Urban Poverty Dynamics in Peru and Madagascar 1997-1999:
A Panel Data Analysis

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Abstract

The limits of the welfare-type anti-poverty policies promoted in the eighties in order to counter the effects of structural adjustments programs (SAP) have led to an awareness of the need to reflect on interactions among anti-poverty programs and, more importantly, to conceive and put in place anti-poverty policies adapted to the different existing types of poverty, as well as to draw attention to the factors associated to exits from poverty.

However, the small number of studies on poverty dynamics in developing countries and methodological differences among them have made it difficult to identify what the implications are for anti-poverty policies. Are the factors associated to chronic poverty and vulnerability the same from one country to the next? What are the features that characterize exits from poverty?

Based on a large sample of Peruvian and Madagascan urban households (1997-1999), the importance of poverty transitions was examined, as well as the characteristics of the temporarily and the chronically poor, with respect to those of non-poor households. Then, through a multinomial logit model, the specific contribution of household characteristics (demographics, human and physical capital), but also of shocks –related to both demographics and job market– experienced by these households, on chronic poverty and poverty entries and exits was highlighted. In this analysis, the impact of « geographic » variables linked to neighborhoods (provision of public goods, income levels, human capital and employment structure, among others) on poverty transitions was also considered. The two latter groups of variables are rarely considered in empirical research on developing countries (shocks are set aside in analyses because of the simultaneity biases that exist when no more than two years of observation are available). Result comparability was ensured by defining the variables and formulating the econometric model in a rigorously identical manner in both countries.

The factors associated to permanent poverty amply cover the characteristics generally identified in analyses on « static » poverty correlates. Nevertheless, these results do not confirm the idea that only shocks are relevant to temporary forms of poverty. The type and quality of entry on the job market, as well as the features of the residence neighborhood, turn out to be equally relevant in the analysis of poverty dynamics. These results suggest that the spatial « inequality » dimension should be added to analyses on income and poverty transition dynamics.

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Introduction

In recent years, the fight against poverty has become the main objective of development policies. The mixed results produced by two decades of stabilization and structural adjustment on the standard of living of households in developing countries have led the international financial community, encouraged by the Bretton Woods Institutions, to rethink its strategy and develop new instruments to conduct what has now taken the shape of a real crusade. The *Economic Policy Framework Papers* (EPFP), which defined the accessibility conditions to financial assistance to development agencies are now titled *Poverty Reduction Strategy Papers* (PRSP). The World Bank's traditional « Structural Adjustment Credit » (SAC) has been replaced with the « Poverty Reduction Support Credit » (PRSC). Even the IMF, which had been rather uninvolved on that front, has followed suit by transforming its « Enhanced Structural Adjustment Facility » (ESAF). A new debt reduction mechanism was introduced to complement prior debt write-off and rescheduling agreements (Paris Club; Toronto, Naples, Lyon Terms; etc.) through the Heavily Indebted Poor Countries (HIPC) Initiative. To signal their commitment, the main donors have set eight Millenium Development Goals (MDG), the first of which is to reduce the incidence of extreme poverty by half from 1990 to 2015. Although the priority of the fight against poverty is focused, above all, on the least developed countries, it also concerns middle-income countries, in order to include all developing and transition countries.

This new direction in development policy poses a formidable challenge for the scientific community, and economists in particular, as shown by the World Bank in its report on world development titled, « *Attacking Poverty* » (World Bank, 2000). The objective of the present study is to contribute to this vast reflection by means of a comparative analysis of individual poverty dynamics in two developing countries, Madagascar and Peru, in the late nineties. The interest of this research lies in a rigorous comparison of the factors that determine poverty transitions, based on two panels of urban households, over a three-year period, in two very different contexts. The first case looks at one of the poorest countries in the world as it finds itself in a phase of rapid recovery, and the second, an at an emerging country engaged in a recession.

Judgements on the disappointing progress made in the fields of living standards and international inequalitiy are generally founded on a static perspective, based on comparing the indicators of a given year to those of past years. Only net poverty balances are considered, but households' trajectories over time are ignored. Conclusions drawn from static approaches on whether or not poverty persists imply that the poor constitute a set category of households with the same specific features and permanent in nature. This therefore implies that there is no (or little) income redistribution to the benefit of the lowest segments of income distribution.

Monitoring a panel of households allowed addressing important questions, which had remained unanswered in Developing Countries until then. What proportion of the population is in a situation of chronic poverty? In a given year, what percentage of the poor corresponds to transient poor? What is the significance of the economic mobility of households and, particularly, between poor and non-poor? Do the permanent poor display characteristics different from those of the transient poor ? Are the factors that determine entry into poverty the same as those that determine exit from it? What are the changes in the features of households and their environment that are associated with upward and downward mobility? How does this dynamic approach to poverty lead to a reconsideration of anti-poverty policies and an assessment of their efficiency? Few developing countries are equipped to tackle these issues, as this involves conducting large-scale monitoring of the same households over time, and such surveys are extremely rare in these countries.

The different forms of poverty that exist may be understood more subtlety through the study of the features and determining factors of poverty and non-poverty, especially by distinguishing between the chronically poor and the temporarily poor and, hence, result in the implementation of differentiated policies linked to the specific risk factors of each of the two categories. This would be quite apart from targeting problems (« filtering » and « exclusion ») due to a high degree of social mobility between poverty and non-poverty.

Although abundant in developed countries, the literature on the issue of economic mobility and poverty dynamics based on panels of households (for example, see Jenkins, 1998) remains very scarce in developing countries. The main reason for this is the lack of longitudinal data. Yacub (1999) stated that only 5 of the 44 low human development countries, and 7 of the 66 countries with intermediate human development, according to the UNDP classification, had available panel data. In a recent publication on the issue, Baulch and Hoddinot (2000) confirmed this panel data shortage. The book they edited, which includes 6 original studies (Ethiopia, South Africa, China, Pakistan, Zimbabwe and Chile), constitutes the first attempt to draw lessons from this type of approach. However, the extreme diversity of the panels used (in terms of geographic extension, reference timeframe, type of sampling, welfare indicators, poverty line, etc.) considerably limits the analytical scope of these different case studies, particularly with respect to their comparison dimension.

Following the same thematic line, the present article constitutes, to our knowledge, the first attempt at a comparative analysis of poverty dynamics, based on a shared methodological approach and the same choices. By mobilizing two high-quality panels and adopting homogenous procedures for constructing analytical variables, the best

conditions are achieved to conduct a study of the risk factors for entering poverty and those associated with chronic poverty. The issue is therefore to find out if the level of development and the existing economic situation affect the intensity of poverty « flows » In addition, the fact that the study was conducted over three consecutive years allowed the inclusion of shocks on households (demographic and economic) among variables that explain poverty transitions, while preventing endogeneity problems that cannot be solved when only two points in time are available. Finally, we have attempted to broaden the field of factors that explain poverty transitions by adding variables associated with residence neighborhoods to the traditional individual features of households, in order to assess the possible effects of geographic location on poverty.

The macroeconomic context in place during the three-year period of the study (1997-1999) is introduced in the first section by examining the period in a historical perspective, as well as the main features of the data used and the methodological choices made. A summary of the evolution of poverty and inequality by means of a cross-section analysis is the subject of the second section. An estimate of confidence intervals and analysis in terms of stochastic dominance confirm the robustness of the results based on comparing traditional FGT indexes. A growth/inequality decomposition of the evolution of poverty has also been carried out. The third section focuses on a descriptive analysis of poverty transitions, which are modeled in the fourth section. Finally, the concluding section provides a summary of the study's main results and examines some of their implications regarding policies designed to fight poverty.

I.- <u>General Overview</u>

The macroeconomic context of the nineties

Despite very different development levels – the per capita GDP of Peru is ten times that of Madagascar (US $2 400 and US $250, respectively–, both countries applied very similar policies in the nineties. Following the failures of past economic policies and, as many developing countries did, both Peru and Madagascar attempted to redirect their growth model by banking on the liberalization of the economies and opening to the world economy. The change was adopted as early as the mid-eighties in Madagascar, while it waited until 1990 to come about in Peru, when president Fujimori came to power.

Peru

The nineties were years of profound institutional reforms and macroeconomic shocks that broke with the previous regime based on political favors, whose economic « heterodoxy » had plunged the country into chaos (hyperinflation, etc.). While most public and parapublic corporations were being privatized, and subsidies and price controls eliminated, the government carried out unprecedented labor market reforms. Job stability was practically abolished and dismissal costs greatly reduced. Financial incentives convinced 150 000 public employees to leave their jobs, while, simultaneously, labor market deregulation resulted in the spread of precarious work. In this context, the proportion of stable jobs in the capital dropped from 65% in 1989 to 42% in 1994, and to 23% in 1997 (Vedera, 2000). Over the same period, the rate of unionization plummeted: from 58% in 1989, it fell to under 13% in 1997.

After the first phase of the harsh recession that followed the « Fujishock » (the GDP lost 5% in 1990), Peru underwent a period of vigorous expansion from 1993 to 1997[1]. Its GDP per capita grew by more than 6% annually. However, since the second half of 1997, Peruvian economic growth has slowed down sharply, and became negative following the Asian crisis, as happened in most Latin American economies. The short-term capital inflow dried up and main export prices fell, which was compounded by the devastating effects of El Niño. In the end, when examined from a long-term perspective, the GDP leap of more than 50% observed under president Fujimori's administration has only resulted in a return to the level reached in 1972.

In 1998 and 1999, the Peruvian GDP per capita registered drops of 2,1% and 0,3%. The dualism of the Peruvian economy, in which growth is driven by a dynamic primary-products export sector, has hidden the magnitude of the crisis for households, who suffer first and foremost from domestic market shrinkage. Per capita private consumption fell by 2,7% in 1998 and 1,9% in 1999, after having grown 2,4% under the impulse of resumed public spending during the previous year, which had risen 7,6% that year. Household survey results confirmed the extent of the decline in consumption registered in national accounts, in which real per capita spending dropped 8% between 1997 and 1999.

Such a downturn in economic activity meant a worsening unemployment rate (from 7,2% to 9% between 1996 and 1999), even though it was not readily affected by macroeconomic shocks (mostly due to the absence of unemployment insurance and to a high proportion of independent informal workers). Workers' wages in companies employing over 10 workers decreased by 0.5% from 1997 to 1998, and by 1,3% the following year. The decline in

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[1] Interestingly, the final years of the government of Alan García did far more harm to economic growth than the "Fujishock": between 1987 and 1989, the GDP per capita dropped 22%, as opposed to less than 7% between 1989 and 1990 (see figure 1).

living standards is shown indirectly by the strategies households used to counter the crisis. Hence, the participation rate in the capital city has gone from 59,7% in 1996 to 64% in 1999.

In this unfavorable context, the incidence of poverty at the national level significantly increased from 1998 to 1999 (from 37,7% to 42,2%)[2]. Poverty became more urban as three quarters of the increase in the number of poor people was concentrated in urban areas. The poverty rate rose 7 points in the capital and on the coast, whereas it remained stable in rural regions. Between 1997 and 1999, 43% of the one and a half million additional poor people were from the capital and 30% from coastal cities. By contrast, the incidence of extreme poverty declined by 15,6% to 13,2% between 1997 and 1999, thanks especially to a 10 point decrease in its incidence in rural regions, while it stayed relatively stable in urban areas. The contrasting evolution of poverty in different areas was certainly not unaffected by the reform policies implemented. These were more likely to have an effect on the modern and urban sector of the economy. At the same time, the government launched a program to fight poverty and initiated an unprecedented increased social spending, which tripled from 1993 to 1998, from US $63 to US $174 per capita, and was largely directed to the country's poorest rural regions.

Table 1
Madagascar and Peru in numbers (1999)

	Madagascar	Peru		Madagascar	Peru
Area (1 000 km^2)	587	1 285	**GDP** (billions US$)	3,7	51,9
Population (millions)	14,6	25,2	**GDP per capita** (US$)	250	2 130
Population growth rate (%)	2,8	1,7	**Investment rate** (% GDP)	12	22
Urban population (%)	29	72	**Tax burden** (% GDP)	11	12
Life expectancy (years)	58	69	**Foreign debt** (% GDP)	123	61

Madagascar

For nearly 15 years, Madagascar has been engaged in a process of economic adjustment. Although the first phase focused on financial stability, the limits of the policy quickly came to light. The second phase intended to establish in-depth changes in the economic regulation mode. Regardless of hesitations, the authorities undertook a wide range of reforms to promote a market economy. Among the measures taken were:
- the elimination of export taxes;
- a significant decrease in import duties and taxes;
- the liberalization of marketing channels and previously administered prices;
- the establishment of a regime of free export companies;
- the application of a floating exchange rate;
- government disengagement from production activities, particularly from the banking sector.

Even though difficulties in pursuing sectorial reforms persisted in certain areas (public corporation privatization, public service reform, etc.), the progress made reflected an advanced degree of commitment in the process of establishing a market economy opened to the outside world. In fact, since the early nineties, Madagascar has carried out a double transition: economic, of course, but also political. The country successfully scrapped a two-decade, socialist-type experiment in favor of a democratic regime (free elections, freedom of the press, emerging civil society, etc.). Strengthened by such progress, Madagascar reestablished ties with the international financial community in 1996 and was allowed to benefit from numerous loans and debt write-offs (SAC, ESAF, Paris Club, etc.)

However, despite the magnitude of the reform program, the Madagascan economy stagnated during the first half of nineties. The ongoing political instability that prevailed over that period was largely to blame for this growthless adjustment phase. It was finally only in 1997 that the recovery began to be felt: for the first time in many years, the GDP per capita improved slightly (+1%). Since then, the process has quickened, and growth neared 5% in 2000. This bright spell is exceptional in Madagascar's economic history. To find such a favorable situation, one must go back to the sixties. Inflation is now under control, following its spiraling in 1994-96, which had been generated by exchange rate liberalization. Although overall, the integration of Madagascar within the world economy has not substantially improved, due to the inertia of traditional primary-products exports and the stagnation of external private capital flow, a few sectors have managed relatively well. This is the case of tourism, fishing and, most importantly, the industrial duty-free export processing zone, where exceptional dynamism contrasts with the slump that characterizes Madagascar's counterparts in sub-Saharan Africa (except for Mauritius).

The macroeconomic evolution displayed by data from the country's national accounts does not adequately reflect household income dynamics, mostly because of their poor quality. Suveys conducted with households showed an unprecedented boom in the urban economy, whereas rural areas stagnated. In cities, informal jobs, which had progressively taken over the labor market were in decline, while real wages and households' per capita income registered increases of 43% and 35%, respectively, from 1995 to 1999 (Razafindrakoto, Roubaud, 1999). This exceptional improvement, which benefited every household category, was spurred by a very generous policy of public

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[2] Both for Peru and Madagascar, poverty levels mentioned in this section agree with official data. They do not compare with those calculated in the rest of the study due to different data sources and methodological choices (geographic coverage, poverty line, income versus consumption, etc.).

and private wages. On the other hand, rural regions, massively excluded from the market, did not benefit from returns on growth. Such dualism generated rising inequalities between urban and rural areas, as pockets of poverty are massively concentrated in the countryside (84% of the poor).

The evolution of poverty has followed households' income fluctuations. According to the results of EPM surveys conducted in 1993, 1997 and 1999, the incidence of poverty at the national level slightly decreased from 1997 to 1999 (-2 points). However, this global observation conceals different dynamics in urban and rural areas. While levels of rural poverty remained high (76% and 76,7%), they declined by over 11 points in the cities (63,2% and 52,1%). In both cases, the incidence of poverty was always above that registered in 1993 (Razafindravonona, Stifel, Paternostro, 2001). From a longer-term point of view, households' standards of living remained far below those observed in the early seventies, since, between 1971 (the best year) and 1996 (when the lowest point was reached), per capita consumption fell by half. In the case of the capital city, where data has been available since independence, the standard of living was seen to have dropped by 30% from 1961 to 1998 (Ravelosoa, 2001). The impact of specific policies to fight poverty (transfers, social spending, etc.) remained marginal due to insignificant budgetary allocations (the tax rate could hardly reach 10% of the GDP).

Figure 1
Per capita GDP Evolution 1960-2000
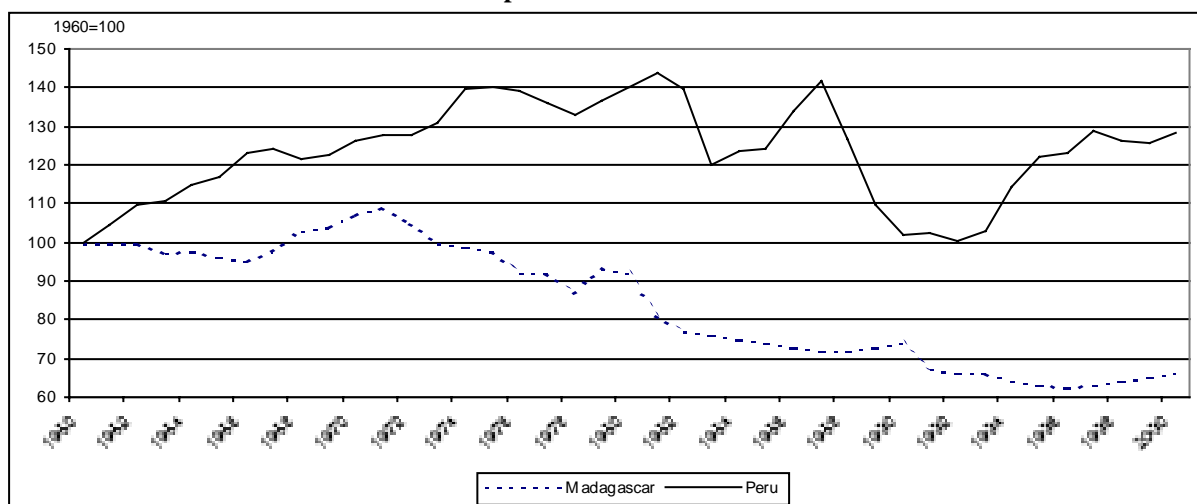
Sources: INSTAT, Madagascar, *Banco Central de Reserva* (Central Reserve Bank), Peru, authors' calculations.

The Data

In order to carry out the analysis of individual poverty transitions, panel data was required. In addition, the comparative perspective adopted here implied that the surveys and processing procedures has to be harmonized. Both these constraints explain why, to our knowledge, no such research had previously been conducted. The data used are briefly introduced below, as well as the main methodological options chosen.

ENAHO research in Peru

In 1996, with the support of the Inter-American Development Bank, the Peruvian National Statistics and Data Processing Institute (INEI) set up a system of household surveys (ENAHO), as part of the MECOVI Program. Through these surveys, the population's living conditions, among other things, could be monitored. The constitution of a large national panel of households was one of the major innovations of this Program. Besides their national coverage, the surveys allowed the decomposition of results according to seven geographic domains, in addition to the distinction between urban and rural areas. Four quarterly surveys were involved, each focusing on a specific issue (violence, employment, health, education, household expenditures). In the present case study, only waves in the last quarter of each year have been used, as they are the only ones with a panel dimension.

The panel on hand was composed of 1720 urban households and of almost 8 000 individuals present every year over the 1997-99 period. Two biannual sub-panels, made up of 2709 households in 1997-98 and 1872 households in 1998-99, were also available. The households present in the panel for all three consecutive years represented a little over 40% of the total in 1997 and 1998, and nearly 78% in 1999. In addition to the information on individuals' housing and demographic features, the surveys included sections on education, health, expenditures, income, employment, etc.

The MADIO Employment Survey in Madagascar

Since 1995, the National Statistics Institute (INSTAT), with the support of the MADIO Project, had run a 1-2-3 household survey system in the city of Antananarivo (Roubaud, 2001; Rakotomanana, Ravelosoa, Roubaud, 2001). It was based on an employment survey (phase 1), carried out every year, on a sample of 3000 households and approximately 15 000 individuals. This survey was the basis of phases 2 (informal sector) and 3 (consumption, poverty), conducted every three years (1995, 1998, 2001), according to the survey-grafting principle. In 2000, the survey was extended to the country's 7 largest cities. It must be underlined that such a mechanism was unheard of in sub-Saharan Africa. Specifically, since strict control procedures were used at every step (collecting, screening, processing), the quality of the Madagascan data was by far superior to that found in most household surveys in Africa.

The results analyzed in this paper were taken from 1995-2000 employment surveys. They specifically include the 1997-99 panel data. In fact, since 1997, the principle of renewing a third of the sample each year (that is 1000 households) has been adopted. Nonetheless, taking into account the loss observed between 1997 and 1998, the total 1998 sample was surveyed in 1999. Finally, the 1997-99 panel was based on a usable sample of 2 676 households: 1 551 surveyed in 1997 and 1998, and 2 371 in 1998 and 1999, including 1249 for which data was available over the three years of the study. Because information was gathered individually from all household members, 13 539 individuals belonging to 2 676 households were involved: 8 149 in 1997 and 1998, and 12 138 in 1998 and 1999, including 6 478 over the three-year period. Besides the traditional socio-demographic data and housing features, the survey addressed the individuals' situation vis-à-vis the labor market (inactivity, unemployment, job type), as well as income.

Tableau 2
Samples used 1997-1999

	Madagascar			Peru		
Number of households	1997	1998	1999	1997	1998	1999
Total Sample	3 000	3 002	3 002	4 022	4 044	2 218
1997-1998 Panel	1 551	1 551	-	2 709	2 709	-
1998-1999 Panel	-	2 371	2 371	-	1 872	1 872
1997-1998-1999 Panel	1 249	1 249	1 249	1 720	1 720	1 720

Sources: Employment surveys 1997-1999, MADIO, Enaho 1997-1999, INEI, authors' calculations.

Measuring Welfare and Constructing Poverty Lines

Unlike in many studies, welfare levels and the monetary poverty measurements derived from them are based on the per capita income of households. This choice responded chiefly to the need to be able to compare both countries –expenditure estimates for the Madagascan panel were not available–, but was also founded on a certain number of analytical considerations. First, the argument often put forth to favor the approach that refers to expenditure instead of income is based on the idea that, in surveys, the former is grasped better than the latter. This argument did not seem systematically justified to us and is probably quite overestimated. Nothing ensured that errors in consumption measurement (valorization of self-consumption, complexity of consumption reconstituting procedures over a year, memory effect, etc.) were fewer than errors in income[3]. In fact, this observation was corroborated in the case of developed countries (Verger, 2001). It led Verger to conclude that, "*In the end, it is not easier to measure expenditures than income: it may even be more difficult and one must recognize that the individual consumption distribution drawn from surveys on household budgets has hardly any value at all at the individual level, and could not provide the basis for an approach on inequalities or poverty.*" This is the reason why, in Europe, poverty measurements are based on income rather than expenditures.

Second, since the objective of the study was to link macroeconomic shocks to changes in households' living standards over a short period, the use of the consumption variable –often interpreted as a measure of permanent income– did not seem the most appropriate. On the other hand, income seemed more closely connected to existing conditions on the labor market, which was also under the direct influence of the macroeconomic situation. Furthermore, in terms of economic policy, it is easier to act on income than on consumption, since the later is actually only a result of the former. Finally, the fact that we limited the field of our study to urban households also ensured that exogenous shocks due to the weather were minimized. In fact, in late 1997, the El Niño phenomenon severely affected agricultural activities in Peru. Both entries into poverty (in 1998) and exits from poverty (in 1999) in rural areas are associated to the fall and subsequent recovery of agricultural production due to that natural phenomenon, in proportions difficult to assess. This is obviously much less common in the case of urban income, which is more closely linked to the evolution of the domestic market.

The "income" variable used in this study corresponded to the sum of all incomes (monetary and non-monetary) of each household member, except for capital income. They included wages from work in the main and secondary,

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[3] For example, the consumptopn of households involved in the 1993 survey in Madagascar represented only one third of private consumption in the national accounts for that same year.

formal and informal activities, as well as benefits in kind, social assistance benefits and pensions. Although not including capital income introduced a bias in the measurement of total income, this was not a priori likely to affect the results obtained, due to the little weight they have in developing countries, particularly among the poor. To establish inter-temporal and geographic comparisons, we adopted an absolute poverty line common to both countries. According to classic works in this field (Ravallion, 1996), the threshold used corresponded to the amount needed to achieve a food consumption norm of 2 300 calories per capita, per day, to which a complementary amount was added for non-food expenses. Calculated for 1998, when consumption surveys were available for both countries, these lines were retropolated and extrapolated using the corresponding consumer price index, that is, 140 300 Madagascan francs and 198 new soles, respectively, equivalent to 2 and 4 current dollars.

From the start, both panels were systematically controlled and outliers eliminated. In addition, the study of attrition biases ensured that the panels used were good-quality panels and represented well the reality to be examined in both countries. Finally, in order to be able to make a comparison, only variables common to both series of surveys were used in the analysis. These variables were constructed by using strictly identical definitions and calculation methods.

II.- Poverty, Growth and Inequalities in the Second Half of the Nineties

Urban Poverty Evolution and Levels (1995-2000)

From 1995 to 2000, poverty fell over 12 points in the Madagascan capital. It was reduced from 86% to 74%. 1997 and 2000 were the two best years in this regard. This decline was not limited to the incidence of poverty, but also affected FGT indicators, particularly poverty gap and severity (P_1 et P_2), for which it was even more spectacular (-16 points in 5 years). This considerable drop was all the more significant because it constituted an actual trend reversal, as poverty had continuously increased over a long period of time, that is, at least since the early seventies. Despite such improvement, in 2000, nearly three out of four residents of the capital, Antananarivo, were still poor. In the case of Peru, the trend is not as clear. Following a sharp, 6-point decrease between 1994 and 1997, poverty levels stabilized during the next period (1997-1999). Neither the slight, 2-point decline observed between 1997 and 1998, nor the upturn the following year are statistically significant.

In terms of levels, the comparison of both countries' urban poverty incidence sheds a bright light on the gap between the two. There was a 50-point difference in the mid-nineties. In spite of the exceptional dynamism of the Madagascan economy, the gap still reached 47 points in 1999. At such a pace, twenty years will be required for Madagascar to equal the standard of living currently registered in Peru.

Table 3
Evolution of Monetary Poverty, 1995-2000

	Madagascar						Peru			
	1995	1996	1997	1998	1999	2000	1994	1997	1998	1999
P_0	85,8 [82,6-89,0]	85,6 [82,9-88,2]	80,5 [78,1-83,0]	79,6 [77,3-81,8]	77,3 [74,8-79,9]	73,6 [70,3-76,8]	35,9 [32,6-39,3]	30,2 [27,8-32,5]	28,6 [25,7-31,5]	30,3 [27,2-33,5]
P_1	52,5 [49,1-55,8]	50,7 [48,1-53,2]	44,7 [42,7-46,7]	44,3 [42,2-46,4]	42,6 [40,5-44,7]	36,1 [33,6-38,7]	12,5 [10,9-14,0]	10,4 [9,4-11,3]	10,4 [8,9-11,8]	10,2 [8,8-11,6]
P_2	36,7 [33,7-39,7]	34,8 [32,6-36,9]	29,3 [27,6-30,9]	29,3 [27,5-31,1]	28,1 [26,3-29,9]	21,8 [19,8-23,8]	6,0 [5,1-6,9]	5,1 [4,5-5,6]	5,4 [4,4-6,3]	5,2 [4,1-5,8]

Sources: Employment surveys 1995-2000, MADIO, Enniv 1994, Enaho 1997-1999, authors' calculations. 5% confidence intervals in parentheses

The study of the evolution of extreme poverty –the threshold of which corresponds to a subsistence food basket– confirms the diagnosis presented above. In 1995, 61% of Antananarivo's residents lived in this situation of extreme hardship. However, the proportion of the extremely poor continued to decrease, reaching 39% in 2000. The gap and severity of extreme poverty followed similar trends: they fell by half over the same period (from 30 to 15% for P_1 and 18 to 8% for P_2). In Peru, no change occurred between 1994 and 1999. The incidence of extreme poverty was about 9%, 3% gap and a little over 1% severity. Toward the end of the period, the incidence of extreme poverty remained 5 times higher in Madagascar than in Peru.

Juxtaposing income distributions per capita (expressed in real terms) provides a graphic view of the evolution in progress. In particular, it relaxes the constraints imposed by the choice of a poverty line, which is arbitrary by nature. Figure 2 clearly illustrates the decline of poverty in both countries. For Madagascar, the curves shift toward the right from one year to the next (except in 1995 and 1996, where they intersect), especially in the area between the thresholds of extreme poverty (lower limit) and poverty (upper limit). In the case of Peru, two distinct groups of years are visible: 1994, when the situation was the least favorable, and 1997-99, when the relative position of the distributions varied according to the considered line.

Figure 2
Income Distributions Per Capita, 1995-2000

An analysis in terms of stochastic dominance, based on the above distribution comparison, tested the robustness of the conclusions drawn above, regardless of the poverty line chosen. In Madagascar, the analysis confirmed the substantial decline of poverty over the entire period. At the 5% threshold, Kolmogorov-Smirnov tests show that, every year, income distribution per capita "dominates" that of the previous year, with the sole exception of 1997 and 1998, when the hypothesis of equal distributions cannot be rejected. In other words, the incidence of poverty decreased systematically, in a statistically significant manner, from one year to the next, regardless of the poverty line chosen. The disconnection observed in 1997 and 2000 with respect to the incidence of poverty is found over the entire income distribution. Improvements in the situation of households actually affected all living conditions, whether assessed from a monetary (income, consumption) or non-monetary (housing comfort, access to public services, schooling, etc.; Razafindrakoto, Roubaud, 1999) point of view. In Peru, the conclusions are more ambiguous. Although the 1994 distribution is significantly "dominated" (by 5%) by those of 1997-1999, which means that the incidence of poverty declined, the diagnosis over the three years cannot distinguish them.

Table 4
Evolution of Poverty: First Order Stochastic Dominance Tests, 1995-2000

Peru	Madagascar						
	1994	1995	1996	1997	1998	1999	2000
1994	-	-	-	-	-	-	-
1995	-	-	M	M	M	M	M
1996	-	-	-	M	M	M	M
1997	P	-	-	-	ns	M	M
1998	P	-	-	ns	-	M	M
1999	P	-	-	ns	ns	-	M
2000	-	-	-	-	-	-	-

Poverty, Growth and Inequalities

The evolution of poverty must be linked to growth dynamics and inequalities. Globally, the second half of the nineties corresponded to a growth phase in both countries, which was significant in Madagascar and more erratic in Peru. The real per capita income of households rose 50% in the Madagascan capital, and 25% in Peruvian urban areas. At the same time, no clear trend took shape on the inequality front. In Peru, up until 1998, the Gini coefficient increased, but its variations were not significant. Overall, both countries' levels are comparable, at around 0,50. Such a figure displays the mark of societies characterized by extreme disparities, which is in fact a continental reality: Africa and Latin America are the two regions of the world with the greatest inequalities.

Comparing macroeconomic aggregates and survey data demonstrates the degree to which the first wrongly reflect the real dynamics at play at the household level. The gaps are particularly flagrant in the case of Madagascar. While the GDP per capita increased by 2,3% between 1995 and 2000, Antananarivo residents experienced a 50% growth of their purchasing power. This divergence is the result of a combination of two factors. On one hand, the Madagascan capital probably benefited more than any other region from the favorable upturn in the country's economic situation (creation of duty-free companies, wage raises, etc.). But, on the other hand, the divergence is also largely the

result of the poor quality of national accounts, due to their more than doubtful reliability (Razafindrakoto, Roubaud, 1998). In Peru, in turn, the macroeconomic evolution is more coherent with regard to survey results. From 1994 to 1999, the GDP per capita exhibited a 13,8% growth, as opposed to 24,4% for urban households' per capita income. In this case, the gap may reasonably be attributed to real differences among urban and national dynamics, to the benefit of cities, rather than to measurement mistakes in official figures.

The evolution of poverty may be decomposed in two effects, one linked to income growth and another resulting from the variation in inequalities. We will therefore attempt to see whether poverty variations from a period to the next are strictly due to growth effects or whether they may also be attributed to distribution changes, in other words, to which degree did the poor benefit from growth. To answer this question, we will use the method proposed by Mahmoudi (1998), which, unlike prior suggestions by Datt and Ravallion (1992), has the advantage of providing a precise decomposition of both effects, without any residual term. We will restrict our analysis to the variation in the incidence of poverty (P0). The decomposition is obtain from the following formula:

$$P_{t+n} - P_t = [P(cdf_2, z) - P(cdf_1, z)] = cdf_1(z\mu_t / \mu_{t+n}) - cdf_1(z) \qquad (1)$$

where:
cdf is the cumulative density function
z is the absolute poverty line
μ is the mean income per capita

In Madagascar, the steady increase of the average purchasing power of households contributed to the decline of the incidence of poverty. However, the redistributing effect varied along the years. Rising disparities in 1997, 1998 and, to a lesser degree, in 2000, interfered with the dynamics of growth. However, tensions due to inequalities were limited enough not to cancel the growth effect. In total, over the entire period, both factors jointly contributed to poverty reduction. But, of the observed 12,2 point decline, almost 97% could be attributed to income growth, and the remaining 3% to a slight reduction of disparities. Consequently, considering the relatively high level of inequality, there is a significant margin of maneuver for increasingly redistributive public policies. In Peru, movements were more contrasted. Decreasing poverty from 1994 to 1997, and from 1997 to 1998, was associated with a simultaneous rise in incomes. However, the latter is partially offset by a negative redistribution effect. In 1999, the decline in the average income fully impacted on the poor, since the distributive effect was neutral.

In conclusion, two interesting results may be drawn. For each of the considered periods, growth had a positive effect on poverty reduction. On average, the apparent elasticity of poverty to growth was 0,25 in Madagascar (a 4% increase in average income brings about a 1-percentage point reduction of the incidence of poverty) and 0,20 in Peru. Even though this relation is not very robust because of a limited number of observations, it does confirm the numerous studies that have established a strong link between growth and poverty (Chen, Ravallion, 1997; Roemer, Gugerty, 1997; Dollar, Kray, 2000). Moreover, the elasticity obtained for both countries is about the same as that estimated econometrically by Squire (1993) from a large sample of countries (0,24). On the other hand, growth tends to generate unegalitarian tensions, as both effects operate in opposite directions. It is as if a "redistributive recall force" existed and limited the impact of income reductions on poverty. It is difficult to uncover the complex mechanisms at play here, but they certainly owe more to individual strategies or market adjustments –such as job offer behavior, prices and wage dynamics– than to deliberately remedial government policies, since these are extremely deficient.

Table 5
Decomposition of the Evolution of Poverty: Growth and Inequalities, 1995-2000

	Madagascar						Peru			
	1995	1996	1997	1998	1999	2000	1994	1997	1998	1999
Growth	100	100,7	124,9	132,5	135,3	149,9	100	123,4	128,6	124,4
Gini	0,49	0,47	0,49	0,51	0,50	0,46	0,45	0,48	0,51	0,50
	[0,47-0,51]	[0,45-0,49]	[0,47-0,51]	[0,49-0,53]	[0,49-0,52]	[0,45-0,48]	[0,43-0,48]	[0,46-0,50]	[0,47-0,54]	[0,47-0,54]
Growth	-	-0,1 pts	-6,3 pts	-2,1 pts	-1,0 pts	-3,9 pts	-	-10,1 pts	-2,3 pts	+1,7 pts
Inequality	-	-0,1 pts	+1,2 pts	+1,2 pts	-1,3 pts	+0,2 pts	-	+4,4 pts	+0,7 pts	0,0 pts
Variation	-	-0,2 pts	-5,1 pts	-0,9 pts	-2,3 pts	-3,7 pts	-	-5,7 pts	-1,6 pts	+1,7 pts

Sources: Employment surveys 1995-2000, MADIO, Eniv 1994, Enaho 1997-1999, authors' calculations. 5% confidence intervals in parentheses

III.- Individual Poverty Dynamics 1997-1999

Poverty transitions

In Madagascar, in a context of increasingly fast poverty decline, slightly more than 10% of individuals exit poverty every year. But, reciprocally, between a third and over 40% of the non-poor enter poverty the following year, demonstrating the fact that not being identified as poor at a given time is no guarantee at all that this favorable situation will be maintained over a longer period. In Peru, where the economic situation underwent a first phase of poverty reduction, followed by a severe degradation the following year, transitions into and out of poverty were also intense. In this case, nearly 40% of the poor escape their situation every year, while 13% to 20% take the opposite route. In both cases, the transition matrices display structures that are surprisingly stable over time in each country, although the overall rise (resp. decline) of poverty tends to inflate (resp. reduce) flows into (resp. flows out of) poverty and limit exits (resp. entries). In total, 17% of individuals change categories in Madagascar every year. In Peru, these « defectors » represent between a quarter and a fifth of Peruvians.

Table 6
Poverty Transition Matrices 1997-1999

Madagascar					Peru			
	1998					**1998**		
1997	Poor	Non-poor	Total		**1997**	Poor	Non-poor	Total
Poor	88,7	11,3	100 (81,2)		Poor	62,4	37,6	100 (29,2)
Non-poor	42,7	57,3	100 (18,8)		Non-poor	13,6	86,4	100 (70,8)
Total	80,1	19,9	100		Total	27,9	72,1	100

	1999					**1999**		
1998	Poor	Non-poor			**1998**	Poor	Non-poor	Total
Poor	87,6	12,4	100 (80,1)		Poor	63,0	37,0	100 (27,9)
Non-poor	33,5	66,5	100 (19,9)		Non-poor	19,4	80,6	100 (72,1)
Total	76,9	23,1	100		Total	31,6	68,4	100

Sources: Employment surveys 1995-2000, MADIO, Enaho 1997-1999, authors' calculations.

The chart below is a reconstruction of all flows into and out of poverty over the three-year period of the study. It displays three interesting results. First, it gives an exact idea of the complexity of poverty transitions, which cross-section data do not exhibit. Second, the chart confirms that the "*poverty halo*" goes far beyond the category of the poor perceived though a cross-section analysis. Whereas the poverty rate in 1999 was 77%, 91% of Antananarivo residents had gone through at least one episode of poverty in the two previous years. In Peru, the proportions were 32% and 48%, respectively. However, regardless of the significance of these changes, a hard core of poverty remain (chronic poverty), which, based on the three-year panel of our study, may be estimated to 13% in Peru and 65% in Madagascar. Finally, it appears that the poverty phenomenon is a process linked to memory. Having been in poverty at a given time actually increases the probabilities of remaining poor, and inversely.

In 1999, in both countries, the probability of staying poor was 24 points higher, depending on whether or not one had been poor in 1997 (respectively 71% and 47% in Peru, and 90% and 66% in Madagascar). Symmetrically, individuals who had not been poor in 1998 had a notably greater chance of remaining out of poverty the following year, whether or not they had been poor in 1997. The difference in probabilities was 28 points in Peru (respectively 85% and 57%) and reached 40 points in Madagascar (85% and 45%).

Two not necessarily competing interpretations may be called upon to explain this phenomenon. On one hand, being temporarily identified as poor could perform as a "signal" to detect structurally fragile households (unstable family or employment situation, health problems, etc.). On the other hand, having gone through periods of poverty may weaken households (deschooling, illness, under-investment, aversion to risk) and lead them to real poverty traps from which it is difficult to escape. These hypotheses are tested in the upcoming section.

Mobility between poverty and non-poverty is not at all specific to these two countries. A recent World Bank publication (2000) compiled ten or so studies using household panels that give the distribution of the chronic poor and transient poor in developing and transition countries. They may therefore be compared with our results. Although poverty levels in the various countries are not comparable, due to poverty lines that were not harmonized and geographic coverage that varied from country to country, it appears that in all cases transient poverty constitutes a substantial part of poverty (Table 7). Except for Madagascar, and, to a lesser degree, the Ivory Coast, the incidence of transient poverty was systematically higher than chronic poverty, in a ratio ranging from 1 to 1,2 in Ethiopia, to 1 to 9 in Pakistan. The hard core of poverty was all the more reduced since the panel considered was long. The level of absolute poverty in Madagascar, which was much higher to that registered in the other countries, explains the relative weakness of the transient poverty component in that country. Be as it may, in all the cases considered, not taking into account the two categories of poor people risks rendering policies to fight poverty inoperative, as different instruments may be required for each of the two sub-populations.

Figure 3
Flows Into and Out of Poverty from 1997 to 1999

1997	1998	1999	Total 1999

Poor
29,2%

Poor
18,2%

Poor
13,0%

Non-poor 5,3%

Non-poor
11,0%

Poor 4,7%

Non-poor 6,3%

Poor 4,6%

Poor 9,7%

Non-Poor 5,1%

Poor 9,3%

Non-poor
70,8%

Non-poor
61,1%

Non-poor
51,8%

Poor
31,6%

Non-poor
68,4%

National panel, 1717 households. ENAHO 97, 98, 99

1997	1998	1999	Total 1999

Poor
64,9%

Poor
72,1%

Poor
81,2%

Non-poor 7,2%

Non-poor 4,2%

Non-poor
9,2%

Poor 5,0%

Poor 1,6%

Poor 8,1%

Non-poor
9,1%

Non-poor
18,8%

Non-poor
10,7%

Poor 5,4%

Non-poor 2,7%

Poor
76,9%

Non-poor
23,1%

National panel, 1214 households. MADIO 97, 98, 99

Sources: Panels, Employment surveys 1997-1999, MADIO, Enaho 1997-1999, authors' calculations.

Table 7
Chronic and Transient Poverty in Various Countries

Country	Period	Permanent Poor	Transient Poor	Never Poor
Madagascar	1997-99	64,9	26,0	9,1
Peru	1997-99	13,0	35,2	51,8
China	1985-90	6,2	47,8	46,0
Ivory Coast	1987-88	25,0	22,0	53,0
Ethiopia	1994-97	24,8	30,1	45,1
Pakistan	1986-91	3,0	55,3	41,7
Russia	1992-93	12,6	30,2	57,2
South Africa	1993-98	22,7	31,5	45,8
Zimbabwe	1992/93-95/96	10,6	59,6	29,8

<u>**Sources**</u>: *Attacking Poverty*, World Bank 2000 (draft), p.21 and authors' estimates for Madagascar and Peru.

<u>*Analysis of Poverty Profiles*</u>

Comparing poverty profiles provides a first glance at the differential features of households according to their status with respect to poverty. From the 1997-1999 panel of households that took part over the entire period, we constructed three categories of households: the "*chronic poor*" (those who remained poor over the three-year period), the "*transient poor*" (those who were poor for one or two years) and the "*never poor.*" The variables were sorted into three groups: variables regarding household heads, household structure and, finally, neighborhood of residence. These variables were measured for the baseline year, that is 1997. This first descriptive approach is complemented by statistical tests, in order to grasp the degree of significance of the differences observed among the distributions.

The first observation that may be drawn from Table 8 is the stunning similarity between the socio-demographic features of both countries' sample. Madagascar households were slightly larger than Peruvian households (5,8 as opposed to 5,4 in Peru), and its population was slightly younger and less educated. The relative youth of Antananarivo residents was reflected in terms of employment by a higher dependency rate (inactive/active ratio) for Madagascar. Employment structure clearly differentiated the two countries. Jobs were more highly qualified in Peru (proportion of white-collar workers) and the industrial sector more developed, while the Madagascan capital was characterized by the massive prevalence of services and of the informal sector. Paradoxically, the primary sector (peri-urban agricultural activities, mining, fishing) weighed more in employment in Peru. This is probably due to the presence of other smaller cities in the Peruvian sample, whereas only the capital city made up the Madagascan sample. It is actually in the areas of housing and access to public infrastructure services that the differences come to light. These indicators clearly reflect uneven development levels, especially the fact that Madagascar has fallen far behind in matters of public investment over a long period of time. While, in Peru, over nine out of ten urban households had access to electrical power and three quarters enjoyed running water, these proportions drop to only 60% and 14% respectively in the Madagascan capital.

On examining the variables associated with the different forms of poverty, those that perform similarly in both countries may be identified, as well as the variables that correspond to specific national features. In both countries, the size of households, demographic weight of young children, age of the household head, low level of education of the household head and, more broadly, the stock of human capital of the entire household, are many of the factors associated with a high incidence of poverty, and particularly chronic poverty. The type of housing and access to basic infrastructure (water, electrical power) also clearly divide the three household categories. The level of economic dependency, the proportion of public sector jobs and the degree to which households are equipped are significantly linked –positively in the first case, negatively in the others– to status with respect to poverty. In more original terms, residence neighborhoods differentiate the diverse forms of poverty. The poor tend to live in disadvantaged neighborhoods, as regards both individual characteristics (the average income of residents is lower and the informal rate is higher) and access to public services (access to water, electrical power, etc.). In both cities, the poverty phenomenon therefore involves a spatial component. To go further, the direction of causality must be identified: Are the poor led to gather in "poor" neighborhoods or rather is it that living in "poor" neighborhoods reinforces or leads to poverty ? This question will be addressed in the coming section. This concludes our analysis of factors common to both countries.

Tableau 8
Profils de pauvreté suivant le type de pauvreté

	Madagascar				Pérou			
	Pauvre permanent	Pauvre transitoire	Jamais pauvre	Total	Total	Pauvre permanent	Pauvre transitoire	Jamais pauvre
Total	**64,9**	**26,0**	**9,0**	**100**	**100**	**12,5**	**32,7**	**54,8**
Chef du ménage								
Age	43,9***	46,7+++	47,6	44,9	47,5	43,5***	47,6+++	48,3
Sexe								
Homme	86,2	83,6*	89,8	85,9	83,6	76,5**	84,6++	84,6
Femme	13,8	16,4	10,2	14,1	16,4	23,5	15,4	15,4
Niveau d'éducation								
Sans niveau/primaire	51,6***	27,4*** +++	10,0	41,5	35,2	48,4***	46,4***	25,5
Secondaire	45,6	52,8**	38,4	46,8	40,8	45,1	43,5	38,3
Universitaire	2,8***	19,9*** +++	51,6	11,7	24,0	6,5***	10,0***	36,3
Expérience	31,7**	31,6*	28,4	31,4	33,3	31,2	34,9** ++	32,8
Statut matrimonial								
Marié	76,2**	73,8**	83,9	76,3	60,0	49,7***	56,4**	64,4
Union libre	7,4***	3,5++	1,4	5,8	19,8	26,2**	27,2***	13,8
Célibataire/veuf/divorcé	16,4	22,6*	14,8	17,9	20,2	24,0	16,4** +	21,8
CSP								
Cadre/patron	11,0***	26,8***	68,0	19,8	30,7	7,1***	19,3*** +++	42,9
Non cadre/ouvrier	45,7***	41,2***	22,1	42,7	32,1	33,9	41,3***	26,0
Indépendant	43,3***	31,3***	9,9	37,5	37,2	59,0***	39,4** +++	31,1
PEA								
Occupé					80,6	77,0	82,6	80,2
Chômeur					4,0	4,6	4,3	3,7
Inactif					15,4	18,4	13,1	16,1
Secteur institutionnel								
Public	17,1***	27,6+++	37,5	21,4	12,1	4,6***	8,7***	16,0
Privé formel	27,2***	35,8*** +++	50,4	31,3	36,1	22,7***	26,2***	45,2
Informel	55,7***	36,6*** +++	12,1	47,3	51,8	72,7***	65,1***	38,8
Branche d'activité								
Primaire	8,5	3,7++	3,5	6,9	11,9	24,5***	15,9*** ++	6,6
Secondaire	34,7**	33,6*	24,1	33,5	51,2	49,9	57,3**	47,9
Services	56,9***	62,6*	72,5	59,6	36,9	25,6***	26,8***	45,6
Emploi secondaire								
Oui	17,3	12,0++	13,2	15,6	13,3	14,4**	11,3	14,3
Non	82,7	88,0	86,6	84,4	86,7	85,6	88,7	85,7
Ménage								
Taille	6,3***	5,0* +++	4,5	5,8	5,4	6,6***	6,1***	4,8
Composition démo.								
Nombre de membres								
# membres 0-9 ans	1,89***	1,08*** +++	0,70	1,57	1,2	2,1***	1,4*** +++	0,9
# membres 10-15 ans	1,11***	0,57 +++	0,49	0,91	0,8	1,2***	1,0*** +	0,5
# membres 16-60 ans	3,11	3,13	3,11	3,11	3,1	3,1	3,3**	3,0
# membres plus de 60 ans	0,17	0,27++	0,20	0,20	0,3	0,2	0,3	0,4
Structure %								
% membres 0-9 ans	29,6***	19,1** +++	14,3	25,5	20,5	31,6***	22,2*** +++	16,9
% membres 10-15 ans	15,9***	9,6+++	8,5	13,6	13,1	18,0***	15,9***	10,4
% membres 16-60 ans	50,1***	64,1** +++	70,0	55,5	58,5	46,1***	55,0*** +++	63,5
% membres plus de 60 ans	4,4*	7,1++	7,2	5,3	7,9	4,4***	6,8* +	9,3
ménage nucléaire								
Oui	69,7	64,1	73,0	68,6	62,4	64,7	57,4*	64,8
Non	30,3	35,9	27,0	31,4	37,6	35,3	42,6	35,2
% percepteurs de revenu	37,2***	42,4*** +++	53,4	40,0	47,9	32,4***	44,2*** +++	53,7
% des actifs occupés	41,4***	45,4*** ++	55,9	43,8	46,4	34,5***	44,3*** +++	50,4
Taux de capital humain	0,36***	0,50*** +++	0,63	0,42	0,49	0,39***	0,45*** +++	0,54
Secteur institutionnel								
Emploi public/PET	5,6***	10,8*** +++	23,8	8,6	6,9	2,1***	5,3*** +++	9,0
Emploi formel/PET	21,6***	25,5*** +	35,6	23,8	22,7	15,0***	17,3***	27,7
Emploi informel/PET	43,5***	26,6*** +++	12,7	36,3	34,6	44,8***	42,6***	27,5
Chômeurs, inactifs/PET	29,4	37,2*** +++	27,9	31,3	35,8	38,1	34,8+++	35,8
Logement								
Statut d'occupation								
propriétaire avec titre	36,8**	45,1++	48,2	40,0	72,7	71,5	67,6**	76,0
propriétaire sans titre	14,7**	9,8++	8,1	12,8	6,2	6,3	11,2*** +	3,2
Locataire, autres	48,5	45,1	43,7	47,2	21,1	22,1	21,1	20,8
Eau courante	3,5***	23,9*** +++	65,9	14,5	75,1	59,5***	64,2***	85,2
Electricité	46,5***	81,0*** +++	96,7	60,0	92,7	80,0***	88,6*** +	98,0
Murs en dur					61,6	36,9***	48,8*** +	74,9
WC à l'intérieur	1,5***	16,3*** +++	50,0	9,8	67,2	37,2***	54,0*** +++	81,8
Nombre d'actifs	1,2***	2,4*** +++	4,9	1,8	3,8	1,7***	2,6*** +++	5,0
Quartier								
Revenu moyen	77,3***	95,9*** +++	113,7	85,5	405,6	194,9***	280,0*** +++	528,7
Ménages avec eau	10,3***	20,9*** +++	33,4	15,1	74,6	63,6***	64,8***	82,9
Ménages avec électricité	55,6***	70,7*** +++	78,9	61,7	92,2	81,4***	89,6** ++	96,3
Taux d'informalité	53,3***	44,8*** +++	38,6	49,8	50,9	64,9	58,7	43,1

Sources : Panels cylindrés, Enquêtes-emploi 1997-1999, MADIO, Enaho 1997-1999, nos propres calculs.

Let's now look into the differences between the two countries. In Peru, men seemed to be relatively advantaged, while the sex of household heads was irrelevant in Madagascar, a more egalitarian society with respect to gender. However, the most interesting result was the effect of private employment on poverty. Typically, in both countries, the more household members are involved in the informal sector, the poorer they are (and inversely, regarding the formal private sector). However, while in Madagascar, these two variables clearly distinguished the two different forms of poverty, this was not the case in Peru, where no significant difference between the permanent poor and transient poor was registered. This result could reflect the intense movement of formal-sector wage employment toward precariousness over the past two decades, which led to the massive impoverishment of households that had belonged to the middle class. Finally, and paradoxically, the characteristics of the residence neighborhood seemed more discriminating in Madagascar than in Peru, at least in differentiating chronic poverty form transient poverty, whereas spatial polarization (in terms of residents' incomes) was lower. This phenomenon cannot be explained a priori by less social mixing in the Madagascan capital, but rather by the lack of more polarized urban infrastructure policies in Madagascar.

IV.- Factors Determining Poverty Transitions

Review of the Literature on the issue regarding Developing Countries

As underlined by Baulch and Hoddinott (2000:2), there are very few studies on individual poverty dynamics in developing countries, although developments in this field of research have recently begun (Table 9). Most of the work on the inter-temporal aspects of poverty has been conducted within a static comparative perspective. However, Chaudhuri and Ravallion (1994) demonstrated that static poverty indicators only distinguish quite inadequately the chronic poor from the transient poor. As mentioned in the introduction, the main cause for this shortcoming is the absence of longitudinal household surveys in most developing countries.

Table 9 lists the different studies conducted on poverty dynamics in developing countries. Half of them examine a few hundred households, and about 40% include only two points in time. The limited data available weakens the robustness of their results (limited sample representativeness, difficult identification of forms of the poverty, whether chronic and transient, and of the shocks experienced by the households).

These studies are different not only with respect to the length of time analyzed (and number of waves), but also to the geographic coverage. They also present a great diversity of methodological options and issues addressed. An important point is how to define chronic poverty and transient poverty, as two types of approaches co-exist. The first approach, the most common and the one we have adopted is based on crossings the poverty line, in a direction or another, which allows the definition of poverty states. Instead of distinguishing individuals or households in chronic or transient poverty, the second approach aims at isolating a chronic component and a transient component of income[4]. This approach was first used by Jalan and Ravallion (1998, 2000) in their study on rural households in Southern China, and then, for example, by McCulloch and Baulch (1998, 1999) in Pakistan. As pointed out by Yaqub, these two ways of defining poverty, as chronic or transient, are not equivalent. In this sense, in the case of a study on India by Gaiha and Deolikar (1993), among households whose permanent income was below the poverty line, only a third had current incomes below that line for each of the 9 periods covered by the survey (Yaqub, 2000:4). In the end, the extreme heterogeneity of the data and methods makes it difficult to compare results, identify patterns and, therefore, formulate policy proposals, differentiated according to the chronic or transient nature of the poverty encountered.

Table 9
Panel Studies of Poverty and Income Dynamics

Source	Country	Number of waves	Period of study	Welfare Indicator	Panel Size	Theme
Reardon, Taylor (1996)	Burkina Faso	2	1983 /84- 1984/85	Income	150 households	Impact of climactic shocks on poverty dynamics
Carter (1999a)	South Africa	2	1993-98	Expenditures	1 183 households	Poverty dynamics, economic mobility, role of assets
Carter (1999b)	South Africa	2	1993-98	Expenditures	1 183 households	Poverty dynamics
Maluccio, Haddad, May (1999)	South Africa	2	1993-98	Expenditures	1 400 households	Social dynamics of poverty

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[4] Chronic poverty is defined as the gap between the poverty line and the average income over the entire period observed, while transient poverty is the remainder of total poverty minus chronic poverty.

					households	poverty
May (1999)						
Dearcon, Krishnan (2000)	Ethiopia	3	1994-95	Expenditures	1 450 households	Poverty dynamics and nutrition
Gaiha (1989)	India	3	1968/69-1970/71	Income	4 118 households	Characteristics of the chronic poor
Gaiha (1988)	India	3	1968/69-1970/71	Income	4 118 households	Poverty transitions and economic mobility
Gaiha, Deolalikar (1993)	India	9	1975/76-1983/84	Income	170 households	Chronic poverty according to different approaches
Chaudhri, Ravallion (1994)	India	8	1975/76-1982/83	Income, expenditures	170 households	Methodological aspects in targeting policies aimed at the chronic poor
Lanjouw, Stern (1991)	India	4	1957/58-1983/84	Income	143 households	Poverty transitions
Walker, Ryan (1990)	India	10	1975/76-1984-85	Expenditures	240 households	Socioeconomic dynamics
Grootaert, Kanbur (1995)	Ivory Coast	2	1985-86	Expenditures	700 households	Poverty transitions
Grootaert, Kanbur, Oh (1997)	Ivory Coast	2	1987-88	Expenditures	700 households	Factors determining per capita spending variations
Herrera (1999)	Peru	4	1985, 1990, 1994, 1996	Expenditures	460 households	Factors determining poverty transitions, economic mobility
Herrera (2000a)	Peru	3	1997-1999	Expenditures	3 100 households	Factors determining poverty transitions
Cumpa, Webb (1999)	Peru	3	1991, 1994, 1996	Expenditures	676 households	Poverty transitions
Glewwe, Hall (1995)	Peru	2	1985/86-1990	Expenditures	699 households	Factors determining per capita spending variations
Jalan, Ravallion (1998)	China	6	1985-90	Expenditures	38 000 individuals	Transient and chronic poverty and targeting the poor
Jalan, Ravallion (2000)	China	6	1985-90	Expenditures	38 000 individuals	Factors determining transient and chronic poverty
McCulloch, Calandrino (2002)	China	5	1991-95	Income	3 311 households	Poverty dynamics, vulnerability
McCulloch, Baulch (1998)	Pakistan		1986/87-1990/91	Income	686 households	Poverty transitions
McCulloch, Baulch (1999)	Pakistan	5	1986/87-1990/91	Income	686 households	Factors determining transient and chronic poverty
Mroz, Popkin (1995)	Russia	4	1992-94	Income	6 300 housing units	Poverty and employment transitions
Scott, Litchfield (1994)	Chile	2	1967/69-1985/86	Income	146 households	Factors determining economic mobility and inequality

Scott (2000)	Chile	2	1967/69-1985/86	Income	146 households	Poverty transitions
Glewwe, Gragnolati, Zaman (2000)	Vietnam	2	1992-93, 1997-98	Expenditures	4 281 households	Factors determining transient and chronic poverty
Freire, S. (2000)	Venezuela	2	1997-98	Income	7 744 households	Economic mobility and poverty transitions

Sources: prepared by authors from Yaqub (2000a), Baulch, Hoddinott (2000: 7).

To our knowledge, the approach proposed here is the first comparative study on the factors that determine poverty transitions in two developing countries. To ensure result comparability, the data were treated strictly in the same manner: construction of the welfare indicator, definition of the poverty line, types of households, equal numbers of panel waves, study periods, estimation model and method and, lastly, independent variables. Regarding the latter, our study is distinct form the others, as it considered, besides the usual individual socioeconomic features of household heads and of the households to which they belong, the non-current shocks suffered by these households (labor market shocks, demographic shocks)[5]. Finally, this study is different from the ones presented above because of the fact that it took into account variables linked to the spatial location of households.

The Econometric Model

In the previous section on poverty transition profiles, we examined the unconditional risk that households with given characteristics may experience any of the poverty transition states. Through this, variables potentially relevant to policies to fight chronic and transient poverty were identified. A more analytical approach, however, requires that the specific effect of each variable be isolated, while maintaining the impact of the other variables constant. The present section will focus on modeling the factors associated with entries into and exits from poverty, as well as the conditions of « chronic poor » and « never poor. »

We chose to model poverty transitions rather than income dynamics.[6] Our attention is therefore focused on discrete income variations on both sides of the poverty line. The dependent variable corresponds to the four states of poverty transition (*chronic poverty*[7], *exits from poverty*, *entries into poverty* and *non-poverty*) observed from 1998 to 1999. The type of estimated model is multinomial logit, so the same variable may have a differentiated impact according to the type of poverty transition:

$$P_{ij} (y_i = 1 \mid x_i) = 1 / \sum_{j=2}^{4} e^{\beta(j)Xi}$$

$$P_{ij} (y_i = m \mid x_i) = e^{\beta(j)Xi} / \sum_{j=2}^{4} 1 + e^{\beta(j)Xi} \qquad \text{pour } 4 > m > 1$$

Where P_{ij} is the probability that household i is in poverty transition state j

Four groups of variables were used: three of them had to do with structural features concerning household heads, households and their neighborhood, and the fourth corresponded to variables related to shocks experienced by households, divided in two subgroups: demographic and economic shocks. To avoid the simultaneity and endogeneity problems mentioned above, the structural variables are those from the beginning of the period (1998) and the shock variables are those of the prior period (1997-1998), by taking advantage of the three observation points in time available. Variables were introduced block after block, which enabled us to assess the robustness of our results. The choice of this type of modeling requires several comments.

First, the choice of four states, in particular the distinction between entry into and exit from poverty within transient poverty, is justified by two types of related reasons. From the economic point of view, factors that may throw a household into poverty are not necessarily the same which, in the opposite direction, may enable it to exit poverty. The consideration of the potential existence of poverty traps should be enough to explain such asymmetry. In such a case, the policies to be implemented would therefore be different. This hypothesis is confirmed statistically, since, in both countries, Wald tests rejected the hypothesis that different transition states could be combined; the variables chosen therefore properly differentiate the four poverty states analyzed.

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[5] Therefore avoiding the problem of simultaneous bias found in certain studies in which panels only include two time periods (see Glewwe et al. 2000 on that point).
[6] This is the approach adopted by Glewwe and Hall (1995), and by Grootaert and Kanbur (1995).
[7] The term *chronic poverty* was chosen over *permanent poverty* due to the short observation period on hand (2 years).

Second, since transition statuses are completely determined by the relative position of incomes with respect to the poverty line, a model to determine panel incomes could have been considered more pertinent, within the perspective of an estimation strategy that maximizes the information available (especially on income amounts). Two reasons led us to discard this solution from the onset, with the knowledge that we would look into this option later on. First, as our objective was to compare our results to those obtained in the above-mentioned studies, a similar type of modeling had to be adopted. Then, income and poverty were all the less equivalent because we chose an absolute poverty line whose definition was close to the physiological threshold. It may therefore be considered that crossing the poverty line has an economic meaning and specific consequences for the households concerned, which would not be the case if a more arbitrary, relative threshold had been chosen, since the effect of independent variables on incomes is not necessarily linear and may play differently below and above the poverty line. Finally, binding both classes' incomes (*poor / non-poor*) limits the impact of biases caused by income measurement mistakes, which we know are far from negligible. On the other hand, it must be thoroughly ensured that changes in poverty status were not the result of small income variations from one period to the next, which in turn may be attributed to measurement errors. Overall, this hypothesis could be discarded for both countries. The income variations experienced by households entering or exiting poverty were significant enough while remaining of « reasonable » size in the short term, that is, totally compatible with exogenous (macroeconomic and climactic) shocks suffered by households in developing countries, in the absence of institutional social protection (see Appendix). For instance, in Madagascar, nearly 85% of those who entered poverty between 1998 and 1999 (resp. those who exited) saw their income fall over 30% (resp. an increase of over 30%)[8].

Finally, the question of shocks needs to be developed further. The underlying hypothesis of the papers mentioned above and that we sought to test is that a lack of physical assets and human capital is mainly associated with *chronic poverty*, while *transient poverty* is more closely linked to shocks suffered by households, which leads to greater income variability. Such shocks may be of different natures. Based on work by Bane and Ellwood (1986), Jenkins (1998) proposed a hierarchy of events linked to poverty transitions. He suggests to first examine if the household head had changed or not. If so, the demographic changes associated with the examined poverty transition had to be specified. Demographic events include the arrival of new members through birth, marriage or the arrival of relatives and non-relatives; or the reduction of household size due to the death of a member or the separation of the couple and consequent departure of children or other members. In the case of households where the head remains, Jenkins suggested comparing the evolution of needs with respect to the evolution of monetary incomes, while specifying the source that most contributed. Among events linked to income evolution are variations in the household head's income and those of the spouse, variations linked to income from work or other types of income –transfers, capital income, etc.

Since the welfare indicator is the family income per capita, transitions therefore directly depend on variations in household members' incomes and demographic composition. Income variations may occur following events related to income creation –household assets (physical assets, human and social capital) and returns on these assets– or after changes in household composition –which affect both the numerator and denominator–, or following both. Events or shocks may affect households individually (idiosyncratic shock) or as a group (Jenkins, 1999 :4-5 ; Baulch et Hoddinott, 2000 :11)[9]. It must be underlined that, since only a limited observation period was available, macroeconomic shocks (growth, inflation, etc.) or shock which affect the labor market environment (liberalization, minimum wage, etc.) cannot be taken into account.

The econometric treatment of shocks poses a formidable arbitration problem. To avoid the simultaneity bias, current shocks must be discarded and only past shocks considered. On the other hand, the information on current shocks is lost although it is known. However, for example, it is clear that an adverse shock –spouse's departure, job loss, etc.– between *t-1* and *t* will have a greater influence on income in *t*, than if the shock had taken place between *t-2* and *t-1* (which corresponds to our modeling). However, since we are interested in poverty transitions between *t-1* and *t*, the nature of the data does not enable us to find out the order in which the events occurred, and therefore ensure that a given shock did take place prior to the transition, and not inversely. The model with current shocks is still presented, keeping in mind the limitation imposed by such modeling, since the exogeneity of this type of independent variables is not guaranteed.

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[8] See McCulloch et Baulch 2000 for a similar argument. In the case of France, Maurin and Chambaz (1996: 140) arrived at similar results, which led them to formulate the hypothesis that transitions reflected discontinuities in the working/family life of households, that is, in the « way in which income is created. »

[9] In their study on US households, Bane and Ellwood (1986) highlighted the importance of demographic events and shocks in poverty transitions. In that sense, they observed that at least 60% of entries into poverty were set off by a drop in the household head's income, while 60% of exits from poverty resulted from increased household head income. The authors cited then recommended to focus research on households' formation decisions and on the behavior of households' secondary members (Bane and Ellwood, 1986: 1). On the other hand, in the case of the United Kingdom, Jenkins found that the behavior of households' secondary members outweighed demographic changes in poverty transition explanations: 82% of exits from poverty were associated with favorable income-related events, and only 18% with demographic changes. The importance of demographic changes is greater in the case of entries into poverty (38% of cases; Jenkins, 1998: 12-13). In the case of Madagascar and Peru, the relatively lower spouses' participation, compared to developed countries, would tend to enhance the demographic effect, while the higher frequency of extended households would tend to rather counter that effect.

Box
Reading of the Results

The reading and interpretation of the results of a multinomial logit model are made difficult by the number of states (dependent variable; here, 4 modalities) and independent variables considered, coupled with the comparison between the two countries. For example, the relative risk ratio that y= 2 (*entry into poverty*) related to the reference case (y=4, *chronic poverty*) for an X_i unit variation is given by:

$$\frac{P_{ij} (y_i = 2 \mid x_i)}{P_{ij} (y_i = 4 \mid x_i)} = e\beta_i(2)$$

However, a variable may be significant in explaining the relative risk ratio related to the chosen reference case (for example, *chronic poverty*) for a modality and yet not be so with respect to another state. In order to ease the reading of the results, a certain number of options were chosen:

- although regressions were estimated based on a 4-state multinomial model, comments compare pairs of states where the contrast seems the most « natural. » First, *chronic poverty* is compared to *non-poverty*, since both these states correspond to two extreme situations. Then, to analyze the transitions, the reference state chosen is the one that shares the same starting point: *exit from poverty* versus *chronic poverty*, and *entry in poverty* versus *non-poverty*. To do so, estimates were made by changing the reference state used for the comparison.

- the coefficients are presented in terms of odds ratios, which simply correspond to the regression coefficient exponential (e^b). A coefficient greater than 1 indicates that the variable in question increases the probability of, for example, exiting poverty with respect to remaining in chronic poverty. Inversely, a coefficient lower than 1 indicates that the variable examined has a negative impact on the relative risk ratio of a transition with regard to the base case. As opposed to marginal effects, the odds ratio have the advantage of not being dependent on the value of other variables in addition to the variable in question.

- complementarily, we will use the graphic method developed by Long and Freese (2001). The graphs are presented in the appendix and correspond to the model estimation that considers all the variables (regression 1). This method enabled us to « see » the effects of each independent variable on the different modalities of the dependent variable (the different poverty transitions). The odds ratios of each of the four poverty transition states –that is, the permanent poor (P), the never poor (J), those entering poverty (E) and those exiting poverty (S)– may be seen by the distance separating two points representing poverty transitions. If these two points are linked by a line, then the odds ratio is not statistically significant and the variable in question does not differentiate between the two states.

Estimate Results

The following plan will be used to comment on the results of our poverty transition models. First, we will compare the two extreme states, *chronic poverty* and *non-poverty*. We will then focus on the factors more specifically associated with *entries into* and *exits from poverty*. This second aspect is clearly the most original. Indeed, the factors associated with *exits from poverty*, as well as those linked to *entries into poverty*, have not been studied to much extent in developing countries. The question is therefore to determine if the transient forms of poverty, which, as seen above, do indeed correspond to two populations with their own characteristics, are the result of distinct causes and, consequently, should be assigned differentiated policies. In each case, the determining factors common to both countries are analyzed first, and differences are addressed afterwards.

Chronic Poverty versus Non-Poverty

With respect to *non-poverty*, *chronic poverty* risk factors are highly predictable and include most traditional variables found in static poverty equations. They are also very similar in both countries. The large size of households and a higher proportion of young children increase the probability of *chronic poverty*. However, this result must be interpreted with caution, since no correction was made to take into account equivalence scales and economies of scale. Households' human capital (investment in schooling) and physical capital (elements of capital) also play a protecting role against *chronic poverty*. The positive effect of education, already very pronounced, is seven times more marked in Madagascar than in Peru. Furthermore, their profiles are different. Figure 4 shows how the risk ratio of « never being poor » varies with respect to the state of *chronic poverty*, according to households' human capital[10], while the other variables are maintained constant at their average value. In Madagascar, the "return" on education with respect to the probability of *non-poverty* grows significantly, whereas it decreases slightly and much less sharply in Peru –the potential effect is confined to a much narrower variation range, approximately 0,6 a 0,85.

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[10] The human capital indicator of a household is the average for all the individuals of the ratio: the number of successful years in school on the theoretically possible number of years of education, which, of course, depends on age. This indicator ranges from 0 to 1 (see Appendix).

Figure 4
Variation of Poverty Transition Probabilities according to Households' Human Capital

Sources: Three-year panels, employment surveys 1997-1999, MADIO, Enaho 1997-1999, INEI, based on our results (regression 1, see Appendix).
Reference modality: *Chronic poverty*.
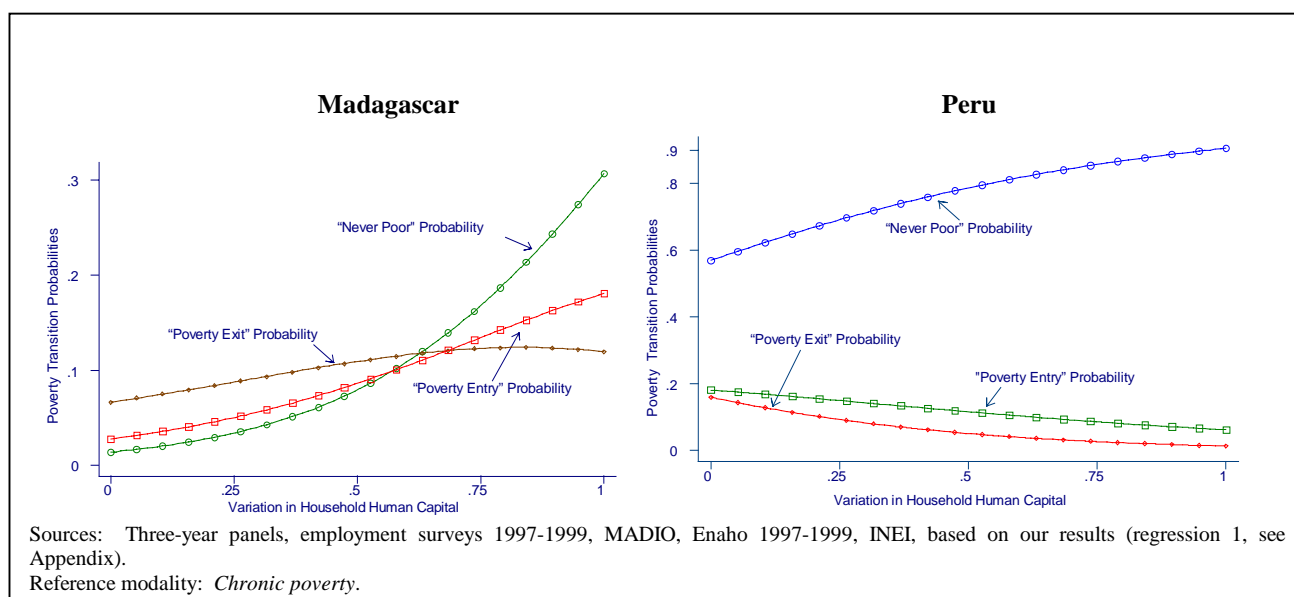
Quality integration on the labor market, particularly as a public-service wage-earner, white-collar worker or outside of the primary sector, limited the risks of *chronic poverty*. Despite the severe precariousness of wage-earning work and the drop in public employees' wages, these jobs continued to be at the top of the professional hierarchy. In neither of the countries did resorting to a second job provide an escape from poverty. Finally, both in Peru and Madagascar, the non-access to public infrastructures, such as electrical power, is a significant « marker » of *chronic poverty* status. On the outskirts of large cities, the considerable geographic expansion of so-called « *human settlements* » made up of precarious housing explains why, in Peru (and also in Antananarivo), the lack of indoor toilets is also associated with *chronic poverty*.

In more original fashion, while everything else remained equal, the level of wealth of the residence neighborhood (average income in the neighborhood) affected the probability of escaping poverty. A good geographic location may therefore create positive externalities: When all observable features were identical, households who lived in better-off neighborhoods benefited from a more favorable environment (especially access to collective public services, social capital, higher demand for informal workers, etc.), enabling them to grasp market opportunities more easily, which allowed them to generate higher incomes. None of the shock variables was significant, in accordance with the structural model presented above.

On the other hand, certain variables did not affect both countries in the same way. For instance, the sex of household heads had no specific influence on status in Peru, whereas households headed by women in Madagascar were rather disadvantaged, in spite of more equitable schooling in this country. Households headed by men had almost three times more chances of being non-poor than those headed by women. In Peru, where women heading households often belong to neighborhood organizations (« *comedores populares* »), the opposite result was observed, although it was not statistically significant. Since the demographic composition of households as well as the human capital and the type of work were controlled, it may be construed that Madagascan women suffer greater income discrimination than their Peruvian counterparts. Similarly, households whose head lived in a common-law relationship were stigmatized and worse off in Madagascar but not in Peru. This is probably due to the weight of greater religious rigor in the former.

Another contrasted and *a priori* counterintuitive result is that the proportion of informal workers in the residence neighborhood notably reduced the risk of *chronic poverty* in the Madagascan capital. Unlike this, in Peru, this variable had the expected negative impact, though it was not significant. This result could signal a greater integration of informal workers in Madagascar, as informality density in a neighborhood is linked to the importance of solidarity networks and social capital. In fact, in Madagascar, a greater proportion of informal workers worked out of their home, used family labor and carried out sales in the neighborhood, as opposed to their Peruvian counterparts residing in outlying neighborhoods recently established and far from the selling points of the commercial downtown areas.

Poverty Entries and Exits

We have seen that *chronic poverty* could be distinguished from transitory forms of poverty. Specific poverty entry and exit factors are now left to be identified, particularly the role of shocks experienced by households. In order to make the results easier to understand, the *non-poverty* situation will be used as reference to establish contrasts with *entries into poverty*, and the *chronic poverty* situation will serve as reference case for *exits from poverty*. Also, as mentioned above, shocks refer to the 1997-98 period, while the poverty transitions we wish to explain relate to the 1998-99 period. Our approach is different from that of Freire (2000) for Venezuela and Glewwe et al. (2000) for Vietnam, for whom shocks and transitions were simultaneous –they only had two-wave panels on hand. We therefore avoided possible simultaneity biases in our estimates[11]. Furthermore, if we consider simultaneous shocks and transitions, in the case of Madagascar, we artificially obtain a better predictive quality for the model (the pseudo R^2 goes from 0,35 to 0,38), whereas, in the case of Peru, the Wald test for all shock coefficients becomes significant at 5%.

The structural factors of *exits from poverty* are overall the same as those that affect *chronic poverty* (household size and composition, human and physical capital, labor market integration, access to infrastructures). Globally and for each country, coefficients have the same sign but are smaller and often not significant. The difficulties of households headed by women in Madagascar are confirmed, as these households also find it harder to come out of poverty. Spatial features operate in the expected direction: the proportion of informal workers in the neighborhood inhibits *exits from poverty* in Peru, while these are favored by the concentration of human capital in Madagascar.

On the other hand, shocks play a more important role than in *chronic poverty*, on which they have little or no effect, particularly in Peru. In that country, the departure of the household head reduced the possibilities of coming out of poverty, while, on the contrary, the arrival of a spouse was beneficial. These results are similar to those observed in developed countries, where demographic shocks weigh on poverty transitions. Economic shocks linked to labor market integration are also important. An increasing number of active household members also raises the chances of coming out of poverty. In addition, the institutional sector in which the new active members are integrated must also be taken into account. In fact, the informalization of the family workforce from one period to the next hinders *exits from poverty*.

Let's now examine *entries into poverty*. These will be compared to the reference situation of not having fallen into poverty in 1999. The idea is to identify the vulnerability factors that increase the probability of entering into poverty despite the fact of never having been poor before. From the onset, a rather widespread notion was discredited. The sex of the household head is not per se a vulnerability factor (from the point of view of entry into poverty). This result was also evidenced in Venezuela, for both entries into and exits from poverty (Freire, 2000: 25-26), as well as in Vietnam, both in urban and rural areas (Glewwe et al. 2000: 34). In Poland, households headed by a woman have a lower possibility of being poor or vulnerable (Okrasa 1999: 24). In the case of our two countries, it would seem that, in Madagascar, household headed by women run a greater risk of finding themselves in chronic poverty than in other states, which are not otherwise distinguished on that criterion, whereas, in Peru, the sex of the household head is irrelevant.

The size of households in Peru and the proportion of children in Madagascar both constitute definite risk factors. Having physical capital in both countries and human capital in Peru limits *entries into poverty*. Being employed in the primary sector in Peru, or as a blue-collar worker in Madagascar are also risk factors. Unlike in the Peruvian case, where household heads' having a second job facilitates *exit from poverty*, in Madagascar, it favors *entries into poverty*. As the number of low-quality jobs accumulated increases, so do the risks of *entering into poverty*. The variables linked to geographic location do not affect entry into poverty, except for the degree of informality of the neighborhood, which reduces that probability. This paradoxical result has been discussed above with regard to *chronic poverty*.

According to our estimates, very few variables linked to changes underwent by households are significant. Among these, the departure of household members (other than those of the nuclear family) decreased the risk of entering into poverty in Peru, which leads to believe that such members did not contribute or contributed little to the household income. Curiously, it may be observed that, in Madagascar, household heads' job loss and path to unemployment or inactivity, is a factor that reduced the risk of entering poverty. This result actually reflects reverse causality. Only once households reach a sufficiently high income level do household heads leave the workforce or declare themselves unemployed. More fundamentally, an increasing proportion of informal workers, private sector wage-earners and inactive workers/unemployed (with respect to public sector wage-earners) in households slightly raises the risks of entering into poverty.

Finally, all the empirical studies on factors determining poverty transitions run into difficulties when identifying factors associated with transient forms of poverty. Baulch and McCullogh (1999) only found the

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[11] This problem is explicitely addressed by Glewwe et al. (2000).

dependency rate to distinguish *chronic poverty* from *transient poverty*. The estimated model for Southern China by Jalan and Ravallion (1999) has a greater predictive ability for *chronic poverty* than for *transient poverty*. The most important variables linked to *transient poverty* are those linked to the life cycle (age and square age) and to assets. Neither the level of education nor the demographic features of households (except the proportion of children between the ages of 6 and 14) seem to have any impact on *transient poverty*. These same authors identified demographic features –household size, education levels, demographic structure–, as well as the variability of agricultural yields and the rate of illiteracy in the area, as being more important variables in terms of *chronic poverty* than *transient poverty* (ibid.). They conclude that the determining factors of *chronic poverty* and those of *transient poverty* are very different (ibid.). In the case studied by Glewwe et al. (2000), no independent variable turned out to be significant in explaining *entries into poverty* in urban areas, whereas in rural areas, household heads' socio-professional groups and education, household size and demographic composition, assets (irrigated land), agricultural yields, access to markets and to public goods (post office) all have a significant impact on the probability of *entering into poverty* with regard to *chronic poverty*.

The disappointing aspect of transient poverty models is reflected by their deficient predictive ability. While it is highly acceptable in the case of *chronic poverty* and *non-poverty*, it is extremely inferior, and almost nil, in the case of *entries into* and *exits from poverty*[12]. In fact, the estimated model (regression 1; see Appendix) accurately predicts the cases of *never poor* households in 87% and 61% of cases for Peru and Madagascar, respectively. The figures are 41% and 89% for *chronic poverty*. On the other hand, under 5% of *entries into* and *exits from poverty* were accurately predicted by the model. In Madagascar, most of the *transient poor* are classified as *chronically poor* (55% for *exits from poverty* and 41% for *entries into poverty*). In Peru, where the quality of the regression is less (the pseudo R^2 is 0,28 as opposed to 0,35 for Madagascar), the *transient poor* are placed in the category of the *never poor* (53% and 51% for *entries* and *exits*, respectively), but, in addition, an important proportion could not be classified without ambiguity by the model (about 40% of the *transient poor*; see tables in Appendix). In spite of this, the hypothesis which suggests that the different poverty transitions could be combined into a single one was rejected for the four models estimated in the case of Peru. In Madagascar's case, this hypothesis could not be rejected in the regression that only included household heads' features, but was rejected at the 10% and 6% thresholds in the model that did not include shocks (regression 2) and in the model without shocks and neighborhood variables (regression 3).

Conclusion

The priority given to the fight against poverty by developing countries and international organizations has led to refining diagnoses on the different forms of poverty and the policies that these require. In particular, the distinction between *chronic poverty* and *transient poverty* has called into question past policies judged too « asistencialista, » (welfare-type) and reflected the need to redirect them toward promoting exits from poverty and protecting vulnerable groups. Underlying this new conceptualization is a model that asserts that *chronic poverty* comes from a structural deficit in assets, whereas *transient poverty* is a result of adverse shocks which should be prevented. Such an approach involves expanding the traditional static view to an analysis centered on individual poverty dynamics. However, to this date, very few empirical studies in this field have been conducted in developing countries, essentially because of the absence of panel data, which are required for this type of analysis. In addition, it is difficult to draw general conclusions from prior research, due to the heterogeneity of the samples, data and methodological choices, which restricts the sphere of comparison among countries. Our study on the dynamics of urban poverty in Madagascar and Peru is a first contribution in this direction. By adopting rigorously comparable methods and covering a wide spectrum of situations in both countries, whose economic contexts and development levels are highly contrasted, we have aimed at identifying the general and specific features of *chronic* and *transient poverty*.

Following the presentation and examination of the economic context in each of the two countries, it was shown that, both in Peru and Madagascar, flows of entry into and exit from poverty are much higher than the evolution of static measurements of the incidence of poverty may indicate. The diversity of situations in both countries leads us to believe that this is actually a general result, and it is confirmed by most other studies of the same type. The important flows between poverty and non-poverty situations explains why anti-poverty programs based on a static view of poverty (the poor being identified at a given moment in time) run into targeting problems (high filtering and exclusion rates).

The study also showed the similarities and differences between the profiles of populations concerned by the various poverty states in both countries: *chronic poverty*, *transient poverty* and *non-poverty*, but those in a situation of *chronic poverty* seem to be differentiated from the *transient poor* by the intensity of poverty and the negative factors associated with it. Indeed, the greater the size of households, a higher proportion of young children and little human capital (education level) and physical capital (housing and access to public services) are all the more risk factors associated with poverty and magnified in the case of *chronic poverty*. Integration on the labor market is a relevant

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[12] When the predicted probability that a household may find itself in one of the four states was higher than 50%, this household was classified in the corresponding state.

discriminating factor in both countries. The more households work in the informal sector, the higher the poverty risks. In both countries, the poverty phenomenon includes a major spatial component. The poor tend to live in disadvantaged neighborhoods, both in terms of individual features (lower average income of residents, higher informality rate) and in terms of public infrastructures (access to water, to electrical power, etc.). Beyond that nucleus of common characteristics, certain features are specific with respect to a given context. In this sense, households headed by a woman are disadvantaged in Peru, unlike in Madagascar, an *a priori* more egalitarian society. In the case of Madagascar, more clearly than in Peru, the intensity of households' integration within the informal sector also distinguished chronic and transient forms of poverty. This result could be attributed to the severely precarious turn that formal employment in Peru has taken, following ten years of labor market liberalization, which made these categories of wage-earners, formerly protected, more vulnerable. It is probably for the same reason that spatial characteristics play a greater role in Madagascar than in Peru, although residential segregation is not *a priori* more marked there.

The hypotheses drawn on the basis of "unconditional" poverty transition profiles were analyzed using a multinomial logit model. Wald tests confirmed that the variables chosen not only allowed distinguishing the three states established (*chronic poverty*, *transient poverty* and *non-poverty*) among them, but also differentiating, within *transient poverty, entries into* and *exits from poverty*. *Chronic poverty* risk factors are absolutely typical, mostly common to both countries, and include the traditional variables of static poverty (household size, human and physical capital, employment, access to infrastructures). While, all other things are kept equal, the degree of wealth of the residence neighborhood affects the probability of escaping poverty. A good geographic location may therefore create positive externalities. None of the shock variables is significant, in accordance with the structural model presented above. Among the differences between the two countries is the sex of household heads. As opposed to what was observed based on unconditional profiles, the risk of chronic poverty is greater when households are headed by a woman in Madagascar. Women in Madagascar may suffer from income discrimination, while the greater vulnerability of their Peruvian counterparts may be the result of an asset deficit.

With regard to *exits from* and *entries into poverty*, results are somewhat disappointing. The models' predictive ability is extremely limited, the roles of shocks reduced (even when considering current shocks) and few independent variables common to Peru and Madagascar were found to account for the transitions. Nonetheless, and in conformity with the model established, structural factors are less significant, and demographic and economic shocks weigh relatively more than in the case of *chronic poverty*. In Peru, for example, the departure of the household head lowered the possibilities of coming out of poverty. An increase in family workforce and quality labor-market integration (in the formal sector) favor exits.

From the point view of anti-poverty policies, the decomposition of poverty in its chronic and transient components showed that transient poverty is a more acute problem in Peru than in Madagascar, where poverty is not only more widespread, but also more chronic. The advantages involved in implementing programs aimed at reducing the vulnerability of households are therefore more evident in Peru. The econometric results we obtained did not allow us to confirm the idea according to which having assets in human and physical capital is solely relevant to chronic poverty, whereas shocks would explain the different forms of transient poverty. Such a result is actually found in most empirical studies on the issue. This negative result may not only be linked to the real difficulties associated with measuring shocks, but also to not taking into account covariant shocks, although quite important in urban areas. Leaving aside excessive focusing on the micro factors that determine poverty transitions in order to integrate the evolution of the macroeconomic environment is a research avenue left open by the present study.

Bibliography

Banque mondiale (2000),: <u>Attacking Poverty</u>., Washington, World Development Report 2000/1.

Baulch B., Hoddinott J. (eds.) (2000):, <u>Economic mobility and poverty dynamics in developing countries</u>. Frank Cass Publishers.

Carter M., (1999), "Getting ahead or falling behind? The dynamics of poverty in post-apartheid South Africa", University of Wisconsin.

Carter M., May J. (1999), "One Kind of Freedom: Poverty Dynamics in Post-Apartheid South Africa", IFPRI/University of Natal, University of Wisconsin.

Chaudhuri, S., Ravallion, M. (1994) : "How well do static indicators identify the chronically poor ?", Journal of Public Economics, vol. 53, p.367-394.

Cumpa, M., Webb, R. (1999): "Mobility and poverty dynamics in the 1990's". Institute of Development Studies, Brighton.

Datt G., Ravallion M. (1992): "Growth and redistribution components of change in poverty measures. A decomposition with applications to Brazil and India in the 1980s", LSMS Working Paper n°83.

Dearcon, S., Krishnan, P. (2000): "Vulnerability, seasonality and poverty in Ethiopia" in Baulch B., Hoddinott J. (eds.) (2000):, <u>Economic mobility and poverty dynamics in developing countries</u>. Frank Cass Publishers, p.25-53.

Dollar D., Kraay A. (2000), "Growth is Good for the Poor", draft, World Bank, march.

Fields G. (2001): <u>Distribution and development: a new look at the developing world</u>. MIT Press/Russell Sage Foundation.

Freire, S. (2000): "Income, positional and poverty dynamics in Venezuela", NIP-LACEA conference, Rio de Janeiro, octobre 2000.

Gaiha, R. (1988): "Income mobility in rural India", Economic Development and Cultural Change, vol. 36, n°2, p.279-302.

Gaiha, R. (1989): "Are the chronically poor also the poorest in rural India?", Development and Change, vol. 20, p.295-322.

Gaiha, R., Deolalikar, A. (1993): "Persistent, expected and innate poverty: estimates for semi-arid rural south India", <u>Cambridge Journal of Economics</u>, vol. 17, n°4, p.409-421.

Glewwe P., Gragnolati M., Zaman H. (2000): "Who Gained from Vietnam's Boom in the 1990's? An Analysis of Poverty and Inequality Trends" World Bank PRWP 2275.

Glewwe P., Hall G. (1995): "Who is most vulnerable to macroeconomic shocks? Hypothesis tests using panel data from Perú", Washington, D.C., The World Bank, LSMS Working Paper n°127.

Grootaert, Ch., Kanbur, R. (1995): "The lucky few amidst economic decline : distributional change in Côte d'Ivoire as seen through panel data sets, 1985-88", <u>The Journal of Development Studies</u>, vol. 31, n°4, pp.603-619.

Grootaert, Ch., R. Kanbur, GI-Taik Oh, (1997): "The Dynamics of Welfare gains and Losses: An African Case Study", <u>Journal of Development Studies</u>, vol. 33, n°5, p.635-657.

Herrera, J. (1999): "Ajuste económico, desigualdad y movilidad", in R. Webb; M. Ventocilla (1999) (eds). <u>Pobreza y economía social. Análisis de una encuesta (ENNIV-1997)</u>, USAID, Instituto Cuanto, UNICEF, pp 101-142.

Herrera, J. (2001a): "Poverty dynamics in Peru, 1997-1999". Document de travail DIAL 09-2001, 56 pages.

Herrera, J. (2001b): "Les fonctionnaires péruviens sont-ils sur-payés?", in F. Roubaud, M. Raffinot (eds.) <u>Les fonctionnaires au Sud</u>. Revue Autrepart, décembre 2001.

Jalan, J., Ravallion, M. (1998): "Is transient poverty different? Evidence for rural China", in Baulch B., Hoddinott J. (eds.) (2000):, <u>Economic mobility and poverty dynamics in developing countries</u>. Frank Cass Publishers, p.82-99.

Jalan, J., Ravallion, M. (1998): "Transient poverty in postreform rural China", <u>Journal of Comparative Economics</u>, 26, pp.338-357.

Jenkins S. (1998), "*Modelling household income dynamics*", Colchester, draft, University of Essex.

Justino, P., Litchfield, J. (2002): "Poverty dynamics in rural Vietnam: winners and losers during reform", PRUS working paper n°11, University of Sussex.

Lanjouw, P., Stern, N. (1991): "Poverty in Palanpur", World Bank Economic Review, vol. 5, n°1, p.23-55.

Long, J., Freese, J. (2001): <u>Regression models for categorical dependent variables using Stata</u>. Stata press.

Mahmoudi V. (1998): "Growth-equity decomposition of a change in poverty: an application to Iran", draft, University of Essex.

Maluccio, J., Haddad, L., May, J. (2000): "Social capital and household welfare in South Africa, 1993-98", in Baulch B., Hoddinott J. (eds.) (2000):, <u>Economic mobility and poverty dynamics in developing countries</u>. Frank Cass Publishers, p.54-81.

McCulloch, N., Baulch B. (1998): "Beign poor and becoming poor: poverty status and poverty transitions in rural Pakistan", IDS Working Paper n°79.

McCulloch, N., Baulch B. (1999): "Distinguishing the chronically from the transitorily poor: Evidence from rural Pakistan", IDS Working Paper n°97.

McCulloch, N., Calandrino, M. (2002): "Poverty Dynamics in Rural Sichuan Between 1991 and 1995", IDS Working Papers n°151.

Mroz, T., Popkin, B. (1995) : "Poverty and the economic transition in the Russian Federation", <u>Economic Development and Cultural Change</u>, vol. 44, n°1, p.1-31.

Rakotomanana F., Ravelosoa R., Roubaud F. (2001), "*L'enquête 1-2-3 sur le secteur informel et la satisfaction des besoins des ménages dans l'agglomération d'Antananarivo 1995, 1998: la consolidation d'une méthode*", Paris, Stateco n°94/95/96, Insee.

Ravallion M. (1996): "Comparaisons de la pauvreté. Concepts et méthodes". LSMS Working Paper n° 122, Banque Mondiale.

Ravallion M., Chen S., (1997), "What can New Survey Data Tell Us About Recent Changes in Distribution and Poverty", World Bank Economic Review 11(2), pp.357-382.

Ravelosoa R. (2001), "*Dynamique de la pauvreté urbaine sur les quatre dernières décennies : le cas de l'agglomération d'Antananarivo* ", Séminaire international "La pauvreté à Madagascar : état des lieux, réflexions sur les politique de réduction et leur mise en œuvre » Antananarivo, février.

Razafindrakoto M., Roubaud F. (1999), "*La dynamique du marché du travail dans l'agglomération d'Antananarivo entre 1995 et 1999 : la croissance économique profite-t-elle aux ménages ?* ", Revue Economie de Madagascar n°4, BCM/INSTAT, Madagascar, pp.103-137.

Razafindravonona J., Stiefel D., Paternostro S. (2001), " *Dynamique de la pauvreté à Madagascar : 1993-1999* ", Séminaire international "La pauvreté à Madagascar : état des lieux, réflexions sur les politique de réduction et leur mise en œuvre", Antananrivo, février.

Reardom, T., Taylor, J. (1996): "Agroclimatic shock, income inequality, and poverty evidence from Burkina Faso", <u>World Development</u>, vol. 24, n°2, p.175-99.

Roemer M., Gugerty M.K. (1997), "Does Economic Growth Reduce Poverty" CAER II Discussion Papers n°4-5, Havard Institue for International Development.

Roubaud F. (2001), "*La mise en place d'une enquête annuelle sur l'emploi en Afrique: un exemple pour l'Afrique sub-saharienne*", Paris, Stateco n°94/95/96, Insee.

Scott, C., Litchfield, J. (1994): "Inequality, mobility and the determinants of income among the rural poor in Chile 1968-86", STIRCED, Development Economics Research Programme DEP 35, London School of Economics.

Scott, C. (2000): "Mixed fortunes: A study of poverty mobility among small farm households in Chile, 1968-86" in Baulch B., Hoddinott J. (eds.) (2000):, <u>Economic mobility and poverty dynamics in developing countries</u>. Frank Cass Publishers, pp.25-53.

Squire L. (1993), "Fighting Poverty", American economic Review, May, pp. 377-382

Verdera F. (2000) "Cambios en el modelo de relaciones laborales en el Perú, 1970-1996", JCAS-IEP Occasional Paper n°5.

Verger D. (2001), "*Les approches de la pauvreté en Europe de l'Ouest: quels enseignements pour Madagascar?*", Séminaire international « La pauvreté à Madagascar : état des lieux, réflexions sur les politique de réduction et leur mise en œuvre » Antananrivo, février.

Walker, T., J. Ryan (1990): <u>Village and household economies in India's semi-arid tropic</u>. John Hopkins University Press.

Yaqub S. (2000a), "Poverty dynamics in developing countries", mimeo, University of Sussex.

Yaqub S. (2000b), "Intertemporal welfare dynamics: extent and causes", Background paper pour le Rapport sur le Développement Humain 2001 du PNUD, mimeo, University of Sussex.

Appendices

Variables used

cage98	Age of household head 98
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csex98	Sex of household head 98
cedu981	Household head with primary educ/without educ 98
cedu982	Household head with high school education 98
cmat982	Household head in common-law relationship 98
cmat983	Single household head 98
cexp98	Years of experience of household head 98
ccsp982	Household head non-white collar/blue collar 98
ccsp983	Household head independent worker 98
ccsp984	Household head unemployed/inactive
cbran981	Household head in primary sector 98
cbran982	Household in industry 98
csec98	Household head with a second job 98
qrev98	Average neighborhood income 98
qedu98	Human capital of neighborhood 98
qsin98	Proportion of informal workers in neighborhood 98
mtai98	Household size 98
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mp1598	% members 10 to 15
mp9998	% members over 60
mnucl98	Nuclear household 98
mpat98	# assets owned by household 98
mpro982	Home owner without property title 98
mpro983	Tenant & others 98
meau98	Indoor tap 98
mele98	Electrical lighting 98
mwce98	Indoor toilet 98
mfor98	Employed in formal sector/WAP tot 98
minf98	Employed in informal sector /WAP tot 98
mcho98	Unemployed & inactive/WAP tot 98
Mdept98	Proportion of employed in household 98
mkhu98	Human capital of Household 98
dche9798	Departure of head 97/98
dcon9798	Departure of spouse 97/98
denf9798	# departure of children 97/98
daut9798	# departure of other members 97/98
dcpe9798	Employed head 97 – inactive/Unemployed 98
dcre9798	Head Inactive/Unemployed 97 – Employed 98
dinf9798	Dif. proportion informal workers in household 97/98
ddpt9798	Dif. proportion of employed in household 97/98
dper9798	Dif. household size 97/98
acon9798	Arrival of spouse 97/98
aenf9798	# arrival of children 97/98
aaut9798	# arrival of other members 97/98

Poverty Transition Sensibilities

Madagascar, income variations and poverty transitions between 1997 and 1998.

vrev9798c	Chronic Poor	Entry into Poverty	Exit from Poverty	Never Poor	Total
-50%	13.72	57.95	0	8.48	15.43
-50% to -30%	12.36	22.60	0	9.89	11.78
-30% to -10%	15.53	15.42	0	16.61	14.21
-10% to 0%	8.03	4.04	0	7.12	6.88
0 to +10%	7.34	0	0	6.63	6.00
+10% to +30%	10.05	0	3.85	20.15	9.76
+30% to + 50%	10.08	0	7.35	7.43	8.74
Over +50%	22.89	0	88.80	23.69	27.20
Total	100.00	100.00	100.00	100.00	100.00

Madagascar, income variations and poverty transitions between 1998 and 1999.

vrev9899c	Chronic Poor	Entry into Poverty	Exit from Poverty	Never Poor	Total
-50%	13.39	57.89	0	8.70	14.40
-50% to -30%	14.02	26.94	0	19.01	14.15
-30% to -10%	14.65	12.67	0	19.41	13.70
-10% to 0%	7.51	2.50	0	7.07	6.38
0 to +10%	8.39	0	1.38	8.56	7.16
+10% to +30%	11.97	0	12.48	13.24	11.39
+30% to + 50%	5.33	0	12.17	7.42	5.93
Over +50%	24.74	0	73.96	16.59	26.89
Total	100.00	100.00	100.00	100.00	100.00

Peru, income variations and poverty transitions between 1997 and 1998.

vrev9798c .	Chronic Poor P	Entry into Poverty	Exit from Poverty 1?	Never Poor P P	Total
-50%	14.78	67.77	0	6.81	13.39
-50% to -30%	10.66	22.48	0	12.74	11.90
-30% to -10%	16.69	9.62	0	19.41	15.83
-10% to 0%	13.82	0.13	0	11.07	9.39
0 to +10%	13.28	0	1.67	11.11	9.30
+10% to +30%	10.66	0	8.24	13.91	11.34
+30% to + 50%	3.68	0	12.13	8.09	6.94
Over +50%	16.43	0	77.96	16.86	21.91
Total	100.00	100.00	100.00	100.00	100.00

Peru, income variations and poverty transitions between 1998 and 1999

Vrev9899c	Chronic Poor	Entry into Poverty	Exit from Poverty	Never Poor	Total
-50%	7.90	41.28	0	8.02	11.83
-50% to -30%	9.07	34.64	0	9.88	12.19
-30% to -10%	17.02	21.26	0	18.04	16.45
-10% to 0%	10.19	2.82	0	9.50	7.58
0 to +10%	8.92	0	0	11.03	8.10
+10% to +30%	13.94	0	6.46	15.44	12.09
+30% to + 50%	8.89	0	10.64	10.21	8.60
Over +50%	24.07	0	82.90	17.89	23.16
Total	100.00	100.00	100.00	100.00	100.00

PERU	Regression (4)			Regression (3)			Regression (2)			Regression (1)		
	Never Poor	Exit from Poverty	Entry into Poverty	Never Poor	Exit from Poverty	Entry into Poverty	Never Poor	Exit from Poverty	Entry into Poverty	Never Poor	Exit from Poverty	Entry into Poverty
Household Head Characteristics												
Age of household head	1.390	1.291	0.813	1.202	1.280	0.888	1.166	1.282	0.903	1.171	1.281	0.898
	(7.23)***	(4.24)***	(4.20)***	(3.15)***	(3.61)***	(2.05)**	(2.64)***	(3.63)***	(1.76)*	(2.68)***	(3.57)***	(1.83)*
Sex of household head	1.052	1.410	0.873	0.731	1.249	0.979	0.756	1.207	0.960	0.794	1.552	0.972
	(0.18)	(0.97)	(0.42)	(0.82)	(0.54)	(0.06)	(0.72)	(0.46)	(0.11)	(0.55)	(0.97)	(0.08)
Head with primary educ/without educ	1.522	5.595	0.808	3.114	5.090	0.563	2.540	4.942	0.598	2.661	5.066	0.582
	(0.77)	(2.44)**	(0.40)	(1.81)*	(2.18)**	(1.03)	(1.46)	(2.10)**	(0.92)	(1.50)	(2.08)**	(0.96)
Head with high school education	0.787	1.874	1.102	1.538	2.031	0.843	1.361	1.983	0.865	1.424	1.998	0.849
	(0.70)	(1.40)	(0.31)	(1.12)	(1.49)	(0.52)	(0.79)	(1.41)	(0.44)	(0.88)	(1.41)	(0.49)
Head in common-law relationship	0.833	0.821	0.986	1.086	0.830	0.882	1.116	0.833	0.877	1.145	0.832	0.896
	(0.94)	(0.79)	(0.07)	(0.36)	(0.71)	(0.57)	(0.48)	(0.69)	(0.59)	(0.58)	(0.68)	(0.48)
Single household head	1.950	1.256	0.479	0.888	1.199	0.811	0.851	1.196	0.843	0.732	1.346	0.911
	(2.38)**	(0.68)	(2.31)**	(0.31)	(0.44)	(0.58)	(0.42)	(0.43)	(0.46)	(0.75)	(0.66)	(0.24)
Years of experience of household head	0.763	0.799	1.193	0.853	0.802	1.107	0.875	0.800	1.091	0.874	0.803	1.096
	(6.02)***	(3.77)***	(3.68)***	(2.74)***	(3.27)***	(1.79)*	(2.32)**	(3.30)***	(1.54)	(2.31)**	(3.21)***	(1.60)
Head non-white collar/blue collar	0.604	0.640	1.589	0.748	0.658	1.102	0.785	0.647	1.089	0.770	0.617	1.069
	(1.50)	(1.01)	(1.71)*	(0.75)	(0.90)	(0.34)	(0.63)	(0.93)	(0.30)	(0.67)	(1.03)	(0.23)
Head independent worker	0.238	0.751	2.038	0.333	0.864	1.408	0.355	0.846	1.365	0.346	0.813	1.394
	(4.86)***	(0.74)	(2.75)***	(3.15)***	(0.36)	(1.23)	(2.95)***	(0.41)	(1.12)	(2.98)***	(0.50)	(1.18)
Head unemployed/inactive	0.189	1.030	1.953	0.409	1.218	1.381	0.419	1.170	1.345	0.376	0.822	1.164
	(4.99)***	(0.06)	(2.14)**	(2.18)**	(0.41)	(0.93)	(2.14)**	(0.33)	(0.85)	(1.96)**	(0.35)	(0.36)
Head in primary sector	0.389	0.834	0.690	0.508	0.877	0.493	0.562	0.869	0.478	0.579	0.844	0.472
	(4.36)***	(0.65)	(1.24)	(2.56)**	(0.45)	(2.35)**	(2.12)**	(0.48)	(2.46)**	(2.00)**	(0.58)	(2.48)**
Head in industry	0.934	1.435	1.437	0.997	1.614	1.229	1.014	1.610	1.205	1.058	1.567	1.159
	(0.28)	(1.21)	(1.73)*	(0.01)	(1.54)	(0.93)	(0.05)	(1.52)	(0.85)	(0.20)	(1.41)	(0.66)
Head with a second job	1.389	1.706	0.894	1.633	1.882	0.824	1.660	1.839	0.830	1.661	1.848	0.829
	(1.20)	(1.59)	(0.44)	(1.54)	(1.78)*	(0.73)	(1.56)	(1.72)*	(0.70)	(1.56)	(1.72)*	(0.70)
Neighborhood Variable 1998												
Average neighborhood income							1.015	0.995	0.996	1.014	0.996	0.997
							(2.33)**	(0.67)	(1.49)	(2.26)**	(0.57)	(1.44)
Human capital of neighborhood							0.376	0.469	0.806	0.438	0.376	0.756
							(0.89)	(0.61)	(0.21)	(0.73)	(0.77)	(0.27)
Propor. of informal workers in neighborhood							0.629	0.340	1.071	0.642	0.344	1.072
							(0.94)	(1.97)**	(0.14)	(0.89)	(1.90)*	(0.15)
Household Characteristics 1998												
Household size				0.670	0.921	1.341	0.736	0.913	1.295	0.695	0.888	1.314
				(6.60)***	(1.43)	(4.98)***	(4.71)***	(1.44)	(4.30)***	(5.17)***	(1.66)*	(4.40)***
% members 0 to 9				0.050	0.245	0.955	0.035	0.252	1.173	0.025	0.214	1.444

	(3.40)***	(1.49)	(0.05)	(3.69)***	(1.43)	(0.18)	(3.87)***	(1.54)	(0.41)
% members 10 to 15	0.090	0.623	0.960	0.069	0.636	1.132	0.049	0.477	1.311
	(3.07)***	(0.54)	(0.05)	(3.31)***	(0.52)	(0.16)	(3.56)***	(0.82)	(0.35)
% members over 60	0.995	0.227	0.493	1.111	0.268	0.499	0.853	0.206	0.546
	(0.01)	(1.97)**	(1.17)	(0.17)	(1.73)*	(1.15)	(0.24)	(2.11)**	(0.97)
Nuclear household	0.577	0.878	1.655	0.609	0.913	1.657	0.663	0.976	1.655
	(2.36)**	(0.52)	(2.40)**	(2.13)**	(0.37)	(2.41)**	(1.73)*	(0.10)	(2.27)**
# assets owned by household	1.366	1.049	0.827	1.325	1.051	0.843	1.326	1.064	0.851
	(5.53)***	(0.76)	(4.13)***	(4.89)***	(0.78)	(3.64)***	(4.76)***	(0.95)	(3.41)***
Home owner without property title	0.811	1.639	0.937	0.836	1.644	0.929	0.864	1.893	0.959
	(0.54)	(1.30)	(0.17)	(0.46)	(1.32)	(0.19)	(0.37)	(1.65)*	(0.11)
Tenant & others	0.667	0.599	0.927	0.611	0.579	0.957	0.636	0.633	0.976
	(1.74)*	(1.80)*	(0.33)	(2.01)**	(1.89)*	(0.19)	(1.81)*	(1.56)	(0.10)
Indoor tap	1.146	1.070	0.999	1.116	1.070	1.013	1.114	1.071	1.021
	(0.58)	(0.26)	(0.00)	(0.47)	(0.27)	(0.05)	(0.46)	(0.26)	(0.09)
Electrical Lighting	2.173	1.032	0.817	2.015	1.017	0.830	2.187	1.123	0.803
	(2.41)**	(0.10)	(0.57)	(2.15)**	(0.05)	(0.53)	(2.33)**	(0.36)	(0.62)
Indoor toilet	2.045	1.848	0.646	1.786	1.868	0.681	1.833	1.873	0.679
	(3.13)***	(2.31)**	(1.99)**	(2.49)**	(2.29)**	(1.77)*	(2.57)**	(2.24)**	(1.76)*
Employed in formal sector/WAP tot	0.073	0.094	65.666	0.059	0.099	70.728	0.060	0.101	68.294
	(2.68)***	(2.02)**	(4.94)***	(2.88)***	(1.95)*	(5.04)***	(2.85)***	(1.92)*	(5.01)***
Employed in informal sector/WAP tot	0.014	0.068	52.079	0.017	0.122	51.691	0.019	0.166	49.874
	(4.22)***	(2.31)**	(4.49)***	(3.95)***	(1.77)*	(4.40)***	(3.77)***	(1.49)	(4.31)***
Unemployed & inactive/WAP tot	0.011	0.164	39.471	0.010	0.275	47.947	0.009	0.370	55.096
	(3.70)***	(1.37)	(3.52)***	(3.77)***	(0.96)	(3.68)***	(3.75)***	(0.72)	(3.77)***
Proportion of employed in household	6.957	4.099	0.578	5.111	4.752	0.701	2.496	2.156	0.744
	(1.79)*	(1.21)	(0.60)	(1.46)	(1.30)	(0.38)	(0.76)	(0.61)	(0.30)
Human capital of household	6.147	0.308	0.209	7.097	0.391	0.230	7.311	0.388	0.214
	(2.32)**	(1.30)	(2.11)**	(2.23)**	(0.97)	(1.81)*	(2.21)**	(0.96)	(1.88)*
Shock Variables 1997/98									
Departure of household head							0.868	0.137	0.755
							(0.23)	(2.36)**	(0.32)
Departure of spouse							2.361	0.886	0.541
							(1.64)	(0.17)	(1.15)

# departure of children										0.991	0.904	0.814
										(0.05)	(0.44)	(1.19)
# departure of other members										1.058	0.981	0.826
										(0.42)	(0.11)	(1.77)*
Employed head 97 -Inactive/Unemployed 98										0.864	1.630	1.517
										(0.34)	(1.08)	(0.98)
Head inactive/Unemployed 97-Employed 98										0.863	1.597	1.104
										(0.41)	(1.15)	(0.29)
Dif. propor. informal workers in household										0.852	0.607	0.890
										(0.73)	(1.94)*	(0.54)
Dif. proportion of employed in household										2.081	3.923	1.297
										(1.58)	(2.36)**	(0.57)
Dif. household size										0.994	1.101	1.111
										(0.04)	(0.55)	(0.91)
Arrival of spouse										0.579	5.920	2.063
										(0.56)	(1.80)*	(0.82)
# arrival of children										0.906	0.873	0.790
										(0.40)	(0.51)	(0.96)
# arrival of other members 97/98										1.436	1.050	0.786
										(1.93)*	(0.23)	(1.63)
Observations	1712	1712	1712	1712	1712	1712	1711	1711	1711	1711	1711	1711

Robust z statistics in parentheses
significant at 10%; ** significant at 5%; *** significant at 1%
Reference Category: Chronic Poor (for never poor and for exit from poverty)
Never poor (for entry into poverty)

Reference Terms:
Female household head, household head with higher education, non-single household head, head in public sector, head in service sector, household head without a second job, % of members between 16 and 60, multi-family household, home owner with property title, without indoor tap, without electrical lighting, without indoor toilet, employed in public sector /WAP, no departure of household head, no departure of spouse, no change in employment status.

Multinomial regression	reg1	reg2	reg3	reg4
Number of obs		1711	1711	1712	1712
Wald chi2(135)		545	513	511	334
Prob > chi2		0	0	0	0
Pseudo R2		0.278	0.267	0.253	0.114
Log likelihood		-1340	-1359	-1387	-1643

	Transitions predicted by model					
Observed Transitions						
	Never Poor	**Exit**	**Entry**	**Chronic Poor**	**Non Classified**	**Total**
Never Poor	86.9	0.3	0.0	1.8	11.0	100
Exit	32.8	4.8	0.5	9.5	52.4	100
Entry	50.8	1.5	1.0	5.5	41.3	100
Chronic Poor	17.2	1.1	0.0	40.7	41.0	100
Total	65.8	1.1	0.2	9.2	23.9	100

Madagascar	Regression (4)			Regression (3)			Regression (2)			Regression (1)		
	Never Poor	Exit from Poverty	Entry into Poverty	Never Poor	Exit from Poverty	Entry into Poverty	Never Poor	Exit from Poverty	Entry into Poverty	Never Poor	Exit from Poverty	Entry into Poverty
Household Head Characteristics												
Age of household head	1.360	1.185	0.882	1.012	1.000	1.031	1.023	1.001	1.019	1.002	1.019	1.036
	(5.15)***	(2.77)***	(1.75)*	(0.15)	(0.00)	(0.33)	(0.29)	(0.01)	(0.20)	(0.03)	(0.24)	(0.36)
Sex of household head	1.837	1.632	1.510	2.590	2.159	1.239	2.649	2.137	1.199	2.854	2.634	1.095
	(1.75)*	(1.28)	(0.75)	(2.24)**	(1.95)*	(0.41)	(2.29)**	(1.94)*	(0.35)	(2.27)**	(2.33)**	(0.16)
Head with primary educ/ without educ	0.986	1.028	1.389	1.633	1.371	1.040	2.167	1.470	0.809	1.945	1.662	0.909
	(0.02)	(0.04)	(0.36)	(0.57)	(0.40)	(0.04)	(0.90)	(0.48)	(0.21)	(0.75)	(0.62)	(0.09)
Head with high school education	0.866	0.860	1.137	1.449	1.254	0.820	1.620	1.334	0.799	1.432	1.310	0.833
	(0.37)	(0.33)	(0.24)	(0.71)	(0.44)	(0.34)	(0.93)	(0.55)	(0.39)	(0.67)	(0.51)	(0.30)
Head in common-law relationship	0.277	1.452	3.530	0.131	1.389	6.755	0.132	1.304	5.708	0.165	1.458	5.542
	(1.59)	(0.89)	(1.36)	(2.25)**	(0.68)	(1.82)*	(2.43)**	(0.54)	(1.80)*	(2.11)**	(0.70)	(1.72)*
Single household head	3.273	2.287	0.727	1.424	1.881	1.037	1.443	1.817	0.965	1.667	2.060	0.759
	(3.56)***	(2.33)**	(0.68)	(0.83)	(1.67)*	(0.07)	(0.85)	(1.60)	(0.07)	(1.09)	(1.73)*	(0.47)
Years of experience of household head	0.763	0.862	1.101	0.981	1.012	0.966	0.965	1.011	0.984	0.981	0.991	0.970
	(4.70)***	(2.49)**	(1.37)	(0.24)	(0.16)	(0.38)	(0.47)	(0.14)	(0.18)	(0.24)	(0.12)	(0.31)
Head non-white collar/blue collar	0.299	0.597	1.467	0.227	0.536	2.163	0.219	0.513	2.124	0.215	0.512	2.413
	(4.56)***	(1.59)	(1.08)	(4.22)***	(1.75)*	(1.90)*	(4.36)***	(1.87)*	(1.85)*	(4.30)***	(1.83)*	(2.05)**
Head independent worker	0.137	0.377	2.253	0.205	0.457	1.961	0.207	0.441	1.933	0.234	0.456	1.901
	(6.60)***	(2.82)***	(2.03)**	(3.95)***	(2.13)**	(1.44)	(3.85)***	(2.20)**	(1.39)	(3.45)***	(2.06)**	(1.29)
Head unemployed/ inactive	0.193	0.834	2.250	0.363	0.610	2.848	0.411	0.584	2.444	0.522	0.789	4.911
	(5.05)***	(0.46)	(1.88)*	(2.19)**	(1.08)	(1.94)*	(1.93)*	(1.15)	(1.68)*	(1.19)	(0.42)	(2.37)**
Head in primary sector	0.237	1.034	2.293	0.137	1.122	2.908	0.150	1.155	2.849	0.139	1.022	3.057
	(1.82)*	(0.07)	(0.88)	(2.82)***	(0.22)	(1.27)	(2.76)***	(0.27)	(1.26)	(2.89)***	(0.04)	(1.33)
Head in industry	0.882	0.941	0.679	0.971	1.054	0.639	1.036	1.067	0.609	1.038	1.049	0.605
	(0.56)	(0.24)	(1.19)	(0.10)	(0.20)	(1.24)	(0.12)	(0.24)	(1.38)	(0.12)	(0.18)	(1.35)
Head with a second job	0.845	0.732	2.043	0.866	1.025	2.127	0.903	1.044	2.048	0.830	1.008	2.102
	(0.55)	(0.88)	(1.95)*	(0.37)	(0.07)	(1.88)*	(0.26)	(0.11)	(1.79)*	(0.45)	(0.02)	(1.75)*
Neighborhood Variable 1998												
Average neighborhood income							1.008	1.000	0.993	1.007	1.000	0.994
							(2.57)**	(0.15)	(2.30)**	(2.49)**	(0.17)	(2.04)**
Human capital of neighborhood							1.127	1.155	1.009	1.130	1.190	0.994
							(1.17)	(1.51)	(0.07)	(1.17)	(1.76)*	(0.04)
Propor. of informal workers in neighborhood							15.676	3.318	0.059	16.580	3.594	0.065
							(2.30)**	(1.11)	(1.91)*	(2.34)**	(1.19)	(1.79)*
Household Characteristics 1998												
Household size				0.796	0.897	1.112	0.802	0.903	1.117	0.811	0.950	1.022
				(3.01)***	(1.91)*	(1.00)	(2.91)***	(1.79)*	(1.05)	(2.20)**	(0.77)	(0.18)
% members 0 to 9				0.007	0.093	4.104	0.012	0.103	2.755	0.014	0.090	8.752
				(3.68)***	(2.07)**	(0.86)	(3.23)***	(1.96)**	(0.60)	(2.85)***	(1.87)*	(1.20)
% members 10-15				0.005	0.036	18.770	0.005	0.037	22.871	0.005	0.035	69.832

	(4.99)***	(3.23)***	(2.11)**	(4.92)***	(3.23)***	(2.25)**	(4.51)***	(3.03)***	(2.80)***
% members over 60	2.373	0.569	1.010	2.644	0.597	0.979	3.133	0.676	0.875
	(0.99)	(0.71)	(0.01)	(1.08)	(0.65)	(0.02)	(1.25)	(0.50)	(0.12)
Nuclear household	0.724	0.835	1.047	0.743	0.861	1.054	0.678	0.715	1.105
	(1.16)	(0.74)	(0.13)	(1.05)	(0.61)	(0.15)	(1.16)	(1.15)	(0.23)
# assets owned by household	1.748	1.322	0.770	1.706	1.331	0.791	1.784	1.368	0.806
	(5.59)***	(2.65)***	(2.27)**	(5.29)***	(2.72)***	(2.04)**	(5.48)***	(2.86)***	(1.89)*
Home owner without title	1.000	1.388	0.624	1.108	1.436	0.551	1.141	1.439	0.533
	(0.00)	(1.00)	(0.86)	(0.26)	(1.09)	(1.08)	(0.33)	(1.05)	(1.06)
Tenant & others	1.139	1.228	0.977	1.085	1.207	0.978	1.077	1.254	0.988
	(0.49)	(0.80)	(0.07)	(0.30)	(0.72)	(0.07)	(0.27)	(0.87)	(0.03)
Indoor tap	1.644	1.487	0.563	1.662	1.389	0.486	1.668	1.410	0.474
	(1.47)	(1.18)	(1.33)	(1.47)	(0.94)	(1.62)	(1.46)	(0.96)	(1.61)
Electrical lighting	1.910	2.279	0.921	1.955	2.207	0.855	2.097	2.250	0.777
	(1.59)	(2.60)***	(0.17)	(1.58)	(2.50)**	(0.31)	(1.69)*	(2.49)**	(0.47)
Indoor toilet	1.356	0.970	0.579	1.210	0.970	0.617	1.079	0.826	0.618
	(0.69)	(0.07)	(0.99)	(0.43)	(0.07)	(0.84)	(0.16)	(0.41)	(0.82)
Employed in formal sector/WAP tot	0.092	0.444	4.317	0.100	0.458	4.102	0.092	0.405	4.139
	(4.43)***	(1.32)	(2.06)**	(4.24)***	(1.27)	(1.96)**	(4.31)***	(1.44)	(1.98)**
Employed in Informal sector/WAP tot	0.021	0.244	10.246	0.018	0.226	12.349	0.011	0.175	19.202
	(5.92)***	(2.10)**	(2.69)***	(6.14)***	(2.17)**	(2.87)***	(6.23)***	(2.43)**	(3.05)***
Unemployed & inactive/WAP tot	0.009	0.354	1.660	0.019	0.368	0.797	0.018	0.277	1.643
	(3.54)***	(0.88)	(0.32)	(2.93)***	(0.84)	(0.14)	(2.83)***	(1.02)	(0.29)
Proportion of employed in household	6.861	1.374	0.171	17.798	1.641	0.079	31.641	2.817	0.199
	(1.28)	(0.25)	(1.07)	(1.87)*	(0.39)	(1.51)	(2.12)**	(0.73)	(0.89)
Human capital of household	36.514	6.308	0.345	43.930	5.182	0.205	50.997	4.088	0.292
	(2.63)***	(1.57)	(0.59)	(2.75)***	(1.39)	(0.88)	(2.79)***	(1.13)	(0.66)
Shock Variables 1997/98									
Departure of household head							0.746	2.176	0.336
							(0.37)	(1.27)	(1.06)
Departure of spouse							0.288	0.168	0.782
							(1.16)	(1.34)	(0.21)
# departure of children							1.487	0.963	0.672
							(0.99)	(0.09)	(0.72)
# departure of other members							0.881	0.730	1.558
							(0.28)	(0.72)	(0.82)
Employed head 97-Inactive/Unemployed 98							0.420	0.517	0.131
							(1.38)	(1.17)	(1.66)*
Inactive/Unemployed head 97-Employed 98							0.411	1.028	2.141
							(1.36)	(0.04)	(1.05)
Dif. propor. informal workers in household							2.103	1.231	0.421
							(1.90)*	(0.71)	(1.84)*
Dif. proportion of employed in household							0.440	0.332	0.815
							(1.18)	(1.82)*	(0.26)
Dif. household size							0.969	1.064	0.779
							(0.19)	(0.41)	(1.03)

Arrival of head										1.001 (0.00)	0.000 (58.27)***	3.690 (1.06)
Arrival of spouse										0.561 (0.74)	0.581 (0.68)	0.821 (0.16)
# arrival of children										1.032 (0.07)	1.037 (0.09)	1.868 (1.12)
# arrival of other members 97/98										0.820 (0.42)	0.461 (1.62)	1.936 (1.10)
Observations	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214	1214

Robust z statistics in parentheses
significant at 10%; ** significant at 5%; *** significant at 1%
Reference Category: Chronic Poor (for never poor and for exit from poverty)
Never poor (for entry into poverty)

Reference Terms:

Female household head, household head with higher education, non-single household head, head in public sector, head in service sector, household head without a second job, % of members between 16 and 60, multi-family household, home owner with property title, without indoor tap, without electrical lighting, without indoor toilet, employed in public sector /WAP, no departure of household head, no departure of spouse, no change in employment status.

Multinomial regression	reg1	reg2	reg3	reg4
Wald chi2(135)	38120	425	421	245
Prob > chi2	0	0	0	0
Pseudo R2	0.353	0.333	0.327	0.155
Log likelihood	-829	-854	-861	-1081

Transitions Observed	Transitions predicted by model					
	Never Poor	**Exit**	**Entry**	**Chronic Poor**	**Non Classified**	**Total**
Never Poor	**60.7**	0.0	0.0	10.9	28.4	100
Exit	14.5	**2.9**	0.0	55.1	27.5	100
Entry	17.2	1.1	**3.2**	40.9	37.6	100
Chronic Poor	1.2	0.5	0.0	**88.6**	9.7	100
Total	15.2	0.7	0.3	66.5	17.4	100

Category Combination Tests- Madagascar

Tested Categories	Regression n°1	Regression n°2	Regression n°3	Regression n°4

Never Poor –Exit	1849***	101***	94***	49***
Never Poor –Entry	106***	92***	88***	43***
Never Poor –Chronic Poor	331***	285***	290***	207***
Exit –Entry	2397***	43*	41*	17
Exit –Chronic Poor	10543***	130***	129***	64***
Entry –Chronic Poor	160***	130***	129***	65***

significant at 10%; ** significant at 5%; *** significant at 1%

Category Combination Tests - Peru

Tested Categories	Regression n°1	Regression n°2	Regression n°3	Regression n°4
Never Poor –Exit	242***	222***	224***	100***
Never Poor –Entry	151***	142***	147***	89***
Never Poor –Chronic Poor	333***	326***	343***	225***
Exit –Entry	92***	88***	79***	33***
Exit –Chronic Poor	111***	94***	90***	48***
Entry –Chronic Poor	143***	127***	125***	47***

significant at 10%; ** significant at 5%; *** significant at 1%

Madagascar	Regression (4)		Regression (3)		Regression (2)		Regression (1)	
Three Transition Modes								
	Never Poor	Transient Poor	Never Poor	Transient Poor	Never Poor	Transient Poor	Never Poor	Transient Poor
Household Characteristics								
Age of household head	1.359	1.191	1.330	1.164	1.022	1.015	1.003	1.032
	(5.55)***	(3.50)***	(5.09)***	(3.01)***	(0.27)	(0.25)	(0.04)	(0.50)
Sex of household head	1.838	1.964	2.022	2.046	2.603	2.404	2.775	2.731
	(1.83)*	(2.24)**	(2.10)**	(2.35)**	(2.31)**	(2.70)***	(2.28)**	(2.86)***
Head with primary educ/ without educ	0.979	1.154	1.313	1.330	2.158	1.555	1.889	1.720
	(0.03)	(0.24)	(0.40)	(0.47)	(0.91)	(0.66)	(0.74)	(0.80)
Head with high school education	0.864	0.912	1.097	1.089	1.640	1.308	1.425	1.265
	(0.38)	(0.25)	(0.24)	(0.22)	(0.98)	(0.63)	(0.68)	(0.54)
Head in common-law relationship	0.278	1.248	0.234	1.101	0.130	1.041	0.162	1.178
	(1.68)*	(0.63)	(1.89)*	(0.27)	(2.29)**	(0.10)	(2.01)**	(0.39)
Single household head	3.283	2.327	3.320	2.197	1.427	1.643	1.631	1.756
	(3.85)***	(3.00)***	(3.83)***	(2.76)***	(0.87)	(1.55)	(1.10)	(1.61)
Years of experience of household head	0.764	0.853	0.777	0.874	0.966	0.988	0.980	0.970
	(5.03)***	(3.26)***	(4.63)***	(2.75)***	(0.44)	(0.20)	(0.24)	(0.48)
Head non-white collar/blue collar	0.300	0.519	0.296	0.497	0.217	0.484	0.215	0.509
	(4.57)***	(2.45)**	(4.51)***	(2.57)**	(4.10)***	(2.33)**	(4.02)***	(2.13)**
Head independent worker	0.138	0.344	0.154	0.352	0.206	0.425	0.232	0.445
	(6.63)***	(3.84)***	(6.15)***	(3.72)***	(3.94)***	(2.76)***	(3.55)***	(2.57)**
Head unemployed /inactive	0.194	0.650	0.197	0.569	0.403	0.678	0.518	1.093
	(4.97)***	(1.37)	(4.72)***	(1.75)*	(1.87)*	(0.99)	(1.16)	(0.19)
Head in primary sector	0.239	0.785	0.353	0.902	0.157	0.765	0.145	0.726
	(1.84)*	(0.60)	(1.34)	(0.25)	(2.03)**	(0.59)	(2.08)**	(0.69)
Head in industry	0.886	0.777	1.014	0.819	1.046	0.846	1.050	0.836
	(0.54)	(1.25)	(0.06)	(0.98)	(0.15)	(0.75)	(0.16)	(0.80)
Head with a second job	0.828	1.136	0.836	1.195	0.865	1.395	0.811	1.355
	(0.62)	(0.52)	(0.58)	(0.72)	(0.36)	(1.21)	(0.51)	(1.08)
Neighborhood Variable 1998								
Average neighborhood income			1.007	1.001	1.008	1.001	1.007	1.000
			(3.33)***	(0.27)	(2.72)***	(0.36)	(2.55)**	(0.18)
Human capital of neighborhood			1.188	1.178	1.125	1.145	1.129	1.154
			(2.16)**	(2.39)**	(1.13)	(1.76)*	(1.13)	(1.83)*
Propor. of informal workers in neighborhood			1.858	0.982	16.163	2.052	16.856	2.187
			(0.65)	(0.02)	(2.21)**	(0.81)	(2.20)**	(0.86)
Household Characteristics 1998								
Household size					0.803	0.896	0.818	0.915
					(2.78)***	(2.09)**	(2.10)**	(1.43)
% members 0 to 9					0.013	0.061	0.014	0.078

	(2.99)***	(2.86)***	(2.72)***	(2.41)**
% members 10 to 15	0.005	0.054	0.005	0.067
	(4.42)***	(3.47)***	(4.18)***	(2.98)***
% members over 60	2.548	1.071	3.069	1.195
	(1.12)	(0.10)	(1.32)	(0.27)
Nuclear household	0.749	0.843	0.678	0.719
	(1.00)	(0.80)	(1.14)	(1.34)
# assets owned by household	1.703	1.337	1.771	1.377
	(5.79)***	(3.54)***	(5.98)***	(3.80)***
Home owner without property title	1.125	1.046	1.186	1.080
	(0.28)	(0.16)	(0.41)	(0.26)
Tenant & others	1.082	1.135	1.091	1.172
	(0.28)	(0.61)	(0.31)	(0.76)
Indoor tap	1.715	1.150	1.691	1.154
	(1.53)	(0.47)	(1.46)	(0.47)
Electrical lighting	1.953	2.000	2.119	2.044
	(1.65)*	(2.76)***	(1.80)*	(2.81)***
Indoor toilet	1.233	0.891	1.099	0.778
	(0.47)	(0.28)	(0.21)	(0.60)
Employed in formal sector/WAP tot	0.100	0.454	0.094	0.425
	(3.89)***	(1.48)	(3.89)***	(1.58)
Employed in informal sector/WAP tot	0.018	0.229	0.011	0.199
	(5.73)***	(2.49)**	(5.93)***	(2.61)***
Unemployed & inactive/WAP tot	0.022	0.101	0.020	0.102
	(2.71)***	(2.24)**	(2.67)***	(2.16)**
Proportion of employed in household	19.325	1.278	34.241	3.003
	(1.91)*	(0.23)	(2.16)**	(0.97)
Human capital of household	42.208	6.455	46.578	6.632
	(2.67)***	(1.82)*	(2.63)***	(1.79)*
Shock Variables 1997/98				
Departure of household head			0.733	1.200
			(0.40)	(0.35)
Departure of spouse			0.312	0.219
			(1.17)	(1.62)

# departure of children							1.454	1.001
							(0.81)	(0.00)
# departure of other members							0.852	1.033
							(0.34)	(0.10)
Employed head 97 - inactive/unemployed 98							0.404	0.325
							(1.37)	(2.32)**
Inactive/Unemployed head 97-Employed 98							0.411	0.963
							(1.34)	(0.08)
Dif. propor. informal workers in household							2.140	1.120
							(1.93)*	(0.41)
Dif. proportion of employed in household							0.412	0.316
							(1.35)	(2.27)**
Dif. household size							0.981	0.967
							(0.11)	(0.26)
Arrival of household head							0.928	0.582
							(0.05)	(0.56)
Arrival of spouse							0.579	0.492
							(0.49)	(0.90)
# arrival of children							1.006	1.291
							(0.01)	(0.76)
# arrival of other members 97/98							0.812	0.688
							(0.40)	(0.95)
Observations	1214	1214	1214	1214	1214	1214	1214	1214

Robust z statistics in parentheses
significant at 10%; ** significant at 5%; *** significant at 1%
Reference Category: Chronic Poor

Reference Terms:
Female household head, household head with higher education, non-single household head, head in public sector, head in service sector, household head without a second job, % of members between 16 and 60, multi-family household, home owner with property title, without indoor tap, without electrical lighting, without indoor toilet, employed in public sector /WAP, no departure of household head, no departure of spouse, no change in employment status.

Multinomial regression	Reg1	reg2	reg3	reg4
Wald chi2(135)	829	803	421	380
Prob > chi2	0	0	0	0
Pseudo R2	0.3687	0.357	0.187	0.169
Log likelihood	-710	-723	-914	-934

Category Combination Tests- Madagascar

Tested Categories	Regression n°1	Regression n°2	Regression n°3	Regression n°4
Never Poor –Transient Poor	113***	110***	66***	59***
Never Poor -Transient Poor	263***	264***	235***	220***
Transient Poor –Chronic Poor	174***	167***	105***	95***

significant at 10%; ** significant at 5%; *** significant at 1%

	Three Transition Modes							
Peru	Regression (4)		Regression (3)		Regression (2)		Regression (1)	
	Never Poor	Transient Poor	Never Poor	Transient Poor	Never Poor	Transient Poor	Never Poor	Transient Poor
Household Head Characteristics								
Age of household head	1.391	1.205	1.294	1.191	1.184	1.173	1.189	1.170
	(7.23)***	(3.87)***	(5.29)***	(3.46)***	(2.79)***	(2.72)***	(2.82)***	(2.64)***
Sex of household head	1.052	1.153	1.123	1.190	0.775	0.995	0.828	1.150
	(0.17)	(0.43)	(0.37)	(0.52)	(0.69)	(0.01)	(0.49)	(0.36)
Head with primary educ/ without educ	1.541	2.536	1.717	2.697	2.785	2.981	2.926	3.012
	(0.83)	(1.63)	(0.98)	(1.71)*	(1.62)	(1.77)*	(1.68)*	(1.76)*
Head with high school education	0.792	1.241	0.914	1.347	1.421	1.603	1.490	1.631
	(0.72)	(0.59)	(0.26)	(0.80)	(0.91)	(1.19)	(1.01)	(1.22)
Head in common-law relationship	0.833	0.820	0.880	0.832	1.117	0.940	1.141	0.971
	(0.95)	(0.96)	(0.65)	(0.89)	(0.49)	(0.28)	(0.57)	(0.13)
Single household head	1.951	1.094	1.523	1.038	0.879	1.010	0.773	1.035
	(2.35)**	(0.29)	(1.41)	(0.12)	(0.35)	(0.03)	(0.68)	(0.09)
Years of experience of household	0.763	0.855	0.812	0.864	0.863	0.866	0.862	0.870
	(6.05)***	(3.31)***	(4.37)***	(2.97)***	(2.47)**	(2.50)**	(2.45)**	(2.39)**
Head non-white collar/blue collar	0.604	0.831	0.605	0.798	0.782	0.763	0.771	0.738
	(1.62)	(0.53)	(1.58)	(0.65)	(0.70)	(0.74)	(0.72)	(0.82)
Head independent worker	0.239	0.600	0.288	0.658	0.375	0.661	0.367	0.652
	(5.01)***	(1.61)	(4.19)***	(1.29)	(2.94)***	(1.20)	(2.95)***	(1.22)
Head unemployed /inactive	0.189	0.615	0.213	0.636	0.443	0.848	0.398	0.617
	(5.01)***	(1.33)	(4.51)***	(1.22)	(1.99)**	(0.40)	(1.89)*	(0.98)
Head in primary sector	0.389	0.496	0.502	0.540	0.607	0.538	0.625	0.535
	(4.33)***	(2.94)***	(3.00)***	(2.53)**	(1.89)*	(2.39)**	(1.76)*	(2.38)**
Head in industry	0.937	1.395	0.965	1.376	1.050	1.417	1.093	1.394
	(0.28)	(1.37)	(0.15)	(1.30)	(0.18)	(1.33)	(0.33)	(1.26)
Head with a second job	1.392	1.436	1.504	1.477	1.643	1.581	1.646	1.577
	(1.22)	(1.25)	(1.47)	(1.34)	(1.56)	(1.48)	(1.55)	(1.46)
Neighborhood Variable 1998								
Average neighborhood income			1.024	1.012	1.013	1.005	1.013	1.005
			(7.07)***	(3.26)***	(3.84)***	(1.46)	(3.77)***	(1.51)
Human capital of neighborhood			1.225	0.451	0.380	0.371	0.436	0.364
			(0.24)	(0.92)	(0.90)	(0.94)	(0.76)	(0.94)
Propor. of informal workers in neighborhood			0.377	0.461	0.592	0.517	0.614	0.532
			(2.43)**	(1.82)*	(1.06)	(1.33)	(0.96)	(1.25)
Household Characteristics 1998								
Household size					0.736	0.936	0.699	0.907
					(5.25)***	(1.26)	(5.63)***	(1.69)*
% members 0 to 9					0.039	0.118	0.028	0.100
					(3.69)***	(2.47)**	(3.93)***	(2.57)**
% members 10 to 15					0.076	0.247	0.053	0.193

	(3.35)***	(1.86)*	(3.68)***	(2.11)**
% members over 60	1.052	0.368	0.800	0.299
	(0.08)	(1.47)	(0.33)	(1.73)*
Nuclear household	0.608	0.972	0.660	1.041
	(2.28)**	(0.13)	(1.79)*	(0.18)
# assets owned by household	1.319	1.084	1.322	1.098
	(5.13)***	(1.51)	(5.07)***	(1.72)*
Home owner without property title	0.869	1.124	0.905	1.247
	(0.39)	(0.35)	(0.27)	(0.66)
Tenant & others	0.616	0.585	0.640	0.631
	(2.09)**	(2.28)**	(1.89)*	(1.94)*
Indoor tap	1.118	1.075	1.123	1.083
	(0.48)	(0.33)	(0.50)	(0.36)
Electrical lighting	1.973	1.252	2.136	1.360
	(2.20)**	(0.85)	(2.40)**	(1.14)
Indoor toilet	1.833	1.478	1.856	1.464
	(2.67)***	(1.78)*	(2.68)***	(1.70)*
Employed in formal sector/WAP tot	0.048	0.704	0.049	0.735
	(2.91)***	(0.31)	(2.89)***	(0.28)
Employed in informal sector/WAP tot	0.016	0.269	0.017	0.319
	(3.86)***	(1.15)	(3.72)***	(0.98)
Unemployed & inactive/WAP tot	0.010	0.359	0.009	0.415
	(3.69)***	(0.79)	(3.69)***	(0.66)
Proportion of employed in household	5.120	5.197	2.509	2.473
	(1.52)	(1.56)	(0.80)	(0.80)
Human capital of household	6.456	0.726	6.482	0.691
	(2.19)**	(0.38)	(2.16)**	(0.44)
Shocks Variables 1997/98				
Departure of household head			0.712	0.283
			(0.45)	(1.58)
Departure of spouse			2.435	1.124
			(1.57)	(0.20)
# departure of children			1.012	0.856
			(0.06)	(0.81)
# departure of other members			1.071	0.923
			(0.45)	(0.56)
Employed head 97-Inactive/Unemployed 98			0.872	1.539
			(0.32)	(1.04)
Inactive/Unemployed head 97 - Employed 98			0.902	1.238
			(0.27)	(0.59)
Dif. propor. of informal workers in household			0.834	0.683
			(0.81)	(1.73)*

Dif. proportion of employed in household								2.165	3.331
								(1.61)	(2.46)**
Dif. household size								0.987	1.095
								(0.09)	(0.65)
Arrival of spouse								0.833	3.626
								(0.19)	(1.45)
# arrival of children								0.936	0.810
								(0.26)	(0.85)
# arrival of other members 97/98								1.420	1.079
								(1.87)*	(0.42)
Observations	1712	1712	1711	1711	1711	1711	1711	1711	

Robust z statistics in parentheses

significant at 10%; ** significant at 5%; *** significant at 1%
Reference Category: Chronic Poor

Reference Terms:
Female household head, household head with higher education, non-single household head, head in public sector, head in service sector, household head without a second job, % of members between 16 and 60, multi-family household, home owner with property title, without indoor tap, without electrical lighting, without indoor toilet, employed in public sector /WAP, no departure of household head, no departure of spouse, no change in employment status.
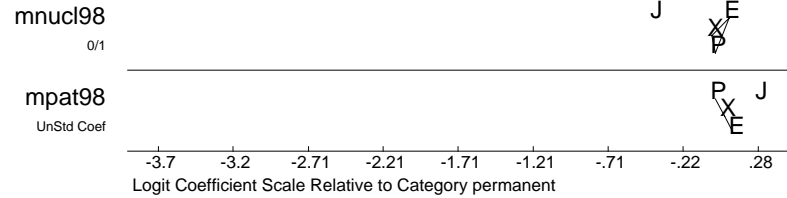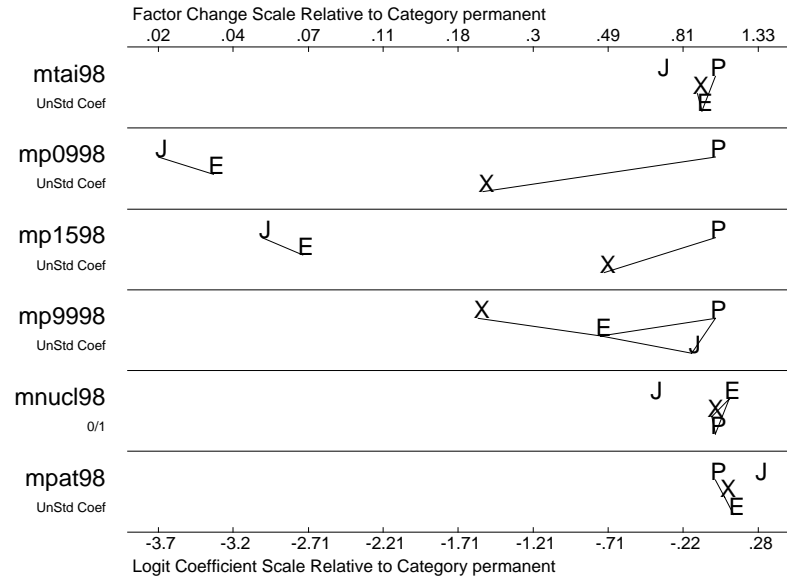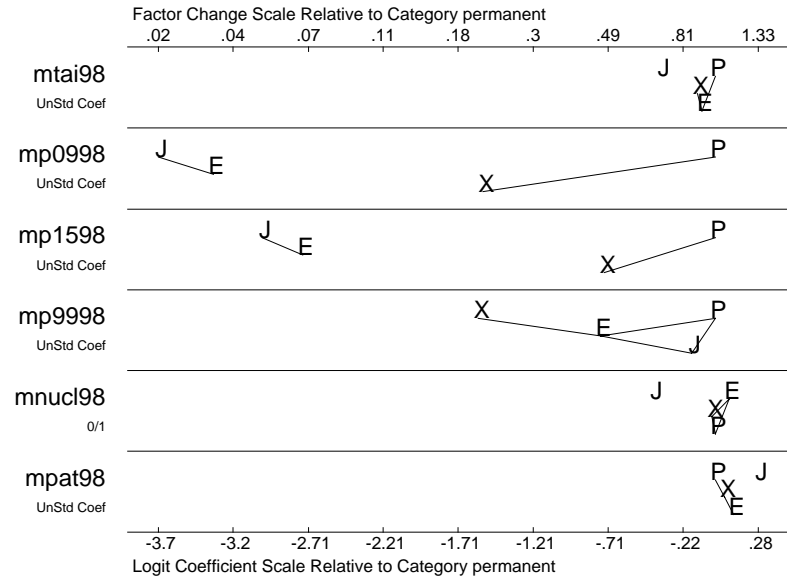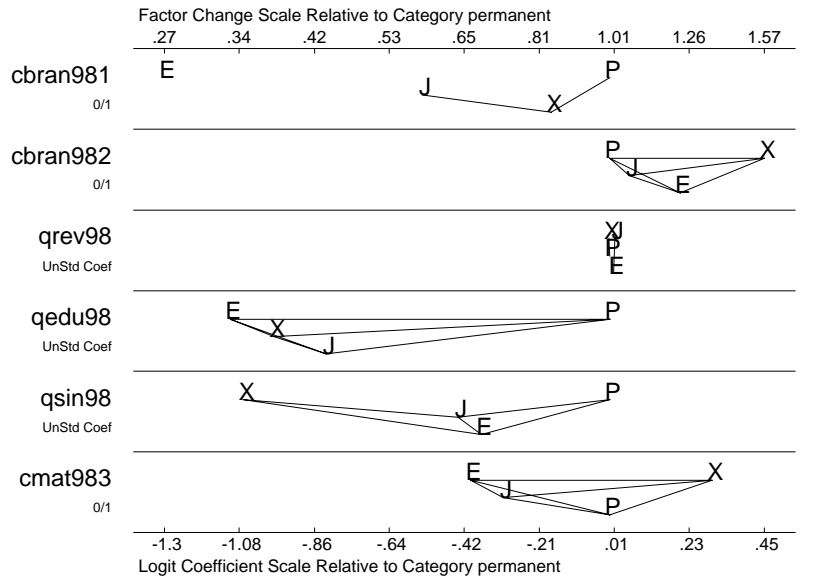
Multinomial regression	reg1	reg2	reg3	reg4
Wald chi2(135)	915	882	541	388
Prob > chi2	0	0	0	0
Pseudo R2	0.289	0.278	0.171	0.123
Log likelihood	-1127	-1144	-1314	-1391

Category Combination Tests- Peru

Tested Categories	Regression n°1	Regression n°2	Regression n°3	Regression n°4
Never Poor –Transient Poor	257***	247***	154***	135***
Never Poor –Chronic Poor	335***	331***	226***	207***
Transient Poor –Chronic Poor	120***	112***	69***	54***

significant at 10%; ** significant at 5%; *** significant at 1%

Pérou (régression n°1)

Madagascar (reg n°1)

Factor Change Scale Relative to Category perman
.01   .03   .08   .22   .59   1.61   4.34   11.72   31.64

mpro982
UnStd Coef
E P S

mpro983
UnStd Coef
P S

mfor98
UnStd Coef
J   E   P
E
S

minf98
UnStd Coef
J   P
S E

mcho98
UnStd Coef
J   P
E   S

mdept98
UnStd Coef
P   S   J
E

-4.49 -3.5 -2.51 -1.51 -.52 .47 1.47 2.46 3.45
Logit Coefficient Scale Relative to Category perman

Factor Change Scale Relative to Category perman
.06   .09   .14   .22   .35   .55   .87   1.37   2.18

dche9798
UnStd Coef
E   J   S
P

dcon9798
UnStd Coef
S E   P
J

denf9798
UnStd Coef
S J
E
P

daut9798
UnStd Coef
S   E
J
P

dcpe9897
UnStd Coef
E   J   P
S

dcre9897
UnStd Coef
J   E S
P

-2.9 -2.44 -1.98 -1.52 -1.06 -.6 -.14 .32 .78
Logit Coefficient Scale Relative to Category perman

Factor Change Scale Relative to Category perman
0   0   0   0   0   0   0   .01   3.69

dper9897
UnStd Coef
S
P

dinf9897
UnStd Coef
E J
P
S

ache9798
0/1
S   E
P
J

acon9798
0/1
P
S

aenf9798
0/1
F
S

aaut9798
0/1
S E
P

-44.45 -38.73 -33.01 -27.29 -21.57 -15.85 -10.13 -4.41 1.31
Logit Coefficient Scale Relative to Category perman

Factor Change Scale Relative to Category perman
.46   .56   .69   .84   1.02   1.24   1.51   1.85   2.25

mpro982-0/1
E   P J   S

mpro983-0/1
P E   S

meau98-0/1
E   P   S   J

mele98-0/1
P   E   J S

mwce98-0/1
E   S   P J

aaut9798-0/1
S   J   P   E

-.77 -.58 -.38 -.18 .02 .22 .41 .61 .81
Logit Coefficient Scale Relative to Category perman

46