender	0.018	0.433	0.006	0.241
A(Education of head of household) (1)	0.007	1.489	-0.012	-4.098
A(Potential labor experience)	-0.002	-1.623	-0.002	-2.127
A(Migration)	0.146	2.486	-0.078	-2.053
A(Land)(l)	0.021	1.552	-0.003	-1.384
A(Access to potable water)	0.017	0.310	0.063	2.218
A(Access to sewerage)	0.021	0.290	0.000	-0.007
A(Access to electricity)	0.029	0.324	-0.063	-0.938
A(Access to telephone)	0.051	0.670	-0.100	-1.174
A(Family size)	-0.034	-5.124	0.028	6.842
A(Financial savings) (1)	-0.014	-0.068	0.045	0.345
A(Livestock)(l)	-0.001	-0.882	-0.001	-1.796
A(Community capital)	-0.062	-0.799	-0.003	-0.075
A(Labor status)	0.052	1.806	-0.057	-3.184
FONCODES	0.000	0.304	0.000	-0.864
Constant	-0.058	-0.922	-0.063	-1.870

II: CONSTANT

	POOR TO POOR		NON-POOR TO NON-POOR	
	Coefficients	**z**	**Coefficients**	**z**
Education of head of household	-0.032	-7.047	0.049	8.713
Potential labor experience	-0.005	-4.193	0.008	5.416
Gender	0.031	0.883	-0.086	-1.668
Migration	-0.202	-3.569	0.137	1.992
Illness	-0.002	-0.147	-0.003	-0.232
Family size	0.062	8.357	-0.092	-10.011
Financial savings	-0.466	-2.842	0.315	3.450
Durable goods	0.000	1.186	0.000	-0.682
Land	0.000	0.008	0.001	0.347
Access to potable water	-0.018	-0.520	-0.056	-0.988
Access to sewerage	-0.003	-0.104	0.077	1.607
Access to electricity	-0.049	-0.906	0.101	1.148
Access to telephone	-0.446	-4.417	0.418	6.016
Community capital	0.448	1.845	0.063	0.179
Livestock	0.002	2.234	-0.004	-2.333
Labor status	0.077	3.397	-0.102	-2.918
FONCODES	0.000	-0.003	0.000	-0.085
Constant	0.181	2.162	-0.156	-1.239
Pseudo R2			0.195	

Note: (1) These variables were instrumentalized to correct possible bias due to endogenous effects.

Table IV.13
Hausman test for IIA

Excluding alternative poor-poor	13.7563
Excluding alternative poor/non-poor	10.9349
Excluding alternative non-poor/poor	11.1669
Excluding alternative non-poor/non-poor	62.6985

Test:

Where ***s*** indicates the estimators based on the restricted subset of alternatives, and / indicates the estimators with all the set of alternatives. The critical value is 75.35 at the level of 1%.

The probabilities of transition are presented in Table IV. 14 where the effective probability is equivalent to the transitions effectively observed and reported in Table IV.10.

Table IV.14
Probability of Transition

STATES	EFFECTIVE	ESTIMATE
Poor to poor	29.3%	35.7%
Poor to non-poor	21.0%	10.5%
Non-poor to poor	10.0%	3.0%
Non-poor to non-poor	39.7%	50.8%
TOTAL	100.0%	100.0%

The results reveal that the assets of human capital assets (years of education of head of household, potential experience of head, migratory experience and family size), financial capital (financial savings), physical capital (livestock) and public and organizational capital (access to telephone and membership of associations) are crucial in explaining why certain households remain in a state of poverty or non-poverty. Changes in some human capital assets (migratory experience and family size) as well as the positive shocks associated with change in the labor status are the variables that best explain the transition from poverty. Conversely, the variables that best explain why certain households that were not poor in 1991 had become poor by 1994 are the level and change in educational level of the head of household, changes in labor and migratory experience, together with lack of access to public goods and the adverse shock associated with the change in labor status.

Gender differences are not important in any of the four states analyzed. Additionally, of the short-term shocks identified (FONCODES spending and change in labor status) only the second has explanatory power for understanding the reasons why a household moves into or out of poverty. Lastly as expected, family size reduces the probability of improving status and is determinant in explaining why some households remain in poverty.

V. Conclusions and Policy Implications

This study has empirically verified the key assets that characterize the poor population of Peru. It has attempted to better understand the connection between assets and poverty, analyzing changes in the distribution of assets, the link between access to or holding of these assets and poverty, and the connection between their return and poverty. Given that many of these assets are reasonably exogenous, at least in the short term, an understanding of these relationships enriches the debate on which public policies could have the greatest effect on poverty reduction.

In the Peruvian case, the study shows the importance of variables such as education and family size for typifying the state of poverty of individuals, through the analysis of probit models and spending regressions. The analysis also confirms that access to credit and ownership of assets that can be used as collateral has a positive effect on spending and on the probability of not being poor. Finally, statistical evidence was found that variables of public and organizational capital such as membership of organizations, and access to basic public services such as water, sewerage, electricity and telephone have a similar impact. In this respect, the empirical analysis is consistent with the view that the lack of access to certain key assets, which generate sufficient income for loans for a part of the population, underlies the problem of poverty.

The level and the changes in the return on assets are as important as the possession itself of assets in the determination of the status of poverty. These returns can also be modified by access to complementary key assets. Utilizing the parameters estimated from the spending equations, the impact was calculated of changes in the ownership and access to complementary assets on the return on education and land. The results show a positive effect of public assets on these returns, which is evidence that private and public assets are complementary. This shows the role of public policy in terms of provision of services and infrastructure as a mechanism to strengthen the return from private assets and thus facilitate reduction of poverty.

Further, reductions in family size have a significant positive impact on the return of the assets mentioned. The concept that the larger the family implies an increase in the productive resources of the family and therefore an increase in wellbeing is not empirically sustained. The finding is very significant even if the existence of economies of scale is accepted in family consumption. This could justify public intervention in the area of family planning, but since the variable is endogenous to other decisions and restrictions that affect the household, it is not possible to validate such a policy recommendation without first understanding the mechanism of the determination of family size. The variable as included in these calculations could in fact be capturing the effect of variables of human capital that are not easily observable.

A dynamic analysis was also done of the ownership of assets on mobility between the states of poverty and non-poverty. It was found that the initial levels of the assets are not sufficient to explain transitions into and out of poverty, although they are crucial in explaining permanence in poverty or non-poverty. This is to be expected since the sample of household in panel form was for a relatively short period (1991-1994). Education, labor experience and family size, as well as financial saving, access to telephone and ownership of livestock are the most important variables in explaining whether a household will remain in its original state of poverty.

In contrast, to explain transitions into and out of poverty, in addition to initial levels and changes in assets, shocks linked to short term changes have to be considered. These shocks were partially approximated by short-term changes in the social spending of FONCODES in each household's district and by short-term changes in the labor status of household members. Thus to leave poverty, the crucial factors are an increase in migratory experience, an increase in the number of employed persons in relation to total members of working age, and a reduction in family size. On the other hand, the level of education and its increase, labor experience, reduction in family size, improvements in access to potable water, and increases in livestock reduce the probability that a household move into a state of poverty. In this analysis of transition, the variable of FONCODES district spending was not significant.

In the first part of this work, to contextualize and justify the importance of the study of poverty and its determinants, an analysis was done of the trend in poverty and distribution of income and assets. A first conclusion is that during the last 20 years poverty and spending dispersion has fallen. The magnitude of the changes and the reasonable comparability of the information indicate a fall in poverty between 1971 and the 1980s. However, despite this long-term reduction and the improvements observed in

the 1990s, poverty in Peru is extremely high and continued to affect almost half the population in the mid-1990s. On the other hand, according to the Gini coefficient, the level of income dispersion fell from 0.55 to 0.40 between 1970 and 1996. It is clear then that the Peruvian problem, rather than distribution is one of low average income. However, although in the 1960s the inequality was sufficiently high to prevent economic growth from having a positive impact on reduction of poverty, in the future it could be expected that the negative impact of the initial inequality on the poverty-growth interaction could be lower.

The analysis suggests the possible existence of a relationship between poverty and the distribution of assets and income. The reduction in poverty and spending dispersion could be related to long-term structural changes in the average ownership and dispersion of education and land ownership. The decrease in the dispersion of land ownership is evidence, together with the increase in the stock of available land, of consistency with increased ownership of this asset by the poor. Yet, the absence of an institutional framework to facilitate the transfer of land lowered its value market value and its productivity. Additionally, the lack of other complementary assets, such as public goods and education, keeps poverty rates very high despite possible improvement of distribution within the rural sector.

In the urban case, the reduction in income dispersion is probably due to increased educational opportunities for individuals from all strata. In this case the dispersion of education is decreasing while the average level is increasing, which has as correlate an increase in the stock of this asset among the original poor. However, the correlate of the extension of education is a reduction in quality; although this has not led to a reduction in the return on education, the impact of the change in quality remains to be evaluated.

The study also analyzed the short-term trend in poverty and income distribution in the 1985-1996 period. In the Peruvian case, hyperinflation hindered the use of poverty lines based on purchasing power parity, requiring the use of poverty lines based on normative consumption baskets. The central evidence is that in recent years poverty has been pro-cyclical. Thus, between 1985 and 1991, poverty surged by 15 points to 55% in the context of a generalized fall in income. Then, poverty fell by nine points from 1991 until 1996, making impossible a return to the levels of poverty prior to the crisis of the late 1980s. Income distribution improved consistently from 1985 to 1996 in a context of falling income where spending by the poorest sectors fell less than that of the richest. In the 1990s, this reduction in dispersion took place in a context of economic growth in which the spending of the poorest deciles grew more rapidly than that of the richest.

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Table IV.4 shows similar indicators for the rural sector. In this case poverty is much more concentrated among individuals with a lower educational level. Only 10% of the poor have completed secondary or further education. However, given the high incidence of poverty in general in the rural sector, the incidence only falls below 20% in the case of individuals with a completed higher education. The poverty gaps between the more and less educated is much larger in the urban areas. In the case of gender in rural areas, the incidence of poverty is a lower among families headed by women.

IV.2 Relationship between assets, returns and poverty: a static analysis

Depending on the conceptual framework, the relationship between possession or access to certain assets and the condition of poverty can be seen either as a profile of poverty or an attempt to understand its determinants. Based on the static model of optimization of household decisions on production and consumption, it is possible to derive a relationship between household spending and possession of assets, which is susceptible to empirical evaluation.

In fact, assuming that households as producers maximize benefits subject to the usual technological restrictions (i.e. production function) and as consumers maximize their welfare by optimizing their consumption and work decisions given the level of gains obtained, it is possible to establish a direct connection between possession and access to assets and levels of spending by the household. The reduced form of this problem of optimization can be represented in terms of the following spending equation:

$$G = G(p;A) = G(p;A_{hum}, Afi_s, AfinApub\&org) \qquad (1)$$

where p is the price vector and A is the vector that includes all the assets that the household has access to. These assets can in turn be classified as assets associated with human capital (AhumX physical capital (Afi_s), financial capital ($Af_{¡_n}$) and public and organizational capital ($A_{p_{u_b}}$&org)'

This equation establishes a direct connection, given an economic context, between possession or access to assets by a household and its spending capacity. If our definition of poverty is based on the indicator of household spending, it is possible to rewrite equation (1) as follows:[16]

[16] Assuming separability between the price vector and the assets, equation (5) can be expressed as $G^* = G^*(A_{hum}, A_{fi}, Af_n > Ap_{„}b\&t > T_a)$ where the regional price vector is included in the spending calculation; that is, the spending is expressed in this case at constant values of the city of Lima,

$$P = P(A_{hum}, A_{fis}, A_{fin}, A_{pub\&org}) \quad (2)$$

where P indicates the probability of a household being poor or non-poor.

Tables IV.5 and IV.6 show the estimates of equation (6), which has been done as an estimate of a probit model at urban and rural levels for each year for which information from ENNIV is available. In general the results for the 1985-1986 period are consistent. Variables of human capital such as years of education of the head and members aged over 14, family size, financial capital (financial saving, durable goods or own home), access to public services and organizational capital (water, sewerage and electricity, along with membership of organizations) are consistently significant with the correct sign. Migratory experience in times of crisis also appears as significant (e.g. in 1991).

In the urban sector, the variables of access with guarantees to the capital market are significant (durable goods and own home), as well as the variables of human capital mentioned in the last paragraph. In the rural sector, the variables associated with public and organizational capital are important (access to water and sewerage and membership of associations) followed by variables associated with financial capital (financial savings and durable goods). It is interesting to note that, confirming the mention in the last section, access to land does not discriminate between poor and non-poor in the rural sector. No differences were found by gender of head of household. In the latter case, the gender difference identified in the preceding section was diluted when controlled by possession and access to the other assets.

The negative sign of the variable of family size is very strong [17]. A possible interpretation is that smaller families are better able to increase their assets to leave poverty. However this variable could also be appearing as a proxy of other variables of human capital not observed.

[17] The negative relationship appears in both the spending equations and the probit equations. This relationship between larger families and lower spending or greater probability of being poor, maintains its sign and significance even when economies of scale in consumption are incorporated, although it can obviously change in magnitude. Simulations with a parameter of economies of scale in consumption from 0.5 to 1 confirmed this statement, since economies of scale would require an implausible magnitude to reverse the signs of the relationships. See annex 2 of Escobal, Saavedra and Torero (1998).

Table IV.5
Estimates of the determinants of poverty: urban sector
(Marginal effects)

Variables	1985-1986	1991	1994	1996
Intercept	0.1409	0.7232	0.3995	0.0214
	(2.789)	(4.750)	(4.399)	(0.105)
Years of education of head	-0.0109	-0.0156	-0.0204	-0.0195
	-(2.142)	-(1.346)	-(2.452)	-(1.570)
Years of education of head squared	0.0002	-0.0001	-0.0001	0.0000
	(0.683)	-(0.103)	-(0.120)	(0.005)
Years of education of rest of household	-0.0090	-0.0361	-0.0245	-0.0135
(aged over 14)	-(4.773)	-(8.081)	-(7.597)	-(2.829)
Potential experience (head)	0.0000	-0.0015	-0.0003	-0.0026
	-(0.084)	-(1.219)	-(0.386)	-(2.075)
Marital status (married)	-0.0002	0.0959	0.0695	0.1132
	-(0.008)	(1.861)	(1.766)	(2.040)
Gender of head of household	-0.0120	-0.0542	0.0160	-0.0925
	-(0.502)	-(1.006)	(0.386)	-(1.596)
% of migrants in household	-0.0559	-0.1353	-0.1221	0.0004
	-(2.426)	-(2.719)	-(3.043)	(0.005)
Days of illness (head)	-0.0070	0.0076	-0.0029	-0.0314
	-(1.606)	(0.717)	-(0.339)	-(0.999)
Family size	0.0328	0.0802	0.0675	0.0864
	(10.000)	(11.650)	(12.692)	(10.604)
Proportion of people with 6 years or more	-0.0724	-0.3040	-0.1848	-0.0505
	-(1.756)	-(3.028)	-(2.635)	-(0.394)
Financial savings	-0.1190	-0.1023	-0.1417	-204.8
	-(6.922)	-(2.781)	-(3.246)	-(2.357)
Durable goods	-0.0124	0.0001	-0.0084	-0.0940
	-(8.647)	(1.230)	-(2.536)	-(5.440)
Own home	-0.0018	0.0707	-0.0370	-0.0661
	-(0.143)	(2.341)	-(1.680)	-(1.986)
Potable water in home	-0.0480	-0.0787	-0.1187	-0.0343
	-(2.611)	-(1.367)	-(3.045)	-(0.578)
Sewerage in home	-0.0394	-0.0631	-0.0850	-0.0630
	-(2.595)	-(1.302)	-(3.340)	-(1.463)
Have electric power	-0.0600	-0.2642	-0.1121	0.1215
	-(2.140)	-(2.624)	-(2.047)	(0.791)
Have telephone	-0.0411	-0.3091	-0.2424	-0.1959
	-(1.816)	-(7.275)	-(6.205)	-(4.779)
Membership of associations	-0.0700	-0.1211	-0.1132	-0.0540
	-(3.897)	-(2.281)	-(2.269)	-(0.794)
Pseudo R2	0.265	0.246	0.318	0.347
Prediction rate	0.821	0.746	0.802	0.810

Note: The Z statistics are in brackets.

Authors' own figures based on ENNIV 1985-86, 1991, 1994 and 1996

Table IV.6
Estimates of determinants of poverty: rural sector
(Marginal effects)

Variables	1985-1986	1991	1994	1996
Intercept	-0.2318	0.2578	0.4114	0.4851
	-(2.456)	(1.470)	(3.625)	(1.951)
Years of education of head	-0.0116	-0.0308	-0.0315	-0.0692
	-(1.153)	-(1.643)	-(2.471)	-(2.686)
Years of education of head squared	-0.0004	0.0000	0.0002	0.0030
	-(0.409)	-(0.030)	(0.242)	(1.490)
Years of education of rest of household	-0.0177	-0.0318	-0.0264	-0.0301
(aged over 14)	-(3.668)	-(4.352)	-(5.331)	-(2.991)
Potential experience (of head)	0.0005	-0.0061	-0.0019	-0.0009
	(0.560)	-(3.534)	-(1.554)	-(0.362)
Marital status	0.0238	-0.1262	0.0143	0.0674
	(0.599)	-(1.584)	(0.228)	(0.537)
Gender of head of household	-0.0076	0.1182	0.0754	-0.0693
	-(0.168)	(1.236)	(1.077)	-(0.482)
% of migrants in household	-0.0273	-0.0685	-0.1895	-0.1425
	-(0.666)	-(0.594)	-(2.791)	-(0.804)
Days of illness (head)	0.0106	-0.0341	-0.0045	-0.0608
	(1.306)	-(1.790)	-(0.385)	-(1.025)
Family size	0.0709	0.1186	0.0875	0.1434
	(12.665)	(8.464)	(11.241)	(8.258)
Proportion of people with 6 or more years	-0.0343	-0.2220	-0.5144	-0.7783
	-(0.429)	-(1.353)	-(5.105)	-(3.418)
Financial savings	0.0055	-1.2029	-0.2038	-421.6
	(0.374)	-(1.229)	-(3.154)	-(2.278)
Durable goods	-0.0492	-0.0001	-0.0002	-0.2784
	-(8.305)	-(0.832)	-(0.145)	-(4.321)
Size of land	-0.0001	-0.0029	-0.0001	0.0020
	-(0.844)	-(1.037)	-(0.171)	(0.359)
Own home	-0.0311	0.0656	-0.0079	0.0342
	-(0.989)	(0.888)	-(0.213)	(0.443)
Potable water in home	-0.0133	0.1025	-0.0324	0.0870
	-(0.546)	(1.981)	-(1.070)	(1.382)
Sewerage in home	-0.0586	0.0217	-0.1461	-0.1301
	-(1.409)	(0.448)	-(3.461)	-(1.614)
Have electric power	-0.0113	0.0224	0.0310	0.0414
	-(0.242)	(0.318)	(0.667)	(0.410)
Membership of associations	-0.2248	-0.2000	-0.0871	-0.2339
	-(6.580)	-(1.840)	-(1.361)	-(2.932)
Pseudo R2	0.155	0.249	0.219	0.316
Prediction rate	0.696	0.757	0.731	0.796

Note: The Z statistics are in brackets.

Authors' own figures based on ENNIV 1985-86, 1991, 1994 and 1996

The estimate of the spending equations [18], as specified in equation (5), permits the calculation of an indicator of the asset elasticity of spending, as follows:

Tables IV.7 and IV.8 present precisely these calculations for the urban and rural sectors, respectively [19].

To simplify the interpretation of these results, they are presented in terms of the additional spending permitted by one unit of each asset (e.g. one more year of education or an additional hectare). The indicators have been evaluated at the average values of each quintile. For the urban sector all the asset elasticities of spending for the 1985-86 survey are progressive (i.e. highest in the poorest quintile). In 1996 the progressivity is maintained for the variables associated with education, labor experience and financial saving, while the other variables analyzed show relatively similar elasticities throughout the spending quintiles. The elasticity rises notably between 1985-86 and 1994 for critical assets such as education, labor experience and financial saving. For example 1,000 additional *soles* in durable goods or one year of labor experience raises on average per capita spending by over 10% while one year extra of education raises per capita spending by 5% to 7%. Lastly the elasticities associated with the provision of public goods or community capital are very low and even insignificant in many cases. [20]

Likewise in the rural sector, all the variables analyzed show a progressive pattern in the 1985-86 survey, except the "membership of associations" variables (proxy of community capital) which shows a regressive pattern, and the land variable which has the same elasticity in all quintiles. In this period the elasticity or return on agricultural machinery is high: 1,000 additional soles of this asset can raise the spending per capita of the poorest quintiles by over 40%. Next in importance are access to public goods and financial savings: access to sewerage and 1,000 additional soles of financial savings

[18] The estimates of the spending equations for urban and rural households are reported in Escobal, Saavedra and Torero (1998) and are available from the authors.

[19] Both these elasticities and the cross elasticities reported in Table IV.9 were calculated omitting the parameters of the spending function that were not significant.

[20] As shown in the next section, the indirect impact of this type of asset is significant because of the higher return on the private assets.

raise the per capita spending of the poorest quintile by 15% and 13% respectively. In general, the magnitude of the elasticity was constant between 1985-1986 and 1994.

A common element in the estimates of the spending elasticities reported for both the urban and rural sectors is the high value of the family size variable: one extra member in the family reduces per capita spending (*ceteris paribus)* between 11% and 15% in the urban sector and 4% and 17% in the rural sector, affecting most the poorest quintiles.

Table IV.7
Elasticities of assets in urban sector
(Percentages)

Variable	Quintile 1	2	3	4	5
			ENNIV 1985-86		
Additional 1,000 soles of durable goods	2.9	3.0	2.7	2.8	2.3
One additional year of potential experience	1.1	1.1	1.2	1.1	1.0
One additional day of illness	4.4	4.5	4.6	4.3	4.6
One additional year of education of head	3.7	3.4	3.6	3.5	2.8
Additional 1,000 soles of financial savings	8.4	7.5	7.2	6.8	6.3
One additional member in family	-11.6	-12.4	-13.6	-15.0	-16.0
			ENNIV 1994		
Additional 1,000 soles of durable goods	11.6	11.7	11.2	11.8	12.2
One additional year of potential experience	0.0	-0.2	-0.5	-0.7	-1.7
One additional day of illness	-1.7	-0.7	0.2	1.1	3.9
One additional unit of community capital	0.5	0.5	0.3	0.4	0.5
One additional year of education of head	7.6	8.0	8.2	7.5	5.4
Additional 1,000 soles of financial savings	7.2	7.3	7.7	7.9	5.6
One additional member in family	-12.0	-12.0	-12.0	-12.0	-12.0

Note: The elasticities measure the percentage change in the spending per capita in view of a discrete change in the variables. The results are evaluated on the average values of the quintiles. The quintiles are arranged from lower to higher spending per capita.

Authors' own figures based on estimates of semi-logarithmic spending equations.

Another interesting indicator that can be derived from the per capita spending equations is the "cross elasticity" between asset i and asset j:

$$\varepsilon_{A_i A_j} = \frac{\partial\left(\frac{\partial G}{\partial A_i}\right)}{\partial A_j} x\, A_{jover} \frac{\partial G}{\partial A_i} \qquad (4)$$

Table IV.8
Elasticities of assets in the rural sector
(Percentages)

Variable	Quintile 1	2	3	4	5
			ENNIV 1985-86		
One additional member in family	-14.1	-14.5	-14.7	-15.5	-17.2
Additional 1,000 soles of durable goods	5.4	5.4	5.5	5.3	4.7
Membership of associations	1.2	4.4	5.3	7.5	12.2
One additional hectare of land	0.1	0.1	0.1	0.1	0.1
Additional 1,000 soles of agricultural equipment	44.5	44.7	44.0	35.9	2.2
Access to sewerage in home	16.4	15.4	15.7	15.7	15.7
One additional year of education of head	4.1	3.9	3.5	3.4	3.2
Additional 1,000 soles of financial savings	14.0	13.7	12.4	11.2	6.6
			ENNIV 1994		
One additional member in family	-18.7	-17.4	-16.9	-12.3	-8.1
Additional 1,000 soles of durable goods	6.3	6.5	6.3	6.9	7.5
Membership of associations	0.5	0.7	0.6	0.8	0.5
One additional hectare of land	0.7	0.7	0.8	0.6	0.5
Additional 1,000 soles of agricultural equipment	18.2	18.3	17.8	16.4	43.3
Access to sewerage in home	15.5	16.2	15.9	16.0	15.9
One additional year of education of head	4.1	4.0	4.4	4.9	4.2
Additional 1,000 soles of financial savings	2.6	0.4	1.0	0.9	-1.7

Note: The elasticities measure the percentage change in per capita spending in relation to a discrete change in the variables. The results are evaluated in the average values of the quintiles. The quintiles are arranged from lower to higher spending per capita.

Authors' own figures based on the estimates of semi-logarithmic spending equations.

As $\frac{dA}{A}$ is a proxy for the return on asset Ai ε_{AiA} it simulates the percentage rise in return on one asset in relation to a percentage increase in the possession of the other assets.[21] The estimated spending equation is semi-logarithmic and includes the interactions between assets. Given the functional form chosen, the elasticities vary throughout the range of interest of the assets, which although complicating the

[21] This "return" is approximated by the effect generated by an additional unit of an asset on the value of its marginal product, measured in terms of household spending.

calculation gives much more flexibility, permitting the estimate of different values for the elasticities at the average values of each quintile.[22]

Table IV.9 shows these estimates for the return on the assets of education and land in relation to changes in the possession of other assets of human capital (family size) and access to public assets (sewerage, electric power, roads). In all cases, except in relation to changes in family size, the cross elasticities are positive, and the changes in the return on education and land in relation to a change in the access to public goods are greater in the richest strata. Family size is again negative and "progressive" in the sense that the reductions in the return on education are higher in the richest quintile. Finally, the simulations show that one more year of education increases the return on the land by 3% to 4%, evidence of the complementarity of both assets.

IV.3. Assets and transition between states of poverty

Access to assets of human, physical and financial capital and public or organizational capital would not only raise the return on private assets but have an effect on the process of asset accumulation. Thus, the original possession of assets, their process of accumulation and the existence of external shocks would be the determinants of the transition of households along the scale of income or spending. Under this criterion, it is possible to derive an equation that represents the transition of a household from one level of spending to another, or alternatively from states of poverty or non-poverty:

$$\Delta P = P(A_{i0}, A_{j0}, A_{k0}, A_{l0}; \Delta A_i, \Delta A_j, \Delta A_k, \Delta A_l, \eta);$$
$$i \in A_{hum}, \; j \in A_{fis}, \; k \in A_{fin}, \; k \in A_{pub\ \&\ org} \qquad (5)$$

where all the variables have been defined, except r| which represents a vector of short-term shocks that affect current income/spending. In our case we introduced two variables to capture short-term shocks: the spending of the Compensation and Social Development Fund (FONCODES) between 1991 and 1994 and the change in the labor status between both years (the difference between the household occupation rate measured as the number of members of the household who work compared with the number of members aged over 14). Both variables attempt to capture short-term modifications in the macro-environment which have not yet resulted in changes in the possession of assets.

If a double-logarithmic functional form of the parameters of the cross products had been used the elasticities would be constant, but this would obviously be less interesting because the effect of a change of assets would be the same between rich and poor.

Table IV.9
Change in the return on education and land in relation to an increase in selected assets
(Simulation)

Variable	Quintile 1	2	3	4	5
Urban 1985-86					
			Return on education		
One additional member in family	-12.0	-12.3	-13.1	-14.0	-16.2
Access to sewerage in home	8.1	8.7	10.3	10.5	10.9
Access to electric power	14.1	14.2	14.8	14.2	15.6
Urban 1994					
			Return on education		
One additional member in family	-12.1	-12.7	-12.1	-12.7	-12.9
Access to sewerage in home	8.0	11.3	13.4	14.5	14.4
Access to electric power	13.8	14.0	15.6	15.1	15.1
Rural 1985-86			Return on education		
	-15.6	-16.6	-17.5	-18.1	-22.6
One additional member in family	0.5	1.0	1.4	2.3	2.5
Access to sewerage in home	2.4	0.9	1.1	1.2	1.0
One additional hectare of land					
			Return on land		
One additional year of education	4.1	3.8	3.6	3.5	3.2
Rural 1994			Return on education		
One additional member in family	-29.6	-30.2	-29.6	-30.0	-29.0
Access to sewerage in home	1.3	1.5	1.8	2.1	4.3
Access to electric power	11.3	9.4	6.4	4.6	-0.6

Note: The values show the percentage change in the profitability of education and land in relation to a discrete change in their variables selected. The results are evaluated on the average values of each quintile. The quintiles are ordered from lower to higher.
Authors' own figures based on the estimates of semi-logarithmic spending equations.

To evaluate the transition between states of poverty, a panel of 1,316 households surveyed in 1991 and 1994 was used. To see how representative the panel is with respect to the 1991 sample, the panel information for the principal variables under study was compared with data that does not form part of the panel because the households were not present in the 1994 survey. The coverage of the panel represents 71.5% of the 1991 sample. The results, based on the principal variables under study, show that the

information at panel level does not contain significant differences in relation to the global sample of 1991. However, the panel assigns greater weight to the urban north coast and lesser weight to metropolitan Lima. In relation to the poverty rate, the panel captures the distribution of the total sample, although with a slight bias since it captures 74% of the poor and only 71% of the non-poor.

Table IV.10
Distribution of household panel between 1991 and 1994
(Percentages)

	URBAN	RURAL	TOTAL
Poor to poor	23.9	42.9	29.3
Poor to non-poor	20.8	21.7	21.0
Non-poor to poor	8.6	13.4	10.0
Non-poor to non-poor	46.8	22.0	39.7
Number of cases	943	373	1316

Source: ENNIV 1991 and 1994

The estimate of equation (10) requires the use of a discrete variable to indicate the changes between the different states, and the use of a multinomial logit to estimate the effect of the possession of different types of asset on the probability that for example a household remains in poverty or makes a successful transition. The estimate of the transition matrix from the multinomial logit is asyntotically equivalent to the direct estimate of the transition matrix by maximum verisimilitude. The advantage of the option used here is that it explicitly identifies the effects of the possession of different assets on the transition process.

Since certain changes in the possession of assets can be considered endogenous to the process of household decision-making, the changes have to be instrumentalized, especially for changes in key assets such as education, financial saving, land or livestock. The changes in public assets are considered exogenous to the process of household decision-making and are not therefore instrumentalized. For the instrumentalization, the endowment of initial assets is used both those that appear in the estimate and others not considered in the estimated model (e.g. education of the rest of the household).

Since the set of explanatory variables shows an important degree of collinearity, certain restrictions were imposed. In particular the estimated model assumes that the changes in possession of assets helps explain the transitions but does not affect the households that remained in the same state between 1991 and 1994. It is also assumed that the asset levels help explain why certain households remain poor or non-poor but

are less important in explaining the transition. Additionally, because of the small number of panel observations for the rural sector, the model was estimated for the entire sample.

Table IV.11 shows the results obtained from the proposed multi-nominal logit model. The model maintained 15 explanatory variables previously analyzed which are indicators of the assets of human capital (education of head of household, potential labor experience, gender differences, migratory ability, illnesses in the household and family size), assets of physical and financial capital (financial saving, durable goods, land, livestock), and of public and organizational capital (access to water, electricity, sewerage, telephone and membership of social organizations). The prediction rate of the model is reasonably high for households that remain in their initial state (poor or non-poor). In contrast, the prediction rate for households that make the transition from states of poverty is low, reflecting inability to capture adequately all the short-term shocks that affect the transitory income or spending of the households:

Table IV.12
Prediction rate of model

STATES	Correct	Incorrect
Poor to poor	67.5%	32.5%
Poor to non-poor	20.9%	79.1%
Non-poor to poor	13.0%	87.0%
Non-poor to non-poor	81.6%	18.4%

The multivariate logit-type models have the property of independence of irrelevant alternatives (IIA), that is to add or reduce alternatives or states does not affect the relative probabilities of the state maintained in the model. This property could be undesirable in a model such as that proposed here because the states are conditional on the initial position of each household. To verify that this property does not generate important biases in the results obtained, the statistical test developed by Hausman and McFadden (1984) was used. As shown in Table IV.13, in our case the tests show that the estimates of the proposed model were not affected by this assumption.

[23] These assumptions appear reasonable in the light of the results of the unrestricted logit model, with the sole exception of the educational variable in the equations that explain the transitions (variable that was introduced in the model). It should be noted that due to the high collinearity verified between the changes in the assets and their levels, these restrictions were imposed ex ante.

Table IV.ll

Multinomial analysis of changes in states of poverty (Marginal effects)

I: IN TRANSITION

	POOR TO NON-POOR		NON-POOR TO POOR	
	Coefficients	**z**	**Coefficients**	**z**
Education of head of household	-0.002	-0.519	-0.006	-2.500
Gender	0.018	0.433	0.006	0.241
A(Education of head of household) (1)	0.007	1.489	-0.012	-4.098
A(Potential labor experience)	-0.002	-1.623	-0.002	-2.127
A(Migration)	0.146	2.486	-0.078	-2.053
A(Land)(l)	0.021	1.552	-0.003	-1.384
A(Access to potable water)	0.017	0.310	0.063	2.218
A(Access to sewerage)	0.021	0.290	0.000	-0.007
A(Access to electricity)	0.029	0.324	-0.063	-0.938
A(Access to telephone)	0.051	0.670	-0.100	-1.174
A(Family size)	-0.034	-5.124	0.028	6.842
A(Financial savings) (1)	-0.014	-0.068	0.045	0.345
A(Livestock)(l)	-0.001	-0.882	-0.001	-1.796
A(Community capital)	-0.062	-0.799	-0.003	-0.075
A(Labor status)	0.052	1.806	-0.057	-3.184
FONCODES	0.000	0.304	0.000	-0.864
Constant	-0.058	-0.922	-0.063	-1.870

II: CONSTANT

	POOR TO POOR		NON-POOR TO NON-POOR	
	Coefficients	**z**	**Coefficients**	**z**
Education of head of household	-0.032	-7.047	0.049	8.713
Potential labor experience	-0.005	-4.193	0.008	5.416
Gender	0.031	0.883	-0.086	-1.668
Migration	-0.202	-3.569	0.137	1.992
Illness	-0.002	-0.147	-0.003	-0.232
Family size	0.062	8.357	-0.092	-10.011
Financial savings	-0.466	-2.842	0.315	3.450
Durable goods	0.000	1.186	0.000	-0.682
Land	0.000	0.008	0.001	0.347
Access to potable water	-0.018	-0.520	-0.056	-0.988
Access to sewerage	-0.003	-0.104	0.077	1.607
Access to electricity	-0.049	-0.906	0.101	1.148
Access to telephone	-0.446	-4.417	0.418	6.016
Community capital	0.448	1.845	0.063	0.179
Livestock	0.002	2.234	-0.004	-2.333
Labor status	0.077	3.397	-0.102	-2.918
FONCODES	0.000	-0.003	0.000	-0.085
Constant	0.181	2.162	-0.156	-1.239
Pseudo R2			0.195	

Note: (1) These variables were instrumentalized to correct possible bias due to endogenous effects.

Table IV.13
Hausman test for IIA

Excluding alternative poor-poor	13.7563
Excluding alternative poor/non-poor	10.9349
Excluding alternative non-poor/poor	11.1669
Excluding alternative non-poor/non-poor	62.6985

Test:

Where ***s*** indicates the estimators based on the restricted subset of alternatives, and / indicates the estimators with all the set of alternatives. The critical value is 75.35 at the level of 1%.

The probabilities of transition are presented in Table IV. 14 where the effective probability is equivalent to the transitions effectively observed and reported in Table IV.10.

Table IV.14
Probability of Transition

STATES	EFFECTIVE	ESTIMATE
Poor to poor	29.3%	35.7%
Poor to non-poor	21.0%	10.5%
Non-poor to poor	10.0%	3.0%
Non-poor to non-poor	39.7%	50.8%
TOTAL	100.0%	100.0%

The results reveal that the assets of human capital assets (years of education of head of household, potential experience of head, migratory experience and family size), financial capital (financial savings), physical capital (livestock) and public and organizational capital (access to telephone and membership of associations) are crucial in explaining why certain households remain in a state of poverty or non-poverty. Changes in some human capital assets (migratory experience and family size) as well as the positive shocks associated with change in the labor status are the variables that best explain the transition from poverty. Conversely, the variables that best explain why certain households that were not poor in 1991 had become poor by 1994 are the level and change in educational level of the head of household, changes in labor and migratory experience, together with lack of access to public goods and the adverse shock associated with the change in labor status.

Gender differences are not important in any of the four states analyzed. Additionally, of the short-term shocks identified (FONCODES spending and change in labor status) only the second has explanatory power for understanding the reasons why a household moves into or out of poverty. Lastly as expected, family size reduces the probability of improving status and is determinant in explaining why some households remain in poverty.

V. Conclusions and Policy Implications

This study has empirically verified the key assets that characterize the poor population of Peru. It has attempted to better understand the connection between assets and poverty, analyzing changes in the distribution of assets, the link between access to or holding of these assets and poverty, and the connection between their return and poverty. Given that many of these assets are reasonably exogenous, at least in the short term, an understanding of these relationships enriches the debate on which public policies could have the greatest effect on poverty reduction.

In the Peruvian case, the study shows the importance of variables such as education and family size for typifying the state of poverty of individuals, through the analysis of probit models and spending regressions. The analysis also confirms that access to credit and ownership of assets that can be used as collateral has a positive effect on spending and on the probability of not being poor. Finally, statistical evidence was found that variables of public and organizational capital such as membership of organizations, and access to basic public services such as water, sewerage, electricity and telephone have a similar impact. In this respect, the empirical analysis is consistent with the view that the lack of access to certain key assets, which generate sufficient income for loans for a part of the population, underlies the problem of poverty.

The level and the changes in the return on assets are as important as the possession itself of assets in the determination of the status of poverty. These returns can also be modified by access to complementary key assets. Utilizing the parameters estimated from the spending equations, the impact was calculated of changes in the ownership and access to complementary assets on the return on education and land. The results show a positive effect of public assets on these returns, which is evidence that private and public assets are complementary. This shows the role of public policy in terms of provision of services and infrastructure as a mechanism to strengthen the return from private assets and thus facilitate reduction of poverty.

Further, reductions in family size have a significant positive impact on the return of the assets mentioned. The concept that the larger the family implies an increase in the productive resources of the family and therefore an increase in wellbeing is not empirically sustained. The finding is very significant even if the existence of economies of scale is accepted in family consumption. This could justify public intervention in the area of family planning, but since the variable is endogenous to other decisions and restrictions that affect the household, it is not possible to validate such a policy recommendation without first understanding the mechanism of the determination of family size. The variable as included in these calculations could in fact be capturing the effect of variables of human capital that are not easily observable.

A dynamic analysis was also done of the ownership of assets on mobility between the states of poverty and non-poverty. It was found that the initial levels of the assets are not sufficient to explain transitions into and out of poverty, although they are crucial in explaining permanence in poverty or non-poverty. This is to be expected since the sample of household in panel form was for a relatively short period (1991-1994). Education, labor experience and family size, as well as financial saving, access to telephone and ownership of livestock are the most important variables in explaining whether a household will remain in its original state of poverty.

In contrast, to explain transitions into and out of poverty, in addition to initial levels and changes in assets, shocks linked to short term changes have to be considered. These shocks were partially approximated by short-term changes in the social spending of FONCODES in each household's district and by short-term changes in the labor status of household members. Thus to leave poverty, the crucial factors are an increase in migratory experience, an increase in the number of employed persons in relation to total members of working age, and a reduction in family size. On the other hand, the level of education and its increase, labor experience, reduction in family size, improvements in access to potable water, and increases in livestock reduce the probability that a household move into a state of poverty. In this analysis of transition, the variable of FONCODES district spending was not significant.

In the first part of this work, to contextualize and justify the importance of the study of poverty and its determinants, an analysis was done of the trend in poverty and distribution of income and assets. A first conclusion is that during the last 20 years poverty and spending dispersion has fallen. The magnitude of the changes and the reasonable comparability of the information indicate a fall in poverty between 1971 and the 1980s. However, despite this long-term reduction and the improvements observed in

the 1990s, poverty in Peru is extremely high and continued to affect almost half the population in the mid-1990s. On the other hand, according to the Gini coefficient, the level of income dispersion fell from 0.55 to 0.40 between 1970 and 1996. It is clear then that the Peruvian problem, rather than distribution is one of low average income. However, although in the 1960s the inequality was sufficiently high to prevent economic growth from having a positive impact on reduction of poverty, in the future it could be expected that the negative impact of the initial inequality on the poverty-growth interaction could be lower.

The analysis suggests the possible existence of a relationship between poverty and the distribution of assets and income. The reduction in poverty and spending dispersion could be related to long-term structural changes in the average ownership and dispersion of education and land ownership. The decrease in the dispersion of land ownership is evidence, together with the increase in the stock of available land, of consistency with increased ownership of this asset by the poor. Yet, the absence of an institutional framework to facilitate the transfer of land lowered its value market value and its productivity. Additionally, the lack of other complementary assets, such as public goods and education, keeps poverty rates very high despite possible improvement of distribution within the rural sector.

In the urban case, the reduction in income dispersion is probably due to increased educational opportunities for individuals from all strata. In this case the dispersion of education is decreasing while the average level is increasing, which has as correlate an increase in the stock of this asset among the original poor. However, the correlate of the extension of education is a reduction in quality; although this has not led to a reduction in the return on education, the impact of the change in quality remains to be evaluated.

The study also analyzed the short-term trend in poverty and income distribution in the 1985-1996 period. In the Peruvian case, hyperinflation hindered the use of poverty lines based on purchasing power parity, requiring the use of poverty lines based on normative consumption baskets. The central evidence is that in recent years poverty has been pro-cyclical. Thus, between 1985 and 1991, poverty surged by 15 points to 55% in the context of a generalized fall in income. Then, poverty fell by nine points from 1991 until 1996, making impossible a return to the levels of poverty prior to the crisis of the late 1980s. Income distribution improved consistently from 1985 to 1996 in a context of falling income where spending by the poorest sectors fell less than that of the richest. In the 1990s, this reduction in dispersion took place in a context of economic growth in which the spending of the poorest deciles grew more rapidly than that of the richest.

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