



LUND UNIVERSITY
School of Economics and Management

Master in Economic Development and Growth

IDENTIFYING THE PERUVIAN POVERTY PROFILES: A REVIEW OF POVERTY DYNAMICS FROM 1998 TO 2010

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Abstract: Using a relatively extensive panel data set on poverty –from 1998 to 2010– and information on household member characteristics –from 2007 to 2010–, both coming from a sub-sample of the Peruvian Household National Survey, a poverty dynamic analysis was carried out in this study. A spell approach was applied to calculate transient and persistent poverty and an ordered probit model was estimated to identify factors related to both transient and persistent poverty. The analysis performed showed that both the static and the dynamic approach predict a decreasing trend of poverty between 1998 and 2010, however, static approach significantly underestimates the real magnitude of poverty. In contrast to other studies, the multivariate analysis showed that there is no distinction among the explanatory factors of transient and persistent poverty; instead, that a group of them is more strongly associated to transient poverty while the other group is more strongly associated to the persistent poverty.

Key words: Measurement and analysis of poverty, persistent poverty, transient poverty

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1. INTRODUCTION

A longitudinal analysis of poverty may shed light on more appropriate policy design to combat poverty than a single cross section analysis. In poverty literature, the former usually is known as a dynamic analysis and the latter as a static analysis. A single cross-section analysis of poverty might lead to focalization errors, and to inappropriate anti-poverty policies. In that sense, complimenting the static analysis of poverty using longitudinal data is important to acquire a better understanding of the phenomenon; since it allows both distinguishing between different types of poverty (e.g. chronic and transient poverty), and identifying the specific factors associated to them. Thereby, a dynamic analysis of poverty becomes a useful tool for obtaining information about how to combat poverty, through the understanding of the process for which the household moves in or out of poverty, or remains poor as time passes.

Official statistics regarding poverty, based on cross sectional data, offer us a snapshot of poor at a particular point in time. Using this information to make comparisons over time is

like comparing different poverty rates obtained from a pool cross sectional data; thus this is not a dynamic analysis. Indeed, these over time comparisons also offer a static analysis of poverty, since it is assumed that the poor are the same through the time without making any distinction among them, as they were a homogeneous group with the same problem. For that reason, making such comparisons over time may also lead to a misunderstanding of the poverty phenomenon. Based on this approach, Peruvian official statistics spread the idea that poverty had been continuously declining since the late 1990's to 2010; from around 50% to 30%, respectively (CEPAL, 2010).

Meanwhile, using longitudinal data and distinguishing between chronic and transient poverty, an important study in Peru concluded that poverty magnitude and its evolution had been stark different from what a static analysis shows. According to Chacaltana (2006), the important economic growth experienced by the Peruvian economy after 2000 had not been enough for leading a significant drop in poverty. Indeed, what the author found was that 68% of Peruvian people were poor at least one year between 1998 and 2001 and 67% between 2001 and 2004. Also, for the same period of time, the author found that chronic poverty increased from 25% to 28% while transient poverty fell from 43% to 39%. Thereby, previous figures seem to suggest that a static analysis of poverty may be showing a wrong picture of the real magnitude of poverty in Peru, as well as a meager analysis of its evolution.

Like Chacaltana's study, other international studies (e.g. Jalan and Ravallion 1998; Jenkin and Rigg 2001; Gaiha and Deolalikar 1993; among others) arrived at similar conclusions about the underestimation of the magnitude of poverty when a static analysis is performed, and about the necessity of distinguishing between the different types of poor to improve policy making effectiveness. Although in Peru the literature on poverty is abundant, to my knowledge there are only three studies based on poverty dynamics. One of them is the previously mentioned Chacaltana's study, and the other one is the World Bank's (2005) study, which is based on the econometrical analysis of Herrera and Roubaud's (2002) study. Although all three studies highlight the considerable poverty transitions in Peru and their implication for social policy, Chacaltana's study analyzes two four-wave panels data

(1998-2001, and 2001-2004), while the other studies use a three-wave panel data (1997-1999). Hence, overlooking these studies, especially the Chacaltana's study which found 1% reduction in total poverty (transient and persistent) between 1998 and 2004 may result in underutilization of useful information that can be used as a benchmark for further studies and for policy making. This controversial finding, as well as the political implications of the topic, becomes a deep motivation for the elaboration of the present study.

In that sense, the aim of this study is twofold. On one hand, this study will estimate the magnitude of persistent and transient poverty, and their evolution, using a panel data set from 1998 to 2010. Then, taking the previous estimations as input, the study will describe the profiles of the transient and persistent poor; through the identification of the most important explanatory factors behind each type of poverty. Specifically, the questions which this paper intends to respond to are: (i) What have been the transit, persistent and total poverty trends in Peru since 1998 to 2010? (ii) What are the factors behind the persistent poverty? (iii) What are the main shocks associated with movements into and out of poverty?

In this paper an extensive and fruitful data analysis is performed, aiming to take advantage of the data available. Thus, along this study a wide variety of descriptive statistics are used not only to describe poverty dynamics and the different poverty profiles, but also to describe the Peruvian economic growth model and socioeconomic context, and the social public expenditure. To complement the descriptive analysis, an ordered probit model was run to identify the most influential factors to determine persistent and transient poverty. This comprehensive data analysis led to the following three main findings. (i) The generalized idea on poverty in Peru is erroneous since poverty rates are usually shown in a static perspective. Peruvian are unaware that the real magnitude is actually higher than the one provided by the cross sectional analysis, and that a meaningful share of the poor is constantly moving in and out of poverty. (ii) Nevertheless, an appreciable reduction in total, transient and persistent poverty has been observed since 1998 to 2010. (iii) Unlike other studies, there is not distinction between the explanatory factors of transient poverty and the ones explaining persistent poverty. Rather than that, among the set of significant

explanatory variables, there are ones with stronger effect on persistent poverty (household location, educational background of the household head, demographic characteristics, working modality, and the economic sector where the household head income comes from) and others with stronger effect on transient poverty (the number of years which the household is receiving remittances and transferences, the standard deviation of the amount of remittances and transferences received by the household, the standard deviation of the household head income, and the number of years which the household face a lack of at least one basic service).

The plan of the paper is as follow. Section II presents an analysis of the Peruvian economic model and the social policy. Section III discusses the theoretical framework on poverty dynamics. Section IV describes the database and discusses empirical implementation issues. Section V outlines the empirical strategy to perform the regression analysis. Section VI describes the poverty profiles base on time-unvarying and time-varying characteristics; as well as an analysis of poverty entries and exits. Section VII presents the regression results and section VIII concludes.

2. A GLANCE OF THE PERUVIAN ECONOMIC MODEL AND SOCIAL POLICY

2.1. Peruvian Socio-economic context

Peru faces a long standing problem of poverty, which barely has slightly overcome through the years, as the cross section analysis of poverty shows (see table 2.1). The static analysis of poverty lets us notice that Peruvian poverty rates have varied around 50% –using the national poverty line– between 1998 and 2005. To put these figures in perspective, it is worth mentioning that, in 2004, Peru just presented lower poverty rates compared to Colombia and Ecuador and higher poverty rates than Brazil and Argentina, taking into account the US \$/. 2,00 a day poverty line (World Bank, 2005). However, in the last five

years, meaningful and consistent drops in poverty rate have been observed. Indeed, in 2010, poverty reached 31% of the Peruvian population.

Alternatively, during the last decade, an economic growth of 5,7%, in average, has been observed; and since 2004, save 2009, the annual growth rate was generally over 5%. At the same time, it may be observed that the Peruvian economic activity has presented certain volatility since 1998. Indeed, economic growth rates of -0,7; 0,9; 0,2 and 0,9 were observed in years 1998, 1999, 2001 and 2009, respectively. On the other hand, according to Mendoza and Florian (2002), from 1950 to 2001, the GDP per-capita grew, at an average of 1% annually; during 1950 to 1975, 2,58%; and from 1976 to 2001, -0,3%. Fortunately, along the last decade (2001 - 2010), the negative pattern was reversed again, since the average growth rate of the GDP per-capita was around 4,4% according to the figures published by the World Bank. However, it should be borne in mind that, although the Peruvian economy showed a recovery in the last decade, the GDP and the GDP per-capita growth rates registered were, in average, similar to the ones reached in the 60's (6,2 and 4,2, respectively)¹.

Moreover, due to the economic crisis that began in US in 2007, the Peruvian economy experienced a recession since the last quarter of 2008 and during all 2009; due to the dramatic reduction in the value of its exports and the considerable capital outflows (Dancourt and Mendoza 2010). This drastic change was faced after two consecutive years of unprecedented growth mainly attributed to the domestic demand (and not by exports as in previous years) and by non-primary activities (in previous years, primary and non-primary GDP grew evenly) (Mendoza 2008). As a result of the Peruvian economic recession, since the end of 2008, the productive sectors of non-primary manufacturing and construction were overwhelmingly affected. This fact was mainly attributed to the low inertia of the non-primary GDP, the weakening of the entrepreneurs and bankers' confidence, and the inventory adjustment policy which was applied in the commercial and industrial sectors (Dancourt and Mendoza 2010).

¹ Visit <http://www.bcrp.gob.pe/estadisticas.html> and <http://databank.worldbank.org>, for further references.

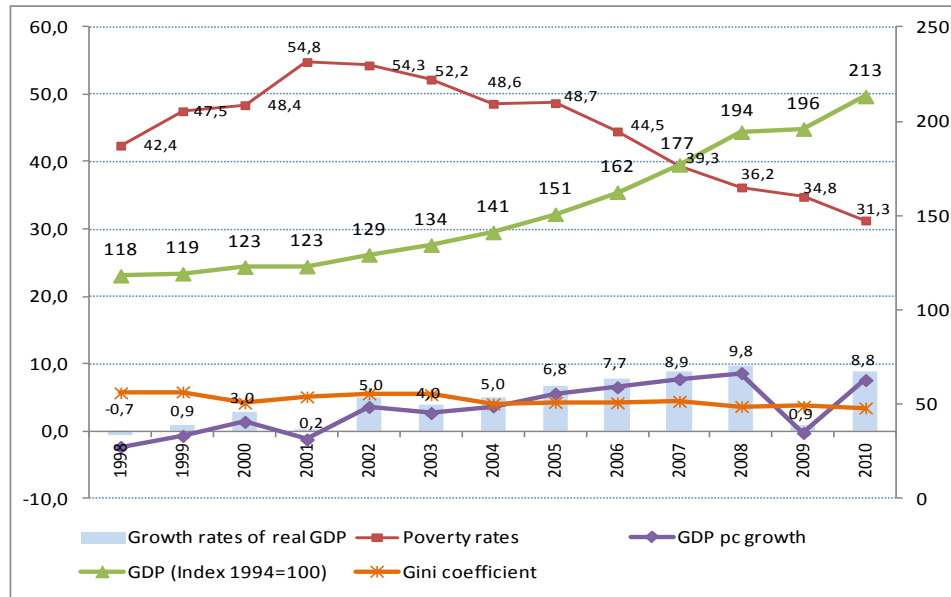


Figure 2.1. Evolution of Peruvian economic activity and poverty rates (1998 -2010).
 Author's elaboration based on the National Household Survey (ENAHO), implemented by National Institute of the Statistic and Informatics (INEI).

Thus far, using a static perspective of poverty, it may be said that since 2001 Peru has experienced a negative correlation between economic growth and poverty; i.e. that there would be an evidence of pro-poor growth (see figure 2.1). In fact, García and Céspedes (2011) found that the Peruvian economic growth was pro-poor during the last decade, except in 2009. Other studies argue that there had been considerable lags in the response of poverty to the growth of the Peruvian economic activity, at least until the first half of the last decade (World Bank 2005); or a little or no response at all of poverty –analyzed from a dynamic perspective– to the economic growth (Chacaltana, 2006). Likewise, Ponce (2010) pointed out that even though the poverty rate diminished in 2005 compared to 1993, from 55% to 50%, that figure was above the poverty rate reached in 1981, which was 39%². According the World Bank (2005), among the most important reasons for the sticking nature of poverty in Peru are: (i) a slow GDP per-capita growth between 1997 and 2004; (ii) economic growth biased toward capital intensive or low-productivity sectors; (iii) the volatility of economic growth, which has discouraged investment in employment generating activities; and (iv) low employment generating economy due to the excessive

² This author estimated her own poverty measures using cross sectional data, and consumption as indicator of the household welfare. That was implemented for comparative reasons and with the aim of applying the same criteria followed in the estimation of the poverty rate of 1981.

installed capacity accrued between the crisis of 1998-1999. All these factors have held back a sustainable fight against poverty in Peru.

On the other hand, figure 2.1 also shows a negative correlation between economic growth and inequality –measured with the Gini coefficient– in the last decade. The latter result has been highly diffused by other authors, like: Mendoza and García (2006) and García and Céspedes (2011). Using the Theil index and the following groups: big cities, middle cities and rural cities; Ponce (2010) argued that the slightly overall reduction in the income inequality was totally explained by the lower inequality within-groups, since the inequality across groups was higher in 2005 than in 1993 and 1981. In this regard, it is important to mention that poverty is more acute in rural areas than in urban areas. Furthermore, the rural poverty has hardly diminished; in opposition to the evolution of poverty rate in the urban area, since 2002. According to World Bank (2005), the rural poor, in general, tend to be highly dependent on the agricultural activity and on just one income source.

A key issue to bear in mind is the economic growth model prevailing in the country. Thus, the Peruvian economic growth has been strongly related to the evolution of its external sector, which has fundamentally depended on the primary commodity exports. The growth of the external sector, in turn, has been mainly based on the commercial policies adopted. According to Tello (2008), during the 50's, the value of the commodities exported accounted for around 88% of the total FOB exports value; and some decades later, in 2007, the percentage continued being more or less the same (87%). Regarding the trade policies implemented, during the 50's and the 60's liberal commercial policies were implemented; while in-between the aftermath of the 70's and the 80's, the import substitutions was prevailing. Then, since 1991 the Peruvian economy started to implement structural reforms and becoming liberal; not only regarding commercial trade but in other different scopes – e.g. monetary policy; privatization and concession of natural monopolies initially administrated by the government; and so forth. Although, the 50's and the 90's were considered times of strong impulse of liberal trade policies, the Peruvian economy showed a more open trade during the 50's than in the 90's –however, in the last decade, the external sector rebounded again. To this regard, Mendoza and Florián (2002) mention that the share

of the total exports to the GDP dropped from 16,7% to 10,7%, from the 50's to the 90's, and only it started to slightly recover later on 2001, reaching 13,1%. Also, according to the official statistics published by the Reserve Central Bank, during last decade, the share of the total exports to the GDP amounted, in average, 20,2%.

Another important issue is that, the composition of the current exports has dramatically changed since 50's. An increment in the share of the mining products exported and a substantial reduction in the share of the agricultural products exported were observed. During the 50's, exports of agricultural products and mining products represented, in average, 46,3% and 29,7% of total exports, respectively; meanwhile, during the 60's, those shares become 26,5% and 43,0%, respectively. In the last decade, the share of the agricultural products exported over the total exportations just represented 2,5%, while the mining products exports, 54,8%³. Both facts have not allowed to the country to fight more aggressively against poverty. On the one hand, the mining sector not only present too few linkages, but it is strongly intensive in natural resources and capital, but less intensive in labor and even less in unskilled labor (World Bank 2005; Chacaltana 2006). On the other hand, not only there is a remarkable diminishing of the share of the agricultural products exported over the total exports, but also those exportations represent a very small part of the agricultural production of non-tradable and importable goods. In fact, just 23% of the agricultural land is dedicated for production of tradable goods; while the rest, which is split among land owners of not more than 5 hectares, are used for production of goods which are not tradable or which compete with imports (Tello 2008). In the last decades, due to the competitiveness and productivity problems in the agricultural sector, the Peruvian economy had come showing persistent trade deficits of agricultural and food products (Escobal 2007).

Regarding the labor participation rates of the economy, they have been around 70% of the economically active population older than 14, amidst 1998 and 2006, being the lowest levels of the labor participation rates, amidst 2003 and 2006. After that, during the last four

³ These figures were obtained from the Central Reserve Bank. Visit <http://www.bcrp.gob.pe/estadisticas.html>, for further information.

years, the labor participation rates have consecutively increased from 74,3% to 76,0%. According to the World Bank (2005), the employment generating was not enough during the first years after 2000 due to the excess of installed capacity originated as a consequence of the economic recession faced in 1998 -1999. Regarding the unemployment, Peru has been presenting figures which have been slightly lower than the ones shown by Latin America. In 2002, 2007 and 2008, the unemployment rates corresponding to Peru were 9,7%; 7,2%; and 6,4% respectively; and the ones corresponding to Latin America were 10,5%; 7,7% and 8,5% respectively for each year (OIT 2004; OIT 2009). As a consequence of the US economic crisis, the unemployment rate in Latin America increased; nevertheless, the Peruvian unemployment rate continued diminishing; though to increasingly lower rates (see table 2.1).

**Table 2.1. Socio-economic and demographic indicators
(1998 -2010)**

Years	GDP ^{1/}		Population		Poverty rate ^{2/}			Gini	Fertility rate			Labor participation rate ^{5/}	Unemployment rate ^{6/}
	(Millions S/. of 1994)	Growth rates	National Total	National Growth	National	Urban area	Rural area	National (%)	National ^{3/}	Urban area ^{4/}	Rural area ^{4/}	National (%)	National (%)
1998	116 522	-0,66	25 182 269	1,67	42,4	29,7	65,9	56,17	3,06			70,80	7,80
1999	117 587	0,91	25 588 546	1,61	47,5	34,7	71,8	56,66	2,99			72,20	8,00
2000	121 057	2,95	25 983 588	1,54	48,4	36,9	70,0	50,75	2,93	2,20	4,30	70,10	7,80
2001	121 317	0,21	26 366 533	1,47	54,8	42,0	77,1	54,06	2,87			73,10	8,80
2002	127 402	5,02	26 739 379	1,41	54,3	46,4	77,7	55,64	2,82			71,00	9,70
2003	132 545	4,04	27 103 457	1,36	52,2	44,1	75,7	55,22	2,77			68,80	10,30
2004	139 141	4,98	27 460 073	1,32	48,6	37,1	69,8	50,34	2,73	2,10	3,70	68,60	10,50
2005	148 640	6,83	27 810 540	1,28	48,7	36,8	70,9	51,11	2,69	2,10	3,70	68,30	11,40
2006	160 145	7,74	28 151 443	1,23	44,5	31,2	69,3	50,87	2,65	2,10	3,70	69,70	8,80
2007	174 407	8,91	28 481 901	1,17	39,3	25,7	64,6	51,65	2,61			74,30	7,20
2008	191 505	9,80	28 807 034	1,14	36,2	23,5	59,8	48,95	2,58			75,10	6,40
2009	193 155	0,86	29 132 013	1,13	34,8	21,1	60,3	49,05	2,54	2,30	3,60	76,00	6,30
2010	210 143	8,79	29 461 933	1,13	31,3	19,1	54,2	48,14	2,50			76,00	

Notes and sources:

1/ Figures provided by Central Reserve Bank of Peru

2/ Poverty Head Count ratio at national, urban and rural poverty line. Estimations from cross section data, provided by World Bank.

3/ Estimations provided by World Bank

4/ Estimations obtained by UNFPA, with information provided by INEI, which come from ENDES (Encuesta Demográfica y de Salud Familiar, 1991-1992, 1996, 2000, 2004-2006 Y 2009).

5/ Proportion of an economically active population (15 ages and older) who is employed. International Labour Organization, Key Indicators of the Labour Market Database.

6/ Share of the labor force (15 ages and older, who are economically active) without work, who is available for and seeking employment. International Labour Organization, Key Indicators of the Labour Market Database.

Elaboration:

Author's elaboration

Other interesting indicators which may contribute to a better understanding of the Peruvian Economy and its possibilities to aggressively reduce poverty are the demographic ones. Thus, the population growth rate has consistently diminished along the period analyzed, from 1,67%, in 1998, to 1,13%, in 2010. This reduction in the population growth rate was mainly attributed to the drop in the rural fertility rate, from 3,6% to 2,50%, from 1998 until 2010, respectively (see table 2.1). Taking a very long-run perspective, the evolution of the population growth rate has been significantly favorable; since during the 60's the population growth rate was 2,9%; the maximum value since 1950. Due to educational programs of family planning, the increment of alphabetization in adult population, and the urbanization, the fertility rate was considerable diminished in rural areas, and as result, a meaningful slowdown of the population growth was observed during the last decades (INEI, 2001).

2.2. Describing Peruvian social policy

The main driving factor of poverty reduction should be the economic growth through its effect on the increment in the labor demand (Mendoza and García 2006). However, since the Peruvian economic growth has not been enough to reduce substantially the poverty rates (World Bank 2005; Chacaltana 2006); either the economic growth model should be improved or a more aggressive and efficient social policy should be implemented. As it has been mentioned in the previous section, Peru started to implement structural reforms, and become liberal, since 1990. In fact, according to Lora (2001), towards 1999, Peru was one of the countries, among 19 Latin American countries⁴, with the highest index of structural reforms. The most important structural reforms implemented were: open trade, financial liberalization, public sector management (e.g. privatizations), tax policy, monetary policy, private administration of the pension system, labor legislation, and the modernization of the payment system (Barrera 2009). Thereby, Peruvian economy has been applying a set of structural reforms, since the 90's, with the aim of encourage private investment and stimulate the economy.

⁴ The counties which conform the sample of Latin American countries analyzed in that study were: Argentina, Bolivia, Colombia, Costa Rica, Chile, Ecuador, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panamá, Paraguay, Peru, Dominican Republic, Trinidad y Tobago, Uruguay, and Venezuela.

However, to stimulate the economic growth has not been enough; since the driving force of the economic growth has been the dynamism of the primary-export sector, which is not labor intensive. In such context, the redistributive role of the State and the efficiency of the social policy are fundamental. Nevertheless, the weakness of the institutions for carrying on and implementing social policy, and the pro-cyclic nature of the social expenditure have been an obstacle to fight efficiently against poverty, in Peru. According to Aparicio et al. (2011), even when there has been an increment of the social expenditure through the time and implementation of new social programs, the institutional weakness of the public sector (inadequate and disorganized public administration) has held back the progress in reducing poverty issues. In fact, since social policy is multi-sectoral –i.e. it is tackled from different ministries, such: Ministry of Economy and Finance, Ministry of Women, Ministry of Social Development and Integration, among others– that configuration usually becomes a drawback, due to the lack of coordination between those organizations, and between the headquarters and its decentralized institutions. Castro (2006), on the other hand, argues that the pro-cyclical behavior exhibited by the social expenditure, amidst 1994 and 2004, was one important reason for the lack of success in fighting against poverty during recession stages. Also, the author pointed out that the social expenditure policy must be accompanied by policies directed to increase the assets of the poor, to reduce their vulnerability against shocks.

In Peru, the total social expenditure is split in social previsional (pension payments) and non-previsional expenditures. The social non-previsional expenditure includes: (i) the basic social expenditure and (ii) the complementary social expenditure. The former, which is based on the Consensus of Oslo, encompasses the provision of education, basic health, nutrition, water and sanitation, and social protection. Basically, includes the expenditure in goods and services which are directly received by the beneficiaries (e.g. medicines, school books, teacher salaries, and so forth); and exclude administrative expenditures (e.g. payments directed to decentralized organisms of education). The complementary social expenditure intends to complement the basic ones, by contributing to the opportunities generation for economic and social disadvantage people. This type of social expenditure

can be universal or targeted; and, historically, it has represented a higher share of the total social expenditure (MEF 2005a; MEF 2005b). It is important to mention that, since the categories of the government' expenditures have experienced several changes; it is difficult to establish comparisons in time regarding social expenditure. In this regard, in an analysis for Latin American counties, the United Nations (2010), pointed out that because of the different definitions and methodologies used to store the data on social expenditures among countries, as well as, due to the continuous changes implemented by each country to improve the available statistics, it is quite difficult to establish reliable cross country comparisons.

Table 2.2. Social expenditure (main components) evolution as percentage of the current GDP (2000- 2010)

FUNCTIONS / PROGRAMS	YEARS			
	2000	2003	2005	2010
(1) SOCIAL PROTECTION <i>(includes only expenditure on two programs: (i) Supportive Assistance, and (ii) Social and Community Assistance and Promotion)</i>	0,78	1,65	0,58	0,67
(2) EDUCATION <i>(includes only expenditure on three programs: (i) Pre- school, (ii) Elementary Education, and (iii) Lower and upper secondary education)</i>	2,04	2,13	2,10	1,64
(3) HEALTH AND SANITATION <i>(includes only expenditure on three programs: (i) Sanitation, (ii) Collective Health, and (iii) Individual Health)</i>	1,05	1,22	1,31	1,35
TOTAL BASIC SOCIAL EXPENDITURE (1) + (2) + (3)	3,88	5,00	3,99	3,65
(1) SOCIAL ASSISTANCE	0,78	1,65	0,58	0,67
(2) SOCIAL PREVISION	2,68	3,45	3,50	2,36
(3) EDUCATION ^{1/}	2,85	3,04	3,00	2,87
(4) HEALTH AND SANITATION	1,42	1,53	1,52	1,52
TOTAL EXPENDITURE IN FUNCTIONS (1) + (2) + (3) + (4)	7,73	9,67	8,60	7,41

Notes:

1/ The expenditure on sports and culture have been removed, since those concepts do not belong to the public expenditure on education since 2010.

Sources:

Data on social expenditure obtained from SIAF - MEF (05/09th/2010)

Data on current GDP obtained from World Databank (05/09th/2010)

Elaboration:

Author's elaboration

According to the figures published by CEPAL (2002 - 2003), Peru is one of the countries with the lowest social expenditure in Latin America and the Caribbean; being only above El Salvador, Bolivia, Honduras, Paraguay, Guatemala, Ecuador and Nicaragua –taking the social expenditure per-capita as reference. Whilst Latin American and the Caribbean countries, in average, assign to social expenditure 15% of the GDP, which is equivalent to

US\$ 610,00 per habitant; Peru only spend 8% of its GDP, which is equivalent to US\$ 170,00 per habitant (UNICEF and Apoyo Institute 2006). From 1990 to 2001, the social expenditure in Peru, as a percentage of the GDP, increased in 4,1% (UNICEF and Apoyo Institute 2006); from 2000 to 2005 the same ratio increased in 1,3% (United Nations 2010); and from 2000 to 2010, the social expenditure, in monetary terms, increased 141% (MEF 2010). Likewise, although the information on social expenditure, presented at the bottom of table 2.2., corresponds only to the main functions and programs (education, health, social assistance and social prevision); it is possible to observe a decreasing pattern in social expenditure as percentage of the GDP. Thus, although Peru increased the social expenditure, during the last two decades, that has not been sufficient to reach the regional averages. That because the meaningful increment of social expenditure in monetary terms has been not enough to equate the GDP growth in the same period⁵. This policy decision, of relativize the importance of social policy, probably has been associated to the recession experienced in 2009, or maybe obey to explicit preference of the Peruvian Government to prioritize other sectors.

Peru not only presents low levels of social expenditures, but also a high share of the social expenditure is dedicated to personnel payments in the public sector. Even more, there is not a strong correlation between the social expenditure and outcomes; i.e. there is evidence of economic inefficiency in the provision of public services (e.g. public education) (UNICEF and Apoyo Institute 2006; Tam 2007). Analyzing the total social expenditure per habitant, in Peru, it increased from S/. 576,00 to S/. 829,00, from 2000 to 2005, respectively. More than half of this increment was due to the increment in the expenditure of social prevision (which include the social security systems and pensions for retired). In fact, a significant share of the total social expenditure was assigned to salaries (32,3%, in 2000, to 34,7%, in 2005) and pensions (32,0%, in 2000, to 33,4%, in 2005), during that period (UNICEF and Apoyo Institute 2006). On the other hand, during 2005 to 2010, the drop in social expenditure as a percentage of the GDP was mainly drove by the drop in social prevision and education (see table 2.2).

⁵ Probably, that is the reason why official documents do not present the expenditure evolution as a percentage (rather than the evolution in monetary terms) of the GPI for the last years.

An additional way in which the Peruvian government fights against poverty is through the “Conditional Cash Transfer” (CCT) program. The population target of these kinds of programs is the extremely poor; i.e. the people who have not the means to generate incomes. These programs consist on giving cash to the population target in exchange for the fulfillment of certain activities. For instance, parents receive the transfer beneath the condition of enroll their children at school, or bring them regularly to the hospital (MEF 2005b). Peruvian government has implemented the CCT program since 2005, and named it “National Program of Direct Support to the Poorest - JUNTOS”. In 2005, the JUNTOS program had S/. 120 millions, which directed to only 70 districts (located in the 4 poorest Peruvian regions). While, in 2009, the program had S/. 729 millions directed to 638 districts, which represented more than 55% of the target districts. The program consist on transferring S/200,00 (approximately, US\$ 75,00) bimonthly to the mothers, under the following conditions: (i) guarantee the school attendance of children between 6 to 14 years old; (ii) children from 3 to 36 months must participate in the Program of Complementary Food directed to population in risk; (iii) children non older than 5 years old must fulfill with the complete vaccination, reception of vitamins, and the growth check; (iii) women must attend pre and post natal checks, and educational presentations about sanitation; and (iv) children and adults without birth certificate or without national id must to participate in the Program “My Name”. After 4 years of participation if the beneficiaries have not attained to go out from poverty, then they continue being beneficiaries but receiving 20% less money each year. Accordingly, JUNTOS has managed to increase the households’ consumption, the school attending, and the use of health services for infants and mothers (Aramburú 2009; Del Pozo and Guzmán 2011). Likewise, JUNTOS has enabled to rise the productive capacity of the rural households. That is, the program has impacted positively on households’ productive investment (mainly, in agriculture and livestock) and on the accumulation of productive assets; which, in turn, have positively affected on availability of liquidity (Perova and Vakis 2011; Del Pozo and Guzmán 2011).

The importance of the availability of social programs in Peru is that, through those, poor population can manage to slightly smooth their consumption; even though, they are not as strong facing idiosyncratic income shocks as non-poor people (Castro 2006). Among the

most important fighting poverty programs in Peru are: “Vaso de leche”, “Sistema Integrado de Salud”, “A trabajar”, “Comedor popular”, “Desayuno escolar”⁶ However, several studies have argued that the social programs operate inefficiently, which considerable targeting errors, mainly due to leakage more than under-coverage (Chacaltana 2006; Monge and Winkelried, 2010). Indeed, around 2006-2007, the “Vaso de leche” leakage and under-coverage were, approximately, 51,4% (in rural areas) and 68% (of the total beneficiaries), respectively. Meanwhile the leakage and “Comedor popular” under-coverage were, approximately, 46,2% and 97% (of the total beneficiaries), respectively⁷. Additionally, since the government expenditure in social programs (social assistance) is significantly low (see table 2.2), each program represents negligible percentages of the households’ consumption (even in the income’ first quintile). Accordingly, more than a third part of the poor families decide to participate in more than one social program (Lavado 2007).

3. THEORETICAL FRAMEWORK

3.1. Welfare and Poverty measures

Poverty measurements may be different depending on the welfare indicator and the poverty line used, but mainly on the definition of poverty adopted. The broader the aspects embedded in poverty conceptualization, the higher the difficulty associated to its measurement (Kakwani and Silber 2008). According to Ravallion (1992), there are two approaches for measuring individual well-being, the welfarist and the non-welfarist approaches. The former lies on the ranking of different social states made by individuals on the basis of their personal preferences in each social state (Sen 1979). This approach is based on the following assumptions: (i) individuals are rational and they are the better judges to choose a combination of goods and services which maximize their utility and happiness, (ii) competitive markets, (iii) presence of perfect information, and (iv) absence

⁶ In English: “Milk Glass”, “Integrated Health System”, “Let’s go to work”, “Popular Dining room”, “School Breakfast”, respectively.

⁷ Figures obtained from Programas Sociales en el Perú. Elementos para una propuesta desde el control gubernamental; published by Contralorí General de la República, in 2008.

of externalities. Under these restrictive assumptions, and subject to the individuals' initial endowments, the prices level in the economy, and the production technology, the welfarist approach will produce a Pareto-efficient result (Duclos and Araar 2006). Whilst in the non-welfarist approach, the measurement of the individuals' well-being is basically made irrespective of the utility information (Ravallion 1992). The basic-needs method, and the capability method are the most representatives non-welfarist approaches; both based on the Sen's (1992) seminal ideas on functioning and capabilities (Duclos and Araar 2006; Kakwani and Silber 2008). Basically, the basic needs-functioning approach defines poverty as the lack of direct consumption or functioning (e.g. being adequately nourished, in good health, happy, and so forth) experience; and the capability approach defines poverty as the lack of incomes and capabilities (Duclos and Araar 2006).

Both approaches, the welfarist and the non-welfarist, have limitations, and it is essential to be mindful their drawbacks. To this regard, the welfarist approach rules out the use of non-utility information (e.g. liberty, discrimination, and exploitation); additionally, in the Arrow framework, the interpersonal comparison of utilities is completely avoided, which implies a poor use of utility information. Besides, due to those limitations, welfarism does not allow to distinguish between the poor and the rich, in terms of income, utility, and even less regarding non-utility information. In that sense, it is not possible to overweight the interests of the poor relative to the ones of the rich (Sen 1979). Other two strong criticisms are: (i) there are reasons for not trusting in individuals' judgment on well-being, because of the lack of perfect information and irrational choice (Ravallion 1992; Duclos and Araar 2006); and (ii) the interpersonal comparisons of utilities are highly problematic due to heterogeneity in: preferences, personal characteristics, necessities, individual abilities, household size; and due to the prices variability in time and space (Duclos and Araar 2006). Whether the non-welfarist approach is less restrictive regarding the role of heterogeneity in the well-being measurement, this approach also faces important critiques. One of them is that it may lead to conclude that the individual is better-off even when the individual's perception of his or her well-being is opposite (Ravallion 1992). Regarding the non-welfarist approach of basic needs and functioning, the major critiques are: (i) the width and depth of both concepts, (ii) the ambiguous "acceptable or adequate" degree in each

dimension of basic needs and functioning, and (iii) the possibility of substitutability among dimensions of basic needs and functioning are generally ignored (Duclos and Araar 2006).

According to Ravallion (1992) there are three major ways for measuring well-being: through the measurement of living standards, the households' opportunities for consumption, and the rights to participate in society. Among them, the most widely used is the living standards measurement, which also may be addressed from both: the welfarist and non-welfarist approaches. The living standard measurement under the welfarist approach intend to capture the individual consumption (goods and services) valued at market prices, including goods of own production. Whilst under the non-welfarist approach it is focused on a myriad of forms of deprivations as: inadequate food consumption, inadequate health, and so forth. The living standards method is commonly used in developing countries; while the households' opportunities for consumption and the rights to participate in society are preferred in developed ones. Also, while the standard of living is preferably measured through consumption, the other methods commonly use income.

Both income and consumption indicators have limitations and both usually present meaningful error of measurement (Baulch and Hoddinott, 2000). Due to the higher inter-temporal variability of income in comparison to consumption, most analysts prefer the latter, since shows a better mirror of the current and long-term standard of living. There are other less common indicators used to measure well-being, such as: nutritional indicators, anthropological methods, equivalence scales (e.g. consumption per equivalent adult male), non-food budget share,⁸ (Ravallion 1992), deprivation indexes. The latter based on a scientific definition of deprivation and on information of what is socially perceived as necessities (Gordon et al. 2000). However, the well-being indicator selection is not the unique concern for measuring poverty; the poverty line used as reference for counting poor it is also crucial. Hinging on the poverty line used different poverty concepts may be obtained, like: absolute, relative and subjective poverty.

⁸ See Ravallion 1992, for a detailed discussion on benefits and drawbacks of using income, consumption or the other alternatives measures as indicators of standard of living.

Finally, it is also important to keep in mind the drawback and the meaning of the indicators selected to measure the poverty incidence, like: Head Count Ratio (HCR), Poverty Gap (PG), Squared Poverty Gap (SPG), the Foster-Greer-Thorbecke (FGT) indicators, among others. The FGT class is a family of indexes which include the three first previous indexes mentioned; i.e. HCR, PG and SPG (Kraay 2005), when the measure of poverty aversion (α) is 0, 1 and 2, respectively. The larger the α 's value, the greater the weighting on the poorest families. The FGT family of indexes allow take into account the monotonicity, transfer, transfer sensitivity, and the subgroup monotonicity axioms (i.e. additively decomposable with population-share weights). When $\alpha > 2$, all the previous axioms are fulfilled. Meanwhile, the PG just fulfill the monotonicity axiom, and the SPG fulfill the Sen's axioms; i.e. the monotonicity and transfer axioms (Foster et al. 1984); and the HCR violate the monotonicity axiom (Sen 1976).

3.2. Poverty dynamics

A dynamic analysis of poverty is different from static or trend analyses. To account for poverty dynamics it is necessary to analyze longitudinal data, while in the other cases cross section and time series data, respectively, may be used. The interesting issue of analyzing poverty dynamics is which it allows to track specific households (or individuals) through time and to evaluate their economic mobility each year, based on a particular welfare indicator (Yaqub 2000). Some people are consistently poor while others experience poverty only as a consequence of transitory shocks, like: common (or covariant) and idiosyncratic shocks. The former are typically identified as large scale disasters (e.g. earthquakes, landslides, and so forth) which produce assets losses and also collaterally affect the demand of individual providing services. The latter are events which affect to particular individuals of specific sectors (e.g. a sickness, a plague in crops, and so forth), affecting the stock of and the returns to the endowments (Baulch and Hoddinott 2000).

Depending on the approach adopted, transitory and chronic poverty may be focused and measured in a different way. Yaqub (2000) recognize two approaches: the poverty spell and the permanent poverty approaches. The poverty spells approach identify as a transient poor

each household or individual which move in or out the poverty line; and as chronically poor those who remain below the poverty line in every wave of the longitudinal database (Baulch and McCulloch 1998; Jenkins and Rigg 2001). Instead of quantifying transient poverty as crossing over the poverty line, the permanent poverty approach focuses on measuring the deviations of a specific welfare indicator (e.g. consumption or income) and its contribution to the expected permanent level of poverty. In that sense, the permanent approach does not distinguish between transient and chronic poor but decompose the intertemporal poverty measure in two components: the permanent and the transient, for every household (Baulch and Hoddinott 2000, Günter and Klasen 2007). To calculate these measures; first, the permanent level of the welfare indicator must be estimated. The latter may be approximated by the average of the welfare indicator over the all waves in the longitudinal data. Permanent poverty, thereby, is defined to occur whenever the smoothed welfare indicator is below the poverty line; and transit poverty, as the difference, in each wave, between the intertemporal poverty and the permanent poverty (Jalan and Ravallion 1998, 2000). It is important to mention that while the spell approach can use HCR to measure the different type of poverties, the permanent approach need to use a measure of poverty which presents some desirable properties as the Squared Poverty Gap (SPG).

As a result, following the permanent approach, the total intertemporal poverty may be decomposed in three groups. The persistently poor, who are the ones which faced poverty in every wave; the chronically poor and the exclusively transient poor. The chronically poor not necessarily are persistently poor. Indeed, the persistently poor are a subset of the chronically poor. Likewise, chronically poverty in some cases may include a transitory component. The exclusively transient poor are the ones who present a permanent welfare indicator which is above the poverty line but they face poverty in some waves (Jalan and Ravallion 2000).

On the other hand, with the aim of distinguish the permanent poor from the temporal ones, Gaiha and Deolalikar (1993) estimate four poverty measures which not only differ in the methodology applied but also in the data structure analyzed. They refer to these measurements as: annual poverty, expected poverty, innate poverty and persistent poverty.

The first measure is the HCR estimated for each year. The second measure is based on the estimation of the expected income, obtained by running a reduced form income equation, considering all income sources. There is expected poverty whenever the predicted income is below the poverty line. Both poverty measures are calculated using cross sectional and time series data. The third measure is obtained running an income equation, controlling for unobserved household fixed effects (e.g. managerial ability, industriousness, among other household endowments) and allows for time varying household characteristics (e.g. ownership of assets, family size, among others) to be fixed at the sample mean. The fourth poverty measure is calculated as those households which are below the poverty line in an entire period, i.e. between 5 and 9 years. The last two poverty measures are obtained using longitudinal data.

3.3. Structural and idiosyncratic causes of poverty

There are different factors associated with poverty; some of them are mainly related with persistent poverty, others specially trigger transient poverty and others are related with both of them. In this paper, structural factors will be always associated with chronic and persistent poverty; while triggering, driver or idiosyncratic factors will be generally associated with transient poverty. Before continuing with the description of structural and triggering factors, it is important to bear in mind some caveats. First, the literature is not determinant neither conclusive regarding the classification of factors in the ones which induce transient poverty and the ones which induce chronic poverty. Indeed, some trigger events can affect not only transient poverty but also chronic poverty. Second, the triggering factors are not universal; that is some of them may explain movements into (or out of) poverty for some households but not for others. Third, another big issue to take into account regarding the explanatory factors of poverty is the importance to identify causal relations rather than simply correlations, since the latter do not guarantee (one directional) causality (Jalan and Ravallion 2000; Smith and Middleton 2007; Grant and Marcus 2009).

Grant and Marcus (2009), based on a wide literature revision, identify as structural factors: (i.e. the ones associated to chronic poverty) the social exclusion and discrimination,

remoteness (geography), the structure of the economy and economic reforms, bad politics and poor governance (e.g. corruption), and inadequate social service provision. The exclusion and discrimination hold back that some groups integrate adequately in society, and generally lead to segregation. Examples of exclusion and discrimination are: the barriers to acquire basic education, to access social services or to take part in politic spheres; as well as the resilient ethnic segregation. Regarding the structural economic factors, a national economic program, which promotes an unequal growth, is seen as the main structural cause of poverty. Jalan and Ravallion (2000) not only recognize the importance of education to explain chronic poverty, but also point out that other important factors highly associated with chronic poverty are: the demographic characteristics, such: household size or the household members' age composition; and the occupational status; e.g. employed vs. unemployed. Also, disabled or ill-health people are more likely to face poverty persistently; however, researches should be mindful the causality reverse problem inherent between both variables (Smith and Middleton 2007).

A key characteristic of the trigger events is their variability through the time. Indeed, precisely to their nature is which they are mainly associated with transient poverty. On the other hand, the status of transient poor might be determined by the balance between the households' needs and resources. Thus, changes in the households' demographic characteristics and the labor market opportunities should trigger transient poverty; since those trigger events affect the balance between the households' needs and resources. Examples of demographic trigger events are: variations in household size, e.g. the birth of a baby; and changes in the type of family structure, e.g. from nuclear family to lone parenthood. Examples of changes in labor market opportunities which may lead transient poverty are: changes in employment status (employed vs. unemployed) or in the number of hours worked of any household' member, changes in total earnings (considering incomes from any source), variations in the number of earners in the household, and changes in taxes (Jenkins and Rigg 2001; Smith and Middleton 2007). On the other hand, Grant and Marcus (2009) define driver factors as: risks, disasters or shocks. These shocks may be: environmental (e.g. floods, drought, landslides, climate change, and so forth), economic (changes in commodity prices, changes in aid flows, and so forth), or of health (e.g.

illnesses among breadwinners, or expenditure on medical treatment of other household member).

It is important to highlight that most of the poverty reduction studies, as well as anti-poverty policies, usually are mainly focused on triggering factors than on structural ones. That may be attributed both, on the one hand, to the fact that poverty is commonly analyzed in a static way (Smith and Middleton 2007); and on the other hand, to the fact that structural factors usually are seen, by governments, as more difficult to tackle as well as closely linked to the long term policy results (Grant and Marcus 2009). Under a static perspective of poverty, governments commonly implement policies geared to get people out from poverty, but not focused on keeping them out of poverty. That is, poverty alleviation programs mainly provide short-term relieve to the poor (Attanasio and Székely 2001; Smith and Middleton 2007). In fact, common employment policies have been successful in getting people out from poverty but not in maintaining them as non-poor, because there is a lack of regard in policies focused on job progression and retention (Smith and Middleton 2007). On the other hand, as Grant and Marcus (2009) point out idiosyncratic factors may be seen as easier to tackle than structural factors (e.g. prevailing institutions and socio-cultural patterns); since hardly ever there is just a single and a well defined structural factor related to chronic poverty; and because of the nature of structural factors, to combat chronic poverty generally need to be addressed through multi-sectoral policies.

An alternative viewpoint which is worth mentioning is the asset-based approach developed by Attanasio and Székely (2001). Although this approach does not intend to classify poverty causes in structural and idiosyncratic factors, its knowledge is important for the frame of the present study. The asset-based approach lies on the individuals' income decomposition in four elements: (i) the stock of income-earning assets, (ii) the rate at which these assets are used for generating income (iii) their market value, and (iv) transfers and bequest. Thus, positive variation in any of the income component may lead the poor to exit from poverty. Attanasio and Székely consider as income-earning assets: human capital (e.g. education, health), physical capital (e.g. capital stock used for production, money holding,

and properties) and social capital (e.g. social networks, norms). Baulch and Hoddinott (2000) add natural capital (e.g. land), and financial capital to the previous classification, but both new categories are embedded in the physical capital category, as defined by Attanasio and Székely.

The literature, finally, mentions two important aspects to take into account at the moment the econometric model is specified and the results are interpreted. First, transitory shocks may wind up producing chronic poverty if the people affected have no means to overcome the transient poverty; for instance, by acceding to some type of external assistance (Grant and Marcus 2009). Second, there is an inertial component of poverty which is crucial to be mindful. That is, the longer the period that individuals face poverty the higher the difficulty to escape from poverty (Smith and Middleton 2007).

4. DATA AND VARIABLES DESCRIPTION

4.1. Data

The data used in this study is obtained from the National Household Survey, provided by the Peruvian Institute of Statistics and Informatics (INEI⁹). The data structure is a rotated panel, covering the period from 1998 to 2010. The research unit was the household, and the target population was the household members¹⁰ from the 25 regions of Peru, including urban and rural areas. Rather than a common sample of households traced for the entire period; there are three panels: the first one is from 1998 to 2001, the second one is from 2002 to 2006; and the most recent, from 2007 to 2011. The size of the common sample for every wave in the first panel is of 1 355 households; the common sample in the second panel is 3 661 households, and the common sample in the third panel is 2 561 households.

⁹ For its acronym in Spanish: Instituto Nacional de Estadística e Informática.

¹⁰ Household members embrace: family members, domestic helpers who live in the household, members of a family pension (with a maximum of 9 pensioners), and people who are not a family member but which were living in the household the last 30 days.

In each case the sample allows for making inference to the following levels: national, rural national and urban national¹¹.

The three panels will be used for analyzing the evolution of chronic and transient poverty since 1998 to 2010, and establishing comparisons with the results obtained from the static analysis. The poverty persistence in this study is limited to 4 years, the number of waves available in each panel data. The dynamic poverty analysis carried out with the second panel data was also limited to 4 years, because information on poverty rates at 2003 was removed due to the excessive missing values. On the other hand, to analyze the determinants of each type of poverty the most recent panel data, from 2007 to 2010, will be used. Since the three panels virtually have no coincidence –of observations– among them, the multivariate analysis just could be performed for each panel and not for the entire period.

The INEI in Peru commonly provides two types of poverty measures: The poverty and the extreme poverty. Both measures use consumption as welfare indicator. People are considered as poor if their per-capita expenditure is not high enough to be above the poverty line; and extremely poor people are those whose per-capita expenditure is not above the extreme poverty line. In Peru absolute poverty lines are constructed; they are constant over time, in real terms; and fixed irrespective of the income distribution. The extreme poverty line is defined as the amount of money necessary for acquiring a food bundle which satisfies the individuals' basic nutritional needs. Meanwhile the poverty line is equal to the sum of the monetary value of the extreme poverty line and the amount of money necessary for acquiring a set of essential non-food needs, which includes: education, health, transport, clothes and housing (INEI, 2010).

It is important to mention that, the expenditure on consumption includes the monetary and the non-monetary expenditure (e.g. production of goods for own final consumption, the housing services by own final consumption by owner occupiers, the imputed rents, and so forth). Higher error sources come from non-monetary consumption, because usually the

¹¹ See Appendix No. 1 for further information on sample specifications.

methodology applied to impute a value is not exempt of troubles –not only for the selection of adequate prices but also because of the extrapolation of quantities). Also, an additional error source, which not necessarily comes from non-monetary activities, is attributed to the poor quality of information regarding the consumption of high-income households (Blades D. 1974; Francke and Iguñiz, 2006). In that sense, some additional poverty estimations transitions will be made, in order to test the stability of the poverty categorizations constructed.

Additionally, slightly differences have been found between point-in-time poverty rates calculated from cross sectional data and the ones estimated here using the panel database. Fortunately, the discrepancies are pretty small, and most of the time they are not statistically significant. Moreover, in all cases where there are discrepancies, the annual poverty rate estimations provided by the static approach are higher than the annual poverty rates estimated using the panel database. In that sense, even if calculations of transient and chronic poverty –i.e. estimations based on the all 4 waves– result in higher percentages of poverty (compared to the static approach); they still would be slightly underestimated; and therefore, that do not affect to the hypothesis validity that static measures of poverty underestimate the real dimension of poverty. Also, it is important to mention that unweighted calculations on poverty rates are closer than the weighted rates, from the panel data sample (especially since 2007), to the official statistics of poverty rates based on cross sectional data. For that reason, poverty types (persistent and transient), and poverty exit and entries have been calculated without weights¹².

4.2. Variables

Variables have been elaborated using information from panel data component of the Peruvian National Household Survey¹³. The main topics covered by the survey are: housing characteristics and household members' education, health, income and occupation.

¹² To observe the discrepancies between weighted and unweighted estimations of poverty using panel data; and estimations of poverty provided by the Peruvian official institution using cross section data, see table A.2, in Appendix 2.

¹³ The panel data component encompasses less topics, as well as less items within the topics which are included, than the full version of the Peruvian Household National Survey.

Information on education is available for household members older than 2 years old. Information on health was drawn for all members regardless of the age; whilst information on income and occupation was drawn only for those household members older than 13 years old. The information on income considers the following sources: from working activities, current transfers (from the last 6 months), from the asset possession (from the last 12 months), and extraordinary incomes (from the last 12 months).

The independent variables considered in the subsequent analysis may be divided in the ones which are individual (household) and time-varying and the ones which just vary among individuals (households). The latter ones have been constructed as mean across years. As it will observe in section 6, those averages slightly vary due to variations in household composition; however, those variations are not statistically significant. The time-varying variables have been constructed similarly to the dependent variable; that is, capturing the information provided by the time dimension (see table A.3 in appendix 3).

5 EMPIRICAL STRATEGY

The empirical strategy will be based on an in-depth statistical descriptive analysis of the poverty dynamics using the methodology adopted by Baulch and McCulloch (1998), and Jenkins and Rigg (2001). The drawback of this kind of studies in calculating the different types of poverty (persistent and transient) is which data is right and left censored, especially when a short period of time is analyzed. That is, people which have been poor in the last two years, according to our definition they would be transient poor, but if information for subsequent years would be available and some of those people would continue being poor; then, they actually would be persistent poor rather than transient. The same logic might be applied to explain the problem which arises due to the left-censored data. Fortunately, according to the data analyzed in this study those problems do not seem to be quite meaningful. On the other hand, the advantage to analyze poverty with a four-wave panel is that the problem of sample attrition is significantly reduced, and therefore, problems of biased results are avoided, especially of underestimation of persistent poverty (Jenkins and Rigg 2001).

To get a glance of how rural areas and urban areas are affected by persistent and transient poverty, the poverty estimations by the spell approach will be shown by relevant set of subgroup breakdowns. Additionally, to get a general view of how transient poverty is affected by shocks, exits and entries poverty rates will be calculated as well as the association between them with some important shocks (e.g. getting an income increment, getting unemployed, getting sickness, giving birth). Finally, to identify the relevant explanatory factors of persistent and transient poverty an ordered probit model will be performed, in which the dependent variable will be constructed using the poverty indicators elaborated using the spell approach.

5.1. Construction of dynamic poverty indicators using the spell approach

Three indicators will be estimated applying the spell approach: (i) never poor, (ii) transient poor, and (iii) persistent poor. To construct those indicators the Head Count Ratio is used as a measure of poverty.

a. Indicator of no poverty

Calculated as the absence of poverty during the four year span. That is, the household monetary consumption is over the poverty line during the four years.

b. Indicator of transient poverty

Calculated as the number of times, less than three, the household monetary consumption is below the poverty line.

c. Indicator of persistent poverty

The household will be considered as chronically poor whenever its monetary household is below the poverty line, at least in three waves.

5.2. Assessing the importance of the idiosyncratic shocks for triggering movements into and out of poverty

To identify what are the main shocks which trigger transient poverty, first poverty entries and exits are calculated. Then, a bivariate analysis will be performed, relating poverty

entries and exits with one shock at a time. These shocks examined are chosen based on the theoretical framework, and on previous –national and international– findings regarding the events which are closely related to the movements into and out of poverty. The main drawback of this analysis is that it assumes that the trigger events are mutually exclusive, without considering that sometimes entry or exit from poverty are caused for a set of events rather than just due to one of them. However, contrary to other studies, this study uses this methodology as part of the descriptive analysis and compliment this results with the ones acquired from the multivariate analysis.

Poverty entry rate is defined as the number of households becoming poor in each wave – given that the previous year they were not poor–, expressed as a percentage of the total number of non-poor households in the previous year. Poverty exit rates are defined as the number of households becoming non-poor in each wave –given that the previous year they were poor–, expressed as a percentage of the total number of poor households in the previous year. These variables are constructed considering poverty transition over a one year interval. Hence, since four year span is analyzed, three poverty rates and three poverty entries will be obtained.

5.3. The model: estimating the explanatory factors of persistent and transient poverty

To get an estimation of the net effects not only of the idiosyncratic shocks but also of the structural factors on the dependent variable, a multivariate model will be estimated. The dependent variable take three values based on the poverty indicators estimated under the spell approach. Those categories are: never poor, transient poor and persistent poor. Since the dependent variable is an ordered discrete one, the ordered probit model is the technically adequate option.

After the elaboration of the dependent variable based on the spell approach, the temporal dimension of the panel data disappears; since the dependent variable only varies across individuals but not with time. As a result, the ordered probit model will be run as for cross section data. However, to take advantage of the time dimension of the data, the time-

varying variables will be transformed in the same way as the dependent variable to capture the time dynamics (see variable description in appendix 3).

One important reason why ordered probit models are appropriate when the dependent variable is ordinal, and the linear regression models are not technically appropriate is because unlike the former, the latter assumes that the difference or distance between the variables' categories are equivalent. Additionally, the ordered probit models estimate a cut points based on a continuous underlying distribution which the linear regression models simply ignores. Those facts imply that the estimated coefficients from linear regression models ignore the real data generating process and, therefore, offer misestimated effects (Becker and Kennedy 1992; Daykin and Moffat 2002; Wooldridge 2002).

Based on the econometric literature (Becker and Kennedy 1992; Daykin and Moffat 2002; Wooldridge 2002), the dependent variable may be defined as: $y \in \{0, \dots, m\}$, where $m= 0, 1$ and 2 ; and those values, in the present study, mean never poor, transient poor, and persistent poor, respectively. Let y_i^* ($-\infty < y_i^* < +\infty$) be the underlying latent variable to our ordinal dependent variable; i.e. the latent variable may be interpreted as the time each household remains poor. Then, the ordered probit model for y , may be derived from a latent variable model, in which the latent variable lineally depends on the explanatory variables. That is:

$$y_i^* = x_i' \beta + \varepsilon$$

And the relationship between y_i^* and y is given by:

$$\begin{aligned} y_i &= 0 & \text{if } y_i^* \leq c_1 \\ y_i &= 1 & \text{if } c_1 < y_i^* \leq c_2 \\ y_i &= 2 & \text{if } y_i^* > c_2 \end{aligned}$$

Where:

$$\varepsilon/x \sim N(0,1)$$

$i = 1, \dots, n$ households.

x = represent the explanatory variables

β : is a vector of parameters, not including a constant term.

c_1 and c_2 : are the unknown cut points. The number of cut points is equal to $m-1$.

Thus, given that the error term is normal *iid*, the probabilities to observe y conditional on x are:

$$P(y_i = 0|x) = P(y_i^* \leq c_1 | x) = \Phi(c_1 - x_i'\beta)$$

$$P(y_i = 1|x) = P(c_1 < y_i^* \leq c_2 | x) = \Phi(c_2 - x_i'\beta) - \Phi(c_1 - x_i'\beta)$$

$$P(y_i = 2|x) = P(y_i^* > c_2 | x) = 1 - \Phi(c_2 - x_i'\beta)$$

Finally, it is important to mention that the sign of the β 's just offers information about the direction of the explanatory variables effect on the conditional probabilities. However, the sign of the β 's do not say anything about the direction of the explanatory variables effect on the intermediate outcomes of the dependent variable. Specifically, the marginal effects on the first outcome (in this study, 0) are of the opposite sign to that of the estimated β 's, while the marginal effects on the last outcome (in this study, 2) are of the same sign to that of the estimated β 's. The sign of the marginal effects on intermediate outcomes (in this study, 1) hinge on β 's and also on marginal densities (Greene 1999; Wooldridge 2002).

6. A DYNAMIC ANALYSIS OF POVERTY: GETTING IN AND OUT OF POVERTY

6.1. Persistent and transient poor: Understanding the poverty phenomenon in Peru

The aim of this section is threefold. First, it is of interest to distinguish between persistent and transient poor and identify the magnitude of each problem. Second, to analyze the persistent and transient poverty evolution, using the information provided by the three panel data. Third, to compare the magnitude of poverty from both perspectives: static and dynamic.

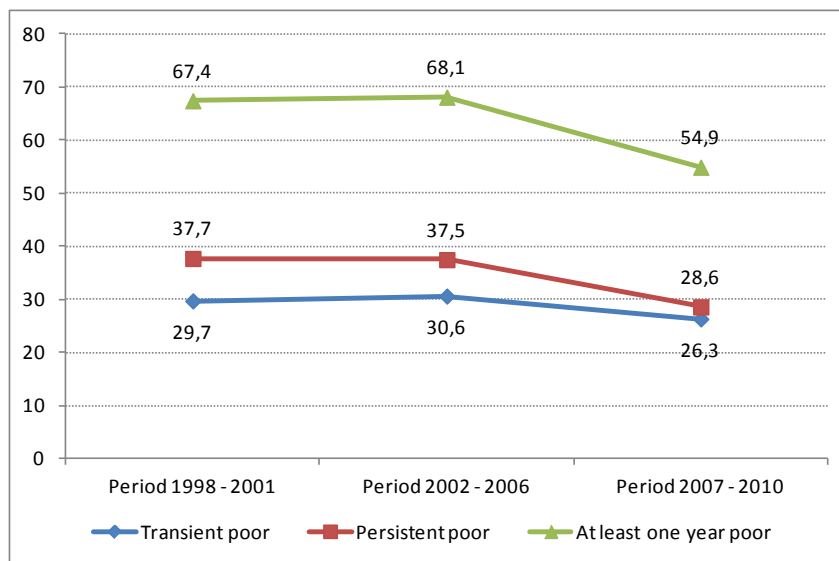


Figure 6.1. Dynamic Poverty Evolution at National Level (1998 - 2010).

Author's elaboration based on the data from National Household Survey (ENAHO), implemented by National Institute of the Statistic and Informatics (INEI).

Notes:

1/ This analysis excludes year 2003 due to the excessive missing data.

According to the figures of persistent and transient poverty, both problems are of an important magnitude; albeit, persistent poverty had been higher than the transient poverty, through the entire period analyzed. Even though such difference has been diminishing in the last years, it is important to be mindful that it may be being slightly underestimated due to the right and left censored structure of the data. As is shown in figure 6.1, during the period 1998 to 2001, 38% of the population was persistently poor or at least three years poor; while 30% of the population was transitorily poor or at most 2 years poor. These rates did not virtually change during the second period (2002 to 2006), but significantly dropped during 2007 to 2010, reaching percentages of 29 and 26% of the population, respectively.

An interesting result is which persistent poverty prevails in rural areas, while in urban areas transient poverty does. Likewise, the difference in magnitude of both types of poverty is significantly less sharp in urban than in rural areas (see figure 6.2). Furthermore, in general terms it may be said that a diminishing pattern of poverty is observed in both geographic areas, from 1998 to 2010. Nevertheless, comparing the first with the last panel data, while in urban areas both, persistent and transient, poverty rates have decreased (persistent

poverty, from 24% to 17%; and transient poverty, from 30% to 24%); in rural areas only persistent poverty has sharply dropped (from 57% to 47%).

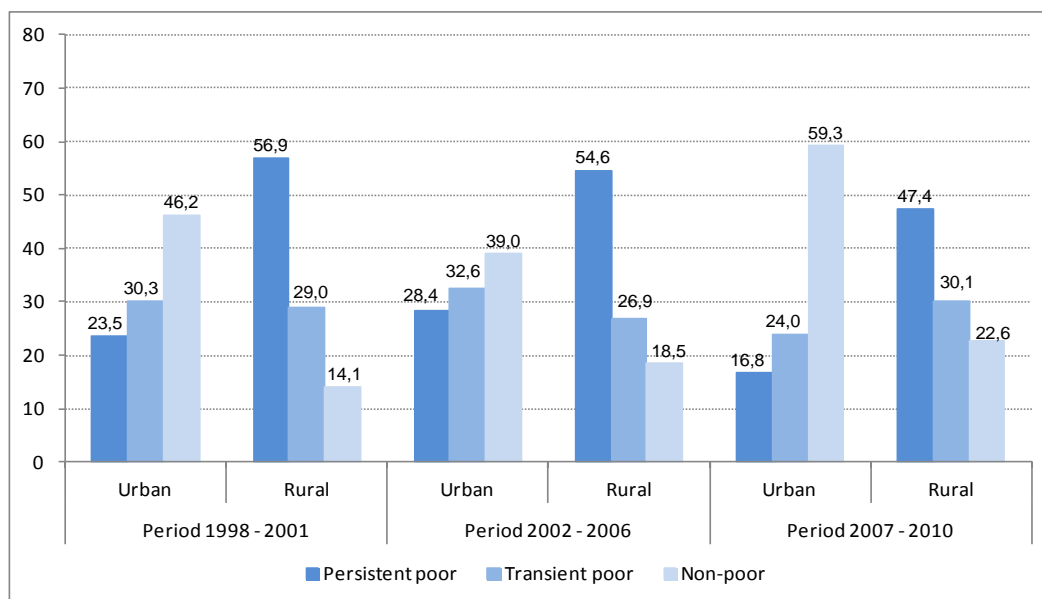


Figure 6.2. Dynamic Poverty Evolution in Urban and Rural Areas (1998 - 2010)

Author's elaboration based on data from National the Household Survey (ENAHO), implemented by National Institute of the Statistic and Informatics (INEI).

Notes:

1/ This analysis excludes year 2003 due to the excessive missing data.

Even when a decreasing pattern of poverty has been found from both, the static and the dynamic perspective, the present analysis clearly shows that the former approach underestimate the real magnitude of poverty. Thus, from table 6.1 it may be seen that from 1998 to 2001 almost two thirds of the population faced at least one episode of poverty; and in the more recent period, from 2007 to 2010, slightly more than a half of the population were poor at least one year. Comparing this figures with the ones of static poverty analyzed in chapter 2 (see table 2.1) –in which poverty rates increased from 42% to 55% amongst 1998 and 2001, and decreased from 39% to 31%, amongst 2007 and 2010– it may be found wide similarities in trend but not in amounts; since static measures of poverty are significantly lower. Such difference among both approach reinforce the previous finding that actually in Peru there is quite a lot of movement into and out of poverty.

**Table 6.1. Dynamic Poverty Evolution at National, Urban and Rural levels
(1998 - 2010)**

Number of times poor	National	Urban	Rural
<i>Period 2007 - 2010</i>			
0	45,1	59,25	22,57
1	14,53	14,49	14,57
2	11,79	9,47	15,49
3	11,25	7,18	17,71
4	17,34	9,6	29,66
Transient poor	26,32	23,97	30,06
Persistent poor	28,58	16,78	47,37
At least one year poor	54,91	40,74	77,43
<i>Period 2002 - 2006^{1/}</i>			
0	31,89	39,02	18,46
1	16,55	18,31	13,22
2	14,07	14,27	13,68
3	14,19	13,01	16,44
4	23,3	15,39	38,2
Transient poor	30,62	32,59	26,91
Persistent poor	37,49	28,40	54,64
At least one year poor	68,11	60,98	81,54
<i>Period 1998 - 2001</i>			
0	32,58	46,20	14,09
1	15,24	17,40	12,30
2	14,48	12,87	16,67
3	14,98	13,16	17,46
4	22,73	10,38	39,48
Transient poor	29,71	30,26	28,97
Persistent poor	37,71	23,54	56,94
At least one year poor	67,43	53,80	85,91

Notes:

1/ This analysis excludes year 2003 due to the excessive missing data.

Sources:

National Household Survey (ENAHU), implemented by the National Institute of the Statistic and Informatics (INEI).

Elaboration:

Author's calculations

6.2. Peruvian poverty profile: Some important descriptive statistics

Table 6.2 displays some descriptive statistics on Peruvian households, distinguishing by their classification as non-poor, transient poor, or persistent poor. This information will provide us an in-deep knowledge regarding the specific characteristics presented by the Peruvian households, given the poverty type they face. Specifically, the figures inside the table 6.2 represent the percentage or means corresponding to the characteristic analyzed within each type of poverty.

A first notable feature of this analysis is that all variables, saved household income and the rest of family members income, do not vary (statistically significant) in time; but they just vary across individuals. Those variables are: the household location (rural vs. urban), the socio-demographic characteristics (sex and mother tongue of the household head and household's dependency rate), and some socio-economic characteristics (years of schooling, employment status, and job characteristics of the household head, the remittances and transferences received by the household and basic services availability). Accordingly, it would be expected that most of these variables would be mainly associated with being persistently poor or being persistently non-poor.

Focused on the bivariate relationships among the different household characteristics and poverty classification (non-poor, transient poor, and persistent poor), it is found that the variables which present a statistically significant variation as poverty type changes are: household location, household head' mother tongue, household head' years of schooling, household dependency rate, white collar job, independent work, income sources (agriculture, business, professional activities), household head income, family income, and basic services availability (water, sewer, and electricity). Meanwhile, the variables which do not present relation with poverty classification are: age and sex of the household head, and the household access to remittances and transfers. In the latter case, although the percentage of non-poor household receiving transferences and remittances generally is higher than the poor ones (transient and persistent), those differences are not statistically significant, except in the year 2010.

Regarding the population characteristics, at national level, around three quarters of households have a man, who is in his early 50's, as a household head. Thus far, it is important to mention that, some demographic characteristics may change as time passes. For instance, a present nuclear family may become in a single parent family in future, due to the death, divorce, and so forth. Likewise, a house with only one household in present may become to have two household or more in future, due to lease, or because sons or daughter shape a new family and continue leaving in the same hose. Although taking into account this possible events, the descriptive statistics show that age and sex of the

household sex has remain quite stable over the years; due to the few changes of household head.

Peruvians who have a mother tongue different from the official language and who have lower years of schooling are more probably found living in poor conditions than their pairs who have the Spanish as a mother tongue and higher years of schooling. In around half of the persistent poor households and in the third of the transient poor ones, the household head have a native mother tongue (i.e. quechua, aymara, awajun, shipibo, and so forth); meanwhile this characteristic is found just in the fifth of the non-poor households. Likewise, the household head of a persistent poor, of a transient poor, and of a non-poor household, have in average 5 years, 7 years and 10 years of schooling, respectively. That means which the former group has even attained to conclude the primary education, the second group has reached to conclude the primary education and they attended only the first year of the secondary education; and the latter group almost concludes secondary education, since they attended 4 of 5 years of secondary education¹⁴.

Two astonishing results are the ones related to employment and household dependency rate, since there is a higher percentage of household head employed and a lower dependency rate in transient and persistent poor households than in non-poor ones (see table 6.2). Apparently, the Peruvian poor households would be fighting against poverty incorporating most of their family members to the market labor. Since the Peruvian economically active population comprises individuals since their 14 years old, it is highly probable that the poorest households supply more adolescent labor than the non-poor ones. Indeed, amidst 2007 and 2010, around fifth of the poor households send the adolescent to work; whereas less than a tenth of the non-poor households do that. For that reason, a lower dependency rate is found in the groups of transient and persistent poor households than in the non-poor ones.

¹⁴ These equivalences of years of schooling with level of educations have been made assuming that there have not been grade repetition; that is which the household head do not failed any grade.

Table 6.2. Descriptive statistics on Peruvian households, according to the poverty categorization - Analysis from 2007 to 2010

VARIABLES	Poor categorization	2007	2008	2009	2010
		Population mean or percentage	Population mean or percentage	Population mean or percentage	Population mean or percentage
1. The household is in the rural area (%)	Non-poor	13,4 (1,30)	13,93 (1,30)	14,66 (1,31)	14,91 (1,31)
	Transient poor	37,13 (2,66)	38,04 (2,67)	38,26 (2,62)	39,31 (2,66)
	Persistent poor	61,03 (2,50)	61,23 (2,47)	61,24 (2,46)	61,83 (2,45)
2. The household does not have at least one basic service (water, electric light, or drain) (%)	Non-poor	15,73 (1,24)	14,61 (1,21)	15,07 (1,23)	13,07 (1,09)
	Transient poor	42,37 (2,57)	41,3 (2,57)	40,45 (2,44)	34,07 (2,30)
	Persistent poor	72,25 (2,31)	70,03 (2,36)	65,98 (2,28)	64,32 (2,35)
3. Age of the household head (mean)	Non-poor	52 (0,56)	53 (0,56)	54 (0,58)	54 (0,56)
	Transient poor	49 (0,63)	50 (0,62)	51 (0,62)	52 (0,63)
	Persistent poor	49 (0,71)	50 (0,71)	50 (0,69)	51 (0,70)
4. The household head is a woman (%)	Non-poor	23,46 (1,67)	24,48 (1,67)	24,59 (1,64)	26,26 (1,66)
	Transient poor	24,88 (2,02)	23,95 (2,03)	24,98 (2,02)	25,78 (2,09)
	Persistent poor	18,06 (1,83)	19,48 (1,83)	20,31 (1,89)	20,5 (1,90)
5. The household head has a native language (%)	Non-poor	18,59 (1,50)	17,27 (1,38)	17,4 (1,45)	17,99 (1,46)
	Transient poor	33,88 (2,22)	34,99 (2,32)	35,48 (2,28)	33,05 (2,15)
	Persistent poor	52,35 (2,05)	54,18 (2,00)	54,12 (2,02)	52,34 (2,05)
6. Household head years of schooling (mean)	Non-poor	9,70 (0,19)	9,71 (0,19)	9,64 (0,18)	9,61 (0,18)
	Transient poor	6,78 (0,21)	6,82 (0,23)	6,74 (0,22)	6,82 (0,21)
	Persistent poor	4,93 (0,15)	4,90 (0,15)	4,85 (0,16)	5,03 (0,16)
7. Household dependency rate	Non-poor	0,31 (0,01)	0,33 (0,01)	0,33 (0,01)	0,35 (0,01)
	Transient poor	0,26 (0,01)	0,27 (0,01)	0,27 (0,01)	0,26 (0,01)
	Persistent poor	0,19 (0,01)	0,21 (0,01)	0,22 (0,01)	0,20 (0,01)
8. The household head has a job (%)	Non-poor	81,47 (1,69)	78,31 (1,81)	80,35 (1,79)	75,52 (1,87)
	Transient poor	88,78 (1,70)	89,39 (1,38)	88,89 (1,66)	89,31 (1,47)
	Persistent poor	94,59 (1,14)	92,41 (1,29)	93,74 (1,12)	93,04 (1,19)

Table 6.2. (...continue)

VARIABLES	Poor categorization	2007		2008		2009	
		Population mean or percentage	Population mean or percentage	Population mean or percentage	Population mean or percentage		
9. The household head is a white collar employee (%)	Non-poor	26,52 (1,81)	24,85 (1,85)	24,16 (1,69)	24,92 (1,81)		
	Transient poor	9,52 (1,63)	8,41 (1,59)	8,26 (1,51)	8,15 (1,44)		
	Persistent poor	1,36 (0,44)	0,94 (0,40)	2,05 (0,63)	2,98 (0,86)		
10. The household head is an independent worker (%)	Non-poor	39,74 (2,06)	39,15 (1,93)	39,11 (1,94)	39,51 (2,02)		
	Transient poor	56,71 (2,63)	53,29 (2,57)	54,89 (2,43)	50,77 (2,44)		
	Persistent poor	69,16 (2,01)	73,53 (1,36)	71,91 (2,09)	72,69 (2,12)		
11. The household head income comes from professional salaries (%)	Non-poor	16,32 (1,53)	15,87 (1,56)	15,82 (1,53)	13,61 (1,43)		
	Transient poor	6,80 (1,40)	4,42 (1,11)	5,79 (1,24)	6,87 (1,37)		
	Persistent poor	0,65 (0,28)	0,77 (0,33)	1,72 (0,60)	2,33 (0,74)		
12. The household head income comes from business (%)	Non-poor	40,34 (2,15)	38,76 (2,02)	39,74 (1,98)	39,95 (1,96)		
	Transient poor	27,36 (2,35)	25,62 (2,35)	28,89 (2,29)	25,82 (2,23)		
	Persistent poor	16,29 (1,82)	16,19 (1,82)	17,55 (1,87)	18,32 (1,88)		
13. The household head income comes from agriculture production (%)	Non-poor	13,26 (1,11)	14,5 (1,19)	14,74 (1,28)	13,64 (1,20)		
	Transient poor	38,48 (2,50)	37,18 (2,50)	35,25 (2,37)	33,88 (2,26)		
	Persistent poor	57,86 (2,08)	62,47 (2,23)	60,47 (2,20)	59,57 (2,30)		
14. Household head income (mean)	Non-poor	884,21 (103,55)	916,74 (77,16)	971,16 (68,07)	955,45 (61,39)		
	Transient poor	281,71 (9,37)	339,16 (11,61)	363,18 (11,17)	425,44 (14,41)		
	Persistent poor	145,08 (5,00)	168,37 (4,61)	182,45 (4,68)	207,77 (5650)		
15. Family income (mean)	Non-poor	2 059,40 (146,59)	2196,494 (135,22)	2327,48 (178,29)	2316,74 (140,10)		
	Transient poor	902,66 (36,20)	1082,07 (44,40)	1123,35 (42,52)	1303,34 (68,89)		
	Persistent poor	579,31 (31,49)	693,09 (34,07)	759,14 (33,70)	800,52 (28,55)		
16. The household head receive remittances or transfers (%)	Non-poor	13,43 (1,42)	12,08 (1,29)	13,81 (1,39)	14,40 (1,48)		
	Transient poor	11,33 (1,40)	8,77 (1,18)	11,7 (1,40)	11,77 (1,58)		
	Persistent poor	10,67 (1,30)	9,99 (1,28)	9,54 (1,30)	8,79 (1,19)		
17. Total amount of remittances and transfers received by the household (mean)	Non-poor	77,72 (10,65)	107,5 (15,35)	92,2 (8,72)	98,98 (13,60)		
	Transient poor	24,79 (4,06)	32,11 (4,60)	26,26 (3,80)	33,17 (4,61)		
	Persistent poor	23,47 (4,35)	36,2 (15,76)	19,60 (3,63)	25,45 (3,74)		

Notes:

1/ The differences in mean or in percentages within the poverty categories (non-poor, transient poor, and persistent poor) which are statistically significant are in bold.

2/ The statistically significant differences across years are in cursive. Only household head income and family income change significantly over time.

3/ These estimations have been obtained taking into account the sample design.

Sources:

National Household Survey (ENAHO), implemented by the National Institute of the Statistic and Informatics (INEI).

Elaboration:

Author's calculations

Continuing with the socioeconomic characteristics, non-poor households have access to an economically and statistically significant income higher than the transient and persistent poor household. They do not obtain higher incomes through the household head work but also from the rest of the household members –in cases where other family member work– and even from the remittances and transferences received from other households –making comparisons among remittances households’ recipients (see table 6.2). This finding explain the previous result, since persistent poor households obtain lower incomes than the transient poor ones, and the latter ones, in turns, perceive lower incomes than the non-poor households; then the former group of households needs to have more family members working, than the second one, and the second one, in the same way, present lower dependency rate than the third one. Likewise, it is probably that a significant share of the non-poor households, whose household head are unemployed, would be recipients of remittances and transferences.

Some of the reasons why non-poor households have access to a higher income coming from household head work compare to the transient and persistent poor ones, is because the type and modality of work performed by the household head. For instance, there is a high percentage of white collar workers in non poor households than in the poor ones. Specifically, around in one quarter of non-poor households, in less than a tenth of the transient poor households, and around in a fiftieth of persistent poor households, the household head is a white collar employee. Meanwhile, an opposite trend is observed when it is analyzed the distribution of household head which work independently. That is, the higher proportion of them is concentrated in persistent poor households. In the same way, it is observed that a higher percentage non-poor households perceives income from professional salaries and mainly from business, while in transient and mainly in persistent poor households, income generally come from agriculture activities (see table 6.2).

Finally, it is observed that poverty is highly concentrated in rural areas, especially persistent poverty. Indeed around 60% of the persistent poor households, 40% of the transient poor households, and 15% of the persistent poor households are located in rural

areas. Additionally, although, in some extent is expectable that persistent and even transient poor households have problems of lack of access to basic services –such as: water, sewer and electricity–, it is astonishing that even households categorized as non-poor face shortness of at least one basic service as well (see table 6.2).

6.3. Trigger events of poverty transitions: A bivariate analysis

The aim of this headland is twofold. On the one hand, to show the year-on-year poverty exit rates and poverty entry rates; and on the other hand, to perform a bivariate analysis relating shocks (called here trigger events) with poverty exits and entries. This analysis will provide evidence on poverty transitions in time, at national level and broken down by area residence (i.e. urban and rural). Additionally, through the bivariate analysis it will be possible to identify the main trigger events of poverty transitions at national level.

Table 6.3. Poverty exit and entry rates, by year, at national, urban and rural level.

	National	Urban	Rural
<i>Exit rate</i>			
2008	28,59	40,00	22,73
2009	28,82	37,26	24,31
2010	32,93	43,65	32,51
<i>Entry rate</i>			
2008	14,95	10,98	24,43
2009	15,08	10,02	28,09
2010	12,10	7,92	20,12
<i>Average Poverty exit rate</i>	30,11	40,30	26,52
<i>Average Poverty entry rate</i>	14,04	9,64	24,21

Source:

National Household Survey (ENAHO), implemented by the National Institute of the Statistic and Informatics (INEI).

Elaboration:

Author's calculations

According to what is shown in table 6.3, in the last years the exit poverty rates has been higher than the entry poverty rates. In fact, the average poverty exit rate was 30%; which means that around a third of the households which were poor one year were no longer poor the next year. Whilst the average poverty entry rate was around a half of the average poverty exit rate; that is, only 14% of the household which were classified as non-poor one year, get into the poverty the next year. However, it should be born in mind that since the share of non-poor household in a specific year is considerable higher than the share of poor

households; the difference in absolute numbers between poverty entry and exit is not that much as in relative terms.

Table 6.4. Percentage of poverty exits and poverty entries, by main trigger events

Main trigger events	2008	2009	2010
<i>Associated with poverty exit</i>			
A rise in money income from the head of household	79,42 (2,94)	72,67 (3,42)	77,17 (2,85)
A rise in money income from the rest of the household	69,22 (3,29)	55,97 (3,72)	58,66 (3,09)
A rise in remittances and transfers received by the household	19,83 (2,99)	17,03 (2,81)	19,6 (2,86)
The head of household recovers from a illness or other health problem	5,05 (1,53)	6,15 (1,88)	5,98 (1,52)
The head of household gets a job	5,04 (1,87)	8,55 (2,67)	4,62 (1,66)
<i>Associated with poverty entry</i>			
A drop in money income from the head of household	48,66 (3,94)	60,33 (3,69)	55,08 (4,46)
A drop in money income from the rest of the household	42,45 (3,96)	47,24 (3,82)	49,98 (4,44)
A drop in remittances and transfers received by the household	18,07 (3,02)	16,18 (2,98)	18,92 (3,35)
A new integrant of the household	19,86 (3,19)	24,72 (3,21)	19,37 (3,55)
The birth of a baby	18,64 (3,27)	31,75 (3,53)	24,73 (3,94)
The head of household presents an illness or other health problem	12,32 (2,88)	6,47 (1,78)	3,72 (1,52)
The head of household loses his job	9,87 (2,82)	4,35 (1,72)	6,08 (2,19)

Notes:

1/ The figures in bold indicate that there is a statistically significant difference between the percentage of household which exit from poverty and the percentage of household which do not manage to get out from poverty due to the specific trigger event analyzed. The same logic applies in the analysis of the main trigger events associated with poverty entry rates.

2/ These estimations have been obtained taking into account the sample design.

Sources:

National Household Survey (ENAH0), implemented by the National Institute of the Statistic and Informatics (INEI).

Elaboration:

Author's calculations

Additionally, a slightly rise in poverty exit rates and a drop in poverty entry rates seem to be observed through the time; and at national, urban and rural level. Indeed, the rise in the national exit poverty rate would have been mainly leaded by the rise in the rural poverty

exit rate. Likewise, other interesting result is the difference between the urban and the rural area. As is displayed in table 6.3, the poverty exit rates are considerable higher in the urban area; that is 40% versus 27%, respectively. Meanwhile, the poverty entry rates are more than twice higher in rural area than in the urban area; that is 24% versus 10%, respectively.

On the other hand, in table 6.4 are shown how poverty exit and entry vary according to different shocks face by Peruvian households. These main trigger events have been considered based on our theoretical framework and the data availability. The shocks consider in this work are: income, employment, health and demographic shocks. Regarding the latter ones in this study only has been considered the birth of a baby and the increase in the number of household members. Other important events mentioned by the literature are the changes in the family structure; however, in the Peruvian case, as was previously mentioned, those events –such: wife or a child becoming a household head– are not meaningful.

The most remarkable result obtained from table 6.4 is which poverty exits and poverty entries are mostly associated to income shocks¹⁵, and mainly to the incomes coming from the household head earnings. Also, poverty exits are more sensible to income shocks than the poverty entries. In fact, around in third quarters of the household which get out from poverty, the household head' income have experienced an increment of at least 10%; while in around a half of households which get into the poverty, the household head' income experienced a drop of at least 10%. The relative importance of income to determine movements into and out of poverty has remained through the time.

Other frequently shocks have been variations in the amount of remittances and transferences perceived by the households, an increment in the number of family members and the birth of a baby, while less frequently shocks have been health problems (such: sickness, accident, and so forth) and the variation in the employment status. The interesting fact is that all these factors have been presented in the same extent –i.e. they have been

¹⁵ As it was mentioned in the methodology section, poverty rates used in this study are constructed based on consumption expenditure.

evenly distributed— among the households which get out from poverty and the ones which not —when poverty exit is analyzed— and among the household which get into the poverty and the ones which not —when poverty entry is analyzed—. Put another way, the bivariate analysis regarding the main trigger events of poverty transitions seems to indicate that the following shocks: variations in the amount of remittances and transferences perceived by the households, the increment in the number of family members and the birth of a baby, are not specifically associated to poverty exits or entries.

7. REGRESSION RESULTS

In the present section, I will present the regressions results based on the strategy outlined in the methodology section. Three models have been run because the final model hides important interactions between the explanatory variables and between them and the dependent variable. The estimated marginal effects of the three ordered probit models are presented in table 7.1. It is important to mention that although some variables included in the multivariate models are not necessarily statistically significant, their inclusion is theoretically justified; and in most of the cases contributes to a better model fit. Also, it should be mentioned that the marginal effects have been estimated taking into account the mean values —in cases in which they are continuous— and the more frequent category —in cases in which they are categorical— of the independent variables (last column headed fixed values in table 7.1).

Looking at the results from the three models, first, it may be concluded that given the independent variables considered in this study, there are no evidence that the factors related to poverty can be classified or exhaustively split on the ones that explain persistent poverty and the ones that explain transient poverty. Instead of that, what it is observed is that some variables which were identified as non time-varying in section 6.2 now, in the multivariate analysis, present a stronger effect on being never poor and on being persistently poor than on transient poverty. Also, the extent in which a household possess a specific characteristic (i.e. the absence, lack or abundance) matter for being classified as non-poor, transient poor or chronic poor.

Regarding the factors which do not vary as time passes –also called structural factors–, the ones which show effects statistically significant on the dependent variable are: variables related to the household location (i.e. rural, highland and jungle), variables related to demographic characteristics (sex, age and mother tongue of the household head, and the household dependency rate), educational background of the household head (approximated by the years of schooling), working modality (i.e. working as an independent worker, against otherwise), economic sector (i.e. receiving income from agricultural production against otherwise), and the average income of the 4 years analyzed (as an approximation of the permanent income –or the smoothed component) . Meanwhile, among the factors which are time-varying, including the idiosyncratic shocks, the ones which result statistically significant to explain the dependent variable are: the number of years which the household is receiving a remittances and transferences, the standard deviation (across the years) of the amount of remittances and transferences received by the household, the standard deviation (across years) of the household head income, and the lack of basic services (measured as the number of years which the household has not access to at least one of the following services: water, sewer and electricity). As may be observed from the output regressions, structural factors more strongly affect the category of persistent poverty, while the time varying factors more strongly affect the category of transient poverty.

Tabla 7.1. Estimated marginal effects corresponding to the ordered probit model

VARIABLES	Model 1			Model 2			Model 3			Fixed values ^{1/}
	Never poor	Transient poverty	Persistent poverty	Never poor	Transient poverty	Persistent poverty	Never poor	Transient poverty	Persistent poverty	
Rural area	-0,080 ** (0,03)	0,027 ** (0,01)	0,052 ** (0,02)	-0,031 (0,03)	0,008 (0,01)	0,024 (0,02)	0,163 *** (0,03)	-0,140 *** (0,02)	-0,024 *** (0,01)	0
Highland	-0,282 *** (0,02)	0,039 * (0,02)	0,242 *** (0,02)	-0,249 *** (0,02)	-0,006 (0,02)	0,255 *** (0,02)	-0,104 *** (0,03)	0,078 *** (0,02)	0,025 ** (0,01)	0
Jungle	-0,095 *** (0,03)	0,031 *** (0,01)	0,064 ** (0,02)	-0,073 ** (0,03)	0,015 * (0,01)	0,058 ** (0,02)	0,031 (0,03)	-0,025 (0,02)	-0,006 (0,01)	0
Gender of the head of the household (1 = man)	-0,082 ** (0,03)	0,038 ** (0,01)	0,045 ** (0,01)	-0,071 * (0,03)	0,024 * (0,01)	0,048 ** (0,02)	-0,027 (0,03)	0,022 (0,02)	0,005 (0,01)	1
The mother tongue of the head of the household is the native language	-0,122 *** (0,02)	0,038 *** (0,01)	0,085 *** (0,02)	-0,116 *** (0,02)	0,018 * (0,01)	0,098 *** (0,02)	-0,090 *** (0,03)	0,068 *** (0,02)	0,021 ** (0,01)	0
Age of the head of the household (mean across time)	0,011 *** (0,00)	-0,004 *** (0,00)	-0,007 *** (0,00)	0,011 *** (0,00)	-0,003 (0,00)	-0,008 *** (0,00)	0,002 * (0,00)	-0,002 * (0,00)	-0,0005 * (0,00)	51
Head of the household years of schooling (mean across time)	0,051 *** (0,00)	-0,020 *** (0,00)	-0,030 *** (0,00)	0,050 *** (0,00)	-0,014 (0,01)	-0,036 *** (0,00)	0,014 *** (0,00)	-0,011 *** (0,00)	-0,003 ** (0,00)	7
Dependency rate (mean across time)	-0,155 * (0,06)	0,062 * (0,03)	0,093 * (0,04)	-0,170 ** (0,06)	0,046 (0,03)	0,124 ** (0,04)	0,128 (0,06)	-0,102 (0,05)	-0,026 (0,01)	0,26
Number of years the household has faced health problems	0,003 (0,01)	-0,001 (0,00)	-0,002 (0,01)	0,003 (0,01)	-0,001 (0,00)	-0,002 (0,01)	0,016 (0,01)	-0,013 (0,01)	-0,003 (0,00)	0
Number of years the head of the household is unemployed	-0,007 (0,01)	0,003 (0,01)	0,004 (0,01)	-0,006 (0,01)	0,002 (0,00)	0,004 (0,01)	0,011 (0,02)	-0,009 (0,01)	-0,002 (0,00)	4
Number of years receiving remittances or transfers by the household	0,020 (0,02)	-0,008 (0,01)	-0,012 (0,01)	0,023 (0,01)	-0,006 (0,01)	-0,017 (0,01)	0,055 *** (0,02)	-0,044 *** (0,01)	-0,011 ** (0,00)	0
Amount of remittances and transfers (mean across time)	0,00003 (0,00)	-0,00001 (0,00)	-0,00002 (0,00)	0,00002 (0,00)	0,00000 (0,00)	-0,00001 (0,00)	-0,00054 (0,00)	0,00044 (0,00)	0,00011 (0,00)	0
Standard Deviation of remittances and transfers (across time)	0,00056 * (0,00)	-0,00023 * (0,00)	-0,00034 * (0,00)	0,000557 * (0,00)	-0,00015 (0,00)	-0,00041 * (0,00)	0,00061 * (0,00)	-0,00049 * (0,00)	-0,00012 * (0,00)	0
Number of years without at least one basic service							-0,0371 *** (0,01)	0,0297 *** (0,01)	0,0074 *** (0,00)	0
Household income (mean across time)							0,003 *** (0,00)	-0,002 *** (0,00)	-0,001 *** (0,00)	500
Standard Deviation of household income (across time)							-0,001 *** (0,00)	0,001 *** (0,00)	0,000 *** (0,00)	200
The head of the household earnings come from agriculture				-0,114 *** (0,03)	0,041 *** (0,01)	0,073 *** (0,02)	0,023 (0,03)	-0,018 (0,03)	-0,005 (0,01)	1
The head of the household is an independent worker	-0,095 *** (0,02)	0,044 *** (0,01)	0,051 *** (0,01)	-0,062 * (0,02)	0,020 * (0,01)	0,042 ** (0,02)	0,012 (0,03)	-0,009 (0,02)	-0,002 (0,01)	1
Conditional probability	0,53	0,32	0,15	0,44	0,35	0,21	0,67	0,30	0,03	
Likelihood ratio test (LR)		1046,34			1059,93			2161,67		
Prob>LR		0,00			0,00			0,00		

Notes:

Standard errors of the estimates are reported in parentheses.

Among the variables related to the household location, it is observed that living in rural, highland or the jungle highly increase the probability of being persistently poor (considerable more than being transient poor) and greatly reduce the probability of being non-poor (see model 1). However, an interesting fact is that the rural effect disappears (and the highland effect become weaker) when the effect of the agricultural production (specifically, if household head income comes from the agricultural sector) is considered (see model 2). Even more, after including information on income variability and basic service availability, a change in the direction of the rural effect and the jungle effect is experienced (see model 3). Such finding reflect that the fact that persistent poor household are concentrated in rural, the jungle and the highland areas is mainly due to main economic activity performed by the population (agriculture), the high variability of incomes, and the lack of access to the basic services. Also, it may be seen that the variables related to the household location mainly determine persistent poverty, while their effect on transient poverty is considerably lower.

Regarding the educational background, in model 1 and 2, this variable affects stronger the categories of being non-poor and being persistent poor compare to its effect on transient poverty. That finding indicates that highly qualified people have higher probabilities of being non poor while unskilled people have higher probabilities of remain poor in the long-run. In model 3, after control by income level and variability, the magnitude of the years of schooling effect is stronger to explain “non-poverty” and transient poverty compare to the effect on persistent poverty. That may be implying that while education is highly important to determine income among the persistent poor, the income generated by the transient poor and the non-poor are not only function of the skill labor but also of other factors. For that reason, after income information is controlled, the educational background effect on persistent poverty diminishes considerably, while the effect on transient poverty is hardly reduced.

Another interesting result due to the estimation of the net effects, through the multivariate model, is concerning the demographic characteristics effects. After controlling for other important factors, the effect of the sex and the age of the household head, and of the

household dependency ratio on the dependent variable change, compared to the results obtained from the bivariate analysis (see section 6.2). Specifically, the effect of sex and age variables becomes statistically significant, and the direction of the household dependency rate effect changes. Actually, the only demographic characteristic whose effect direction and statistical significance are maintained (compared to the bivariate analysis) is the mother tongue of the household head.

Being a woman highly increases the probability of being never poor and decreases the probabilities of being transiently and persistently poor (see models 1 and 2). This finding may be attributed to the fact that in households where women become a household head is mainly because their earnings are higher than men's earnings and because their contribution represents a higher share of the household budget. For that reason after including information on income the sex effects disappear (model 3). Likewise, the negative relation of the household dependency rate with being non-poor and its positive relation with being transiently and persistently poor disappear after control by income of the household head.

On the other hand, getting older seems to be associated with a higher probability of being non-poor while being a young household head is associated with higher probabilities of being transient and (especially) persistent poor (see models 1, 2 and 3). In rural area, the percentage of young parents used to be considerable higher than in urban area; and because of this fact young parents interrupt their studies to start taking part of the labor market. However, the age effect remains statistically significant even after controlling for education, rural location, and income level; albeit its magnitude diminishes after include the latter variable. Thereby, it should be other explanatory factors behind the age effect on poverty which are not being considered in this study (e.g. labor experience, networking, among others).

According to the theory and international evidence, it was expected that idiosyncratic shocks affecting employment, health, income, and family structure determine a pattern of getting into and out regularly from poverty. However, after bivariate and multivariate analysis were performed few evidence of those effects are found in Peru. Indeed, the most

remarkable result is that poverty transitions are basically explained by income factors, such the regularity and frequency in which remittances are received, the level of the household head income, and the remittances and income variability (across time). These variables together with the household access to basic services present a higher marginal effect on being transient poor than on being persistent poor. On the other hand, the fact that shocks of employment and health have not an impact on poverty transitions in Peru, means that the main problem in Peru are not the lack of employment, becoming sick or having an accident, but it is the low levels and high variability of income. That is because the underemployment is highly significant in Peru and that information are hidden in employment figures. This fact can be seen just partially in this study through the inclusion of the variable independent worker, since a significant part of the unemployment is represented by the independent work modality. Put another way, Peruvians have to self-generate their own employment to fight against poverty; and generally this kind of employment produces low and unstable earnings.

8. CONCLUDING REMARKS AND IMPLICATIONS FOR RESEARCH AND PUBLIC POLICY

The paper was initially motivated by a controversial finding of Chacaltana (2006) regarding the real poverty magnitude in Peru and its evolution during 1998 until 2004¹⁶. While other studies regarding poverty evolution and pro-poor growth in Peru have been more optimistic, the mentioned study was noteworthy for demonstrating that the conventional way of analyzing poverty was hiding important information on Peruvian poverty nature. Specifically, that the real poverty magnitude was considerable higher than the figures commonly published, and that the total poverty (chronic and transient) had just reduced from 61 to 60%, between the following four-wave periods: 1998-2001 and 2001-2004.

After expanding the analysis for six more years, this work has found that the poverty trend in Peru has considerably reduced since 1998 until 2008, whether a static or dynamic

¹⁶ It is important to mention that this study was based on a World Bank's (2005) report on Peruvian poverty, which performed a poverty dynamic analysis with three-wave panel data, from 1997 to 1999.

poverty approach is performed. Also, it has been confirmed that the former approach considerably underestimates the real magnitude of poverty and it does not distinguish among the different types of poverty: persistent and transient. The calculations made in this study show that, at the national level, the transient poverty diminished from 30% to 26%, while the persistent poverty decreased from 38% to 29%, comparing the estimations obtained in the period 1998 to 2001 with the ones corresponding to the period 2007 to 2010.

The fact that persistent and transient poverty did not meaningfully drop between the following four-wave periods: 1998-2001 and 2002-2006, seems to indicate that the sensitivity of poverty to economic growth is highly weak in the short to medium run. Put another way, given the considerable economic growth experienced in the last decade, it might be inferred that the pro-poor growth in Peru is mainly a long-run outcome, since transient and persistent poverty significantly decreased taking into account a longer time interval: 1998-2001 and 2007-2010. Furthermore, based on the contextual analysis made in section 2, the slow poverty response to the economic growth might be attributed to the economic growth model based on commodities exports (mainly from the mining sector, which is capital intensive), to the not despicable economic growth volatility (which affects economic agents' decision), and the main productive structure in different regions within the country

The discrepancies between the static and dynamic approach regarding the magnitude of poverty, are evidence that in Peru there is a quite significant movement into and out of poverty. Thus, the estimated transient poverty in Peru, between 2007 and 2010, was around 26%; the average year-to-year poverty entry rate was 14%; and the average year-to-year poverty exit rate was 30%¹⁷. The disturbing implication is that a considerable share of our population would be being overlooked by the social policy, just because they would be erroneously considered as non-poor –by official statistics based on cross-section poverty measures. Thus, given the additional evidence provided by the present study, Peruvian

¹⁷ As was mentioned in section 6.3, the denominators of the poverty entry and exit rates are not the entire population, but the population in risk of becoming poor, and in risk of becoming non-poor, respectively.

government should start adapting the anti-poverty policy to include transient poor as part of their target population. Even more, the public policy should also consider that urban and rural areas face different poverty problems. Whilst transient poverty is more common in urban areas (24%, during 2007 to 2010); in the rural ones persistent poverty (48%, during 2007 to 2010) is the main problem.

Opposite to other studies, the multivariate analysis reflects the fact that variables which determine poverty are in turn associated to both transient and persistent poverty. That is, this study has not found evidence that a group of factors exclusively explain one poverty type or the other. Instead of that, it has found that the not time-varying variables (the ones which only vary across individuals) are more strongly related to being never poor and to being persistently poor; meanwhile shocks have been more strongly related to transient poverty. Among the variables which do not vary as times passes (also called structural factors) are: household location (rural, highland, and jungle), the educational background of the household head, demographic characteristics (age, sex, and mother tongue of the household head, and household dependency rate), working modality (independent work vs. otherwise), and the economic sector where the household head income comes from (agriculture vs. otherwise). Whereas the shocks identified as main trigger events of poverty transitions in this study are: the number of years which the household is receiving remittances and transferences, the standard deviation (across the years) of the amount of remittances, and transferences received by the household, the standard deviation (across years) of the household head income, and the number of years in which the household faces a lack of at least one basic service (water, sewer, or electricity).

It is important to highlight that poverty transitions in Peru are mainly explained by income levels and variability, and by the remittance frequency. Likewise, poverty in the rural area, the highland, and the jungle, are considerably attributed to the fact that the income of the household heads comes mainly from agricultural production, and also to the low and high variability of such incomes. On the other hand, the unemployment shocks as well as the health shocks did not result statistically significant to explain poverty transitions (not with the bivariate or the multivariate analyses).

As official figures show, Peru presents the lowest unemployment rate among the Latino-American countries, and in the last years that variable has followed a decreasing trend, even after the North-American economic crisis. However, the unemployment rates in Peru hide a key issue which is related to the massive presence of self-employment generation among the poor people. Thus, whether they are considered as part of the employed population, the real fact is that their jobs are quite unstable, as well as their incomes. In this regard, with the aim of better explaining the relationship between employment shocks and poverty transitions, more rich information regarding the market labor (especially on underemployment) should be incorporated to the panel data component of the household national survey¹⁸.

Although the economic growth model meaningfully determines the speed at which poverty is reduced, the social policy efficiency plays a key role in helping poor people escape from poverty. In that sense, the government endeavor not should only be directed to increase social expenditure (since it is insufficient and among the lowest in Latin-America) but also to rise the economic efficiency of the public institutions (because of the waste of resources and the low outcomes). Thus, a numberless of reforms in this matter are imperative since as it has been observed in this study the average years of schooling of Peruvian household heads are dramatically low (5, 7, and 9 for those who came from persistent, transient, and non-poor households, respectively). In the same way, it is surprising that even non-poor households face lack of at least one basic service. Even when the state has granted in concession the management of their provisions (water, sewer, and electricity), as part of its regulatory function the state should guarantee a higher coverage.

It is important to add that, the intention of this study is not to say that official statistics or cross sectional data analysis are not valid. Instead, this paper highlights that dynamic analysis shows important information which a static analysis hides; such as the different poor profiles, especially because a significant share of poor are transient. Put another way, a contention of this study is that the anti-poverty policy should not be entirely guided by

¹⁸ Other information either included –in the panel data component of the Household National Survey– has been the household assets possessions, variable which is meant to be significantly related with poverty.

figures of static measures of poverty, assuming that there is only one type of poor, otherwise policy based on targeting methods may wind up in unfruitful endeavors.

Finally, better and wider longitudinal data should be collected by the Peruvian official institution to encourage the production of studies on poverty dynamics and trigger events of poverty transitions. Likewise, in order to be more specific and precise in the policy design, more micro-analysis should be implemented. That is, accessing to, and analyzing the information regarding the functioning of the different markets (e.g. labor and health markets) must be the next step to offer a more complete explanation on the relationship between them and transient and persistent poverty.

REFERENCES

- Aramburú, C. (2010). *Informe Compilatorio: El programa Juntos, resultados y retos*. [Compilation report: Juntos program, outcomes and challenges]. Lima: Presidencia del Consejo de Ministros.
- Aparicio, C., Jaramillo, M. and San Román, C. (2011). “Desarrollo de la infraestructura y reducción de la pobreza: el caso Peruano”. [Infrastructure development and poverty reduction: The Peruvian case]. Lima: Consorcio de Investigación Económica y Social (CIES) - Universidad del Pacífico (UP).
- Attanasio, O. and Székely, M. (2001). *Portrait of the poor. An assets-based approach*, Washington: Interamerican Development Bank.
- Baulch, B. and Hoddinott, J. (2000). “Economic mobility and poverty dynamics in developing countries”, In Baulch B. and J. Hoddinott (Eds.), *Economic mobility and poverty dynamics in developing countries*. (pp. 1-24) Frank Cass Publishers.
- Baulch, B. and McCulloch, J. (1998). “Being poor and becoming poor: Poverty status and poverty transitions in rural Pakistan”, Institute of Development Studies, wp. No. 79.
- Castro, J. (2006). “Política Fiscal y Gasto Social en el Perú: Cuánto se ha avanzado y qué más se puede hacer para reducir la vulnerabilidad de los hogares”. [Fiscal policy and social expenditure in Peru: How much progress has been made and what more can be done to reduce the vulnerability of households]. Lima: Universidad del Pacífico.
- Barrera, C. (2009). “Ciclos sectoriales de los negocios en el Perú e indicadores anticipados para el crecimiento del PBI no primario”. [Sectoral business cycles in Peru and leading indicators for non-primary GDP growth]. Lima: Central Reserve Bank of Peru, wp. 2009-013.
- Becker, W. and Kennedy, P. (1992). “A graphical exposition of the ordered probit”, *Econometric Theory*, Vol. 8, No. 1, pp. 127-131.
- Blades, D. (1974). “Subsistence activities in the national accounts of developing countries with special reference to Latin America”, OECD Development Centre.
- Chacaltana, J. (2006) “¿Se puede prevenir la pobreza?: hacia la construcción de una red de protección de los activos productivos en el Perú”. [Can poverty be prevented? Towards the protection of the productive assets in Peru]. Lima: Consorcio de Investigación Económica y Social (CIES).
- Dancourt, O. and Mendoza, W. (2010). “Recesión de 2008-2009: lecciones de política macroeconómica”. [Economic recession from 2008 to 2009: lessons for macroeconomic policy]. Lima: Consorcio de Investigación Económica y Social (CIES) - Pontificia Universidad Católica of Peru.
- Daykin, A. and Moffat P. (2002). “Analyzing ordered responses: A review of the ordered probit model”, *Understanding Statistics*, I (3), 157-166.
- Del Pozo, C. and Guzmán, E. (2011). “Efectos de las transferencias monetarias condicionadas en la inversión productiva de los hogares rurales en el Perú”. [Effects of conditional cash transfers on productive investment of rural households in Peru]. Lima: Consorcio de Investigación Económica y Social (CIES).
- Duclos, J. Y. and Araar, A. (2006). *Poverty and equity. Measurement, policy, and estimation with DAD*, International Development Research Centre, Vol. 2, Chapter 1: Well being and poverty.
- Escobal, J. (2007). “La agricultura peruana frente al TLC: ¿oportunidad o maldición?”. [Peruvian agriculture and the Free Trade Agreement: Opportunity or curse]. Lima: Consorcio de Investigación Económica y Social (CIES) - Grupo de Análisis para el Desarrollo (GRADE).

- Foster, J., Greer, J., and Thorbecke E. (1984). "A class of decomposable poverty measures", *Econometrica*, Vol. 52, No. 3.
- Francke, P. and Iguíñiz J. (2006). "Crecimiento pro-pobre en el Perú". [Pro-poor growth in Peru]. Lima: Pontificia Universidad Católica del Perú.
- García, J. and Céspedes, N. (2011). "Pobreza y crecimiento económico: tendencias durante la década del 2000". [Poverty and economic growth: Trend during the decade of 2000]. Lima: Central Reserve Bank of Peru, wp. 2011-021.
- Gordon, D., Levitas, R., Pantazis, C., Patsios, D., Payne, S., Townsend, P., Adelman, L., Ashworth, K., Middleton, S., Bradshaw, J., and Williams, J. (2000). *Poverty and social exclusion in Britain*, Townsend Centre for International Poverty Research, University of Bristol; Centre for Research in Social Policy, Loughborough University; and Social Policy Research Unit, University of York.
- Grant, U. and Marcus, R. (2009). *Chronic poverty and PRSPs. A desk study*, Chronic Poverty Research Centre, Background Paper for the Chronic Poverty Report 2008-2009.
- Greene, W. H. (1999). *Análisis econométrico*. Tercera Edición. Traducción de: *Econometric Analysis*, third edition. Prentice Hall Inc. 1998.
- Günther, I. and Klasen, S. (2007). "Measuring chronic non-income poverty", Chronic Poverty Research Centre, wp. No. 79.
- Instituto Nacional de Estadística e Informática del Perú (INEI)
- (2001). "Perú: Estimaciones y proyecciones de población 1950 – 2050, urbana - rural 1970 - 2025". [Peru: Population estimates and projections, from 1950 to 2050. Urban - Rural 1970 - 2025]. Boletín de Análisis Demográfico No. 35. Lima.
- (2010). "Informe técnico. Evolución de la pobreza al 2009" [Technical report: poverty evolution at 2009]. Lima
- Herrera, J. and Roubaud, F. (2002). "La Pobreza en el Perú, 2003. Advertencia sobre cambios metodológicos". [Poverty in Peru, 2003. Caveats on methodological changes]. Cited in World Bank's (2005) study. Lima: Institut de Recherche pour le Développement (IRD) - INEI
- Jalan, J. and Ravallion, M. (1998). "Transient poverty in post-reform rural China", *Journal of Comparative Economics* 26, 338-357.
- Jenkins, S. and Rigg, J. (2001). *The dynamics of poverty in Britain*, Department for Work and Pensions, Research Report 157, Leeds: Corporate Document Services.
- Kakwani, N. and Silber, J. (2007). *The many dimensions of poverty*, New York: United Nations Development Program.
- Kraay, A. (2005). "When is growth pro-poor? Evidence from a panel of countries", *Journal of Development Economics*, 80, 198 - 227.
- Lavado, P. (2007). "Desigualdad en los programas sociales en el Perú". [Inequality in Peruvian social programs]. Lima: Consorcio de Investigación Económica y Social (CIES) - The World Bank.
- Lora, E. (2001). "Las reformas estructurales en América Latina: Qué se ha reformado y cómo medirlo". [Structural reforms in Latin-America: What has been reformed and how to measure?]. Lima: Inter-American Development Bank, wp. No. 348.
- Mendoza, W. (2008). "Balance de la economía peruana 2007, perspectivas al 2008". [Balance of the Peruvian economy at 2007, and prospects for 2008]. Lima: Consorcio de Investigación Económica y Social (CIES).
- Mendoza, W. and Florián, D. (2002). "Perú, 1950-2001: Crecimiento en una economía abierta". [Peru, 1950-2001: Growth of an open economy]. Lima: Consorcio de Investigación Económica y Social (CIES) - Pontificia Universidad Católica del Perú (PUCP).

Mendoza, W. and García, J. (2006). “Perú, 2001 - 2005: Crecimiento económico y pobreza”. [Peru, 2001-2005: Economic growth and poverty]. Documento de trabajo No.250. Lima: Pontificia Universidad Católica del Perú.

MINISTERIO DE ECONOMÍA Y FINANZAS (MEF)

(2005a) “El Gasto Público Social en el Perú: Taxonomía, definiciones y opciones de política”. [The Public Social Expenditures in Peru: Taxonomy, definitions and policy options]. Lima: Dirección General de Asuntos Económicos y Sociales.

(2005b) “Boletín de Transparencia Macrosocial No. 1”. [Bulletin of social transparency No. 1]. Lima: Dirección General de Asuntos Económicos y Sociales.

(2010) *Marco Macroeconómico Multianual Revisado 2011 - 2013*. [Multiannual Macroeconomic Framework Revised 2011 - 2013]. Lima: Approved in Dirección de Consejo de Ministros of August, 25th of 2010, (Updated to August, 2010).

Monge, A. and Winkelried, D. (2010). “Dinámica en la demanda por programas sociales en el Perú”. [Demand Dynamics for social programs in Peru]. Lima: Consorcio de Investigación Económica y Social (CIES) - MACROCONSULT.

Perova, E. and Vakis, R. (2011). “Más tiempo en el programa, mejores resultados: Duración e impactos del programa JUNTOS en el Perú”. [More time at the program, better results: Duration and impacts of the JUNTOS program in Peru]. Lima: The World Bank and JUNTOS.

Ponce, C. (2010). “Pobreza y demografía: una visión de mediano plazo”. [Poverty and demographics: A medium run view]. Lima: Consorcio de Investigación Económica y Social - GRADE.

INTERNATIONAL LABOUR ORGANIZATION (ILO).

(2004). *Panorama Laboral 2004. América Latina y el Caribe*. [Employment Outlook 2004. Latin America and the Caribbean]. Lima: OIT / Oficina Regional para América Latina y el Caribe, 2004.

(2009). *Panorama Laboral 2009. América Latina y el Caribe*. [Employment Outlook 2009. Latin America and the Caribbean] Lima: OIT / Oficina Regional para América Latina y el Caribe, 2009. 122 p.

Ravallion, M. (1992). “Poverty Comparisons. A Guide to Concept and Methods”, Living Standards Measurement Study, wp. No. 88.

Sen, A. (1976). “An ordinal approach to measurement”, *Econometrica*, Vol. 44, No. 2, pp. 219-231.

Sen, A. (1979). “Personal utilities and public judgements: Or What’s wrong with welfare economics”, *The Economic Journal*, Vol. 89, No. 355, pp. 537-558.

Smith, N. and Middleton, S. (2007). *A review of poverty Dynamics Research in the UK*, Centre for Research in Social Policy, Loughborough University.

Tam, M. (2007). “Una aproximación a la eficiencia técnica del gasto público en educación en las regiones del Perú”. [An approximation to the technical efficiency in public spending in education in the regions of Peru]. Lima: Consorcio de Investigación Económica y Social (CIES) - Universidad Nacional de Trujillo.

De Tello, M. (2008). *Barreras no arancelarias y protección externa e interna de los productos transables agropecuarios: el caso del Perú, 2000-2008*. [Non-tariff barriers and external and internal protection of agricultural tradables: The case of Peru]. Lima: Consorcio de Investigación Económica y Social (CIES) - Programa Comercio y Pobreza en Latino-América (COPLA).

UNICEF and APOYO Institute (2006). *El Gasto Social en el Perú 2000 – 2005*. [Social Expenditure in Peru 2000 - 2005]. Lima: UNICEF – APOYO Institute.

- UNITED NATIONS (2010). *Gasto Social: Modelo de Medición y Análisis para América Latina y el Caribe*. [Social Expenditure: Measurement Model and Analysis for Latin America and the Caribbean]. (Au. Martínez R. and M. Collinao), Manuales, Serie, No. 65. Chile: Dirección de Desarrollo Social.
- WORLD BANK (2005). *Opportunities for All. Peru Poverty Assessment*, Poverty Reduction and Economic Management Sector Unit – Latin American and Caribbean Region, report No. 29825-PE.
- Wooldridge, J. M. (2002). *Econometric Analysis of Cross Section and Panel Data*. The MIT Press.
- Yaqub, S. (2000). “Poverty Dynamics in Developing Countries”, Institute of Development Studies, Development Bibliography 16, University of Sussex.

APPENDIX 1

THE SAMPLE

Table A.1. Households Sample in each panel

Level	1998 - 2001	2002 - 2006 ^{1/}	2007 - 2010
Urban	684	2053	1573
Rural	504	1089	988
National	1188	3142	2561

Notes:

1/ Year 2003 is excluded due to the excessive missing data.

Source:

National Household Survey (ENAHO), implemented by National Institute of the Statistic and Informatics (INEI).

Elaboration:

Own elaboration

APPENDIX 2

DISCREPANCIES BETWEEN POVERTY RATES ESTIMATIONS FROM BOTH
DATABASE: PANEL DATA AND CROSS SECTION DATA

Table A.2. Point-in-time Poverty Rates and annual Poverty lines

Year	Panel data		Cross section data ^{1/}	Absolute (monthly) Poverty line	Absolute (monthly) Poverty line
	Weighted	Unweighted		(S/.) ^{2/}	(US\$.) ^{3/}
1998	37,20	40,55	42,4	n.a.	-
1999	40,97	41,78	47,5	n.a.	-
2000	47,25	43,84	48,4	n.a.	-
2001	47,37	51,65	54,8	205,2	58,5
2002	50,15	51,18	54,3	210,6	59,9
2003	na ^{4/}	na ^{4/}	52,2	211,8	60,9
2004	44,26	44,22	48,6	215,7	63,2
2005	42,43	42,28	48,7	222,2	67,4
2006	39,2	38,65	44,5	226,0	69,0
2007	33,66	37,84	39,3	229,4	73,3
2008	31,90	36,31	36,2	251,0	85,8
2009	30,78	35,45	34,8	257,1	85,4
2010	27,98	31,59	31,3	263,8	93,3

Notes:

1/ Official statistics, based on INEI estimates on poverty, also accessible through World databank of World Bank.

2/ Official statistics, published by INEI

3/ Conversion using nominal exchange rate, published by Central Reserve Bank of Peru

4/ 43% are missing data

Source:

National Household Survey (ENAHO), implemented by National Institute of the Statistic and Informatics (INEI).

World data Bank - World Bank

Elaboration:

Own elaboration

APPENDIX 3

Table A.3. Variables description

Variables	Definition	Values
Rural area	Rural areas comprise all the places which are not the district capitals, which have less than a hundred houses, or even having more than that they are highly dispersed.	1=rural; 0=urban
Highland	Geographic region characterized for having mountains and plateaus	1=highland; 0=coast
Jungle	Geographic region to the East of the Andean Cordillera	1=jungle; 0=coast
The gender of the head of the household	Dichotomous variable	1=man; 0=woman
The mother tongue of the head of the household is the native language	Dichotomous variable	1= native languages; 0=Spanish
Age of the head of the household	Average age in a four year span	From 19 to 85
Head of the household years of schooling	Average years of schooling in a four year span	From 0 to 18
Dependency rate (mean across time)	Number of family members who do not work, as a percentage of the total family members	From 0 to 1
Number of years the household has faced health problems	Number of years that at least one of the family members have had any health problem, during a four year span	0 = Nobody has had any health problem 1 = At least one member had a health problem for one year 2 = At least one member had a health problem for two years 3 = At least one member had a health problem for three years 4 = At least one member had a health problem for four years
Number of years the household head is unemployed	Number of years that the head of household is unemployed during a four year span	0 = Never unemployed 1 = One year unemployed 2 = Two years unemployed 3 = Three years unemployed 4 = Four years unemployed
Number of years receiving remittances or transferences by the household	Number of years that any of the family member receive a remittance or transference, during a four year span	0 = Nobody receive remittances 1 = At least one member of the family received remittances for a year 2 = At least one member of the family received remittances for two years 3 = At least one member of the family received remittances for three years 4 = At least one member of the family received remittances for four years
Amount of remittances and transferences	Average amount of remittances and transferences that the family receive during the four years analyzed	From S/. 0,00 to S/. 2 523,00
Standard Deviation of remittances and transferences	Standard deviation of remittances and transferences across the four years analyzed	From S/. 0,00 to S/. 2 143,17
Number of years without at least one basic service	Number of years that the household is without at least one basic service (water, sewer, and electricity), during a four year span	0 = No one year without at least one basic service 1 = One year without at least one basic service 2 = Two years without at least one basic service 3 = Three years without at least one basic service 4 = Four years without at least one basic service
Household income	Average household income during the four years analyzed	From S/. 47,10 to S/. 11 616,29
Standard Deviation of household income	Standard deviation of household income across the four years analyzed	From S/. 3,47 to S/. 8 167,74
The earnings of the head of household come from agriculture	The income perceived by the head of the household comes from agriculture	1 = agriculture; 0 = otherwise
The head of the household is an independent worker	The income perceived by the head of the household comes from an independent work	1 = independent work; 0 = otherwise