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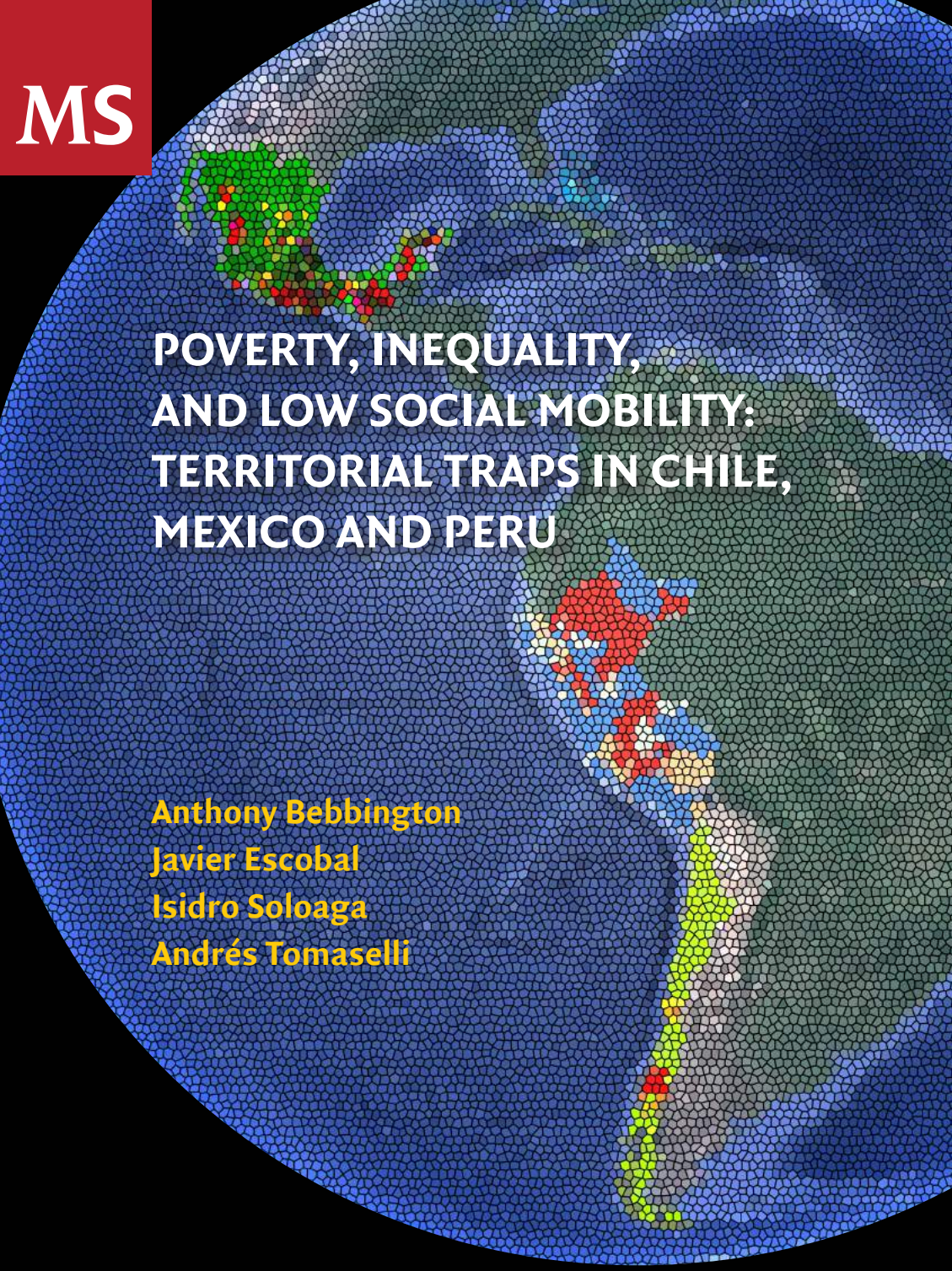

# POVERTY, INEQUALITY, AND LOW SOCIAL MOBILITY: TERRITORIAL TRAPS IN CHILE, MEXICO AND PERU

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UNIVERSIDAD IBEROAMERICANA
CIUDAD DE MÉXICO

# Poverty, Inequality, and low Social Mobility:

## TERRITORIAL TRAPS IN CHILE, MEXICO AND PERU

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## TERRITORIAL TRAPS IN CHILE, MEXICO AND PERU

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# PREFACE

In Latin America, where you're born or where you live makes a difference. The opportunities available to individuals and certain social groups are strongly determined by their territory. Even when people decide to migrate in search of better opportunities or simply because life in their place of origin becomes unsustainable, they take the territory with them, and this affects their ability to take advantage of opportunities at their destination. Territorial conditions interact with other determinants of opportunities—gender, social class, ethnic group—so that although women or indigenous people suffer discrimination and special constraints on their development, they are expressed differently from place to place.

Geography makes a difference, but even more important are social structures and institutions, and the social actors who build and reproduce them. These structures, institutions and actors are different in different territories, and to a great extent, that is why major economic, social or cultural trends, as well as public policies, do not "take root" in the same way in different places.

We have been studying this situation for more than a decade in Rimisp, the Latin American Center for Rural Development, along with dozens of partners throughout Latin America. We are motivated by our desire to transform social conditions so that opportunities for and the welfare of all of us are similar, regardless of the territory where we are born and where we develop personally.

This book contributes to the discussion about territorial inequalities. Taking the cases of Chile, Mexico and Peru, it presents new evidence about patterns of development in our societies, with a degree of spatial breakdown that was previously unavailable. The authors study both the outcomes of these differentiated development dynamics, in terms of poverty and vulnerability, and the opportunities that our children and young people face in defining their access to education, basic services or goods necessary for their personal growth. They also analyze how territory, compared with personal circumstances, becomes a key factor in differentiated access to opportunities. This work also shows that we are not experiencing a process of territorial convergence in these countries, which would allow us to aspire to civilized levels of social cohesion within a reasonable time frame. At the same time, however, the three countries studied show growing territorial segregation, where personal aspirations are increasingly limited by the place where one lives. If we add to this territorial segregation the weakness of governance institutions in many of our Latin American countries, it is easy to see that we face an explosive mixture.

But this state of growing territorial inequality can change, and the trends can be reversed. The book analyzes territories in the three countries that have managed to shed their condition of being spatial poverty traps, despite being located in disadvantaged regional environments; this has translated into a better quality of life for their inhabitants. Taking these territories as case studies and comparing them with others in the same environment that have not managed to overcome the lag, this book provides new qualitative evidence about the social and political-institutional factors that cause some to continue lagging, or which have been crucial for others to forge a positive path of development.

We offer this book to both general readers and experts, in the hope that it will help lift the veil of spatial blindness with which most public policies are designed and implemented. Territory matters, and it matters a great deal, and as long as we do not internalize that in

public policies, those policies will often unwittingly help perpetuate the territorial inequality that limits the horizons of millions of Latin Americans.

*Julio A. Berdegué*
Coordinator
Working Group on Development with Territorial Cohesion
Rimisp

# 1

# TERRITORIAL POVERTY TRAPS AND INEQUALITY—A SUMMARY OF THE FINDINGS

*Anthony Bebbington, Javier Escobal, Isidro Soloaga, and Andrés Tomaselli*



When analyzing countries' development and their economic evolution, in particular those undertaken within the fields of economics and sociology, these studies typically focus on national variables and often ignore the large variations found in development among different social groups and territories within a country. These kinds of studies have contributed to our knowledge of the factors that help explain national development patterns; however, given that they obscure variations within countries, they may not accurately reflect the true levels of well-being among individuals (Foster et al., 2003).

In recent years, there has been increasing global evidence of the territorial dimensions of poverty and inequality. Various authors in both developed and developing countries[1] have demonstrated spatially-differentiated patterns of economic development. In a 2012 report, the European Trade Union Institute went so far as to characterize regional inequalities within countries as a more common and dramatic phenomenon than those between countries (ETUI, 2012).

Territorial inequalities are also a reality in Latin America. The Economic Commission for Latin America and the Caribbean (ECLAC) (2010) shows significant inter-territorial differences in Gross Domestic Product and in indicators of social well-being. Similar results are found for economic competiveness (CAF, 2010); access to quality

1 See for example: Goerlich and Mas, 2001; Jesuit et al., 2002; Osberg, 2000; Stewart, 2002; Green, 2009, Anderson and Ponfret, 2004; Wei and Wu, 2002; Kanbur and Zhang, 2004.

housing (World Bank, 2008); and well-being indicators (Latin American Report on Poverty and Inequality, 2011[2]).

Results from the Rural Territorial Dynamics (RTD) program at the Latin American Center for Rural Development (RIMISP) reveal that the benefits of economic development have not been experienced equally across different sub-national territories throughout the continent. During the period between 1990 and the beginning of the first decade of the 21st century, fewer than ten percent of these sub-national areas displayed virtuous dynamics, defined as those in which economic growth is accompanied by reductions in poverty and inequality. Meanwhile, one out of every three territories experienced economic and social stagnation (Modrego and Berdegué, 2015). More current data for a smaller number of countries (Brazil, Ecuador and Mexico) show better results, although this is not the case when considering each country separately. While the vast majority of districts in Ecuador and municipalities in Brazil enjoyed economic growth, poverty reduction, and increased equity between 2000 and 2010 (Wong, 2013 and Favareto et al., 2013), in Mexico only one percent of the municipalities achieved this virtuous dynamic (Yúnez et al., 2013).



In this book, we seek to increase our understanding of spatial inequalities in Latin America by presenting new evidence. Our research seeks to verify the existence of localized poverty and inequality traps and, if found to exist, to identify their determinants. The hypothesis guiding this research is that there are poverty traps, vulnerabilities and opportunities in the region that take a clearly-defined territorial form. These traps manifest themselves in the existence of territories with well-being indicators that consistently lag behind those of the rest of the territories located within the country. By and large, they are determined by social and political-institutional factors that are at once cross-cutting and specific to the territory in question.

2 www.informelatinoamericano.org

Our research strategy sought to combine disciplines, methods and methodologies in order to create a more comprehensive assessment of territorial dynamics. We combined quantitative methods, such as creating indicators for equality of opportunity, quality of life, and social mobility, with a qualitative analysis of institutional arrangements, political economy and binding constraints to growth. This combination of quantitative and qualitative methods allows for a better exploration of the determinants of poverty and inequality traps. The research strategy was based on four complementary components:

1. Identify and characterize those territories caught in traps, as assessed by both outcome variables and opportunities.
2. Find evidence as to whether individual-level or territorial characteristics determine the presence of these traps.
3. Evaluate if, despite these traps, there is any evidence of convergence across areas, and how much this is affected by territorial factors.
4. Study the binding constraints to growth and the institutional, political and economic factors that underlie these traps.



To this end, we undertook six independent studies that each followed a common methodology. This allowed for a cross-cutting set of conclusions for the three countries in question, presented here in the summary chapter. We focused on the cases of Chile, Mexico and Peru, monitoring various well-being indicators with a level of disaggregation previously absent from the available literature. Employing statistical techniques such as Small Area Estimates to spatially disaggregate the income levels by household,[3] this study presents poverty and vulnerability dynamics at a functional territory[4] level in Chile and Mexico and on a provincial scale in Peru. Using geographic data from censuses, we explore the distribution of equality of opportunities,

3 As we had estimates for household income, when we applied poverty lines, we were able to determine poverty rates at a community/municipal level.

4 As we explain later on, a functional territory brings together communities/municipalities with high levels of social and economic interaction into a single spatial unit.

again with a degree of spatial disaggregation never before undertaken in other studies. Through the generation of pseudo-panels, we studied the dynamics of well-being, incorporating for the first time highly disaggregated territorial dimensions (municipalities, provinces, and functional territories) in the analysis.

Another innovative aspect of these studies is the fact that we have combined quantitative measurements with the compilation of qualitative information. Through case studies we explore the reasons why certain territories have been able to overcome development gaps while other communities with similar characteristics remain chronically mired in these traps. Our hypothesis was that institutional factors determine these patterns.



In this study, we verify how, despite their different macroeconomic situations, each of the three countries is characterized by high levels of territorial inequity as expressed by the presence of territories that lag behind others in terms of poverty, vulnerability and opportunities. The geographical distribution of these trapped territories is not random: a significant proportion of these territories are found in the central-southern region of Chile, the southern region of Mexico and the Andean region of Peru. In the three countries, these trapped territories are small in terms of population and are less urbanized. When compared with other territories, they have higher levels of illiteracy, lower rates of employment and a higher proportion of inhabitants working in primary sectors of the economy, not to mention being considered less attractive destinations for internal migration.

We found evidence of extremely slow convergence patterns. To reduce the income gap by half, it would take between 22 and 40 years in Peru, between 19 and 29 in Mexico, and between 17 and 41 in Chile. We observed the existence of what might be called "convergence clubs", which would imply that there is territorial polarization within the countries, with poor territories converging around lower levels of well-being compared to wealthy territories. This slow and uneven convergence is further indication of a poverty trap.

The case studies reveal that the presence of poverty traps is associated with a lack of social cohesion, a political class that operates on a patronage system and weak rule of law.[5] In Chile, the studied territories are characterized by the existence of an elite group that is not committed to growth or inclusion and/or a lack of emerging, competing elites. It is the arrival of agents from outside the territories, bringing with them greater cash flows, networks connected to state power and a "modernizing" vision, that helps territories reverse their delayed situation. In addition, the nature of productive activities taking place in a territory is also an important factor. Territories where natural resources are exploited without adding any value remain trapped, while those in which value chains emerge are able to escape these traps. The Mexican territories caught in traps are characterized by information asymmetries that favor certain groups with social advantages to the detriment of others. Conversely, escaping such traps is associated with greater levels of political competition and changes in agricultural production that lead to increased earnings. Finally, territories in Peru are in a permanent process of construction that involve changes in local productive structures, the creation of new infrastructure and the opening up of new markets. These changes generate divergent trajectories in which certain spaces and populations remain caught in traps as a consequence of newly-defined, unequal access to new markets.



## 1.- SPATIAL DIMENSIONS OF WELL-BEING

National and regional averages tend to hide spatial disparities in well-being. For this reason, our goal is to study the dynamics of well-being at as granular a level as possible in order to be able to observe the het-

5 A definition of rule of law can be found in the World Bank's Worldwide Governance Indicators: "Rule of law captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, property rights, the police, and the courts, as well as the likelihood of crime and violence." World Bank (2016).

erogeneity of development processes. Schejtman and Berdegué (2004) define territory as a space with a socially constructed identity. In this sense, "territory" corresponds to a dynamic structure that changes over time according to the evolution of society and the interactions among people. This definition is not always compatible with political-administrative divisions, which are often static. For this reason, territory should be defined not in administrative terms but rather in a way that is most compatible with actual social and economic dynamics.



For this study we have chosen to use territorial divisions, created based on interactions that occur within the territories themselves. The study in Chile uses the Functional Territories identified by Berdegué et al., (2011) as its units of analysis. Functional Territories include, in a single geographic unit, those communities that have a high frequency of economic and social interactions among their inhabitants, organizations and companies. The study in Mexico is also based on prior studies of Functional Territories by Soloaga and Yúnez-Naude (2013), and while it analyzes poverty at a municipal level, the analyses of opportunities are based on groupings of municipalities within the states according to the size of the main town. Finally, the Peruvian study bases its estimates at the provincial level given that it provides for more exact estimates regarding family spending and poverty, in addition to being large enough to include economies of scale within the territory.[6]

## 2.- POVERTY AND VULNERABILITY IN THE TERRITORIES

Over the past two decades, the macroeconomic indicators of the three countries studied in this book have evolved in different ways. According to World Bank statistics, while GDP per capita in Chile and Peru has grown above the Latin American average, the Mexican economy has experienced relative stagnation, growing at rates below the regional average.

6 In Peru, it is not possible to identify Functional Territories since the population census does not distinguish between the place where people live and where they work.

TABLE 1
AVERAGE GDP PER CAPITA GROWTH RATE

| | 1990 – 2000 | 2000-2010 | 1990-2012 |
|---|---|---|---|
| Latin America and the Caribbean | 1.51 | 1.84 | 1.74 |
| Chile | 4.74 | 2.77 | 3.84 |
| Mexico | 1.65 | 0.50 | 1.21 |
| Peru | 2.15 | 4.43 | 3.46 |

Source: WDI, World Bank.



National poverty statistics reflect the country's macroeconomic situation. While at a national level Chile and Peru[7] have significantly reduced the incidence of poverty, the statistics for Mexico show that 2012 poverty levels are practically unchanged when compared to those recorded 20 years ago. Despite this, the three countries share the characteristic of having spatially heterogeneous social development.

In Chile, good macroeconomic performance is associated with the fact that, during the period of analysis (1992–2002), 57 percent of the territories registered reductions in poverty levels and none of the sampled territories registered increases in poverty; however, we can observe a greater concentration of poverty in the Functional Territories of the regions of Coquimbo in the north central region of the country, and in *Maule*, *Bío Bío*, *La Araucanía* and *Los Lagos* in the central southern region. Extreme cases can be observed in *Galvarino* (*Araucanía*) with 46.8 percent of the inhabitants living in poverty in 2002, compared with Antarctica, where the poverty index was a mere 0.5 percent. In

7 In Peru there are no consistent estimates for the period of study as a whole; however, by superimposing poverty estimates according to different methodologies, we can observe sustained reductions.

Mexico, between 1990 and 2010, poverty increased in 16 percent of the municipalities, most of which are located in the southern part of the country. This is in stark contrast to the 64 percent of municipalities with positive dynamics, most of which are located in the central and northern part of the country and the northern part of the Yucatan peninsula. Lastly, in Peru, during the period comprising 1993-2007, the provinces with positive poverty reduction dynamics were concentrated on the coast, in the capital of the *Cuzco* region, in some northern Amazonian provinces and in *Madre de Dios*, in the southern Amazon. This is in contrast to the Andean region where certain areas experienced stagnation and increases in poverty.



In addition to characterizing the territories according to traditional metrics of monetary poverty, this project is innovative as it includes an analysis of the dynamics of vulnerability facing the different territories in these three countries. Following in the footsteps of World Bank studies, we define vulnerability as the income threshold under which there is an elevated risk of sliding into poverty.[8] This definition conserves the dynamic factors behind human well-being given that it takes into account exposure to risks being faced by households (Damas and Israt, 2004). In this sense, improvements in poverty indicators do not necessarily mean there has been a significant or sustainable improvement in the quality of people's lives, specifically if the condition of being non-poor is associated with a permanent risk of returning to poverty. This hypothesis is taken up by Birdsall et al., (2014) and Hardy (2014) who identify a Latin American phenomenon of a growing vulnerable population.

By expanding the analysis of poverty to include vulnerable groups, we find that in the three countries studied, a reduction in the incidence of poverty has, in general, been accompanied by an increase in vulnerable populations. This would indicate that overcoming poverty

8 Specifically,we followed the methodology presented by López Calva and Ortiz Juárez (2011) and Ferreira et al., (2013). Details of the approach are presented in the methodological appendix.

doesn't imply a permanent transition to improved well-being, but rather it implies a transition to a fragile state. This could be an indicator that the observed trajectories, particularly for Chile and Peru, may not be sustainable over time, as was the case in Mexico where successive crises (1995, 2009) eroded the gains that had preceded them.

In Chile, between 1992 and 2002, the population living in vulnerable conditions at a Functional Territory level increased from an average of 41 percent to 45 percent. However, in general, the Chilean territories demonstrated positive dynamics. In 69 percent of the Functional Territories studied, the increase in the vulnerability rate emerged as a result of a drop in the incidence of poverty, and this was accompanied by the growth of the middle and upper classes. Additionally, in 15 percent of territories, the rate of vulnerable non-poor decreased, alongside a decrease in poverty and the growth of the middle class. Combining both the vulnerable non-poor with the population in poverty in a single group, entitled "total vulnerability", this group represented 80 percent of the population in 1992, dropping to 73 percent in 2002. During the period of study, researchers found 48 Functional Territories with improved rates of total vulnerability, while 54 were unchanged and only in the territories of *Carahue* and *Araucanía* did the rates increase.



In Mexico, between the years 2000 and 2010, 13 percent of the population experienced improved well-being with decreases in vulnerability rates, associated with an increasing middle class. However, the changes in the vulnerability rates for about 3 percent of the population could be associated with a decrease in their well-being as a result of a shrinking middle class and a higher rate of poverty. It is important to note that, while the improvements in well-being were principally concentrated in urban territories, the negative dynamics were mainly observed in semi-urban, semi-rural and rural territories.

In Peru, on a national level, there was an increase in size of the vulnerable groups, from 38 percent of the population in 1993 to 48 percent in 2007. This change was mostly a response to positive well-

being dynamics. These positive dynamics are a result of an increase in the percentage of the population considered to have a middle to upper socioeconomic status, as well as a reduction of the rate of poverty. On a rural level, however, there was stagnation with no significant variations in the vulnerability of the population. When studying total vulnerability, which combines the vulnerable population and the population in a situation of poverty, reductions were principally located on the coast, specifically along the central and north-central coast (with links to the departments of *Lima*, *Áncash*, *Lambayeque* and *La Libertad*) and along the southern coast (with links to the departments of *Tacna* and *Moquegua*). Negative dynamics, expressed in increases in the total vulnerability, were concentrated in rural provinces of the Andean region, especially in the highlands of *Cusco* and *Puno*, not to mention in *Ayacucho* and other provinces in the central and northern Andes.



This demonstrates that the relatively good macroeconomic indicators in Chile and Peru don't guarantee spatially-equitable development. Mexico is in a more troubling position as its relative macroeconomic stagnation appears to have negatively affected levels of well-being. In addition to having spatial heterogeneity that is characteristic of Latin American countries, there are also territories whose levels of well-being decreased during the period of study. For the three countries that were studied, we can see a high percentage of cases in which poverty reduction has not led to qualitative jumps in living standards because they are associated with the growth of the vulnerable population.

### *Poverty Traps*

In addition to identifying poverty at a territorial level and mapping it, we also aim to categorize the territories to have a better impact on the creation of public policies. We have adopted the concept of poverty traps— when a territory permanently lags behind other territories in indicators of well-being. Defined as such, growth or improvements in standards of living are necessary but not sufficient enough to overcome a poverty trap. A measurement of relative poverty is based on the

idea that a minimum well-being is conditioned by the specific society in which it is measured. In this sense, the magnitude of relative poverty is an indicator of how the benefits of development are shared within a country. For the effects of this study, in the three countries studied, we have defined a territory as "lagging behind" when the level of poverty is a half of the standard of deviation or more above the average for the period. The principle results are found in Table 2.[9]

TABLE 2
TERRITORIAL POVERTY TRAPS*



| | GEOGRAPHIC UNIT OF ANALYSIS | YEARS OF ANALYSIS | % GEOGRAPHIC UNITS IN POVERTY TRAPS | % OF POPULATION LIVING IN TERRITORIES TRAPPED IN POVERTY |
|---|---|---|---|---|
| Chile | Functional Territory | 1992 and 2002 | 19.4% | 6.9% |
| Mexico | Municipality | 1990, 2000 and 2010 | 26.9% | 8.6% |
| Peru | Provinces | 1993 and 2007 | 25.1% | 9.8% |

* In order to favor the comparison between countries, we chose the definitions of poverty so that they were similar to each other. In Chile, we considered people living in poverty to be those whose per capita household income is insufficient to satisfy basic needs. In Mexico, we considered the population with insufficient income for a basic food basket and for basic health, clothing, living, transportation and education expenses (defined as Patrimonial Poverty by CONEVAL). In Peru, it refers to people whose homes have income or consumption per capita lower than the cost of a basket of minimal essential services and goods.

In Table 2, we can observe spatial heterogeneity in the levels of well-being given that between 19 and 27 percent of territories are trapped in poverty. In the three cases, the trapped territories have small populations and are less urban in nature. These territories also have, in general, lower levels of human capital (measured by

9 This definition of a poverty trap is in keeping with the definition used by the OECD, in which the situation of poverty is relative to average income.

variables of educational attainment) and a greater proportion of residents working in primary economic sectors. In these lagging territories, the population is made up of a higher percentage of indigenous people, although this situation is much more pronounced in Mexico and Peru than in Chile. In Chile and Mexico, the less-developed territories tend to be less attractive for internal migration. In Peru, limited connectivity appears as a pattern in territories trapped in poverty.

The geographic distribution of poverty traps in Chilean Functional Territories are concentrated in the Central-Southern region of the country, specifically in the *Maule, Bío Bío* and *Araucanía* regions. In Mexico, by and large, municipalities where poverty traps are found are located in the southern regions of Chiapas, Guerrero, and Oaxaca, on the Gulf of Mexico in Veracruz, in Puebla, and in areas located in the western Sierra Madre Mountains, which covers various states. In Peru, there are poverty traps in almost all of the northern Amazon provinces and the highland provinces of the northern and southern Andes.



During the period analyzed, 11 percent of the Chilean territories overcame their situations of underdevelopment, and 16 percent fell into a situation in which they are now lagging behind. In Mexico, 11 percent of the municipalities, accounting for about 4 percent of the population in 2010, showed patterns of downward mobility with regard to poverty, having started from a position of equal footing with the rest of the country in 1990, to lagging behind the rest in 2000, 2010 or both years. In contrast, patterns of upward mobility were present in 10 percent of the municipalities, accounting for five percent of the total population. Lastly, in Peru, 13 percent of the provinces experienced upward mobility, while 13 percent experienced downward mobility.

It is noteworthy that in all three countries, the territories with upward mobility are located in the same regions as the trapped territories. This shows that there are some territories that are able to overcome their situation despite the fact that they face difficult envi-

ronmental factors. These diverse paths in similar territories have been analyzed in greater detail in the case studies presented here.

### 3.- HUMAN OPPORTUNITIES

One outcome variable for the persistence of poverty focuses on the extent to which people are unable to earn an income that enables them to acquire a basic food basket and basic services. Part of this book is dedicated to quantifying the extent to which territorial factors are associated with this outcome variable. Incorporating the influence of territory on the availability of opportunities allows us to emphasize the unjust differences that arise as a result of external circumstances. Specifically, this study provides evidence that territory has a significant influence—more than 25 percent in the majority of indicators in all three countries—on the opportunities that are available to inhabitants under the age of 18. This supports the need to reform public policies in order for them to take territorial factors, which are usually absent from these policies, into account.



A wide number of studies have emphasized the fact that equality of opportunity in access to basic services and education is a necessary condition for achieving a sustainable reduction in poverty (among others UNDP, 2005 and 2010, World Bank, 2000, Paes de Barros, et al., 2009). In this book, we present a measure of the influence of spatial factors on the inequality of opportunities, in addition to evidence of the extent to which these factors persist over time.

Opportunities are measured with a methodology based on the work of Roemer (1998), and further developed and applied empirically by the World Bank in its Human Opportunity Index (HOI) (World Bank, 2006).[10] The HOI evaluates access to goods and services (re-

10 The HOI is an indicator that combines the average coverage of a determined advantage (e.g. access to electricity) with an indicator of how unequal the distribution of this advantage is within the population. While a greater average rate of coverage increases the HOI, a lesser

ferred to as advantages in this book), which include not only average levels of coverage, but also how equitable these are in their distribution among the population of a given territory. To do so, researchers identify to what degree personal circumstances, outside the control of children and adolescents (such as place of birth, ethnicity, gender, parents' schooling and employment and the demographic composition of the household), affect their access to these advantages. Children and adolescents are used as the units of analysis because practically all of the variables in their environment can be considered as outside of their control and are not part of their decision-making process.



In this study, we take advantage of the information available from population and household censuses, taking this information a step further by estimating the HOI at a more granular level than is found in the literature for the countries being studied. This allows us to better identify the influence of territory on the opportunities available to children and adolescents.

In the three studied countries, we selected a set of variables or advantages that highlight the opportunities that are available to minors in order to achieve minimum levels of quality of life and to create the human capital needed for the future. The advantages analyzed relate to:

- Household access to basic services (potable water, sewage, electricity).
- Access to quality housing, where this quality is defined by characteristics of the flooring, roof, walls and density of occupation.
- Education and human capital, which is analyzed through different indicators for each country:
  - Chile: Grade appropriate placement for children between the ages of 7 and 14 and adolescents between the ages of 15 and 18.

distribution of the access to the advantage reduces it. Algebraically, $IOH=p^*(1-d)$ , where $p$ is the average coverage and $d$ is an indicator of inequality. For more information on this, please see the methodological appendix.

- Mexico: Class attendance and grade appropriate placement for children between the ages of 15 and 17.
- Peru: School attendance for children between the ages of 6 and 12 and adolescents between the ages of 13 and 18. Grade appropriate placement for children between the ages of 6 and 12 and 13 and 18.

• Key goods and services according to the availability of information in each country:

- Chile: Refrigerator, television and telephone.
- Mexico: Telephone and computer.
- Peru: Refrigerator, television, computer, telephone and the Internet.



Furthermore, for the three countries we included a variable related to the opportunity of living in a household above the poverty line. In Chile and Mexico, we include a variable related to the opportunity to belong to the middle or upper class, which is to say the opportunity of living in home above the thresholds of poverty and vulnerability.

We followed the literature on the subject for the circumstances that influence the distribution of opportunities, considering variables beyond the control of the minors. At the level of the household, these include: gender, education ethnicity, and occupation. We also include variables about the household such as whether it is a single parent household, number of children and household's dependency ratio. Lastly, we consider a set of ad hoc territorial variables for every country like the area of residence and the type of Functional Territory in Chile; the size of the town where the individual lives in Mexico; and the area of residence, geographic region, and altitude of the population center in Peru.

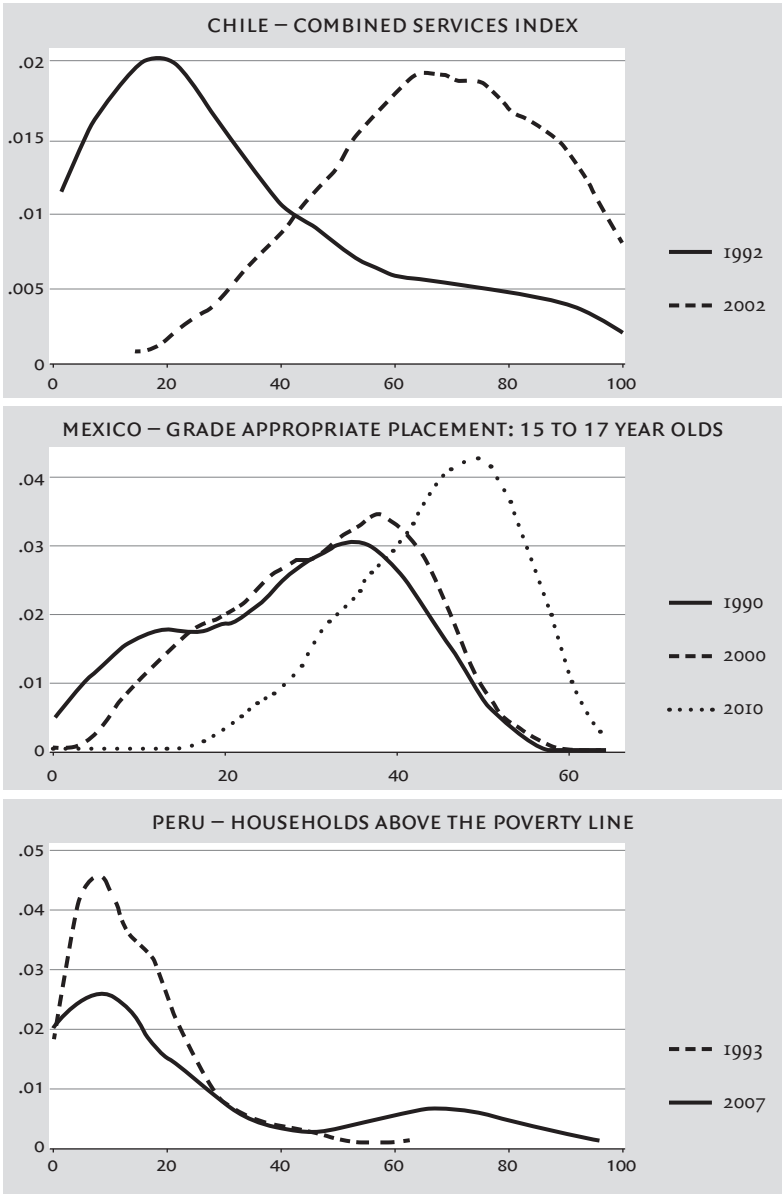
In the three countries, we found generalized improvements in the opportunity indicators in the intercensal period of study, which reflect the existence of public initiatives to increase access to the surveyed "advantages". Decomposition exercises, however, show that the changes in opportunity respond principally to improvements in the average coverage and not improvements in equity of access.

In the three cases, we found important differences in the opportunity levels according to the well-being indicators analyzed both within the countries and between countries. In Chile, in the last year of the study, opportunity levels were close to 90 points out of a possible 100 in terms of access to basic services and television, and above 80 points in grade appropriate placement and possession of a refrigerator. On the opposite side of the spectrum, we found the opportunity to live in a quality home (47 points) and be part of the middle class (15 points out of a possible 100). In Mexico, the greatest levels of opportunity were found in the advantages relating to housing conditions. For 2010, the overall HOI was 75 in terms of access to services in the home services indicator and close to 68 for the quality of housing indicator; however, for rural populations, the opportunity indicators were far below the levels found in urban areas. Similar to the findings in Chile, the inequality in the opportunity of achieving middle class status is the indicator with the worst results: an index of 20 points out of a possible 100 in 2010 and with an 8:1 ratio in favor of urban areas compared to rural areas. Similar to the findings for Mexico, in Peru the opportunity of living in a home built from quality materials reached a level of 90 out of a possible 100 points, which was the same as the indicator for school attendance.



The results at a territorial level confirm the findings in the national analysis and are similar to the findings for poverty and vulnerability. Opportunities have improved, but there is significant spatial heterogeneity. The following group of graphs show selected cases that summarize the findings in the evolution of territorial opportunities in the three countries studied. The graphs show the territorial distribution of HOI for each variable. The horizontal axis shows the HOI level for the territories and the vertical axis indicates the percentage of cases at each level. A shift in the curve to the right indicates a general improvement in the indicator because it implies that the percentages of territories with improved HOI indicators is increasing.

GRAPHS SET 1 HOI IN TERRITORIES




Source: Chile, Census Data 1992 and 2002; Mexico, Census Data 1990, 2000 and 2010; Peru, Census Data 1993 and 2007. Author's estimates.

For example, in Chile the opportunity to access basic services shows a positive shift in the territorial opportunity distribution curve. At the same time, however, we can see that there are territories whose opportunities are close to 20/100 points alongside others with universal or nearly universal coverage for the analyzed opportunity (HOI greater than 90/100). In Mexico, the progress in appropriate schooling for 15-17 year olds is significant with a clear rightward shift in the curve between 1990 and 2010; however, we can also see significant dispersion with territories with close to zero opportunity alongside others with close to 60 points. Nevertheless, the fact that the maximum HOI is close to 60 is an indicator of a generalized problem with regard to completion of high school education on time in Mexico.



Lastly, the example selected for Peru shows a shift to the right regarding the density of opportunity of breaking the poverty cycle, indicating an improvement in a significant portion of Peruvian provinces; however, while the density in 1993 was unimodal (with an important mass of distribution located in low levels of HOI), in 2007, this becomes bimodal. This indicates a segregation at the provincial level in which one group of provinces improves its HOI significantly compared to another group of provinces that are lagging behind. The study also finds that the provinces with high HOI values are largely found on the coast, in addition to some informal alluvial gold mining communities in the Amazon region.

### *Opportunity Traps*

Continuing with the analysis undertaken for monetary poverty, we categorize territories according to how they compare to the national average, identifying those territories that seem to constantly lag behind in terms of opportunities. For the three countries, we refer to territories as lagging behind when their index of opportunities is half a standard deviation or more below the average for the period. In order to identify those opportunity traps that may be related to the multidimensional poverty criteria used for each country, we adopted distinct

definitions for the three case studies. For Chile, we define 'trapped' as being those territories that are constantly behind in four or more opportunities. For Mexico, we define a trapped geographic area as one that is permanently lagging behind in terms of key opportunities: absence of poverty, quality of housing materials, access to household services and grade appropriate placement (for households with children between the ages of 15 and 17). Lastly, in Peru, we consider a province to be trapped when it lags behind in at least 9 out of 12 analyzed opportunities. We identify a territory as being upwardly mobile when it ceases to lag behind in five or more indicators.



The following table summarizes the trapped territories:

TABLE 3: OPPORTUNITY TRAPS

| | YEARS ANALYZED | % OF TERRITORIES WITH OPPORTUNITY TRAPS | % OF POPULATION THAT LIVES IN TRAPPED TERRITORIES |
|---|---|---|---|
| Chile | 1992 and 2002 | 36.9% | 6.8% |
| Mexico | 1990, 2000 and 2010 | 46.0% | 14.3% |
| Peru | 1993 and 2007 | 34.4% | 13.9% |

Source: Authors' estimates.

The results for Chile show 38 Functional Territories with opportunity traps distributed between the fourth and tenth regions of Chile; however, fifty percent of these cases are concentrated in the *Bío Bío* and *Araucanía* regions, with ten and nine trapped territories, respectively. Furthermore, the research identified 29 territories that did not fit the definition of being trapped but were permanently lagging behind in between one and three opportunities. These territories are found mostly in the same regions as the trapped ones. Among the trapped territories, 11[11] stand out as lagging behind permanently in 10 or more of the 14 analyzed indicators.

11 *Canela, Combarbalá, Cobquecura, El Carmen, Quirihue, Lonquimay, Lumaco, Purén, Carahue, Galvarino* and *Queilén.*

The results for Mexico show a clear geographic influence on the distribution of opportunities. Three out of four municipalities in which the majority of their population are located in rural areas are trapped, compared with 10 percent of the municipalities in which a majority of the population live in semi-rural areas. Only four percent of the municipalities where the majority of the population live in semi-urban areas are trapped. None of the municipalities with a preponderance of urban dwellers was deemed to be trapped. Fourteen percent of the population in 2005 was in a trapped situation (nearly 15 million people; 14 million of whom live in rural areas). Geographically, the opportunity traps are concentrated in the Pacific, Central, Southern, Southern-Central, Gulf and Yucatan regions.



The Peruvian case study is notable given the fact that none of the provinces on the coast are lagging behind. This is also the situation in a few additional provinces—almost all of which are regional capitals—that are located in the Andes and Amazon. On the other hand, we find relative stagnation in provinces located in the northern and southern Andes (especially in the provinces of *Cuzco* and *Puno* in the south and *Cajamarca* and *Huánuco* in the north). The provinces showing downward mobility are concentrated in the southern Andes, especially *Ayacucho* and *Apurímac*, and in the northern *Cuzco* region.

While the definitions of opportunity traps applied in each country are not the same, it is possible to identify some similarities. There are more territories with opportunity traps than those with poverty traps, and they encompass a greater population. The trapped territories tend to be smaller in terms of population and are significantly less urban in nature. They have more indigenous or afro-descendent inhabitants and a less-educated human capital. Furthermore, they have more people working in primary economic sectors and a less diversified economy. In general, the characteristics of the territories with opportunity traps tend to be the same as those found in the territories with monetary poverty traps.

### *Impact of Geographic Location within the Territory*

The methodology used in this study allows us to ascertain the role that each circumstance (parental schooling, geographic location, etc.) played in the distribution of opportunities, in addition to identifying their relative importance in accessing opportunities.[12] It also allows us to evaluate the influence of the territory—as compared to personal and household circumstances—on access to opportunities. In this sense, it provides highly relevant information that can drive public policy initiatives to address the obstacles to universal access to these advantages. In particular, there is data that help us to evaluate which approach is most conducive for development—territorial interventions or policies aimed at individuals.



The results demonstrate that the territory is the main factor behind the distribution of basic services and that its relative weight increases over time. As average coverage increases, so does the relative weight of the territory. This means that as progress is made in basic goods and services coverage, territorial circumstances acquire more importance and emerge as the dominant explanation for access inequality. In this sense, the importance of specific territorial factors—possibly those having to do with the quality of their institutions—become more important.[13]

For their part, the results for other advantages vary by country. In Chile, territory is the second or third most relevant factor. In all the case studies, territory is a greater contributor to total inequity than the variables traditionally identified in previous studies, such as ethnic origin and gender of the minor.

In Mexico, territory accounts for 35 percent of access to a home with quality materials and absence of overcrowding. For the three

12 This was undertaken using the Shorrocks-Shapley (1999) decomposition, which is presented inthe methodological appendix. This decomposition calculates each circumstance's influence on the HOI after controlling for the influence of the remaining circumstances.

13 "Spatial Patterns of Growth and Poverty Changes in Peru (1993 – 2005)", Working Paper N° 78, Rural Territorial Dynamics Program. After applying a variety of controls, Escobal & Ponce find that the spatial differences persist and are related to institutional differences.

variables related to living in a home that is not below the poverty line, the size of the town where the people live accounted for between 36 and 41 percent of total inequity in 2010. At the same time, 39 percent of the total inequity in the opportunity of a minor between the ages of 0 and 17 belonging to a middle class home has to do with the geographical location of the individual's home.

For Peru, we undertook a decomposition exercise for the opportunity to breaking the poverty cycle, using different levels of geographical aggregations in order to define the territory. We found the increasing importance of the spatial component in the distribution of this opportunity. In 2007, it accounted for between 49 and 53 percent of the total observed inequity. In Peru, we found a greater influence of the territory on variables relating to poverty than those found in Chile and Mexico. These results are associated with observed improvements in well-being that have followed a well-defined spatial pattern that privileges coastal regions to the detriment of the regions of the Andes and Amazon.



The results in Peru show a heterogeneous pattern. During the intercensal period, there is a reduction in the spatial inequalities for opportunities relating to housing quality, access to television, access to electricity, potable water and the Internet, along with the variables relating to education; however, the spatial inequalities increased for the indicators of breaking the poverty cycle, access to sewage, absence of overcrowding and access to a computer or a refrigerator.

## 4.- MOBILITY OF SOCIAL GROUPS

The analysis of poverty and opportunity are complemented with studies that reveal whether populations from different territories are approaching what is known as convergence, which means that the standard of living in regions that are lagging behind start to catch up with the standard of living found in the leading regions. If this is indeed

occurring, it is interesting to find out how long it will take to close the gap in these standards of living. In order to ascertain this, we use a pseudo-panel technique in which we follow different groups of individuals over time. The individuals are grouped together based on characteristics that are relatively unvarying overtime (gender, year of birth, ethnic origin, etc.). The application of this kind of analysis allows us to document to what extent certain social groups have converging or diverging dynamics in indicators of well-being, and to what extent historically excluded groups experienced some degree of upward mobility. The existence of convergence would be an indication that the less-favored groups grow at higher rates than the more-favored ones, thus allowing them to close the gaps. In this case, the use of the population and housing censuses as a basic source of information allowed us to incorporate the territory at a level of detail unprecedented in previous research.



In the three studied countries, we found patterns of upward mobility. Unequivocally, indicators for poorer groups improved at a greater velocity than they did for higher income groups. In Peru, the analysis included income and indicators of access to goods and services. It was found that the most accelerated convergences occur in housing quality and the slowest in access to sewage and telephone, which are precisely the two opportunities that, along with access to computers and the Internet, demonstrated the most modest improvements of all the HOI indicators.

The pseudo-panel analysis also allows us to determine the velocity of the convergence, which indicates how long it will take to reduce current inequalities by half. This 50% reduction of the gap can be estimated by using solely the levels of well-being for each group in different time periods, known as absolute convergence. It can also be estimated using the characteristics of each group, classified using the pseudo-panel technique, which is known as conditional convergence because the gaps close around different levels of well-being. In Peru, we found relatively short periods of time (less than 15 years) for abso-

lute convergence in the case of quality of housing. For access to electricity and potable water indicators, the estimated time was more than 15 years, while it was over 20 years for the well-being ratio or access to television. It was 30 years to reduce the gaps in access to sewage or telephone by half. For Chile and Mexico, the patterns of absolute convergence appeared to be slower than in Peru. To reduce the gaps in income by half, it would take between 17 and 41 years in Chile and between 19 and 29 years in Mexico.

In all three countries, estimates for conditional convergence revealed that notably less time would be needed to reduce gaps by half. When location variables (e.g. rural-urban) were included, there were also significant changes in the speed of convergence. This may be indicative of a process of conditional convergence in which the territory is a key variable in determining at which income level convergence occurs. In other words, unless structural changes are made, different types of territories (or 'convergence clubs', as they are known), identifiable by their average levels of income, will be created.



These slow patterns of convergence and the evidence found for the existence of convergence clubs, point towards the existence of poverty and opportunity traps. The data reveal that the three countries are becoming increasingly polarized, with the coexistence within their borders of groups of territories that are able to take advantage of the benefits of growth alongside others that are chronically lagging behind.

## 5.- CASE STUDIES: BINDING CONSTRAINTS TO GROWTH AND THE POLITICAL AND INSTITUTIONAL MECHANISMS UNDERLYING TERRITORIAL POVERTY AND INEQUALITY TRAPS

Our quantitative analysis allowed us to identify both territories caught in traps and those that have been able to escape from them. In all cases, those territories that have been able to break out of these traps are located next to others that still remain trapped. We sought to investi-

gate in greater detail the reasons why certain territories have been able to succeed as well as the conditions that keep others mired in marginalization. To do so, we selected pairs of territories in each country that had similar characteristics and were geographically close but which have had different development trajectories. We then conducted qualitative comparative studies on these territories in order to explain the divergence in their development patterns.

Following the main research hypothesis, the point of departure for the case studies was the assumption that determinants of the poverty trap in each territory would, by and large, be found in the political-institutional arrangements found within and out with each territory. The qualitative studies sought to investigate these political-institutional mechanisms, which are unobservable at a statistical level. This involved an analysis of the actors, incentives and power dynamics underlying the processes of institutional reproduction that produce exclusionary territorial dynamics.



At the same time, we hypothesize that the territories that have overcome these poverty traps have been able to redefine their position and the rules that mediate their relationships with centers of power, which is to say that they are able to establish new political equilibria and settlements both within the territory and in relation to higher levels of the country's political-administrative hierarchy. As a hypothesis, we suggest that these new equilibria are achieved through institutional changes that help remove critical restrictions to growth at a general level, as well as those that afflict the most marginalized groups in the territory.

As outlined above, using the findings from the studies on monetary poverty and opportunities, we selected pairs of similar territories in each of the countries studied. We identified regions where there were concentrations of territories caught in traps, as well as emerging territories that have been able to break out of these situations of underdevelopment. We sought to develop comparative studies between a territory that has negotiated its poverty and inequality trap and an-

other where these traps persist. To control for other sources of variation, each territory belonged to the same political-administrative unit (region, department or state).

In particular, this means of selecting the territories allowed us to ensure constancy in the region-center relationship within which each territory was embedded. It also allowed us to interview key actors, with a regional focus, and ask questions about their own comparative analysis of the trapped and emerging territories. Finally, this approach offers a greater potential to understand the conditions in which a territory can advance, even in an unfavorable environment.



These paired territorial studies involved interviews and repeat interviews with key actors from the public, private and civil society sectors regarding their perspectives on territorial development. Through these interviews we sought to identify which restrictions to growth were viewed as the most limiting, which we call binding constraints, the extent of marginalization in the territory, and the social and institutional arrangements that sustain these conditions. Furthermore, we used different types of documentary and secondary data to compare the opinions of the interviewees and analyze the quality and coherence of their discourse. In addition, the perspectives of some actors were presented (anonymously) to other key actors, who were then asked to comment on and critique them. It is important to note that given our hypothesis that the conditions sustaining or undermining poverty and inequality traps reside in relationships both within territories as well as those linking territories to the wider region and the country, we selected informants from each of these three levels. This allowed us to build relational models of the socio-institutional arrangements in which the territory is embedded. We were also able to identify the interest groups underlying these arrangements as well as the social marginalization and binding constraints on growth deriving from these relationships.[14]

14 For more information on the methodology used, see the methodological appendix.

The case studies were undertaken in *Cauquenes* and *Constitución* in the Chilean region of *Maule*; *Santa Isabel Cholula* and *Tianguismanalco* in the state of *Puebla* in Mexico, and *Calca* and *Lares* in Cusco, Peru.

TABLE 4 – THE STUDIED TERRITORIES

| Territory Type | Maule (Chile) | Puebla (Mexico) | Cusco (Peru) |
|---|---|---|---|
| Trapped | Cauquenes | Tianguismanalco | Calca |
| Dynamic | Constitución | Santa Isabel Cholula | Lares |

Source: Own construction.



While in each country the territories were selected in a way that allowed for controlled comparisons and contrast, it was not possible to find regions or territories that were totally comparable between the countries. However, in all three cases, we found regions with a combination of trapped and more dynamic territories. We identified similarities and differences in the processes that promote or reduce the traps of poverty and inequality in these different contexts.

***Binding Constraints to Growth (BCG's) and Social Marginalization***

The degree of similarity among territories in terms of the principal BCG and sources of social marginalization that interviewees identified is quite remarkable. While not all exactly the same in each territory, the following restrictions emerged frequently and recurrently in interviews.

*Physical Context of the Territory*

Without resorting to environmental determinism, in each territory the interviewees identified the physical context of the territory as a great obstacle to growth. This context has two elements: the quality of environmental resources, and geographical location. For instance, in *Cauquenes* and *Constitución*, the lack of water for irrigation, and in *Lares*, the altitude and cold climate both limit agricultural and livestock production. Furthermore, constraints on access to the territories is a great limitation for the growth of markets and economic opportunities.

In reality, the influence of natural resources and physical location depends on the existence of markets, infrastructure and other factors with which these physical contexts interact. For example, the altitude and the aridity of *Lares* can restrict its productive capacity, but the same physical geography has helped *Písac* become a tourist destination. This is to say that whether the environment in Cusco is restrictive or does not depend on the presence or absence of a tourism economy or an infrastructure that allows for the arrival of tourists. At the same time, geographic isolation as a variable is a function of technologies of connection—such as the existence or not of a highway. Indeed, among the other factors that often came up as a BCG was the lack of infrastructure and limited access to markets.



*1. Infrastructure*

In much popular and political discourse, development is identified with, and measured in units of, cement. And so one must always be careful when the lack of infrastructure is mentioned as a significant obstacle to development. This is because, whether consciously or not, interviewees may just be assuming and repeating this discourse. That said, it is notable that the issue of infrastructure, principally that of roads, appears largely as a restriction in the different case studies: local roads to access agriculture and livestock markets (*Lares*); ports and airports to access bigger markets (*Cauquenes*, *Constitución*); and the provision of water in *Maule* and *Puebla*.

*2. Market Access*

Consistent with extensive literature, the cases reiterate that having access to different markets (products, labor, finance, etc.) is of key importance in broadening economic opportunities, not to mention that limitations to said access constitute a serious restriction. In *Cauquenes*, the lack of access to quality labor markets comes up, while in *Cuzco* the lack of access to tourist markets was emphasized (for the sale of local crafts and the provision of services, such as hotels and restaurants, etc.). The cases

also confirm that access to markets should be seen as both a physical problem (mediated by distance and infrastructure) and a social problem (mediated by institutions and social relationships). In fact, the case-analyses place greater emphasis on the social factor. In *Calca*, powerful local elites exclude farmers and working class people from municipal handicraft markets, and powerful tourism operators in the city of *Cuzco* and/or international companies control the tourist routes, thereby excluding local companies. In *Puebla*, the fact that public programs determine how beneficiaries of public funds use them has limited the possibilities for investment in transforming structures of production.



*Human Capital, Culture of Commerce and Emigration: The Brains that Stay and Those that Leave*

Lastly, in the three case studies, interviewees identified human capital—either its quality or its absence—as a BCG and a source of marginalization. Problems were associated with obstacles in accessing quality education, either because of an absolute lack of schools (*Cauquenes*) and/or because the process of gaining access to training programs is complicated for farmers with few credentials (*Puebla*). The result of these different obstacles is a population with limited levels of schooling (*Maule*) or technical skills (*Puebla*).

The other way in which human capital restricts growth has to do with the fact that young people migrate in search of economic opportunities, which results in an aging of the local population and *brain drain* (given that those who leave are more educated.) This is in issue in *Maule* and in *Puebla*. In *Puebla* however, if migrants return, they tend to assume the role of businesspeople and promote local investment and the consolidation of certain markets.

At the same time, restrictions on economic growth may be associated with cultural forms of market access that frustrate processes of wealth accumulation, as is the case in *Lares* (*Cuzco*). Gudeman (2001) argues that populations can establish different ways of inserting themselves into markets depending on their histories and cultural patterns.

In the case of *Lares*, the cultural and historical heritage of the *hacienda*, together with environmental limitations leading to low productivity, have influenced the formation of a domestic economy with limited access to regional markets. The economy is based on bartering with areas at lower altitudes, selling at local markets and subsistence farming with communal rules governing access to resources.

### *Institutional Forms and Social Relations underlying BCG's and Marginalization*

*1. Investment and Public Policies*



In all of the territories, public investment appears to be a key factor, and in many cases it is identified as a BCG, although the interviewees and the authors also believe that this same investment has the potential to reduce BCG's. Current public sector investment is viewed as a BCG under the following circumstances:

- When it is not aligned with the productive potential of the territory. This is an issue that appears to be greater in *Puebla*. Here public sector investment focuses on large scale investments (a gas pipeline and a highway) of national priority. It does not, however, catalyze the territory's economic potential, and it may even hamper it because it involves the expropriation of land.
- When it is absent. Here the issue that arises in each of the three case studies is the lack of public sector investment in infrastructure focusing on enhancing endogenous processes of development. Above all, interviewees noted a lack of investment in roads and quality education.
- When it ends up being captured by elites who use their social networks to gain privileged access to public funds.

Although public investment is identified as a BCG in the studies, in practice the interviewees seem to imply that the problems lie in the fact that the investment is not used to reduce more deeply-rooted growth restrictions (infrastructure, finance, human capital, physical environment). In this sense, rather than consider public investment a

BCG in itself, it is more accurate to conclude that the way in which it is deployed can generate BCG's. This implies that the underlying problem has to do with the rules that determine how such public funds are used and the institutions that define these rules as well as the priorities for public investment.

We also observe a disconnect in public policies, in particular between what government programs offer (e.g. tractors) and what territories require (e.g. credit and technical assistance). Furthermore, it is difficult to access these programs because this requires political connections or because access requirements (such as the need for a formal property title, as in *Puebla*) are defined in ways that place programs beyond the reach of many. That said, it is notable that in *Constitución*, Chile, government subsidies for forestry are, by and large, what makes the dynamism of the territory possible.



2. *Rules of Access to Government Funds*

Government investment can also stymie the reduction of BCG's and foment social marginalization due to the rules that determine the use and access to these funds. In *Puebla*, in order to access certain government funding, applicants need to demonstrate that they own their property. This is difficult because documentation is rare in *Puebla* and there isn't much official support for obtaining it. Another rule has to do with the expropriation of assets. In *Puebla*, in order to facilitate government investment in large-scale infrastructure projects, public agencies can expropriate land without compensation. In *Cauquenes*, the law appears to facilitate—even if not intentionally—processes that concentrate land in the hands of timber companies.

3. *Elites and Social Networks*

The institutional forms and arrangements that emerge as most important in all three case studies relate to elites and the social relationships through which they operate, which, at the same time, serve to reproduce the privilege and power of these elite groups. Interviewees

repeatedly attributed problems of unequal access to markets, education, and public resources to the power of a territory's elites and their ability to utilize their social networks.

This power has two major effects. Firstly, it reduces the possibility that actors with fewer resources can access markets. This is very clear in the case of *Calca* (*Písac*), for example, where the elites manipulate the city's control of the local market to such an extent that the rural community members can't get stalls in the market. Secondly, it reduces access to public resources. For example, in *Puebla* information on public funds circulates in a privileged manner through elite social circles; there are cases in which beneficiaries of agricultural programs were all relatives of the mayor who implemented the program. People comment that, in general, the federal programs are all negotiated by agents contracted by mayors or local authorities. In a similar fashion, in *Maule*, a broadly held perspective among interviewees is that municipal governments are guilty of clientelism, giving out handouts, especially in *Cauquenes*. Another possible effect of this power is that it concentrates resources among elites whose culture is primarily one of rent-seeking rather than entrepreneurism. This appears to be an obstacle to making the territory of *Cauquenes* more dynamic, insofar as land is concentrated in the hands of individuals who do not invest in it, but simply live off the money they collect from renting it. Indeed, in *Maule*, and above all in *Cauquenes*, the weak political and economic leadership of the elites is a serious limitation. On the one hand, the elites are unable to articulate a vision for the future of the territory and, on the other, municipal authorities are unable to attract public resources with the same efficacy as in emerging territories (something that we also found in *Tanguismanalco* and in *Lares*).



4. *Extra-Territorial Decisions*

In the three case studies, marginalization is strongly influenced by actors from outside the territory or at least by processes and decisions that are exogenous to the territory. These exogenous actors are both

public (the central government) and private (national and international capital) and, in most instances, a combination of the two. These extra-territorial actors respond to goals and priorities that are not those of the territory; rather they use the territory as a means to their ends. The fact that the priorities of such actors are national or corporate has the effect that actors within the territory do not have much of a voice.

In Mexico, for instance, the decisions on where to implement significant infrastructure projects (a gas pipeline and a national highway) were not made within the territory, even though the investments will have a significant impact on the territory. Likewise, there is little to no local participation in identifying production support programs that would be most appropriate to the needs of each area. In Peru, private actors (tourism agencies) from outside the Sacred Valley define the tourism routes that foreign visitors follow. The spatial and social structure of this route defines which local companies and sub-territories benefit from the route and which are left out by it. Lastly, in Chile, an exogenous decision (by both the state and a private company) defined where a plant for forestry products was to be built. Again, this decision determined the geographic distribution of benefits and costs generated by the plant; however, this case is slightly different. Despite the marginalization of territorial actors from this decision-making process, these external actors did set in a motion a process that ultimately extricated the territory from its situation of poverty.



### *Escape Routes: Liberating Local Development from Traps*

Escaping poverty and inequality traps is difficult because, as the case studies demonstrate, there are both structural and contingent restrictions on growth and inclusion. The structural restrictions have been created and perpetuated over time by historical processes involving many social factors. These include the perpetuation of rent-seeking cultures among elites and subsistence cultures among communities, as well as the rigidity of exclusionary social networks that allow elites and their allies to hijack opportunities for their own benefit.

However, the cases also demonstrate that structural restrictions are not immutable. In each case there are factors of change, be they social, institutional and/or organizational, that break with the pre-existing institutional paradigms. These changes generate new opportunities that facilitate the appearance of escape routes from the traps of poverty and inequality. Here we comment on the most notable factors identified in the three studies.

Each case suggests the importance of a territorialized vision of the future that, at the same time, includes the entire territory and revolves around one or more of the economic axes that link processes and the social groups within it. These visions define new directions and aspirations. While in no case study is there an ideal vision, they highlight the importance of a forestry vision in *Constitución*, the vision of an agricultural economy based on new products in *Santa Isabel Cholula*, or the agribusiness vision in *Yanatile-Quelloúno*. The actors who led the articulation of these visions were the forestry industry in *Constitución*, certain networks of producers in *Cholula*, and farming organizations in *Yanatile-Quelloúno*.



The emergence of these central actors has to do with changes in land ownership, in particular agrarian reforms. For example, the economic organizations of *Yanatile-Quelloúno* came into being as a result of locally-driven struggles for land, while the presence of forestry capital in *Constitución* also depended on the previous expropriation of large *haciendas*, which came about as a consequence of the way in which Chile's agrarian reform reorganized patterns of land ownership.

The contingent constraints on growth and inclusion in each territory derive from specific and adverse political and economic contexts. The case studies reveal that these restrictions can also be overcome, in particular through opportune public interventions that lay the foundations for escaping from poverty and inequality traps. In *Constitución*, the government installed a cellulose plant and, after privatizing it, continued to support the forestry sector. If we contrast this experience with that of *Puebla*, where public investment is concentrated in large-

scale projects that simply 'pass through' the territory, the implication is that government investment is more likely to foster local development and overcome poverty and inequality traps when it strengthens the natural and human assets that a territory already possesses. To ensure this effect, the mechanisms of public investment have to be independent from the influence of the elites, especially traditional elites.

These case studies demonstrate that the traps can be overcome with or without large industry, with or without small and medium agribusinesses, and with or without government investment. Escaping from these traps can be a process that is either more endogenous (*Yanatile-Quelloúno*; *Santa Isabel Cholula*) or more exogenous (*Constitución*). More important than who leads the process is the fact that the process replaces rent-seeking and exclusionary traditional elites as well as the social networks and institutional ways of doing business that have long sustained their power. In other words, it is important to design transformative public interventions that do not rely upon elites or the social arrangements that produce and reproduce structural restrictions to growth, but rather incentivizes factors that foster change. For example, any intervention in *Yanatile-Quelloúno* should strengthen those same institutional forms that are already facilitating an exit from the traps that have historically restricted growth and inclusion in the territory.



## 6. CONCLUSIONS

The results found in these studies can be summarized in eight key ideas:

1. Territorial inequities both reside in and are expressed through the existence of territories that are chronically lagging behind others in terms of poverty and opportunities for children and adolescents. This situation can exist both in favorable macroeconomic contexts (Chile and Peru) and in contexts of relative economic

stagnation (Mexico). Territorial inequality appears to be a structural characteristic of the region and not a result of the macroeconomic situation.

2. Territory is a key factor, and in some cases an increasingly important one over time, in the inequitable distribution of opportunities.
3. The spatial distribution of territories with poverty/opportunity traps is not random and tends to be concentrated in less urbanized areas with smaller populations. These territories often have less human capital, a greater concentration of primary sector economic activities, and a greater proportion of indigenous and afrodescendant inhabitants.



4. Large swaths of the population being vulnerable to poverty is a growing phenomenon in the countries studied. The pathway out of poverty is not one that leads to permanently improved levels of well-being but rather to a state of vulnerability.
5. Despite the existence of these poverty traps, there is evidence that the average income of people in poverty has grown faster than it has for people with higher incomes. However, this convergence of income is very slow and there is evidence of polarization within these countries, with one set of territories converging to standards of living that are relatively high, while other sets of territories are converging towards much lower living standards.
6. Territorialized poverty traps are defined by political-institutional factors that are both internal and external to territories. Local authorities tend to be clientelists, favor hand-outs and have a limited capacity for managing local actors in attempts to improve the situation of the territory in question.
7. Whether traps persist or are overcome, often depends on the decisions of actors residing outside the territory.
8. Public policies in some cases perpetuate poverty traps, particularly when they are not aligned with the productive capacities of the territory, when they are hijacked by certain elites or simply when the public sector is absent from the territory.

This is the predicament of a situation of heterogeneous territorial development in which a significant portion of the population do not share in the benefits of economic growth. The inequitable distribution of opportunities also presents an ethical problem, particularly in the case of children and adolescents in these areas, where external circumstances completely outside of their own control define their chances for development. The place where they are born and live is a highly relevant factor in determining the quality of life they can expect to have. While there are indications of some convergence among territories, the process is very slow. This supports the case for an active public policy intervention.



Effort needs to be reoriented so that greater consideration is paid to the territorial dimensions of development programs. Currently these considerations are largely absent from policies in the three countries studied. Moreover, public interventions should be designed on the basis of familiarity with underlying social processes in the territories so that any intervention identifies both the causes of poverty and inequality traps as well as the social changes required to facilitate a reduction of poverty and inequality.

Development policies should consider a combination of place-based initiatives and 'spatially sensitive' sectoral policy. Place-based interventions should stimulate capacity development within territories and contribute to a reduction in the persistent gaps present among them. Spatially-sensitive sectoral policies should build features of the broader territorial context into their very design and implementation. These policies should recognize, from the very outset- that they will produce territorially-differentiated effects, and, if necessary, they should include instruments to mitigate these effects.

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# II

# POVERTY, VULNERABILITY AND OPPORTUNITIES IN CHILEAN FUNCTIONAL TERRITORIES (1992 – 2002)

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## 1.- INTRODUCTION

In recent decades, Chile has stood out in Latin America for its high economic growth rate. According to World Bank statistics, between 1990 and 2007, the country doubled its per capita GDP, surpassing Argentina, Brazil, Mexico, Uruguay and Venezuela. This excellent economic performance was reflected in improvements in the quality of life of its citizens. The evidence of this is found in the sustained growth of its Human Development Index score, which shows a marked tendency towards getting closer to the average score of more developed countries, as well as ranking Chile as a leader in Latin America. The nation approached its bicentennial in 2010 with the highest levels of social and economic development in Latin America (Larrañaga, 2010).

That said, these excellent results obscure important inequalities, both between groups of individuals and between territories within the country. The OECD's 2014 report found Chile to be the member country with the greatest income disparities. The benefits of its impressive growth have not been distributed in a homogeneous manner, leaving significant portions of the population lagging behind the rest. For example, data from the 2011 National Survey of Socioeconomic Characterization (*Encuesta de Caracterización Socioeconómica Nacional*-CASEN) revealed that average earned income was 14 times higher in homes in the highest quintile compared to homes in the lowest quintile. It also

found more poverty in younger segments of the population, a greater probability of women living in poverty and a significantly higher proportion of indigenous people living in poverty compared to the non-indigenous population. Access to education was also inequitably distributed, with the highest socio-economic group benefitting, on average, of five more years of schooling compared to the poorest segment of the population.

Inequalities are persistent at a territorial level as well. The literacy rate for the adult population reached 98 percent in urban areas compared to 91 percent in rural areas. Over 87 percent of children under the age of six had adequate, age-appropriate nutrition in the region of *Tarapacá*, while this figure dropped to 76 percent in *Maule*. While only one out of every one hundred urban homes in *Arica* and *Parinacota* had deficits in access to sewage, this figure reached 67.5 percent among rural homes in *Tarapacá*.



These disparities at a regional level tend to be even more marked in the available data for 'communes', which are the smallest administrative division in Chile. Data from the Health Ministry revealed that, in 2010, the infant mortality rate in *Putre* was 47 times higher than in *Quellón*, while in the same year, fourth graders in *Vitacura* scored 112 more points on SIMCE exams (the government's standardized exams) than those from *Camarones*.

National averages can clearly obscure relevant information for groups of people and territories that lag behind. At the same time, a good part of the statistical information available at a regional level hides important gaps between communes from the same region.

The aforementioned differences, both in terms of outcome variables and opportunities, reveal significant challenges for Chile, a country whose average income levels are close to those of developed nations. For this reason, it is important to further study different dimensions of inequality. The goal of this study is to generate concrete evidence regarding the territorial aspects of inequality at a more granular level than is currently found in the literature available.

A key factor in poverty (or efforts to overcome it) is the ability for household members to earn income (Robles, 2011) and, by extension, access labor markets. The ability to generate resources doesn't depend solely on the commune where an individual lives, but rather it depends on all of the communes where he or she would be able to work without having to migrate. For this reason, the Functional Territory was the spatial unit of analysis. Functional Territories (FT) are places where people live, work and have access to services they need in their daily lives, as well as establishing social networks and participating in community and public life activities. These territories were identified through the 2002 census[1] in which individuals identified the commune where they live and the commune where they work or study. The FT are single territorial units that group together communes with a high frequency of economic and social interactions between people and homes, organizations and companies (Berdegué et al., 2011). In this book, each FT is identified by the name of its largest town.[2]



Lastly, it is important to mention that the focus of this study is to analyze social dynamics at the most granular level possible. To do this, the most current micro data from censuses taken between 1992 and 2002 are used. In order to complement this, regional comparisons are presented for 2003 and 2011.[3] While this doesn't allow us to address the heterogeneity observed in territories of the same regions, it does shed light on whether certain patterns persist or are changing.

1 See: Berdegué, J.; Jara, B.; Fuentealba, R.; Tohá, J.; Modrego, F.; Schejtman, A. y Bro, N., 2011. "Territorios Funcionales en Chile". Working Document N° 102. Programa Dinámicas Territoriales Rurales. RIMISP, Santiago, Chile.

2 More information on the construction of each FT is found in the Berdegué et al., (2011) appendix.

3 Data from CASEN surveys from these years.

## 2.- POVERTY AND VULNERABILITY

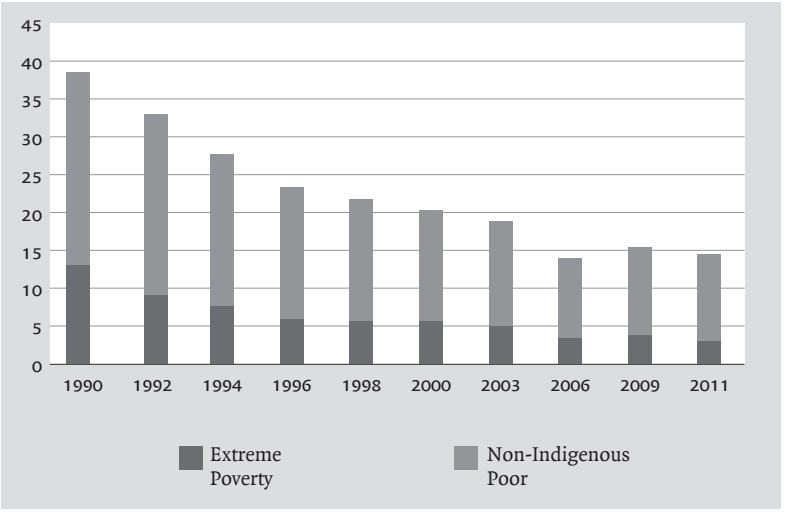
### *Poverty in Chile, a Historical Perspective*

There has been a permanent reduction of poverty in Chile. In one decade, the poverty rate fell by nearly half, from 38.6 percent in 1990 to 20.2 in 2000. This tendency continued into the next decade, with the exception of a slight increase in 2009, until it hit 14.4 percent in 2011. The following graph shows this evolution.

Studies attribute this performance to the confluence of a series of factors, especially macroeconomic dynamism and profound changes in social policy (Raczynski and Serrano, 2005). With the return to democracy, the government took a more active participation in social policy. Larrañaga (2010b) summarizes these changes, in which the government implemented public policies that favored long-ignored groups, with the concept of 'paying a social debt'. These policies led to sustained increases in public spending on social programs which nearly doubled during the 1990's.



GRAPH 1 – POVERTY AND EXTREME POVERTY RATES 1990 - 2011



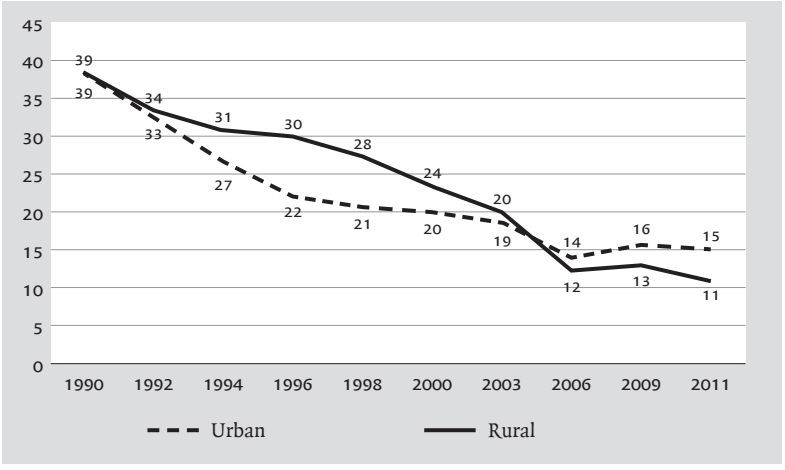

Source: Ministry of Social Development (*Ministerio de Desarollo Social*).

A review of the composition of poverty reveals that it is found in greater concentrations among indigenous populations. It is also a phenomenon that has a particular effect on children, who, during the period of study, had higher poverty rates which, at certain points in time, were double that of other groups. At the other extreme, poverty among the elderly was always below average.

At a territorial level, there is a change in the incidence of poverty from a predominantly rural phenomenon to a predominantly urban one. Starting in 1996, rural poverty decreased at faster rates than urban poverty did, becoming more pronounced between 2003 and 2006 when the change takes place.



GRAPH 2 – POVERTY RATES BY AREA 1990 – 2011



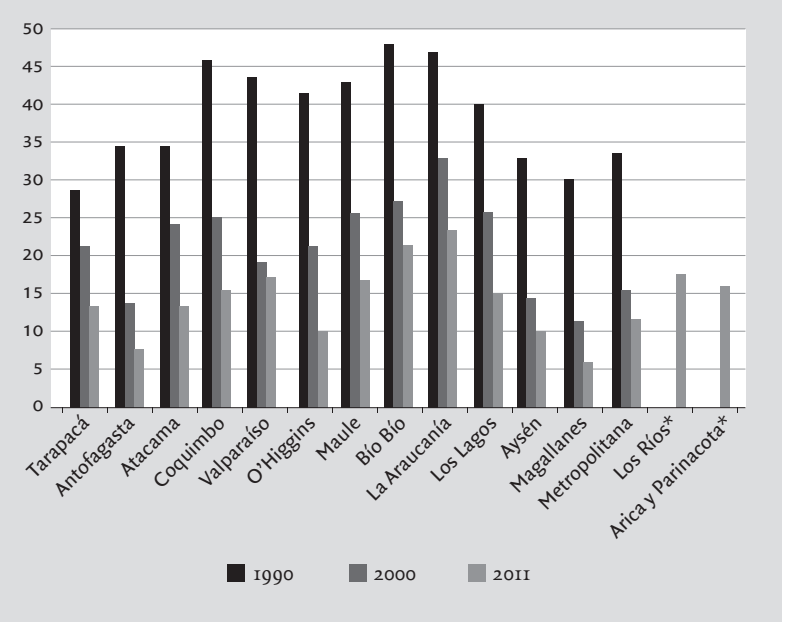

Source: Ministry of Social Development.

Poverty rates have pronounced differences at a regional level. There are very dynamic regions which have registered results for overcoming poverty that surpass the national average, while others are more marginalized. For instance, Region IX of *Araucanía*, which historically has had poverty rates above the national average, had a poverty rate in 2011 that was nearly four times higher than the rates found

in the XII Region of *Magallanes* and Chilean Antarctica, the region with the lower rates that year. In particular, five regions stand out for consistently being below the national average (*Coquimbo*, *Maule*, *Bío Bío*, *La Araucanía* and *Los Lagos*), while four stand out for consistently performing better than the national average (*Antofagasta*, *Aysén*, *Magallanes* and Chilean Antarctica, and the Metropolitan Region).

Graph 3 – Poverty Rates by Region 1990 – 2011






*Regions created in 2007
Source: Ministry of Social Development. Compiled by Authors

### *Poverty in Functional Territories in Chile*

As the statistics presented in earlier sections demonstrate, national and regional averages obscure significant disparities in living standards within the territories. Unfortunately, the surveys available in Chile regarding household budgets and income, which are used to

create poverty indicators, do not compile information at the commune level. For this reason, RIMISP's estimates of communal poverty are used (Modrego et al., 2009). Modrego's work combines the most recent micro-data for communes from the 1992 and 2002 censuses with CASEN surveys from 1992 and 2003 in what is called the Poverty Mapping methodology (Elbers et al., 2003), the goal of which is to get income estimates for households at a commune level. Applying official poverty lines to this data, rates of communal poverty can be estimated.

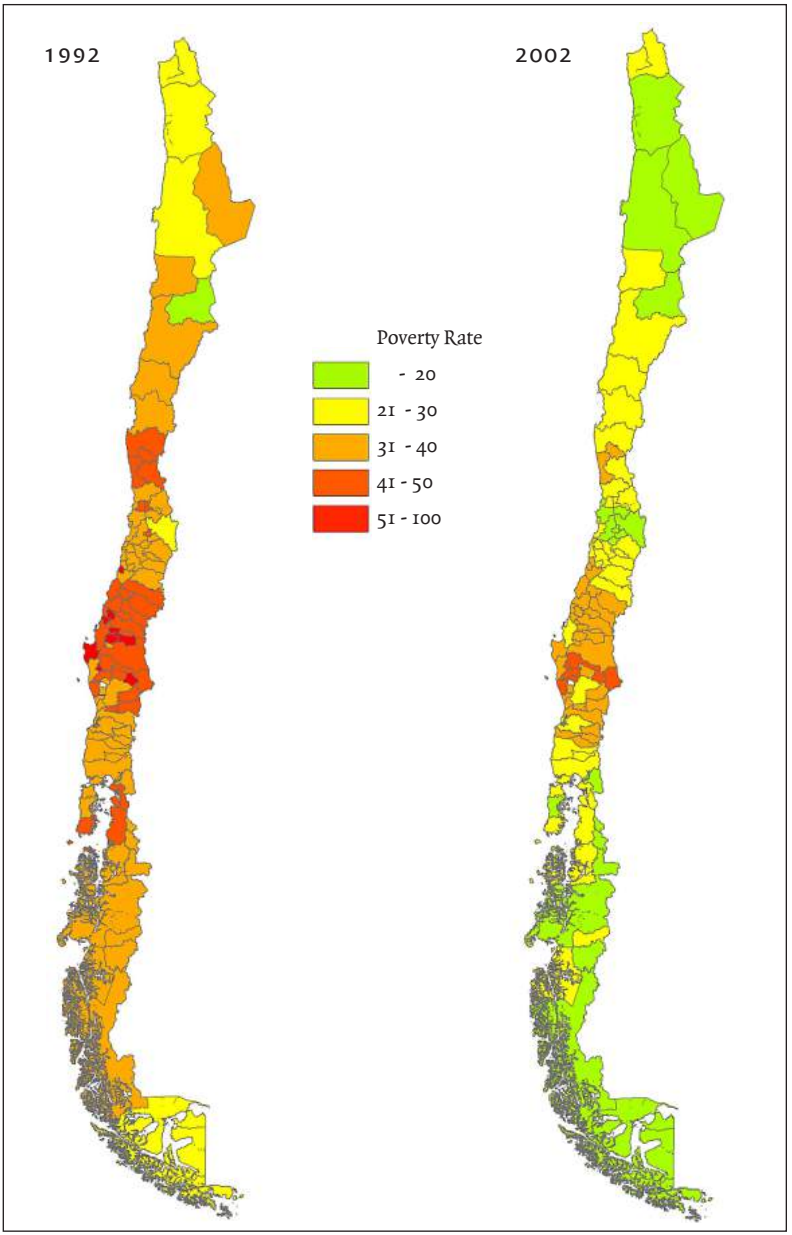
Below are two maps with estimated poverty rates for 1992 and 2002. The scale goes from light green, where poverty is relatively low, to red, where the rate is high. Significant drops in the poverty rate can be observed, although there is also strong territorial heterogeneity. In 1992, the simple average for poverty at the level of Functional Territories reached 38.7 percent. Territories at half a standard deviation below this level were considered advantaged, with thirty territories meeting this criteria. Territories with half a standard deviation above this level were considered to be lagging behind, with thirty-one falling into this category. The most extreme cases were found in Antarctica, the territory with the lowest incidence of poverty (10.6 percent), and *Vichuquen*, which was in the worst situation, with a poverty rate five times as high (55.3%). In 2002, the simple average for poverty at the level of Functional Territories fell by more than 10 percentage points to 27.6 percent. In this period, using the same criteria as that used in 1992, 35 territories could be considered advantaged, whereas 36 were deemed to be lagging behind. The extreme cases once again were found in Antarctica, with 0.5 percent of its population below the poverty line, and *Galvarino*, where 46.8 percent of the population was in poverty. An illustration of these dynamics can be seen in the following maps.



During the period analyzed, none of the territories experienced increases in their poverty rates, and 59 had statistically-significant reductions[4], while 44 did not experience any statistically-significant changes.

4 With 95 percent confidence.

MAP 1 – DISTRIBUTION AND TRANSITION POVERTY




Source: Data from Modrego et al., 2009. Compiled by Authors.

### *From Poverty to Vulnerability*

Traditional and dichotomous measurements of income poverty hide the fact that many households that don't qualify as poor are vulnerable to internal and external shocks that could easily push them into poverty (Pritchett et al., 1999). In particular, Raczynski and Serrano (2005) estimate that the households located between the 1st and 8th income distribution deciles are in highly unstable situations.

This instability or vulnerability may be associated with endogenous shocks to the household, such as losing a job, illness and/or events that alter the structure of the household (births, deaths, separations, etc.). It may also be associated with exogenous factors such as natural disasters or changes in the macroeconomic situation. "The events or breakdowns in the realms of work or family, for a variety of reasons, have become more frequent: jobs are more unstable as is household composition and couple relationships. The result is greater income vulnerability which affects the poor sectors and the middle stratum" (Raczynski and Serrano 2005).



In this study, we define vulnerability as a threshold of income below which there is an elevated risk of becoming poor. According to López Calva and Ortiz Juárez (2011) and Ferreira et al., (2013), this threshold is defined as the per capita income for the household below which there is a greater than ten percent chance of becoming poor[5].

Data from the Ministry of Social Development's CASEN Panel from 2006 to 2009 is used to create a transition matrix that identifies poor and non-poor in the base year (2006) through 2009, identifying how many of them maintained or changed their situation.

This matrix shows four categories of households: 1) the never poor; 2) the non-poor in 2006 who became poor in 2009; 3) the poor in 2006 who overcame poverty in 2009; and, 4) the always poor. Downward mobility was small, with only 16.6% of the non-poor in 2006 going on to become poor in 2009 (Category 2). In line with the reduction

5 For more details on the methodology, see the methodological appendix.

TABLE 1
POVERTY TRANSITION MATRIX CHILE (%)

| | | Ending Period (2009) | | Total |
|---|---|---|---|---|
| | | Non-Poor | Poor | |
| Starting Period (2006) | Non-Poor | 83.4 | 16.6 | 100 |
| | Poor | 53.0 | 47.0 | 100 |

Source: CASEN Panel data. Compiled by the Author.



of aggregate poverty at a national level, the percentage of poor in 2006 who overcame poverty in 2009 reached 53 percent (Category 3).

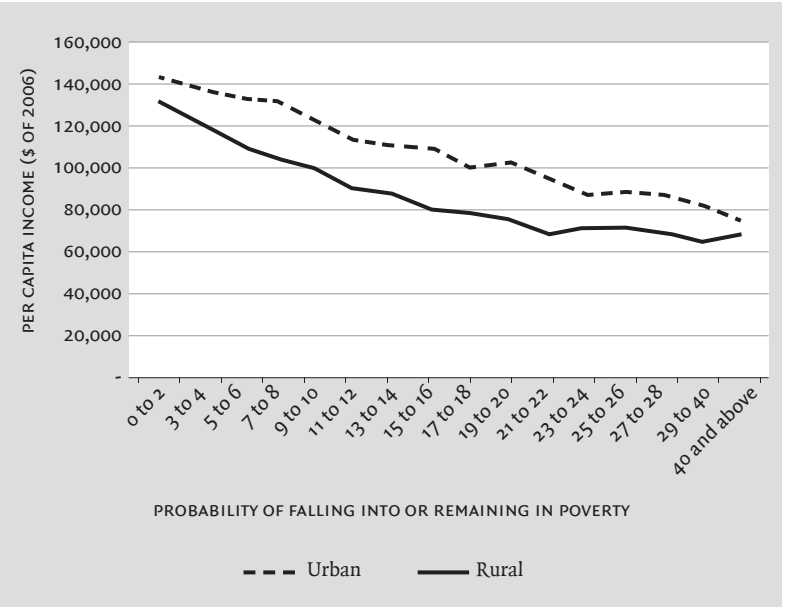
Taking Categories 2 and 4, a logit model is implemented in order to estimate the probability of staying or becoming poor based on the observed characteristics at the base year (2006). These characteristics include: educational level, gender, age and labor characteristics of the head of household, characteristics of the house (access to services, quality of construction) and shocks endured by the household, among others. The details of the regression are found in Appendix 1 of this chapter.

Once the logit model was estimated, a regression analysis was applied using the same variables in order to estimate per capita household income and an estimated level of income associated with each probability of becoming or staying poor. Considering that the poverty lines were different for urban and rural areas, the coefficients of the estimations were applied to separately determine the results for urban and rural households. The results are presented in the following graph.

The vulnerability threshold is Chilean $118,367 (2006) in per capita income for an urban household and Chilean $96,916 for a rural household. The urban threshold is equivalent to US $9.50 (PPP 2005) per day, consistent with the US $8.50 to $9.90 that López de Calva and Ortiz Juárez (2011) estimated for Chile using CASEN Panel data from 2001-2006, and the US $10.00 found in other research into the subject.[6]

6 Birdsall, 2010; Kharas, 2010; Milanovic and Yitzhaki, 2002; Ferreira et al., 2013.

GRAPH 4 – PER CAPITA MONTHLY INCOME AND PROBABILITY OF BECOMING OR STAYING POOR



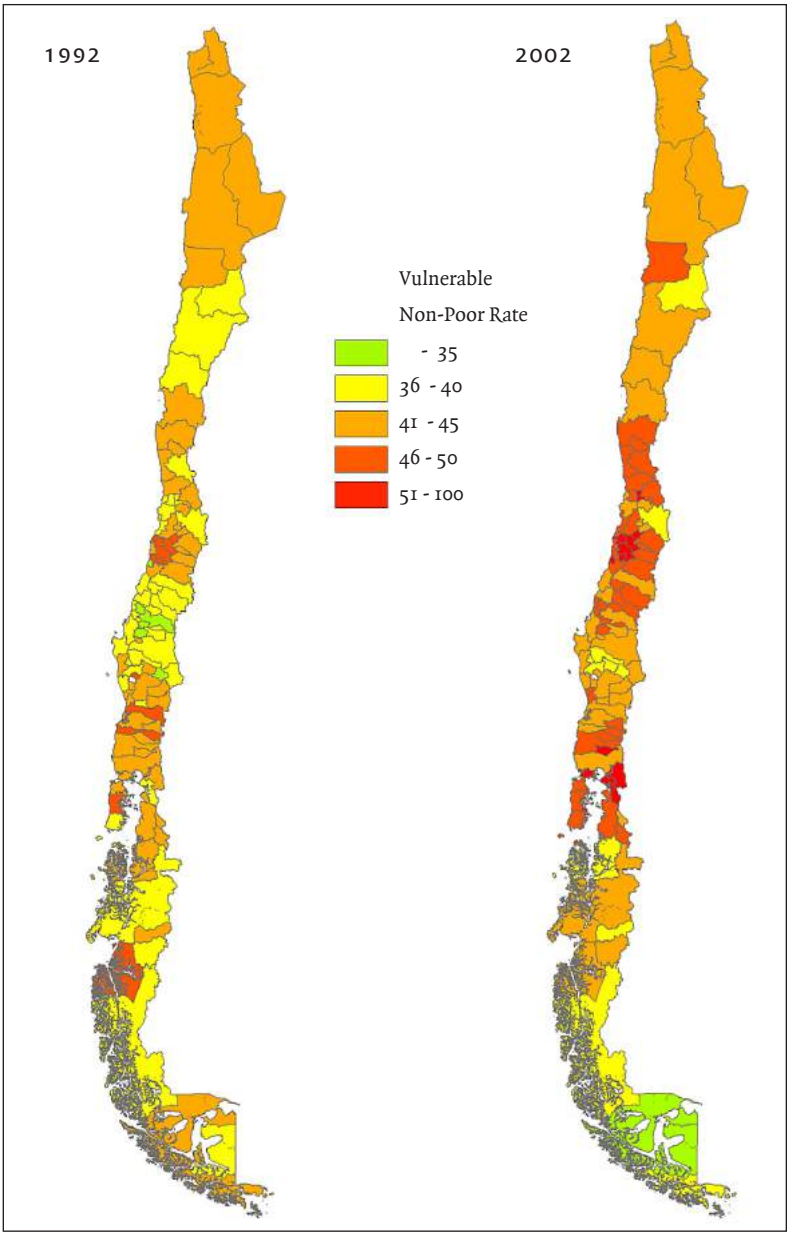

Source: CASEN. Compiled by the author.



RIMISP's estimates of communal poverty (Modrego et al., 2009) were used to calculate vulnerability rates in functional territories by adjusting them to the estimated vulnerability threshold. The maps below present vulnerable non-poor rates for 1992 and 2002; the scale goes from light green, where the rate of vulnerability is relatively low, to red, where the rate is high.

Alongside the reduction in poverty, an increase in the vulnerable non-poor can be observed. The vulnerable non-poor are below the vulnerability line, but above the poverty line. The simple average for this group at a territorial level went from 41.4 percent in 1992 to 45 percent in 2002. The following map presents the distribution and transition of the vulnerable non-poor during the period of study.

MAP 2 – DISTRIBUTION AND TRANSITION, VULNERABLE NON-POOR




Data Source: Modrego et al., 2009. Map created by the Author.

During the period of study, positive dynamics were present in 88 percent of the studied FT (91 territories).[7] In 72 of these, the levels of vulnerable non-poor increased, the poverty rates dropped and the middle class grew. Furthermore, in 16 territories the rates of vulnerable non-poor decreased, poverty decreased and the middle class grew. Negative dynamics were observed in ten territories. In six of these, changes in the vulnerable non-poor population were a result of increases in the rates of poverty and decreases in the middle class. In the remaining four, the decrease in the middle class was greater than the decrease in the poverty rate.



Changes in the rates of the vulnerable non-poor underscore the need to evaluate not just poverty, but to also broaden the analysis to include vulnerable groups. As was mentioned earlier, overcoming poverty doesn't necessarily mean significant improvements to quality of life, especially if it is associated with a high risk of returning to poverty.

The situation of total vulnerability (vulnerable and poor) is more dramatic than that of poverty alone, despite the fact that this group evolved favorably during the period, as is depicted in the following map. In 1992, the simple average for total vulnerability at the level of Functional Territories reached 80.1 percent, but fell to 72.6 percent in 2002. The data indicate that, in 2002, almost three out of every four people in Chile found themselves in a situation of poverty or were at an elevated risk of becoming poor. In terms of spatial distribution, 34 Functional Territories were lagging behind in 1992 and 22 were considered to be ahead, compared to 40 lagging behind and 26 ahead in 2002.

An analysis of the rates of change reveals that 48 FT registered statistically-significant improvements in their levels of total vulnerability between 1992 and 2002,[8] while 54 didn't change, and 1 (*Carahue*) registered a statistically-significant increase in its rate of vulnerability, which went from 83.1 percent to 86.6 percent.

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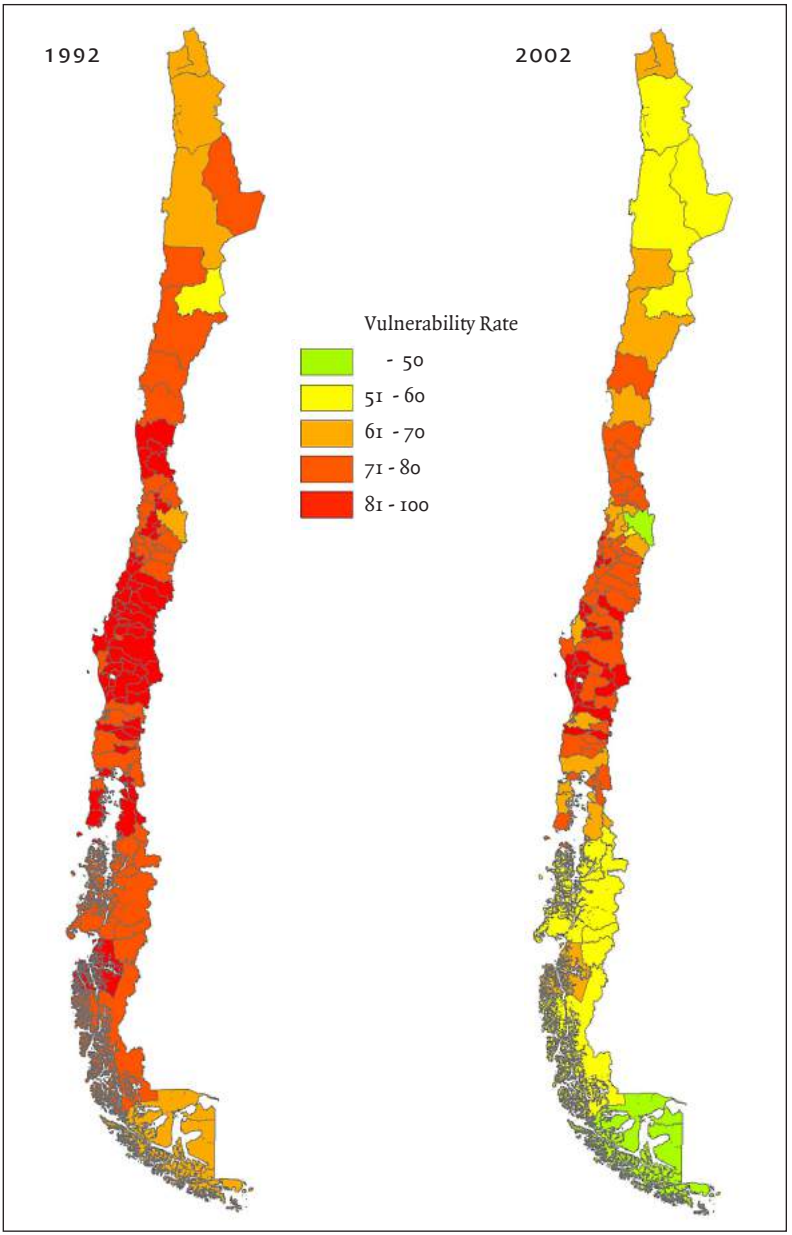
7 For more detail, see the methodological appendix, Table A1.

8 At 95% confidence.

MAP 3 – DISTRIBUTION AND TRANSITION FOR TOTAL VULNERABILITY




Source: Modrego et al., 2009. Map created by the Author.

### *Poverty Traps and Total Vulnerability*

On average, Functional Territories in Chile have demonstrated positive statistics, with decreases of 11.1 and 7.5 percentage points in their rates of poverty and total vulnerability, respectively. Furthermore, no territory's poverty index has worsened, and only one had a higher total vulnerability index; however, despite these average improvements, there are territories that, period after period, continue to lag behind other territories.

The fact that certain territories aren't converging towards average well-being despite improvements for Chile as a whole points to the need for a different means of evaluating the situation of Chilean territories. Territories with poverty traps are those that are chronically lagging behind the average of the rest of the territories. From this definition, we can deduce that a territory that grows (i.e., has improved indicators) can still be trapped if this growth is not sufficient enough to help it overcome its underdevelopment issues. At the same time, a territory with stagnating or worsening indicators may still stay out of a trap if its original situation was a positive one in comparison to the national average.

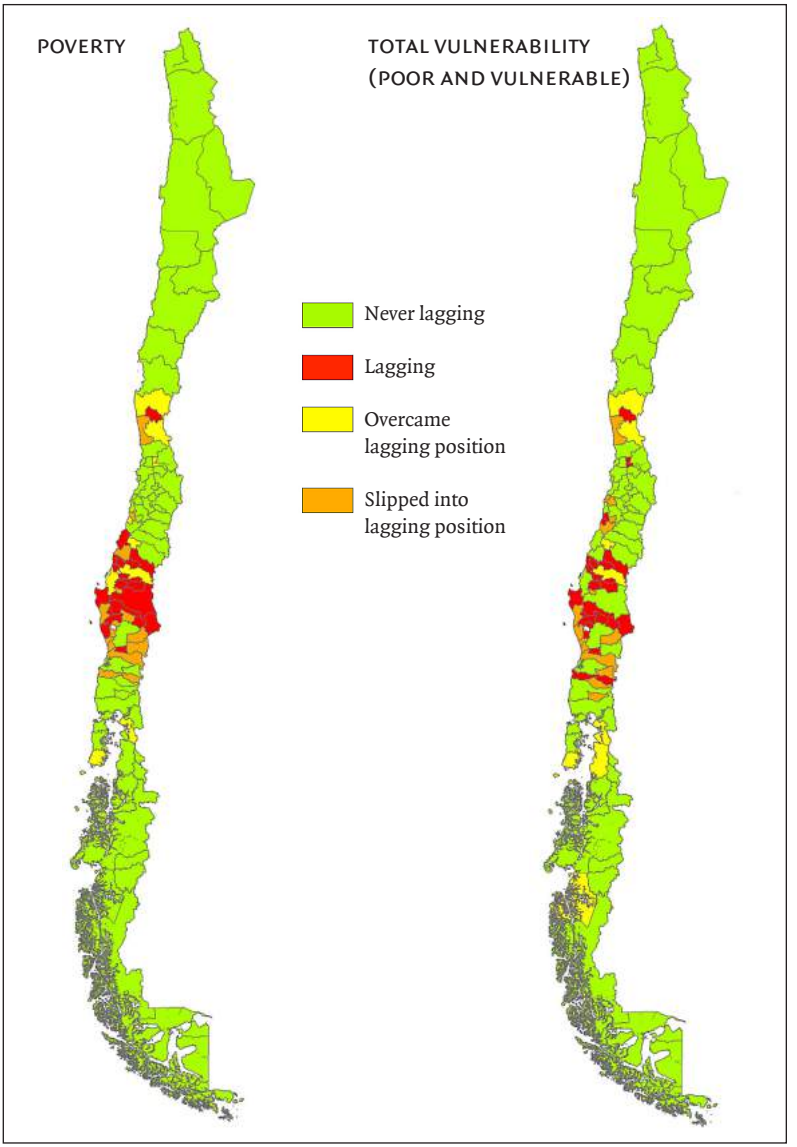


In this study, a territory is categorized as lagging behind when its rate of poverty/total vulnerability for any given period is half a standard deviation or more above the simple average for the territories over the same period. There are four categories of territories:

1. Trapped: lagging behind in 1992 and 2002.
2. Slipped into a lagging position or a situation of downward mobility: not lagging behind in 1992, but lagging behind in 2002.
3. Overcame a lagging position or a situation of upward mobility: lagging behind in 1992, but not in 2002.
4. Not trapped: never lagging behind.

The categories appear in the following map:

MAP 4 – POVERTY TRAPS AND TOTAL VULNERABILITY [9]




Map created by the Author.

9 More information on territories that have poverty or vulnerability traps or that were lagging in one of the two study years appears in Appendix 2 of this chapter.

TABLE 2
POVERTY AND VULNERABILITY TRAPS

| | Number of Territories | % Territories | Population (2002) | % Population |
|---|---|---|---|---|
| | | Poverty | | |
| Poverty Trap | 20 | 19% | 965,452 | 6% |
| Upward Mobility | 11 | 11% | 1,404,610 | 9% |
| Downward Mobility | 15 | 15% | 480,005 | 3% |
| Never Lagging Behind | 57 | 55% | 12,086,718 | 81% |
| | | Vulnerability | | |
| Vulnerability Trap | 26 | 25% | 790,277 | 5% |
| Upward Mobility | 9 | 9% | 541,777 | 4% |
| Downward Mobility | 14 | 14% | 363,969 | 2% |
| Never Lagging Behind | 54 | 52% | 13,240,762 | 89% |

Source: Compiled by the authors.



Twenty territories have poverty traps. They are located in the regions of *Coquimbo* (1), *Maule* (2), *Bío Bío* (10) and *Araucanía* (7). 11 territories overcame their situation of underdevelopment, while 15 fell behind. Lastly, 57 were never lagging behind, including some in *Arica* and *Parinacota*, *Tarapacá*, *Atacama*, *Antofagasta*, *Metropolitana*, *Aysén* and *Magallanes*, where none of the territories were lagging behind in either of the two studied years. The trapped territories and those that demonstrate downward mobility tend to have smaller populations than those that have demonstrated positive dynamics.

As in the case for poverty, the twenty-six territories that had total vulnerability traps were concentrated in *Coquimbo* (1), *Maule* (2), *Bío Bío* (10), *Araucanía* (9), *Valparaiso* (1), *O'Higgins* (1) and *Los Ríos* (2). 17 of the 20 territories that had poverty traps also had vulnerability traps. 9 territories overcame their situation of underdevelopment, while 14 fell into a situation in which they lagged behind. Finally, 54 were never lagging behind. None of the territories in the regions of *Arica* and *Parinacota*, *Atacama*, *Tarapacá*, *Antofagasta*, *Metropolitana* or *Magallanes*

were lagging behind in either of the two studied periods. When it comes to vulnerability traps, the trapped territories and those with downward mobility tended to have smaller populations than those with positive dynamics.

### POVERTY TRAPS AND TOTAL VULNERABILITY TRAPS IN CHILEAN REGIONS (2003 – 2011)

The identification of poverty traps at a Functional Territory level was complemented by a regional analysis that used CASEN survey data to compare 2003 and 2011. This allowed for a more current vision, although its aggregation of territories may hide some differences among territories within the same region.

The analysis identified three regions with poverty traps: *Bío Bío*, *La Araucanía* and *Los Ríos*. When it comes to total vulnerability traps, five regions appear to be chronically lagging behind: *Coquimbo*, *Maule*, *Bío Bío*, *La Araucanía* and *Los Ríos*.

These regions coincide with the findings of the Functional Territory analysis, which would indicate that the problems of chronic underdevelopment persist over time.



## 3.- SPATIAL DISTRIBUTION OF HUMAN OPPORTUNITIES

The poverty analysis performed up to this point reveals an outcome variable that speaks of the inability of certain households to afford a basket of basic goods and services. It is also important to ascertain the different levels of opportunity that individuals have according to the territory where they reside. This was determined through an analysis of the spatial distribution of opportunities to access goods and services considered essential for well-being, with a specific focus on the concept of equality of opportunities (Paes de Barros et al., 2009). This

concept is based on the principle that the differences in opportunities that are most objectionable and, as a result, should be a priority for elimination are those that arise from circumstances that are completely beyond the control of an individual (e.g. gender, race, place of birth). The World Bank's Human Opportunity Index (HOI,[10] Roemer, 1998; World Bank, 2006) was used to evaluate the distribution and evolution of opportunities in the territories. Using data from the 1992 and 2002 censuses, 14 opportunities or advantages that fall under five key aspects of human development were analyzed:



1. Basic Services, which include four advantages:
   - **Water and Sewage:**
     - **Drinking Water:** Homes with access to the public potable water system.
     - **Sewage:** Homes that have toilets connected to the sewage network or septic tanks.
   - **Electricity**: The availability of this kind of energy in the home.
   - **Combined Services Index**: This is a combination of the three advantages mentioned above. This index identifies those individuals who live in a home lacking one of these three advantages.

2. Quality of Housing, which includes three advantages:
   - **Housing Materials**: Based on the Ministry of Social Development's[11] definition of housing constructed from acceptable materials.
   - **Non-crowded home:** Which is the inverse of the index for overcrowding from the Ministry of Social Development. This index considers a household to be overcrowded if more than 2.5 people live in a bedroom.
   - **Combined Housing Quality Index**: this is a combination of the two advantages mentioned above. This index identifies those individuals who live in a home that is lacking one of these advantages.

10 More detail about these estimates can be found in the Methodological Appendix.

11 http://observatorio.ministeriodesarrollosocial.gob.cl/casen/casen_def_vivienda.php

3. Education, which includes two advantages based on the age of the young people and children:
   - **Grade Appropriate Placement—Secondary School:** identifies young people between the ages of 15 and 18 who are in a grade that corresponds to their age.
   - **Grade Appropriate Placement—Primary School:** Identifies children between the ages of 7 and 14 years who are in a grade that corresponds to their age.



4. Goods and Services, which includes two goods and one service:
   - **Refrigerator:** Availability of a refrigerator in the home.
   - **Television:** Individuals who live in a home with at least one television.
   - **Telephone:** Includes access to a landline or cellular phone. The advantage identifies the individuals who live in a home with at least one phone.

5. Poverty: in addition to the 12 mentioned indicators, there are two indicators relating to the condition of living outside of poverty or total vulnerability that were analyzed in the first part of this chapter.
   - **Non-Poor:** minors living in homes where per capita income is above the official poverty line.
   - **Middle Class:** minors living in homes where the per capita income is above the vulnerability threshold estimated for this report.

The following are 'circumstances' or factors that should not influence access to the advantages:
- Area of Residence (urban/rural);
- Functional Territory type (Metropolitan, Urban-Rural, Rural with Multiple Communes, Rural with One Commune [12]);
- Gender of the Head of Household;

12 For more detail on the territorial classification, see Berdegué et al., 2011.

- Schooling of the Head of Household (three dichotomous variables that identify whether the head of the household has completed primary, secondary or higher education);
- Ethnic Origin of the Head of Household (identifies whether the head of household is a member of an indigenous group or is an afro-descendent);
- Economic Activity of Head of the Household (dichotomous variable that indicates whether the head of the household works in the forestry, farming or livestock sector);
- Number of Children in the Home (under the age of 13);
- Dependency Ratio;
- Single Parent Home, and;
- Gender of Minor.



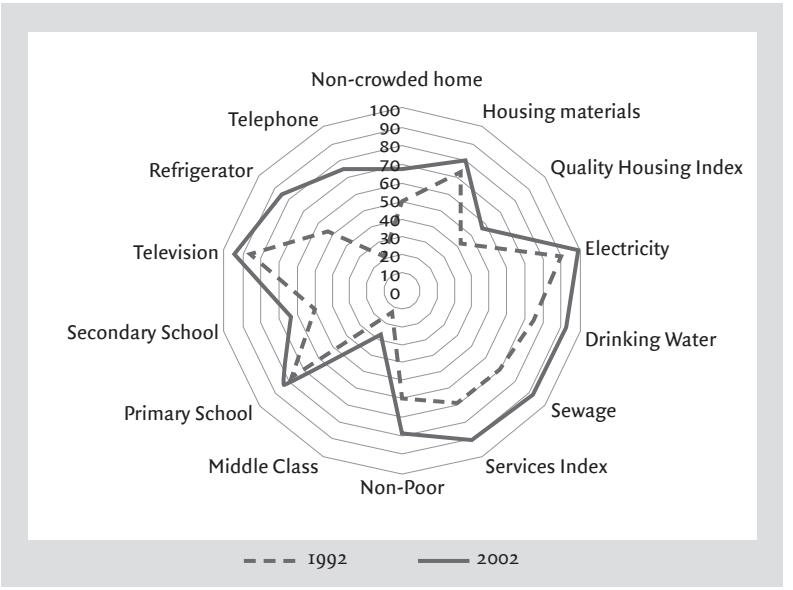
In order to ensure the exogeneity of the studied variables and the circumstances to which they are exposed, young people and children were used as our study universe, which is in line with the World Bank's work on this topic (implicit in the understanding that, at that age, young people and children are not responsible for their education, income or other aspects of the household in which they live).

***Opportunities in Chile***

The data show varied outcomes for the distribution of opportunities at a national level. There are advantages with rates greater than 90 points, alongside some under 50 points. Despite this, there is an optimistic trend in the data. In the decades studied, all 14 indicators show statistically-significant improvements, even in those advantages that started at an elevated level in the base year, such as living in a home with electricity or the availability of a television.

At a national level, the greatest opportunities are found in the advantages of access to electricity and availability of television, which scored above 90 points. On the other hand, there were advantages that, in 2002, scored under 50 points, including the housing quality

GRAPH 5 – DISTRIBUTION OF OPPORTUNITIES
(AGGREGATED NATIONAL DATA) 1992 -2002




Source: Census Data for 1992, 2002 and Modrego et al., 2009. Compiled by the Author.

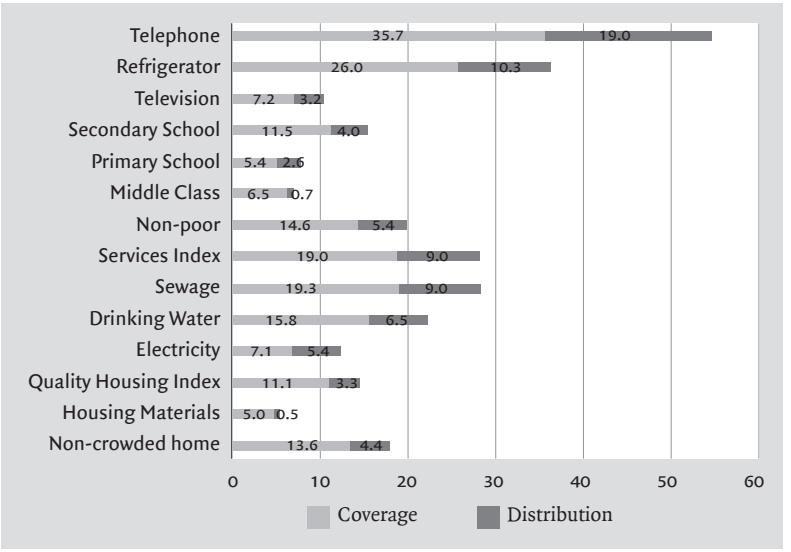


index (47.5) and the opportunity to live in a middle or upper-class home, which lagged behind significantly with only 15.2 points. Income vulnerability stood out as the greatest challenge in Chile's quest for human well-being.

Regarding the evolution of the opportunities, this has been mainly led by improvements in coverage, accounting for more than 50 percent of the registered change in all of the cases. Furthermore, while progress was made in securing a more equitable distribution of these opportunities, it contributed less to the overall change.

The data above reveal that improvements in opportunities are due more to broad policies aimed at increasing average coverage and less to policies aimed at reducing inequities in access to these advantages. Circumstances outside the control of the children and young people

GRAPH 6 – DECOMPOSITION OF THE CHANGE IN THE OPPORTUNITY INDEX 1992 -2002




Source: Census Data 1992, 2002 and Modrego et al., 2009. Compiled by the Author.



carry less weight over time, but they continue to be a relevant indicator by defining the opportunities to which they will have access.

***The Contribution of Territory to the Distribution of Opportunities***

Opportunities for the development of individuals are influenced by variables outside of their control. For this reason, it is fitting to ask how much of an influence each circumstance has on the unequal distribution of these opportunities. A Shorrocks-Shapley (1999)[13] decomposition exercise for all of the studied variables was undertaken in order to answer this question. This decomposition seeks to identify the contribution of each circumstance, (or group of circumstances) to the total inequity. For this analysis, the variables were consolidated into eight groups:

13 A detailed explanation of the decomposition appears in the Methodology Appendix.

1. Territorial Factors: including area (urban/rural) and four Functional Territory classifications (Metropolitan, Urban-Rural, Rural Multi-Communal, Rural Uni-Communal);
2. Education of the Head of the Household: including three dichotomous variables that identify if he/she has a primary, secondary or higher education;
3. Gender of the Head of the Household;
4. Gender of the Child/Young Person;
5. Single-Parent Home;
6. Composition of the Household: including variables for the number of children and the dependency ratio in the home;
7. Ethnic Origin of the Head of the Household, and;
8. Economic Activity of the Head of the Household.

The contribution of each circumstance is presented in graphs that compare their weight in 1992 and 2002. The Shorrocks-Shapley decomposition estimates the individual contribution of each group to the total inequity as a function of the remaining variables (groups used), so that the sum of individual contributions totals 100 percent.

**Services**

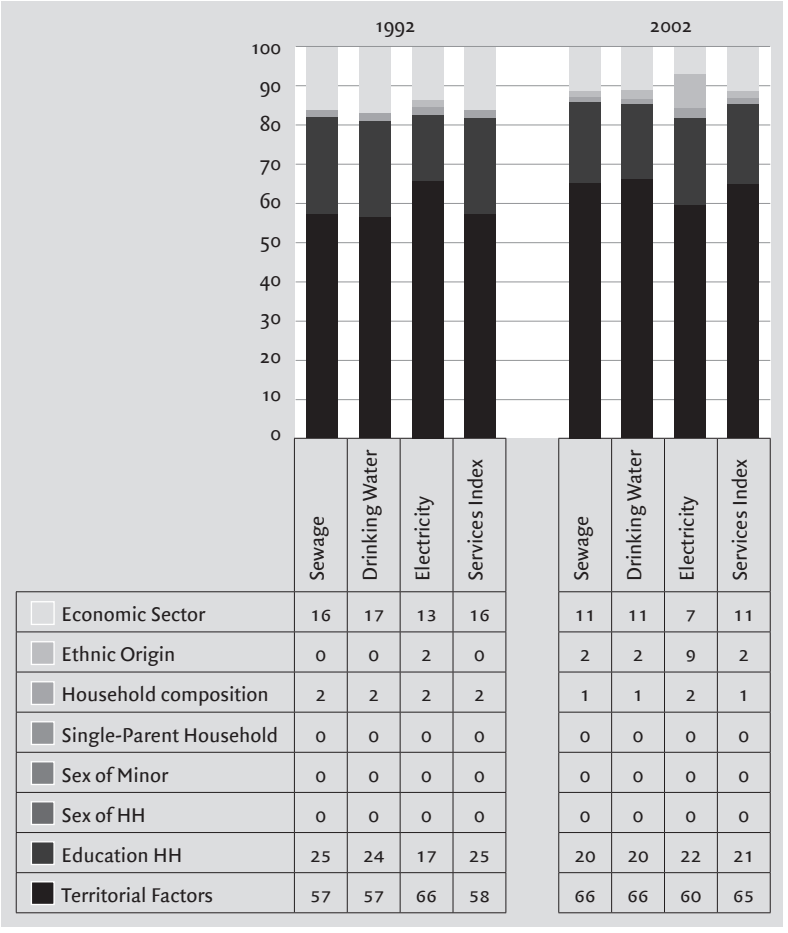
Along with the improvements in coverage explained earlier, the inequity in the distribution of basic services also decreased. The decomposition for inequity reveals that territory is the principal circumstance accounting for its distribution, and its weight in the distribution tends to grow over time. This may indicate an improvement in coverage is occurring within territories that already had access to these services, which would, therefore, allow the weight of the remaining circumstances to decrease. Given the dynamics of networks, it is more difficult to reach new areas and this increases the relative weight of the territory.

By 2002, territory accounted for 65.6 percent of the differences in the distribution of the opportunity to live in a home with bathrooms connected to sewage systems or a septic tank. This, along with the

head of the household's level of schooling and economic activity, accounted for more than 95 percent of the total inequity. This situation practically repeats itself in the analysis for access to drinking water.

In 2002, territory accounted for close to 60 percent of the inequity in terms of the distribution of electricity, followed by the schooling of the head of the household.

GRAPH 7 – DECOMPOSITION OF INEQUITY – SERVICES 1992 -2002



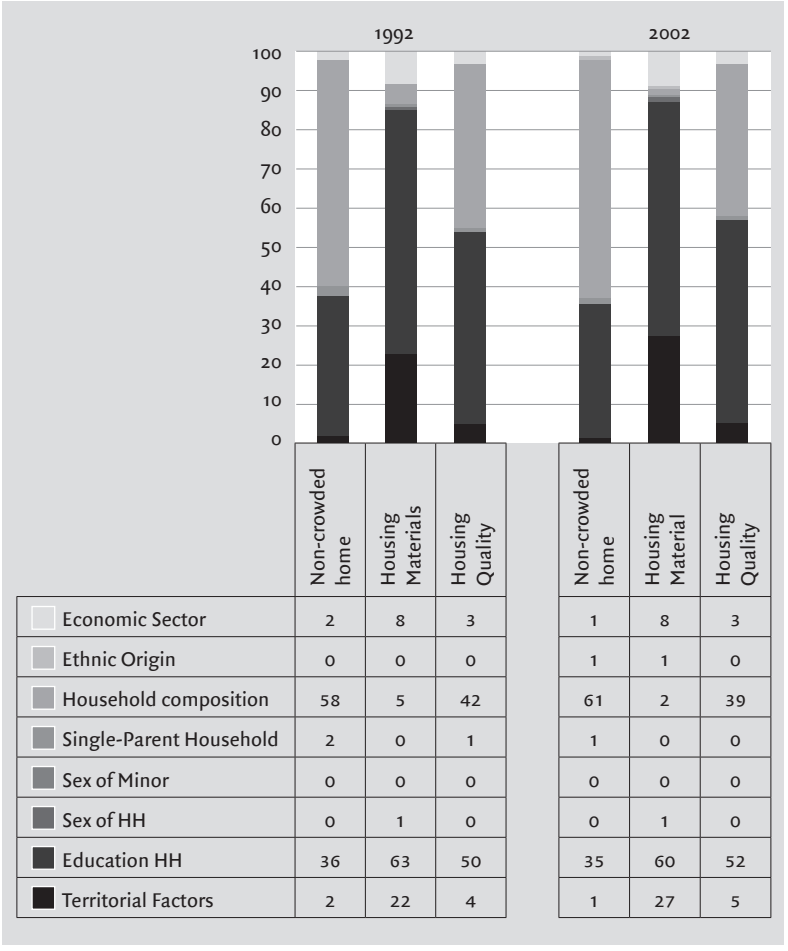

| | 1992 Sewage | 1992 Drinking Water | 1992 Electricity | 1992 Services Index | 2002 Sewage | 2002 Drinking Water | 2002 Electricity | 2002 Services Index |
|---|---|---|---|---|---|---|---|---|
| Economic Sector | 16 | 17 | 13 | 16 | 11 | 11 | 7 | 11 |
| Ethnic Origin | 0 | 0 | 2 | 0 | 2 | 2 | 9 | 2 |
| Household composition | 2 | 2 | 2 | 2 | 1 | 1 | 2 | 1 |
| Single-Parent Household | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sex of Minor | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Sex of HH | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| Education HH | 25 | 24 | 17 | 25 | 20 | 20 | 22 | 21 |
| Territorial Factors | 57 | 57 | 66 | 58 | 66 | 66 | 60 | 65 |

Source: Census Data 1992 and 2002. Compiled by the Author.

## Housing Quality

There are low and decreasing levels of inequality regarding the quality of the construction materials with which homes are built. There was also a downward trend regarding the inequality of the opportunity of living in a non-crowded home and for the housing quality index;

GRAPH 8 – DECOMPOSITION OF INEQUITY – HOUSING QUALITY
1992 -2002




| | 1992 Non-crowded home | 1992 Housing Materials | 1992 Housing Quality | 2002 Non-crowded home | 2002 Housing Material | 2002 Housing Quality |
|---|---|---|---|---|---|---|
| Economic Sector | 2 | 8 | 3 | 1 | 8 | 3 |
| Ethnic Origin | 0 | 0 | 0 | 1 | 1 | 0 |
| Household composition | 58 | 5 | 42 | 61 | 2 | 39 |
| Single-Parent Household | 2 | 0 | 1 | 1 | 0 | 0 |
| Sex of Minor | 0 | 0 | 0 | 0 | 0 | 0 |
| Sex of HH | 0 | 1 | 0 | 0 | 1 | 0 |
| Education HH | 36 | 63 | 50 | 35 | 60 | 52 |
| Territorial Factors | 2 | 22 | 4 | 1 | 27 | 5 |

Source: Census Data 1992 and 2002. Compiled by the Author.

however, elevated levels of inequality with regard to their distribution remain.

In general, the factors relating to the educational level of the head of household, the composition of the home, and the territory were the greatest determinants of the inequality of distribution of the opportunities in this category.

Inequity in housing materials is fundamentally explained by the head of household's educational level, followed by territorial circumstances. It is noteworthy that the weight of territory on inequity increased in the second period of study.



Inequity in the distribution of the opportunity to live in a non-crowded home in both years of study is fundamentally a result of the variables for the composition of the home. This would seem to indicate that the number of family members is the principal factor in its distribution. Next in importance is the group including the educational level of the head of household. Together, these two variables account for 95 percent of the inequity of distribution for both years.

Lastly, analyzing the components of inequity in the housing quality group, we see that these are marked completely by the education of the head of household and by the number of members in the household. In both years, this group of factors accounted for more than 90 percent of the inequity. In a distant third place, territory accounts for five percent of the inequity; however, the weight of this factor increases over time.

**Education**

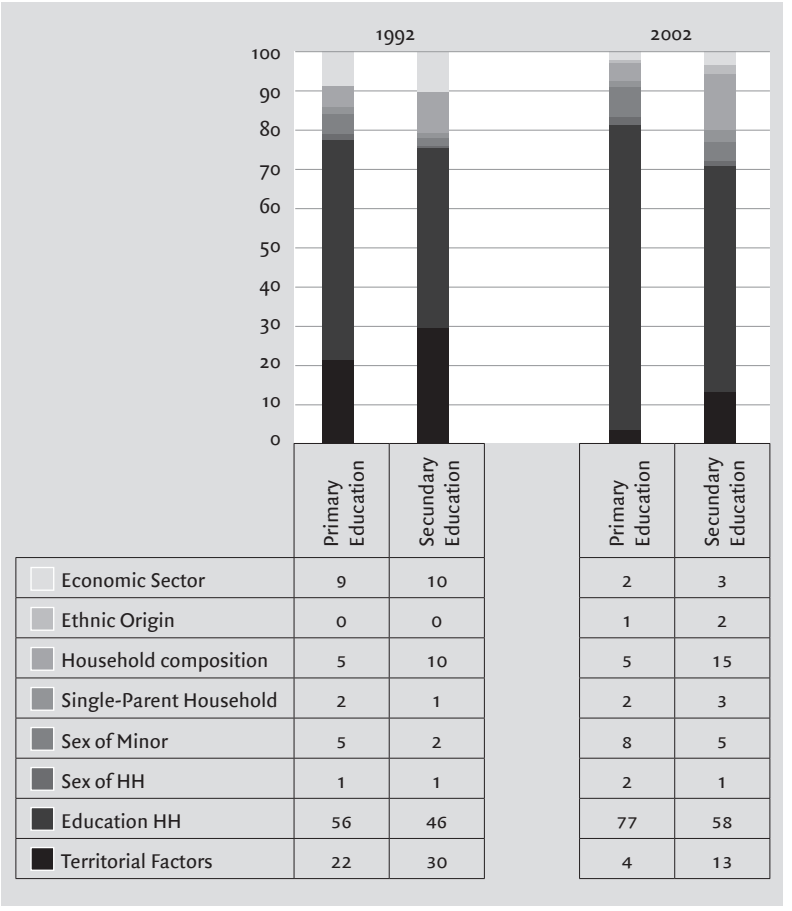
Inequity in the distribution of access to primary education is principally due to the educational level of the head of household. It is noteworthy that there was a significant decrease (21.3% to 4%) in the weight of the territorial component with regard to the inequity of this advantage.

The educational level of the head of household is once again the principal factor behind the inequitable distribution of access to grade-appropriate placement for secondary school. It is followed by territory, which once again decreased in importance over time.

Other circumstances commonly identified in other research (gender of the child, ethnic origin) have less weight in the explanation of inequity. These results corroborate the findings of Hoyos and Narayan (2011) that the gender of a minor has decreasing relevance in determining inequity, especially in countries like Chile, which have high educational coverage.

GRAPH 9 – DECOMPOSITION OF INEQUITY – EDUCATION
1992 -2002





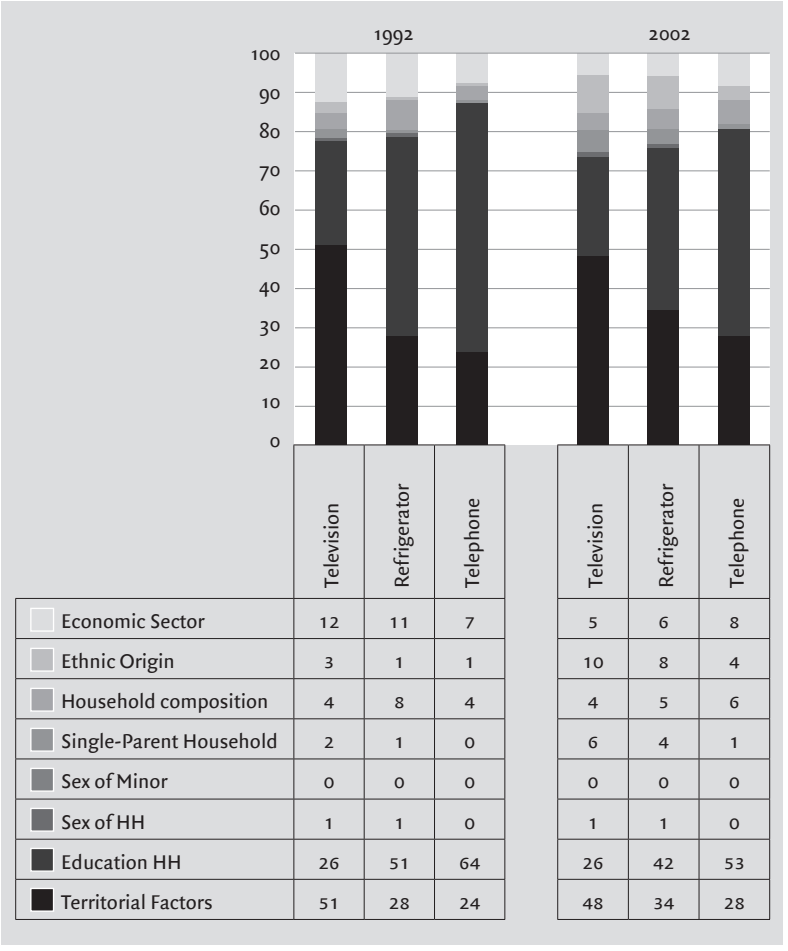

| | 1992 Primary Education | 1992 Secundary Education | 2002 Primary Education | 2002 Secundary Education |
|---|---|---|---|---|
| Economic Sector | 9 | 10 | 2 | 3 |
| Ethnic Origin | 0 | 0 | 1 | 2 |
| Household composition | 5 | 10 | 5 | 15 |
| Single-Parent Household | 2 | 1 | 2 | 3 |
| Sex of Minor | 5 | 2 | 8 | 5 |
| Sex of HH | 1 | 1 | 2 | 1 |
| Education HH | 56 | 46 | 77 | 58 |
| Territorial Factors | 22 | 30 | 4 | 13 |

Source: Census Data 1992 and 2002. Compiled by the Author.

## Goods and Services

Inequity in the distribution of the opportunities relating to goods and services also decreased, although with different values depending upon the good. Territory is the factor that most explained the inequitable distribution of televisions, the importance of which decreased slightly over

GRAPH 10 – DECOMPOSITION OF INEQUITY IN GOODS AND SERVICES 1992 -2002




| | 1992 Television | 1992 Refrigerator | 1992 Telephone | 2002 Television | 2002 Refrigerator | 2002 Telephone |
|---|---|---|---|---|---|---|
| Economic Sector | 12 | 11 | 7 | 5 | 6 | 8 |
| Ethnic Origin | 3 | 1 | 1 | 10 | 8 | 4 |
| Household composition | 4 | 8 | 4 | 4 | 5 | 6 |
| Single-Parent Household | 2 | 1 | 0 | 6 | 4 | 1 |
| Sex of Minor | 0 | 0 | 0 | 0 | 0 | 0 |
| Sex of HH | 1 | 1 | 0 | 1 | 1 | 0 |
| Education HH | 26 | 51 | 64 | 26 | 42 | 53 |
| Territorial Factors | 51 | 28 | 24 | 48 | 34 | 28 |

Source: Census Data 1992 and 2002. Compiled by the Author.

time, while the importance of the ethnic origin of the head of the household increased by eight percentage points during the period of study.

Inequity in the distribution of refrigerators is largely due to the educational level of the head of household. While it remains a preponderant factor, it loses weight over time. On the other hand, territorial circumstances are the second source of inequity, and its weight tends to grow over time.

Lastly, access to telephones, which grew significantly during the period of study, had the biggest reduction in inequitable distribution. Inequity is mainly due to the educational level of the heads of households and territorial circumstances. The former decreased in relative weight, while the latter increased.



OPPORTUNITY TO ACCESS A COMPUTER OR THE INTERNET

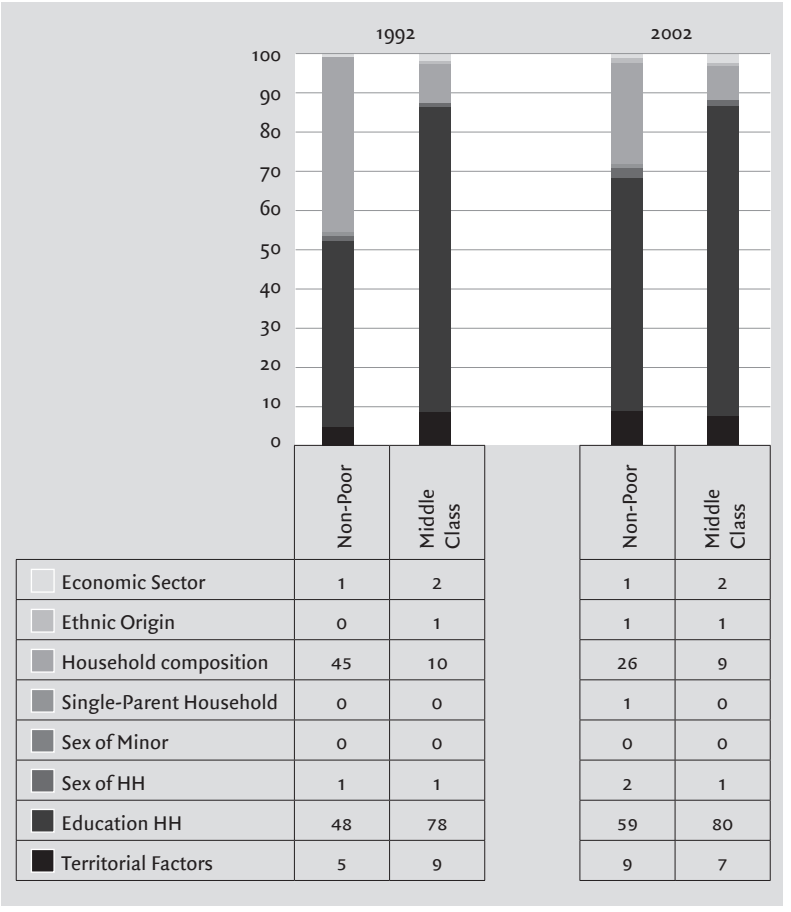
Data on the availability of a computer in the household and access to the Internet has been collected since 2002, so it was not possible to analyze the change in access to these advantages; however, an analysis of these factors provides a glimpse into the distribution of these recently-available opportunities. Each advantage starts with low-opportunity values, with 14.4 for computers and 5.4 for the internet. In both cases, the circumstance that most accounts for the inequity in distribution is the educational level of the head of household (about 80 percent), followed by territorial circumstances, which accounts for about 10 percent of the observed inequity.

**Poverty**

The opportunity to live in a home above the poverty line improved during the period of study. These changes were associated with average reductions in poverty rates and also in inequity. The opportunity to belong to the middle or upper class, i.e. living in a household that is not at risk of poverty, nearly doubled, from 8.0 percent in 1992 to

15.2 percent in 2002. However, in 2002, it was the advantage with the worst index of opportunity along with the greatest inequity in its distribution. The improvement observed in these opportunities responds fundamentally to greater coverage, which is to say that a smaller percentage of households living below the indicated line, while inequity decreased only slightly.

GRAPH 11 – DECOMPOSITION OF INEQUITY – POVERTY
1992 -2002




| | 1992 Non-Poor | 1992 Middle Class | 2002 Non-Poor | 2002 Middle Class |
|---|---|---|---|---|
| Economic Sector | 1 | 2 | 1 | 2 |
| Ethnic Origin | 0 | 1 | 1 | 1 |
| Household composition | 45 | 10 | 26 | 9 |
| Single-Parent Household | 0 | 0 | 1 | 0 |
| Sex of Minor | 0 | 0 | 0 | 0 |
| Sex of HH | 1 | 1 | 2 | 1 |
| Education HH | 48 | 78 | 59 | 80 |
| Territorial Factors | 5 | 9 | 9 | 7 |

Source: Modrego et al., 2009. Compiled by the Author.

When it comes to the distribution of the two analyzed advantages, the educational level of the head of household and the composition of the household were the two most relevant circumstances. However, there was a notable increase in the weight of territory in the case of poverty, from 4.8 percent in 1992 to 9.3 percent in 2002, which may indicate a tendency towards a geographic concentration of poverty, as was described in the first part of this chapter. In both cases, territory had a greater contribution than the factors traditionally identified in other research, such as ethnic origin and gender.



***Territorial Distribution of Opportunities***

As was demonstrated in the previous point, for many of the studied advantages, territory constitutes an important factor in the explanation of inequitable distribution. National averages can hide significant territorial disparities, so it is important to evaluate how opportunities are distributed within the territories themselves. The graphs presented below show the territorial distribution of HOI for each variable. The horizontal axis indicates the level of HOI in the territories, and the vertical axis shows the percentage of cases that exist at each of the levels.

**Services**

There was a generalized improvement in the four indicators for this category. Graph 12 shows the density distribution of each of the indicators for the 102 Functional Territories for which information was available.[14] In all cases, the density graphs showcase a shift in the curve to the right, indicating a higher concentration of high levels of opportunities.

The opportunity to live in a home with bathrooms connected to a sewage system or a septic tank went from a minimum of 4 and a mode of around 20, to values of 19 and 80, respectively. Similar results are found for Drinking Water and the Combined Services Index. The in-

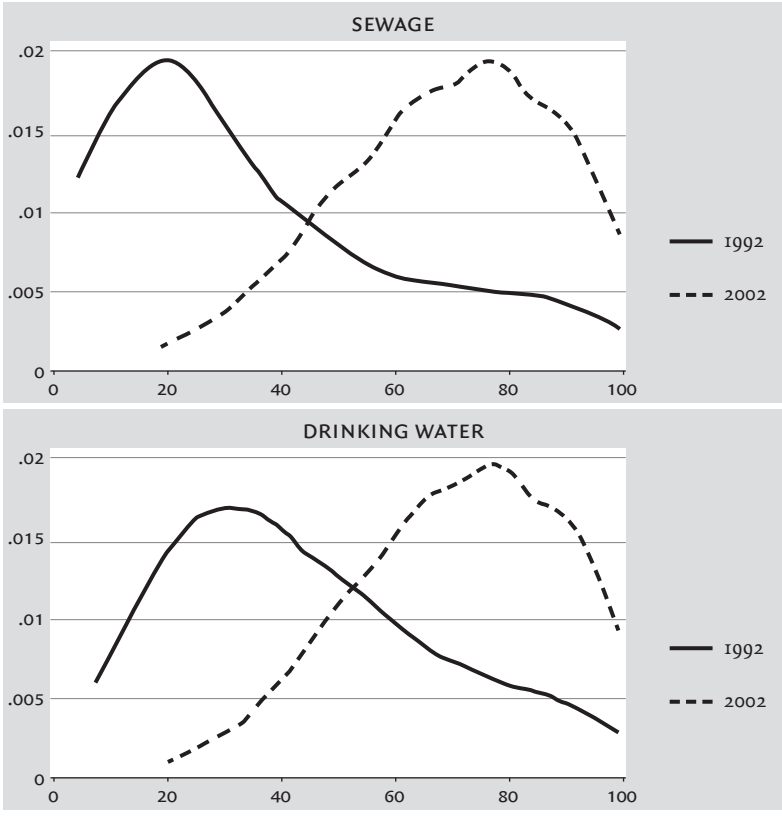
14 There was insufficient information to estimate the opportunity index for the Functional Territory of the Chilean Antarctic .

dex for access to electricity also stands out, with the curve shifting to concentrate in the high end of distribution of opportunities.

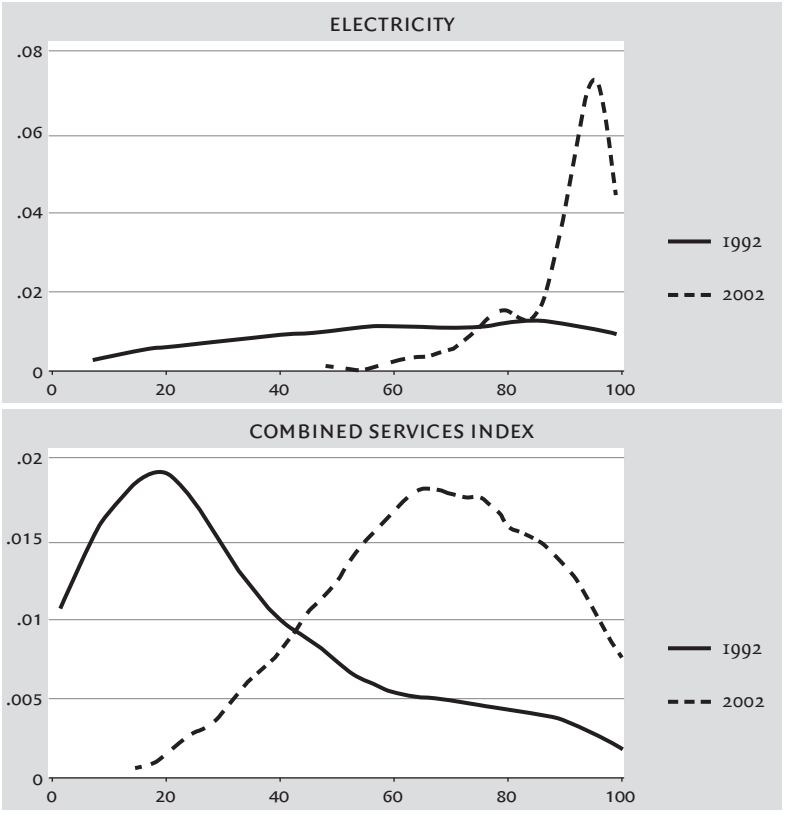
An analysis of each one of the functional territories demonstrates that no statistically-significant differences were found in only six of them. In no cases was there any evidence of regression. Stagnation occurred in *Juan Fernández* with regard to drinking water and in *Antofogasta* in terms of electricity, while on Easter Island there was stagnation of all four advantages. That said, the territories where there was stagnation all started out at relatively high HOI levels that were well



GRAPH 12 – TERRITORIAL DISTRIBUTION OF HOI—SERVICES 1992 -2002



GRAPH 12 – TERRITORIAL DISTRIBUTION
OF HOI—SERVICES 1992 -2002 (CONTINUE)




Source: Census Data 1992 and 2002. Compiled by the Author.



above the national average, and they maintained this position during the last year of analysis. For this reason, one cannot conclude that there was a drop in the quality of life for the inhabitants. In particular, the index of opportunities was around 98 points in *Antofagasta* and *Juan Fernández*, and for electricity in Easter Island. It was around 88 points on Easter Island for sewage, drinking water, and the combined index.

These good results are due principally to improvements in coverage, which had a statistically significant increase in 98.5 percent of the cases, with four cases stagnating or regressing. There were improvements in the equity of distribution in 88 percent of the cases, which appears to indicate that the increase in coverage had more to do with the closing of the access gap. In 22 percent of the cases, distribution did not improve, and there were no cases in which it worsened.

**Quality Housing**

This category also had average improvements in all of its indicators, although the changes in distribution were not always positive. The rates of opportunity to live in a house without overcrowding and the combined indicators showed clear shifts to higher levels, improving the position of the worst situated as well as in the mode of the distribution[15]. On the other hand, for quality housing materials there was an improvement in the average as well as in the lower part of the distribution , although these changes were accompanied by a lowering in the value of the mode.



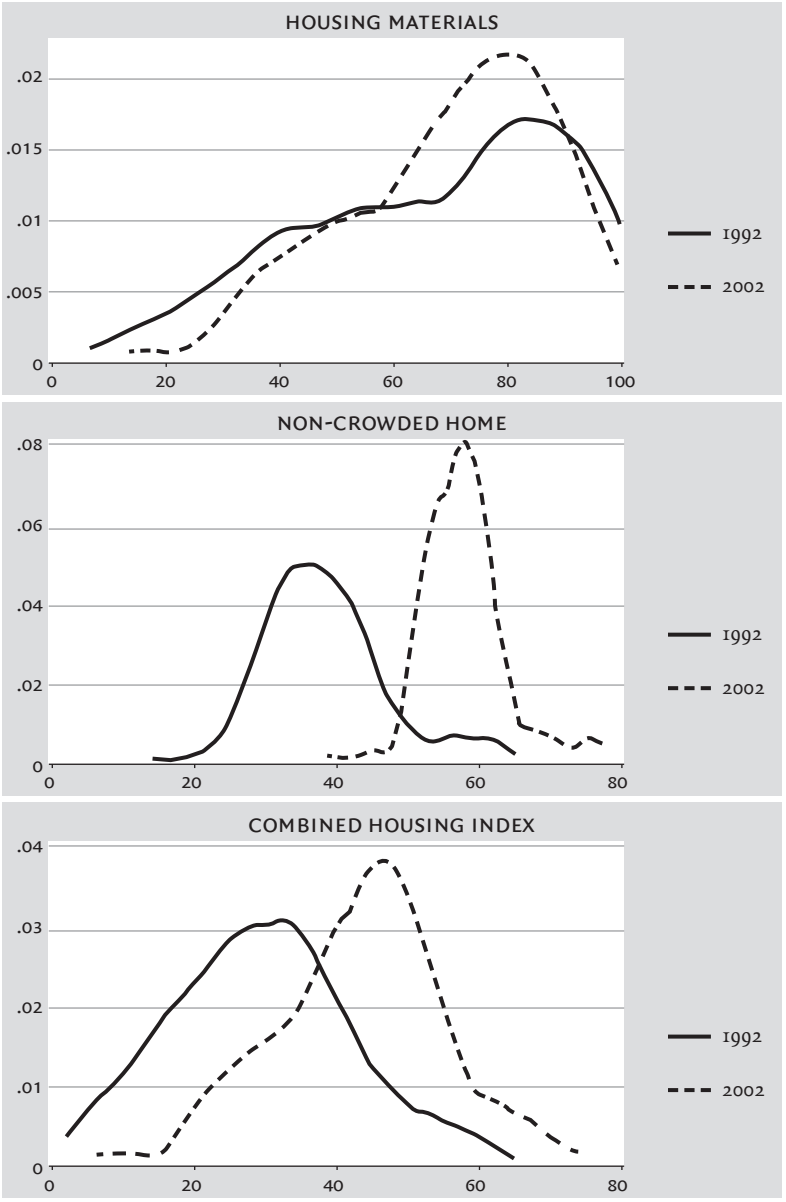
A detailed look at each territory reveals that there were contrasting results compared to those found for basic services. In 102 of the Functional Territories studied, 12[16] stagnated in their opportunity to access a home built with quality materials, alongside 34[17] whose situation worsened with regard to this opportunity. However, as in the case of services, in all of the territories, except in one of the cases where there was regression, the affected territories started at levels above the national average. And so, despite the drop, they remained in a situation of relative advantage compared to the national average in 2002. The

15 The mode indicates the value with the higher frequency.

16 *Ancud, Cabo de Hornos, Chaitén, Chillán, Diego de Almagro, El Carmen, Lago Ranco, Laja, Palena, Quellón, Timaukel, Tolten.*

17 *Angol, Castro, Cañete, Cisnes, Coihaique, Concepción, Cunco, Curacautín, Curanilahue, Ercilla, Futaleufi, Futrono, Isla de Pascua, Juan Fernández, La Unión, Loncoche, Los Ángeles, Mariquina, Natales, Nueva Imperial, Osorno, Papudo, Puerto Montt, Puerto Octay, Punta Arenas, Purén, Queilén, San Antonio, Temuco, Teodoro Schmidt, Valdivia, Valparaíso, Villarica and Yungay.*

GRAPH 13 – TERRITORIAL DISTRIBUTION HOI– QUALITY HOUSING
1992 -2002




Source: Census Data 1992 and 2002. Compiled by the Author.

exception was Easter Island, which began with above-average levels in 1992 and slid backwards in 2002 in the housing materials indicator.

The opportunity to live in a house that is not overcrowded had a positive balance. In this case, no territory reversed course, and only one (*Futaleufú*) stagnated; however, *Futaleufú* started out in 1992 with opportunity levels above the national average and maintained that position in 2002.

The composite housing indicator stagnated in two territories (*Futaleufú* and *Juan Fernández*), while declining in only one (Easter Island).

A decomposition of the HOI shows that, for the housing indicator, 33 percent of the territories saw a decline in coverage. The equity of distribution stagnated; 73 percent of the territories didn't have statistically significant changes; and the distribution grew more inequitable in three territories. One hundred percent of the cases had improved coverage in the opportunity to live in a house without overcrowding, and 80 percent had an increase in the equity of distribution.



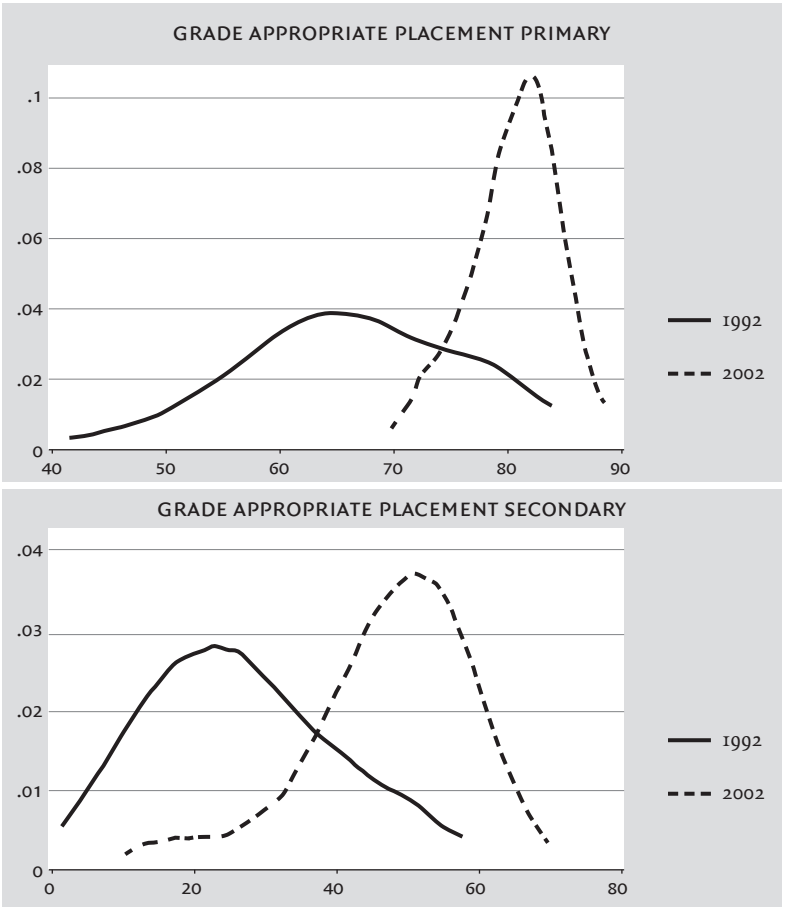
**Education**

The distribution graphs show a clear improvement in educational opportunities. The primary education curve and the secondary education curve show upward shifts. The tail of the primary education curve in 2002 starts nearly 30 percentage points higher than in 1992. By 2002, primary education had a clear concentration in the higher end of the opportunities.

In the case of secondary education, while there is a clear improvement with a close to 20-point shift in the mode, there is still a distribution across a wide range of opportunities, with the curve for 2002 concentrated in the middle to upper end.

There was a general pattern of improvement of opportunities for the territories. No territory backtracked in any of the indicators, and only four of them stagnated in the opportunity of grade-appropriate placement for primary school. All four had values above the national average in 1992 and maintained this position in 2002. In the case of

GRAPH 14 – TERRITORIAL DISTRIBUTION HOI – EDUCATION
1992 -2002




Source: Census Data 1992 and 2002. Compiled by the Author.



grade-appropriate placement for secondary school, stagnation occurred in the Functional Territory of *Futaleufú*, which lagged behind the national average in both years.

The results observed in education respond to a generalized improvement in the average coverage. Ninety-five percent of the territo-

ries had statistically-significant improvements in their coverage rates, and of these, 52 percent had a combination of improved coverage and improved distribution. These results were similar to those for grade-appropriate placement for secondary school, with 99 percent of the territories experiencing improvements in coverage, 44 percent of those combining it with an improvement in distribution as well.

**Goods and Services**

Access to goods and services also demonstrated significant positive shifts. For the opportunity to live in a home with a refrigerator, there is a clear change in the pattern of the curve, which shifts to concentrate in the higher part of the graph. In the case of access to television, we see a shift in the mode and a decrease in the lower part of the curve. For access to a telephone, in 1992, the curve was clearly concentrated in the lower part of the graph, and it goes on to have a broader distribution with a significantly higher mode.



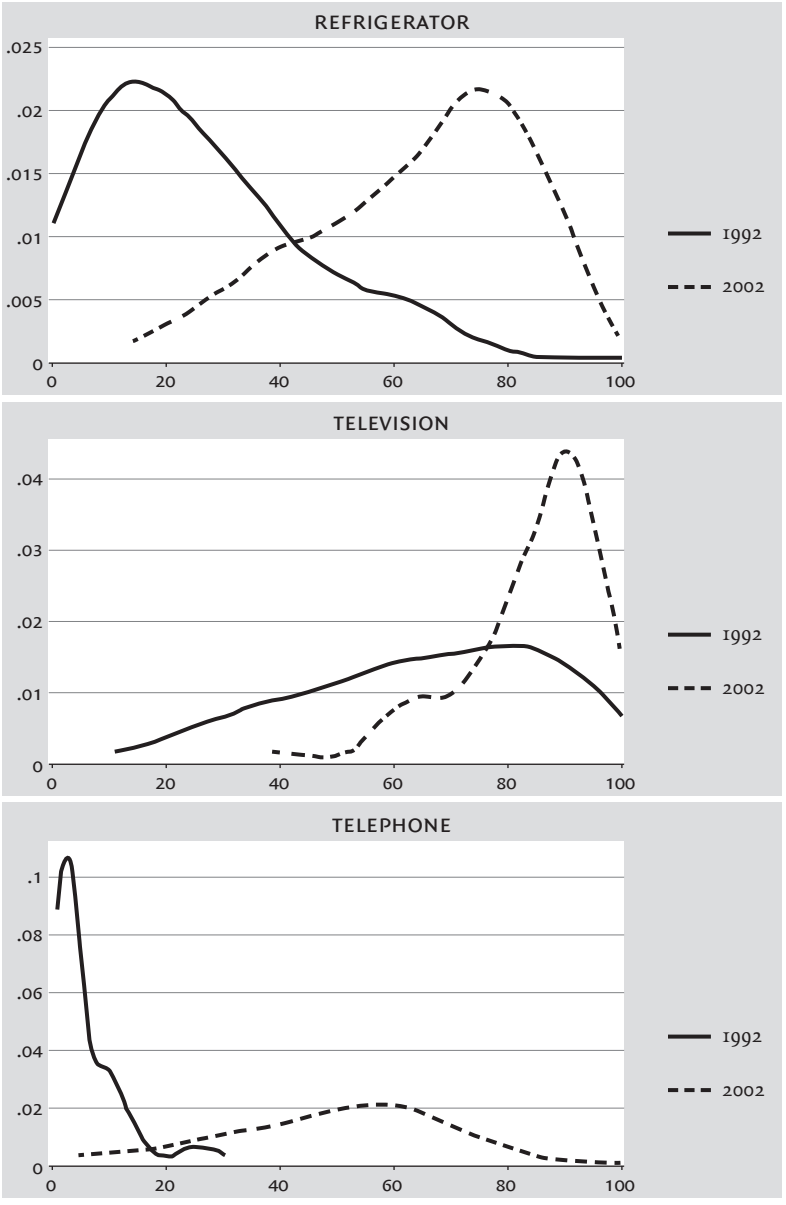
Access to a refrigerator improved in all Functional Territories, benefiting from increased coverage, and, in 95 percent of the cases, improved distribution. For access to television, the improvements were generalized, with the exception of two isolated territories that stagnated with nearly no access to the service (*Juan Fernández* and *Cabo de Hornos*). Lastly, for telephone there was an improvement in 98 percent of the territories, no regression in any territories, and a stagnation in two (*Futaleufú* and *Palena*), both of which were lagging behind the national average in both years.

**Poverty**

The opportunity to live in a household above the poverty line also improved in the period analyzed. As the graph shows, the distribution narrows as the result of a higher baseline at the tail end of the curve. There is also a shift in the mode to higher opportunity levels.

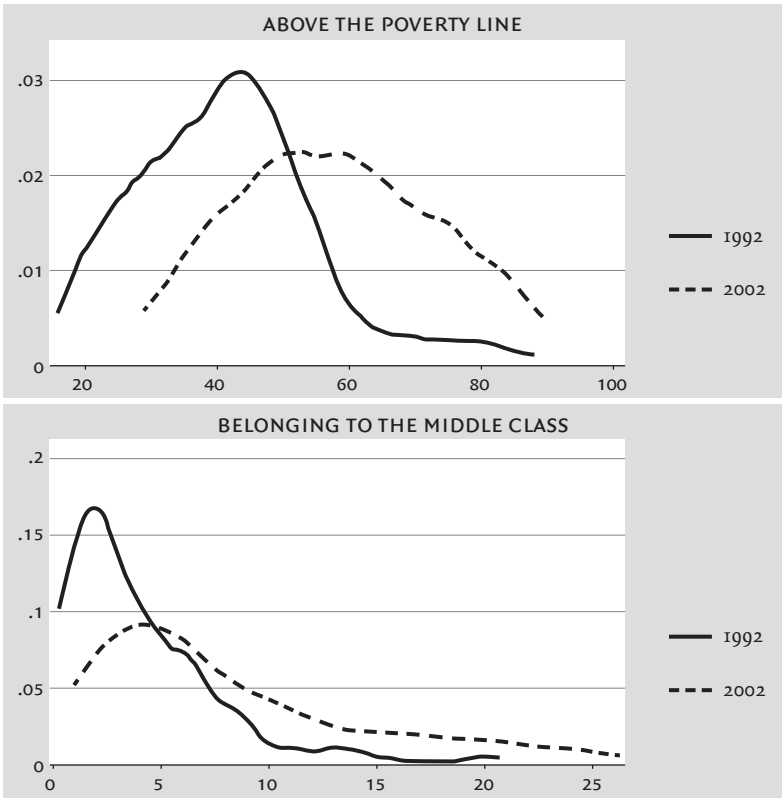
There was also an improvement for the middle class; however, the fact that the curve for both years begins close to the axis indicates

GRAPH 15 – TERRITORIAL HOI DISTRIBUTION – GOODS AND SERVICES 1992 -2002




Source: Census Data 1992 and 2002. Compiled by the Author.

GRAPH 16 – TERRITORIAL DISTRIBUTION
HOI– POVERTY 1992 -2002




Source: Modrego et al., 2009. Compiled by the Author.



the existence of territories where nearly 100 percent of the population lives in conditions of vulnerability. It is also noteworthy that the curve barely surpasses 20 percent in 1992 and 25 percent in 2002.

A more detailed analysis of the territories reveals that only three[18] saw stagnation in their opportunity to live above the poverty line, while nine[19] regressed as a result of a decrease in average coverage.

18 *Diego de Almagro*, *Navidad* and *Teodoro Schmidt*.

19 *Juan Fernández*, *Laja*, *Cañete*, *Carahue*, *Galvarino*, *Tolten*, *Lago Ranco*, *Futrono* and *Mariquina*.

This was due to an increase in the average number of minors living in households that are below the poverty line. It is also noteworthy that on only one occasion (*Laja*) was the decrease in coverage accompanied by a decrease in distribution.

Six territories stagnated in terms of the opportunity to belong to a middle-class household and in terms of distribution. No territories regressed.

**Opportunity Traps**



Chile registered generalized improvements in its indicators; however, there are still territories characterized by relatively low levels of coverage and inequity in the distribution of opportunities. For this reason, it is important to evaluate how far behind these territories are lagging in each of the indicators.

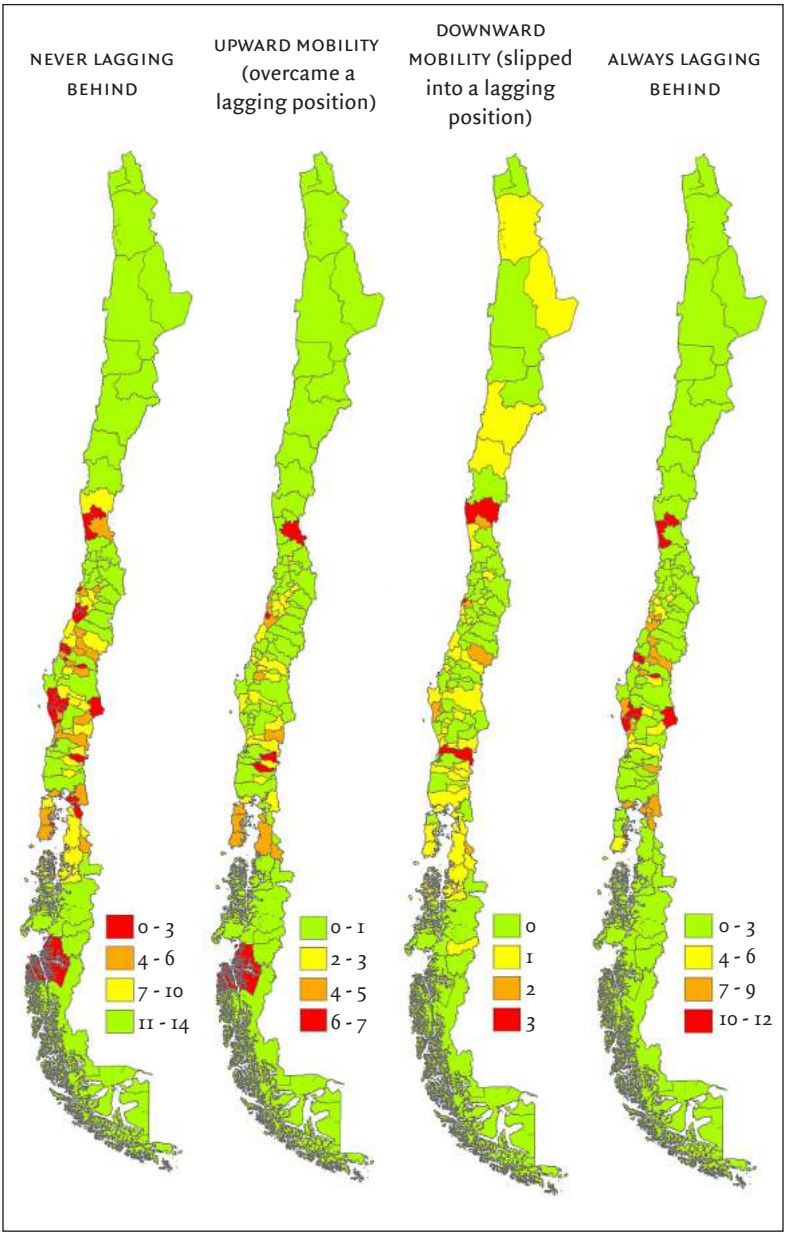
The same analysis that was used for poverty and total vulnerability is employed here in order to determine whether a territory is lagging behind or not. A territory is deemed to be lagging behind when its index of opportunities is half a standard deviation or more below the simple average for that period. Under this criteria, there are four categories of territories:[20]

1. Always lagging behind: lagging behind in 1992 and 2002.
2. Slipped into a lagging position or is downwardly mobile: was not lagging behind in 1992 but was in 2002.
3. Overcame a lagging position or is upwardly mobile: was lagging behind in 1992 but not in 2002.
4. Never lagging behind.

A summary of this classification can be seen in the following maps. The first map shows the quantity of advantages for which the Functional Territories never lagged behind. The next two maps dis-

20 For more information see Appendix 3.

MAP 5




Source: Compiled by Authors.

play the patterns of upward and downward mobility, indicating the number of advantages for which the territories overcame or slipped into a lagging position, respectively. Lastly, the fourth map shows the number of advantages for which a territory has always been lagging.

Thirty percent of the territories are chronically lagging behind in services. For the sewage connection advantage, 29 territories are permanently lagging behind. For drinking water this number stands at 31, while it is 22 for electricity and 31 for the combined services index. The regions of *Araucanía* and *Bío Bío* have the greatest concentration of lagging cases with 24 and 22 percent, respectively. The regions of *Los Lagos*, *O'Higgins* and *Maule* have 16, 13 and 12 percent, respectively. Ten territories stand out for chronically lagging behind in all of the indicators in this category: *Canela*, *Lonquimay*, *Lumaco*, *Carahue*, *Galvarino*, *Nueva Imperial*, *Teodoro Schmidt*, *Queilén*, *Calbuco* and *Hualaihué*.



Roughly 25 percent of the territories are chronically lagging in housing quality. Twenty-nine territories are trapped with regard to the advantage of living in a household constructed from quality materials and 24 territories are trapped in terms of the opportunity of absence of overcrowding, while 26 are trapped with regard to the combined index. Four territories have the greatest concentration of these cases: *Maule* (27%), *O'Higgins* (22%), *Bío Bío* (20%) and *Coquimbo* (14%). Twelve functional territories lagged behind in all of the indicators for this category: *Canela*, *Combarbalá*, *Ovalle*, *Paredones*, *Lolol*, *Quirihue*, *San Carlos*, *Ránquil*, *Parral*, *Cauquenes; Hualañé* and *San Javier*.

Around 21 percent of the territories are chronically lagging behind in educational advantages. In this case, it is of note that 73 percent of the territories that are lagging behind in elementary education are also lagging behind in secondary education, indicating a generational transmission of this situation. Territories that are lagging behind are concentrated in the regions of *Los Lagos*, which has 36 percent of the cases; *Araucanía*, with 29 percent; and *Bío Bío*, with 17 percent.

16 territories are always lagging behind: *Cobquecura*, *El Carmen*, *Cañete*, *Galvarino*, *Lonquimay*, *Lumaco*, *Purén*, *Lago Ranco*, *Castro*, *Queilén*, *Quellón*, *Calbuco*, *Cochamó*, *Puerto Octay*, *Hualaihué* and *Cisnes*.

The rates of how much the territories are lagging behind vary for goods and services. The opportunity with the fewest territories lagging behind is access to a television (20), followed by access to a telephone (25), and access to a refrigerator (29). At a regional level, the cases of territories that are chronically lagging behind are concentrated in *Araucanía* (40 percent), *Los Lagos* (19 percent) and *Bío Bío* (17 percent).

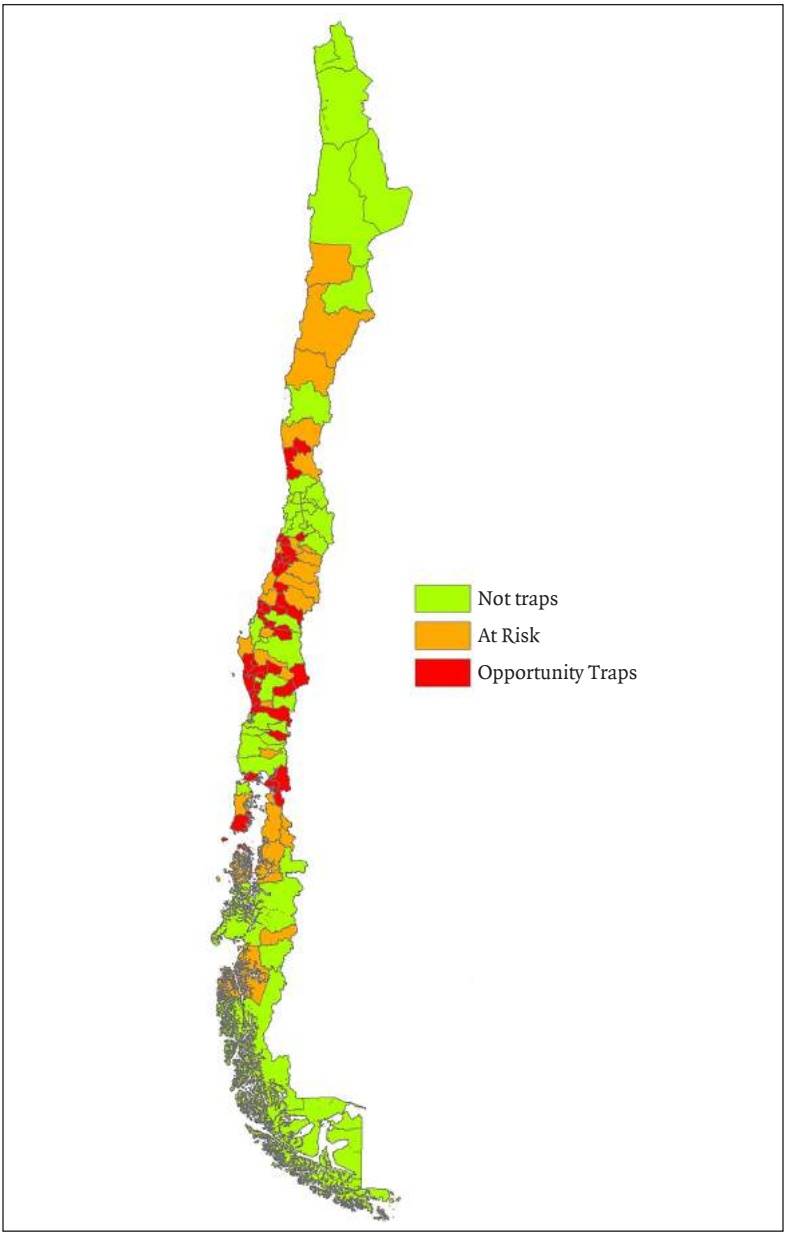


Twenty-one percent of the territories are chronically lagging behind in poverty, while 33 percent are lagging behind in terms of vulnerability. Two regions are home to the greatest concentration of territories that are lagging behind: *La Araucanía*, with 41 percent, and *Bío Bío*, with 33 percent. Ninety percent of the territories that are lagging behind in poverty are also lagging behind in vulnerability. These are: *Combarbalá*, *Parral*, *Yungay*, *Yumbel*, *Bulnes*, *Cobquecura*, *Coelemu*, *El Carmen*, *Quirihue*, *San Carlos*, *Ercilla*, *Lonquimay*, *Angol*, *Lumaco*, *Purén*, *Carahue*, *Cunco*, *Loncoche* and *Curacautín*.

**Territories with Opportunity Traps**

After identifying the opportunities in which the territories were chronically lagging behind, consolidated information for the 14 indicators was used to generate a synthetic indicator for opportunity traps. In line with the proposals made by the Presidential Advisory Committee for Measuring Poverty (*Comisión Asesora Presidencial para la Medición de la Pobreza*), a territory was considered to be trapped when it lagged behind in 30 percent or more of the advantages. An additional category of "at-risk" was generated for territories that are lagging behind in at least one advantage, but not as many as 30 percent of the advantages. The following map presents the results for three categories:

MAP 6 OPPORTUNITY TRAPS




Source: Map created by the Authors.

TABLE 3
OPPORTUNITY TRAPS

| | Number of Territories | % Territories | Population (2002) | % Population |
|---|---|---|---|---|
| | | Poverty | | |
| Trapped | 38 | 37% | 933,267 | 6% |
| At Risk | 28 | 27% | 1,888,840 | 13% |
| Never Trapped | 36 | 36% | 12,114,548 | 81% |

Source: Compiled by the authors.



Thirty-eight functional territories had opportunity traps. They are concentrated in eight regions located between the fourth and tenth regions of Chile. *Araucanía* and *Bío Bío* have the worst results, with 10 and 9 trapped territories, respectively. There are 28 "at-risk" territories, which are located essentially in the same regions as those that are trapped. Among the trapped territories, *Canela*, *Combarbalá*, *Cobquecura*, *El Carmen*, *Quirihue*, *Lonquimay*, *Lumaco*, *Purén*, *Carahue*, *Galvarino* and *Queilén* all are chronically lagging behind in ten or more of the 14 studied indicators. More information on the trapped territories is available in Appendix 3.

As with the territories in poverty and vulnerability traps, the territories with opportunity traps have smaller populations compared to those with positive dynamics. While the number of territories is similar, the population in the trapped territories is much lower than those that never lagged behind.

## 4.- CHARACTERIZATION OF THE TERRITORIES IN POVERTY AND OPPORTUNITY TRAPS

Without trying to search for causes, but rather identifying common patterns among the territories in monetary poverty and opportunity traps, the following table presents 18 development indicators to draw

a comparison between territories in poverty or opportunity traps with those territories that never lagged behind. In both cases, the data available for the base year (1992) are used, which represents the original characteristics that mark their development patterns.

TABLE 4. CHARACTERIZATION OF FUNCTIONAL TERRITORIES ACCORDING TO POVERTY AND OPPORTUNITY TRAPS

| | Monetary Poverty Trap | | Opportunity Trap | |
|---|---|---|---|---|
| | Trapped | Never Lagging Behind | Trapped | Never Lagging Behind |
| Number of Territories | 20 | 57 | 38 | 36 |
| Number of Inhabitants | 942,841 | 10,855,776 | 925,419 | 10,973,620 |
| Level of Urbanization | 49% | 60% | 32% | 78% |
| Indigenous Population | 13% | 8% | 15% | 10% |
| Recent Migrants | 9% | 17% | 10% | 15% |
| Single-Parent Homes | 33% | 33% | 34% | 32% |
| Female Head of Household | 23% | 22% | 22% | 23% |
| Gini Income Per Capita | 0.499 | 0.491 | 0.492 | 0.494 |
| Illiteracy Rate | 86% | 92% | 85% | 94% |
| SIMCE Math (1994) | 224 | 234 | 221 | 237 |
| SIMCE Spanish (1994) | 227 | 244 | 229 | 245 |
| Labor Force Participation Rate | 44% | 51% | 44% | 50% |
| Unemployment Rate | 9% | 8% | 8% | 9% |
| Non-Primary Sector Employment | 52% | 64% | 44% | 73% |
| Workforce Diversity* | 0.271 | 0.205 | 0.303 | 0.155 |
| Permanent Income / Total (Mun. 1995)** | 16% | 25% | 18% | 28% |
| Total Investment/ Spending (Mun. 1995)** | 11% | 14% | 13% | 13% |
| Per Capital Municipal Spending (1995) ** | 72,260 | 120,989 | 88,902 | 106,364 |

* Herfindhal Index of Economic Activities
** Simple average of the communes that make up the Functional Territory
Source: Population and Housing Census, Modrego et al., (2009), Comptroller General of the Republic and Ministry of Education.

The same trends observed in the monetary poverty traps appear in the opportunity traps, although there are more territories with opportunity traps than monetary poverty traps. While only 20 percent of the Functional Territories have poverty traps, 37 percent have opportunity traps. The trend of trapped territories having small populations persists. The trapped territories are also less urbanized[21], have more indigenous and afro-descendent populations, and are also less attractive for internal migrants. Meanwhile, the territories that never lagged behind are attractive options for migrants.

There is no difference between trapped and never-trapped territories regarding the composition of the household in either poverty or opportunities. Both have similar levels of single-parent as well as female headed households. This situation is also found when analyzing the distribution of income, expressed with a Gini index for each type of territory.



Trapped territories have higher levels of illiteracy and worse scores on the SIMCE standardized tests, both in Spanish and Math. There is also evidence that they have lower coverage and lower quality in terms of education.

An analysis of employment variables reveals a lower labor force participation rate in trapped territories with similar unemployment levels. These territories also have a lower proportion of inhabitants working in non-primary sector jobs, and they have a higher concentration of economic activities, expressed in a higher Herfindhal labor diversity index.

When it comes to the proxy variables for municipal management —which are also a proxy for the quality of institutions—the analysis reveals a lower capacity for generating resources in the trapped territories. In territories with poverty traps, there is a lower proportion of investment compared to spending. Lastly, the analysis revealed lower per capita spending in territories that are lagging behind, which is

21 Associated with this is the finding that no FT, classified as Metropolitan by RIMISP (2011), had poverty or opportunity traps.

a source of concern, considering that it is precisely these territories where there is a greater need for public services.

## 5.- MOBILITY OF SOCIAL GROUPS

Along with the analysis on poverty, vulnerability and opportunities, it is important to study patterns of mobility among social groups in order to ascertain whether there are indications that marginalized social groups are converging at the levels of well-being of the better-off groups, and if so, to estimate how long this convergence will take.



This was done with pseudo-panels that were based on data from the Population and Housing Census for 1992 and 2002 and include income and expenditures data obtained using the Poverty Mapping technique (Modrego et al., 2009). The pseudo-panel technique compensates for the inexistence of surveys with the level of territorial disaggregation used in this study. They are different from traditional panels in that they don't follow a particular individual, but rather individuals grouped together according to characteristics that tend to be static over time.

Pseudo individuals were constructed from average levels of household income of different cohorts defined by their age range,[22] gender of the head of household, and the commune where they reside. The following table presents the descriptive statistics of the cohorts.

The data reveal changes in household characteristics during the period of study. More homes have a female head of household, a pattern that is seen among all age groups. The average number of years of schooling also increased, especially among the youngest cohorts. All of the cohorts had positive changes in their per capita income, which

22 In line with Dang et al., 2011, the age of the head of household was limited to between 25 and 64 years (in the 1992 Census) given that, at ages below or above this range, families are just starting or are beginning to disperse.

TABLE 5. DESCRIPTIVE STATISTICS FOR PSEUDO INDIVIDUALS

| | | Average age of the cohort in 1992 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | 25 to 29 | 30 to 34 | 35 to 39 | 40 to 44 | 45 to 49 | 50 to 54 | 55 to 59 | 60 to 64 |
| Total Households, 1992 | 2,615,488 | 312,826 | 417,017 | 407,916 | 373,343 | 330,927 | 289,046 | 241,963 | 242,450 |
| Total Households, 2002 | 2,951,296 | 515,300 | 524,339 | 453,331 | 398,851 | 331,280 | 283,283 | 235,220 | 209,692 |
| % Households with Male Head, 1992 | 77.4% | 84.4% | 83.7% | 80.8% | 77.8% | 75.3% | 72.8% | 70.0% | 66.6% |
| % Households with Male Head, 2002 | 68,5% | 74.6% | 72.4% | 70.2% | 68.5% | 67.0% | 64.1% | 61.1% | 56.9% |
| Age 1992 | 42,8 | 27.2 | 32.0 | 37.0 | 42.0 | 47.0 | 51.9 | 57.0 | 62.0 |
| Age 2002 | 50,9 | 37.1 | 41.9 | 46.9 | 52.0 | 57.0 | 61.9 | 66.8 | 71.9 |
| Education 1992 | 8,7 | 10.0 | 9.9 | 9.7 | 9.0 | 8.3 | 7.6 | 7.0 | 6.6 |
| Education 2002 | 9,2 | 10.5 | 10.3 | 10.1 | 9.4 | 8.6 | 7.8 | 7.1 | 6.7 |
| Per Capita Income 1992 | 129,593 | 106,691 | 109,153 | 115,101 | 124,798 | 137,536 | 148,222 | 158,063 | 164,519 |
| Per Capita Income 2002 | 180,380 | 151,458 | 157,949 | 180,277 | 199,292 | 213,705 | 208,877 | 181,036 | 179,906 |
| Poverty Rate 1992 | 31.3% | 42.1% | 41.7% | 37.8% | 31.6% | 25.6% | 22.4% | 19.8% | 17.8% |
| Poverty Rate 2002 | 17.6% | 23.8% | 20.8% | 17.2% | 15.3% | 14.4% | 14.3% | 14.2% | 12.6% |
| Migrants 1992 | 42.0% | 33.8% | 36.8% | 40.3% | 42.6% | 44.7% | 46.4% | 47.5% | 48.8% |
| Migrants 2002 | 42.4% | 36.1% | 38.4% | 41.3% | 43.3% | 45.3% | 47.2% | 48.5% | 50.1% |
| % Rural Population 1992 | 15.1% | 14.6% | 14.1% | 13.9% | 14.1% | 14.6% | 16.4% | 17.5% | 17.7% |
| % Rural Population 2002 | 13.7% | 12.5% | 12.4% | 12.4% | 13.2% | 14.2% | 16.1% | 16.8% | 16.3% |

* 2009 in Pesos
Source: Census Data 1992 and 2002 and Modrego et al., (2009). Compiled by the Author.

led to reductions in poverty rates. Migration rates were practically unchanged, and there was a decrease in the size of the population living in rural areas.

### *Estimates of Income Mobility*

The estimate of the convergence model was based on a traditional growth equation in which the observed income in the second period is a function of the income observed in the first period in addition to other controls. In this case in particular, the goal was to estimate how much of the average income of each pseudo individual in 2002 is explained by the income that this group had in 1992, after the application of a series of controls, both personal (age, gender, etc.) and environmental (region, rurality of the commune, etc.).



Incorporating these controls allows for an estimation of the "absolute convergence", in which personal characteristics specific to each cohort are not considered and the "conditional convergence", in which the growth estimate is conditioned by personal characteristics. In the latter case, convergence exists towards different levels of income, which in turn are determined by each group's characteristics.

Estimates of mobility were calculated for six combinations of territorial variables, which allowed us to distinguish territorial differences in the patterns observed. The main findings are presented in the following table.

The table presents results of each of the estimated models. The first part of the table shows the convergence coefficients. In this case, in order to verify if the velocity of convergence varies according to the Functional Territory type, the convergence coefficient interacted with each type of Functional Territory. The table then presents the coefficients obtained when the fixed effects of each kind of Functional Territory were included. Following that, the table presents calculations for the half-life (the time it would take to reduce the gap by half), which is based on the coefficients obtained in the first part. Lastly, a list of included controls is presented.

TABLE 6
ESTIMATES OF INCOME MOBILITY FOR FUNCTIONAL TERRITORIES

| | ABSOLUTE CONVERGENCE | | | | | | CONDITIONED CONVERGENCE | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEPENDENT VARIABLE: LOGARITHM OF PER CAPITA INCOME 2002 | MODEL I | MODEL II | MODEL III | MODEL IV | MODEL V | MODEL VI | MODEL I C | MODEL II C | MODEL III C | MODEL IV C | MODEL V C | MODEL VI C |
| **Convergence Coefficient** | | | | | | | | | | | | |
| WITHOUT FT INTERACTIONS | 0.793* | 0.745* | | | | | 0.581 | 0.589* | | | | |
| FT1 – ISOLATED RURAL | | | 0.601*** | 0.647*** | 0.570*** | 0.325*** | | | 0.476*** | 0.485*** | 0.417*** | 0.208*** |
| FT2- RURAL | | | 0.710* | 0.766* | 0.641 | 0.501** | | | 0.610** | 0.610* | 0.490 | 0.377** |
| FT3-SEMI-URBAN | | | 0.646 | 0.705 | 0.630* | 0.501*** | | | 0.527 | 0.533 | 0.443 | 0.374*** |
| FT4-METROPOLITAN | | | 0.892*** | 0.917*** | 0.817*** | 0.761*** | | | 0.706*** | 0.711*** | 0.602*** | 0.602*** |
| | | | | | | | | | | | | |
| **Fixed Effects** | | | | | | | | | | | | |
| CONSTANT | 2.671*** | 3.209*** | 4.831*** | 4.252*** | 4.948*** | 7.968*** | 3.224*** | 3.271*** | 4.653*** | 5.307** | 5.923** | 9.777*** |
| FT2- RURAL | | -0.055*** | -1.284* | -1.388* | -0.838 | -2.077** | | -0.065*** | -1.569** | -1.474** | -0.856 | -1.999** |
| FT3-SEMI-URBAN | | -0.022 | -0.518 | -0.668 | -0.658* | -1.985*** | | -0.058*** | -0.624 | -0.591 | -0.289 | -1.886*** |
| FT4-METROPOLITAN | | 0.129*** | -3.205*** | -2.973*** | -2.740*** | -4.832*** | | 0.004 | -2.612*** | -2.571*** | -2.090*** | -4.408*** |

TABLE 6. ESTIMATES OF INCOME MOBILITY FOR FUNCTIONAL TERRITORIES (CONTINUE)

| | ABSOLUTE CONVERGENCE | | | | | | CONDITIONED CONVERGENCE | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DEPENDENT VARIABLE: LOGARITHM OF PER CAPITA INCOME 2002 | MODEL I | MODEL II | MODEL III | MODEL IV | MODEL V | MODEL VI | MODEL I C | MODEL II C | MODEL III C | MODEL IV C | MODEL V C | MODEL VI C |
| **Half Life**[1] | | | | | | | | | | | | |
| WITHOUT FT INTERACTIONS | 30 | 24 | | | | | 13 | 13 | | | | |
| FT1 – ISOLATED RURAL | | | 14 | 16 | 12 | 6 | | | 9 | 10 | 8 | 4 |
| FT2- RURAL | | | 20 | 26 | 16 | 10 | | | 14 | 14 | 10 | 7 |
| FT3-SEMI-URBAN | | | 16 | 20 | 15 | 10 | | | 11 | 11 | 9 | 7 |
| FT4-METROPOLITAN | | | 61 | 80 | 34 | 25 | | | 20 | 20 | 14 | 14 |
| | | | | | | | | | | | | |
| **Controlled by:** | | | | | | | | | | | | |
| REGIONAL DUMMIES | NO | NO | NO | NO | YES | NO | NO | NO | NO | NO | YES | NO |
| COMMUNAL DUMMIES | NO | NO | NO | NO | NO | YES | NO | NO | NO | NO | NO | YES |
| FIXED COHORT EFFECTS | NO | NO | NO | YES | YES | YES | NO | NO | NO | YES | YES | YES |
| AGE, AGE2, EDUCATION, % INDIGENOUS, MIGRATION AND GENDER | NO | NO | NO | NO | NO | NO | YES | YES | YES | YES | YES | YES |
| | | | | | | | | | | | | |
| R2_ADJUSTED | 0.655 | 0.677 | 0.69 | 0.728 | 0.787 | 0.858 | 0.751 | 0.755 | 0.761 | 0.764 | 0.814 | 0.870 |
| OBSERVATIONS | 5345 | 5345 | 5345 | 5345 | 5345 | 5345 | 5345 | 5345 | 5345 | 5345 | 5345 | 5345 |

1 Corresponds to the estimate of how much time it would take to close the gaps by half.
Compiled by the Author.

In the four models without interactions (*MI*, *MII*, *MIc* and *MIIc*) patterns of convergence can be observed. This is to say that the incomes of the poorest groups grew at a faster rate than the incomes of the richest groups. Based on this parameter, it would take between 24 and 30 years to close the gap by half in the absolute model and 13 years in the conditional model.

When the interactions with the functional territories are incorporated, convergence rates are significantly lower in the metropolitan territories compared to the other territory types. In this case, conditional convergence accelerates the convergence times in all the models. This implies that socio-economic characteristics are closely related with income mobility.



The inclusion of regional and communal controls both lead to a decrease in the convergence rates. This, in addition to the differences observed in the interactions with Functional Territory, suggests that convergence clubs exist and that they are defined by the location of the individuals. This would imply that there is a process of segregation occurring in which the country is generating clubs of poor territories (where the individuals converge at relatively low income levels) and clubs of rich territories (where individuals converge at relatively high levels of income).

## 6.- Conclusions

There is evidence in Chile of significant levels of growth and the reduction of average poverty and vulnerability during the period studied; however, these improvements are not distributed equally among the territories. In 43 percent of the territories poverty rates did not improve, and in 53 percent there was no improvement in total vulnerability.

When it comes to opportunities, there were improvements in almost all of the studied territories and categories, which is principally due to an increase in the coverage of goods and services, but also as the

result of a better distribution of the aforementioned. A comparison of changes in monetary poverty with the evolution of opportunities suggests that the improvements in access to key advantages are not enough to bring about a significant reduction in monetary poverty rates.

The analysis of the relative distribution of poverty, vulnerability and opportunities reveal that there are territories that lag behind. There are 20 territories that are permanently lagging behind in terms of poverty (poverty traps), while 26 are chronically lagging behind in terms of vulnerability (vulnerability traps) and 38 are permanently lagging behind in terms of opportunities (opportunity traps).



Trapped territories have small populations, are rural, and have a greater percentage of indigenous inhabitants. They have lower levels of education, a lower labor force participation rate, and their inhabitants mostly work in the primary sector of the economy. Municipal governments tend to have weaker management. They are concentrated between the regions of *O'Higgins* and *Los Lagos*, particularly in *La Araucanía* and *Bío Bío*.

Observed convergence patterns are quite slow; bridging gaps by half could take 80 years in the metropolitan territories in the absolute convergence estimate and up to 20 years in the estimates taken from conditioned convergence. Additionally, there is evidence of the existence of convergence clubs that are associated with the territory, which could lead to increments in territorial segregation unless there is a public policy response.

The results show heterogeneity in the territories: individual regions are home to territories that are profoundly lagging behind in many areas, with others that are ahead. This is a clear call for public policies that are designed to be sensitive to territorial heterogeneity. In general, the statistics that are currently available for Chile use regions as the unit of analysis. This is an impediment to revealing the heterogeneity observed here, and as such, they do not deliver a comprehensive view of the spatial distribution of quality of life in Chile. More progress must be made in generating data at the level of the

communes in order to ensure a greater understanding of territorial dynamics and better-designed public policies.

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## APPENDIX 1
## VULNERABILITY THRESHOLD ESTIMATE

| Model: | Logistic | | Linear | |
|---|---|---|---|---|
| Dependent Variable: | Poverty* | | Ln Per Capita Income | |
| | Coef. | Std. Error | Coef. | Std. Error |
| Head Secondary Ed. (1 for completed Secondary Ed.) | -0.355 | 0.004 | 0.284 | 0.001 |
| Head Higher Ed. (1 for completed Higher Ed.) | -0.528 | 0.008 | 0.594 | 0.002 |
| Age Head of Household | 0.003 | 0.001 | 0.034 | 0.000 |
| Age of Head of Household Squared | -0.001 | 0.000 | 0.000 | 0.000 |
| Gender of Head of Household (1 for Male) | -0.073 | 0.005 | 0.130 | 0.001 |
| HH Affiliated to Social Security (1 if Head of Household is Affiliated to the Social Security) | -0.430 | 0.004 | 0.235 | 0.001 |
| Floor of House (1 if it is bare concrete, earth, or other material directly over the ground) | 0.437 | 0.004 | -0.261 | 0.001 |
| Water (1 if it comes from a public system) | -0.172 | 0.009 | 0.060 | 0.002 |
| Single-Parent Household (1 if single parent) | -0.384 | 0.004 | 0.183 | 0.001 |
| Married Head (1 if married or common law marriage) | -0.064 | 0.005 | -0.175 | 0.001 |
| Head Farmer (1 if HH works in agriculture) | -0.193 | 0.009 | 0.046 | 0.002 |
| Head Independent (1 if HH is self-employed) | 0.275 | 0.005 | 0.003 | 0.001 |
| Occurrence of Labor Shocks (2006-2009) | 0.378 | 0.004 | -0.120 | 0.001 |
| Occurrence of Health Shocks (2006-2009) | -0.004 | 0.005 | 0.023 | 0.001 |
| Change in Number of Working ;embers | -1.635 | 0.006 | -0.415 | 0.002 |
| Change in Size of Household | 0.549 | 0.004 | 0.258 | 0.001 |
| Area (1 for Urban) | 0.498 | 0.007 | 0.125 | 0.002 |
| Constant | -0.553 | 0.028 | 9.912 | 0.008 |
| Control with Regional Dummies | Yes | | Yes | |
| R2 | 0.1241 | | 0.309 | |

* Use value 1 if slips into or remains in poverty.

## APPENDIX 2
## FUNCTIONAL TERRITORIES WITH POVERTY AND TOTAL VULNERABILITY TRAPS

| Region | Functional Territory | Poverty Trap | Total Vulnerability Trap |
|---|---|---|---|
| Coquimbo | Canela | 3 | 3 |
| | Illapel | 2 | 2 |
| | Combarbalá | 1 | 1 |
| | Ovalle | 2 | 2 |
| Valparaíso | Llay-Llay | 2 | 1 |
| O'Higgins | Litueche | | 3 |
| | Navidad | | 3 |
| | Paredones | 3 | 1 |
| | Lolol | | 3 |
| Maule | Parral | 1 | 1 |
| | Constitución | 1 | |
| | Cauquenes | 3 | |
| | Hualañé | | 3 |
| | Vichuquén | 2 | 1 |
| | Linares | 2 | 2 |
| Bío Bío | Los Ángeles | 1 | |
| | Laja | 3 | 3 |
| | Yungay | 1 | 1 |
| | Yumbel | 1 | 1 |
| | Concepción | 2 | |
| | Bulnes | 1 | 1 |
| | Chillán | 2 | 2 |
| | Cobquecura | 1 | 1 |
| | Coelemu | 1 | 1 |
| | El Carmen | 1 | 1 |
| | Quirihue | 1 | 1 |
| | San Carlos | 1 | 1 |
| | Ránquil | 2 | 1 |
| | Curanilahue | 1 | 1 |
| | Cañete | 3 | 3 |

## APPENDIX 2
## FUNCTIONAL TERRITORIES WITH POVERTY AND TOTAL VULNERABILITY TRAPS (CONTINUE)

| Region | Functional Territory | Poverty Trap | Total Vulnerability Trap |
|---|---|---|---|
| La Araucanía | Ercilla | 3 | 1 |
| | Lonquimay | 1 | 1 |
| | Angol | 1 | 1 |
| | Lumaco | 1 | 1 |
| | Purén | 1 | 1 |
| | Carahue | 1 | 3 |
| | Cunco | 3 | 3 |
| | Villarica | 3 | |
| | Galvarino | 3 | 1 |
| | Loncoche | 1 | 1 |
| | Nueva Imperial | 3 | 1 |
| | Teodoro Schmidt | 3 | 3 |
| | Toltén | 3 | 3 |
| | Curacautín | 1 | 1 |
| Los Ríos | Futrono | 3 | 3 |
| | La Unión | 3 | 3 |
| | Lago Ranco | 3 | 1 |
| | Mariquina | 3 | 3 |
| Los Lagos | Queilén | 2 | 2 |
| | Quellón | 2 | 2 |
| | Puerto Octay | | 3 |
| | Chaitén | | 2 |
| | Hualaihué | 2 | 2 |
| Aysen | Tortel | | 2 |

1. Trapped (lagging behind in both years)
2. Overcame lagging position
3.Slipped into a lagging position

## APPENDIX 3
## HUMAN OPPORTUNITY TRAPS

| Region | Functional Territorial | Opportunity Traps |
|---|---|---|
| Antofagasta | Taltal | 1 |
| Atacama | Copiapó | 1 |
| | Vallenar | 1 |
| Coquimbo | Canela | 2 |
| | Combarbalá | 2 |
| | Illapel | 1 |
| | Ovalle | 1 |
| Valparaíso | Juan Fernández | 1 |
| Santiago Metropolitan | Alhué | 2 |
| O'Higgins | Litueche | 2 |
| | Lolol | 2 |
| | Navidad | 2 |
| | Paredones | 2 |
| | Pichilemu | 1 |
| | Rengo | 1 |
| | San Fernando | 1 |
| | San Vicente | 1 |
| | Santa Cruz | 2 |
| Maule | Cauquenes | 1 |
| | Constitución | 1 |
| | Curicó | 1 |
| | Hualañé | 2 |
| | Linares | 1 |
| | Parral | 2 |
| | San Javier | 2 |
| | Talca | 1 |
| | Vichuquén | 2 |
| Bío Bío | Bulnes | 2 |
| | Cañete | 2 |
| | Cobquecura | 2 |
| | Coelemu | 2 |
| | Curanilahue | 1 |
| | El Carmen | 2 |
| | Quirihue | 2 |
| | Ránquil | 2 |
| | San Carlos | 2 |
| | Yumbel | 1 |
| | Yungay | 2 |

## APPENDIX 3
## HUMAN OPPORTUNITY TRAPS (CONTINUE)

| Region | Functional Territorial | Opportunity Traps |
|---|---|---|
| Araucanía | Angol | 1 |
| | Carahue | 2 |
| | Cunco | 2 |
| | Curacautín | 1 |
| | Ercilla | 2 |
| | Galvarino | 2 |
| | Loncoche | 1 |
| | Lonquimay | 2 |
| | Lumaco | 2 |
| | Nueva Imperial | 2 |
| | Purén | 2 |
| | Teodoro Schmidt | 2 |
| | Toltén | 2 |
| Los Ríos | Lago Ranco | 2 |
| | Mariquina | 2 |
| | Futrono | 2 |
| Los Lagos | Castro | 1 |
| | Calbuco | 2 |
| | Chaitén | 1 |
| | Cochamó | 2 |
| | Futaleufú | 1 |
| | Hualaihué | 2 |
| | Palena | 1 |
| | Puerto Octay | 1 |
| | Queilén | 2 |
| | Quellón | 2 |
| Aysen | Chile Chico | 1 |
| | Cisnes | 1 |
| | Tortel | 1 |

1. Trapped
2. At Risk

# III

# INSTITUTIONAL ARRANGEMENTS FOR OVERCOMING LOCALIZED MONETARY POVERTY TRAPS: THE TERRITORIES OF *CAUQUENES* AND *CONSTITUCIÓN* IN THE *MAULE* REGION OF CHILE

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## INTRODUCTION

Over the past three decades, monetary poverty has declined dramatically in Chile. In 1990, 38.6 percent of the population lived in poverty and, in 2011, this number dropped to 14.4 percent. However, these positive statistics obscure significant territorial inequalities. For instance, the 2011 national average hides an enormous gap between the region of *Araucanía* (22.9 percent) and *Magallanes* (5.8 percent). The local gaps are even greater: while 0.1 percent of the commune of *Vitacura* in the Metropolitan region live in poverty, nearly half the inhabitants of *Ercilla* (48.8 percent) in *Araucanía* live in poverty (MDS, 2013).

The territories that lag the furthest behind are, generally speaking, rural areas with small populations that are far from urban centers (RIMISP, 2012b). When these remain in a lagging position over time, they find themselves in *localized poverty traps* which are "any self-reinforcing mechanism that causes poverty to persist" (Azariadis and Stachurski, 2005). Bourguignon et al., (2007, p. 2) propose that inequality traps are due to "persistent differences in power, wealth and

1 María Fernanda Leiva, an economist and research assistant at RIMISP, assisted with the field work.

status among socio-economic groups that are sustained over time by economic, political and socio-cultural institutions". This is to say because of institutional arrangements that are made inside and outside of a trapped territory.

This study seeks to advance the understanding of the determinants of localized poverty traps. The hypothesis is that it is precisely these institutional arrangements, which are at cross-cutting and local at the same time, that determine the existence of poverty traps. A complementary hypothesis states that the territories that overcome their situations have redefined their position and the rules of play relating to centers of power. This would be possible through institutional changes that help them remove the constraints on growth in their territories in general, but also on the groups that lag the farthest behind. (Aroca et al., 2013; Bebbington, 2013).



This study, which seeks to prove these hypotheses, is based on a similar conceptual framework and uses a similar methodology to the studies covering Peru and Mexico. It begins by identifying the principal binding constraints for growth in the territories that have poverty traps, in addition to identifying the conditions that determine the existence of marginalized social sectors, even in territories that have overcome their trapped situation.

Building on the hypothesis regarding the significance of institutional arrangements, there is a complementary hypothesis that states that the traps, and the escape routes from these traps, may well be determined by social and institutional arrangements that are not exclusively intra-territorial but rather exist on a broader scale and manifest themselves within the territory. On the other hand, they may be arrangements that determine both territorial relationships and relationships at other levels as well. It is likely that extra-territorial interest groups play an important role in determining these arrangements, and that they promote their own interests by defending or promoting certain institutional arrangements, whether or not these are coordinated with local territorial actors (Bebbington, 2013).

This study reveals consistent evidence supporting this hypothesis, through its comparison of one territory that remains mired in a poverty trap with another of similar characteristics that was able to escape it.

We selected the territories for this study from all of the Functional Territories[2] in the country and based on Tomaselli's (2014) analysis, which used the communal poverty estimates for 1992-2002, which Modgrego et al., (2009) calculated using the Small Area Estimation (SAE) methodology. We were able to add year 2011 to the study by using data from the Ministry of Social Development (2013), which was also obtained using SAE. The data revealed that, within the universe of rural-urban[3] territories, five territories are in poverty traps, which is to say that they lagged behind in all three moments of time, or at least in the last two. These territories are located in the regions of *Maule* (1) and *Bío Bío* (4). Meanwhile, six territories overcame their trap, lagging behind in 1992 and/or 2002 and overcoming the situation in 2002 and/or 2011. These are located in the regions of *Coquimbo* (1), *Maule* (3) and *Bío Bío* (2).



For this study, we chose two territories that are located in the same political-administrative unit (region) and which have a similar rural-urban composition and population size. One of these territories is in a "monetary poverty trap" (it was chronically lagging according to statistics from 1992, 2002 and 2011[4]), and the other escaped its lagging position by the third year of measurement. These territories are

2 The Functional Territory concept (Berdegué et al., 2011) is an analytical construct that identifies areas that contain a labor market, a specific space where there are more frequent interactions between employers and the economically active population. These spaces are "relatively self-contained spaces where people live and work" (Tolbert and Killian, 1987: 10). They are also spaces in which people have access to services they require in their day-to-day lives, establish social networks and participate in community and public life activities.

3 Territories that are 100% rural are excluded because it is well known that the fact they are rural explains much of their lagging position (RIMISP, 2012a; 2012b). The focus is on understanding the dynamics that operate in urban-rural territories that are similar in certain aspects but diverge over time in their socio-economic trajectories.

4 A territory is considered to be lagging behind when its poverty index is half a standard deviation below the average for the period.

*Cauquenes*, which is trapped, and *Constitución*, which overcame its trap, both of which are located in the *Maule* region of central Chile.

This study was based on 44 interviews with key sources from the public and private sector and from civil society.[5] Some of them were interviewed twice. We reviewed a variety of documentation and information from secondary sources in order to provide an ex-ante and ex–post comparison with the perspectives of the interviewees.



## 1. THE *MAULE* REGION AND THE STUDIED TERRITORIES

The region of *Maule* is located in central Chile and is bordered by *O'Higgins* to the north and *Bío Bío* to the south (this is the line where southern Chile begins). It has an area of 30,269 km2 and has a total estimated population of 908,097 (Census 2002). It is divided into four provinces: *Curicó*, *Talca*, *Linares* and *Cauquenes*. *Talca* is the biggest city and the capital of the region.

The region is highly rural in nature (33.6 percent) and has significant primary sector economic activities. The sectorial composition of the regional GDP encompasses electricity, gas and water in first place with 19.4 percent, followed by manufacturing with 15.8 percent, agriculture, livestock and forestry with 12.4 percent, and personal services with 12.4 percent. When it comes to the composition of labor, however, the situation is quite different: agriculture, hunting, livestock and forestry are in first place with 32 percent, followed by commerce with 16.6 percent, manufacturing with 8.3 percent, and construction with 7.8 percent (Feres, 2013).

There are 15 electrical plants in *Maule* in addition to two mini plants. These are hydro-electrical and thermos-electrical plants which, together, have a production capacity of approximately 4,952.3 GWh, making *Maule* the largest producer of electricity in the coun-

5 See Appendix for more information about the interviewees.

try[6] (CCM, 2013a). In addition to the generation of electricity, the principal economic activities in the region are fruit growing, vineyards, and forestry, particularly wood pulp production. Both fresh and dry fruit figure prominently among the region's exports, representing 44.1 percent of all exports from the region and 23.5 percent of the country's fruit exports. The other export products are wine (15.5 percent of the region's exports and 24.2 percent of national wine exports) and wood pulp (10 percent of the regional exports and 10.5 percent of wood pulp exports) (CCM, 2013a).

By 2011, the region's per capita GDP was US$7,532, about half, of the per capita GDP for the country, while the regional GDP represented 3.3 percent of the national GDP (Banco Central, 2012). By the same year, the net rate of labor force participation was around the national average of 55 percent, but there was a higher level of employment in the primary sector (30.2 percent) compared to the national average (12.3 percent) (Casen 2011).



*Maule* has little capacity for attracting investment compared to the rest of the country. *Maule* is in eleventh place in terms of private domestic investment, with 1.4 percent of the country total, besting only *Arica, Parinacota, Araucanía, Los Ríos* and *Magallanes* (SOFOFA, 2012). This is the same situation for Foreign Direct Investment (FDI), which represents only 0.5 percent (US$689 million) of total authorized foreign investment and 0.7 percent of the total actual investment between 1974 and 2011 (CCM, 2013a). In terms of public investment, it fared much better, ranking in 4$^{th}$ place for total public investment, behind the regions of Metropolitan, *Bío Bío* and *Los Lagos*; however, taking these statistics *per capita*, the region falls to 8$^{th}$ place, with some $270,000 Chilean pesos in 2009 (CCM, 2013a).

Average monthly income for the employed is the lowest in the country, $283,067 (Chilean Pesos) in 2012, below the national aver-

6 The energy companies with the largest presence in the region are ENDESA S.A. and *Colbún* S.A., with a total of ten hydroelectric plants producing a large proportion of the total energy generated.

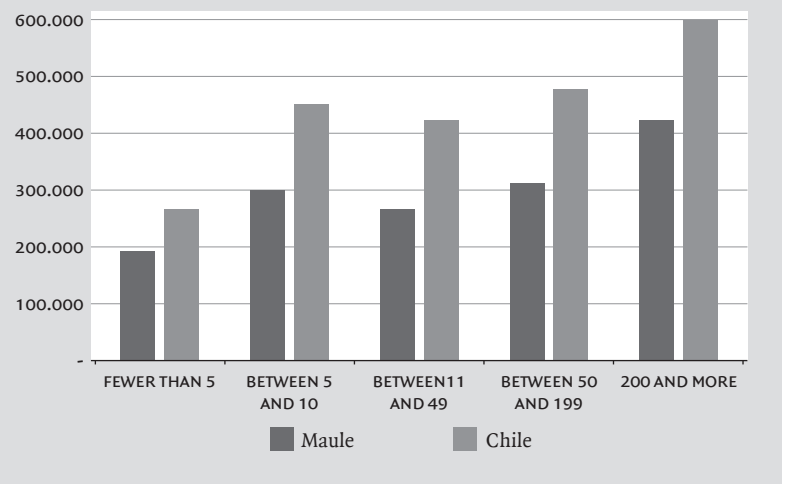
age of $430,919 Chilean Pesos and well below the highest income region, *Magallanes*, which reached $638,776 Chilean Pesos (NESI, INE, 2012).

By economic sector, those who earn the most work in mining ($601,226), financial intermediation ($532,756) and the civil service ($513,688), while those who earn the least work in domestic services ($116.012) and fishing ($183,117), all in Chilean Pesos (NESI, INE, 2012). At the same time, those who earn the highest on average work in the civil service, while within the private sector, those who work for large companies earn the most. These salaries decrease progressively with the size of the company, with microenterprise employees making the least (NESI, INE, 2012). Compared to the national averages, the region consistently has lower income.



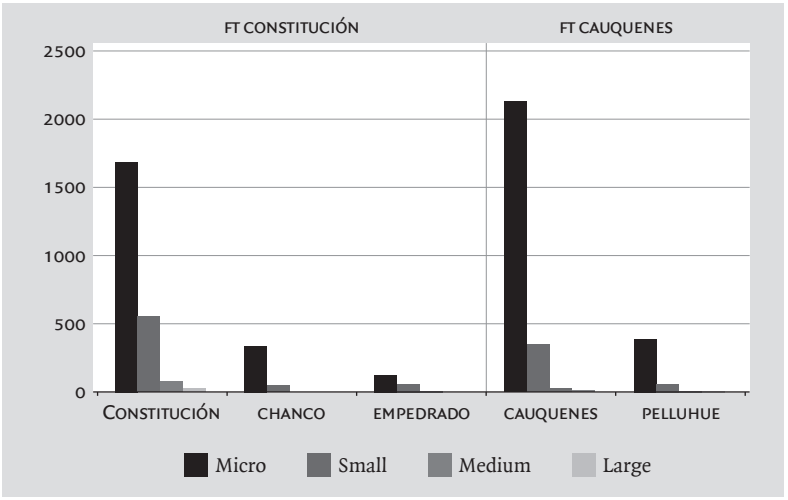
These characteristics place *Maule* in a situation of relative development that is below the national average. We will see below how, in

GRAPH 1 – AVERAGE MONTHLY INCOME (IN CHILEAN PESOS) ACCORDING TO THE SIZE OF THE COMPANY (NUMBER OF WORKERS) IN *MAULE* AND CHILE (2012)




Source: NESI, INE 2012. Compiled by the Authors.

GRAPH 2 – NUMBER OF COMPANIES PER COMMUNE BY SIZE (2012)




Source: SII, 2013. Compiled by the authors.



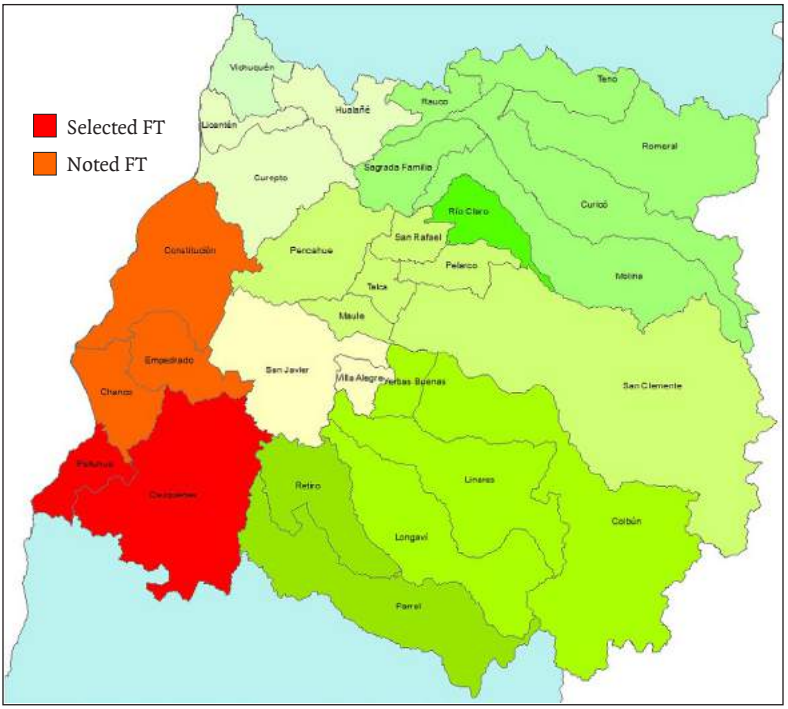
some respects, the territories of *Constitución* and *Cauquenes* differ from this situation.

*Maule* can be divided into nine Functional Territories: one of these is trapped, four overcame a trap, three were never lagging behind and one fluctuated between lagging behind and overcoming its situation.

*Cauquenes* and *Constitución* border each other and share some relevant characteristics. Both are small, rural-urban Functional Territories (Berdegué et al., 2013) and they have similar estimated population sizes and levels of rurality.

*Cauquenes* is in the province of the same name and includes the communes of Cauquenes and *Pelluhue*, with a total population of 45,142 inhabitants (provisional figures, Census 2012) and is 27.2 percent rural. The territory of *Constitución* is part of the *Talca* province, the regional capital. It includes the communes of *Constitución*, *Empedrado*

MAP 1 — FUNCTIONAL TERRITORIES IN *MAULE*




Source: Berdegué et al., (2011). Map created by the Authors.

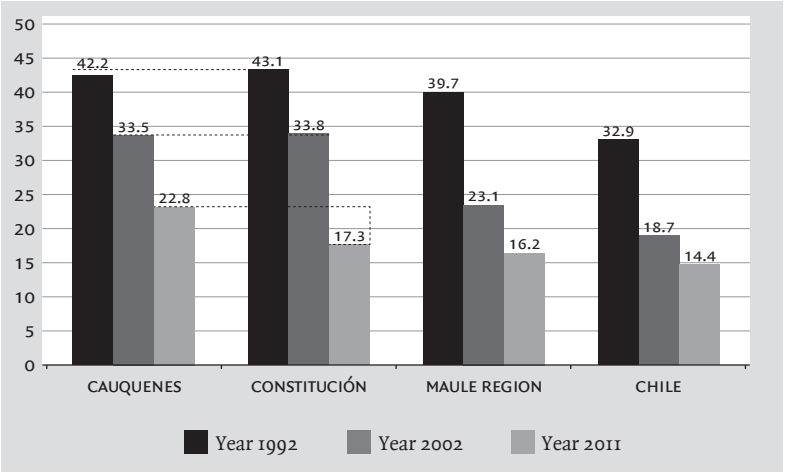


and *Chanco*, with a total population of 54,463 inhabitants and is 32.7 percent rural[7].

Both territories share a history of high poverty rates that far exceed the regional and national averages; however, their trajectories have be-

7 In the field work, we asked the local actors about the relevance of this configuration of Functional Territories (*Cauquenes-Pelluhue* and *Constitución-Chanco-Empedrado*), which made sense to the majority of them, thus validating them as spaces of belonging, which, despite having differences, have common labor and economic dynamics that can be seen in the mobility of workers from one commune to another (many private bus lines travel to the tree farms and seasonal estates). Only the regional government's Planning Unit made a different distinction, breaking-down the area into three territories: *Constitución-Empedrado*, *Chanco-Pelluhue* and *Caquenes*.

GRAPH 3 – EVOLUTION OF POVERTY IN STUDIED FUNCTIONAL TERRITORIES 1992-2002-2011




Source: Tomaselli (2014) and MDS (2013). Compiled by the Authors.



gun to diverge in recent years. By 2011, the difference in their poverty rates was more than five percentage points, after monetary poverty in *Constitución* dropped by 16 percent.

The territory of *Constitución* is made up largely of forest (73 percent) followed by prairies (13 percent), scrubland (8 percent) and farmland (8 percent). *Cauquenes* is less dominated by forests (50 percent), with more prairies and scrubland (30 percent) and farmland (17 percent) (CCM, 2013a).

The presence of the forestry industry and its related services, industries and activities are central to the economy of these territories, although much more so in *Constitución*, which, in 2013, had 780 lots in production on a total of 96,868 hectares. In *Cauquenes* there were 527 lots in production in 2013, totaling 94,748 hectares (INFOR, 2013). The inhabitants of *Constitución* consider the forestry industry to be the principal economic motor in their territory. In contrast, *Cauquenes* has

tree plantations, but downstream industries have not developed and the land is shared with vineyards and, to a lesser extent, fruit farming.[8]

## 2.- BINDING CONSTRAINTS AND LAGGING

The focus on "binding constraints", developed by Hausmann, Rodrik and Velasco (2005), is based on the idea that strategies for growth are different in each situation depending upon the availability of opportunities and resources, in addition to issues such as respect for property rights and rule of law. This focus is based on the finding that political capital is always limited, so its use should be aimed at the binding constraints, instead of changing policies that don't have a direct impact on growth (Aroca et al., 2013).



### *2.1 Limitations to Economic Growth: Territories in Arid Areas, with Little Connectivity, Low-Quality Human Capital and a Graying of the Population*

Five binding constraints for growth in *Constitución* and *Cauquenes* emerged from the interviews with key sources. Some of these are common to both territories, while some are more prevalent in the trapped territory.

2.1.1 As a result of the fact that the territories are located in dry land areas, both have limitations associated with a lack of water and low productivity of the land. On average, in the 13 dry land communes (five of which are part of the studied territories), only 7.3 percent of the total area is irrigated. Communes like *Pelluhue*, *Empedrado* and *Constitución*, irrigate less than one percent of their total area (CCM, 2013b).

8 *Cauquenes* is the commune with the second most vineyards, in terms of area, in the country (in first place is *San Javier*). It had 5,431 hectares planted in 2011. *Cauquenes* has had a significant increase in fruit farms, going from 67.2 hectares in 2001 (mostly olives and table grapes) to 674 hectares in 2013 (with important areas of blueberry and olives). *Constitución* had a reduction in the area planted with fruit (54.2 hectares in 2001 to 16.1 hectares in 2013) (ICE-ODEPA, 2014).

2.1.2 **Connectivity Problems and Lack of Roads:** *Maule* has fewer paved roads than the national average. Of its 7.382,63 km of roadways, 45 percent are gravel, 25.4 are dirt, and only 17.6 percent are paved, which is three percentage points below the national average (CCM, 2013a). Considering that forestry activity predominates in the area, the weight capacity of the roads is a limitation[9].

The region doesn't have an airport, although there is one airstrip in each province, with one located in the commune of *Cauquenes* (*Aeródromo El Boldo*) (MOP, 2012). Furthermore, there is no port that constitutes a significant commercial maritime access point.



*Constitución* and *Cauquenes* are approximately 100 km from Route 5, which is the principal north-south highway that connects major cities. *Constitución* is connected to *Talca* by Route L-30-M and by the only functioning line in the national train network. *Cauquenes* doesn't have a train line, and, while the national highway system has improved (at the end of 2012 the *Los Conquistadores* highway was improved and widened), there is a bypass around the city.

There is significant investment in bridges in *Constitución* (for example the *Cardenal Raul Silva Henriquez* bridge which runs from north to south), as well as in some highways (such as H40, that goes to *Empedrado*).

2.1.3 **Lack of Qualified Human Capital:** Inhabitants of the province of *Cauquenes* have an average schooling rate of 8.5 years, which is the lowest in the country, compared to the national average of 10.5. In the province of *Talca*, where the territory of *Constitución*

9 The weight limit is 45 tons. According to the timber companies in CORMA, increasing this capacity to a standard of 61 tons would lead to a net cargo increase of 36 percent, reducing transport costs that account for 50 percent of the direct costs of the sale of logs; 18 percent of the integrated cost of sawed wood; and 23 percent of pulp. See: http://www.corma.cl/perfil-del-sector/desafi-os-de-infraestructura-vial

is located, there is an average of 9.5 years of schooling (Casen 2011). In the former, only 8.7 percent of those aged 25 years or older have university or technical education, and only 11.6 percent in the latter. Both are below the national average of 15.3 percent.

This trend could be partially reversing itself, mainly in *Constitución*, where the principal commune had three schools place in the top ten in the national standardized tests, known as SIMCE in Spanish, in 2012. The *Constitución* School, which has ties to the ARAUCO company, was ranked fourth in the country for eighth grade and ranked seventh for fourth grade. The *Eduardo Martin* School and the *Santiago Onederra* School ranked second and third, respectively, in the fourth grade exam. *Cauquenes* has only one school, the *Adolfo Quiroz* Municipal School, that was ranked in the top ten for the fourth grade tests.



2.1.4 **Migration of Young Inhabitants and the Graying of the Population:** The dependency ratio indicator for the elderly, which calculates the population 65 and older compared to the population aged between 15 and 64, has a particularly high value in the province of *Cauquenes*, one of the highest in the country and one that continues to grow. A common story told in the territory is the story of the children of landowners who sell their parents' land and move to other communes when their parents die.

TABLE 2: DEPENDENCY RATIO FOR THE ELDERLY, SELECTED PROVINCES (2009-2011)

| Province | Dependency Ratio-Elderly (Casen 2009) | Dependency Ratio-Elderly (Casen 2011) |
|---|---|---|
| Cauquenes | 0.26 | 0.30 |
| Talca | 0.16 | 0.17 |
| National Average | 0.16 | 0.16 |

Source: CASEN 2009 and 2011. Compiled by the Authors.

2.1.5 **A rent-seeking culture among the elite.** This culture stems from the landowning traditions in which landholders owned numerous rural and urban properties as investments or for rent and invested very little in new ventures to help make the economy more dynamic.

> "*I know people who own 150 pieces of property in the region. They rent them or just leave them there; they are not thinking about projects, building, nothing. Their mentality is to collect the money and put it under their mattress. This is the region with the highest level of savings*" (Businessman with companies across the region).



Actors in the territory see these constraints as the most prominent obstacle to growth in the area, and this view has strong empirical support in the aforementioned statistics. With the exception of those constraints that are related to land, these constraints have a greater presence in *Cauquenes* than in *Constitución*, where, as we will see below, there are a series of institutional arrangements that mitigate them.

### *2.2 Lagging Behind and Social Marginalization*

This study hypothesizes that, in addition to binding constraints, the presence of poverty traps is due to conditions that marginalize certain populations within the territory. Below, we will see that, even when a territory is in relatively better-off situation than another territory, there are conditions present in both territories that account for the marginalization of a portion of the population and the consequent poverty rates.

2.2.1 **Low Quality Jobs:** The average monthly income for those who work in *Maule* is lower than the rest of the country ($283,067 in 2012). This is well below both the national average of $430,919 and the highest income region of *Magallanes*, where average

monthly income is $638,776, all in Chilean Pesos (NESI, INE, 2012). The workers with the highest average income are civil servants, while within the private sector, those who earn the most work for large companies. Salaries decrease progressively the smaller a company is, with the lowest salaries being earned by employees of microenterprises (NESI, INE, 2012). The two studied territories have a similar number of companies (around 3,000) although they differ in size. *Constitución* has 23 large companies and *Cauquenes* has only 7 (SII, 2013).



The degree of formality of labor, i.e., jobs with access to social security, also varies between the territories. The province of *Talca*, where FT *Constitución* is located, has a formal labor rate of 70.3 percent; in *Cauquenes,* this number stands at 66.4 percent.[10] The predominance of family-owned farms and the development of low-productivity jobs and precarious living conditions (traditional homes made from brick and with tiled roofs, clay pots) along with seasonal and/or poorly paid work (in fruit farming) make for a labor market that doesn't help the territory overcome its lagging position. At the same time, the predominance of tree farms and mechanized vineyards, which are not labor intensive, means that their benefits are not distributed or circulated within the territory through jobs and salaries that lead to local consumption.

2.2.2 There is also **isolation and dispersal** of the population in rural areas, which have more limited public services, much less so than in urban centers. This is where *Cauquenes*' most vulnerable population lives. This situation exists in *Constitución* as well, and there is also a focal point of lagging groups in more populated areas such as Santa Olga.

10 The province of *Talca*, where *Constitución* is located, has a labor force participation rate of 54.8 percent and 18.4 percent are employed in primary sector activities. *Cauquenes* has a considerably lower labor participation rate of 44.8 percent and a higher proportion of jobs in primary sector activities (26.9%).

The coverage of public services is concentrated in urban centers, such as the cities of *Constitución* and *Cauquenes*, while the population in communes such as *Chanco*, *Empedrado* and *Pelluhue* is in a disadvantaged situation. According to studies undertaken by SUBDERE (2008b), which take into account access to services, these three communes have indices of isolation of 0.4 to 0.44, which put them into the "highly isolated" category.[11]

2.2.3 **Administrative Capacity and Local Government profile:** Municipalities in the studied territories have low levels of financial autonomy and a limited capacity to attract state resources for investment projects, independently from the fact that there are differences observed between the two territories.



*Constitución* has slightly better conditions than *Cauquenes*. For instance, the dependence of its communes on the Common Municipal Fund reached an average of 76.6 percent, while in *Cauquenes* it is, on average, 80 percent. The regional average is 68.7 percent. The budget of *Constitución* is $321,500 per capita per year, while in *Cauquenes* it is $268,600, both in Chilean Pesos. In terms of municipal investment, 19.1 percent of spending in *Constitución* is invested, while in *Cauquenes* that figure is 15.6 percent (SINIM, 2012).

When it comes to the ability of the municipal government to attract state investment projects, *Constitución* had 59.4 percent of its projects approved between 2000-2012, while in *Cauquenes* this figure drops to 49.4%.

One widespread perception among the actors interviewed is that municipal governments have a hand-out mentality, lack a "strategic vision for the commune and its development", and are characterized by simply finding solutions to issues as they arise.

11 The index has four levels: low, medium, high and critical. Its construction is based on the following criteria: physical, demographic, economic, access to services and political-administrative. See SUBDERE (2008b).

*"The mayors favor hand-outs and don't come together to promote development. They think they are there to pay electricity bills and hand out baskets"* (Politician).

The way communal power is exercised differs between the territories. In *Cauquenes,* one observes greater instability, a higher rotation of commune officials and situations of inappropriate use of authority. In *Pelluhue,* there were nine mayors from 2008-2012 because of reiterated accusations of a lack of integrity. Something similar occurred in *Cauquenes*, where the mayor was accused of using post-earthquake reconstruction funds to benefit his relatives (the earthquake occurred on February 27th, 2010). In *Constitución*, there has only been one similar situation in the municipality of *Empedrado*.[12]



2.2.4 **Development of Practices that Favor the Dispossession of Forestry Land**: The territory of *Cauquenes* has a specific relationship with the large forestry companies, given that there is tree farming there but no processing facilities for the pulp. The companies tend to rent land from small farmers so they can apply for a forestry incentive, which subsidizes between 75 and 90 percent of the net expenses of the plantation in addition to providing tax cuts for undertaking forest management activities for plantations on land that is suitable for the activity[13] (DL 701, CONAF). Once it is all planted, the company offers to buy the land at a low price. The owners, in need of cash flow and with land that can no longer be used for anything else and won't produce income for 12 to 18 years (a long time for small producers), agree to sell.

12 http://www.lanacion.cl/alcaldes-de-cauquenes-y-empedrado-en-la-mira-de-contacto/noticias/2013-08-13/235644.html

13 See: http://conaf.cl/conaf/seccion-dl701.html

They lose their property and end up in a vulnerable situation in the mid-term.[14]

## 3.- ACTORS AND SOCIO-INSTITUTIONAL ARRANGEMENTS THAT REPRODUCE OR OVERCOME POVERTY TRAPS

Below is an analysis of the institutional factors that may be behind the persistence of the binding constraints described above and those that helped *Constitución* to overcome its poverty trap.



### *3.1* Cauquenes: *The Backyard of an Emerging Region*

The persistence of the lagging position in which *Cauquenes* finds itself is principally due to the following factors:

a) The territory is in a disadvantageous position within the economic realm of forestry/timber in that it has tree farms but no downstream industries to give added-value to the wood, such as sawmills, pulp, wood chips, furniture or other wood products;
b) The existence of a traditional economic elite that is rent-seeking in nature and more interested in the benefits of renting their land than investing in making a more dynamic economy;

14 Two individuals we interviewed mentioned this mechanism of action; however, analysis and evaluations of forestry policy sheds some light on the creation of a favorable scenario for its development. In 1998, the law on forestry incentives (DL 701) incorporated the Forestry Companies—Small Farmers Program, which was set up to establish agreements to drive support and transference between timber companies and small and medium property holders. One of these initiatives is cash tenancy between property holders, who provide the use of a certain plot of land and the labor to plant trees, and the companies who provide the farming supplies and materials, technology and the buying power. According to DIPRES, "one example of a cash tenancy forestry agreement was promoted in 1995 by the Foundation for Agricultural Innovation (FIA), CONAF and *Forestal Celco S.A.* Among the benefits of these agreements, from the point of view of the property holder, is the ability to make 50 percent of the net income when the timber is harvested. In addition, he can be contracted for the planting and management of the forest and has free access to the products of the forest on his land including firewood, mushrooms and others" (DIPRES, 2005: 76). Considering the time between one harvest and the next, many small property holders have found the idea of selling to be an interesting one.

c) The existence of a political elite with no strategic vision nor the ability to negotiate with the seats of national power, and with an orientation towards hand outs and clientelistic policies;
d) The absence of social coalitions or groups associated with the generation of projects for change.

*Cauquenes* has experienced a downward trend over the past number of years. The province of *Cauquenes* is a reduced version of an old department of the same name that, prior to regionalization in 1974, was more central and had a greater radius of influence. It is common to hear the inhabitants speak with resignation about the area's glorious past.



> "Cauquenes *had five times the territory is has now, it had the fifth oldest high school in the nation, which was founded in 1837* [Liceo Antonio Varas] *(...) Now, I have no idea how it will progress*" (A local leader).
> "Cauquenes *has suffered losses throughout history, and this has affected its self-esteem and culture. Before it was a large province, but with regionalization it lost a lot. It was a rural area with forestry, and it was going to be a center of development, if CELCO* [a private company] *had stayed in the territory. Before it had a train and military troops, but with these losses, its status has declined*" (A politician).

In contrast to the "modern spirit" of *Constitución*, the *Cauquenes* identity is more "old-fashioned". It appears that a traditional culture reticent to change has dominated, with a lack of expectations and a limited horizon. There isn't a strong sense of identification with the territory.

> *"There is an identity of resignation, or insurmountable lagging and low self-esteem. For example, the women weavers sell their handicrafts in* Puerto Montt *and they say 'a souvenir from* Puerto Montt', *so there is no value placed on what is theirs*" (A local academic).

> *"Another thing is the idiosyncrasy of the* Cauquenino*; there is little influx of outsiders and everyone here thinks the same way; there are no great expectations; they are very traditional"*(A local leader).
> *"[in Cauquenes] we need cultural changes and a broader vision. Leaders are very local and have no vision"* (A politician).

In analyzing the region as a whole, which has special significance in *Cauquenes*, it was seen that, in *Maule*, it has been impossible to "construct a narrative that overcomes the duality of the territory (rural/urban, backwards/modern, local/regional)", thus enabling the individuals and identities that cohabit within the region to feel part of a shared project (UCM and Sur*Maule*, 2010).



On top of the perception of having been abandoned and the feeling of resignation is the recent location of a prison in the commune. Given the fact that it is one of the six safest cities in the country,[15] after the 2010 earthquake, it received inmates from neighboring communes of *Constitución* and *Parral* (which were affected by the earthquake). This has deeply affected the city as it receives the relatives of the inmates who are in vulnerable situations and in some cases have ties of their own to criminal activity.

The main actors in the territory are forestry companies that have developed large pine plantations, and whose interests lie in achieving greater productivity and profitability; the Agricultural Cooperative of Winemakers from *Cauquenes*, whose interest lies in revitalizing the vineyards and cooperatives as a path towards a more dynamic local economy; farmers and small family farmers; the tourism industry and the traditional fishermen of *Pelluhue*; the municipalities and provincial government; and public services, such as INDAP and CONAF.[16]

---

15 *Cauquenes* has the sixth lowest crime rate in the nation, standing at only 13.7 percent (ENUSC, 2012). The *Maule* region has the second lowest crime rate in the nation, with only 17.1 percent of households in which one of the members was the victim of a crime. Only *Magallanes* is better, with 15.2 percent, but *Maule* is well below the national average of 26.3 percent.

16 The map of actors in the territory, constructed from the interviews and the documentary reviews, can be found in the Appendix.

The Cooperative could represent a relatively dynamic territorial strategy, in that their resources are obtained through sales, are distributed among their members and feed local economic circuits. However, over time, it has grown weaker due to a loss of members and as a result of the comparatively high cost of production (associated with low yields from the arid lands) and the expansion of forests, which has made it attractive for some vineyards to sell their land to the forestry companies.

This progressive shift of the axis of the economy has resulted in more disadvantages than benefits. The tree farms are not labor intensive and they consume large quantities of water, which has an impact on the irrigation capacity of an area already affected by the scarcity of water. Furthermore, there are no downstream industries that would allow the territory to obtain a benefit. The only exception is *Maule Containers SA* (formerly *Cajonera*, *TERMAC*), a company which makes shipping boxes for fruit exports, and employs 600 worker (and twice as many in the summer months), which is an important source of employment for the territory.[17]



Recently, some large wineries have moved into the territory (*Concha y Toro*, *Miguel Torres*, *Undurraga*, *Ochagavia*), but they have set up organic wine projects on small extensions of land where they are only growing grapes but not processing them. The result is that these ventures don't create more jobs or make the economy more dynamic.

The fruit sector consists principally of small family farmers who sell on the local market for subsistence earnings. Although there are examples of innovations that have been supported by CORFO or INDAP (blueberries, olives, strawberries), these don't yet represent a significant activity in terms of production.

A common opinion among interviewees in the territories is that the local political leaders have not helped development, and that they lack political heft, a strategic vision, technical abilities and commit-

17 After being in business for 25 years, the company TERMAC had a crisis that forced it to close in 2009. This had a strong social impact considering the number of families affected by job loss. One year later, in 2010, it opened its doors again with new owners.

ment to the territory. These feelings are shared by actors from the private sector, social organizations and even the civil servants themselves who, in some cases, acknowledge that their work focuses on resolving limited problems, that they have a hand-out mentality, and that they have poor local governance practices, as was mentioned earlier.

> *"We have lousy politicians;* Cauquenes *is a political trampoline, but they appoint people who don't know the province, the legislators are not even from here (...) There are few votes here, so it's not important to them (...) The mayor has problems with the law"* (A local leader).
>
> *"There is bad policy, lots of traditional patriarchy and authorities from outside the area. They don't know the area and don't work closely with the community, and those who are from here don't have a vision that brings them together"* (A politician).
>
> *"There is a closed group of politicians that stay in power, tamping down new ideas and emerging leaders. Governors and mayors rotate office among themselves"* (A local leader).
>
> "[in Cauquenes] *there is a political deficit, governors who don't know the territory and whose management is ineffective. Their administration of networks is weak, and what they offer isn't pertinent. There isn't an integrated vision or prioritization of strategies or tools"* (A public official).
>
> *"There is a lack of capacity in order to generate proposals from within the territory. There is too much dependence and too many hand-outs, passivity. A lot of strong-man politics and little communal interaction"* (A politician).



The elites of the territory are traditional, and they don't have initiatives that breathe life into the local economy. They don't invest often, and if they do, they do so outside of the territory.

> *"Business owners pay low salaries. They need to offer better quality jobs with higher salaries. This region has the lowest salaries in the country. In my company no one makes the minimum, but no one else sees it like I do"* (A businessman).

> *"The elite are large estate holders, estate owners and politicians with a traditional viewpoint. They are closed groups with their own networks and contacts"* (A local leader).
> *"The estate owners/land owners are old and don't invest, and their children leave the area and invest their money in other sectors outside of* Cauquenes" (A businessman).

The territory is also marked by a lack of strong social organizations that push for change. As the local actors say, the few organizations that do exist (for example the Rural Women's Group and organized traditional fishermen) have little capacity for collective action, little training, and a limited reach. Those that have tried to breathe life into the social fabric, including extraterritorial actors such as the Country Service Program (*Programa Servicio País*) have done so on a small scale, with a reduced sphere of influence.



> *"Fishermen have a union, but they act like a guild, looking out for their own interests"*(Municipal official).
> *"The fruit growers of* Pelluhue *are not organized, but they are in* Chanco. *What's the difference? There is a lot of distrust here, and this is a huge limitation. What's more, the biggest producer here has two hectares and there are over 100 producers; no-one trusts cooperativism here"* (A politician).
> *"There are groups like the Rural Women's Group, but, in general, the capacity for collective action is very reduced and has a small sphere of influence; it is more reactive than proactive"* (An academic).
> *"There is no culture of entrepreneurship, of getting ahead...it is the lack of a growth concept"* (A municipal official).
> *"There is no development vision in* Cauquenes; *that is what we are lacking"* (A government official).

In light of such high levels of resignation, two possibilities for development emerge. The main one is tourism. Whether it's the sun,

beach and water sports found on the coast of *Pelluhue*, or special-interest tourism related to cultural heritage and traditional rural life in inland *Cauquenes*, there appears to be potential for tourism and a desire for it. People perceive it as a means of generating activity within the territory. There are already projects that are seeking to valorize intangible heritage: the traditional way of producing wine, surviving customs (*The Route of the 25*), the revival of the bygone customs, rural tranquility, safety, solidarity and silence that characterize the countryside.

Another potential field of development is agricultural innovation, with the development of new organic crops and the possibility of establishing a "denomination of origin" based on the particular characteristic of the area (the dry climate, hours of sunshine and low flowering results in wine, honey and cornmeal that have a unique taste). After the experience with an INIA and CORFO initiative (2011), a proposed agricultural and research center is under consideration.



### *3.2 The Expansion of Forestry Activity and Development in* Constitución

*Constitución*'s ability to overcome its lagging position is due to the following:

a) The presence of a large company and the consolidation of an export-oriented forestry cluster that generates a circuit of downstream economic activities and associated services, job creation and increases in salaries;
b) The existence of an actor, the forestry industry, that has the ability to put pressure on the state through the Chilean Forestry Corporation (*La Corporación Chilena de la Madera*--CORMA), and to generate public-private alliances that help them secure their interests and extend the reach of their business;
c) The combination of public and private investment that generates an urban center offering services and that is attractive to skilled human capital;
d) The coordination of a group of entities that, even during a post-

earthquake reconstruction era, were able to coordinate and generate projects that made the territory visible beyond its borders.

*Constitución* had a glorious past. It was a port during much of the nineteenth century, and then, from the late 19th century through the first half of the 20th century, it was a summer destination for the upper classes. The construction of a wood pulp plant and its later expansion made forestry the focal point of the economy and profoundly transformed the city of *Constitución*.



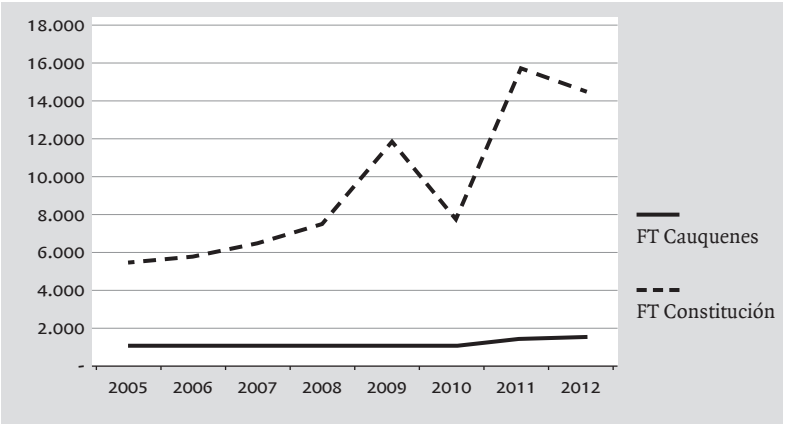
The forestry and large-scale timber industry links large, medium and small companies. In the context of a sustained increase in exports, it contributes to the diversification of production and generates a series of associated service industries including trucking, food, mechanics, industrial hygiene and environmental services, all of which drive trade and generate more jobs and demand for goods and services. The greater flow of people and activities results in a higher probability of government investment, which gives shape to a more dynamic and "modern" urban environment.

> "Constitución *is different. CELCO is the motor there, providing jobs; trucking is based on it. It affects education with high schools that are in the top ten in the nation, as well as cultural activities, which have the psychological effect of making things more dynamic*" (A politician).

The principle actors in the territory are *Arauco Forestry Holding* and other large timber companies (*MININCO, Martín, Mestre, Muñoz, Santa Blanca*), whose interests lie in achieving greater productivity and profitability; small and medium industrial timber companies; the transportation sector associated with the industry; the market for trade and services, including tourism,[18] all of which benefit from the forestry

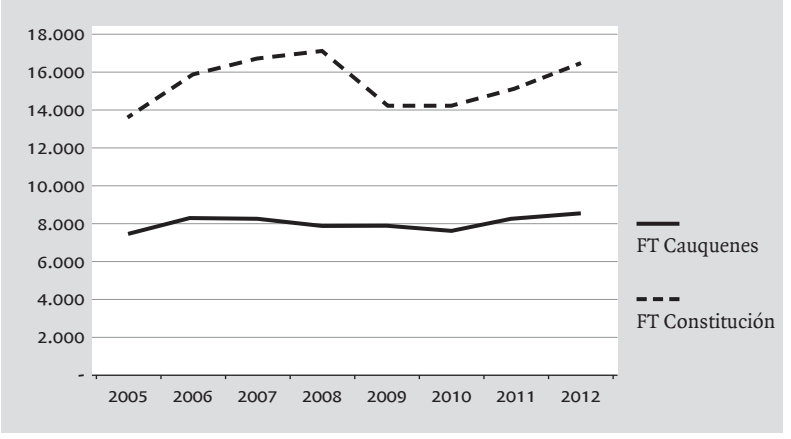
18 Tourism has picked up after the 2010 earthquake: "A few years ago, not a single hotel was being built, the hostels that existed here were for maintenance workers not for tourists from other places" (Secretary of FEFOCON). However, the pulp plant is a limitation (pollution).

GRAPH 4 – EVOLUTION OF SALES IN UF (*UNIDAD DE FOMENTO*) * / NUMBER OF COMPANIES BY FUNCTIONAL TERRITORY (2005-2012) **




Source: www.sii.cl. Compiled by the Authors.
*Unidad de Fomento (UF) is a unit of account that is used in Chile. The exchange rate between the UF and the Chilean peso is now (today) constantly adjusted to factor in inflation so that the value of the *Unidad de Fomento* remains constant on a daily basis during low inflation.
**The drop in Constitución in 2010 could be due in part to the February 27th earthquake which caused severe damage to the *CELCO-Arauca* plant, which didn't operate for three months.

GRAPH 5 – EVOLUTION OF THE NUMBER OF EMPLOYEES, BY FUNCTIONAL TERRITORY (2005-2012) *




Source: www.sii.cl. Compiled by the Authors.
*The drop in 2009 is linked to the effects of the global economic crisis of 2008.

industry; the traditional fishing sector;[19] the municipalities and provincial government; and public services, such as CONAF, SII and MOP. Outsiders who arrived as a result of the Sustainable Reconstruction Plan for *Constitución* after the February, 2010 earthquake, had a particularly large effect on the area.

> "*...the territory is seen as a provider of forests that the industry must consume until they no longer exist ...*" (A local businessman).
> "*About four years ago,* Arauco *began to play a decisive role in local development, reflecting on how....it sought to take on the human capital problem and generate an effect in the mid-term*" (Businessman).



*Arauco Holding* and its wood pulp plant (*CELCO Arauco* and *Constitución S.A.*) are a fundamental part of the recent history of *Constitución* and have defined its socio-economic trajectory. The dynamics deriving from its operations have a broad reach in the territory and, to a large extent, the territory's current situation is a direct result of the company. To understand this process, in which a private sector stakeholder becomes a motor for growth in the area, one must first understand the important role that the state played in creating the conditions for this to occur.

*CELCO Arauco* and *Constitución S.A.* were founded in 1979 as a result of the merger of *Celulosa Arauco* (founded in 1967) and *Celulosa Constitución S.A.* (founded in 1969). Both of these companies were CORFO companies that were privatized in 1977 and 1979, respectively, and they were then acquired and merged by *Compañía de Petróleos de Chile S.A.*, which today is known as *Copec Companies*. *Copec* is still the main owner and controller of these companies. It focuses on the forestry sector, wood pulp, timber and energy, and it is the biggest forestry company

19 Traditional fishing is an important economic activity in the area and one that has experienced a boom in the past 20 to 30 years with the fishing of albacore and then cod. Many small fishing coves emerged, with new boats, but they don't compete with industrial forestry.

in Latin America and one of the biggest in the world (Annual Report, Arauco, 2012).

Forestry is the second most important sector of the national economy after mining, with an annual volume in 2012 of more than US$6 billion in exports, 49 percent of which stem from the production of wood pulp (AIFBN, 2013). Its growth and expansion is promoted by CONAF'S forestry incentive law (DL701). According to an evaluation by the Budget Office of the Treasury, from 1980 to 1997, a total of 20,499 bonuses were awarded for the foresting of 822,428 hectares, of which 94.2 percent was the property of medium and large companies.



The distribution of the forestry bonuses improved between 1998 and 2004 after the law was modified to incentivize the planting of forests on smaller properties and on fragile and degraded soils. Still, it remained concentrated among medium and large companies, which represented 62 percent of credited areas (DIPRES, 2005). The new law states that any property owner, regardless of the size of their property, can participate in the program, and the fragile and degraded lands it focuses on include non-irrigated lands. During this same period, there was sustained growth in the number of bonuses distributed in the area to owners of these kinds of properties (a 325 percent change nationwide) with *Maule* in first place for bonuses (39,308 hectares, or 25.4 percent of the national total).

These fiscal incentives and subsidies for forestry are a key factor in *Arauco's* ability to transform itself, over time, into the largest forestry company in Latin America, and they were pivotal for its ability to determine the territorial dynamics of *Constitución*,[20] where *Arauco* invested heavily in the 1990's because of the conditions offered by the territory in this area.

20 Close to 90 percent of the nation's forestry activity is controlled by three actors: *Arauco*, *Mininco* (CMPC) and *Masisa*. In 2010, the income from exports reached US$4.9 billion. Exports went principally to China, Japan, the USA and Mexico, with 74.4 percent of the exports from *Arauco* and CMPC. Between 1974 and 2012, CONAF paid out US$838 million in bonuses to the companies (AIFBN, 2013).

> "*...15 years ago,* Arauco *invested heavily in* Constitución *as a result of its expansion policy, through which it set out to be a global player in the industry...It chose* Constitución *because it was more industrially developed*" (A businessman).

The new elite that emerged in the territory with CELCO is boosted by its global reach and by the dynamics generated by the productive chain in the area (many actors depend on it and benefit from it) and even for the role it plays in socially.



> "*our products go to more than 70 countries and pass through over 80 ports*" (A businessman).
>
> "*There is investment because* Arauco *has a monopoly (...). Thanks to them we have grown. (...) Those who cause trouble for Arauco do so because of environmental issues, because of its image, for its concentration of economic power, etc., but all the development is thanks to them*" (A local businessman).
>
> "*...while CELCO does have a monopoly, while it is doing well, you know they will pay, and, as a result, it provides more stability*" (A local businessman).
>
> "*[we are] an agent of development for the communities and the public (...) We have roots in the area; we have grown with* Constitución; *we have a mature relationship with the communities*" (A businessman)

Key forestry companies in *Constitución* help improve local roads and also drive improvements to the roads that connect *Constitución* with other communes. They invest their own money and pressure the government to invest. More recently, it signed agreements within the framework of SII's Public Notice 49, which provides a tax incentive for companies that finance the development of road projects.[21] They lobby through their

21 Public Notice N°49 from the Internal Tax Service (08/31/2006) in the first category of the Income Law, recognizes the amount that companies spend on construction and road improvement projects as an expense.

industry group, CORMA, which participates in regional public-private sector committees (energy, environment, forestry, roads), as well as driving working agendas with a variety of actors and serving as a direct channel of communication with national authorities.[22]

Among the proposed road projects in *Maule* is the *Coelemy* bypass and the *Chanco* bypass. *Arauco* would cover 50 percent of the total of both, which would cost $3.25 billion and $2 billion Chilean Pesos, respectively.[23]

The dynamic economy in the territory helps attract qualified labor, raising the level of human capital. There are quality schools, including those associated with the *Arauco* Foundation, and cultural activities and services that increased after the 2010 earthquake. All this makes for an urban center that offers what professionals and their families need if they are looking to settle there. As one of its executives said, the managers and assistant managers of CELCO-*Constitución* live in the city.



The mere existence of CELCO and the fact that it is a large company with international standards exerts an upward pressure on average salaries and the quality of the jobs available, meaning the salaries are higher and the working conditions are better (stability, contracts, etc.).[24] Its area of influence is not limited to the city of *Constitución*, but

22 *CONAF Maule* formed a Forestry Roundtable which included the forestry industry's professional associations (CORMA and PYMEMAD), public institutions (SAG, INDAP, ProChile, CORFO) in addition to CONAF,Talca University and the Catholic University of Maule. Furthermore, at a national level, the representatives of CORMA met with government authorities and legislators. Some of their current demands include a legal extension for DL-701, which expired in 2012, raising the permitted weight per truck from 45 to 61 tons, which requires a higher standard of roads and an improvement of the railroad infrastructure.

23 See: http://www.sofofa.cl/mantenedor/detalle.asp?p=60&s=6160&n=23472

24 *Arauco* has international accreditation and certifications, the majority of which incorporate issues such as harvests, roads, the environment, consultation, communication and participation, labor relations and the strengthening of organizational structure. The forestry plantations and industrial operations of ARAUCO are certified under: International Standards Organization Quality Management and Environmental Management (ISO 14001); International Occupational Health and Safety Assessment Series (OHSAS 18001); Standards of Sustainable Forestry Management and Chain of Custody in Chile (CERTFOR); National Forestry Certification Standards of Brazil (CERFLOR); and Forest Stewardship Council standards (FSC™) for forestry management in addition to Chain of Custody and Controlled Timber in various industrial units. See: http://www.arauco.cl/cmf/informacion.asp?idq=1299&parent=1287

to the Functional Territory, especially the commune of *Empedrado*, a bedroom community that has a significant portion of residents who work in *Constitución*, many directly with CELCO.

Lastly after the 2010 earthquake the city of *Constitución* received an injection of resources and initiatives that changed it.[25] It became more visible and garnered the attention of a broad group of institutions that put a lot of effort into its reconstruction, including *Foundation Chile*, *Elemental*, and Talca University, among others. Along with MINVU, and the Municipality of *Constitución* and *Arauco*, these groups moved construction projects forward within the framework of the Sustainable Reconstruction Plan (Plan *de Reconstrucción Sustentable*–PRES-Constitución)[26], thus leading to improvements in the city.



The importance of the forestry industry for the territory's development stands in contrast to the little influence that social organizations exert. The Federation of Forestry Workers (*Federación de Trabajadores Forestales de Constitución*-FEFECON) and the Union of Traditional Fishermen of *Constitución* do not have strong agendas that put pressure on the territorial vision. Nevertheless, among their actions, the role of FEFECON in the Tripartite Forestry Committee (in which the National Confederation of Forestry Workers, CORMA and the Ministry of Labor also participated) stands out. The committee began operating in 1992, and its most important success was in 1997 when the Forestry Practices Code went into effect. This document serves as a "rational guide to the practices that companies, workers and authorities involved in various forestry operations should follow in order to minimize conceptual differences and the adverse impacts of these operations" (Chilean For-

25 The Sustainable Reconstruction Plan for *Constitución* (*Plan de Reconstrucción Sustentable de Constitución*-PRES) included the construction of a theater, a Cultural Center and the improvement of public infrastructuresuch as parks, avenues and squares (*Parque Borde Fluvial, Avenida Costanera del Mar, Plaza Señoret*, etc.). See: http://presconstitucion.cl/proyectos/

26 In the words of an *Arauco* official, which promoted it: "This is a more a territorial plan than a list of projects *(...) Through this a future vision is laid out, in which the territory's forestry vocation is clear, but in which it is explicit that it is not the only activity and that it should coexist with tourism and fishing(...) It entails an investment of more than $60 billion pesos and is a roadmap for* Constitución" (Social ResponsibilityDirector at *Arauco*).

estry Practices Code, p. 5). FEFOCON celebrated the initiative, which allowed them to improve labor conditions, if not salaries.

Despite the fact that civil society groups are not that well organized, since 2006 they have staged various protests against *Arauco's* plan to dump industrial liquids into the sea, as well as for negatively affecting air quality with odorous emissions. In addition to affecting the general quality of lives of the area's inhabitants, these actions have had a negative impact on fishing and tourism in particular.[27] It is common to hear territorial actors say that the pulp plant "changed the face of *Constitución*", not just with regard to the economic dynamism it brought about, but because it modified tourism in the city by contaminating its air and water.



> *"It killed tourism, brought environmental problems...agricultural plantations had to transform themselves or sell their land"* (A local leader).

The predominance of *Arauco* as a hegemonic actor in the territory is positive for other actors in the timber industry, but it also leaves them in a dependent and vulnerable position. While it seems certain that *Arauco* will continue to do well, which means that everyone benefits, there is always the risk that it will have difficulties.

> *"Small companies are scared; the future is uncertain; we are weak. Even if we don't sell to* Arauco, *we depend on it a lot. For instance, if it was unable to sell wood outside the country, because of a lack of demand or strikes at the port, etc., the national market would be saturated with wood, and that would especially affect small companies"* (A local businessman).

27 According to the LatinAmerican Observatory for Environmental Conflicts (*Observatorio Latinoamericano de Conflictos Ambientales*–OLCA). See: http://www.olca.cl/oca/chile/region07/celumaule06.htm. The company has prior cases of environmental contamination including the death of swans in the *Cruces* River after its *Valdivia* plant spilled contaminants into the river, for which the state fined it $5.2 billion Chilean Pesos. See: http://www.economiaynegocios.cl/noticias/noticias.asp?id=116195

Lastly, the monoculture trend promoted by *Arauco* and the big forestry companies negatively affects the development of the territory. It requires an elevated use of water in an area where this resource is already scarce, resulting in a systematic reduction of labor on the plantations due to mechanization.

## 4.- CONCLUSIONS: SIGNIFICANT EVIDENCE TO SUPPORT THE INITIAL HYPOTHESES



The analysis of the two territories that share the same history, regional context, size and population profile provides for a greater understanding of the social dynamics that contribute to an explanation of why, over the past decade, a gap has emerged between these two territories and why *Constitución* has been able to overcome its lagging position and historical marginalization with regard to other territories.

One territory maintains characteristics that limit its possibilities for growth and sustain its lagging position, such as low human capital, infrastructure problems, an aging population, difficulty addressing water shortages, precarious employment and the reduced management capacities of the municipal government management. The other territory was able to overcome these constraints and reduce its level of monetary poverty at a greater rate than its neighbors.

As the initial hypothesis posits, the explanation of these divergent trajectories is largely determined by a modification of the institutional arrangements in *Constitución*, in which the traditional rent-seeking elite is replaced by an entrepreneurial, innovative and modern elite with strong ties to national capital and foreign markets.

The government's construction of a wood pulp plant, its privatization, and its expansion under a strong policy of incentives and subsidies for the forestry sector created a key actor whose development has marked the development of its area of influence. Both the economic activities relating to this plant and its capacity to establish public-private

agreements in order to attract investment and a variety of other initiatives have made *Constitución* more dynamic and created more jobs with higher salaries than those in neighboring territories to the south.

Underlying this new arrangement is an economic activity that the private sector has made the most of, that the state has heavily subsidized and incentivized, and that has developed and grown over the past 30 years, achieving a significant impact on the social indicators in the territory. Economic growth in *Constitución*, however, is not without problems. These can be seen in the persistence of a significant group of vulnerable inhabitants who are not involved in forestry and who continue to live in a more traditional manner. It can also be found in the environmental threats posed by the plant, which have begun to mobilize the local population against the industry.



Resolving threats in a virtuous manner will probably lead to a new adjustment to existing institutional arrangements. This will aid in achieving greater coordination between local civil servants and social actors in various aspects of local development, much in the way that the industry has done with the national government with great success.

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## GLOSSARY OF ACRONYMS

**CONAF:** *Corporación Nacional Forestal* (National Forestry Corporation).

**CORFO:** *Corporación Nacional de Fomento de la Producción* (National Production Development Corporation).

**CORMA:** *Corporación de la Madera* (Timber Corporation).

**DIPRES:** *Dirección de Presupuestos del Ministerio de Hacienda* (Budget Office of the Ministry of Finance).

**FIA:** *Fundación para la Innovación Agraria* (Foundation for Agricultural Innovation).

**FEFOCON:** *Federación de Trabajadores Forestales de Constitución* (Forest Workers Federation of *Constitución*).

**INDAP:** *Instituto Nacional de Desarrollo Agropecuario* (National Institute for Agricultural Development).

**INIA:** *Instituto Nacional de Investigación Agropecuaria* (National Institute for Agricultural Research).

**PRES-CONSTITUCIÓN:** *Plan de Reconstrucción Sustentable de Constitución* (Reconstruction Plan for *Constitución*).

**SAG:** *Servicio Agrícola y Ganadero* (Agriculture and Livestock Service).

## APPENDICES

### 1. LIST OF INTERVIEWED SOURCES

| NAME | POSITION |
|---|---|
| Ricardo Alcerreca | SEREMI Economy and Tourism, *Maule* Region, SEREMI |
| Ángela Crua (and team) | Head of Planning Unit, Regional Government of *Maule* |
| Jacqueline Espinoza | Regional Network Management Coordinator, SEREMI, Social Development *Maule* region |
| Juan Ignacio Vásquez | Head of Projects, Office of Roads, SEREMIA, Public Works, *Maule* region |
| Paola Paiva | Head of Forestry Department, CONAF, *Maule* |
| Guillermo García | Regional Advisor, *Maule*/ex-governor of *Cauquenes* |
| Francisco Berríos | Head of Area, CONAF, *Constitución* |
| Nelson Leal Bustos | Mayor of Pelluhue |
| Enrique Espinoza | Mayor of Empedrado, Director, DIDECO |
| Patricio Aravena | Director, DIDECO *Cauquenes* |
| Karina Vásquez | Director, DIDECO Pelluhue |
| Diego Solis | Director DIDECO *Constitución* |
| Patricio Pommiez | Director Sports Department, Municipality of Cauquenes, ex–DIDECO, *Cauquenes* (informal conversation) |
| Magdalena Pavez | Director of the Social Services Screening Office, Pelluhue |
| Loreto Vargas y Silvia Sanchez | SECPLA Pelluhue |
| Francisco Yáñez | Head of Dept. of Rural Development, Empedrado |
| Daniel Lasalle | Director Dept. of Rural Development, *Constitución* |
| Cristián Becerra | Technical Chief, PRODESAL 5, Municipality of Chanco |
| S/I | Coordinator CFT, San Agustín *Cauquenes* (informal conversation) |
| César Aldana Norambuena | Businessman, Owner of El Centro de Talca newspaper and V.P. of ASICENT |
| Leonardo Vergara | General Manager, CORMA, *Maule* |
| Jorge Araneda | Head of Public Affairs and Social and Environmental Responsibility, Arauco-*Maule* |
| Aquiles González | President of Chamber of Commerce and Tourism of *Constitución* |
| Arnoldo Goldberg | Barracas Goldberg |

1. LIST OF INTERVIEWED SOURCES (CONTINUE)

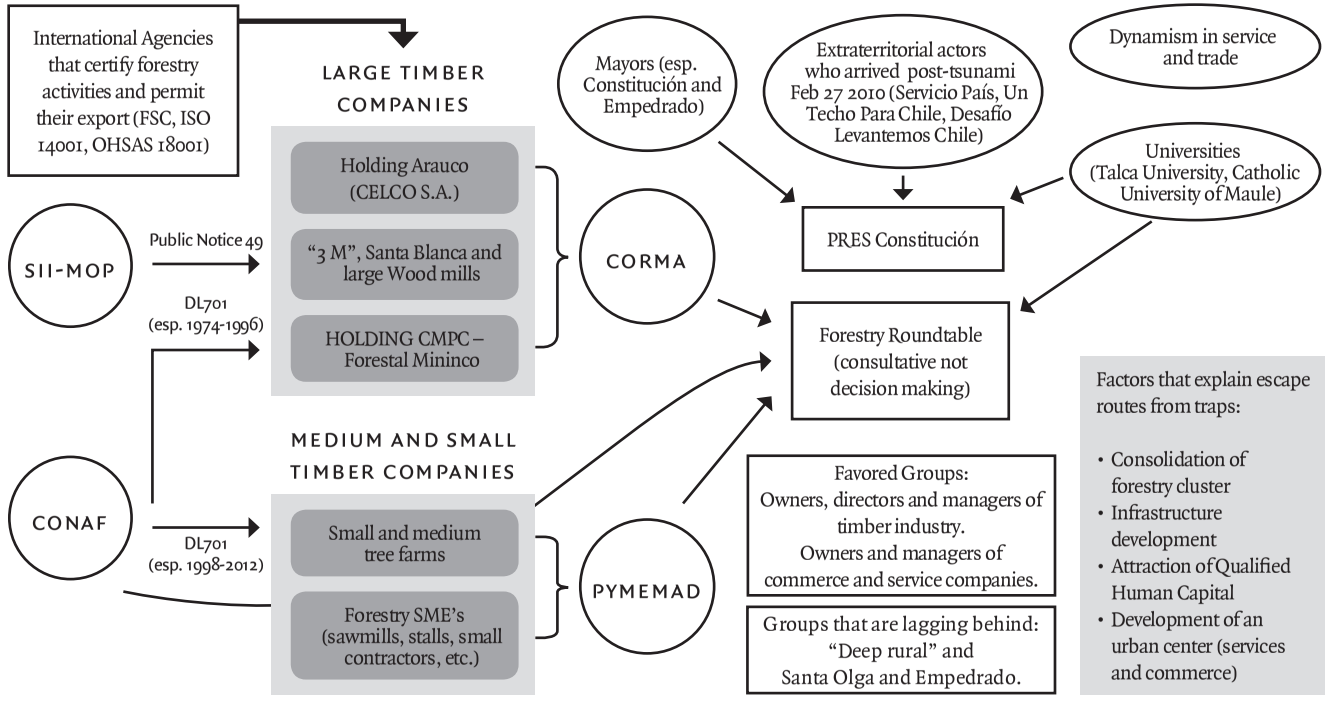
| NAME | POSITION |
|---|---|
| Julio Díaz | Plant Manager, Maderas Martin |
| Nelson Mestre | Assistant Manager of Operations, Sawmill Mestre |
| Marcelo Cerpa | Plant Manager, RUMASAL |
| Felipe Zúñiga | General Manager, COVICA Ltda. (Viña Lomas de *Cauquenes* Cooperative) |
| Gastón Luna Chamorro | Organization of Organic Wineries of *Cauquenes* ("Route of the 25") |
| Yasna Soto | Head, UTP Timber Institute, *Constitución* |
| Patricio López | Head of Specializations, Institute of Timber, *Constitución* |
| Alejandro Medel | Director, La Voz de *Cauquenes* newspaper |
| Roberto Romero | ReporterLa Voz de Cauquenes newspaper and Geminis Radio (informal conversation) |
| Patricio Uribe | Regional Director Overcoming Poverty Foundation |
| Victoria Escobar and Sergio Cornejo | Team members Servicio Pais, *Cauquenes* |
| Ricardo Díaz and Mariluz Valdés | Team members, Servicio Pais, Empedrado |
| Maximiliano Castro, Claudio Muñoz and Elena Fernández | Team Members, Servicio Pais, *Constitución* |
| Jorge Navarrete | Director Center for Competitiveness of *Maule*/U. de Talca (ex-governor) |
| Stefano Micheletti | Coordinator, NGO Sur*Maule* / Researcher-Rurality Observatory |
| Claudia Concha | Department Head, Sociology U. Católica of *Maule* / Researcher Rurality Observatory |
| Christián Salgado | Director of Social Defense of the Railroad: www.elultimoramal.cl |
| Francisco Faúndez and Isidro Tapia | Treasury and Secretary, FEFOCON, *Constitución* |
| Francisco Reveco | President Union of Artisanal Fishers of *Constitución* |

2. LOCAL POLITICS IN THE TERRITORIES

| Territory | Commune | Name and Political Party of Mayor | Voters (% of all eligible) (2012) | N° of candidates in mayoral elections (2012) | Distance between first and second place for mayor (percentage points) (2012) |
|---|---|---|---|---|---|
| Territory *Constitución* | Constitución | Carlos Valenzuela Gajardo (IND-Coalición) | 51.9% | 4 | 10.3 |
| | Chanco | Viviana Escarlette Diaz Meza (RN) | 71.3% | 3 | 38.1 |
| | Empedrado | Gonzalo Tejos Perez (UDI) | 78.1% | 3 | 3.5 |
| Territory *Cauquenes* | *Cauquenes* | Juan Carlos Muñoz Rojas (RN) | 57.9% | 4 | 32.5 |
| | Pelluhue | Nelson Leal Bustos (IND) | 74.1% | 6 | 69.4 |

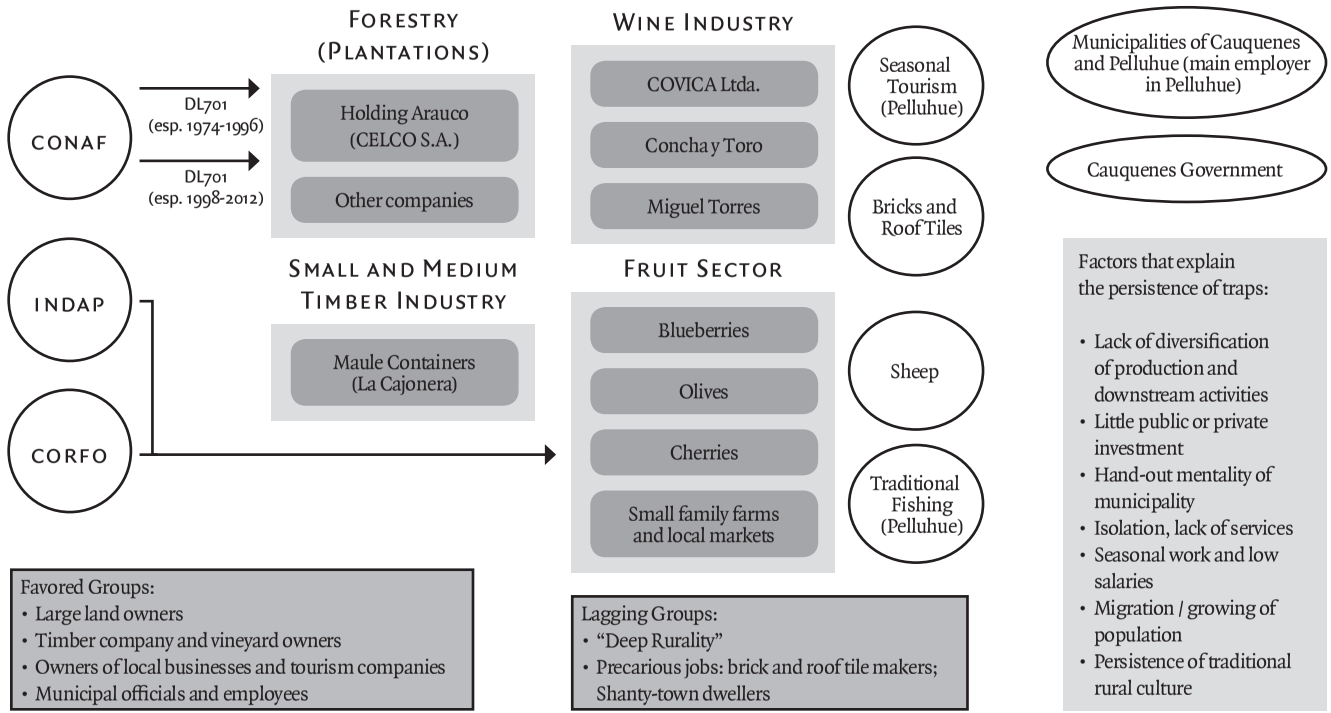
Source: www.servel.cl
Compiled by the authors.

MAP OF ACTORS AND RELATIONSHIPS IN THE REGION OF MAULE
FUNCTIONAL TERRITORY CONSTITUCIÓN: CONSTITUCIÓN-CHANCO-EMPEDRADO
/ POVERTY: 43.1% (1992), 33.8% (2002), 17.3% (2011)



MAP OF ACTORS AND RELATIONSHIPS IN THE REGION OF MAULE

FUNCTIONAL TERRITORY CAUQUENES: CAUQUENES-PELLUHUE / POVERTY: 42.2% (1992), 33.5% (2002), 22.8% (2011)



# IV

# POVERTY AND INEQUALITY TRAPS IN MEXICO

## 1990-2000-2010

*Mariana Pereira and Isidro Soloaga*
Universidad Iberoamericana de México
*with the collaboration of Eréndira Bravo*

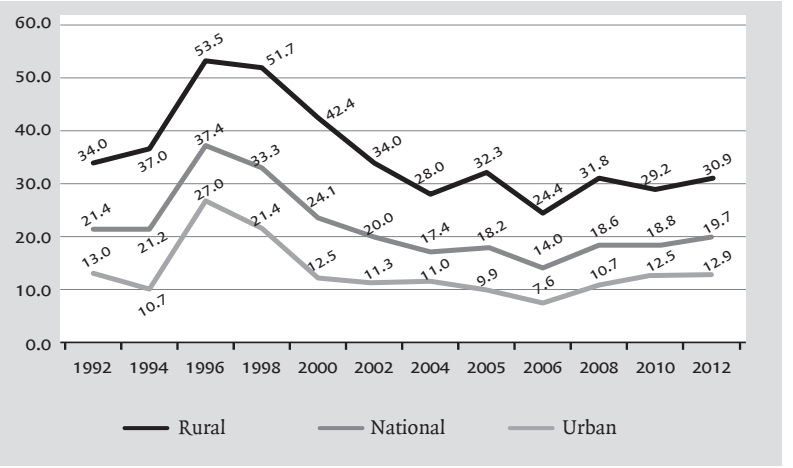


### 1.-EVOLUTION OF POVERTY BY INCOME: 1992-2012

The official information on poverty levels in Mexico for the 1992-2012 period indicates that there were no practical differences between the levels in 2012 and those recorded 20 years ago. Chart 1 clearly shows the severe impact of the impoverishment caused by the 1995 economic crisis, when the average food poverty rate almost doubled, and the interruption of the downward trend that began with the 2008 crisis. Chart 2 highlights the evolution of patrimonial poverty, which shows that more than half of the Mexican population has insufficient income to cover the basic food basket and make the necessary expenditures in health, education, clothing, housing, and transportation.[1] These dynamics take place within the backdrop of an extremely low

1 Before the current measurement of multidimensional poverty, three types of poverty were used by the National Council for the Evaluation of Social Development Policy (CONEVAL): i) *food poverty* (insufficient income to acquire the basic food basket, even if all of the available income in the household were to be used exclusively for the acquisition of these goods); ii) *capabilities poverty* (insufficient income available to acquire the basic food basket and to cover necessary expenditures on health and education, even if all of the available income in the household were to be used exclusively for the acquisition of these goods); and iii) *patrimonial poverty* (insufficient income available to acquire the basic food basket and to cover necessary expenditures on health, clothing, housing, education and transport, even if all of the available income in the household were to be used exclusively for the acquisition of these goods and services), (Wilson and Silva, 2012).

CHART 1 – PERCENTAGE OF PEOPLE IN FOOD POVERTY AT A NATIONAL, RURAL AND URBAN LEVEL 1992-2012




NB: Food Poverty: insufficient income to acquire the basic food basket, even if all of the available income in the household were to be used exclusively for the acquisition of these goods.
Source: CONEVAL (2012) based on the Survey of Household Income and Expenditure (ENIGH).



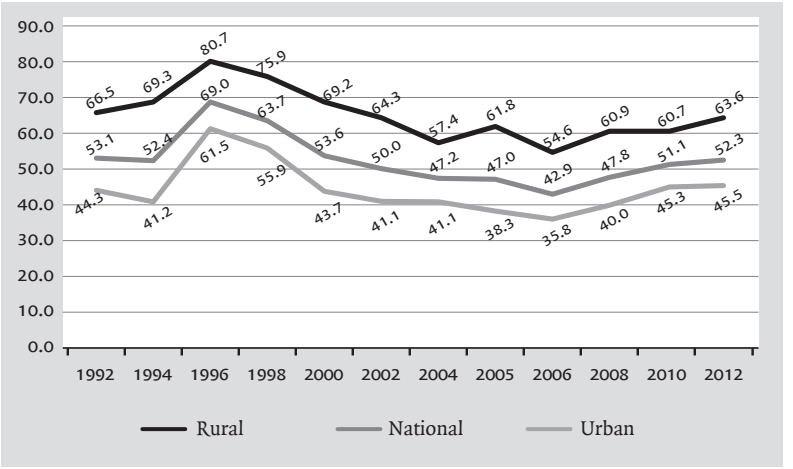
growth rate in per capita GDP, which, for the period comprising 1990-2012, grew by an annual equivalent rate of only 1.2%, below the Latin American average (1.7%) and much lower than that of Chile (3.8%) and Peru (3.5%), as is shown in Table 1.

TABLE 1 –PER CAPITA GDP GROWTH RATE IN LATIN AMERICA, CHILE, MEXICO AND PERU, 1990-2012

| | 2000-1990 | 2010-2000 | 2012-1990 |
|---|---|---|---|
| Latin America and the Caribbean | 1.51 | 1.84 | 1.74 |
| Chile | 4.74 | 2.77 | 3.84 |
| Mexico | 1.65 | 0.50 | 1.21 |
| Peru | 2.15 | 4.43 | 3.46 |

Source: World Bank, World Development Indicators (WDI).

CHART 2 – PERCENTAGE OF PEOPLE IN PATRIMONIAL POVERTY AT A NATIONAL, RURAL AND URBAN LEVEL, 1992-2012




NB: Patrimonial Poverty: insufficiency of available income to acquire the basic food basket and cover necessary expenditure on health, clothing, housing, education and transport, even if all of the available income in the household were to be used exclusively for the acquisition of these goods.
Source: CONEVAL (2012) based on the Survey of Household Income and Expenditure (ENIGH).

Based on the National Council for the Evaluation of Social Development Policy (CONEVAL) estimates, Table 2 shows the change in the food poverty rates at the municipal level between 1990 and 2010 while Map 1 illustrates the spatial distribution of these changes.[2] The increases in poverty levels are generally concentrated in the country's south (in yellow, orange and red) while the most important reductions appear concentrated in the central region and in the northern area of the Yucatán Peninsula (in green).

2 Based on information from the Population and Housing Censuses and the Survey on Household Income and Expenditure (ENIGH), CONEVAL has used Small Area Estimates (SAE) to develop indicators for household income with representation at the municipal level for the years of 1990, 2000 and 2010. These are used to calculate the different levels of poverty at the municipal level.

TABLE 2 – CHANGES IN MUNICIPAL FOOD POVERTY LEVELS, 1990-2010

| Change in the food poverty rate | Municipalities | | Population | |
|---|---|---|---|---|
| | Number of Municipalities | As a % of the Total Number of Municipalities | Population | As a % of the Total Population |
| Reduction of more than 20 points | 116 | 4.7 | 2,265,679 | 2.0 |
| Reduction of between 10 and 20 points | 647 | 26.4 | 17,511,724 | 15.6 |
| Reduction of between 3 and 10 points | 796 | 32.4 | 28,057,211 | 25.0 |
| No significant change | 508 | 20.7 | 50,257,994 | 44.8 |
| Increase between 3 and 10 points | 240 | 9.8 | 12,000,157 | 10.7 |
| Increase between 10 and 20 points | 119 | 4.9 | 2,044,393 | 1.8 |
| Increase of more than 20 points | 28 | 1.1 | 153,491 | 0.1 |
| | 2,454 | | 112,290,649 | |

NB: Food poverty is defined as insufficient income to acquire the basic food basket, even if all of the available income in the household were to be exclusively used for the acquisition of these goods.
Source: Compiled by authors based on CONEVAL (2012).



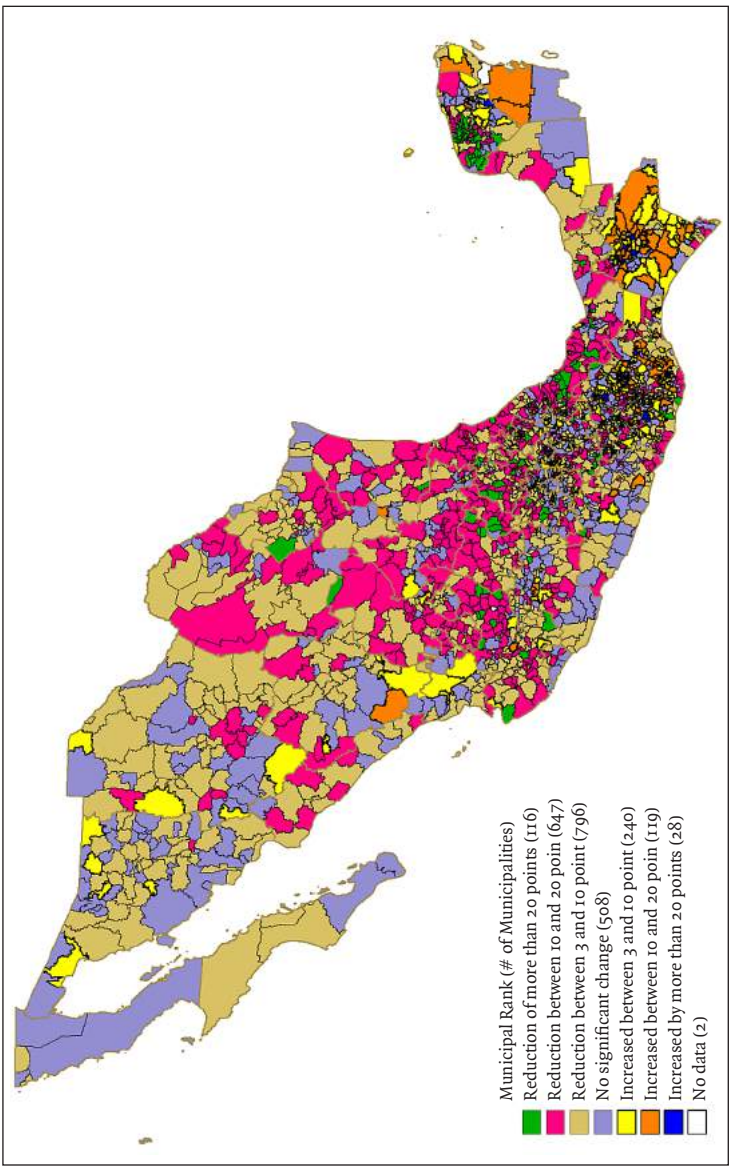
## 2.-Poverty And Vulnerability

### *2.1- Poverty*

For the purpose of analyzing the transitions of entry into, permanence in or emergence from poverty, a poverty threshold has been defined as a level of poverty half of a standard deviation above the average municipal poverty levels in each of the years analyzed (this will herein be referred to as "the poverty threshold"). This approach helps to

identify those municipalities that have lagged behind the evolution of the poverty levels of the municipalities as a whole. This analysis indicates that, in the case of patrimonial poverty, 8.6% of the total

MAP 1 – CHANGES IN THE MUNICIPAL FOOD POVERTY RATE, 1990-2010




Source: Compiled by authors based on CONEVAL (2012).

population of Mexico in 2010 lived in municipalities that presented poverty traps (being persistently above the poverty threshold in 1990, 2000 and 2010, see Line 8 of Table 3), while 83% of the population lived in municipalities with poverty levels below this threshold for the three years analyzed (see Row 1 in the same table). Rows 2, 3 and 4 show the number of municipalities and their respective populations that, having started in a situation with no relative lag in 1990, entered into a lagging position in 2010 (Row 2), in 2000 (Row 3) or in both years (Row 4). The total number of these cases encompassed 3.5% of the municipal population in 2010 with regard to patrimonial poverty. Rows 5, 6 and 7 show the cases in which the municipalities emerged from the relative gap that there was in 1990, whether that be in 2000 and 2010 (Row 5), in 2000 only (Row 6) or in 2010 only (Row 7). The total number of these cases encompassed nearly 5% of the municipal population in 2010.

Table 4 shows the average prevailing poverty levels for each one of the transitions for the three definitions of poverty. As can be seen, in the municipalities with lagging positions, there are high levels of poverty and these are generally above the considered thresholds. For the case of Row 8 (municipalities always lagging behind, between 6.9% and 8.6% of the population of Mexico in 2010, according to the definition of poverty employed), average poverty levels were 80% higher for the case of patrimonial poverty in the three years analyzed.

Map 2 shows the spatial distribution of the transitions in food poverty for the years 1990, 2000, and 2010. The "never lagging behind" category indicates that the municipality was always below the selected poverty threshold (i.e. equal to the mean plus 0.5*standard deviation). "Lagging in X" indicates that it only registered a lag in that year. When a municipality registered a lag in more than one of the years analyzed, this is indicated as "Lagging in X and Y". The "always lagging behind" category indicates that the municipality was lagging behind in the three years analyzed. As can be observed, the vast majority of municipalities identified as "always lagging behind" (in red)

TABLE 3 – TRANSITIONS IN FOOD POVERTY, CAPABILITIES POVERTY AND PATRIMONIAL POVERTY AT THE MUNICIPAL LEVEL, 1990-2000-2010

| Category of Relative Lag | Food Poverty | | | | Capabilities Poverty | | | | Patrimonial Poverty | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Number of Municipalities | % of Municipalities | Population in 2010 | % of Total Population | Number of Municipalities | % of Municipalities | Population in 2010 | % of Total Population | Number of Municipalities | % of Municipalities | Population in 2010 | % of Total Population |
| Never Lagging Behind | 1,410 | 57% | 96,750,728 | 86.1% | 1,377 | 56% | 96,060,248 | 85.5% | 1,279 | 52.1% | 93,323,016 | 83.1% |
| Lagging Behind in 2010 | 26 | 1% | 737,760 | 0.7% | 30 | 1% | 655,634 | 0.6% | 46 | 1.9% | 1,367,080 | 1.2% |
| Lagging Behind in 2000 | 114 | 5% | 835,790 | 0.7% | 97 | 4% | 793,673 | 0.7% | 72 | 2.9% | 902,215 | 0.8% |
| Lagging Behind in 2000 and 2010 | 104 | 4% | 1,064,437 | 0.9% | 124 | 5% | 1,260,131 | 1.1% | 159 | 6.5% | 1,688,846 | 1.5% |
| Lagging Behind in 1990 | 128 | 5% | 3,002,702 | 2.7% | 126 | 5% | 3,031,247 | 2.7% | 129 | 5.3% | 3,331,763 | 3.0% |
| Lagging Behind in 1990 and 2010 | 45 | 2% | 877,314 | 0.8% | 50 | 2% | 942,839 | 0.8% | 52 | 2.1% | 744,513 | 0.7% |
| Lagging Behind in 1990 and 2000 | 69 | 3% | 1,345,137 | 1.2% | 69 | 3% | 1,521,671 | 1.4% | 58 | 2.4% | 1,326,232 | 1.2% |
| Always Lagging Behind | 560 | 23% | 7,722,668 | 6.9% | 583 | 24% | 8,071,092 | 7.2% | 661 | 26.9% | 9,652,876 | 8.6% |
| Total | 2,456 | 100% | 112,336,536 | 100% | 2,456 | 100% | 112,336,535 | 100% | 2,456 | 100% | 112,336,541 | 100% |

Source: Compiled by authors based on CONEVAL (2012).

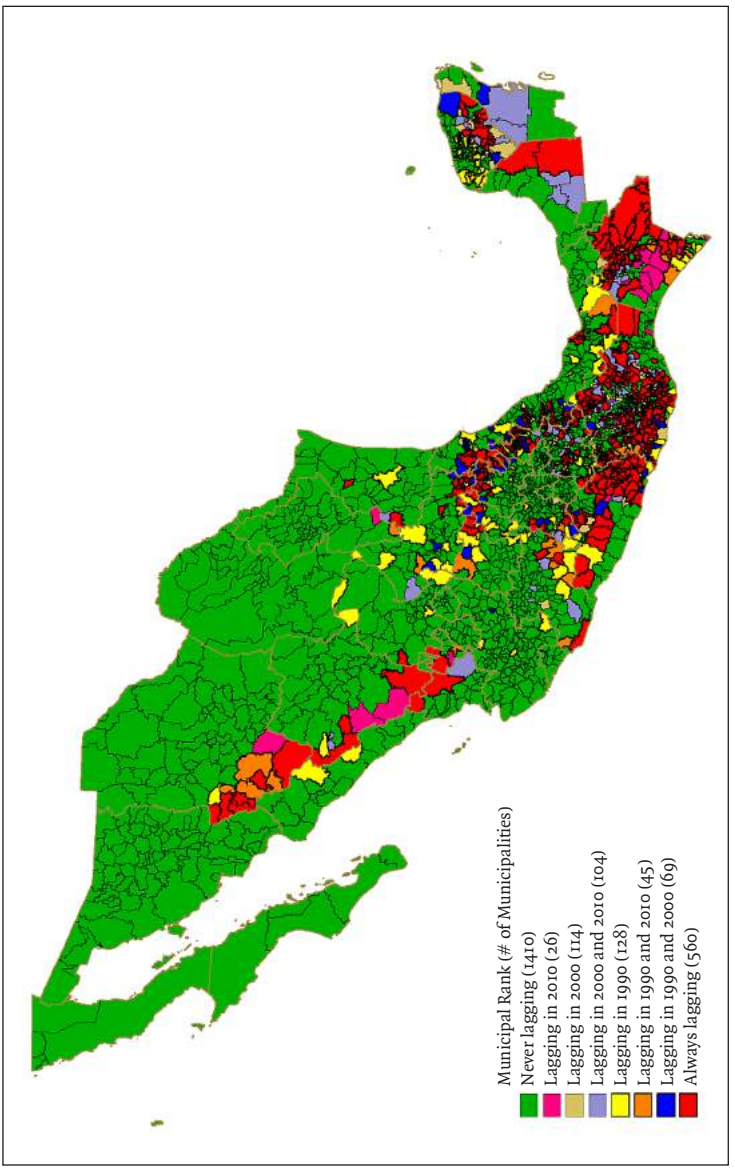
TABLE 4 - AVERAGE LEVELS OF FOOD POVERTY, CAPABILITIES POVERTY AND PATRIMONIAL POVERTY AT THE MUNICIPAL LEVEL ACCORDING TO THE CATEGORY OF RELATIVE LAG, 1990-2000-2010

| | Food Poverty | | | Capabilities Poverty | | | Patrimonial Poverty | | |
|---|---|---|---|---|---|---|---|---|---|
| Category of Relative Lag | 2010 | 2000 | 1990 | 2010 | 2000 | 1990 | 2010 | 2000 | 1990 |
| Never Lagging Behind | 14.8 | 18.0 | 17.6 | 21.9 | 23.9 | 25.0 | 45.0 | 44.0 | 46.7 |
| Lagging Behind in 2010 | 47.1 | 38.9 | 48.8 | 56.9 | 56.9 | 48.1 | 77.2 | 73.7 | 69.9 |
| Lagging Behind in 2000 | 36.5 | 39.1 | 60.8 | 46.9 | 67.5 | 47.8 | 70.6 | 81.8 | 69.6 |
| Lagging Behind in 2000 and 2010 | 47.6 | 40.5 | 65.1 | 58.3 | 71.8 | 49.3 | 79.8 | 84.7 | 70.9 |
| Lagging Behind in 1990 | 32.4 | 49.6 | 48.1 | 42.0 | 55.4 | 58.5 | 67.9 | 73.2 | 78.5 |
| Lagging Behind in 1990 and 2010 | 49.9 | 55.1 | 50.2 | 57.4 | 57.6 | 62.5 | 79.2 | 73.3 | 80.1 |
| Lagging Behind in 1990 and 2000 | 37.3 | 54.0 | 61.7 | 47.4 | 68.4 | 62.2 | 71.0 | 82.2 | 80.1 |
| Always Lagging Behind | 59.3 | 60.4 | 73.7 | 68.7 | 79.5 | 68.7 | 85.9 | 89.5 | 84.5 |
| Average | 19.5 | 23.5 | 24.3 | 27.2 | 31.0 | 31.0 | 50.9 | 51.0 | 52.8 |

Source: Compiled by authors based on CONEVAL (2012) figures.

belong to five states: *Chiapas*, *Guerrero*, *Puebla* and *Oaxaca*, located in the southern region of the country, and *Veracruz*, which is located on the Gulf of Mexico.

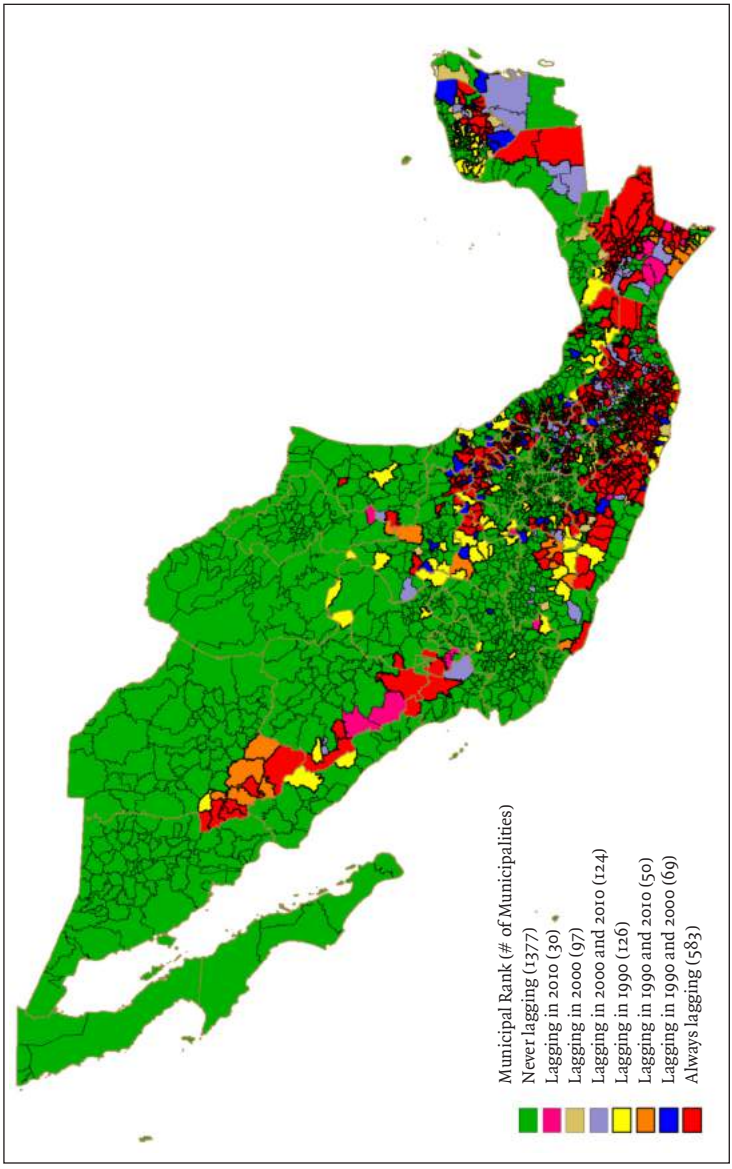
MAP 2 – TRANSITIONS IN FOOD POVERTY, 1990-2000-2010




Source: Compiled by authors based on CONEVAL(2012) figures.

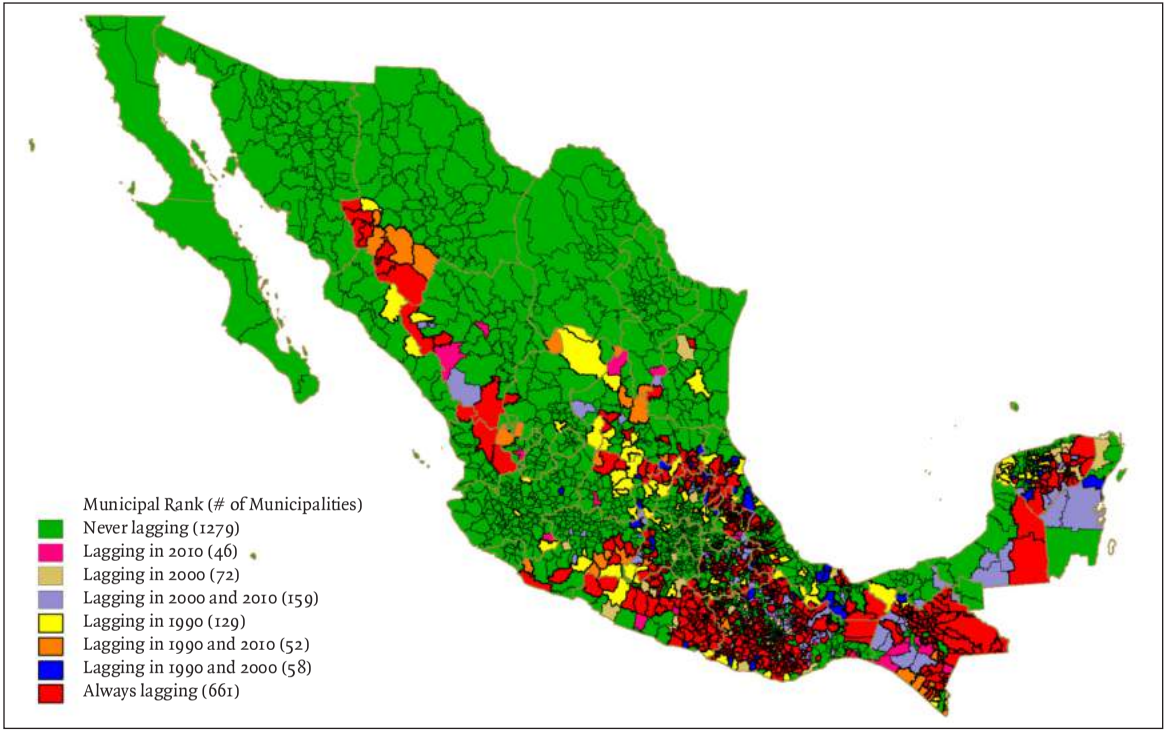
Similar situations can be observed for the two other dimensions of poverty (Capabilities and Patrimonial). These transitions are illustrated in Maps 3 and 4, respectively.

MAP 3 – TRANSITIONS IN CAPABILITIES POVERTY, 1990-2000-2010




Source: Compiled by authors based on CONEVAL (2012).

MAP 4 – TRANSITIONS IN PATRIMONIAL POVERTY, 1990-2000-2010




Source: Authors' estimates.

TABLE 5. STATES THAT REACHED 2010 WITH A RELATIVE LAGGING POSITION: PATRIMONIAL POVERTY

| State | Lagging Behind in 2010 | | Lagging Behind in 2000 and 2010 | | Lagging Behind in 1990 and 2010 | | Always Lagging Behind | | Total of the State Population in the Four Categories | % of the State Population | Total Population in 2010 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Population in this Situation | % of the State Population | Population in this Situation | % of the State Population | Population in this Situation | % of the State Population | Population in this Situation | % of the State Population | | | |
| Campeche | - | 0.0% | 95,378 | 11.6% | - | 0.0% | 64,659 | 7.9% | 160,037 | 19% | 822,441 |
| Chiapas | 361,557 | 7.5% | 378,520 | 7.9% | 293,032 | 6.1% | 2,191,847 | 45.7% | 3,224,956 | 67% | 4,796,580 |
| Chihuahua | - | 0.0% | - | 0.0% | 89,668 | 2.6% | 107,155 | 3.1% | 196,823 | 6% | 3,406,465 |
| Durango | 24,221 | 1.5% | 53,284 | 3.3% | 5,947 | 0.4% | 64,972 | 4.0% | 148,424 | 9% | 1,632,934 |
| Guanajuato | 84,332 | 1.5% | - | 0.0% | 27,803 | 0.5% | 199,220 | 3.6% | 311,355 | 6% | 5,486,372 |
| Guerrero | 101,374 | 3.0% | - | 0.0% | - | 0.0% | 1,263,897 | 37.3% | 1,365,271 | 40% | 3,388,768 |
| Hidalgo | - | 0.0% | 13,313 | 0.5% | - | 0.0% | 394,403 | 14.8% | 407,716 | 15% | 2,665,018 |
| Jalisco | 6,288 | 0.1% | - | 0.0% | 18,084 | 0.2% | - | 0.0% | 24,372 | 0% | 7,350,682 |
| México | 614,453 | 4.0% | 32,645 | 0.2% | 71,077 | 0.5% | 423,696 | 2.8% | 1,141,871 | 8% | 15,200,000 |
| Michoacán | - | 0.0% | 156,100 | 3.6% | 73,587 | 1.7% | 92,240 | 2.1% | 321,927 | 7% | 4,351,037 |
| Nayarit | - | 0.0% | - | 0.0% | - | 0.0% | 59,300 | 5.5% | 59,300 | 5% | 1,084,979 |
| Nuevo León | 5,942 | 0.1% | - | 0.0% | 7,095 | 0.2% | - | 0.0% | 13,037 | 0% | 4,653,458 |
| Oaxaca | 27,356 | 0.7% | 191,280 | 5.0% | 94,518 | 2.5% | 1,225,299 | 32.2% | 1,538,453 | 40% | 3,801,962 |
| Puebla | 66,405 | 1.1% | 394,736 | 6.8% | 10,589 | 0.2% | 1,330,353 | 23.0% | 1,802,083 | 31% | 5,779,829 |
| Querétaro | - | 0.0% | - | 0.0% | 8,865 | 0.5% | 65,463 | 3.6% | 74,328 | 4% | 1,827,937 |
| Quintana Roo | - | 0.0% | 111,205 | 8.4% | - | 0.0% | - | 0.0% | 111,205 | 8% | 1,325,578 |
| San Luis Potosí | 7,902 | 0.3% | 53,456 | 2.1% | 41,538 | 1.6% | 421,994 | 16.3% | 524,890 | 20% | 2,585,518 |
| Tabasco | - | 0.0% | 75,813 | 3.4% | - | 0.0% | - | 0.0% | 75,813 | 3% | 2,238,603 |
| Tamaulipas | - | 0.0% | 3,514 | 0.1% | - | 0.0% | 8,667 | 0.3% | 12,181 | 0% | 3,268,554 |
| Tlaxcala | 8,224 | 0.7% | 4,146 | 0.4% | - | 0.0% | - | 0.0% | 12,370 | 1% | 1,169,936 |
| Veracruz | 58,084 | 0.8% | 58,065 | 0.8% | - | 0.0% | 1,463,020 | 19.1% | 1,579,169 | 21% | 7,643,194 |
| Yucatán | 942 | 0.0% | 67,391 | 3.4% | - | 0.0% | 272,107 | 13.9% | 340,440 | 17% | 1,955,577 |
| Zacatecas | - | 0.0% | - | 0.0% | 2,710 | 0.2% | 4,584 | 0.3% | 7,294 | 0% | 1,490,668 |

Source: Compiled by authors based on CONEVAL (2012).

Table 5 illustrates the total population (corresponding to 2010) per municipality in which a relative lagging position was registered in each of the transitions. We can observe that more than 40% of the population of *Chiapas*, *Guerrero* and *Oaxaca* were in this situation, while more than 20% of the population in *Puebla*, *San Luis Potosí* and *Veracruz* were also in this situation.

However, some municipalities that registered lagging positions in 1990 only, in 2000 only, or in 1990 and 2000 have managed to improve their situations (in blue, sienna, and yellow, respectively, in Maps 2 through 5, above). Table 6 highlights, for example, that 23% of the population in *Yucatan* that experienced a relative lagging position in 1990 or in 2000, reached 2010 with no lag position (7% registered a lag in 2000 only; 13% in 1990 only; and 3% in both 1990 and 2000), while in *Veracruz* this percentage was 15% (1% registered a lag in 2000 only; 6% in 1990 only; and 8% in both 1990 and 2000). This corroborates previous results showing that, in some cases, municipalities managed to emerge from a relative lagging position (Yúnez-Naude et al., 2013).



### 2.2 *Vulnerability*

In this study, the term vulnerable is defined as being the population that, although not currently in a situation of poverty, has a more than 10% probability of falling into this situation.[3] In their work on the case study of Mexico, López Calva and Ortíz Juárez (2011) identify the vulnerable population as that found between the middle class (US $10 per capita per day, valued at PPP) and the population in a situation of capabilities poverty.[4]

A decline in the percentage of population in a situation of vulnerability can be desirable if this decline is due, for example, to an increase in the middle class with no variations in the levels of capabilities poverty, or if it is due to a decline in the levels of capabilities poverty without any variation in the levels of the middle class. However, a decrease in

3 See the Methodological Appendix.

4 This definition deviates from others that consider more general aspects of vulnerability (natural disasters, economic crises, lack of security, etc.) (UNDP, 2014).

TABLE 6 - STATES IN 2010 WITHOUT A RELATIVE LAGGING POSITION: PATRIMONIAL POVERTY

| State | Never Lagging Behind | | Lagging Behind in 2000 | | Lagging Behind in 1990 | | Lagging Behind in 1990 and 2000 | | Total of the State Population in the Four Categories | % of the State Population | Total Population in 2010 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | Population in this Situation | % of the State Population | Population in this Situation | % of the State Population | Population in this Situation | % of the State Population | Population in this Situation | % of the State Population | | | |
| Aguascalientes | 1,184,996 | 100% | - | 0% | - | 0% | - | 0% | 1,184,996 | 100% | 1,184,996 |
| Baja California | 3,155,070 | 100% | - | 0% | - | 0% | - | 0% | 3,155,070 | 100% | 3,155,070 |
| Baja California Sur | 637,026 | 100% | - | 0% | - | 0% | - | 0% | 637,026 | 100% | 637,026 |
| Campeche | 662,404 | 81% | - | 0% | - | 0% | - | 0% | 662,404 | 81% | 822,441 |
| Coahuila | 2,748,391 | 100% | - | 0% | - | 0% | - | 0% | 2,748,391 | 100% | 2,748,391 |
| Colima | 650,555 | 100% | - | 0% | - | 0% | - | 0% | 650,555 | 100% | 650,555 |
| Chiapas | 1,374,144 | 29% | 48,829 | 1% | 127,567 | 3% | 21,084 | 0% | 1,571,624 | 33% | 4,796,580 |
| Chihuahua | 3,202,096 | 94% | - | 0% | 7,546 | 0% | - | 0% | 3,209,642 | 94% | 3,406,465 |
| Distrito Federal | 8,851,080 | 100% | - | 0% | - | 0% | - | 0% | 8,851,080 | 100% | 8,851,080 |
| Durango | 1,475,929 | 90% | - | 0% | 8,581 | 1% | - | 0% | 1,484,510 | 91% | 1,632,934 |
| Guanajuato | 4,519,641 | 82% | - | 0% | 632,052 | 12% | 23,324 | 0% | 5,175,017 | 94% | 5,486,372 |
| Guerrero | 1,696,413 | 50% | 162,653 | 5% | 144,256 | 4% | 20,175 | 1% | 2,023,497 | 60% | 3,388,768 |
| Hidalgo | 1,976,238 | 74% | 21,623 | 1% | 95,953 | 4% | 163,488 | 6% | 2,257,302 | 85% | 2,665,018 |
| Jalisco | 7,289,308 | 99% | - | 0% | 19,376 | 0% | 17,626 | 0% | 7,326,310 | 100% | 7,350,682 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Mexico | 13,700,000 | 90% | 31,803 | 0% | 149,501 | 1% | 117,237 | 1% | 14,000,000 | 92% | 15,200,000 |
| Michoacán | 3,818,077 | 88% | 29,414 | 1% | 101,361 | 2% | 80,258 | 2% | 4,029,110 | 93% | 4,351,037 |
| Morelos | 1,758,089 | 99% | 19,138 | 1% | - | 0% | - | 0% | 1,777,227 | 100% | 1,777,227 |
| Nayarit | 1,025,679 | 95% | - | 0% | - | 0% | - | 0% | 1,025,679 | 95% | 1,084,979 |
| Nuevo León | 4,640,421 | 100% | - | 0% | - | 0% | - | 0% | 4,640,421 | 100% | 4,653,458 |
| Oaxaca | 1,742,404 | 46% | 235,682 | 6% | 227,741 | 6% | 57,682 | 2% | 2,263,509 | 60% | 3,801,962 |
| Puebla | 3,577,348 | 62% | 87,102 | 2% | 270,051 | 5% | 43,245 | 1% | 3,977,746 | 69% | 5,779,829 |
| Querétaro | 1,468,672 | 80% | - | 0% | 236,473 | 13% | 48,464 | 3% | 1,753,609 | 96% | 1,827,937 |
| Quintana Roo | 1,160,777 | 88% | 25,333 | 2% | - | 0% | 28,263 | 2% | 1,214,373 | 92% | 1,325,578 |
| San Luis Potosí | 1,853,539 | 72% | - | 0% | 158,886 | 6% | 48,203 | 2% | 2,060,628 | 80% | 2,585,518 |
| Sinaloa | 2,721,065 | 98% | - | 0% | 46,696 | 2% | - | 0% | 2,767,761 | 100% | 2,767,761 |
| Sonora | 2,662,480 | 100% | - | 0% | - | 0% | - | 0% | 2,662,480 | 100% | 2,662,480 |
| Tabasco | 1,983,505 | 89% | - | 0% | 179,285 | 8% | - | 0% | 2,162,790 | 97% | 2,238,603 |
| Tamaulipas | 3,242,619 | 99% | 9,331 | 0% | 4,423 | 0% | - | 0% | 3,256,373 | 100% | 3,268,554 |
| Tlaxcala | 1,030,693 | 88% | 8,399 | 1% | 118,474 | 10% | - | 0% | 1,157,566 | 99% | 1,169,936 |
| Veracruz | 4,915,768 | 64% | 91,098 | 1% | 453,454 | 6% | 603,705 | 8% | 6,064,025 | 79% | 7,643,194 |
| Yucatán | 1,178,185 | 60% | 131,810 | 7% | 251,664 | 13% | 53,478 | 3% | 1,615,137 | 83% | 1,955,577 |
| Zacatecas | 1,384,951 | 93% | - | 0% | 98,423 | 7% | - | 0% | 1,483,374 | 100% | 1,490,668 |

Source: Compiled by authors based on CONEVAL (2012).

vulnerability levels is not always desirable, and, in several cases, value judgments are required.[5]

The following shows a summary of the variations in the aggregated levels of vulnerability. In order to estimate this, the number of people in each state and type of territory (rural, semi-rural, semi-urban and urban) in a situation of middle class or in a situation of capabilities poverty was calculated for 2000 and 2010. As previously mentioned, the number of people located between these two categories was considered to be vulnerable.



The following table summarizes the findings for the variation in vulnerability by comparing the situation between 2000 and 2010. This comparative analysis indicates, on average, a decline in vulnerability due to an increase in the percentage of the population in the middle class combined, to the same extent, with a decline in poverty levels and, to a lesser degree, an increase in poverty levels. Thus, in this period, 13% of the Mexican population experienced an improvement in well-being as a result of modifications in the levels of vulnerability. In this subgroup, the most important category (which represented 10% of the population in 2000) was the one in which vulnerability decreased due to an increase in the middle class population, which was higher than the percentage of the population which registered an increase in poverty levels. Average levels of well-being deteriorated for about 3.3% of the population in light of changes in the levels of vulnerability; this was primarily due to a combination of a decline in the percentage of population in the middle class with an increase in the population in a situation of poverty.

To summarize, while the level of vulnerability in the Mexican population increased between 2000 and 2010, this increase was generally associated with improvements in the population's levels of average well-being. The following chart summarizes the information for the total population and by territory type. While 15% of the total population experienced a decline in levels of vulnerability, for 11.4%

5 A more detailed analysis of this topic can be found in the Methodological Appendix.

TABLE 7 – CHANGES IN THE LEVELS OF WELL-BEING ORIGINATING IN CHANGES IN THE NUMBER OF PEOPLE IN SITUATION OF VULNERABILITY BY TERRITORY TYPE, COMPARISON OF LEVELS IN 2010 AND IN 2000

| Improvement in Well-Being based on Changes in the Number of People in a Situation of Vulnerability | | | Change in Vulnerability between 2010 and 2000 | |
|---|---|---|---|---|
| | Territory Type | Population in 2000 | Absolute Change (# of People) | As % of the Population in 2000 |
| 1.-Vulnerability increases because the decline in the middle class was lower than the decline in poverty | Rural | 2,527,193 | 259,206 | 0.30% |
| | Semi-rural | 844,426 | 156,571 | 0.20% |
| | Semi-urban | 700,090 | 71,086 | 0.10% |
| | Urban | 3,528,488 | 243,236 | 0.30% |
| | **Category Total** | **7,600,197** | **730,099** | **1%** |
| 3.- Vulnerability increases because the increase in the middle class was lower than the decline in poverty | Rural | 1,686,560 | 99,922 | 0.10% |
| | Semi-rural | 1,486,907 | 21,077 | 0.02% |
| | Semi-urban | 508,274 | 20,227 | 0.02% |
| | Urban | 1,794,214 | 13,829 | 0.01% |
| | **Category Total** | **5,475,955** | **155,055** | **0.20%** |
| 6.- Vulnerability decreases because the increase in the middle class was higher than the decline in poverty | Rural | 817,930 | -44,005 | 0.00% |
| | Semi-rural | 1,766,602 | -58,621 | 0.10% |
| | Semi-urban | 1,694,115 | -146,774 | 0.20% |
| | Urban | 15,541,812 | -2,080,116 | 2.20% |
| | **Category Total** | **19,820,459** | **-2,241,506** | **2%** |
| 7.- Vulnerability decreases because the increase in the middle class was higher than the decline in poverty | Rural | 2,998,603 | -431,176 | 0.50% |
| | Semi-rural | 6,262,792 | -1,074,321 | 1% |
| | Semi-urban | 9,831,816 | -2,700,867 | 3% |
| | Urban | 24,158,259 | -5,230,497 | 5% |
| | **Category Total** | **43,251,470** | **-9,436,860** | **10%** |
| **Total Improvement in Well-Being. % of 2000 Population** | | **76,148,081** | | **13%** |

TABLE 7 – CHANGES IN THE LEVELS OF WELL-BEING ORIGINATING IN CHANGES IN THE NUMBER OF PEOPLE IN SITUATION OF VULNERABILITY BY TERRITORY TYPE, COMPARISON OF LEVELS IN 2010 AND IN 2000 (CONTINUE)

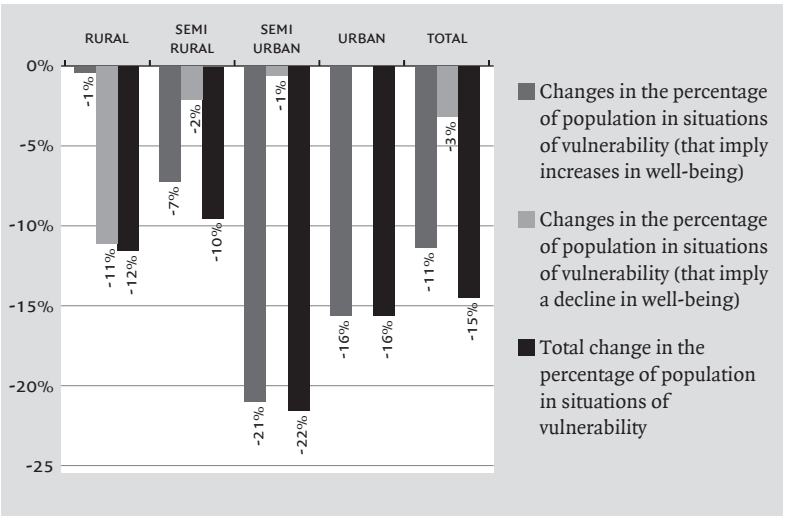
| Deterioration in Well-Being based on Changes in the Number of People in a Situation of Vulnerability | | | Change in Vulnerability between 2010 and 2000 | |
|---|---|---|---|---|
| | Territory Type | Population in 2000 | Absolute Change (# of People) | As % of the Population in 2000 |
| 11.- Vulnerability increases because the decline in the middle class was higher than the decline in poverty | Rural | 184,866 | 15,426 | 0.02% |
| | Semi-rural | 282,885 | 34,008 | 0.04% |
| | **Category Total** | **467,751** | **49,433** | **0.10%** |
| 13.- Vulnerability decreases because the increase in the middle class was lower than the increase in poverty | Rural | 15,492,715 | -2,706,847 | 2.80% |
| | Semi-rural | 2,313,805 | -310,540 | 0.30% |
| | Semi-urban | 310,955 | -87,133 | 0.10% |
| | **Category Total** | **18,117,475** | **-3,104,520** | **3.30%** |
| 14.- Vulnerability decreases because the decline in the middle class was lower than the increase in poverty | Rural | 523,774 | -5,856 | 0.01% |
| | **Category Total** | **523,774** | **-5,856** | **0.01%** |
| **Total Deterioration in Well-Being. % of 2000 Population** | | **19,109,000** | | **3.30%** |

NB: The changes in well-being are averages for the regions analyzed and do not imply that these reach every individual in a particular region.
Source: Authors' estimates.



of the population this decline can be associated with an improvement in well-being, while for 3.2% it is associated with a deterioration in well-being. In terms of territory type, the chart shows that the decline of the population in a situation of vulnerability can be associated with both a deterioration in the levels of well-being in rural territories and with improvements in the remaining territories.

CHART 3 – CHANGES IN VULNERABILITY BY TERRITORY TYPE AND BY THE PERCENTAGE OF POPULATION THAT EXPERIENCED CHANGES IN VULNERABILITY LEVELS. COMPARISON OF LEVELS IN 2010 AND IN 2000.




Source: Authors' estimates.



## 3.-EVOLUTION OF INEQUALITY OF OPPORTUNITIES

This section presents the results of the territorial-based analysis of inequality of opportunities. The concept of inequality of opportunities employed focuses on recent studies based on the work of Roemer (1998). It calculates to what extent personal circumstances (such as place of birth, wealth in household of origin, ethnicity or gender) have an impact on the probabilities of children and young people having access to services that are required for people's well-being and development.[6] This section explores to what extent the territory in which a person lives is a relevant condition in the determination of his/her inequality of opportunities. If proven to exist, this would lead

6 For more details on the methodology, see the Methodological Appendix.

to the recommendation of "spatially-sensitive" policies in order to favor equality of opportunities.

The equality of opportunities approach is consistent with the program's objective of providing a more comprehensive and multidimensional portrayal of poverty and inequality than a mere measurement of monetary poverty or income inequality.

The analysis of the evolution of the levels of human opportunities was carried out in four population types that take into account the size of the localities in which each of the households analyzed are located, for each of Mexico's 32 states. Based on the work of functional territories (Soloaga and Yúnez-Naude, 2013), the population rank was established as:



i) Rural: Less than 2,500 inhabitants
ii) Semi-rural: 2,500 to 14,999 inhabitants
iii) Semi-urban: 15,000 to 99,999 inhabitants
iv) Urban: More than 100,000 inhabitants

Along these lines, 128 aggregates (4 for each of the 32 states) were created. For the purpose of presenting the analysis by state-territory-municipality, each municipality was associated with one of the categories of rurality based on the predominant population type, as indicated in Table 8 below.

Map 5 below shows the regional distribution of each type of territory. Of the total 2,454 municipalities considered, the vast majority

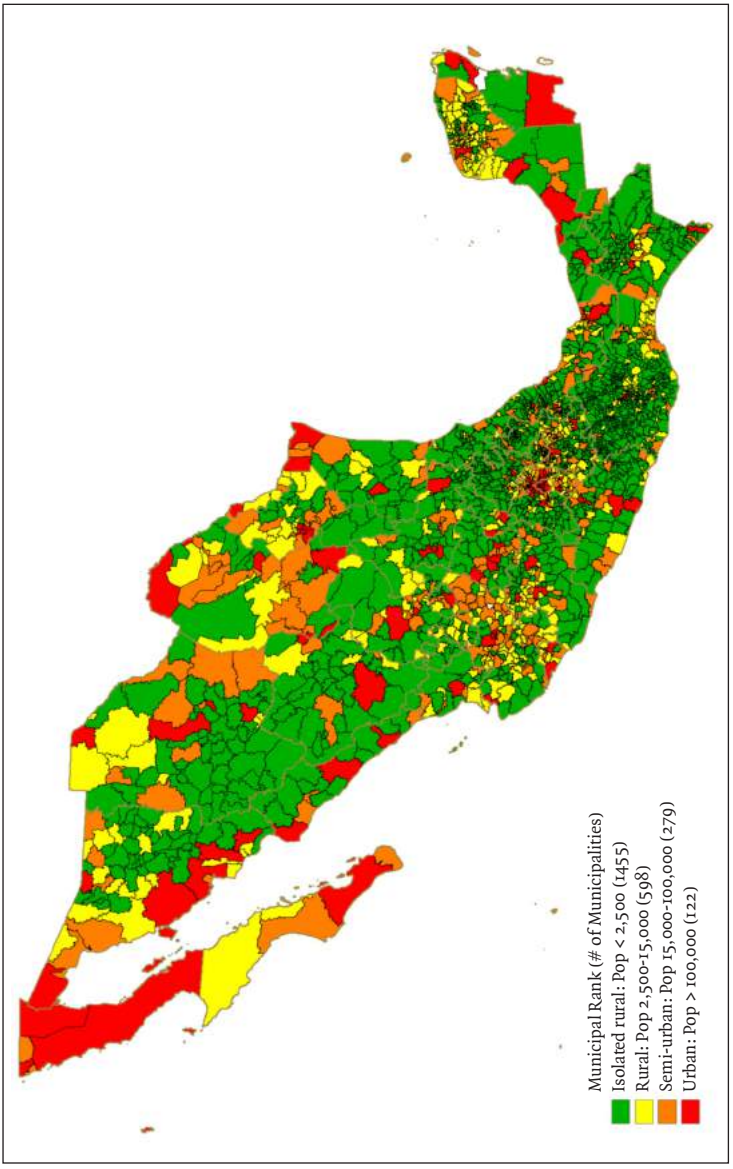
TABLE 8 –MUNICIPALITIES BY POPULATION STRATUM (2005)

| | Rural | Semi-rural | Semi-urban | Urban | Totals |
|---|---|---|---|---|---|
| Population | 24,712,478 | 14,149,277 | 14,364,335 | 50,491,798 | 103,717,888 |
| # of Municipalities | 1,455 | 598 | 279 | 122 | 2,454 |

NB: The population was categorized based on the size of the primary city in each municipality. Rural: primary city has less than 2,500 inhabitants; semi-rural: primary city has between 2,500 and 14,999 inhabitants; semi-urban: primary city has between 15,000 and 99,999 inhabitants; and urban: the primary city has more than 100,000 inhabitants.
Source: Authors' estimates based on recent population census data.

are rural (1,455) or semi-rural (598), despite the sum of these categories representing only 30% of the total (21% rural and 9% semi-rural) in population terms.

MAP 5 – CLASSIFICATION OF MUNICIPALITIES BASED ON THE PREDOMINANT POPULATION TYPE




Source: Authors' estimates based on 2010 Census.

In order to analyze the evolution of inequality of opportunities, the following variables are considered for households in which at least one person is under the age of 18, or in the case of school attendance and age-appropriate grade placement, at least one person is between 15 and 17 years of age.

**Schooling Indicators**

- School Attendance: if the adolescent (person between 15 and 17 years of age) attends classes.
- Age-Appropriate Grade Placement: If the adolescent (person between 15 and 17 years of age) is in the appropriate grade for someone of his/her age.



**Access to Housing Services Indicators** (households with people under the age of 18)

- Indicator composed of Access to Housing Services: if the underage person lives in a home that lacks access to water, electricity or drainage services, based on CONEVAL's methodology (2009).

**Quality of Housing Materials and Overcrowding Indicators** (households with people under the age of 18)

- Indicator composed of Housing Quality: if the underage person lives in a home with inappropriate flooring, walls or ceiling materials, or if he/she lives in a household in which overcrowding is registered, based on CONEVAL's methodology (2009).

**Access to Communications and Information Technology Indicators** (households with people under the age of 18 and only for 2000 and 2010)

- Access to a telephone.
- Access to a computer.

**Situation of Poverty or Belonging to the Middle Class Indicators**

- The household in which the person under the age of 18 resides is not in a situation of food or patrimonial poverty.
- The household where the person under the age of 18 resides has less than 10% probability of being in a situation of capabilities poverty (i.e. belongs to the middle class).

Tables 9 and 10 below show the estimate of the coverage rate, the dissimilarity index and the Human Opportunity Index (HOI) for the analyzed variables. In Table 9 these correspond to schooling variables (attendance and age-appropriate grade placement) for people between the 15 and 17 years of age) and housing quality and services (for people between 0 and 17 years of age). As is to be expected, there is a positive gradient whenever the size of the locality increases, with rural territories always having the lowest well-being indicators; however, as can be seen in the lower panel of the table, the enormous HOI gap between rural and urban territories that previously existed was considerably reduced. For example, while in 1990 the HOI for school attendance for adolescents between 15 and 17 years of age residing in rural areas was barely 31% of the corresponding HOI in urban areas, in 2010, this percentage increased to 65%. Although less pronounced, this change can also be seen in the HOI for age-appropriate grade placement for the same age group. This convergence of the HOI for educational levels towards those levels registered in urban areas can also be seen in two other territory types (semi-rural and semi-urban). Progress in the other two variables considered (housing quality and access to housing services), while important in absolute terms, still indicate a significant relative lag in the rural and semi-rural areas of Mexico, most of with regard to access to housing services (electricity, water and drainage network). Regarding the information found in the lower panel of Table 9, we can see that, in 2010, while the HOI for housing quality in rural areas represented 69% of the indicator for urban areas, the HOI for access to housing services in rural areas represented only 53% of that registered in urban areas.

TABLE 9
COVERAGE RATE, DISSIMILARITY INDEX, AND HUMAN OPPORTUNITY INDEX FOR ATTENDANCE AND SCHOOLING (15 TO 17 YEARS OF AGE) AND FOR HOUSING QUALITY AND ACCESS TO HOUSING SERVICES (0 TO 17 YEARS OF AGE)

| | Coverage Rate | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | School Attendance (15 to 17 years of age) | | | Age-Appropriate Grade Placement (15 to 17 years of age) | | | Quality of Housing Materials and Absence of Overcrowding | | | Access to Housing Services | | |
| Territory Type | 1990 | 2000 | 2010 | 1990 | 2000 | 2010 | 1990 | 2000 | 2010 | 1990 | 2000 | 2010 |
| Rural | 28.8 | 38.4 | 57.3 | 17.6 | 25.1 | 42.1 | 35.9 | 38.8 | 62.0 | 19.8 | 26.4 | 52.6 |
| Semi-rural | 48.3 | 50.4 | 65.9 | 34.1 | 38.8 | 51.6 | 51.9 | 53.3 | 71.8 | 50.4 | 58.8 | 78.3 |
| Semi-urban | 59.6 | 57.7 | 70.6 | 42.6 | 44.8 | 55.0 | 62.6 | 62.5 | 77.5 | 70.4 | 75.9 | 88.2 |
| Urban | 66.8 | 65.5 | 75.2 | 48.2 | 50.8 | 59.9 | 71.5 | 72.7 | 84.4 | 82.6 | 87.0 | 92.9 |
| **Total** | 50.7 | 52.9 | 67.2 | 35.5 | 39.8 | 52.1 | 55.3 | 56.7 | 73.8 | 55.5 | 61.8 | 77.9 |

| | Dissimilarity Index | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | School Attendance (15 to 17 years of age) | | | Age-Appropriate Grade Placement (15 to 17 years of age) | | | Quality of Housing Materials and Absence of Overcrowding | | | Access to Housing Services | | |
| Territory Type | 1990 | 2000 | 2010 | 1990 | 2000 | 2010 | 1990 | 2000 | 2010 | 1990 | 2000 | 2010 |
| Rural | 31.8 | 29.9 | 19.4 | 17.4 | 16.5 | 13.2 | 22.1 | 23.0 | 12.2 | 17.7 | 17.8 | 9.1 |
| Semi-rural | 23.1 | 22.2 | 15.3 | 14.5 | 15.1 | 11.1 | 18.8 | 18.5 | 9.9 | 12.4 | 10.1 | 4.5 |
| Semi-urban | 19.4 | 19.7 | 13.7 | 12.0 | 14.0 | 10.3 | 14.8 | 15.0 | 8.2 | 7.5 | 5.5 | 2.3 |
| Urban | 17.5 | 17.3 | 12.6 | 10.6 | 12.1 | 9.3 | 11.0 | 11.3 | 6.1 | 5.1 | 3.5 | 1.8 |
| **Total** | 23.0 | 22.3 | 15.3 | 13.6 | 14.4 | 11.0 | 16.7 | 17.0 | 9.1 | 10.7 | 9.2 | 4.4 |

TABLE 9
COVERAGE RATE, DISSIMILARITY INDEX, AND HUMAN OPPORTUNITY INDEX FOR ATTENDANCE AND SCHOOLING (15 TO 17 YEARS OF AGE) AND FOR HOUSING QUALITY AND ACCESS TO HOUSING SERVICES (0 TO 17 YEARS OF AGE) (CONTINUE)

| | Human Opportunity Index (HOI) | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | School Attendance (15 to 17 years of age) | | | Age-Appropriate Grade Placement (15 to 17 years of age) | | | Quality of Housing Materials and Absence of Overcrowding | | | Access to Housing Services | | |
| Territory Type | 1990 | 2000 | 2010 | 1990 | 2000 | 2010 | 1990 | 2000 | 2010 | 1990 | 2000 | 2010 |
| Rural | 12.3 | 17.7 | 34.1 | 23.9 | 32.2 | 49.9 | 28.6 | 30.7 | 55.0 | 16.7 | 22.3 | 48.2 |
| Semi-rural | 26.5 | 30.3 | 43.8 | 41.5 | 43.0 | 58.7 | 42.9 | 44.2 | 65.1 | 45.0 | 53.7 | 75.1 |
| Semi-urban | 34.5 | 36.1 | 47.6 | 52.6 | 49.8 | 63.4 | 53.7 | 53.6 | 71.5 | 65.5 | 72.1 | 86.2 |
| Urban | 39.9 | 42.1 | 52.4 | 60.0 | 57.7 | 68.3 | 64.0 | 64.8 | 79.4 | 78.6 | 84.2 | 91.4 |
| **Total** | 28.1 | 31.5 | 44.4 | 44.3 | 45.6 | 60.0 | 47.1 | 48.2 | 67.6 | 51.1 | 57.9 | 75.1 |
| | Human Opportunity Index for Every Territory type relative to HOI in Urban Areas | | | | | | | | | | | |
| Territory Type | 1990 | 2000 | 2010 | 1990 | 2000 | 2010 | 1990 | 2000 | 2010 | 1990 | 2000 | 2010 |
| Rural | 0.66 | 0.72 | 0.84 | 0.69 | 0.74 | 0.86 | 0.67 | 0.68 | 0.82 | 0.57 | 0.64 | 0.82 |
| Semi-rural | 0.86 | 0.86 | 0.91 | 0.88 | 0.86 | 0.93 | 0.84 | 0.83 | 0.90 | 0.83 | 0.86 | 0.94 |
| Semi-urban | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

NB: These are the simple average of the estimates for each territory type in the 32 states. Households with individuals between 15 and 17 years of age were taken into consideration to measure school attendance and age-appropriate grade placement. For quality and access to housing services, households with at least one person between the ages of 0 and 17 years of age were considered.
Source: Authors' estimates.

Table 10 summarizes the coverage information, dissimilarity index and HOI for the variables of absence of food and patrimonial poverty, as well as for the probability of belonging to the middle class.

The same table shows the deterioration in the conditions of poverty of the Mexican population. Upon comparing 2010 with 1990 in all territory types, the coverage indicator declined (in other words, the 2010 poverty levels were higher than those in 1990) as inequality increased, as indicated by the growing dissimilarity index (first and

TABLE 10 COVERAGE RATE, DISSIMILARITY INDEX AND HUMAN OPPORTUNITY INDEX FOR THE ABSENCE OF FOOD POVERTY AND PATRIMONIAL POVERTY AND FOR BELONGING TO THE MIDDLE CLASS (0 TO 17 YEARS OF AGE)



| | Coverage Rate | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Absence of Food Poverty (*) | | | Absence of Patrimonial Poverty(**) | | | Belonging to the Middle Class (**) | | |
| Territory Type | 1990 | 2000 | 2010 | 1990 | 2000 | 2010 | 1990 | 2000 | 2010 |
| Rural | 77.8 | 49.8 | 58.4 | 33.3 | 26.2 | 22.4 | 2.8 | 15.3 | 9.0 |
| Semi-rural | 89.2 | 74.6 | 78.1 | 49.3 | 50.0 | 42.3 | 6.1 | 35.7 | 20.6 |
| Semi-urban | 81.9 | 74.5 | 75.1 | 36.9 | 33.6 | 32.3 | 11.5 | 17.4 | 35.2 |
| Urban | 95.4 | 87.8 | 86.4 | 64.4 | 51.2 | 48.7 | 28.7 | 31.4 | 51.8 |
| **Total** | 86.1 | 71.6 | 74.4 | 45.9 | 40.1 | 36.3 | 12.1 | 24.9 | 29.0 |

| | Dissimilarity Index | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Absence of Food Poverty (*) | | | Absence of Patrimonial Poverty(**) | | | Belonging to the Middle Class (**) | | |
| Territory Type | 1990 | 2000 | 2010 | 1990 | 2000 | 2010 | 1990 | 2000 | 2010 |
| Rural | 11.5 | 23.2 | 22.9 | 36.1 | 33.8 | 41.4 | 64.1 | 43.1 | 52.2 |
| Semi-rural | 6.3 | 13.9 | 12.7 | 28.2 | 24.4 | 30.0 | 65.3 | 31.9 | 42.7 |
| Semi-urban | 10.5 | 14.5 | 12.9 | 36.9 | 36.3 | 37.7 | 58.6 | 47.0 | 35.5 |
| Urban | 3.3 | 7.6 | 7.7 | 20.6 | 26.9 | 28.8 | 40.3 | 38.9 | 26.7 |
| **Total** | 7.9 | 14.8 | 14.1 | 30.5 | 30.4 | 34.5 | 57.2 | 40.2 | 39.4 |

second panels, respectively). The combination of these two outcomes results in a decline in the HOI, which was more pronounced in rural and semi-rural settings (Table 10, third panel). When considering the probability of belonging to the middle class, the gradient is even more pronounced than for the education and housing quality and housing

TABLE 10 COVERAGE RATE, DISSIMILARITY INDEX AND HUMAN OPPORTUNITY INDEX FOR THE ABSENCE OF FOOD POVERTY AND PATRIMONIAL POVERTY AND FOR BELONGING TO THE MIDDLE CLASS (0 TO 17 YEARS OF AGE) (CONTINUE)



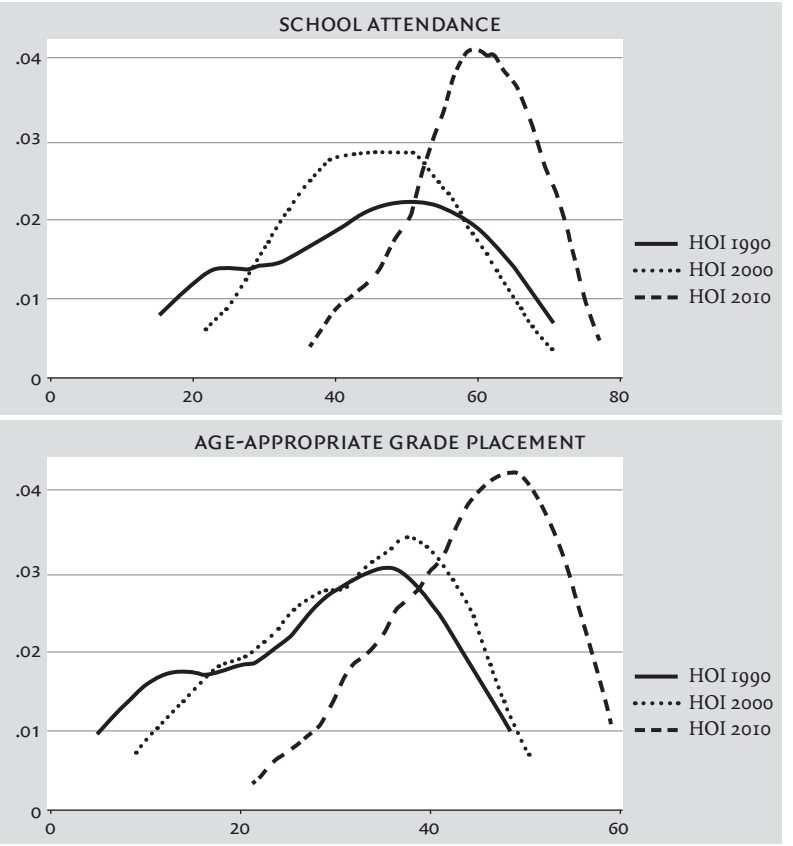
| | Human Opportunity Index (HOI) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Absence of Food Poverty (*) | | | Absence of Patrimonial Poverty(**) | | | Belonging to the Middle Class (**) | | |
| Territory Type | 1990 | 2000 | 2010 | 1990 | 2000 | 2010 | 1990 | 2000 | 2010 |
| Rural | 70.0 | 40.7 | 47.6 | 23.0 | 19.5 | 14.7 | 1.1 | 10.4 | 5.0 |
| Semi-rural | 84.0 | 66.0 | 69.5 | 36.9 | 40.2 | 31.3 | 2.3 | 26.7 | 12.7 |
| Semi-urban | 73.6 | 64.5 | 66.0 | 23.8 | 22.5 | 21.0 | 4.9 | 9.8 | 23.6 |
| Urban | 92.3 | 81.4 | 79.9 | 51.4 | 38.1 | 35.1 | 17.3 | 19.7 | 38.4 |
| **Total** | 79.9 | 63.0 | 65.6 | 33.7 | 30.0 | 25.4 | 6.3 | 16.6 | 19.8 |
| Human Opportunity Index for every Territory Type relative to HOI in Urban Areas | | | | | | | | | |
| Rural | 0.76 | 0.50 | 0.60 | 0.45 | 0.51 | 0.42 | 0.06 | 0.53 | 0.13 |
| Semi-rural | 0.91 | 0.81 | 0.87 | 0.72 | 1.06 | 0.89 | 0.13 | 1.35 | 0.33 |
| Semi-urban | 0.80 | 0.79 | 0.83 | 0.46 | 0.59 | 0.60 | 0.28 | 0.50 | 0.62 |
| Urban | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 |

(*) Income below that required for the acquisition of the basic food basket.
(**) Income below that required for the acquisition of the basic food basket and to cover clothing, health and transportation expenses.
(***) Probability of declining into poverty is less than 10%.
NB: Simple average of the estimates made for each territory type in the 32 states. For the measurement of absence of food poverty, patrimonial poverty and belonging to the middle class, households with at least one person between the ages of 0 and 17 years of age were considered.
Source: Authors' estimates.

services variables, as shown in the significant distance between the HOI for rural and urban territories for these variables. For example, in 2010 an average person between 0 and 17 years of age had 8 times more opportunities of belonging to the middle class if he/she lived in an urban environment than if he/she lived in a rural environment (indicated by the 0.13 relationship between the rural HOI and urban HOI for this variable in the lower panel). For the same variable, if he/she were to live in a semi-rural territory the relation would be 3:1 (a 0.33



CHARTS 4.1 AND 4.2 – SCHOOLING INDICATORS: ADOLESCENTS BETWEEN 15 AND 17 YEARS OF AGE



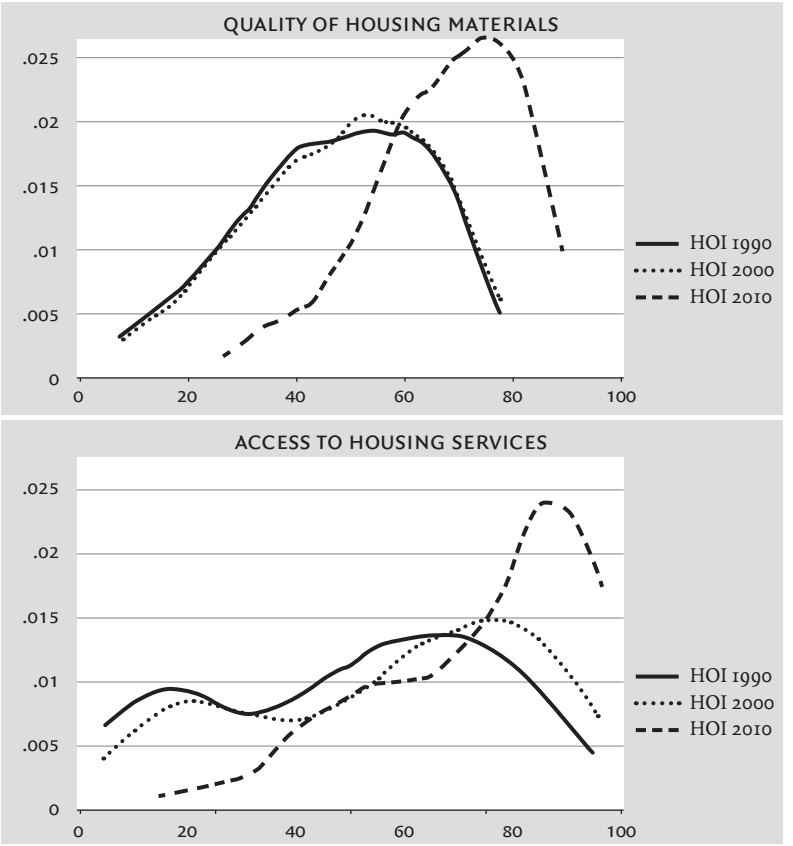

Source: Authors' estimates.

coefficient), while it would be 1.6:1 were he/she to live in a semi-urban territory (0.62 coefficient).

In order to facilitate the interpretation of the change in HOI between 1990, 2000 and 2010, the following charts present kernel distributions for each of the variables included in the tables for the 128 territories considered. The first two charts (Charts 4.1 and 4.2) illustrate the changes in HOI for the advantages defined as school attendance and age-appropriate grade placement for adolescents between 15 and 17 years of age.

CHARTS 5.1 AND 5.2 – QUALITY OF HOUSING MATERIALS AND ACCESS TO HOUSING SERVICES





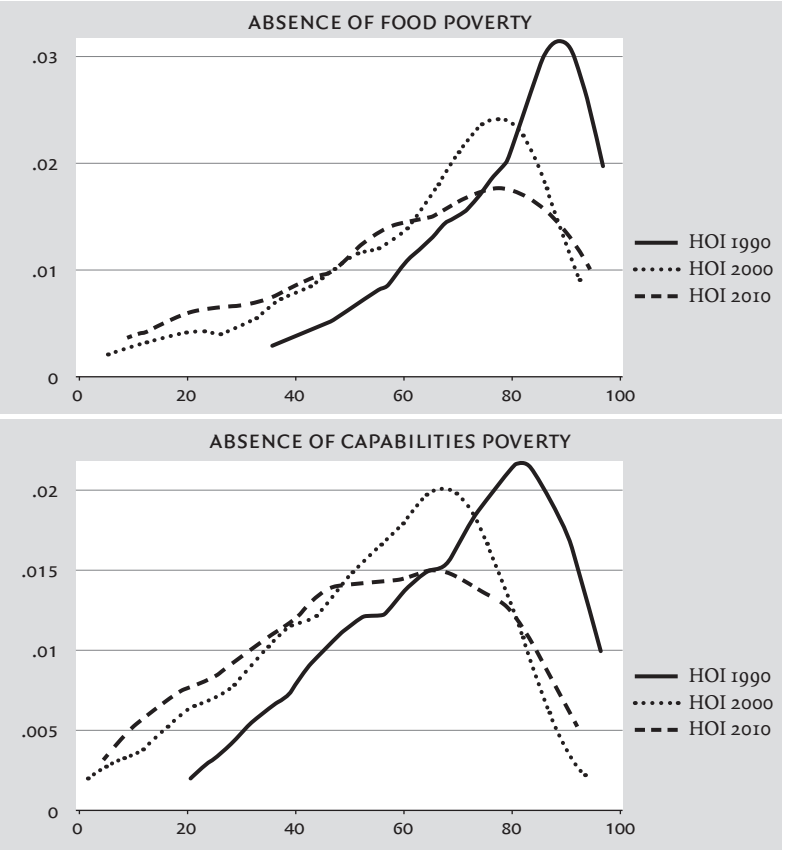

Source: Authors' estimates.

While a shift in the distribution of the HOI to increased values in the past 20 years can be seen, in 2010, the highest figures in school attendance still do not surpass 85% and 65% for age-appropriate grade placement.

Charts 5.1 and 5.2 show the changes in the HOI-linked variables for housing quality (and the indicator for overcrowding) and access to housing services. The charts show that there is substantially more inequality in the HOI for housing quality than in the HOI for access to housing services (much more even distribution).



CHARTS 6.1 AND 6.2 – ABSENCE OF POVERTY AND BELONGING TO THE MIDDLE CLASS

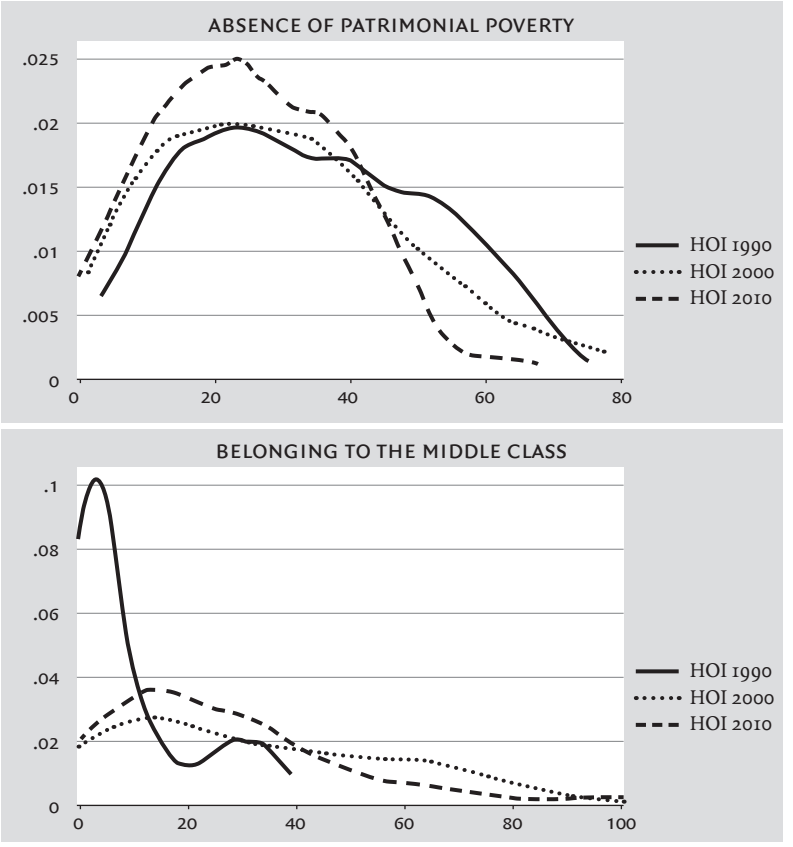



Source: Compiled by the Authors.

Chart 6.1 shows fewer changes in the HOI as a result of the absence of distinct poverty levels when comparing 2000 and 2010 with 1990 (see Charts 6.1, 6.2 and 6.3). Poverty reduction in Mexico has stagnated over the past 20 years. The HOI for belonging to the middle class (Chart 6.4) demonstrates the change in this indicator from a high concentration in lower levels in 1990 to a flatter distribution in 2000 and 2010.

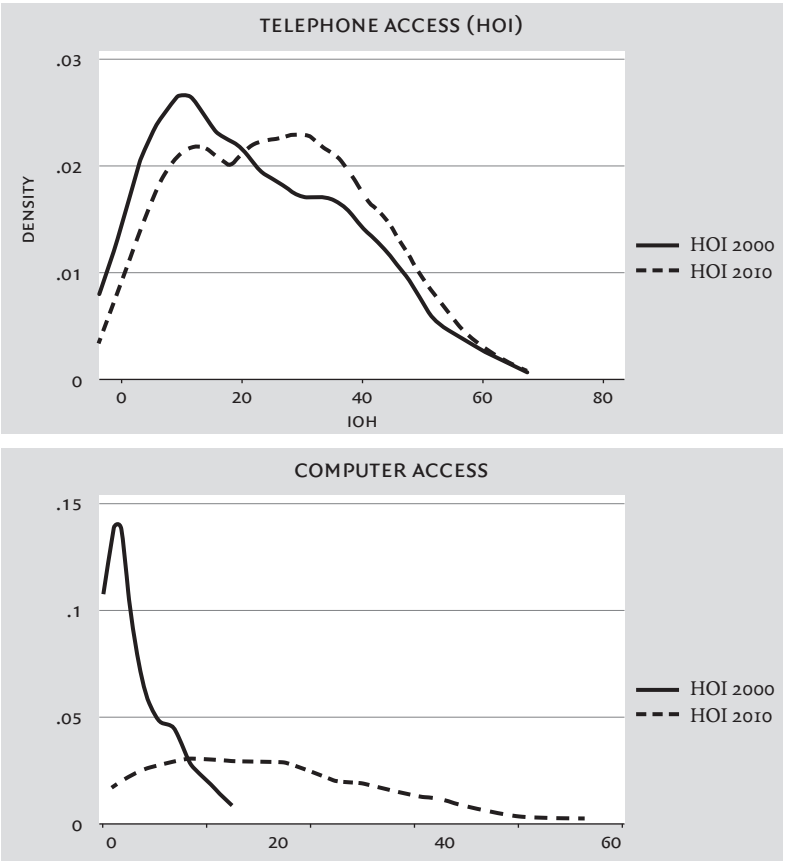
CHARTS 6.3 AND 6.4 – ABSENCE OF POVERTY AND BELONGING TO THE MIDDLE CLASS






Source: Compiled by the Authors.

CHARTS 7.1 AND 7.2 – INDICATORS OF ACCESS TO COMMUNICATION AND INFORMATION TECHNOLOGY (ONLY FOR 2000 AND 2010)




Source: Authors' estimates.

Charts 7.1 and 7.2 show the inequality in the HOI for access to communications and information technology (deemed to be the existence of a telephone and a computer in the home).[7] In the particular case of computer access, while a large-scale expansion is seen in the HOI, and with a strong equalizing component (the distribution

7 This data is only available for 2000 and 2010.

is much more even when comparing 2010 with 2000), in 2010 a large part of the population still did not have access to a computer (the HOI is always less than 60%).

## 4.-TRANSITIONS AND OPPORTUNITY TRAPS

As in the analysis of human opportunities, the analysis of transitions took the location of the households into consideration, identifying four territory types: rural, semi-rural, semi-urban and urban. For the purpose of identifying the opportunity traps, if the HOI for a particular advantage was found to be below the mean of the population minus half the standard deviation in any territory, this territory was considered to be in a "relative lagging position" for this dimension. Likewise, an opportunity trap in a particular advantage was defined as that in which a particular territory demonstrated a relative lagging position in the three years analyzed in this study (1990, 2000 and 2010). To summarize, Table 11 indicates the distribution by the number of municipalities and the total population in the opportunity trap by considering three dimensions of the HOI (absence of patrimonial poverty, quality of housing materials and access to housing services) for households with at least one member between 0 and 17 years of age and one HOI dimension (age-appropriate grade placement for a person's age) for households with at least one member between 15 and 17 years of age.[8]



The geographic dimension is clearly noticeable given that practically three out of every four municipalities with a predominance of people located in rural areas was identified as being in a trapped situation (defined as a permanent relative lagging position in the four

8 To simplify the presentation of the results, only these four dimensions were considered: Patrimonial poverty entails the broader dimension of income required to attain a minimum level of well-being; the two dimensions of housing indicate people's standard of living; the schooling indicator for adolescents between 15 and 17 years of age, in a certain manner, summarizes the risk of the inter-generational transmission of inequality.

TABLE 11 - OPPORTUNITY TRAPS: MUNICIPALITIES AND POPULATION IN A RELATIVE LAGGING POSITION IN THE FOUR DIMENSIONS (POVERTY, HOUSING QUALITY, HOUSING SERVICES AND AGE-APPROPRIATE GRADE PLACEMENT) FOR THE THREE PERIODS ANALYZED (1990, 2000 AND 2010)

| Variable | Territory Type, Number of Municipalities and Population | | | | |
|---|---|---|---|---|---|
| | Rural | Semi-rural | Semi-Urban | Urban | Total |
| | Municipalities | | | | |
| Municipalities in each territory type | 1,455 | 598 | 279 | 122 | 2,454 |
| Always lagging in the four dimensions (number of municipalities) | 1,055 | 62 | 12 | 0 | 1,129 |
| Always lagging in the four dimensions (% of the total municipalities in each territory type) | 73% | 10% | 4% | 0% | 46% |
| | Population | | | | |
| Population in each territory type | 21,789,604 | 9,297,256 | 16,744,627 | 55,886,401 | 103,717,888 |
| Always lagging in the four dimensions (population) | 13,898,228 | 442,642 | 501,807 | - | 14,842,677 |
| Always lagging in the four dimensions (% of the total population for each territory type) | 64% | 5% | 3% | 0% | 14% |

NB: A territory is considered to be lagging if the well-being indicator is below the mean of this indicator for all the territories in a particular year minus 0.5 standard deviation.
Source: Authors' estimates.

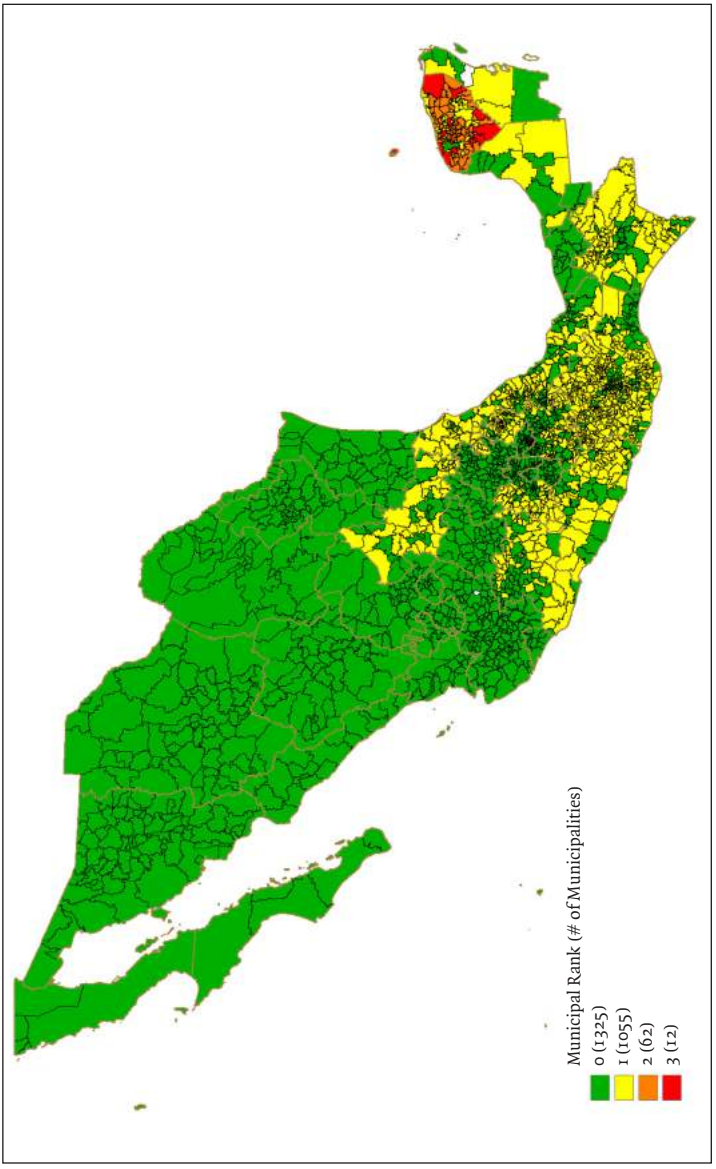


dimensions of the HOI),[9] 10% of the municipalities with a predominance of a semi-rural population and 4% of the municipalities with a predominance of a semi-urban population. Some 14.8 million people in 2005 (14% of the population) were deemed to be in an opportunity trap. The vast majority of the people in opportunity trap reside in rural

9 A relative lagging position is defined as a territory that is located below the observed mean for a particular indicator minus 0.5 standard deviation.

areas (13.9 million). Map 6 shows that the majority of these municipalities are located in the Pacific, center, south, center-south, gulf and Yucatán region.

MAP 6 – MUNICIPALITIES ALWAYS LAGGING BEHIND IN 1990, 2000, AND 2010
POVERTY, HOUSING QUALITY, HOUSING SERVICES AND SCHOOLING




Source: Census Data 1990, 2000 and 2010. Authors' estimates.

### *4.1 Transitions in the HOI and the Dimension regarding the Lack of Patrimonial Poverty*

A total of 84% of the municipalities located in rural territories, 41% of municipalities located in semi-rural territories (247 out of 598) and 43% of those located in semi-urban territories showed a permanent

TABLE 12 - RELATIVE LAGGING POSITIONS IN HOI FOR PATRIMONIAL POVERTY BY TERRITORY TYPE AND NUMBER OF MUNICIPALITIES, 1990-2000-2010



| | Territory Type and Number of Municipalities | | | | |
|---|---|---|---|---|---|
| | Rural | Semi-rural | Semi-urban | Urban | Total |
| Never lagging behind | 118 | 256 | 57 | 116 | 547 |
| Lagging behind in 2010 | 30 | 38 | 8 | 0 | 76 |
| Lagging behind in 2000 | 0 | 0 | 10 | 3 | 13 |
| Lagging behind in 2000 and 2010 | 23 | 0 | 8 | 3 | 34 |
| Lagging behind in 1990 | 66 | 46 | 18 | 0 | 130 |
| Lagging behind in 1990 and 2010 | 0 | 11 | 0 | 0 | 11 |
| Lagging behind in 1990 and 2000 | 0 | 0 | 58 | 0 | 58 |
| Always lagging behind | 1.218 | 247 | 120 | 0 | 1.585 |
| Total | 1.455 | 598 | 279 | 122 | 2.454 |
| Always lagging behind as % of the total | 84% | 41% | 43% | 0% | 65% |
| | As a Percentage of the Total Number of Municipalities | | | | |
| | Rural | Semi-rural | Semi-urban | Urban | Total |
| Never lagging behind | 5% | 10% | 2% | 5% | 22% |
| Lagging behind in 2010 | 1% | 2% | 0% | 0% | 3% |
| Lagging behind in 2000 | 0% | 0% | 0% | 0% | 1% |
| Lagging behind in 2000 and 2010 | 1% | 0% | 0% | 0% | 1% |
| Lagging behind in 1990 | 3% | 2% | 1% | 0% | 5% |
| Lagging behind in 1990 and 2010 | 0% | 0% | 0% | 0% | 0% |
| Lagging behind in 1990 and 2000 | 0% | 0% | 2% | 0% | 2% |
| Always lagging behind | 50% | 10% | 5% | 0% | 65% |
| Total | 59% | 24% | 11% | 5% | 100% |

Source: Authors' estimates.

TABLE 13 - RELATIVE LAGGING POSITIONS IN HOI FOR PATRIMONIAL POVERTY BY TERRITORY TYPE AND POPULATION, 1990-2000-2010

| | Territory Type and Population in 2005 | | | | |
|---|---|---|---|---|---|
| | Rural | Semi-rural | Semi-urban | Urban | Total |
| Never lagging behind | 1,398,643 | 4,891,020 | 3,387,899 | 53,870,895 | 63,548,457 |
| Lagging behind in 2010 | 431,576 | 658,387 | 496,589 | - | 1,586,552 |
| Lagging behind in 2000 | - | - | 546,513 | 954,081 | 1,500,594 |
| Lagging behind in 2000 and 2010 | 401,140 | - | 439,330 | 1,061,425 | 1,901,895 |
| Lagging behind in 1990 | 705,658 | 796,877 | 1,473,223 | - | 2,975,758 |
| Lagging behind in 1990 and 2010 | - | 194,767 | - | - | 194,767 |
| Lagging behind in 1990 and 2000 | - | - | 3,285,149 | - | 3,285,149 |
| Always lagging behind | 18,852,587 | 2,756,205 | 7,115,924 | - | 28,724,716 |
| Total | 21,789,604 | 9,297,256 | 16,744,627 | 55,886,401 | 103,717,888 |
| Always lagging behind as % of the total | 87% | 30% | 42% | 0% | 28% |
| | As a Percentage of the Total Population in 2005 | | | | |
| | Rural | Semi-rural | Semi-urban | Urban | Total |
| Never lagging behind | 1% | 5% | 3% | 52% | 61% |
| Lagging behind in 2010 | 0% | 1% | 0% | 0% | 2% |
| Lagging behind in 2000 | 0% | 0% | 1% | 1% | 1% |
| Lagging behind in 2000 and 2010 | 0% | 0% | 0% | 1% | 2% |
| Lagging behind in 1990 | 1% | 1% | 1% | 0% | 3% |
| Lagging behind in 1990 and 2010 | 0% | 0% | 0% | 0% | 0% |
| Lagging behind in 1990 and 2000 | 0% | 0% | 3% | 0% | 3% |
| Always lagging behind | 18% | 3% | 7% | 0% | 28% |
| Total | 21% | 9% | 16% | 54% | 100% |

Source: Authors' estimates.

lag with regard to patrimonial poverty during the period (1990-2010) (see Table 12). On aggregate, 28% of the Mexican population remains in a permanent lagging position (see Table 13). In terms of geographic location, 87% of the population in rural territories was found to be in a relative lagging position in the three periods analyzed, while this percentage was 30% for semi-rural territories and 42% for populations in semi-urban territories.

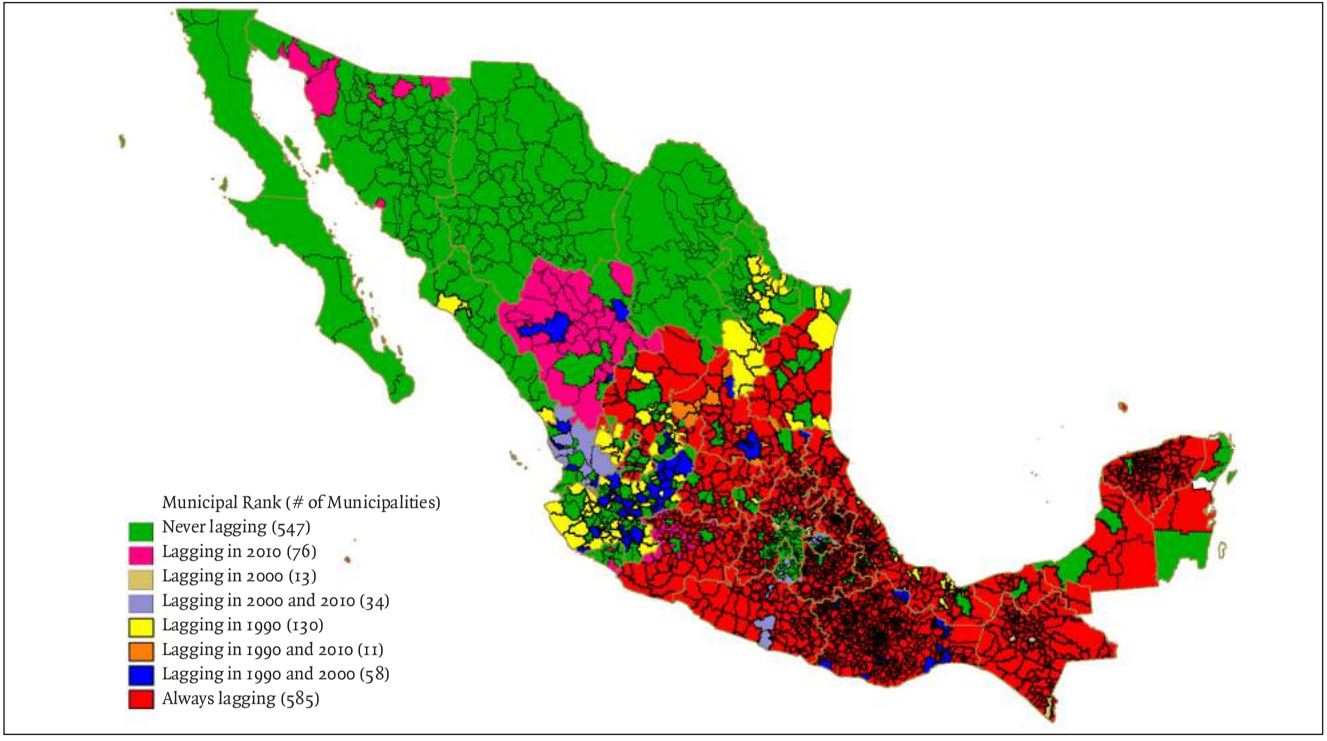
Map 7 below shows the geographic location of the opportunity traps for patrimonial poverty for people between the ages of 0 and 17. For all territories, the map shows that the southern, central-northern and Gulf regions show clear signs of being in a permanent lagging position, while the central and northern regions have relatively higher indicators for well-being.



### *4.2 Transitions in HOI for Quality of Housing Materials and Absence of Overcrowding*

Similar to that found in the case of the HOI for patrimonial poverty, the vast majority of the municipalities located in rural territories (1,120 out of 1,455) and more than half of the municipalities located in semi-rural territories (329 out of 598) were found to be in a permanent lagging position in terms of the opportunities for quality of housing materials and overcrowding during the period analyzed (1990-2010). In only 8% of the semi-urban municipalities a permanent position of relative lag was found in terms of the quality of housing materials; there were no lags found in this area in any of the 122 urban municipalities (see Table 14). With regard to the country's total population, 21% registered inequality traps in access to housing with quality materials and absence of overcrowding. In the disaggregate, almost 70% of the population in rural territories were found to be in a relative lagging position for the three periods analyzed (14.9 million/21.8 million), as this percentage was 45% for populations in semi-rural territories and only 6% for populations in semi-urban territories (see Table 15).

MAP 7 – RELATIVE LAGGING POSITIONS IN HOI FOR PATRIMONIAL POVERTY, 1990-2000-2010




Source: Census Data 1990, 2000 and 2010. Authors' estimates.

TABLE 14 –RELATIVE LAGGING POSITIONS IN HOI FOR QUALITY HOUSING MATERIALS BY TERRITORY TYPE AND NUMBER OF MUNICIPALITIES, 1990-2000-2010

| | Territory Type and Number of Municipalities | | | | |
|---|---|---|---|---|---|
| | Rural | Semi-rural | Semi-urban | Urban | Total |
| Never lagging behind | 123 | 248 | 246 | 116 | 733 |
| Lagging behind in 2010 | 0 | 0 | 0 | 0 | 0 |
| Lagging behind in 2000 | 0 | 0 | 0 | 0 | 0 |
| Lagging behind in 2000 and 2010 | 48 | 0 | 11 | 0 | 59 |
| Lagging behind in 1990 | 1 | 21 | 0 | 3 | 25 |
| Lagging behind in 1990 and 2010 | 20 | 0 | 0 | 0 | 20 |
| Lagging behind in 1990 and 2000 | 143 | 0 | 0 | 0 | 143 |
| Always lagging behind | 1,120 | 329 | 22 | 3 | 1,474 |
| Total | 1,455 | 598 | 279 | 122 | 2,454 |
| Always lagging behind as % of the total | 77% | 55% | 8% | 2% | 60% |
| | As a Percentage of the Total Number of Municipalities | | | | |
| | Rural | Semi-rural | Semi-urban | Urban | Total |
| Never lagging behind | 5% | 10% | 10% | 5% | 30% |
| Lagging behind in 2010 | 0% | 0% | 0% | 0% | 0% |
| Lagging behind in 2000 | 0% | 0% | 0% | 0% | 0% |
| Lagging behind in 2000 and 2010 | 2% | 0% | 0% | 0% | 2% |
| Lagging behind in 1990 | 0% | 1% | 0% | 0% | 1% |
| Lagging behind in 1990 and 2010 | 1% | 0% | 0% | 0% | 1% |
| Lagging behind in 1990 and 2000 | 6% | 0% | 0% | 0% | 6% |
| Always lagging behind | 46% | 13% | 1% | 0% | 60% |
| Total | 59% | 24% | 11% | 5% | 100% |

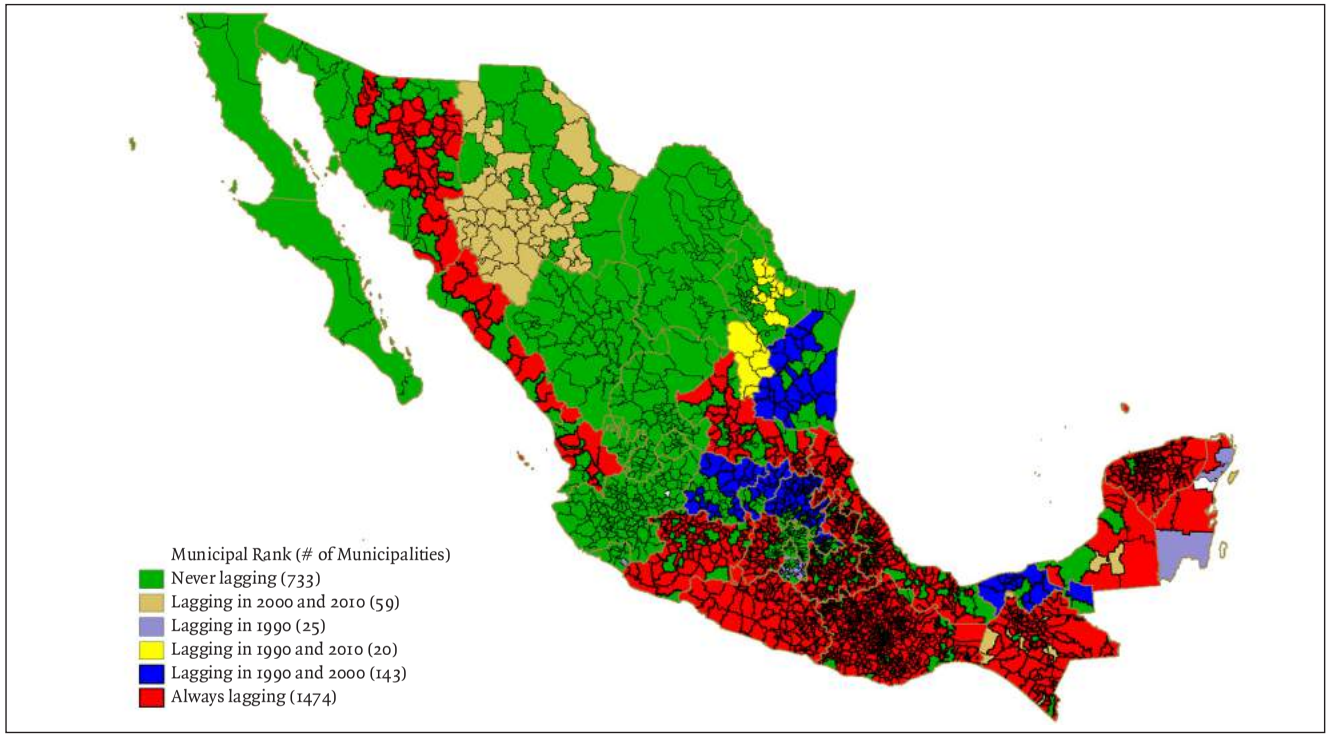
Source: Authors' estimates.

TABLE 15 - RELATIVE LAGGING POSITIONS IN HOI FOR HOUSING QUALITY BY TERRITORY TYPE AND POPULATION, 1990-2000-2010

| | Territory Type and Population in 2005 | | | | |
|---|---|---|---|---|---|
| | Rural | Semi-rural | Semi-urban | Urban | Total |
| Never lagging behind | 1,518,302 | 4,633,119 | 15,077,388 | 53,891,018 | 75,119,827 |
| Lagging behind in 2010 | | | | | |
| Lagging behind in 2000 | | | | | |
| Lagging behind in 2000 and 2010 | 488,282 | - | 613,672 | - | 1,101,954 |
| Lagging behind in 1990 | 4,842 | 479,762 | - | 933,958 | 1,418,562 |
| Lagging behind in 1990 and 2010 | 161,556 | - | - | - | 161,556 |
| Lagging behind in 1990 and 2000 | 4,636,332 | - | - | - | 4,636,332 |
| Always lagging behind | 14,980,290 | 4,184,375 | 1,053,567 | 1,061,425 | 21,279,657 |
| Total | 21,789,604 | 9,297,256 | 16,744,627 | 55,886,401 | 103,717,888 |
| Always lagging behind as % of the total | 69% | 45% | 6% | 2% | 21% |
| | As a Percentage of the Total Population in 2005 | | | | |
| | Rural | Semi-rural | Semi-urban | Urban | Total |
| Never lagging behind | 1% | 4% | 15% | 52% | 72% |
| Lagging behind in 2010 | 0% | 0% | 0% | 0% | 0% |
| Lagging behind in 2000 | 0% | 0% | 0% | 0% | 0% |
| Lagging behind in 2000 and 2010 | 0% | 0% | 1% | 0% | 1% |
| Lagging behind in 1990 | 0% | 0% | 0% | 1% | 1% |
| Lagging behind in 1990 and 2010 | 0% | 0% | 0% | 0% | 0% |
| Lagging behind in 1990 and 2000 | 4% | 0% | 0% | 0% | 4% |
| Always lagging behind | 14% | 4% | 1% | 1% | 21% |
| Total | 21% | 9% | 16% | 54% | 100% |

Source: Authors' estimates.

MAP 8 – RELATIVE LAGGING POSITIONS IN HOI FOR HOUSING QUALITY, 1990-2000-2010




Source: Census Data 1990, 2000 and 2010. Authors' estimates.

Map 8 shows the spatial distribution of the inequality traps for access to housing with quality materials and absence of overcrowding. This distribution is similar to that identified in the case of the inequality trap in poverty analyzed in the previous section: lagging positions were found in the southern, central-northern, Gulf and western Sierra Madre mountain range regions.

### *4.3 Transitions in HOI for the Quality of Access to Housing Services*

The negative indicators relating to well-being in terms of the HOI for access to housing services for people between 0 and 17 years of age spanned almost all of the municipalities located in rural areas (1,403 of a total of 1,455) and almost a third of the municipalities located in semi-rural territories (164 of a total of 598), while lagging positions for this dimension were not found in any of the 279 semi-urban municipalities or in any of the 122 urban municipalities (see Table 16). In terms of the country's total population, 20% registered inequality traps with regard to access to housing services. In the disaggregate, it was found that 96% of the population in rural territories were identified as being in a relative lagging position in the three periods analyzed, and this figure reached 27% for populations in semi-rural territories (see Table 17).



Map 9 indicates the spatial distribution of the inequality traps for access to housing services. This distribution is similar to that identified in the case of the inequality trap in housing materials and overcrowding: lagging positions were found in the southern, central-northern, Gulf and western Sierra Madre mountain range regions.

### *4.4 Transitions in HOI for Age-Appropriate Grade Placement for People aged between 15 and 17*

The HOI indicator for schooling for adolescents between 15 and 17 years of age highlights a geographic pattern similar to the negative indicators for well-being in terms of the HOI for patrimonial poverty and housing services for people between 0 and 17 years of age. A permanent relative lagging position was found in 88% of the municipalities with

TABLE 16 –RELATIVE LAGGING POSITIONS IN HOI FOR ACCESS TO HOUSING SERVICES BY TERRITORY TYPE AND NUMBER OF MUNICIPALITIES, 1990-200-2010

| | Territory Type and Number of Municipalities | | | | |
|---|---|---|---|---|---|
| | Rural | Semi-rural | Semi-urban | Urban | Total |
| Never lagging behind | 6 | 296 | 267 | 122 | 691 |
| Lagging behind in 2010 | 0 | 17 | 0 | 0 | 17 |
| Lagging behind in 2000 | 0 | 0 | 0 | 0 | 0 |
| Lagging behind in 2000 and 2010 | 0 | 46 | 0 | 0 | 46 |
| Lagging behind in 1990 | 13 | 8 | 0 | 0 | 21 |
| Lagging behind in 1990 and 2010 | 0 | 1 | 0 | 0 | 1 |
| Lagging behind in 1990 and 2000 | 33 | 66 | 12 | 0 | 111 |
| Always lagging behind | 1,403 | 164 | 0 | 0 | 1,567 |
| Total | 1,455 | 598 | 279 | 122 | 2,454 |
| Always lagging behind as % of the total | 96% | 27% | 0% | 0% | 64% |
| | As a Percentage of the Total Number of Municipalities | | | | |
| | Rural | Semi-rural | Semi-urban | Urban | Total |
| Never lagging behind | 0% | 12% | 11% | 5% | 28% |
| Lagging behind in 2010 | 0% | 1% | 0% | 0% | 1% |
| Lagging behind in 2000 | 0% | 0% | 0% | 0% | 0% |
| Lagging behind in 2000 and 2010 | 0% | 2% | 0% | 0% | 2% |
| Lagging behind in 1990 | 1% | 0% | 0% | 0% | 1% |
| Lagging behind in 1990 and 2010 | 0% | 0% | 0% | 0% | 0% |
| Lagging behind in 1990 and 2000 | 1% | 3% | 0% | 0% | 5% |
| Always lagging behind | 57% | 7% | 0% | 0% | 64% |
| Total | 59% | 24% | 11% | 5% | 100% |

Source: Authors' estimates.

TABLE 17 –RELATIVE LAGGING POSITIONS IN HOI FOR ACCESS TO HOUSING SERVICES BY TERRITORY TYPE AND POPULATION, 1990-2000-2010

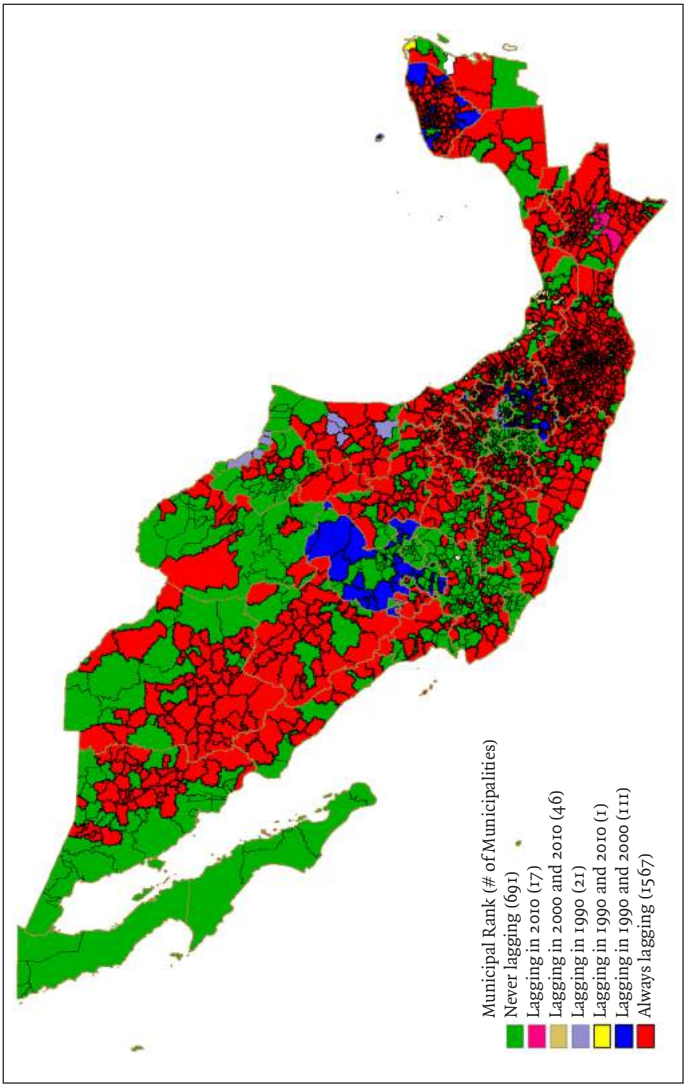
| | Territory Type and Population in 2005 | | | | |
|---|---|---|---|---|---|
| | Rural | Semi-rural | Semi-urban | Urban | Total |
| Never lagging behind | 145,670 | 5,611,235 | 16,242,820 | 55,886,401 | 77,886,126 |
| Lagging behind in 2010 | - | 316,981 | - | - | 316,981 |
| Lagging behind in 2000 | - | - | - | - | - |
| Lagging behind in 2000 and 2010 | - | 796,877 | - | - | 796,877 |
| Lagging behind in 1990 | 134,221 | 119,195 | - | - | 253,416 |
| Lagging behind in 1990 and 2010 | - | 13,744 | - | - | 13,744 |
| Lagging behind in 1990 and 2000 | 452,248 | 985,824 | 501,807 | - | 1,939,879 |
| Always lagging behind | 21,057,465 | 1,453,400 | - | - | 22,510,865 |
| Total | 21,789,604 | 9,297,256 | 16,744,627 | 55,886,401 | 103,717,888 |
| Always lagging behind as % of the total | 97% | 16% | 0% | 0% | 22% |
| | As a Percentage of the Total Population in 2005 | | | | |
| | Rural | Semi-rural | Semi-urban | Urban | Total |
| Never lagging behind | 0% | 5% | 16% | 54% | 75% |
| Lagging behind in 2010 | 0% | 0% | 0% | 0% | 0% |
| Lagging behind in 2000 | 0% | 0% | 0% | 0% | 0% |
| Lagging behind in 2000 and 2010 | 0% | 1% | 0% | 0% | 1% |
| Lagging behind in 1990 | 0% | 0% | 0% | 0% | 0% |
| Lagging behind in 1990 and 2010 | 0% | 0% | 0% | 0% | 0% |
| Lagging behind in 1990 and 2000 | 0% | 1% | 0% | 0% | 2% |
| Always lagging behind | 20% | 1% | 0% | 0% | 22% |
| Total | 21% | 9% | 16% | 54% | 100% |

Source: Authors' estimates.

a predominance of populations living in rural areas (1,286 of a total of 1,455), almost one-third of the municipalities located in semi-rural territories, and only 4% of the semi-urban municipalities (see Table 18). In terms of the country's total population, 21% registered inequality traps.



MAP 9 – RELATIVE LAGGING POSITIONS IN HOI FOR ACCESS HOUSING SERVICES, 1990-2000-2010




Source: Census Data 1990, 2000 and 2010. Authors' estimates.

The disaggregate shows that 82% of the population in rural territories were found to be in a situation of relative lagging in the three periods analyzed, while 28% of the population in semi-rural areas and 3% of the populations in semi-urban areas (see Table 19) were in this same situation.

TABLE 18 - RELATIVE LAGGING POSITIONS IN HOI FOR AGE-APPROPRIATE GRADE PLACEMENT FOR PEOPLE AGED BETWEEN 15 TO 17 BY TERRITORY TYPE AND NUMBER OF MUNICIPALITIES, 1990-2000-2010

| | Territory Type and Number of Municipalities | | | | |
|---|---|---|---|---|---|
| | Rural | Semi-rural | Semi-urban | Urban | Total |
| Never lagging behind | 13 | 299 | 265 | 119 | 696 |
| Lagging behind in 2010 | 0 | 62 | 2 | 0 | 64 |
| Lagging behind in 2000 | 0 | 1 | 0 | 0 | 1 |
| Lagging behind in 2000 and 2010 | 0 | 0 | 0 | 0 | 0 |
| Lagging behind in 1990 | 43 | 2 | 0 | 3 | 48 |
| Lagging behind in 1990 and 2010 | 0 | 0 | 0 | 0 | 0 |
| Lagging behind in 1990 and 2000 | 113 | 48 | 0 | 0 | 161 |
| Always lagging behind | 1,286 | 186 | 12 | 0 | 1,484 |
| Total | 1,455 | 598 | 279 | 122 | 2,454 |
| Always lagging behind as % of the total | 88% | 31% | 4% | 0% | 60% |
| | As a Percentage of the Total Number of Municipalities | | | | |
| | Rural | Semi-rural | Semi-urban | Urban | Total |
| Never lagging behind | 1% | 12% | 11% | 5% | 28% |
| Lagging behind in 2010 | 0% | 3% | 0% | 0% | 3% |
| Lagging behind in 2000 | 0% | 0% | 0% | 0% | 0% |
| Lagging behind in 2000 and 2010 | 0% | 0% | 0% | 0% | 0% |
| Lagging behind in 1990 | 2% | 0% | 0% | 0% | 2% |
| Lagging behind in 1990 and 2010 | 0% | 0% | 0% | 0% | 0% |
| Lagging behind in 1990 and 2000 | 5% | 2% | 0% | 0% | 7% |
| Always lagging behind | 52% | 8% | 0% | 0% | 60% |
| Total | 59% | 24% | 11% | 5% | 100% |

Source: Authors' estimates.

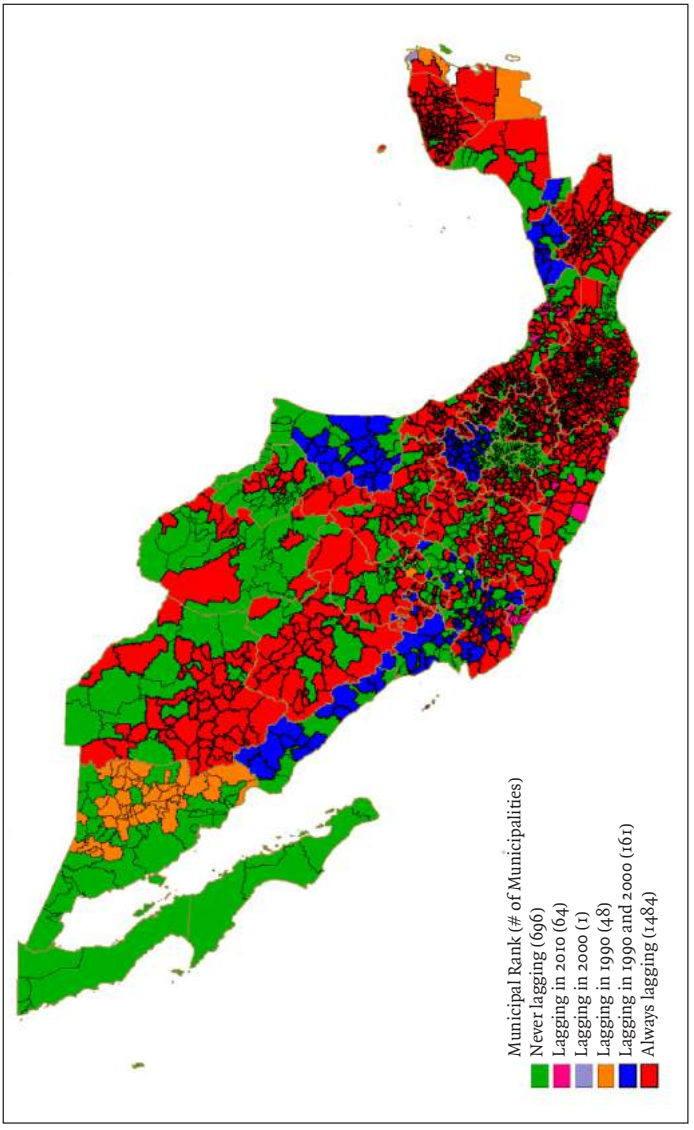
TABLE 19 - RELATIVE LAGS IN THE HOI FOR AGE-APPROPRIATE GRADE PLACEMENT FOR PEOPLE AGED BETWEEN 15 TO 17 BY TERRITORY TYPE AND POPULATION, 1990-2000-2010

| | Territory Type and Population in 2005 | | | | |
|---|---|---|---|---|---|
| | Rural | Semi-rural | Semi-urban | Urban | Total |
| Never lagging behind | 134,221 | 4,917,765 | 16,042,981 | 54,952,443 | 76,047,410 |
| Lagging behind in 2010 | - | 1,099,468 | 199,839 | - | 1,299,307 |
| Lagging behind in 2000 | - | 13,744 | - | - | 13,744 |
| Lagging behind in 2000 and 2010 | - | - | - | - | - |
| Lagging behind in 1990 | 181,529 | 36,789 | - | 933,958 | 1,152,276 |
| Lagging behind in 1990 and 2010 | - | - | - | - | - |
| Lagging behind in 1990 and 2000 | 3,583,296 | 653,294 | - | - | 4,236,590 |
| Always lagging behind | 17,890,558 | 2,576,196 | 501,807 | - | 20,968,561 |
| Total | 21,789,604 | 9,297,256 | 16,744,627 | 55,886,401 | 103,717,888 |
| Always lagging behind as % of the total | 82% | 28% | 3% | 0% | 20% |
| | As a Percentage of the Total Population in 2005 | | | | |
| | Rural | Semi-rural | Semi-urban | Urban | Total |
| Never lagging behind | 0% | 5% | 15% | 53% | 73% |
| Lagging behind in 2010 | 0% | 1% | 0% | 0% | 1% |
| Lagging behind in 2000 | 0% | 0% | 0% | 0% | 0% |
| Lagging behind in 2000 and 2010 | 0% | 0% | 0% | 0% | 0% |
| Lagging behind in 1990 | 0% | 0% | 0% | 1% | 1% |
| Lagging behind in 1990 and 2010 | 0% | 0% | 0% | 0% | 0% |
| Lagging behind in 1990 and 2000 | 3% | 1% | 0% | 0% | 4% |
| Always lagging behind | 17% | 2% | 0% | 0% | 20% |
| Total | 21% | 9% | 16% | 54% | 100% |

Source: Authors' estimates.

Map 10 indicates the spatial distribution of the inequality traps for the case of age-appropriate grade placement. This map shows similar patterns to those found for opportunities previously presented.

MAP 10 – RELATIVE LAGGING POSITIONS IN HOI FOR AGE-APPROPRIATE GRADE PLACEMENT FOR PEOPLE AGED BETWEEN 15 TO 17, 1990-2000-2010




Source: Census Data 1990, 2000 and 2010. Authors' estimates.

## 5. - THE IMPACT OF GEOGRAPHIC LOCATION ON HOI

Both the analysis of the persistence of relative poverty levels and the analysis of the HOI levels numerically and visually reveal something already known by the public and academia: there are areas in Mexico that are in a permanent lagging position. While these are distributed in several states in particular, the situation appears to be chronic in the rural areas of *Oaxaca*, *Chiapas*, *Guerrero*, *Puebla* and *Yucatán* in the south and south-west of the country, as well as in the highland areas of the north.



For the purpose of quantifying the impact of geographic location on HOI, Shapley decompositions were used for the main indicators for the years 2000 and 2010, identifying what percentage of the HOI derives from the geographic location of people's homes. As previously mentioned, this study uses the following geographic characterization: rural areas (population less than 2,500 inhabitants), semi-rural (between 2,500 and 15,000 inhabitants), semi-urban (between 15,000 and 100,000 inhabitants) and urban (more than 100,000 inhabitants).

The following chart shows the changes in the coverage rate for the variables analyzed for the 2000-2010 period. The unequal progress in the indicators on well-being is apparent, with the largest improvements being registered in access to housing services and quality of housing materials and the absence of food poverty. There is a notable reverse in the schooling indicator for age-appropriate grade placement for people between 15 and 17 years of age.

The chart below shows the changes in the HOI between 2000 and 2010, which summarizes the combination of coverage and inequality. The most significant variation is found in the indicator for access to quality housing materials, which has the joint effect of an increase in coverage and a decline in the inequality with which it is distributed within the population. On the other hand, the decrease in coverage as well as an increase in the inequality in the distribution of age-appropriate grade placement for people between 15 and 17 years of age led to a decrease from 53.6 to 44.2 of the HOI for this indicator.

TABLE 20- IMPACT OF GEOGRAPHIC LOCATION ON THE DECOMPOSITION OF THE HOI[10]

| | 2000 | | | | | | |
|---|---|---|---|---|---|---|---|
| | Absence of Food Poverty | Absence of Capabilities Poverty | Absence of Patrimonial Poverty | Belonging to the Middle Class | No Deficiency in Housing Quality | No Deficiency in Housing Services | Age-Appropriate Grade Placement (15-17 years) |
| Coverage (c) | 66.4 | 58.5 | 37.3 | 22.8 | 25.7 | 51.0 | 58.6 |
| Dissimilarity Index (DI) | 20.8 | 24.5 | 33.8 | 42.2 | 34.7 | 29.5 | 8.5 |
| Human Opportunity Index (HOI) | 52.6 | 44.2 | 24.7 | 13.2 | 16.8 | 35.9 | 53.6 |
| Shapley Decomposition, as a % of Total | | | | | | | |
| Variables included in the regression: schooling and occupation of the head of household, two-parent household, number of people between 0 and 17 years, age and gender of child | 77 | 79 | 66 | 85 | 80 | 32 | 70 |
| Variables included in the regression and which refer to the setting in which families live: rural, semi-rural and semi-urban | 23 | 21 | 34 | 15 | 20 | 68 | 30 |
| Disaggregate of the Impacts of Location in the Shapley Decomposition | | | | | | | |
| Rural (<2,500 inhabitants) | 37% | 35% | 26% | 23% | 26% | 58% | 25% |
| Semi-rural (between 2,500 and 15,000) | 1% | 1% | 7% | 3% | 4% | 6% | 2% |
| Semi-urban (between 15,000 and 100,000) | 2% | 1% | 1% | 4% | 2% | 5% | 2% |
| Marginal Impacts from the Probit Model | | | | | | | |
| Rural (<2,500 inhabitants) | -0.295 | -0.267 | -0.085 | -0.003 | -0.075 | -0.629 | -0.031 |
| Semi-rural (between 2,500 and 15,000) | -0.101 | -0.058 | 0.088 | 0.128 | -0.039 | -0.332 | -0.014 |
| Semi-urban (between 15,000 and 100,000) | -0.170 | -0.186 | -0.141 | -0.081 | -0.013 | -0.149 | -0.004 |

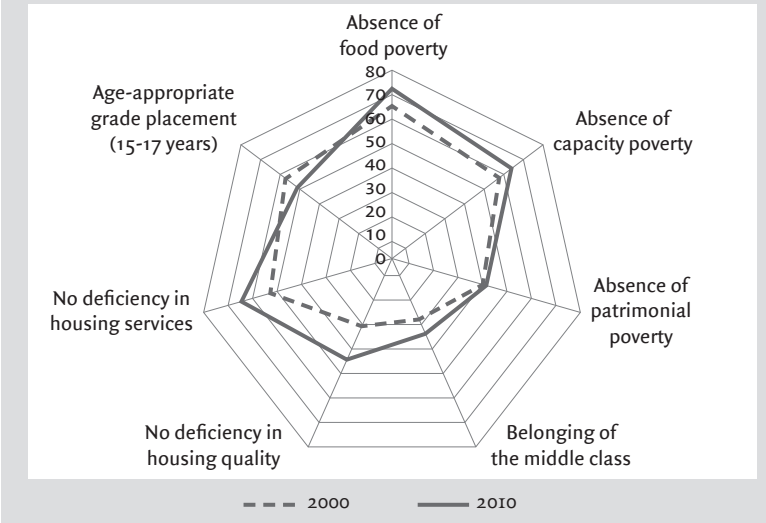
10 The indicators in the first panel of this table (Coverage, Disimiliarity Index and HOI) are not equal to Tables 9 and 10 since these derive from different types of estimates. In this Table, the estimates were made from all of the data at the household level while the indicators in Tables 8 to 11 are simple averages of the values at the state-territory type level.

TABLE 20- IMPACT OF GEOGRAPHIC LOCATION ON THE DECOMPOSITION OF THE HOI (CONTINUE)

| | 2010 | | | | | | |
|---|---|---|---|---|---|---|---|
| | Absence of Food Poverty | Absence of Capabilities Poverty | Absence of Patrimonial Poverty | Belonging to the Middle Class | No Deficiency in Housing Quality | No Deficiency in Housing Services | Age-Appropriate Grade Placement (15-17 years) |
| Coverage (c) | 73.7 | 64.4 | 37.4 | 29.5 | 40.7 | 64.3 | 52.4 |
| Dissimilarity Index (DI) | 15.3 | 19.8 | 34.6 | 40.5 | 24 | 12.9 | 15.7 |
| Human Opportunity Index (HOI) | 62.4 | 51.6 | 24.4 | 17.5 | 30.9 | 56.0 | 44.2 |
| | Shapley Decomposition, as a % of total | | | | | | |
| Variables included in the regression: schooling and occupation of the head of household, two-parent household, number of people between 0 and 17 years, age and gender of child | 71 | 73 | 77 | 73 | 74 | 28 | 76 |
| Variables included in the regression and which refer to the setting in which families live: rural, semi-rural and semi-urban | 29 | 27 | 23 | 27 | 26 | 72 | 24 |
| | Disaggregate of the Impacts of Location in the Shapley Decomposition | | | | | | |
| Rural (<2,500 inhabitants) | 28% | 26% | 19% | 24% | 20% | 61% | 22% |
| Semi-rural (between 2,500 and 15,000) | 1% | 1% | 1% | 3% | 4% | 6% | 2% |
| Semi-urban (between 15,000 and 100,000) | 0% | 1% | 3% | 1% | 1% | 5% | 1% |
| | Marginal Impacts from the Probit Model | | | | | | |
| Rural (<2,500 inhabitants) | -0.159 | -0.155 | -0.060 | -0.252 | -0.125 | -0.623 | -0.074 |
| Semi-rural (between 2,500 and 15,000) | 0.042 | 0.083 | 0.150 | -0.115 | -0.078 | -0.301 | -0.020 |
| Semi-urban (between 15,000 and 100,000) | -0.111 | -0.132 | -0.106 | -0.047 | -0.026 | -0.108 | -0.017 |

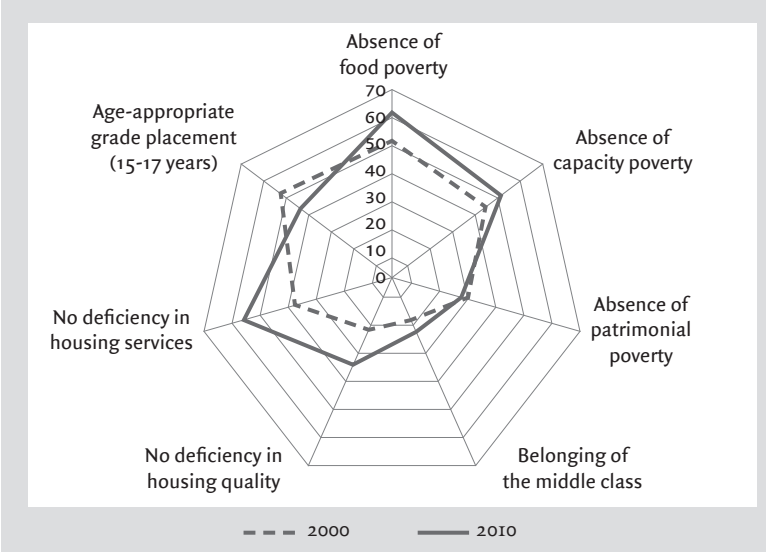
Source: Author's estimates.

CHART 8. – COVERAGE AT AN AGGREGATE LEVEL, 2000 AND 2010




Source: Authors' estimates based on Table 20.

CHART 9. – HUMAN OPPORTUNITY INDEX (HOI) AT AN AGGREGATE LEVEL, 2000 AND 2010




Source: Authors' estimates based on Table 20.

Table 20 indicates the importance of location in the decomposition of the HOI for the variables of absence of poverty, belonging to the middle class and housing quality and housing services. Generally, the variables that reflect location absorbed between 31% (middle class) and 68% (housing services) in 2000. For this same year, as well as for the three poverty indicators considered, the geographic location defined as "rural" proved to have the highest negative impact. The weight of this variable in 2000 in the indicator for the absence of the three types of poverty (food, capabilities and patrimonial) stood at 36%, 35% and 28% respectively; while, in the same year, it was 23% for belonging to the middle class. Rural location had the largest influence with 58%, and this appears in the variable that reflects a household's access to housing services (electricity, water and sanitation). The general pattern of influence in 2010 is similar to that of the year 2000. While the negative influence on well-being due to living in rural settings is reflected in all the indicators analyzed, the influence of access to housing services, followed by access to income above the food poverty line, appears to be the primary problem for inequality.[11]



## 6.-CHARACTERIZATION OF TERRITORIES WITH POVERTY AND OPPORTUNITY TRAPS

Table 21 shows some characteristics (the 2010 average) of two territory types: those with poverty and opportunity equality traps and those that, during the 1990-2010 period, never experienced this situation. This is not an attempt to conduct a causal analysis, but rather

11 The last three lines of the table show the marginal impact of each of the geographic location categories measured by the average value of the variables. Thus, for example, in 2000, the impact of living in a rural area in comparison to living in urban areas implied a 29.6% lower probability of being in a situation of an absence of food poverty, while this impact was 28.3% in 2010. For rural areas, the negative influences on the probability of access to housing services (62.8% in 2000 and 47% in 2010) are the most significant marginal impacts identified.

TABLE 21 –CHARACTERIZATION OF TERRITORIES BY POVERTY AND OPPORTUNITY TRAPS

| | Monetary (Material) Poverty Trap 1990, 2000 and 2010 | | | Inequality of Opportunities Trap (Household not in a Situation of Patrimonial Poverty) | | | Differences between Characteristics of Both Traps |
|---|---|---|---|---|---|---|---|
| Variables (2010) | Always Lagging Behind (a) | Never Lagging Behind (b) | Relation (c)=(b)/(a) | Always Lagging Behind (d) | Never Lagging Behind (e) | Relation (f)=(e)/(d) | (g)=(f)/(c) |
| Population Density (Inhabitants per km²) | 92.87 | 2,720 | 29.3 | 176.57 | 3,690 | 20.9 | 0.71 |
| % of Urban Population (vs. Total) | 30.38 | 85.25 | 2.8 | 47.26 | 91.99 | 1.9 | 0.69 |
| % of Indigenous Population | 42.98 | 2.30 | 0.1 | 18.32 | 1.88 | 0.1 | 1.92 |
| Child Mortality Rate | 30.70 | 13.51 | 0.4 | 23.75 | 12.00 | 0.5 | 1.15 |
| Rate of Adolescent Pregnancy | 58.07 | 41.28 | 0.7 | 48.07 | 40.88 | 0.9 | 1.20 |
| % of Labor Force with at least a Bachelor's Degree | 3.46 | 17.51 | 5.1 | 6.86 | 19.62 | 2.9 | 0.57 |
| % of Recent Immigrants | 3.71 | 19.91 | 5.4 | 6.73 | 23.47 | 3.5 | 0.65 |
| Herfindahl of Sectorial Diversity (*) | 0.57 | 0.35 | 0.6 | 0.46 | 0.34 | 0.7 | 1.17 |
| % of Population Employed in Non-Primary Sectors | 33.32 | 81.37 | 2.4 | 52.46 | 86.03 | 1.6 | 0.67 |
| Per Capita Monthly Expenditures (2010) | 737 | 2,044 | 2.8 | 1,108 | 2,231 | 2.0 | 0.73 |

(*) Herfindahl Index of Sectorial Diversity (economic units by sector).
Source: Authors' estimates.

an analysis of variable correlation. As was expected, there are strong contrasts in practically all the selected dimensions. The population density is more than 20 times larger in territories that are not in lagging positions, as the percentage of urban population is between 1.9 (opportunities) and 2.8 (poverty) times higher. The proportion of the indigenous-language speaking population is 10 times less in the territories in which traps are not registered; the infant mortality rate in these is half or less than that in the territories with traps. Employment dynamics are extremely different. The territories that never experience lagging positions have a high percentage of immigrants (between 3.5 to 5.4 times higher than those in territories with traps), and the territories that are always in a lagging position present a higher concentration of a particular sectorial activity (largely in primary sectors). Lastly, the table shows that the average standard of living measured by the monthly per capita expenditures is extremely disparate: it is almost 2 times larger in the territories without traps than those in which a persistent relative lagging position is recorded. The table, in a certain manner, also enables us to understand the fact that poverty and inequality traps have different characteristics. A comparison of the gaps between variables for the two traps is one way of observing this. Column (g) shows that the gaps for inequality traps generally are approximately 2/3 of the gaps for poverty traps.

## 7. SOCIAL GROUP MOBILITY

This section presents an analysis of mobility patterns at a social group level, defined as a function of level of schooling, age, gender, and geographic location.[12] This analysis reveals to what extent marginal social groups have a provisional record of convergence towards the levels of well-being of better-off groups and the period of time in which this convergence might occur.

12 See Methodological Appendix for more details on the approached used.

The study creates "pseudo individuals" by averaging the level of household income from different cohorts defined by their age group, gender of head of household and municipality in which he/she resides. The following table presents descriptive statistics relating to the cohorts.

The figures indicate some changes in household characteristics during the period studied. More households report having a female head of household; this is repeated for all age groups. The average number of years of schooling, especially among the youngest cohorts, has also increased. The per capita income at an aggregate level indicates stagnation, with some improvement seen only in the 35-39 and 40-44 age groups cohorts. The observed decline in poverty levels between 2000 and 2010 are essentially due to the relative improvement in total income in the population's lowest deciles, which is, above all, reflected in the pronounced decline of food poverty in the period studied.[13] The migration levels and the percentage of the population living in rural areas indicate a level of stability.



### *Estimates of Income Mobility*

The convergence model was estimated by means of a traditional growth equation, in which the income registered in 2010 is in function to the income registered in 2000, plus other controls. This exercise aimed to determine in what measure the average income of each pseudo individual in 2010 can be explained by the income that this group had in 2000, in addition to a series of controls that define each cohort (age group, gender of head of household, etc.) and setting (region, rurality of municipality, etc.).[14]

The mobility estimates were made for six types of combinations of territorial variables for the full sample, with a focus on distinguishing territorial differences in the observed patterns. The following table presents the key results.

13 A detailed analysis of these results is available in Pereira, Soloaga and Tomaselli (2014).

14 See the Methodological Appendix for more details.

TABLE 22. MAIN CHARACTERISTICS FOR EACH COHORT. 2000 AND 2010

| VARIABLE | TOTAL | AGE COHORT, IN 2000 | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | 25 TO 29 | 30 TO 34 | 35 TO 39 | 40 TO 44 | 45 TO 49 | 50 TO 51 | 55 TO 59 | 60 A 64 |
| Total of households, 2000 | 17,765,271 | 2,341,528 | 2,837,769 | 2,904,332 | 2,591,304 | 2,141,058 | 1,857,373 | 1,451,737 | 1,274,441 |
| Total of households, 2010 | 20,229,937 | 3,501,667 | 3,410,493 | 3,127,465 | 2,827,593 | 2,295,094 | 1,916,322 | 1,484,570 | 1,229,218 |
| Age (2000) | 40.7 | 27.11 | 31.98 | 36.99 | 41.85 | 46.91 | 51.84 | 56.88 | 61.79 |
| Age (2010) | 50.7 | 37.00 | 41.88 | 46.93 | 51.88 | 56.85 | 61.87 | 66.87 | 71.82 |
| % of households with a female head of household (2000) | 18.4 | 12 | 13 | 16 | 19 | 20 | 23 | 25 | 29 |
| % of households with a female head of household (2010) | 25 | 19 | 21 | 23 | 26 | 27 | 30 | 32 | 35 |
| Average schooling, in years (2000) | 7.5 | 8.64 | 8.73 | 8.41 | 7.84 | 6.95 | 6.07 | 5.04 | 4.20 |
| Average schooling, in year (2010) | 8.0 | 9.50 | 9.32 | 8.96 | 8.31 | 7.31 | 6.28 | 5.32 | 4.36 |
| Per capita income (2000) | 2,883.3 | 2,640 | 2,724 | 2,849 | 3,069 | 3,140 | 3,100 | 2,957 | 2,774 |
| Per capita income (2010) | 2,904.2 | 2,495 | 2,739 | 3,065 | 3,295 | 3,184 | 3,020 | 2,821 | 2,617 |
| Incidence of food poverty (2000) | 0.17 | 0.15 | 0.17 | 0.18 | 0.17 | 0.17 | 0.17 | 0.17 | 0.18 |

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Incidence of food poverty (2010) | 0.08 | 0.12 | 0.09 | 0.08 | 0.07 | 0.07 | 0.06 | 0.06 | 0.05 |
| Incidence of capacity poverty (2000) | 0.23 | 0.21 | 0.24 | 0.24 | 0.23 | 0.23 | 0.23 | 0.24 | 0.24 |
| Incidence of capacity poverty (2010) | 0.14 | 0.20 | 0.15 | 0.13 | 0.12 | 0.12 | 0.11 | 0.11 | 0.10 |
| Incidence of patrimonial poverty (2000) | 0.44 | 0.46 | 0.47 | 0.46 | 0.42 | 0.42 | 0.42 | 0.44 | 0.45 |
| Incidence of patrimonial poverty (2010) | 0.38 | 0.49 | 0.40 | 0.35 | 0.33 | 0.34 | 0.35 | 0.36 | 0.37 |
| Incidence of middle class (2000) | 0.37 | 0.34 | 0.35 | 0.37 | 0.40 | 0.41 | 0.40 | 0.39 | 0.37 |
| Incidence of middle class (2010) | 0.56 | 0.45 | 0.54 | 0.60 | 0.62 | 0.61 | 0.59 | 0.58 | 0.57 |
| % of indigenous-speaking population (2000) | 0.08 | 0.07 | 0.07 | 0.07 | 0.07 | 0.08 | 0.08 | 0.09 | 0.10 |
| % of indigenous-speaking population (2010) | 0.08 | 0.07 | 0.07 | 0.07 | 0.07 | 0.08 | 0.08 | 0.09 | 0.10 |
| % of migrant population (2000) | 0.27 | 0.24 | 0.26 | 0.27 | 0.28 | 0.29 | 0.30 | 0.29 | 0.28 |
| % of migrant population (2010) | 0.28 | 0.26 | 0.28 | 0.28 | 0.29 | 0.30 | 0.30 | 0.30 | 0.28 |
| % of rural population (2000) | 0.35 | 0.36 | 0.35 | 0.34 | 0.33 | 0.34 | 0.35 | 0.38 | 0.42 |
| % of rural population (2010) | 0.35 | 0.36 | 0.34 | 0.34 | 0.33 | 0.34 | 0.35 | 0.39 | 0.43 |

Source: Authors' estimates based on data from 2000 and 2010 population censuses (INEGI).

TABLE 23. ECONOMETRIC RESULTS
FROM THE GROWTH REGRESSION ON COHORTS

| | Unconditional Convergence | | | Conditional Convergence | | |
|---|---|---|---|---|---|---|
| Dependent variable: log of real per capita household income in 2010 | Model I_NC | Model II-NC | | Model I-C | | Model I-C(*) | |
| **Without TF interactions** | 0.737 | 0 | | 0.94 | *** | | |
| TF 1: Isolated rural | | 0.252 | *** | | | | |
| TF 2 : Rural | | 0.238 | NS | | | 0.481 | *** |
| TF 3: Semi-urban | | 0.265 | NS | | | 0.551 | *** |
| TF 4: Urban | | 0.309 | *** | | | 0.560 | *** |
| TF 5: Urban+ | | 0.277 | NS | | | 0.538 | *** |
| TF 6: Metropolitan | | 0.328 | * | | | 0.525 | *** |
| | | | | | | 0.477 | NS |
| **Fixed effects** | | | | | | | |
| Constant | | | | 1.7721 | *** | 2.718 | *** |
| TF 2 : Rural | | | | | | -0.412 | *** |
| TF 3: Semi-urban | | | | | | -0.444 | *** |
| TF 4: Urban | | | | | | -0.263 | *** |
| TF 5: Urban+ | | | | | | -0.145 | ** |
| TF 6: Metropolitan | | | | | | 0.216 | ** |
| Cohort 2 :30 a 34 | | | | | | 0.053 | * |
| Cohort 3 :35 a 39 | | | | | | 0.105 | * |
| Cohort 4 :40 a 44 | | | | | | 0.119 | NS |
| Cohort 5 :45 a 49 | | | | | | 0.104 | NS |
| Cohort 6 :50 a 51 | | | | | | 0.076 | NS |
| Cohort 7 :55 a 59 | | | | | | 0.051 | NS |
| Cohort 8 :60 a 64 | | | | | | 0.030 | NS |
| **Controls** | | | | | | | |
| Avg age 2000 | | | | 0.0515 | *** | 0.0227 | *** |
| Avg age 2000 sqd | | | | -0.0005 | *** | -0.0001 | NS |
| Avg schooling 2000 | | | | 0.0539 | *** | 0.0531 | NS |
| Pct Indigenous 2000 | | | | -0.0461 | *** | -0.0566 | *** |
| % migrants 2000 | | | | 0.0420 | *** | 0.0515 | *** |
| Sex (Male=1) | | | | 0.0212 | *** | 0.0202 | *** |
| Rural dummy | | | | -0.0711 | *** | -0.0467 | *** |

| **Implied half life**[1] | 23 | | 112 | |
|---|---|---|---|---|
| TF 1: Isolated rural | | 5 | | 9 |
| TF 2 : Rural | | 5 | | 12 |
| TF 3: Semi-urban | | 5 | | 12 |
| TF 4: Urban | | 6 | | 11 |
| TF 5: Urban+ | | 5 | | 11 |
| TF 6: Metropolitan | | 6 | | 9 |
| Controlling for: | | | 0.006 | |
| Dummies for federal entity | NO | NO | NO | YES |
| Dummies for municipalities | NO | YES | NO | NO |
| Fixed effects by cohorts | NO | YES | | YES |
| R2 adjusted | 0.7875 | 0.91 | 0.8304 | 0.8489 |
| Observations | 36025 | 36025 | 36025 | 36025 |

1 Corresponds to the estimate of how many years it would take to reduce the income gap by half.
Source: Authors' estimates.



The table presents the results of models with and without the interaction of geographic variables for the two types of convergence (unconditional and conditional). The models with interactions for each functional territory type enable us to assess whether the level of temporary convergence differs according to the type of setting in which the families live.

Convergence patterns can be seen in all of the regressions; in other words, the poorest groups would present higher growth rates in terms of their income than relatively wealthier groups. Based on these parameters, it can be estimated that it would take between 5 to 6 years in the unconditional model and between 9 to 12 years in the conditional model to reduce the gaps by half. Similar convergence rates can be seen in unconditional models and conditional models incorporating the interactions with the functional territories; the convergence rates in rural territories are similar to those of metropolitan areas and faster than those for the rest of the territories (average life

of 9 years). The estimates show greater dynamism when considering the disaggregation by functional territories in the unconditional and conditional models, as can be observed in the decline in the convergence coefficient when shifting from Model I to Model II in both estimates. Conditioned convergence would seem to indicate the existence of convergence clubs marked by the environment in which people live: clubs of poor territories (where those that are behind converge to the average of the group) and clubs of wealthy territories (where people converge towards relatively higher income levels).



## 8. - DISCUSSION

While the relative lagging position of some geographic areas in Mexico is well known, this analysis has permitted the quantification of the importance of geographic location in key indicators of well-being. It corroborates that the territories identified as being trapped in relatively low levels of well-being in many dimensions demonstrate extremely different characteristics, with a common denominator being their high levels of rurality. Approximately 24% of the Mexican population lives in rural territories, while 14% lives in locations considered semi-rural, which also present higher rates of poverty and inequality traps. The vast majority of the municipalities identified as "always lagging behind" can be attributed to 5 states: *Chiapas*, *Guerrero*, *Puebla* and *Oaxaca*, which are located in the south of the country, and *Veracruz*, which is located on the coast of the Gulf of Mexico. This analysis showed that between 20% and 30% of the impact on inequality of opportunities for people under the age of 18 years in several dimensions (absence of poverty, housing conditions and age-appropriate grade placement) can be traced to a less favorable geographic location, and this situation even exists after controlling for other significant factors (schooling and occupation of head of household, and the age and gender of the person). This percentage jumps to 60% when access to services

available to a household is analyzed. A subsequent descriptive analysis has also enabled us to quantify the enormous differences that exist between the two extremes of the territories studied (those in a situation of poverty and registering inequality traps and those free from a relative lagging position), in terms of human capital and of the availability of employment opportunities, among others. The results of this study can inform the design of public policies, particularly regarding the pressing need to include in them a geographic dimension. The analysis of the income dynamic using the pseudo-panels technique also produced evidence in this sense, finding that people's geographic location in some way determines the speed in which income gaps between relatively poorer and relatively wealthy groups are closed, as well as the levels at which this convergence would occur, which are lower for the poorest groups in society.



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# V
# CONSTRAINTS AND TRAPS AFFECTING TERRITORIAL GROWTH: MUNICIPALITIES OF *SANTA ISABEL CHOLULA* AND *TIANGUISMANALCO* IN THE STATE OF *PUEBLA*, MEXICO

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## INTRODUCTION

Mexico is a country that has low rates of economic growth and a high rate of socio-economic inequality, with very marked regional disparities. In this context, several studies point to the existence of poverty and inequality traps, which are understood to be the circumstances that lead to many regions to remain in a permanent relative lagging position. Nevertheless, while these poverty and inequality traps generally occur in specific geographic areas, some regions have been able to escape this situation in recent years. This document proposes that overcoming these traps, or remaining stagnant within them, should depend on the interaction between political-institutional arrangements and the real issues conditioning economic growth for people living in these territories. The present analysis seeks to identify these traps and explain how they emerge, how they function, and why they exist in certain territories and not in others.

Using the information available from 1990 to 2010 on the group of territories affected by these traps, two municipalities were selected from the state of *Puebla*. These are neighboring municipalities that

share similar socio-economic characteristics (such as the percentage of the population working in agriculture and livestock activities and level of schooling) but that had distinct growth trajectories during the period analyzed. The fieldwork focused on identifying the binding constraints affecting these two municipalities (deficiencies in infrastructure, lack of access to credit, and limitations in human capital, among others), as well as the local institutional arrangements that exist and the roles of local and state level governments. The resulting analysis suggests that the government acts as a pivot that facilitates or restricts development by facilitating or restricting access to information on sources of funding, infrastructure and technical assistance, depending on the socio-economic status of the population.

Within this framework, the analysis corroborated that one of the municipalities (*Santa Isabel Cholula*) circumvented the implicit restrictions in the government's assistance for agricultural production in order to escape the poverty trap. They used existing networks to produce crops that had comparative advantages, making the most of a high demand niche of opportunity for these crops, in a context of greater local economic benefits. To the contrary, the changes in the levels of well-being in the other municipality (*San Juan Tianguismanalco*) were restricted to the income from government-sponsored programs and to a production structure built on the periphery-to-center relationship with the main city of reference for both municipalities (which is the city of *Atlixco*). The existence of extra-municipal infrastructure projects had an effect on both municipalities.

This chapter is organized in the following manner. The first section presents the situation of poverty and growth in Mexico from 1990 to 2010 to serve as a background to briefly analyze the concept of inequality and poverty traps due to the binding constraints to growth and the existing institutional arrangements (second section). The third section presents the selection criteria for the fieldwork. The fourth section explores the territories' poverty rates and recent, typical socio-cultural characteristics. The fifth section provides an assessment of economic growth and some

of the main binding constraints to that growth, while the sixth section summarizes the findings and discusses their implications.

## 1.-THE CONTEXT OF ECONOMIC GROWTH AND POVERTY IN MEXICO, 1990-2012

Mexico's food poverty rates in 2012 were very similar to rates from 20 years earlier The impact of recent economic crises (1995 and 2008) was reflected in the sharp increase in the poverty rates in the subsequent years. The poverty rate in 2012 was six points higher than in 2006, a sign of the vulnerability experienced by a large percentage of the population that could not maintain adequate levels of long-term well-being. It is also important to note that the poverty rate in rural areas, which are home to more than 20% of the country's population, is almost three times higher than that in urban areas. These changes, and the geographic inequalities in the conditions of food poverty, exist in a context of very low growth in per capita gross domestic product (GDP).



Regionally, the highest rates of poverty are found in the southern-southeastern area of the country (mainly in *Chiapas*, *Guerrero*, *Oaxaca*, and *Veracruz*), as well as in the Western Sierra Madre region.

Table 1 displays changes in food poverty rates by municipalities between 1990 and 2010, as well as the frequency and intensity with which the municipalities in Mexico reduced or increased their poverty rates. It shows that over the last 20 years, poverty levels worsened for more than 14 million people, while close to 45% of the population did not undergo significant changes.

Different studies show that Mexico is also one of the most unequal countries in Latin America, with GINI index levels higher than 0.50 (PNUD, 2010) in a context of very low levels of social mobility.[1]

1 Mexico has one of the lowest rates of social mobility when compared with other countries with available data. For a description of the levels and factors that underlie social mobility, see Vélez, Campos and Huerta (2013).

TABLE 1—CHANGES IN THE RATE OF FOOD POVERTY AT A MUNICIPAL LEVEL, 1990-2010

| | Municipalities | | Population | |
|---|---|---|---|---|
| Change in Poverty Rates | Quantity | Percentage of all Municipalities | Total | Percentage of Total Population |
| Reduced by more than 20 points | 116 | 4.7 | 2,265,679 | 2.0 |
| Reduced by 10 to 20 points | 647 | 26.4 | 17,511,724 | 15.6 |
| Reduced by 3 to 10 points | 796 | 32.4 | 28,057,211 | 25.0 |
| No significant change | 508 | 20.7 | 50,257,994 | 44.8 |
| Increased by 3 to 10 points | 240 | 9.8 | 12,000,157 | 10.7 |
| Increased by 10 to 20 points | 119 | 4.9 | 2,044,393 | 1.8 |
| Increased by more than 20 points | 28 | 1.1 | 153,491 | 0.1 |
| Total | 2454 | 100.0 | 112,290,649 | 100.0 |

Source: Compiled by authors based on CONEVAL (2012).



## 2.-POVERTY AND INEQUALITY TRAPS

This study seeks to enhance the understanding of the determinants of localized poverty traps, with the hypothesis that these traps originate from existing political-institutional arrangements (both on a local and on a broader level), as well as the way in which these arrangements are associated with the binding constraints to growth that govern the potential levels of well-being in any region. We posit that overcoming the condition of entrapment in general requires that political-institutional arrangements, which can be rooted in changes in binding constraints, such as new market conditions (Aroca et al., 2013; Bebbington, 2013), be redefined.

Binding constraints to growth are one of the elements used to identify the presence of poverty traps. Hausmann, Rodrik and Velasco (2005) propose an analytical framework for the diagnosis of growth that centers on determining which factors effectively limit growth. The importance of this focus is that it offers a method that goes beyond listing the possible causes of the lack of growth, helping to identify the specific factor (or factors) from a list of possible causes that is most directly related to the lack of growth. This factor is then categorized as a binding constraint. For example, in a setting of low resources, if there is no growth due to the lack of funds available for loans (shown in very high interest rates and/or by the lack of development of activities that require loans), a public policy that promotes activities such as infrastructure improvement as a means to increase growth would make little sense. In summary, Hausmann, Rodrik and Velasco's idea is to clearly identify the bottlenecks to economic growth at a national level. This document addresses it on a municipal level.



Using the approaches of Bebbington and collaborators, as well as Hausmann, Rodrik and Velasco, which was adapted for smaller geographical areas, this study analyzes the historical construction of access to financial resources, human capital, infrastructure and other factors that are important for growth (or the lack thereof) in the regions analyzed, as well as the importance of this access to recent economic development. This study also observes the conditions of marginality in order to identify the people living in those conditions and by what processes. The classic vision of marginality is used, as defined by Lomnitz (1975/2003), i.e. the absence of a structured economic role within the system of industrial production. Similar to the chapters on Peru and Chile in this publication, the hypothesis is that the territories remain in lagging positions due to the existence of *binding constraints to growth* as well as *conditions that marginalize* certain populations within the territory.

## 3.-SELECTION CRITERIA FOR THE FIELDWORK CARRIED OUT IN THE STATE OF *PUEBLA* (MUNICIPALITIES OF *SANTA ISABEL CHOLULA* AND *SAN JUAN TIANGUISMANALCO*)



Pereira and Soloaga (2014) found a well-defined geographic component to the dynamic of poverty. The study uses municipal poverty estimates from the National Council for the Evaluation of Social Development- CONEVAL [*Consejo Nacional de Evaluación de la Política de Desarrollo Social*] for 1990, 2000 and 2010 in order to group municipalities into functional territories based on the characteristics of their labor market.[2] Classifying these functional territories by their relative poverty rates shows that almost 100% of the functional territories that were lagging behind[3] during the three years analyzed were *isolated rural areas* (with scarce participation in labor markets and fewer than 2,500 inhabitants in their population centers) or *semi-rural areas* (with limited participation in labor markets and 2,500 to 22,500 inhabitants in their population centers). The study also identified 32 functional territories that in 2010 ceased to lag behind, evidenced both in 1990 and in 2000 .

Nine of the territories that improved their relative position in 2010 are in the state of *Puebla*. A more detailed analysis on a municipal level made it possible to identify certain dynamics in the municipalities of *Santa Isabel Cholula* and *Tianguismanalco*, thereby motivating the decision to do fieldwork in these areas. As detailed below, labor market patterns in these municipalities changed between 2000 and 2010, and while the municipality of *Santa Isabel Cholula* became more autonomous and its poverty rate decreased compared to 2010, the municipality of *Tianguismanalco* became part of the functional territory with a center in *Atlixco*, but it entered a relative lagging position in 2000 and 2010. Both municipalities belong to the same political-administrative

2 For a description of the concept and methodology of functional territories, see Berdegué et al., (2011).

3 A functional territory is considered to be lagging behind in a given year if its poverty rate exceeds one-half of a standard deviation above the median rate for that year.

unit (the state of *Puebla*) and are very similar in terms of population size and average years of schooling.

## 4.- THE SOCIO-ECONOMIC CONTEXT OF THE MUNICIPALITIES ANALYZED

### *4.1 Context*

The state of *Puebla* is located in the central-eastern part of Mexico. To the east, it borders with the state of *Veracruz*, to the west with the states of *Hidalgo*, *México*, *Tlaxcala* and *Morelos*, and to the south with the states of *Oaxaca* and *Guerrero*. *Puebla* has extremely rugged terrain and lacks direct access to the ocean. More than five million people live in *Puebla*, making it the country's fifth most populated state. The state capital is *Puebla*, the fourth largest Mexican city when ranked by number of inhabitants. It is also a state with many contrasts. On one hand, *Puebla*, the capital, has the highest percentage of impoverished population among Mexico's most important cities. On the other hand, almost half of the state's GDP is generated by the manufacturing industry, particularly the automobile industry, led by the Volkswagen plant's strong export activities (exports to the United States account for 46% of its production).



Historically, the state of *Puebla* has benefitted from its strategic location. While close to Mexico's principal commercial port, *Veracruz*, it is located at a sufficiently high altitude (on average, 2,160 meters above sea level) so as to maintain a healthy environment, while the coastal regions were a source of epidemics during the colonial period. Among the state's symbols are its snow-capped volcanoes, *Popocatéptl* and *Iztaccíhuatl*, whose melting gives origin to the natural springs for four of Mexico's most important hydraulic regions. The *Atoyac* River is the state's most important river, crossing through the city of *Puebla*. The *Balsas* River basin covers eight states, including *Puebla*, leading to the upper aquifer of *Atoyac* that passes through 50 of *Tlaxcala's* municipalities and 32 municipalities from the state of *Puebla*, including *Santa Isabel Cholula* and *Tianguismanalco*.

Many of the natural springs and the *Atoyac* River are included among Mexico's most contaminated water sources, which has a profound effect on the *Valsequillo* dam, which provides water to the eastern area of the capital and the state. This has led to the development of new alternatives for bringing water to the capital. *Puebla* has a rich and profound history that also depicts its contradictions. Those arriving in New Spain saw *Puebla* as their natural destination, escaping from the epidemics in neighboring *Veracruz*. This led to the emergence of a creole state in which Dominicans, Augustinians and Franciscans collaborated to establish a city where the characteristic wealth of colonial architecture and convent-style cooking always rivaled the low esteem imposed on the ethnic groups that have existed from time immemorial, mainly to the west of the capital. The three *Cholulas* (*San Andrés, San Pedro* and *Santa Isabel*) are located to the west, together comprising what is arguably the continent's oldest indigenous area.

In the state's western region, the municipalities of *San Juan Tianguismanalco* and *Santa Isabel Cholula* were chosen. These two municipalities are geographically close to one another, but, as indicated above, there have been noticeable differences in the dynamics of their poverty and income levels over the past two decades. *Tianguismanalco* (with a population of 9,741 in 2010) entered into a "poverty trap" situation after 2000, while *Santa Isabel Cholula* (with a population of 8,034 in 2010) began showing significant improvements in 2000. These municipalities are located within a 15 to 20-kilometer radius from the city of *Puebla*.

In the past, both municipalities had or have had a close relationship with the municipality of *Atlixco* (with a population of 124,810 in 2010). As indicated in Berdegué et al., (2013), the relationship between the place of residence and workplace was used to delimit functional territories. In this regard, the workplace commuting patterns in the selected municipalities underwent changes. In 2000, *Santa Isabel Cholula* (together with the municipalities of *Ocoyucan*, *San Andrés Cholula* and *San Gregorio Atzompa*) formed a functional territory centered in *At-*

TABLE 2 - POVERTY RATE AND PER CAPITA INCOME. *SANTA ISABEL CHOLULA, SAN JUAN TIANGUISMANALCO* AND NATIONAL AVERAGE, 1990, 2000 AND 2010

| | Food Poverty | | | Poverty Gap | | | Asset Poverty | | | Capabilities Poverty | | | Per capita income, as % of National Average | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1990 | 2000 | 2010 | 1990 | 2000 | 2010 | 1990 | 2000 | 2010 | 1990 | 2000 | 2010 | 1990 | 2000 | 2010 |
| Santa Isabel Cholula | 0.61 | 0.42 | 0.37 | 0.23 | 0.14 | 0.11 | 0.88 | 0.76 | 0.76 | 0.71 | 0.53 | 0.49 | 36% | 43% | 48% |
| San Juan Tianguismanalco | 0.25 | 0.55 | 0.51 | 0.07 | 0.20 | 0.17 | 0.60 | 0.85 | 0.85 | 0.34 | 0.65 | 0.62 | 68% | 35% | 39% |
| Benchmark (*) | 0.45 | 0.46 | 0.38 | 0.18 | 0.19 | 0.15 | 0.54 | 0.55 | 0.48 | 0.75 | 0.75 | 0.72 | - | - | - |
| Diferences | | | | | | | | | | | | | | | |
| Santa Isabel minus San Juan | 0.36 | -0.12 | -0.13 | 0.16 | -0.06 | -0.06 | 0.28 | -0.09 | -0.09 | 0.36 | -0.12 | -0.14 | | | |
| Santa Isabel minus Benchmark | 0.16 | -0.04 | -0.01 | 0.06 | -0.05 | -0.03 | 0.34 | 0.22 | 0.28 | -0.04 | -0.22 | -0.24 | | | |
| San Juan minus Benchmark | -0.20 | 0.09 | 0.12 | -0.11 | 0.01 | 0.02 | 0.06 | 0.31 | 0.37 | -0.41 | -0.10 | -0.10 | | | |

(*)The benchmark is defined as the national poverty rate plus one standard deviation.
Source: Compiled by authors based on CONEVAL (2012).

*lixco*, while *Tianguismanalco* appeared to be an isolated functional territory. By the year 2010, commuting patterns changed to such an extent that *Atlixco* now receives workers from *Tianguismanalco*, *San Andrés Cholula* receives workers from *Ocoyucan* and *San Gregorio Atzompa*, while most of *Santa Isabel Cholula*'s population lives and works within that municipality (see Table 3).

TABLE 3 – TERRITORIAL DYNAMICS IN THE SELECTED MUNICIPALITIES



| Municipality | Functional Territory's Center in 2000: | Functional Territory's Center in 2010: |
|---|---|---|
| Atlixco | Atlixco | Atlixco |
| Ocoyucan | Atlixco | San Andrés Cholula |
| San Andrés Cholula | Atlixco | San Andrés Cholula |
| San Gregorio Atzompa | Atlixco | San Andrés Cholula |
| Santa Isabel Cholula | Atlixco | Santa Isabel Cholula |
| Tianguismanalco | Tianguismanalco | Atlixco |

NB: In 2000, the majority of the population of *Tianguismanalco* lived and worked within the municipality.

The employment profile shows that more than two thirds of the population of these municipalities worked in agriculture in the year 2000, while in 2010, the decrease in employment in this sector was most accentuated in *Tianguismanalco* (see Table 4 and Graph 1).

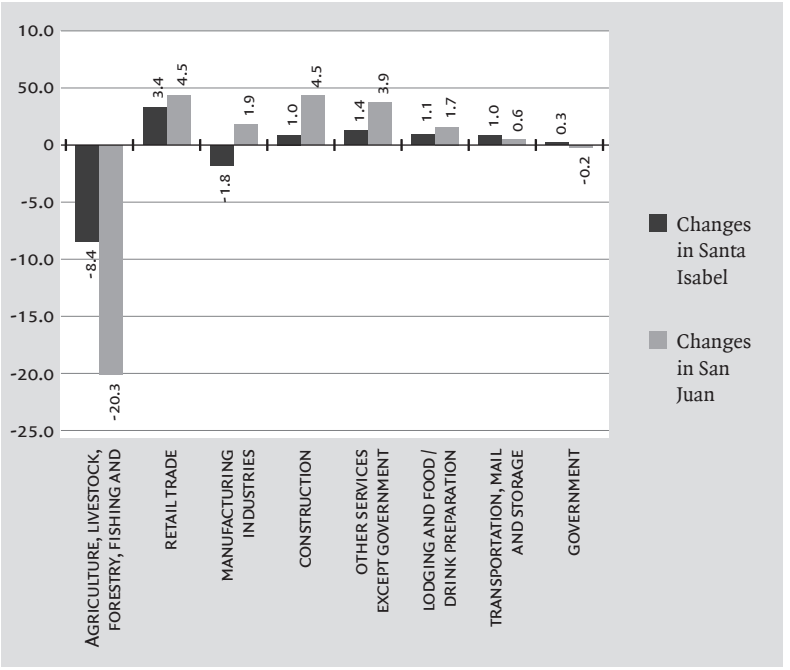
> "*The countryside... has gotten worse because there is no longer a demand; inputs are expensive and the economic crisis badly affected the flower sector. About five years ago, there was a distributor* 'La Joya' *that managed exports [of flowers] to other countries, principally to the United States, but it shut down*" (Aurelio Jorge Hurtado Morales, *Tianguismanalco*, community member and church elder).

TABLE 4 – EMPLOYMENT PROFILES. *SANTA ISABEL CHOLULA* AND *SAN JUAN TIANGUISMANALCO*, BY MAIN OCCUPATIONAL SECTORS, 2000 AND 2010

| Sector in which person works | 2000 | | | | | | 2010 | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | State of Puebla | | Municipality of Santa Isabel | | Municipality of San Juan | | State of Puebla | | Municipality of Santa Isabel | | Municipality of San Juan | |
| | # workers | % total | # workers | % total | # workers | % total | # workers | % total | # workers | % total | # workers | % total |
| 11 Agriculture, livestock, forestry use, fishing, hunting | 421,477 | 27.7 | 1,498 | 70.6 | 1,834 | 73.3 | 417,566 | 22.0 | 1,743 | 62.2 | 1,722 | 53.1 |
| 31-33 Manufacturing industries | 324,349 | 21.4 | 191 | 9.0 | 138 | 5.5 | 323,235 | 17.0 | 203 | 7.2 | 240 | 7.4 |
| 46 Retail trade | 180,867 | 11.9 | 178 | 8.4 | 137 | 5.5 | 280,269 | 14.8 | 331 | 11.8 | 324 | 10.0 |
| 23 Construction | 118,675 | 7.8 | 83 | 3.9 | 107 | 4.3 | 179,898 | 9.5 | 138 | 4.9 | 284 | 8.8 |
| 81 Other services, except government activities | 111,258 | 7.3 | 58 | 2.7 | 69 | 2.8 | 154,884 | 8.2 | 115 | 4.1 | 216 | 6.7 |
| 93 Government activities | 41,927 | 2.8 | 23 | 1.1 | 41 | 1.6 | 57,974 | 3.1 | 38 | 1.4 | 48 | 1.5 |
| 48-49 Transportation, mail and storage | 53,933 | 3.6 | 22 | 1.0 | 32 | 1.3 | 66,255 | 3.5 | 56 | 2.0 | 61 | 1.9 |
| 72 Temporary lodging, food and beverage preparation | 40,214 | 2.7 | 22 | 1.0 | 59 | 2.4 | 77,379 | 4.1 | 60 | 2.1 | 130 | 4.0 |
| Other | 226,886 | 14.9 | 47 | 2.2 | 84 | 3.4 | 340,162 | 17.9 | 119 | 4.2 | 219 | 6.7 |
| TOTAL | 1,519,586 | | 2,122 | | 2,501 | | 1,897,622 | | 2,803 | | 3,244 | |

Source: Compiled by authors based on census data.

GRAPH 1 – CHANGES IN EMPLOYMENT, PERCENTAGES BY SECTOR. 2010-2000




Source: Compiled by authors based on 2000 and 2010 census data.



Agriculture is an important activity in both municipalities. Each day more than 1,500 tons of vegetables are sent from this region (which includes other municipalities) to be sold in Mexico City. Within the region, in addition to the notably impoverished majority, there are also prosperous producers and migrants, although the rates of migration to the United States that had increased during the 1990's, have remained constant over the past 10 years. This region plays an important role in establishing *Puebla* as the country's main vegetable producing state.

In the municipality of *Tianguismanalco*, flower growing is the main agricultural activity, principally comprised of traditional, open-air production. With crops such as baby's breath (*gypsocphila*), honeysuckle

(*caprifoliaceae*), snap dragon (*antirrhinummajus*), gladioli, yellow marigold (*cempaxúchitl*), and statice (*limoniumsinuatum*), this is the largest center for open-air flower production in the country. This speaks of the area's productive potential as well as of the preeminence of a traditional crop that is harvested almost on its own, using the land's natural fertility and the high quality water coming from the melting snowcaps of the *Popocatépetl* volcano. Over the past decade, there has also been a more limited production of flowers such as gerberas, golden root (*rhodiolarosea*) and lisianthus. The most important food crops produced include avocado (whose origin can be traced to this area), green tomatoes, cucumber, bell peppers, amaranth, chia, cabbage, tomatoes and chilies.



People in this municipality have a range of occupations. The capital, *San Juan Tianguismanalco*, is an important flower producer, while *San Pedro Atlixco* produces mostly corn and beans, and equal amounts of flowers and corn/beans are cultivated in *San Martín*. *San Francisco Buenavista* has greenhouses and so-called artificial micro-tunnels, a method of controlled crop management used for vegetable growing. *San Juan Tianguismanalco* has about 4 hectares of greenhouses. The different requirements for each crop play an important role. Avocado production can entail an investment of up to MXN $10,000 per hectare (about US $800), with a high return rate due to exports to the United States. Conversely, traditional corn or beans production costs MXN $300 per hectare and open-air flower growing costs MXN $150 per hectare. There is considerable social stratification in the countryside with landless agricultural workers producing and selling open-air produced flowers directly to consumers, while large-scale producers sell vegetables, avocados or greenhouse flowers. The Communal Government of *San Baltazar Atlimeyeya* has the largest rainbow trout fish farm in the country. With production limited to 1 ton per day, the fish farm had been one of the largest in the world during the 1990's, but its profits decreased significantly due to the import barriers imposed by the US after September 11, 2001. A small portion is still exported, but most is destined for the domestic market where it competes with

imports from China. In addition to rainbow trout, salmon trout is also available, but it shares the same characteristics of serving a predominantly local market that is not entirely familiar with its consumption.

> "*Texas was our main consumer, paying US $19.75 a pound; it was a very good time for us. However after the 9/11 attacks, this dropped off [...] to the extent that staff had to be dismissed*" (Alejandro Concha Martínez, General Manager of the *Xouilin* Fish Farm).



Vegetable production is the main-focus in the municipality of *Santa Isabel Cholula*. Growers insist that they have "very good land where anything can grow", which is reflected in the high levels of production of products such as onions, tomatoes, potatoes, squash, and cilantro, which are mainly sent to the major market of Mexico City. Sorghum and amaranth are other high profit products from the area. The fieldwork revealed that many producers decided against enrolling in the PROCAMPO program (a direct, per-hectare subsidies program that emerged with the economic opening of the North American Free Trade Agreement in the mid-1990's) due to the program's explicit requirement of growing basic grains (principally corn and beans). This requirement continued under the current major government assistance fund for farmers today, PROAGRO.[4] However, despite the name change, the program continues to have highly bureaucratic requirements that the majority of growers are unable to fulfill, as if the intention was to avoid giving assistance.

> "*One day we went to the registration window, just for a piece of paper that they did even not give to us, and the woman said that [the programs] were created in order to not give us support. Without the permit, without that*

4 PROAGRO's rules of operation establish two types of incentives: a) up to 50% of the value of the production project, with a cap of MXN $10 million; b) up to 30% of the total value of the project, covering up to MXN $30 million. There are no limits to the type of production in either of the cases, although clearly they cater to industrial farming production.

*piece of paper, they wouldn't give us the aid, in spite of the administrative paperwork that had taken a year to complete. So, we left. Imagine all the money spent on travelling there, think of the transportation costs*" (Merced Sánchez, an avocado grower in *San Baltazar Altimeyeya*, Communal Government of *Tianguismanalco*).

"*Government assistance is null or scarce. The bureaucratic processes are very slow and there are a lot of requirements*" (Clemente Aguilar, council member in charge of agriculture in the *Tianguismanalco* municipal government).



Even those who received some level of assistance report that it was not easy: "The government gives support, but it always puts obstacles in our way. I received assistance, but you have to struggle to get it" (Nicolás Morales Flores, a livestock farmer in *San Baltazar Atlimeyaya*, *Tianguismanalco*).

In the practice, the production of basic grains limited people to produce for self-consumption. An important change in income occurred in the mid-1990s when this generation of growers discovered that the area's development depended on vegetable production.

*Santa Isabel* is also very conservative in terms of its community profile; its inhabitants report that, until very recently, everything was decided through public assemblies. Every public decision required consultation in the *plazas*, and each week people gave money for different purposes.

Regarding the connectivity between both municipalities, *Tianguismanalco* is practically a final destination (it is not a passage between cities; a two lane highway leads from *Tianguismanalco* to *Metepec*, and from there to *Atlixco*), while *Santa Isabel* is 3 kilometers from the highway that connects *Atlixco* and *Puebla*. Paradoxically, this enables the *Tianguismanalco* elite to set up their lives in *Atlixco*, where they have their homes, they educate their children, and they buy and sell. Conversely, the fact that there is better access to *Atlixco* and *Puebla* enables the *Santa Isabel* elite to remain there. This explains, at least partially, the information

regarding daily commuting shown earlier, highlighting how *Tianguismanalco* is a place from which people travel to *Atlixco*, whereas *Santa Isabel* is a place to which people from neighboring populations travel.

### *4.2 Sources of Information*

In addition to the information found in official records, the study used another 37 in-depth interviews with key informants, some of which were with the same informant at two successive times.[5] Examining documentation and secondary information made it possible to contrast pre and ex-post data with the information provided by interviewees. These interviewees are leaders/local actors, including people who belong to:



- Municipal government, elected authorities
- Chambers of commerce
- Growers' organizations
- Farmer co-operatives
- NGO's on a territorial and regional level, as well as from unions and other groups
- Diocesan/Parish – social team; Bishop (from the region) and priest (territorial level)

The interviews lasted one to two hours each, and they took place between March and May 2014. The techniques used were semi-structured and included life history interviews. The focal point was to ask about how people experienced inequality, understood as one of the binding constraints to growth, adapting Hausmann, Rodrik and Velasco's proposed dimensions to encompass a local level. Since persistent inequality traps prevent the upward mobility of impoverished populations and the downward mobility of the wealthy, a portion of the interviews focused on exploring this situation from the subjects' perspective on these processes of mobility and inequality. The infor-

5 The profile of interviewees is detailed in the Appendix.

mation was obtained in an inductive manner, but using the referential framework of Hausmann, Rodrik and Velasco. This is different from presenting the referential framework and using it to guide an interview in a deductive manner, as occurs with a questionnaire. Research began with key informants, groups of community (*ejido*) members, and majordomos; the group grew using the snowball technique in order to reach theoretical saturation. A participant-observer approach was utilized to gain an in-depth understanding of territorial dynamics, such as the meanings of community actions, and included participation in community celebrations such as the day of *San Isidro Labrador* (May 15).



Inductive techniques made it possible to construct an agenda to understand the meanings of:

- The binding constraints to growth (BCG) that exist in the territory, and/or the BCG that have been overcome.
- The dimensions of marginalization that exist and/or have been overcome in the territory.
- The political, social and institutional factors that sustain those dimensions and conditions, and therefore help to explain the poverty and inequality traps in the selected territories.

## 5.-BINDING CONSTRAINTS TO GROWTH AND SOCIO-INSTITUTIONAL ARRANGEMENTS TO OVERCOME POVERTY AND INEQUALITY TRAPS

This section describes the productive processes and the binding constraints to growth within those processes. As indicated earlier, the initial exploratory framework was an adaptation to a municipal level of several of the topics proposed by Hausmann, Rodrik and Velasco (2005) at a national level. In particular, because of an initial prospection, icebreakers for the interviews explored the existence or lack thereof of funding, the availability of human and technical resources, and the infrastructure needs of the territories. Transversally, the role

that different institutional dimensions (government and local organizations) play in the establishment, perpetuation or modification of inequality and poverty traps was also analyzed. From the interviews, three additional subjects emerged. "Self-discovering"[6] activities, as well as the role of international migration were inherent to the dynamics of both municipalities. Issues also emerged with regard to decisions taken at a state government level, in which these populations lack participation, such as problems regarding property rights over lands that would be vulnerable to the construction of a road (*Tianguismanalco*) and a gas pipeline (*Santa Isabel Cholula*).[7]



The main binding constraints to growth in these municipalities were identified from these lines of analysis, as well as the processes of overcoming the traps to poverty and inequality. These restrictions and processes were classified into seven groups: 1) access to funding; 2) access to government programs and human capital; 3) migration, 4) infrastructure; 5) property rights; 6) self-discovery activities; and, 7) inequality and marginalization. Each one is detailed below.

### *5.1. Access to Funding*

In terms of access to funding, it seems that there are two binding constraints to growth, depending on whether it is access to public or private resources. In the case of private resources, there seems to be a problem of mistrust that makes it appear more beneficial to use sources that do not require collective behavior. For example, *Caja Popular*, a financial institution, looks better than other types of financing, such as that offered by the *Compartamos* bank, which offers solidarity group lending.

In terms of government funding, a variety of restrictions made access difficult for beneficiaries. The Ministry of Agriculture's regula-

6 The terminology of Hausmann and Rodrik (2003) defines "self-discovery" as the process by which countries find or generate their comparative advantages. As examples, they mention the cases of floriculture in Colombia and Ecuador, as well as electronics in Korea.

7 Hausmann, Rodrik y Velazco (2005) indicate that questioning property rights, due to the dangers of expropriation of assets as well as the benefits derived from their exploitation, can inhibit investment and generate lower levels of growth.

tions demand that growers present proof of land ownership. A recent change in the law centralizes property certification services at a municipal level, whereas these had previously been available in the communities where people lived. This created an important increase in the cost of doing the paperwork. Growers on the lower end of the socioeconomic spectrum, who are unable to show land titles, are then excluded from the programs to support growers.

> "*It's problematic if you don't have all of the documentation. There are rules and requirements in order to be deemed eligible for the programs, and they do not fulfill all of the requirements. For example, for a project for women, proof of ownership is required and the women in these municipalities do not have land titles as the men have them. The habits and customs in this area are very deeply rooted [...]*" (Rocío García Olmedo, Federal Member of Congress for the XI District in the Municipal Capital of *Atlixco*).
> "*Regarding the requirements, they ask for the papers that show you are the owner, which, as the result of a problem, we don't have. We know who owns each plot of land, but not officially*" (Artemio Morales Cortés, president of the Communal Government of *San Baltazar Atlimeyaya*, *Tianguismanalco*).
> "*In order to do any paperwork, they request land titles, and we don't have them. And the [State] official doesn't do anything; they change the communal representatives, and they are paid by the government, but they don't do anything, they only bought pick-up trucks: they ate well and went drinking and left the people on their own*" (Merced Sánchez, *San Pedro Atlixco*, *Tianguismanalco*).



### 5.2. *Access to Government Programs and Human Capital*

It is important to note the obstacles to accessing public resources. The analysis of the cases of *Procampo*/*Proagro*, as well as the program to mechanize agricultural land, show how financial assistance programs that should facilitate the growth of the agricultural sector seem disassociated from the needs of local growers. Those able to get beyond

these restrictions do so in two manners: i) they avoid the government and develop their own mechanisms to access information, and establish networks and access to funding, which occurs more in *Santa Isabel* than in *Tianguismanalco*; or, ii) they are part of the political elites that benefit from public policy.

> *"There's PROCAMPO but we aren't part of this program as it would have forced us to plant corn and beans; assistance is conditioned. We have always grown vegetables"* (Isidro Flores Ramírez. farmer of flowers, vegetables and apples in *Santa Isabel Cholula*).
>
> *"There are people who take advantage of this, they are given OPPORTUNIDADES* [a conditional cash transfer program] *and PROCAMPO, and they do not use it for agriculture, they do not do the work; intermediaries shouldn't exist, assistance should be direct, and without such high interest rates for tractors and fertilizer. They should give advice to the farmers because the farmlands can be productive"* (Merced Sánchez, avocado grower from the Communal Government in *San Pedro Atlixco, Tianguismanalco*).



Although, in principle, there is unrestricted access to diverse government assistance programs for production and/or technical training, low schooling levels limits participation. Nevertheless, *Santa Isabel* made more use of networks with increased human capital in order to fulfill the requirements to access public programs.

The state of *Puebla* launched an agro-mechanization program through the provision of motorcycle-tractors. These are 15-horsepower vehicles capable of plowing to a depth of up to 10 centimeters. More than four thousand motorcycle-tractors were provided throughout the state. Farmers' organizations explained when the program was first opened that *Puebla*'s soil conditions are unfit for using motorcycle-tractors.

> *"Motorcycle tractors were given out in this area. And they asked a public official: "When did we ever ask for these machines which are of no use to us?*

*We need tractors. Bring us what we need*" (Lucio Madrid, grower and President of the Technical Committee on Subterranean Water at the *Atoyac* River Basin).

There are very low levels of schooling in these territories. Often, even municipal presidencies lack people trained to carry out their functions.

*"There is a lack of professionals. We are in a difficult situation, but if they provide us with examples to follow, we can do the same thing in our towns. There are agronomists for agriculture, there are teachers in education, but federal and state governments fill the vacancies with people that don't meet the profile*" (Artemio García Núñez, mayor of *Tianguismanalco*, *Puebla*).



To overcome this restriction, locals often seek the support of federal and local legislators to implement public programs, hiring advisors capable of dealing with their requests. This creates an asymmetric situation in which, depending on the circumstances, political connections can become a decisive factor in gaining access to certain programs. One example that came out of the interviews, which highlighted the importance of having both human capital and political relations, was the case of apple tree plantations in *Santa Isabel Cholula*. Fifteen thousand apple trees were obtained through a federal program, but this led to technical complications since this was an entirely new crop in the region. Instead of using local technical training, producers resolved this by seeking support from their family networks in *Chihuahua*, more than 1,000 kilometers away from *Puebla*.

*"A Dutch man came to see our lands, and he said "your lands are good" [...] The apple trees, for example, the man who sold it to us came and was surprised because the plants should produce apples in 3 years, and we are going to harvest them in only a year [...] My brother went to see them at* González Ortega, *and they had already put up the shade nets for weather*

*protection. We'll see, I have some friends who grow apples and they are already covering the apple trees*" (Isidro Flores, a grower and brother of the former mayor of *Santa Isabel Cholula*).

Similar comments were heard for the case of amaranth production (networks in the state of *Morelos*) and avocado crops (networks in the state of *Guerrero* and California).

"*We brought in a greenhouse specialist from Uruapan. [...] we brought him in and got the land, and he knows how to work it, and it is now producing plants which we help sell. However, it is goes far beyond this. Our idea is to spread the word, encourage other people to make this an avocado growing area*" (Evodio Gallardo, leader of avocado growers).



### *5.3 Migration*

The characteristics of migration processes (in terms of domestic or international migration) are linked to overcoming individual poverty traps, either through direct investment using remittances from migrants, or the return of the migrants themselves, or through different global outlooks. In particular, individual self-improvement processes to overcome poverty traps only seem to occur when migrants return with a different point of view coupled with the resources to invest or social networks to exploit. If migrants remain in the United States, as most often occurs in the case of *Tianguismanalco* more so than in *Santa Isabel*, those self-improvement processes do not occur. The elements gathered in the fieldwork do not allow for an exhaustive understanding of why migration processes differ in these municipalities; nevertheless, the fact that the differing quality of roadways influences where the elite live in each location (*Santa Isabel*'s elite mostly live there, while those from *Tianguismanalco* live in the functional territory's center, *Atlixco*) can help to understand the different migrant return rates to each area.

Particularly in the case of *Tianguismanalco*, people often feel strongly that personal development requires temporary migration to

the United States for a variety of reasons. At first, it has to do with a specific objective, such as building one's house. "Here you can see big and pretty houses that belong to people who send money from the United States"; however, it also has to do with different global outlooks. Until very recently, it was fairly common for migrants to return every now and then, invest in the region, spend their money and leave again. The Mexican workers' perspective of migration as a temporary process is well documented.



> "*We farmers have always worked the land; those who migrated from here never built anything and those who emigrated have their nice houses. They go to Mexico City, to the United States. This is noticeable in the houses, those who leave have nice houses; those like us who haven't migrated have humble homes. They have a different perspective on things*" (Merced Sánchez, an avocado grower from the Communal Government of *San Baltazar Atlimeyaya, Tianguismanalco*).
>
> "*My mother was a washer woman and she went to the river, as there was no electricity or running water, and my father worked in the fields- There were eight of us, three sisters and five brothers. I have two sons in Los Ángeles, another daughter in Indiana, my wife's son is in New York and two here at the university: one is studying Business Administration and the other Accounting*" (Evodio Gallardo, a leading avocado grower).

A business person, who, after working as a mason in Mexico City, emigrated to California and returned to take advantage of the demand for flowers in the capital city, is among the cases of successful economic outcomes of migration. This led him to study floral design and to offer flower-design services in the markets of *Atlixco*, *Puebla* and Mexico City. Today he is thought to be the only prosperous person who still lives in *Tianguismanalco*. The people from *Tianguismanalco* emigrate and send money from wherever they are, or when they can, they move to *Atlixco*.

### 5.4 *Infrastructure*

Three factors related to infrastructure were identified: i) access to highways; ii) internal transportation; and, iii) connectivity between these municipalities and its possible influence on collective action.

In terms of access to highways, although highways may be narrow and have many speed control mechanisms (speed bumps), a large volume of vegetables and other products leave the area daily. Therefore, highway infrastructure would not be a binding constraint to growth from the perspective of Haussman, Rodrik and Velazco, although several interviewees did mention it.



In terms of local transportation, in 2013 the government decreed the removal of motorcycle-taxis (previously encouraged by former governments), which by nature of their versatility, responded to the needs of local populations and had local spillover effects. As a result of this law, they had to be replaced by taxis, which is more of a corporate model that benefits people from outside of the communities. Prior to 2013, motorcycle-taxis were an affordable solution at a micro-enterprise level, enabling extensive, low-cost transportation that was functional for local needs. After 2013, the prohibition of motorcycle-taxis and the demand for larger vehicles exceeded the capacities of local companies. Business people from the city of *Puebla* ended up dominating taxi services, leading to local resistance and protests in the area.

In terms of the connectivity between municipalities, *Santa Isabel* is the furthest away; however, it is better connected with *Atlixco* (the city that acts as the region's vertex) than *Tianguismanalco*. This seems to have been influential on the decision by *Tianguismanalco*'s elite to live in *Atlixco*, while it is easier for the elite from *Santa Isabel* to stay in their town, which seems to influence the higher levels of collective action seen in the area.

### 5.5 *Property Rights*

There appears to be a difference between the state government's modernization program and the population's productive view on at least

three issues: i) the highway to the west; ii) the installation of a gas pipeline; and, iii) projects to redirect the water supply to nearby metropolitan centers.

As Hausmann, Rodrik and Velazco indicate, difficulties in exercising property rights can influence the rhythms of investment and growth in a country. Locally, the fieldwork found that three processes with clear extra-territorial benefits could have negative effects on the territories examined. While the principal source of tension in *Tianguismanalco* is the construction of a new road that crosses to the west (named *Arco Poniente*), in *Santa Isabel* the tension is due to the construction of a gas pipeline that will channel gas to the north of the country. In both cases, the main argument is that the modernization project goes against the area's focus on agriculture.



> "*I do not know whose project it is. They pay cheap, MXN $150 per square meter, which is very little, but what they charge* [when reselling] *is not cheap. One way or another, we do not want people to be negatively affected. You already witnessed this. If anyone does anything, they are taken to prison. Even if they face confiscation, they are imprisoned* [...]. *I take those highways, and they charge me, and we do not have access or an entrance or exit to use. It's in my face and I have no access it*" (Artemio Morales, mayor of *Tianguismanalco*).

These two extra-municipal policies, alongside the projects to channel local water to the city of *Puebla*, could be influencing investment and therefore the economic growth of these municipalities by generating uncertainty surrounding property rights.[8]

The plans for the highway and the gas pipeline indicate that they will both pass through the region's best vegetable-growing lands, al-

8 Events that occurred after the fieldwork concluded show the importance of these tensions. Since late May 2014, protests in *Santa Isabel Cholula* and other municipalities were held in an attempt to stop the construction of the gas pipeline that will pass through the area (*La Jornada de Oriente*, August 7, 2014)

though the exact locations remain unknown. One organization created specifically for this purpose at a state government level, the *Banco de la Tierra* [Land Bank], attempted to expropriate 244 agricultural plots, offering compensation well below market value. The fieldwork confirmed that conflicts occurred each time that the *Banco de la Tierra* and the state police entered to carry out their operations in the region. In response to this type of resistance, in March 2014, the expropriation law was modified, and now the Executive branch no longer has to provide compensation or issue warnings in the case of expropriation.[9] From the growers' perspective, the construction of the road and gas pipeline causes problems that include: a) dispossession of fertile and productive agricultural lands; b) increased cost of transporting agricultural products, since it will force growers to travel an additional 60 kilometers because of the inaccessibility of the highway; and c) increasing the distance between communities. The ownership of the *Banco de la Tierra* is another important issue. The mayors from *Tianguismanalco* and *Santa Isabel* do not know if this bank is public or private, that is, on whose behalf they purchase the land. Attempts to clarify this point during this research were unsuccessful.



### 5.6 *Self-Discovery Activities*

With regards to "self-discovery" activities, the rejection of the conditions imposed by the PROCAMPO program in the mid-1990s (to grow corn and beans) led to a push for other activities, such as flower and vegetable production (mostly the latter due to a rising demand in important nearby markets, such as Mexico City). This appeared to mark an important difference in economic growth in *Santa Isabel Cholula*. The development of horticultural production was less important than in the case of *Tianguismanalco*, which together with the previously mentioned dynamics of commuting to work, appears to have determined a lower level of relative growth. In terms of specialized production, in

9 The press and the population have named this law the "plunder law".

*Tianguismanalco* a larger area is used for flower production with some participation in trout farming, while in *Santa Isabel Cholula* there is a clear predominance of vegetable growing.

> "*I have lived here for more than 20 years. [...] In terms of business activities, the situation in San Juan has never evolved as the community dedicates 100% of its time to agriculture; and I would venture a guess that about 85% of the population grows flowers and the remaining 15% is engaged in other agricultural activities*" (Alfonso Méndez Díaz, a teacher in *San Juan Tianguismanalco*).



### 5.7 *Inequality and Marginalization*

As previously mentioned, in addition to observing the restrictions to growth, there was a specific effort to determine if the inequality traps could be explained by the existence of conditions that marginalize certain populations within the territory. Available data show low levels of inequality in *Santa Isabel* and *Tianguismanalco*, which are much lower than the existing levels in the state of *Puebla* and in Mexico as a whole

TABLE 5 – GINI COEFFICIENTS 1990, 2000 AND 2010

| | Year | | |
|---|---|---|---|
| Geographic Level | 1990 | 2000 | 2010 |
| National | 0.562 | 0.552 | 0.500 |
| Puebla | 0.563 | 0.554 | 0.486 |
| | | | |
| Atlixco | 0.391 | 0.485 | 0.375 |
| Ocoyucan | 0.428 | 0.484 | 0.371 |
| San Andrés Cholula | 0.382 | 0.454 | 0.355 |
| San Gregorio Atzompa | 0.385 | 0.364 | 0.338 |
| Santa Isabel Cholula | 0.375 | 0.372 | 0.320 |
| Tianguismanalco | 0.361 | 0.427 | 0.309 |

Source: Compiled by authors, based on CONEVAL (2012).

TABLE 6 – GINI COEFFICIENTS (1990 = 1)

| Geographic Level | Year 1990 | 2000 | 2010 |
|---|---|---|---|
| National | 1.00 | 0.98 | 0.89 |
| Puebla | 1.00 | 0.98 | 0.86 |
| | | | |
| Atlixco | 1.00 | 1.24 | 0.96 |
| Ocoyucan | 1.00 | 1.13 | 0.87 |
| San Andrés Cholula | 1.00 | 1.19 | 0.93 |
| San Gregorio Atzompa | 1.00 | 0.95 | 0.88 |
| Santa Isabel Cholula | 1.00 | 0.99 | 0.85 |
| Tianguismanalco | 1.00 | 1.18 | 0.85 |

Source: Compiled by authors, based on CONEVAL (2012).



(Table 5). The reduction of the GINI coefficient between 1990 and 2010 was somewhat greater in *Santa Isabel* and *Tianguismanalco* than the state and national averages (Table 6).

However, people who do not have access to land and education engage in agriculture production under conditions of marginality. Some of these find a way out through migration. Migrants' social networks help this migration, which functions differently in each municipality. The fieldwork enabled us to verify that the stories of rising mobility are generally all intra-generational. The success of the growers is their own achievement, not that of their families of origin.

## 6.-DISCUSSION

This examination of the territorial constraints and traps to economic growth emphasizes the economic dimension as well as the political and cultural dimensions in each territory analyzed.

Based on the idea that inequality traps are historically constructed and tied to a differentiated level of access to resources, Hausmann, Rodrik and Velasco's conception was adapted to determine which of the factors that most people signal as important are in fact the key elements that perpetuate the existence of a region with low levels of growth or which elements enabled growth to occur. These points of reflection are used to analyze *Puebla*'s western territories of *Tianguismanalco* and *Santa Isabel Cholula*. Both areas have high levels of poverty and low levels of inequality, but despite these similarities, they performed differently in terms of the relative levels of well-being achieved in recent decades. The following section provides a summary of the primary characteristics and binding constraints identified.



**6.1 *Tianguismanalco***

- Flower-growing is the principal catalyst for *Tianguismanalco*'s economy. Although specialization exists (landowners, farmers, traders, intermediaries, etc.), some individuals own the entire value chain, with distinct trajectories of accumulation.
- Flower growing is possible due to the rich soil in *Tianguismanalco*. This area has the potential and the natural conditions to become a major flower production center. Interviewees in *Tianguismanalco* and *Santa Isabel* mentioned their recent contacts with European producers who may invest in the region.
- However, flower production is at a standstill due to traditional productive systems, despite the high profit in some cases, as well as placement in markets distant from *Puebla* (Guadalajara, Mexico City, and the state of *Guerrero*). Several of these growers have produced these crops using technologies such as greenhouses and/or irrigation, most often with assistance from federal programs.
- Fish-farming is another source of income in *Tianguismanalco*. The community of *San Baltazar Atlimeyaya* has the largest trout farm in Mexico.

- Remittances are an important source of income, which has an impact on the construction of modern houses in the municipality and the fostering of aspirations to migrate to the United States among young people. However, perhaps due to the low development of amenities in the municipality, there is limited return migration. In general, the elite tend to live in the neighboring city of *Atlixco*, meaning that local development is more indirect, with trickle-down characteristics.



**6.2 *Santa Isabel Cholula***

- Agricultural land use (for vegetable production) is a breaking point in this municipality's economic growth, following the population's decision to not participate in government programs that required basic grain production (corn and beans), which are much less profitable in the area.
- Due to its geographic location (close to the highway that connects urban areas), *Santa Isabel*'s elite generally reside and carry out their activities within the municipality, which in turn has an effect on a relatively active community life. Similarly, successful economic processes have been linked to the influence of migration (remittances or return migration) and the use of networks to gain access to resources (human capital and technical knowledge).
- *Santa Isabel* has become as a territory that receives people from other municipalities who travel on a daily basis to work in the fields.

***6. 3 Binding Constraints to Development***

For exploratory purposes, three of the principal tools to diagnose growth were used: access to funding, availability of human capital, and infrastructure. During the fieldwork, another three emerged: activities of self-discovery, migration and property rights. There was a perception that different government agencies contribute to the

inequality traps, or do not help to overcome them. Access to public programs requires personal or family relations, as well as excessive paperwork, which are beyond the reach of the majority of the population. Moreover, government programs are not linked to the productive needs of the area. Social networks and often family relations seem to mediate access to the appropriate technical information and effective access to both private and public financing. To overcome the inequality traps, *Santa Isabel Cholula* was to some extent able to remove itself from the government's restricted support that had led people to produce low-yield crops; and by using existing networks, this municipality was able to strengthen the production of comparatively advantageous crops. Conversely, the changes in levels of well-being in *Tianguismanalco* were restricted to income from activities tied to the government and the center-to-periphery relationship that exists with the city of *Atlixco*. The analysis concludes by identifying existing tensions around property rights issues that have emerged due to the unresolved processes of extra-municipal infrastructure development.



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## APPENDIX: PEOPLE INTERVIEWED

| MUNICIPALITY | NAME | POSITION |
|---|---|---|
| Santa Isabel Cholula | Pedro Palma | President of the Ejido Intendancy |
| | Gabriel Aguilar | Majordomo of the Image of Guadalupe |
| | Higinio Muñoz | Grower and merchant in the municipal capital |
| | Catalina Arias Palma | Merchant and housewife |
| | Angel Ventura Tepox | Merchant and grower |
| | Francisco Netzahuatl Pérez | Mason |
| | Isidro Flores Ramírez | Flower grower and intermediary |
| | Juana Acuahuitl Aguilar | Secretary of the Ejido Intendancy |
| | Donato Tepoz Palma | Treasurer of the Ejido Intendancy and member of the Ejido |
| | Noé Hernández Granados | Head doctor at the health center |
| | Albino Pantie Espinosa | Mayor |
| | José Luis Tiahuel Varela | Municipal authority for Agriculture and Livestock and a vegetable grower |
| | Máximo Romero | Potential grower of amaranth in the state |
| | Father Martín Reyes de Gante | Parish Priest |
| Tianguismanalco | Artemio García Núñez | Mayor |
| | Evodio Gallardo | Potential avocado grower |
| | Clemente Aguilar Vásquez | Municipal authority for agriculture and livestock |
| | Cándido Tapia Jiménez | Municipal authority for education |
| | Iray Vázquez Morales | Veterinarian and collaborator with the municipal authority for agriculture and livestock |
| | Otón Flores Ortiz | General Secretary and vegetable grower and promoter of trout farming |
| | Alejandro Concha Martínez | General manager of the Xouilin Fish Farm |
| | Aurelio Jorge Hurtado Morales | Elder and corn grower |
| | Alfonso Méndez Díaz | Teacher at the Emperador Cuauhtémoc afternoon primary school and of the Vicente Guerrero morning school |
| | Alfredo Rodríguez Zambrano | Avocado grower and carbon and wood extractor |
| | Merced Sánchez | Corn and avocado grower |
| | Nicolás Morales Flores | Livestock and vegetable grower |
| | Artemio Morales Cortés | President of the Communal Government of San Baltasar Altimeyeya and a restaurant owner |
| | Ernesto Rojas Saviñón | Ex-president of the Communal Government of San Baltasar Altimeyeya |
| | Inés Morales | Merchant at the Tianguismanalco market |

APPENDIX: PEOPLE INTERVIEWED

| MUNICIPALITY | NAME | POSITION |
|---|---|---|
| Other important regional actors | Jorge Armando Zanella Rodríguez | Regional delegate for San Pedro Cholula, Atlixco and Izúcar de Matamoros |
| | José Luis Galeazzi Berra | Mayor of Atlixco |
| | Juan Francisco Torres Montiel | General Director of Human and Economic Development with Social Inclusion |
| | Rocío García Olmedo | Federal Member of Congress for the 13thMunicipal District of Atlixco |
| | Roxana Luna Porquillo | Federal Member of Congress for the 4thDistrict (4 states, Puebla, Morelos, Mexico City, Guerrero and Tlaxcala) |
| | Lucio Madrid Ramos | President of the Technical Committee on Underground Waters (COTAS) |
| | Adrián Rodríguez Lezama | Journalist from the Atlixco and Izúcar de Matamoros region |

# VI
# TERRITORIAL POVERTY AND INEQUALITY TRAPS IN PERU

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## INTRODUCTION

Over the past two decades, the Peruvian economy has grown consistently at annual rates above five percent. While there are no consistent poverty estimates covering extended periods of time, it has been demonstrated that poverty in Peru has reduced substantially since 2004. (INEI, 2012; INEI, 2013). There is also evidence that economic growth has not affected poverty rates in a homogenous manner. There are urban and coastal areas where poverty reduction has been greater, rural areas of the Andes and Amazon where the reductions have been more modest, and areas where there hasn't been any reduction in poverty at all.

The household surveys in Peru show the evolution of poverty across Peru's 24 regions, known as Departments. However, it has not been possible to look at these spatial changes at a more granular level, such as at a level encompassing the nation's 194 provinces, for instance. Information gathered from household surveys only allows for identification of short term trends, dating back to, in a best-case scenario, the fourth quarter of 2002. This makes it impossible to ascertain how changes in well-being have evolved over long periods of time, such as the intercensal period between 1994 and 2007. All this means that when using traditionally available data sources, one cannot determine whether or not territorial poverty and inequality traps exist in Peru.

Fortunately, by using both population and household surveys, reliable estimates of per capita household expenditures can be estimated at a level of spatial disaggregation that is not possible with household surveys alone. Using the estimates from Escobal and Ponce (2010), this study seeks to identify spatial poverty traps in Peru. In particular, the study differentiates provinces by those that were always lagging behind during the intercensal period; those that have experienced downward mobility; upward mobility; or, lastly, those that never lagged behind.



The concept of monetary poverty does not include segments of the population that, while not poor, could be considered vulnerable. For this reason, this study broadens its characterization of the territorial dynamics of poverty to include vulnerable populations as well. This category is defined as people who, as a result of their socio-economic characteristics, have a greater than 10 percent probability of becoming poor.

The study distinguishes between changes in economic outcomes (changes in income or spending) that occur at a territorial level and changes that occur in the opportunities available to different groups within a population. The distinction between outcomes and opportunities is an important one. Outcomes are a product of both the effort that economic agents invest in their economic activities and the circumstances under which they operate. To ascertain the inequality in opportunities that the Peruvian population faces and the possible existence of territorial traps in how these opportunities are distributed, the study uses information from the population and household censuses from 1993 and 2007 in order to evaluate a broad number of indicators of inequality of opportunities. These include access to key public services, such as water, sewage, electricity or telecommunications, and key private goods, such as adequate housing, a refrigerator or a television, and access to education. The study demonstrates how these opportunities are available in an unequal manner among different social groups (children, for example) that are characterized by circumstances that should not influence their access to these oppor-

tunities. The circumstances include gender, years of schooling of the head of household, ethnicity, and place of residence, among others. They are all factors that should not affect the distribution of opportunities open to children in Peru. Our analysis of territorial traps in outcome indicators (population in situations of poverty and vulnerability) and of opportunity traps confirms that the distribution traps we identify are strongly associated with the same features of exclusion that have historically characterized the poorest sectors of the Peruvian population.

Lastly, the study presents outcomes for the dynamics of key social groups, identified by their circumstances and their place of residence. By constructing pseudo-panels for the 1993-2007 intercensal period, the study demonstrates that despite evidence of a convergence process, in which the most disadvantaged social groups slowly approach the most privileged social groups, this process of convergence is very slow. The process of leveling the playing field of opportunities is described here as insufficient (or too slow) for different social groups to converge in reasonable timeframes. The interaction between spatial poverty traps, spatial traps in terms of opportunities and slow processes of convergence create a reality that demands policies that are not spatially neutral.



## POVERTY TRAPS

### *The Recent Evolution of Poverty*

As was mentioned in the introduction, Peru does not have long-standing and consistent data documenting the evolution of poverty in the country. This is because of changes in the coverage of spending and income and successive changes in the methodologies used to calculate poverty (spatial deflators, caloric requirements, reference populations for calculation of cut-offs, etc.). It is only since 2004 that there have been poverty calculations that are inter-temporally consistent.

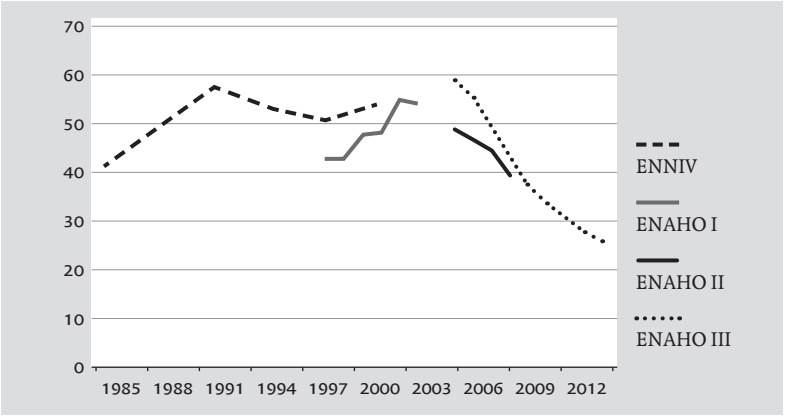
Prior to this date, there are official poverty statistics for 1997-2000 and statistics calculated based on the National Living Standards Measurement Survey (*Encuesta Nacional de Niveles de Vida* -ENNIV) which were undertaken with support from the World Bank and the *Instituto Cuanto* for the years 1990, 1991, 1994, 1997 and 2000. These, however, aren't comparable with the methodology that has been used to calculate poverty since 2004. Lastly, there is also an ENNIV survey for 1985-86 which was undertaken by INEI with support from the World Bank, but this is not comparable either.



Despite this methodological problem, superimposing the different series provides a general idea of poverty trends over the past 25 years. As can be observed in Graph 1, in the second half of the 1980's through the early 1990's, there was a trend of increasing poverty. Beginning in the late 1990's, a poverty reduction trend began and still persists today.

As can be observed in Table 1, poverty in Peru is an eminently rural phenomenon. Indeed, more than half of the poor population lives in rural areas, despite the fact that only 25 percent of the population lives in rural areas. Furthermore, the poverty profile reveals that the poverty

GRAPH 1: MEDIUM TERM POVERTY TRENDS




Source: ENNIV and ENAHO surveys,1985 through 2013. Compiled by the author.

TABLE 1: PROFILE OF POVERTY IN PERU (2012)

| | Poverty Rate |
|---|---|
| Peru | 25.8% |
| By Area | |
| Urban | 16.6% |
| Rural | 53.0% |
| By Domain | |
| Urban Coast | 17.5% |
| Rural Coast | 31.6% |
| Urban Andes | 17.0% |
| Rural Andes | 58.8% |
| Urban Amazon | 22.4% |
| Rural Amazon | 46.1% |
| Metropolitan Lima | 14.5% |
| By Department | |
| Least Poor Departments: | |
| Madre de Dios | 2.4% |
| Ica | 8.1% |
| Moquegua | 9.6% |
| Poorest Departments: | |
| Ayacucho | 52.6% |
| Cajamarca | 54.2% |
| Apurimac | 55.5% |
| By Head of Household | |
| Female Head of Household | 21.0% |
| Male Head of Household | 27.1% |
| Ethnicity | |
| Native Language | 36.0% |
| Spanish | 22.1% |
| Education | |
| Incomplete Primary or Less | 46.7% |
| Complete Primary | 36.1% |
| Incomplete Secondary | 28.6% |
| Complete Secondary | 18.4% |
| Any Higher Education | 5.2% |
| Number of Children (17 and under) | |
| 0 or 1 child | 14.0% |
| 2 children | 23.5% |
| 3 children | 39.1% |
| 4 children | 65.5% |

Source: ENAHO 2012. Compiled by the author.

rates are much higher in homes where the head of household does not speak Spanish as a first language or in houses where the head of household has not completed primary education. At the same time, poverty rates are much higher in homes where there are more children. Lastly, as can be seen in Table 1, there are significant differences in poverty rates by region and department.

Table 2 shows averages for key socio-economic indicators for Peru and for households or people who live in situations of poverty and extreme poverty. The indicators for access to public services are much lower in poor homes than among the population in general. At the same time, the rates of coverage are even lower in homes where incomes are insufficient to pay for a food basket (extreme poor). The coverage is much lower when an integrated package of services is considered as compared to when each type of public service is considered individually (water, sewage, electricity or telecommunications). While nearly two thirds of the national population have simultaneous access to these four public services, only a third of the poor and only 13 percent of the extreme poor have simultaneous access to these four services.



Table 2 also shows that monetary poverty is strongly correlated with other non-monetary aspects of well-being. For example, the levels of accumulation of human capital are much lower among the extreme poor and the poor as compared to the general population. The differences in illiteracy rates among adult women or the educational level of the heads of household are particularly dramatic.

There are also great differences in health and nutrition indicators between the population on average and the population living in poverty or extreme poverty. The indicators where the greatest gaps exist are for malnutrition in children under 5 and the prevalence of anemia.

### *Poverty Traps*

To estimate poverty rates at the territorial level we use Escobal and Ponce's (2008) calculations. They reconstructed the definitions of

TABLE 2: BASIC SOCIAL INDICATORS

| | National Average | Poor Population | Extreme Poor Population |
|---|---|---|---|
| **Identity** | | | |
| Has a National Identity Document (DNI) (% of individuals) | 98.0% | 96.2% | 94.2% |
| Has a DNI (% of individuals>=65) | 96.9% | 93.7% | 89.7% |
| **Education** | | | |
| Attendance of children (3-5 years of age) in Regular Basic Education | 76.4% | 68.3% | 65.5% |
| Net coverage rate, primary education (% population 6-11 years) | 93.1% | 92.7% | 93.0% |
| Head of Household with primary education as maximum level attained | 41.0% | 62.7% | 77.2% |
| Illiteracy (individuals 15 years of age and older who cannot read or write) | 6.2% | 14.0% | 22.3% |
| Illiteracy among Women (women 15 years of age and older who cannot read or write) | 9.3% | 20.2% | 31.5% |
| **Health and Nutrition** | | | |
| Chronic Malnutrition in Children under 5 years of age (WHO) | 17.5% | 21.2% | 37.7% |
| Prevalence of anemia (children 6-59 months of age) | 34.0% | 38.0% | 42.2% |
| Percentage of Children (18-29 months of age) who are fully vaccinated | 68.6% | 69.2% | 67.3% |
| Access to Health Insurance (% people) | 65.4% | 71.6% | 78.8% |
| **Access to Basic Services** | | | |
| Homes with an integrated package of services (drinking water, sewage, electricity and telephone) | 64.9% | 34.3% | 13.0% |
| Access to drinking water (% homes) | 83.2% | 66.6% | 48.1% |
| Access to sewage (% homes) | 77.8% | 57.9% | 43.7% |
| Access to electricity from the public grid (% homes) | 92.1% | 79.4% | 61.9% |
| Access to telecommunications (% homes with landline or cellular phones) | 85.5% | 67.0% | 46.1% |
| **Housing** | | | |
| Homes that use firewood, coal, kerosene or others (% of homes) | 24.0% | 56.4% | 87.0% |
| Homes with Dirt Floors (% homes) | 30.3% | 66.8% | 86.9% |
| Overcrowding (% homes with more than 3 people per room) | 7.6% | 15.8% | 20.7% |
| **Labor** | | | |
| Percentage of young people that don't work or go to school (14-30 years) | 19.5% | 22.1% | 21.2% |
| Percentage of adults over 65 years of age who receive a retirement pension | 24.1% | 4.8% | 1.7% |
| Affiliation with a pension system (% of working individuals) | 32.9% | 10.4% | 2.4% |

Source: Midis (2013) based on ENAHO 2012.

spending for 1994 (ENNIV survey) and 2006 (ENAHO survey) to ensure consistency. They also reconstructed the poverty lines for 1994 to ensure that the caloric requirements underlying the estimates of the poverty and extreme poverty lines and the Engle coefficient calculation would allow for the calculation of total poverty in a manner that is consistent with the official methodology used in calculating poverty for 2006.[1] After making the poverty lines and spending data consistent, Escobal and Ponce (2008) combined the information from the household surveys and census data from 1993 to estimate the 1993 spending and poverty indicators at a provincial level. The calculation was then updated for 2007, combining household surveys with the population census from that year (Escobal and Ponce, 2010).

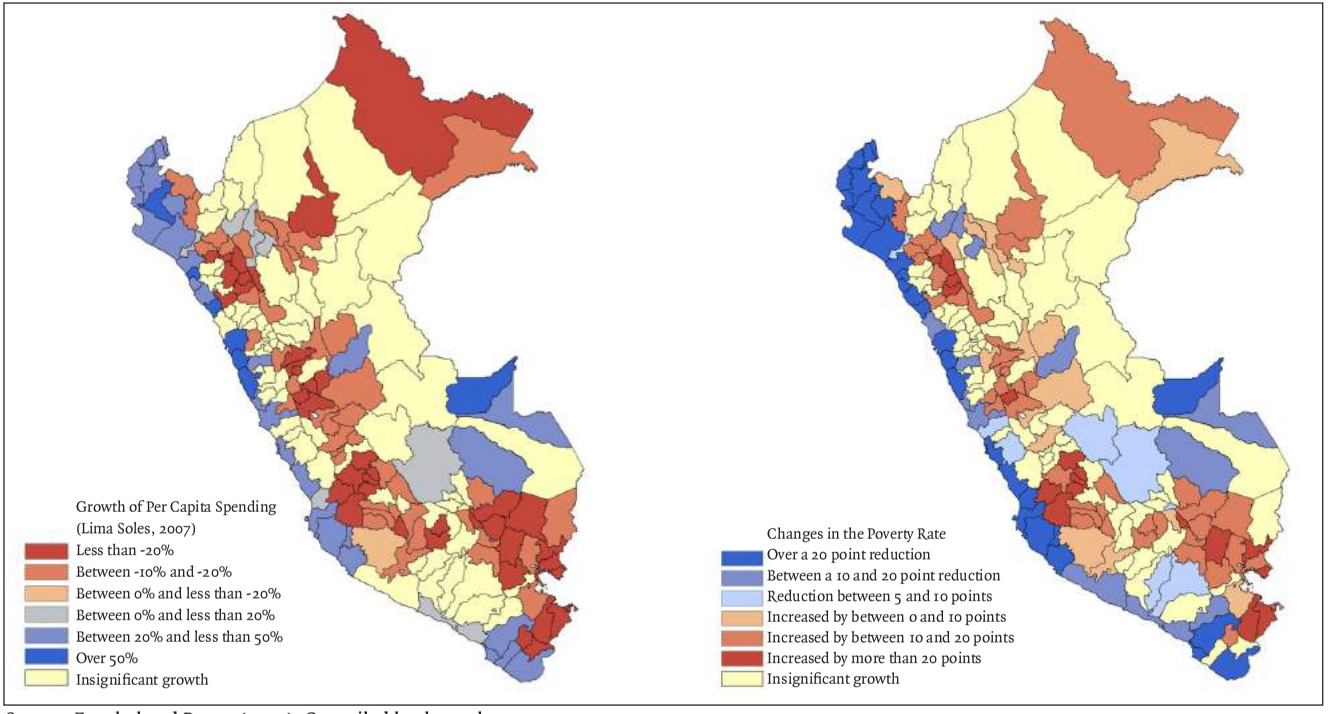


Based on Escobal and Ponce's (2011) work it was possible to construct maps of growth in spending and changes in poverty for the 1993-2007 period that are based on comparable definitions of per capita spending. These maps show a greater level of detail than would be possible using the typical household surveys (ENAHO or ENNIV). Considering the quality of the estimates, Escobal and Ponce (2010) suggest that the data should not be disaggregated further than the provincial level because the smaller the territorial unit, the lower the precision of the estimates. For this reason, although it is possible to construct indicators at a more granular level (such as for districts or even towns), this study characterizes the territorial dynamics of poverty by dividing the country into provinces. This level of disaggregation is large enough to take advantage of economies of scale and the environment of a territory, which is not possible when one chooses a smaller unit, such as districts. At the same time, however, the provincial scale can handle district level fragmentation without being so large, such as at a regional scale,as to be unwieldy. For many analysts the provincial territory is the best environment to plan and promote development activities. (Revesz, 2009).

1 Some spending categories had to be withdrawn from the 2007 calculations to ensure consistency.

MAP 1: PER CAPITA PROVINCIAL SPENDING GROWTH
1993-2007

MAP 2: CHANGE IN PROVINCIAL POVERTY RATES
1993-2007




Source: Escobal and Ponce (2010). Compiled by the author.

Map 1 shows per capita growth (in Lima Soles from 2007) at a provincial level between 1993 and 2007. In the same map, some clear spatial patterns emerge that are worthy of mention. First of all, a sizeable portion of the provinces that demonstrated significant growth (at least 20 percent in the intercensal period) are located in the coastal region of the country. Outside of the coastal region, there were significant growth dynamics in the *Cuzco* region (in the capital province) and in some provinces in the northern Amazon where there has been a significant expansion of coffee growing (*Amazonas* and *San Martín*). Also of note is the growth of some tourist areas, such as the *Colca* Canyon in *Arequipa*. Lastly, the southern Amazon demonstrates significant growth from the expansion of alluvial gold mining, which has been accompanied by severe deterioration in the natural environment.

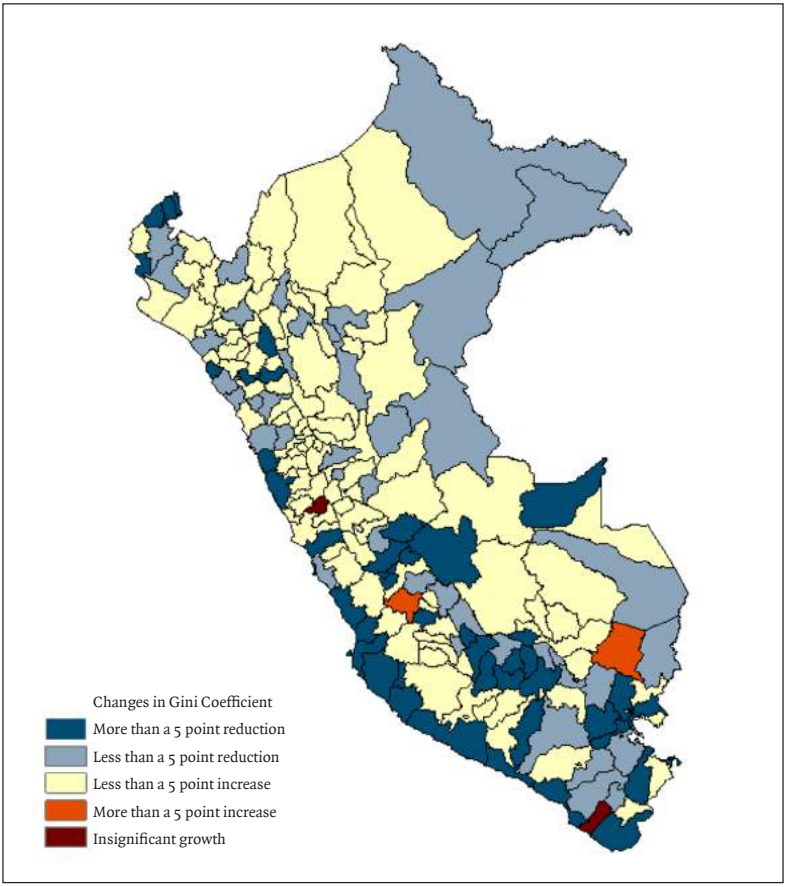


Consistent with the aforementioned regional growth, these same areas show significant reductions in poverty, as shown in Map 2. Areas where the growth was stagnated or where it decreased appear as provinces where poverty increased more than 10 percentage points. The majority of these provinces are concentrated in the most remote parts of the Andes, where there has been a lower rate of improvement in access to goods and public services and where opportunities to link up to the global growth of the Peruvian economy would be very limited.

When one observes the changes in inequality indicators at a territorial level (Map 3), the identified growth dynamics have been accompanied by a generalized reduction in the GINI at a provincial level. Interestingly, there were reductions in inequality in many provinces, but the inequality between provinces grew to such an extent that it compensated for the intra-provincial reduction.

Table 3 shows that the aggregated indicator (GINI or Theil) does not show major changes between 1993 and 2007. These indicators are consistent with the dynamic of spatial polarization in the distribution of income that Escobal and Ponce (2012) found. Based on estimates of growth in per capita spending, poverty and inequality for 1981, 1993 and 2007, these authors found that while there were tendencies of

MAP 3: INTRA-PROVINCIAL CHANGES IN INEQUALITY (GINI)
1993-2007




Compiled by the author



reductions in inequality in per capita spending (measured by GINI or Theil) among individuals, inequality between groups was exacerbated. The latter is associated with processes of segregation and polarization and linked by research to greater social conflict. In particular, one can observe a long-term trend of spatial segregation and polarization that favors large cities as compared to the dynamic in small cities and towns. This tendency towards greater spatial polarization goes

TABLE 3: RELATIVE IMPORTANCE OF THE INTER-PROVINCIAL COMPONENT

| Groups | 1993 | 2007 |
|---|---|---|
| Provinces | 6.0 % | 25.1 % |
| Rural/Urban | 2.3 % | 16.4 % |
| Rural/Urban + Provinces | 8.2 % | 28.5 % |
| Educational Level | 14.4 % | 21.9 % |
| Rural/Urban + Education | 14.5 % | 25.9 % |
| Electricity | 6.2 % | 15.2 % |
| Rural/Urban + Electricity | 6.4 % | 20.6 % |
| Theil | 0.235 | 0.236 |
| GINI | 0.3734 | 0.3731 |

Source: Escobal and Ponce (2010). Compiled by the author.



hand in hand with a greater polarization between indigenous and non-indigenous populations.

***From the Analysis of Poverty to an Analysis of Vulnerability***

Up to this point, we have analyzed how per capita spending and poverty are distributed at a provincial level. Overcoming poverty (in this case, overcoming monetary poverty) is a legitimate objective. But when one examines the trajectory over time of those who overcome poverty, it becomes clear that it is no guarantee that these individuals will remain non-poor. That is why it is important to consider not just the poor, but also the non-poor who are vulnerable to becoming poor. The other side of the coin is the population that can be considered "middle class" (or upper class), which is to say those who have overcome vulnerability.

This section seeks to broaden the concept of "poor" to include "poor or vulnerable" and analyze how this population segment is distributed across the territory. It also shows how the population that has overcome poverty or vulnerability (the middle class) is distributed. The changes in the percentages of poor or vulnerable between 1993 and 2007 are the basis for the identification of territories that have remained trapped, which is to say that the majority of their

population remained poor or vulnerable in comparison to those who managed to achieve some upward mobility.

**The Concept of Vulnerability**

In order to ascertain vulnerability, we used the methodology proposed by López-Calva and Ortiz-Juárez, (2011), which estimates both the relationship between per capita household spending (or income) and the characteristics of the households and the probability that the household will become poor given this set of characteristics. Based on this functional relationship, a vulnerable population is defined as one which does not have sufficient income to have a less than 10 percent probability of becoming poor.



For the casestudy of Peru, López-Calva and Ortiz-Juárez (2011) use the per capita household income and the National Household Survey (*Encuesta Nacional de Hogares*,ENAHO) for 2002-2006. In our case, in order to use the estimates from the census interpolation exercise (calculated using the censuses from 1993 and 2007), we estimate the models using the ENNIV survey panels from 1991-1994 (to estimate the probability of being poor in 1994 given the attributes of the households in 1991), in addition to the 2007-2009 panel from the ENAHO survey (to estimate the probability of being poor in 2009 based on the characteristics of the households in 2007). These are the two panels closest to the census dates, which reduces biases associated with other reference periods.[2]

The following functions were used to calculate the estimates

$$p_{it} = E\left(pobre_{it+1} \mid X_{it}\right) = F\left(X_{it}'\beta\right) \qquad (1)$$

$$ln\, wr_{it} = \alpha + X_{it}'\beta + \varepsilon_{it} \qquad (2)$$

2 The 1991-1994 panel does not include the Amazon or Rural Coast areas. To extrapolate the results, one should bear inmind that these areas were not in the sample panel, although they are included in the base for 1994.

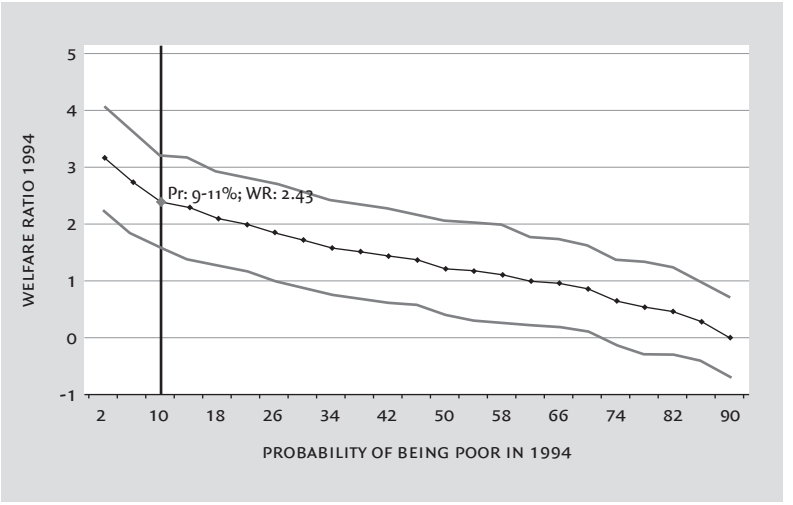
Where *wr* is the welfare ratio (ratio between per capita spending and the relevant poverty line for each home). For the 1991-1994 panel, there are seven official poverty lines (by geographic region and by urban/rural in addition to Metropolitan Lima), while for the 2007-2009 panel, there are 82 official poverty lines (by geographic region, by department and by rural/urban). The definitions for spending and the poverty lines have been homogenized inter-temporally to ensure the comparability of the 1994 ENNIV survey and the 2007 ENAHO survey. With regard to the poverty line, maintaining the official methodology has ensured that the food component covers the same basic caloric requirements, and the Engel coefficient (proportion of spending used for food) has been calculated following the methodology proposed by Pradhan et al., (2001). The estimates of the models using well-being ratios (spending/line) ensures an inter-temporal comparison and adjusts the purchasing power for the spatial price differences.[3]

It is important to note that the model presented in Equation 2 is estimated for 1994 and 2007. The reason for anchoring the estimate in these two years is to ensure that the cut-off point is expressed in temporal terms at a point in time that is consistent with the census interpolations from 1993(expressed in 1994 Soles) and 2007 (expressed in 1994 Soles). After estimating the models for each of the two periods,[4] we can evaluate the relationship between the probability of being poor and the spending predicted by the models. Graph 1 shows this relationship for the ENNIV 1991-1994 panel and Graph 2 shows the same relationship for the ENAHO 2007-2009 panel. It is important to note that the cut-off obtained with the 1991-1994 panel is very similar to the cut-off obtained using the 2007-2009 panel (2.43 versus 2.39). These cut-offs represent a value equivalent to US $13.7 and US $10.9, respectively,

3 INEI made adjustments to the spending estimates starting in 2010, generating databases that are compatible with the new methodology for 2004-2012. For the purposes of our calculations, the spending data is comparable to the 1994 data. However, the expansion factors are from the new methodology and not the old one. These are used to ensure that the it includes a population estimate that is compatible with the population estimates after 2007.

4 The calculations of these models are presented in Appendix 1.

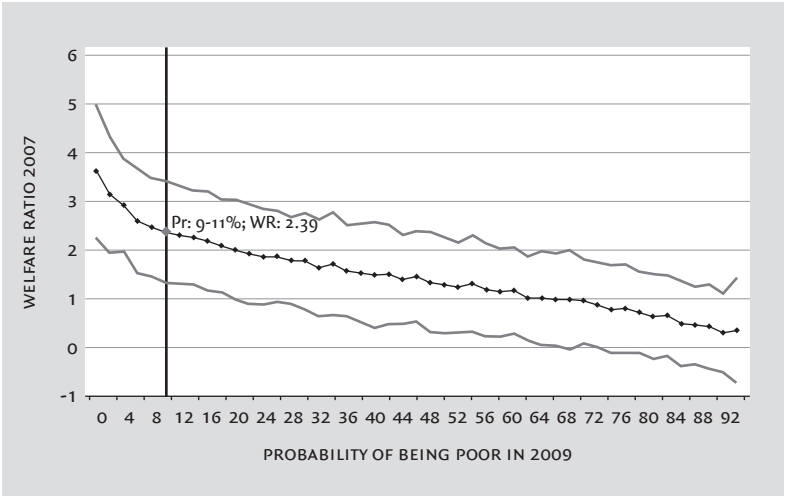
GRAPH 2: ESTIMATED WELFARE RATIO IN 1994 NEEDED TO HAVE A LESS THAN A 10% CHANCE OF BEING POOR IN 1994




Source: ENAHO. Compiled by the author.



GRAPH 3: ESTIMATED WELFARE RATIO IN 2007 NEEDED TO HAVE A LESS THAN A 10% PROBABILITY OF BEEING POOR IN 2009




Source: ENAHO. Compiled by the author.

expressed in 2004 US Dollars. Interestingly, the number for 2007-2009 is very similar to the US $10 PPP from 2004 obtained by Lopez-Calva and Ortiz-Juarez (2011) using the 2002-2006 panel.

**Methodology to Estimate Cut-off Line between Middle Class and Socio-Economic Status "A"**

Based on the calculations undertaken in the previous section, we define the middle class as having per capita spending rates greater than a 2.4 welfare ratio. In order to estimate the size of the middle class, it is necessary to estimate the cut-off point at which households no longer belong to the middle class. Based on estimates from Ipsos-Apoyo (2007), in 2007, 5.5 percent of the population of Metropolitan Lima was rich, meaning that the estimated value of per capita spending at that cut-off point is S/. 1400.



TABLE 4: CUT-OFF POINTS TO IDENTIFY SOCIO-ECONOMIC STATUS IN PERU: 1994 AND 2007

| Cut-off | 1994 | | | 2007 | | |
|---|---|---|---|---|---|---|
| | Welfare Ratio | Per Capita Monthly Spending ML (S/. Nominal) | Per capita Monthly Spending ML (USD-PPP) | Welfare Ratio | Per Capita Monthly Spending ML (S/. Nominal) | Per capita Monthly Spending ML (USD-PPP) |
| Extreme Poor to Non-extreme poor* | 0.42 | 71 | 58 | 0.52 | 129 | 78 |
| Non-extreme Poor to Vulnerable | 1.00 | 167 | 136 | 1.00 | 250 | 152 |
| Vulnerable to Middle Class | 2.43 | 402 | 327 | 2.39 | 601 | 364 |
| Middle Class to Status "A" | 4.78 | 800 | 650 | 5.59 | 1400 | 848 |

Source: Author estimates.
*The ratio associated with the transition between extreme poor and non-extreme poor varies by domain.

To find the equivalent value for 1994, and given that there were no previously available estimates, we assumed that the cut-off point value for 2007 was the same in 1994. Then we obtained the inflation of the IPC between 1994 and 2007, and deflated the value for this rate (74 percent). The result is a cut-off point equivalent to 800 Soles. Table 4 shows the cut-off points for each of the identified socio-economic groups.

The estimates undertaken in Table 5 show the distribution of the Peruvian population by socio-economic status for the 1993-2007 period. Despite the fact that the population grew by 5.3 million between 1993 and 2007, the population in extreme poverty did not increase (rather it decreased by 0.1 million, and the population in non-extreme poverty decreased by 2.3 million). Interestingly, despite the growth in per capita spending and the reduction in poverty that occurred in the period of study, there was also a significant increase in the population considered to be vulnerable. This pattern of decreasing poverty with a simultaneous increase in the non-poor vulnerable population is evidence that the improvements in well-being that occurred in the intercensal period may not be sustainable.



Table 6 shows that much of the improvement at the national level is lost when the analysis is restricted to rural areas. There, the distri-

TABLE 5: DISTRIBUTION OF THE POPULATION BY SOCIO-ECONOMIC LEVEL 1993-2007

| CLASS | POPULATION 1993 | % | POPULATION 2007 | % |
|---|---|---|---|---|
| Middle and Upper Class | 2,106,344 | 9.1% | 4,961,066 | 17.4% |
| Vulnerable | 8,764,300 | 37.9% | 13,648,157 | 48.0% |
| Non-Extreme Poor | 8,643,293 | 37.4% | 6,333,504 | 22.3% |
| Extreme Poor | 3,621,867 | 15.7% | 3,510,447 | 12.3% |
| **National Total** | 23,135,804 | 100.0% | 28,453,174 | 100.0% |

Source: Escobal and Ponce (2010) and Table 4. Compiled by the author.

TABLE 6: DISTRIBUTION OF THE RURAL POPULATION BY SOCIO-ECONOMIC LEVEL 1993-2007

| CLASS | POPULATION 1993 | % | POPULATION 2007 | % |
|---|---|---|---|---|
| Middle and Upper Class | 378,264 | 5.5% | 323,804 | 4.1% |
| Vulnerable | 2,203,368 | 31.9% | 2,638,071 | 33.1% |
| Non-Extreme Poor | 1,984,060 | 28.7% | 2,270,494 | 28.5% |
| Extreme Poor | 2,343,642 | 33.9% | 2,735,706 | 34.3% |
| **Rural Total** | 6,909,334 | 100.0% | 7,968,075 | 100.0% |

Source: Escobal and Ponce (2010) and Table 4. Compiled by the author.



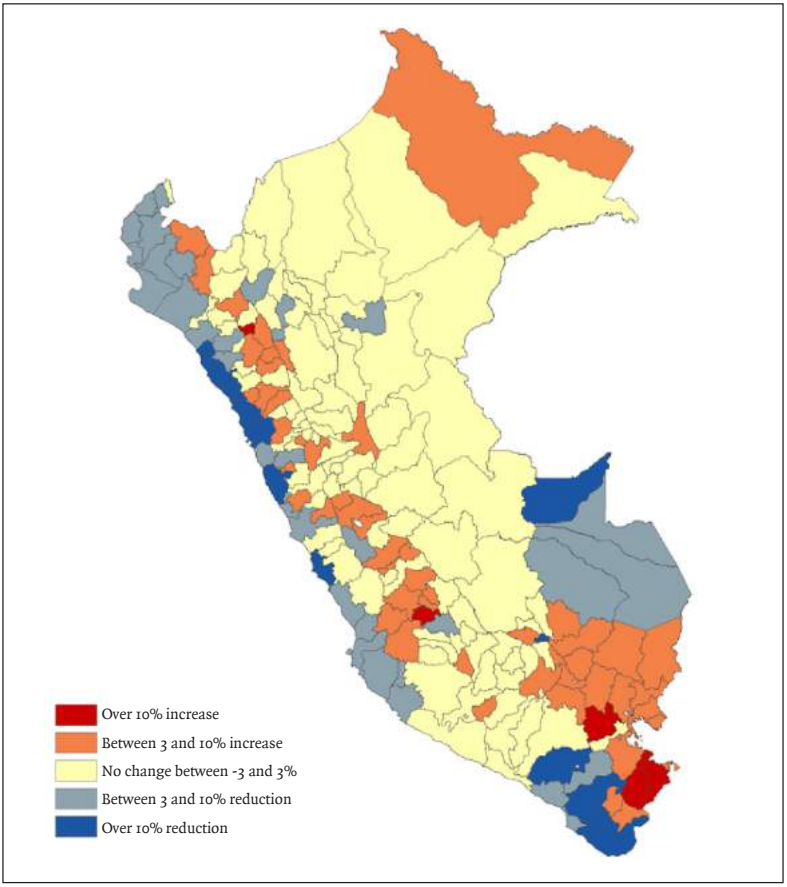
bution of the population among socio-economic groups has not demonstrated much mobility.

Map 4 shows how the rates of total vulnerability (poor plus vulnerable) have changed during the intercensal period. The contrast between this map and the poverty dynamic observed in Map 2 is clearly evident. The reductions in the rates of total vulnerability are even more concentrated in the coastal region, especially the central and northern-central coast (linked to the Departments of *Lima*, *Áncash*, *Lambayeque* and *La Libertad*) and the southern coast (linked to the Departments of *Tacna* and *Moquegua*).

Map 4 also shows that that the segments of the population that have increased rates of vulnerability are concentrated in rural provinces of the Andes, especially in the higher-altitude provinces of *Cusco* and *Puno*, not to mention in *Ayacucho*. It also reveals significant increases in other provinces found in the central and northern Andes.

Another way to characterize the changes in well-being at a provincial level is to observe the location of those who overcame poverty and vulnerability (a segment known as the "middle class"). Map 5 shows the distribution of the middle class, clearly indicating that the population with the greatest level of well-being is located along the coast. As expected, the central coast of Lima stands out as the place

MAP 4: VARIATION IN THE PERCENTAGE OF THE POPULATION THAT IS POOR OR VULNERABLE BETWEEN1993 AND 2007




Source: Escobal and Ponce (2010) and Table 4. Compiled by the authors.

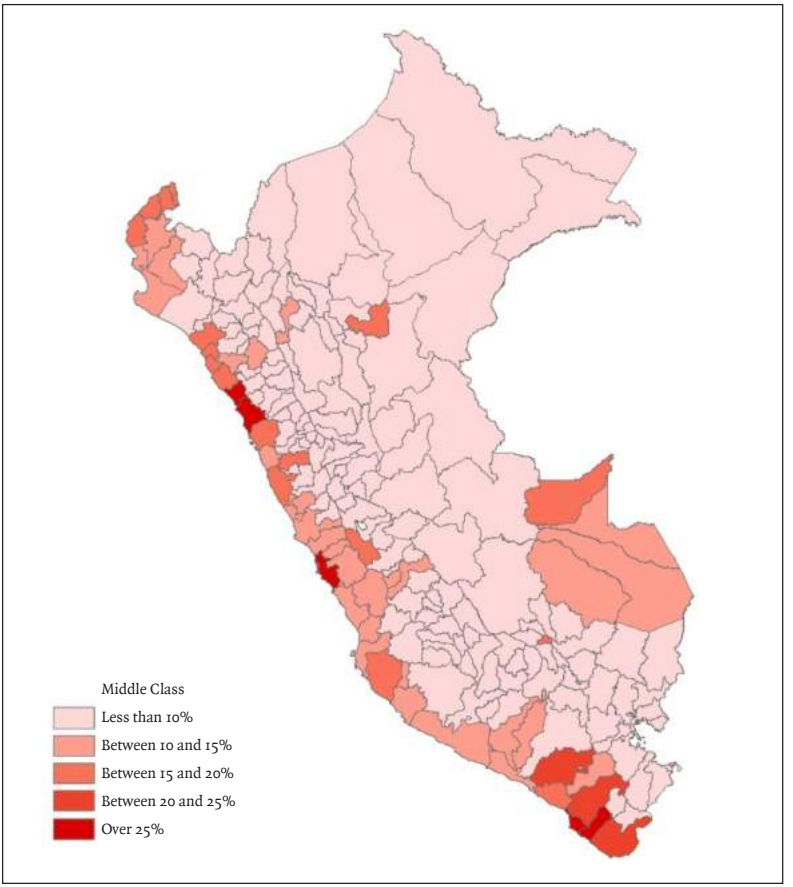


where the greatest concentration of this middle class is located. Outside of the coastal provinces, the stand-out provinces are located in *Cusco* and *Arequipa*. In the north, *Cajamarca*, *Chachapoyas* and *Tarapoto* stand out; in the central region, *Huaraz* and *Huancayo* (all of which are departmental capitals). Lastly, the Amazon province of *Madre de Dios* stands out as a result of the gold exploration taking place there.

Beyond departmental capitals, where it is not surprising to find a substantial part of the middle class, there are a few additional provinces worthy of mention with regard to their middle class populations. These include nearly all of the coastal provinces, which confirms their strategic location on the country's commercial corridors. Along with these coastal provinces, the provinces of *Mariscal Nieto* and *Sánchez Cerro*

MAP 5: DISTRIBUTION OF THE POPULATION BY SOCIO-ECONOMIC STATUS: IMPORTANCE OF THE MIDDLE CLASS IN 2007






Source: Escobal and Ponce (2010). Compiled by the author.

in *Moquegua* (linked to mining activity) stand out, as does the central Andean province of *Concepción, Junín*, which has close commercial ties to Lima via the central highway and the central railway.

***Identification of Trapped Territories***

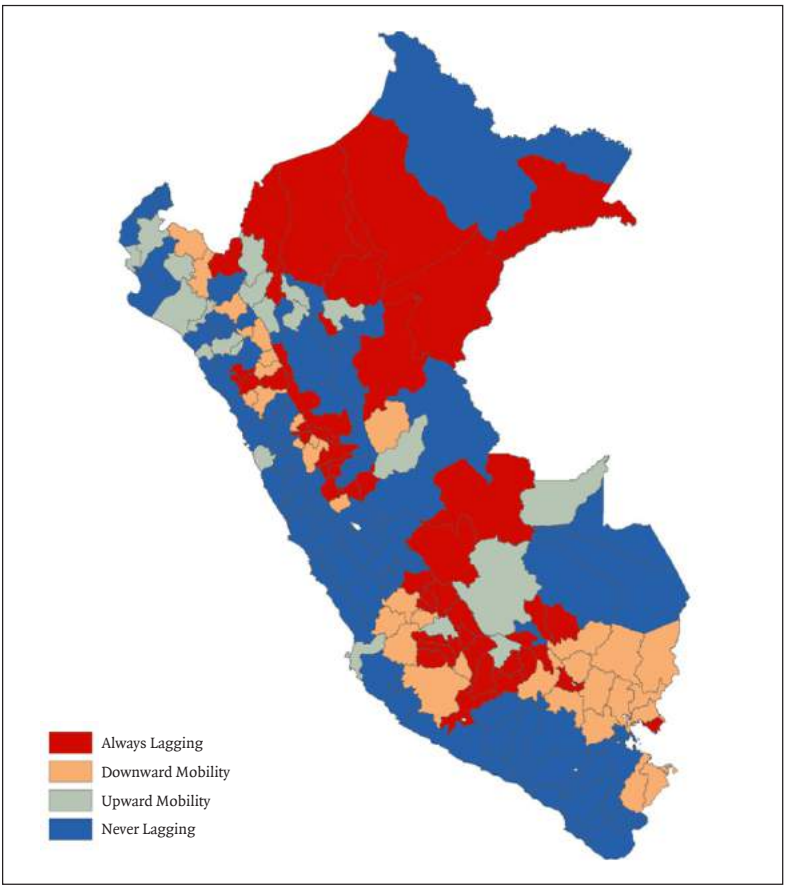
In order to identify territories that are lagging behind in situations of total vulnerability, it is necessary to evaluate trajectories between 1993 and 2007 in order to determine which provinces are always lagging behind, have experienced downward mobility, upward mobility or, lastly, which have never lagged behind. In this study, a province is considered to be lagging behind when its poverty/vulnerability index in a given period is a half a standard deviation or more above the simple average of all the provinces for the same period. There are four kinds of territories:



1. Always lagging behind (or trapped): those that were lagging behind in 1993 and in 2007.
2. Began lagging behind (downwardly mobile): those provinces that were not lagging behind in 1993 but were in 2007.
3. Overcame lagging behind (upwardly mobile): those provinces that were lagging behind in 1993 but not in 2007.
4. Never lagging behind (non-trapped): those provinces that were not lagging behind in either of the two years.

One can observe in Map 6 that a substantial number of the coastal provinces demonstrate a consistent situation of not lagging behind in either of the two periods of study. The few coastal provinces that don't follow this pattern are provinces that have demonstrated upward mobility, aligning themselves with the positive dynamic observed in all of the coastal provinces. At the other extreme, nearly all of the northern Amazon is in a significant poverty trap, which is related to its relative isolation. Similarly, the higher-altitude provinces of the northern and southern Andes also show this relative stagnation. It is important to note that the status of always lagging behindis absent

MAP 6: TOTAL VULNERABILITY TRAPS (POVERTY AND VULNERABILITY)




Source: Escobal and Ponce (2010). Compiled by the author.



in a significant number of provinces in the central Andes, which have a greater degree of integration, via highway and railway connections, with the central coast.

Map 8 also shows the provinces that had a downward mobility tendency between 1993 and 2007, with the majority of these being located in the southern Andes, particularly in the higher-altitude provinces of *Cusco* and in the *Puno* region.

## TERRITORIAL DISTRIBUTION OF HUMAN OPPORTUNITIES

When looking at the spatial distribution of poverty or vulnerability, one is evaluating outcomes that affect a person or a household. Some of the research into the distribution of income recognizes that the outcomes are not solely the result of the circumstances in which a person finds him or herself, but rather they are also a product of the effort with which that person takes on their income generating activities (Roemer, 1998). When wanting to incorporate the issue of equity into a discussion of public policy, one must first distinguish income or spending (wealth) inequality as an approximation of outcome inequality from opportunity inequality, recognizing that the relationship between the two is mediated by inequality of effort. While society does not aspire for its members to achieve equality of efforts, the equality of opportunities is presented as an aspiration. The idea is that the distribution of income should reflect only the distribution of efforts and should not be associated with an unequal distribution of opportunities.



To evaluate the distribution and evolution of opportunities in the territories, our starting point is the methodology suggested by the World Bank. This methodology enables us to calculate the Human Opportunity Index (HOI) (World Bank, 2006)[5]. While the World Bank (2006) compares the indices of opportunity for the Latin American countries, in Peru's case, Escobal et al., (2010) construct the same indicators, distinguishing between large regions (urban and rural areas of the coast, the Andes and the Peruvian Amazon). It is important to note that this previous study did not estimate the indicators at as detailed and granular a level as is achieved here.

### *Presentation of the Indicators (Advantages) of Circumstance*

Before presenting the indicators of opportunities that we analyzed, it is important to describe the basic set of circumstances. As mentioned

5 For more information on the methodology, see the Methodological Appendix.

above, circumstances are those factors which should not affect children's access to certain goods and services that can maximize their potential. The literature on social exclusion in Peru is ample and clearly demonstrates that variables of ethnicity, gender, education, rurality or income are critical for understanding disparities in access to opportunities (MIDIS, 2012).

In this study we have used the following circumstance indicators:



1. Gender of the head of household in which the child lives.
2. Years of schooling of the head of household.
3. Ethnicity of the head of household approximated by his/her first language (Spanish on one end, and *Quechua*, *Aymara* or an Indigenous language from the Amazon on the other).
4. Whether it is a single-parent household.
5. Number of children in the household (aged 15 and under).
6. Occupation of the head of household (primary, secondary or tertiary sector).
7. Dependency Ratio (number of members aged 5 years and under and 65 and older compared to the rest of the members of the household).
8. Area of residence (urban/rural).
9. Regions: Coast and Andes (divided into north, central and south); Amazon (divided into upper and lower) and Metropolitan Lima; and.
10. Altitude of the town in which the house is located (meters above sea level).

Consistent with the literature on the topic, the opportunity indicators presented here are calculated for a population of children under 18 years of age. The reason for this is so that their environment and opportunities can be evaluated in such a way as to ensure that personal efforts to achieve these opportunities are minimized. The idea here is that these circumstances be perceived as rights and not associ-

ated with personal effort. For this reason, it is uncommon to construct these indicators for adults, to the extent that their outcomes depend on their effort in addition to circumstances.

To estimate the Human Opportunity Index at a provincial level for the census years 1993 and 2007, it is necessary to first define the goods and services (or advantages) for which the indicator will be constructed, in addition to the circumstances being faced by the children. The HOI is constructed using 10 indicators relating to the household in which the person lives and 2 indicators that focus on creating human capital:



1. Adequate housing quality (the house doesn't have dirt floors or walls made of straw mats or other precarious materials, which is the official indicator used by INEI).
2. The house is not overcrowded (fewer than three people per room, which is the official indicator used by INEI).
3. Access in the home to drinking water (public system or treated water).
4. Access in the home to adequate sewage (a toilet connected to a sewage system or a septic tank).
5. Access in the home to electricity.
6. Access to key goods: Refrigerator.
7. Access to key goods: TV.
8. Access to key goods: PC.
9. Access to key services: Internet.
10. Access to key services: Telephone.
11. School attendance for children between 6 and 12 years of age and adolescents between 13 and 18 years of age.
12. Grade-appropriate placement for children between 6 and 12 years of age and adolescents between 13 and 18 years of age.

The population studied was divided into those under 12 and 12-18 year olds to see if different patterns emerged. Differences in the patterns only existed for the data relating to education. For this reason,

only in this case is the HOI reported for the two sub-populations. In all other cases, it is reported for children aged 12 and under.

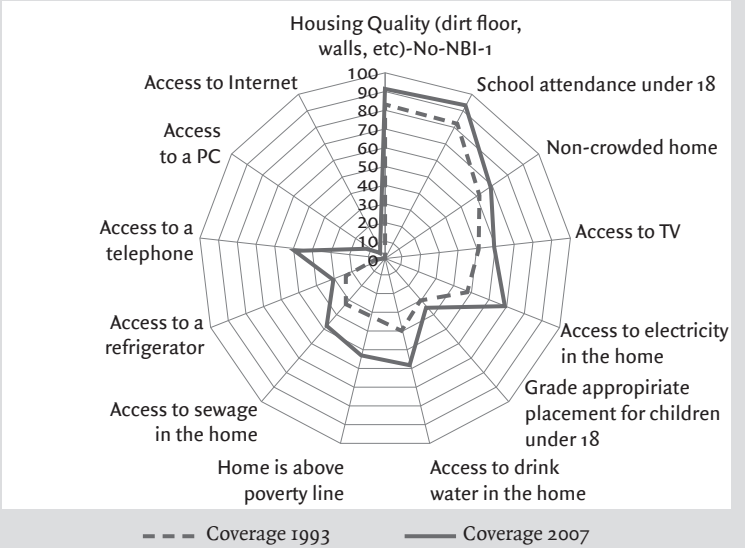
In addition to the 12 indicators mentioned above, we constructed an additional indicator relating to the condition of "non-poor" to which children aspire. It is an outcome indicator and is associated directly with the poverty indicator presented in the previous section to which we add a penalty for territorial inequality in poverty.

### *Evolution of Opportunities 1993-2007*



As can be clearly seen in Graph 4, Peru has experienced a significant improvement in the coverage of various opportunities for its underage population. There are some opportunities, such as access to electricity, water or telephone, where the improvements have been substantial. For other indicators, such as school attendance, the improvements have not been as marked, largely because the coverage was

GRAPH 4: CHANGES IN COVERAGE 1993-2007



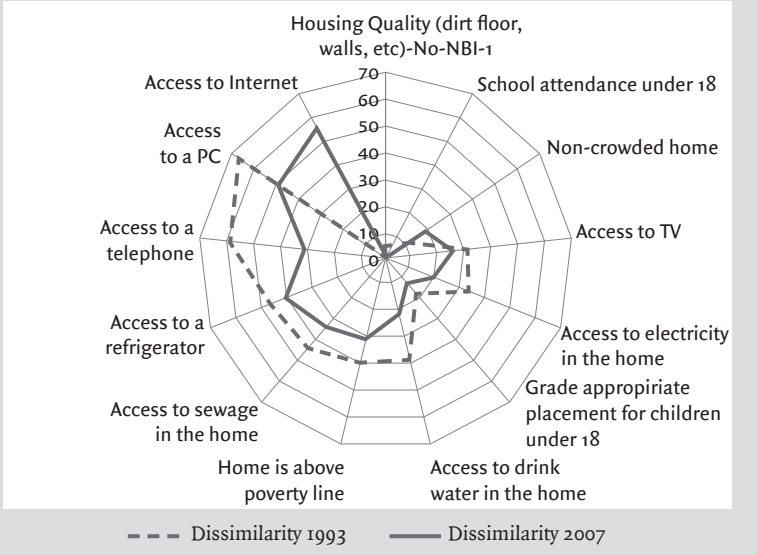

Source: Census 1993 and 2007. Compiled by the author.

already quite high in 1993. For other services, such as access to Internet or a computer, there have been very modest increases on nearly non-existent coverage in 1993.

Graph 5 shows the changes in dissimilarity, or disparities, at an aggregated level, which is to say how the coverage of these goods and services is distributed among different social groups characterized by the different circumstances presented. Interestingly, the most "modern" services, such as access to the Internet or to a PC, show the highest level of dissimilarity. Indeed, when it comes to access to the Internet, the levels of dissimilarity were very low in 1993, by and large because practically nobody had access to this service then. When the coverage of this service began to increase, its distribution was clearly not very homogenous. Areas that are more urbanized, richer, more educated, and non-indigenous get early access to these services. Something similar has happened with access to a telephone, which



GRAPH 5: CHANGES IN DISSIMILARITIES 1993-2007



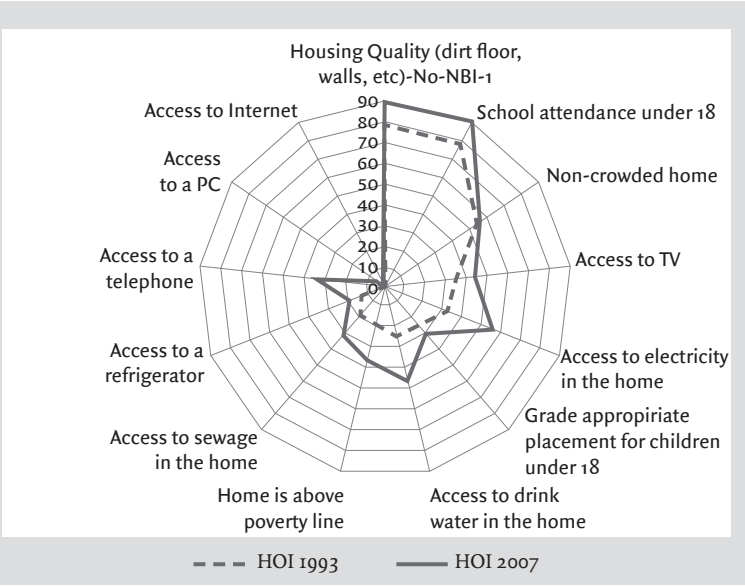

Source: Census 1993 and 2007. Compiled by the author.

had high levels of dissimilarity in 1993 when few people had access to this service. In 2007, the levels of dissimilarity had decreased, but they remained quite high when compared to the levels of dissimilarity for more traditional goods and services, such as access to electricity, drinking water, a house that is not overcrowded, or basic assets, like a television.

Combining changes in coverage with the changes in the dissimilarity of the different basic goods and services, one can ascertain the change in HOI for each one of the opportunities studied. As can be seen in Graph 6, there are opportunities such as access to minimally-adequate housing or school attendance, where HOI levels are quite high. These HOI values were close to 80 percent in 1993, and are now over 90 percent. At the other extreme, there are services, such as access to the Internetor access to a PC, where the HOI is very low because the coverage has not increased greatly, as well as a result of the



GRAPH 6: CHANGES IN EQUALITY OF OPPORTUNITIES 1993-2007




Source: Census 1993 and 2007. Compiled by the author.

expansion of the coverage discriminating against the historically excluded sectors of society.

When it comes to services like access to electricity, drinking water, and, to a lesser extent, access to sewage, Graph 6 shows that the HOI has increased largely because of an increase in coverage for populations who live in rural areas and are poor, have a lower level of education, or have an indigenous language as their first language.

When it comes to the accumulation of human capital, there is a notable difference between the HOI for school attendance and the HOI for grade-appropriate placement (or the level of schooling expected for child's age). In the latter, the HOI indicator reduces dramatically even though there is a significant increase over time.



***The Importance of Territory in the Distribution of Opportunities***

Up until this point, we have only described how changes in opportunities are distributed at a national level. Although it is easy to consider geographic attributes of territory (such as rurality or remoteness, approximated by the altitude of the provincial capital) as a significant factor in the disparities found, it is important to characterize in a more explicit manner the role that territory plays in the observed differences in the distribution of the various opportunities.

Table 7 summarizes the changes between 1993 and 2007 of the HOI indicators for the different opportunities we are studying. The first six columns show the indicators of coverage, disparity and HOI for 1993 and 2007. The last four columns show the decomposition of the change in the HOI. This decomposition in the HOI is calculated using the following equation:

$$IOH_{2007} - HOH_{1993} = \bar{p}_{2007}(1 - D_{2007}) - \bar{p}_{1993}(1 - D_{1993})$$
$$= [\bar{p}_{2007} - \bar{p}_{1993}] - [\bar{p}_{2007}D_{2007}] - [\bar{p}_{1993}D_{1993}] \quad (3)$$

Where the second and third period represent the penalty for changes in disparity.

Following Araar (2008), one can perform a decomposition of the disparity (or any other indicator of inequality) in a component that measures the change in the coverage and another component that measures the change in the penalty for disparity between territories:

$$[\bar{p}_{2007}D_{2007}] - [\bar{p}_{1993}D_{1993}] = [\bar{p}_{2007}D_{intra,2007} - \bar{p}_{1993}D_{intra,1993}] + [\bar{p}_{2007}D_{intra,2007} - \bar{p}_{1993}D_{intra,1993}] \quad (4)$$



To the extent that national and provincial indicators are available, one can perform a decomposition exercise for the penalty for disparity in two parts: one that is associated with the disparity that exists in coverage between different territories (provinces), and one for the penalty for disparity associated with coverage within territories. The outcome of the decomposition exercise is expressed in the following table.

The first set of opportunities (housing quality, access to TV, electricity in the home, drinking water, the Internet and educational indicators) shows a reduction in spatial inequalities. In nearly all cases (with the exception of housing quality), the reduction in inequalities is explained by reductions in the disparity component between provinces, rather than by reductions in disparities within provinces.

In contrast, the rest of the indicators (household above the poverty line, access to sewage in the home, no overcrowding in home, and access to a PC or a refrigerator) demonstrate an increase in spatial inequalities, generating a smaller improvement in the HOI than can be found by only comparing coverage. Another means of evaluating the importance of territory in the changes in opportunity is to decompose the HOI for both periods using a Shapley decomposition as described in Shorrocks (1999) and implemented by Hoyos Suarez (2013). The idea is to use Shapley's concept of equilibrium in game theory in order to identify the contribution of all the combinations of possible circumstances that affect the HOI calculation. By calculating all the possible combinations of circumstances, we can calculate each one's contribution to the HOI value.

TABLE 7: SPATIAL DECOMPOSITION OF THE CHANGES IN HOI 1993-2007

| | 1993 | | | 2007 | | | HOI Changes 1993 - 2007 | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Coverage | Dissimilarity | HOI | Coverage | Dissimilarity | HOI | Change in Coverage | Penalty disparity within Provinces | Penalty disparity between Provinces | Change in HOI |
| Household above poverty line | 0.30 | 0.39 | 0.18 | 0.51 | 0.30 | 0.36 | 0.21 | -0.065 | 0.102 | 0.18 |
| Housing Quality | 0.83 | 0.05 | 0.79 | 0.92 | 0.00 | 0.92 | 0.09 | -0.031 | -0.011 | 0.13 |
| HH access to electricity | 0.47 | 0.33 | 0.32 | 0.68 | 0.19 | 0.55 | 0.21 | -0.013 | -0.015 | 0.24 |
| HH access to drinking water | 0.38 | 0.39 | 0.23 | 0.57 | 0.21 | 0.45 | 0.19 | -0.011 | -0.019 | 0.22 |
| HH acces to sewage | 0.31 | 0.44 | 0.17 | 0.45 | 0.33 | 0.30 | 0.14 | -0.012 | 0.028 | 0.13 |
| HH without overcrowding | 0.61 | 0.12 | 0.54 | 0.68 | 0.18 | 0.56 | 0.07 | -0.009 | 0.063 | 0.02 |
| Access to TV | 0.50 | 0.31 | 0.34 | 0.59 | 0.25 | 0.44 | 0.09 | -0.002 | -0.002 | 0.09 |
| Access to PC | 0.01 | 0.67 | 0.00 | 0.12 | 0.49 | 0.06 | 0.11 | 0.021 | 0.032 | 0.06 |
| Access to Internet | 0.00 | 0.00 | 0.00 | 0.05 | 0.55 | 0.02 | 0.05 | -0.010 | -0.017 | 0.02 |
| Access to Telephone | 0.05 | 0.58 | 0.02 | 0.48 | 0.30 | 0.33 | 0.43 | 0.008 | 0.108 | 0.31 |
| Access to Refrigerator | 0.22 | 0.46 | 0.12 | 0.29 | 0.40 | 0.17 | 0.06 | -0.005 | 0.015 | 0.05 |
| Grade Appropiate Placement (under 12) | 0.28 | 0.17 | 0.23 | 0.33 | 0.12 | 0.29 | 0.04 | -0.003 | -0.006 | 0.05 |
| School Attendance (under 12) | 0.83 | 0.05 | 0.78 | 0.93 | 0.02 | 0.91 | 0.10 | -0.004 | -0.022 | 0.13 |

Source: Own calculations based on Census data from 1993 and 2007

Table 8 shows the decomposition of the HOI for the opportunity of not being poor for each of the two periods. For each year, the basic set of circumstances mentioned at the beginning of this section is used: the gender of head of household where the child lives, years spent in education of the head of household, ethnicity of head of household approximated by first language, single-parent home, occupation of the head of household, dependency ratio, and three variables that reflect geographic characteristics of the territory, urban or rural area of residence, altitude of the town where head of household lives, and region of origin.



The origin variable can be expressed in different ways. Here we use the following three alternatives:

1. Region of Origin 1, based on 9 geographic territories: Coast and Andes (divided into north, central and south); the Amazon (divided into upper and lower) and the Lima metropolitan area.
2. Region of Origin 2, based on 46 geographic divisions: the 24 Departments, each divided by their geographic regions of coast, Andes and Amazon, as appropriate.
3. Region of Origin 3, based on the country's 190 provinces.

Each of these regional variables, alongside the rural or urban area of residence and the altitude of the town where the home is located, constitutes a possible set of geographic variables. As can be observed in Table 8, each decomposition of the HOI has been undertaken using these three alternatives for the region of origin variable.

Firstly, the results of the HOI decomposition exercise, under a number of different circumstances,are consistent with those from a similar exercise undertaken by Escobal et al., (2012). In that study, using ENAHO surveys, a decomposition for education was performed, verifying that the educational level of the head of the household and his or her capacity to generate income along with geographic variables were the circumstances that most influence HOI. While Escobal et al., (2012)

TABLE 8: PROVINCE DECOMPOSITION OF HOI CHANGES (NON-POOR) 1993-2007

| HOI Decomposition according to circumstances | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1993 | | | | | | 2007 | | | | | |
| | Geographic Mix 1 (Domains) | | Geographic Mix 2 (Department + Natural Region) | | Geographic Mix 3 (Province) | | Geographic Mix 1 (Domains) | | Geographic Mix 2 (Department + Natural Region) | | Geographic Mix 3 (Province) | |
| | Disim | % IOH | Disim | % IOH | Disim | % IOH | Disim | % IOH | Disim | % IOH | Disim | % IOH |
| Head of Household Gender | 0.0001 | 0.0% | 0.0002 | 0.0% | 0.000 | 0.01% | 0.0000 | 0.0% | 0.0000 | 0.0% | 0.0000 | 0.0% |
| Single-parent Home | 0.0106 | 2.6% | 0.0102 | 2.5% | 0.0100 | 2.40% | 0.0031 | 1.0% | 0.0031 | 1.0% | 0.0031 | 1.0% |
| Head of Household Years of Scholing | 0.1218 | 30.1% | 0.1167 | 28.4% | 0.1139 | 27.34% | 0.0541 | 17.6% | 0.0533 | 17.1% | 0.0520 | 16.4% |
| Age | 0.0020 | 0.5% | 0.0019 | 0.5% | 0.0018 | 0.44% | 0.0006 | 0.2% | 0.0007 | 0.2% | 0.0007 | 0.2% |
| ## of Children 0-16 years | 0.1440 | 35.6% | 0.1433 | 34.9% | 0.1414 | 33.93% | 0.0253 | 8.2% | 0.0248 | 7.9% | 0.0251 | 7.9% |
| HH Occupation | 0.0313 | 7.7% | 0.0297 | 7.2% | 0.0286 | 6.87% | 0.0363 | 11.8% | 0.0357 | 11.4% | 0.0349 | 11.0% |
| HH indigenous language | 0.0341 | 8.4% | 0.0307 | 7.5% | 0.0301 | 7.22% | 0.0251 | 8.2% | 0.0243 | 7.8% | 0.0239 | 7.5% |
| Dependency ratio | 0.0047 | 1.2% | 0.0045 | 1.1% | 0.0049 | 1.17% | 0.0107 | 3.5% | 0.0108 | 3.4% | 0.0107 | 3.4% |
| Urban/Rural | 0.0258 | 6.4% | 0.0254 | 6.2% | 0.0239 | 5.74% | 0.0554 | 18.0% | 0.0544 | 17.4% | 0.0526 | 16.6% |
| Altitutde | 0.0083 | 2.0% | 0.0075 | 1.8% | 0.0074 | 1.78% | 0.0436 | 14.2% | 0.0421 | 13.5% | 0.0425 | 13.4% |
| Geographic Mix: Dummies for Domain/Natural Region Province | 0.0220 | 5.4% | 0.0412 | 10.0% | 0.0546 | 13.09% | 0.0529 | 17.2% | 0.0634 | 20.3% | 0.0717 | 22.6% |
| Total | 0.4048 | 100.0% | 0.410 | 100.0% | 0.4168 | 100.00% | 0.4048 | 100.0% | 0.4103 | 100.0% | 0.3171 | 100.0% |
| Importance of Geographic Mix + Urban/Rura + Altitude | | 13.9% | | 18.1% | | 20.61% | | 49.5% | | 51.1% | | 52.6% |

Node: Decomposition undertaken for children under 12.

used the income of the head of household, here this indicator was replaced by two related indicators: the economic dependency ratio of the home and the occupation of the head of household.

Table 8 clearly shows that the importance of the geographic component grows dramatically between 1993 and 2007. If we use the first definition of the variable for the region of residence, the geographic component shifts from representing 14 percent to covering nearly 50 percent. If we use the second definition of the region of residence variable, the geographic component increases from 18 percent to 51 percent. Lastly, if we use the third definition (the most granular of the three), the geographic component goes from representing over 20 percent to nearly 53 percent. Although the numbers vary by the definition used, there is no doubt that the increasing importance of the geographic component is a significant finding. A visual depiction of this increase can be clearly observed in Map 2 or in Maps 4, 5 and 6, where we can see that the improvements in well-being have well-defined spatial patterns, privileging the coastal regions and hampering the regions of the Andes and Amazon.

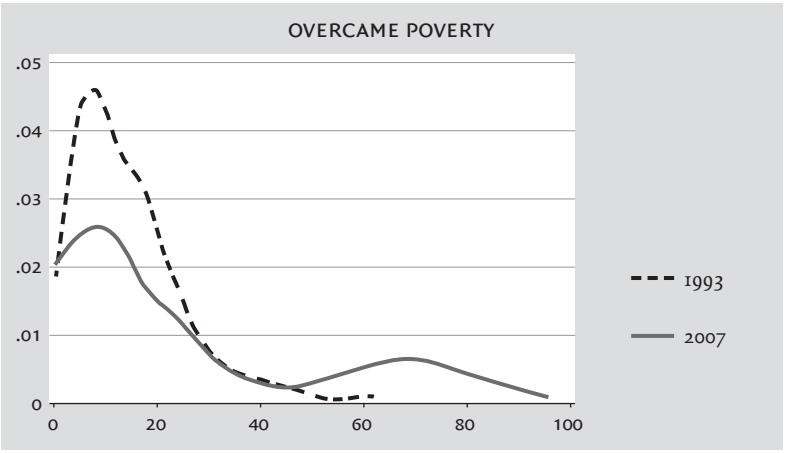


***Territorial Analysis of Each HOI***

Another means of exploring the changes in the spatial distribution of opportunities is by making a graph of the histograms (in their discrete version) or the function of density (in their continuous version) of the HOI at a provincial level. Graph 7 shows the density function (kernel) of the provincial HOI for the "exit from poverty" indicator. The dotted line shows the distribution of the provincial HOI in 1993 and the continuous line shows the distribution in 2007.

Graph 7 shows that the density function for the HOI associated with "non-poor" shifts to the right between 1993 and 2007. This means that a significant portion of the provinces improved their living conditions. The interesting part of this graph, however, is that while the density function from 1993 is unimodal (with a significant mass of distribution located in the lower values of the HOI), the 2007 density

GRAPH 7: CHANGES IN THE PROVINCIAL DISTRIBUTION OF THE HOI




Source: Census data from 1993 and 2007. Compiled by the author.

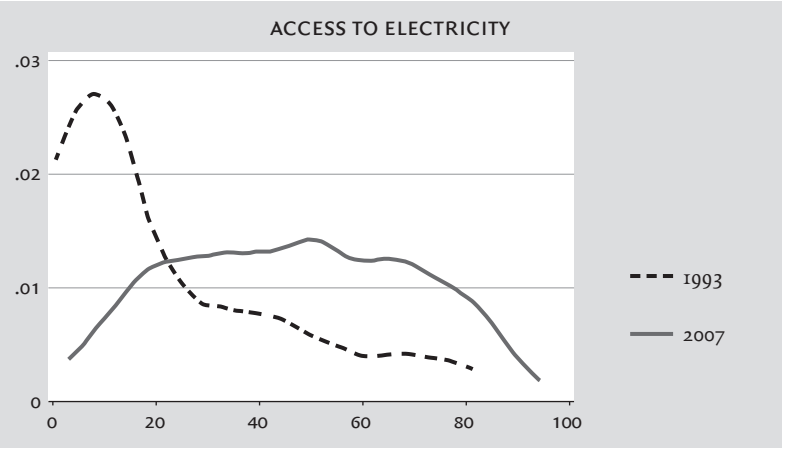


function is clearly bimodal. This means that while one group of provinces experienced a significant improvement in their HOI between 1993 and 2007, another group of provinces remained lagging behind.

Graphs 8 and 9 show the distribution in the provincial HOI for access to electricity and drinking water. In this case, it is interesting to note that there is no bimodality in the density function for 2007. For access to both services, the HOI indicator shifts to the right. Despite the fact that no small number of provinces continue to lag behind, the bulk of the distribution of provinces with low HOI levels in 1993 practically disappears in 2007.

It is interesting to contrast Graphs 8 and 9 with Graph 7. The fact that provinces have managed to improve their access to key infrastructure, such as electricity and drinking water, is not sufficient enough to lead to reductions in monetary poverty. This differentiated pattern is consistent with the fact that it is necessary to complement different goods and public services with more physical, human or natural capital among the poor. Improvements in one aspect may not be sufficient.

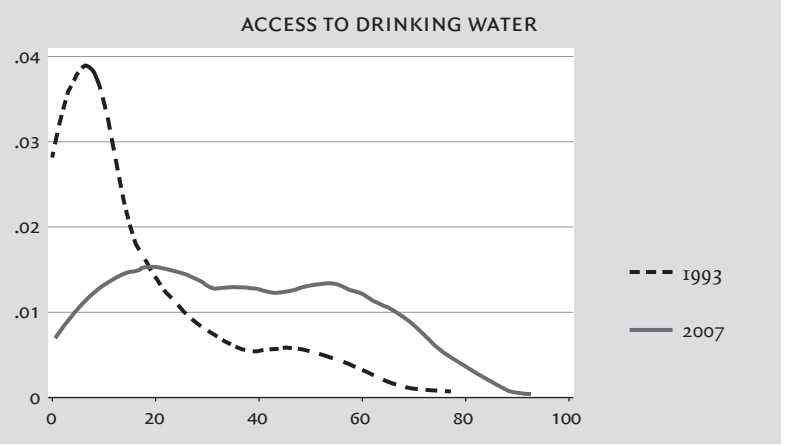
GRAPH 8: CHANGES IN THE PROVINCIAL DISTRIBUTION OF THE HOI






Source: Census Data from 1993 and 2007. Compiled by the author.

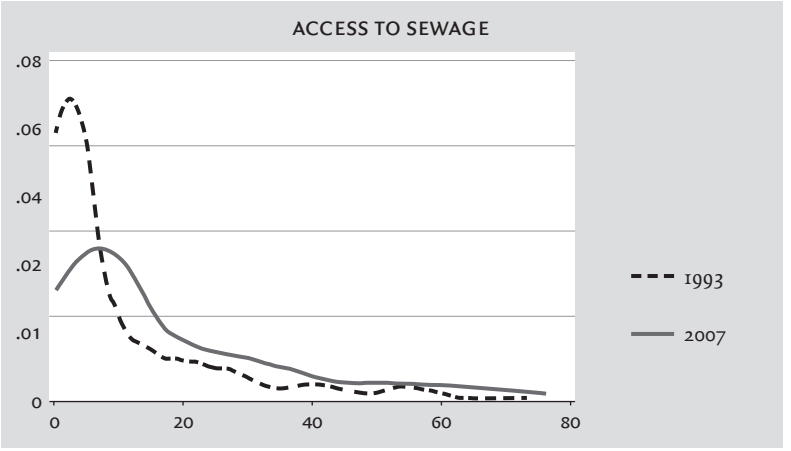
GRAPH 9: CHANGES IN THE PROVINCIAL DISTRIBUTION OF THE HOI




Source: Census Data from 1993 and 2007. Compiled by the author.

In terms of the HOI associated with access to adequate sewage, Graph 10 shows that the pattern of change in the provincial distribution of this indicator is different than the pattern for other public ser-

GRAPH 10: CHANGES IN THE PROVINCIAL DISTRIBUTION OF THE HOI




Source: Census Data 1993 and 2007. Compiled by the author.

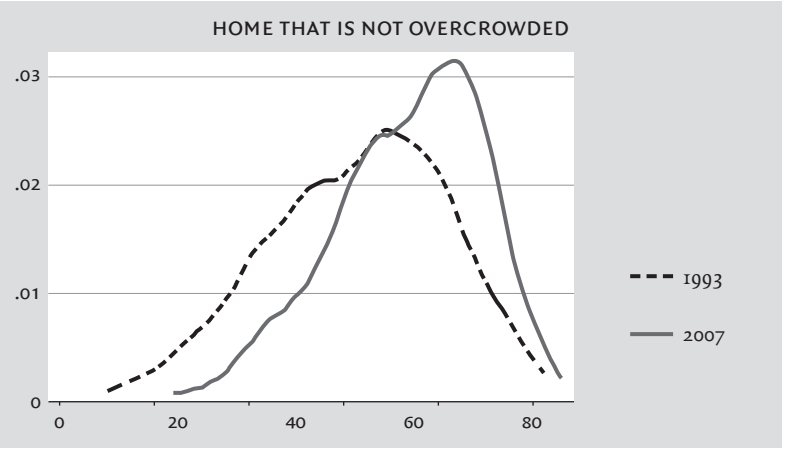


vices, such as electricity and drinking water. In this case, the graph clearly shows that improvements in distribution have been much more modest.

Graphs 11 and 12 show the territorial distribution of HOI indicators associated with both living in a home that is not overcrowded and access to adequate housing. In both cases, the provincial distribution of the departure point is much better than those for the previous indicators. The provincial distribution of the HOI shifts to the right toward higher values associated with 100 percent coverage, no matter the circumstances. In terms of adequate housing, the bulk of the distribution registers close to 100 percent coverage, although a significant proportion of provinces remain in a lagging position, which is reflected along the tail in the left of the HOI distribution for 2007. For access to a home that is not overcrowded, there is still a significant mass in the HOI's distribution that is lower than 50 percent.

Graphs 13 through 17 show access to goods and basic services in the home (a TV, a refrigerator, a computer, Internet and telephone). For access to television, there were improvements between 1993 and

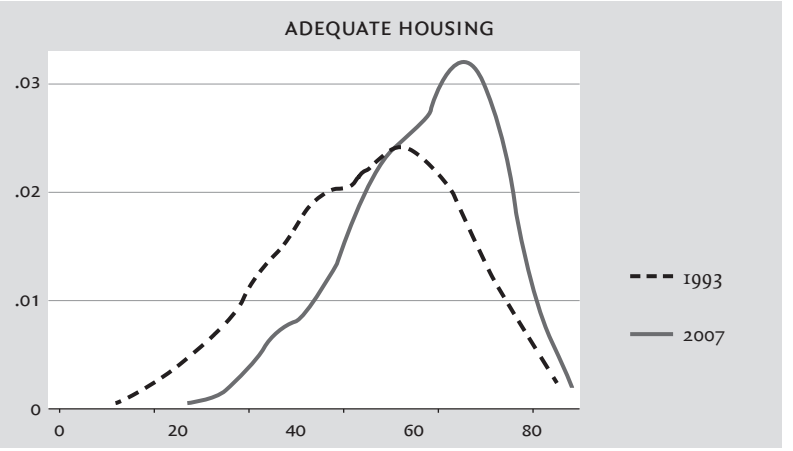
GRAPH 11: CHANGES IN THE PROVINCIAL DISTRIBUTION OF THE HOI






Source: Census Data 1993 and 2007. Compiled by the author.

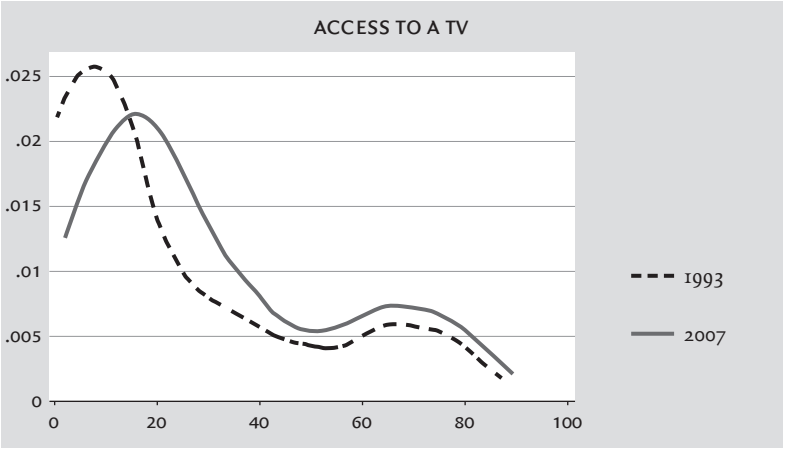
GRAPH 12: CHANGES IN THE PROVINCIAL DISTRIBUTION OF THE HOI




Source: Census Data 1993 and 2007. Compiled by the author.

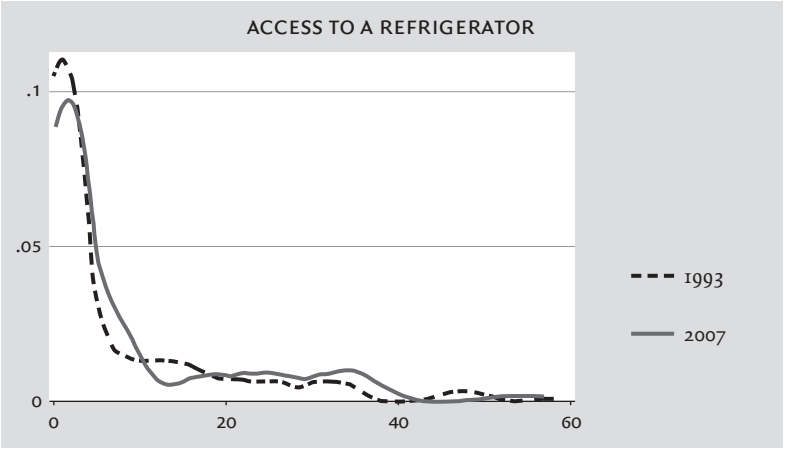
2007, but these changes were not overly significant. There is also evidence of bimodality in the distribution, both in 1993 and 2007, with the existence of groups of provinces with markedly different access to this opportunity. In terms of access to a refrigerator, an essential good

GRAPH 13: CHANGES IN THE PROVINCIAL DISTRIBUTION OF THE HOI




Source: Census Data 1993 and 2007. Compiled by the author.

GRAPH 14: CHANGES IN THE PROVINCIAL DISTRIBUTION OF THE HOI




Source: Census Data 1993 and 2007. Compiled by the author.

for preserving food and improvingdomestic food security, it is surprising that distribution continues to be strongly biased to the right. This shows that improvements in coverage continue to be unequally distributed among the households of different circumstances.

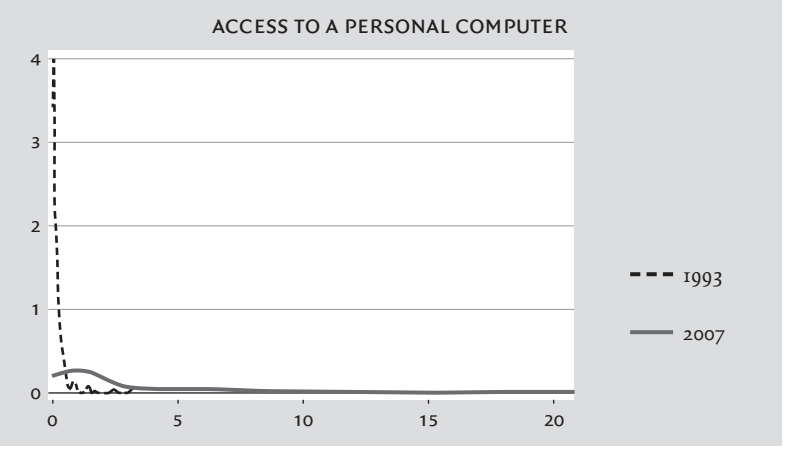
Graphs 15, 16, and 17 show goods and services with very low or, in the case of the Internet, non-existent coverage in 1993, which expanded in a decidedly unequal manner by 2007 in the groups characterized by the different circumstances that we have been analyzing. In terms of the Internet, the bulk of the provinces within the country have very low and unequal coverage, with urban centers and provincial capitals having a more privileged position compared to the peripheries and rural areas.

When it comes to access to telephone, as can be seen in Graph 17, in 1993 there was a medium to high level of coverage in very few provinces, while most provinces had little to no coverage, which was unequally distributed (once again in provincial capitals). In 2007, the panorama improved, but the bimodality in the distribution became apparent with only few provinces with coverage above 60 percent and many provinces with coverage between 10 and 20 percent.



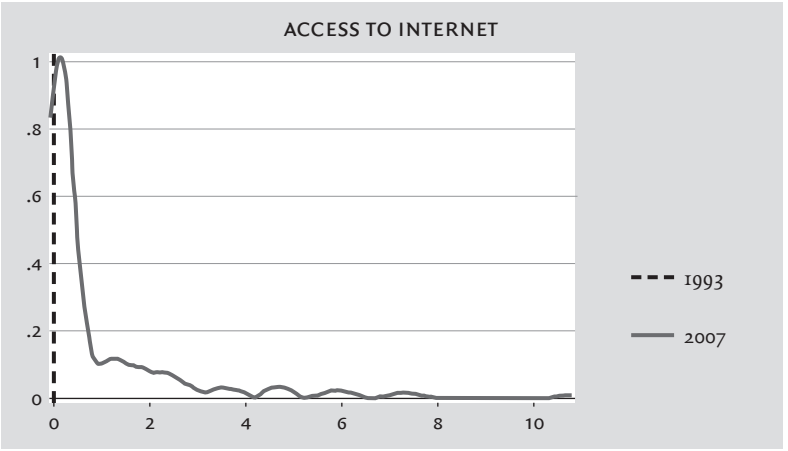
Graphs 18 and 19 show changes in provincial HOI for two variables regarding the accumulation of human capital associated with children aged 12 and under. Graph 18 shows a notable improvement in equal opportunities to access education, fundamentally associated

GRAPH 15: CHANGES IN THE PROVINCIAL DISTRIBUTION OF THE HOI



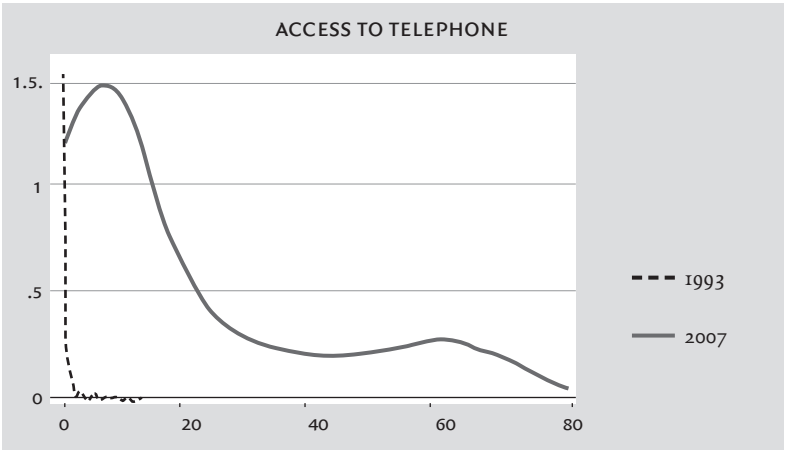

Source: Census Data from 1993 and 2007. Compiled by the author.

GRAPH 16: CHANGES IN THE PROVINCIAL DISTRIBUTION OF THE HOI




Source: Census Data 1993 and 2007. Compiled by the author.

GRAPH 17: CHANGES IN THE PROVINCIAL DISTRIBUTION OF THE HOI

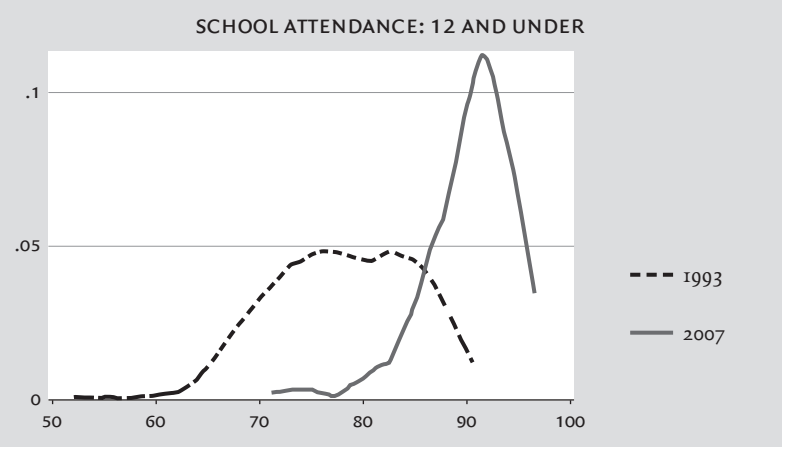



Source: Census Data 1993 and 2007. Compiled by the author.

with primary school. Here the distribution function for 2007 makes it evident that the HOI is lower than 90 percent. This data point is consistent with the nearly universal enrollment in primary school during the recent decades in the country. However, when we analyze the indicator for grade-appropriate placement (schooling appropriate for a

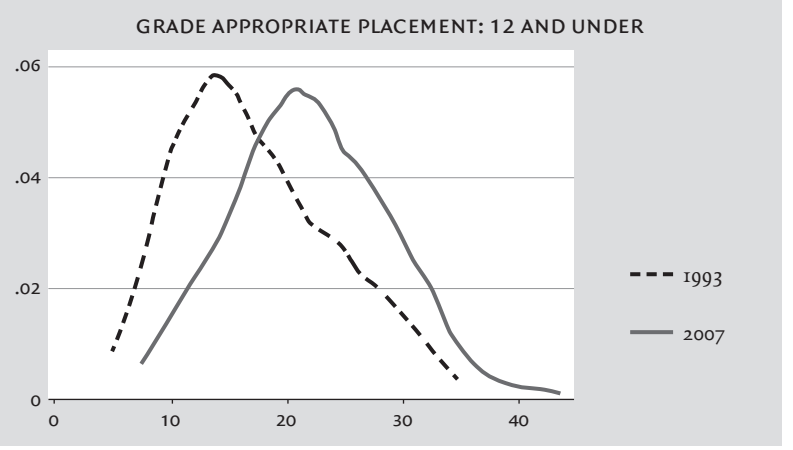
child's age), the panorama is less optimistic. Even though the data show significant improvements between 1993 and 2007, there are very few provinces that have a grade-appropriate placement level greater than 30 percent, demonstrating the problem of delays in enrolling in school, and problems with being held back to repeat a grade.

GRAPH 18: CHANGES IN THE PROVINCIAL DISTRIBUTION OF THE HOI




Source: Census Data 1993 and 2007. Compiled by the author.

GRAPH 19: CHANGES IN THE PROVINCIAL DISTRIBUTION OF THE HOI




Source: Census Data from 1993 and 2007. Compiled by the author.

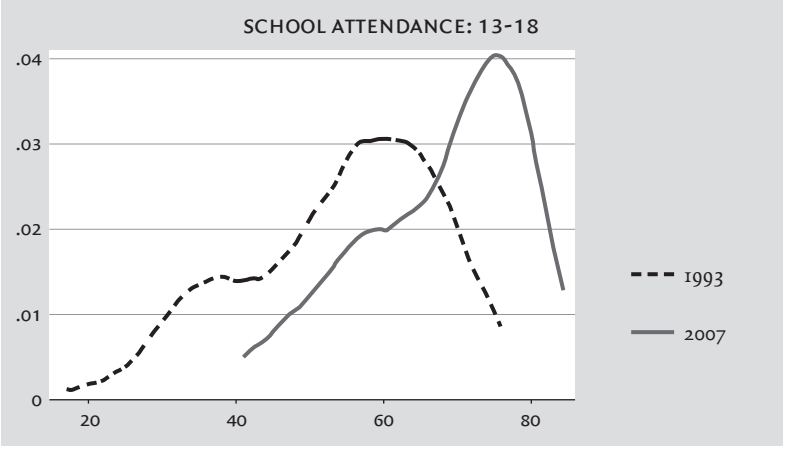
The problems regarding the accumulation of human capital are even more evident when one focuses on the education of children aged 13 and older, typically linked to secondary education. When comparing Graph 20 with Graph 18, we can see that the HOI for school attendance among children aged from 13 to 18 is lower, and there are a significant number of provinces where it is lower than 60 percent. As such, the fact that there are fewer secondary schools spread out across the territory, with a lower presence in more remote rural areas of the Andes and Amazon, generates a greater inequality in opportunity for rural young people to access to higher levels of human capital.



***Maps of Changes in the Territorial Distribution of Opportunities***

To complement the graphs, an analysis was also undertaken using maps that show where the different opportunities were distributed in the territories in 1993 and 2007. Maps can also be used to show how the changes in HOI decompose by using maps that show the change in coverage and the change in the penalty for disparity. As an example, Maps 7.1 to 7.4 present indicators for the opportunity of

GRAPH 20: CHANGES IN THE PROVINCIAL DISTRIBUTION OF THE HOI




Source: Census Data 1993 and 2007. Compiled by the author.

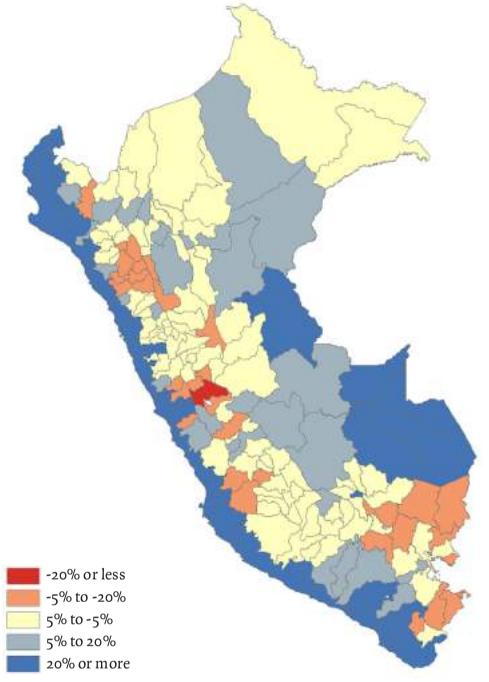
MAP 7: CHANGE AND DECOMPOSITION IN THE OPPORTUNITY INDEX: NON-POOR

MAP 7.1. HOI – 1993

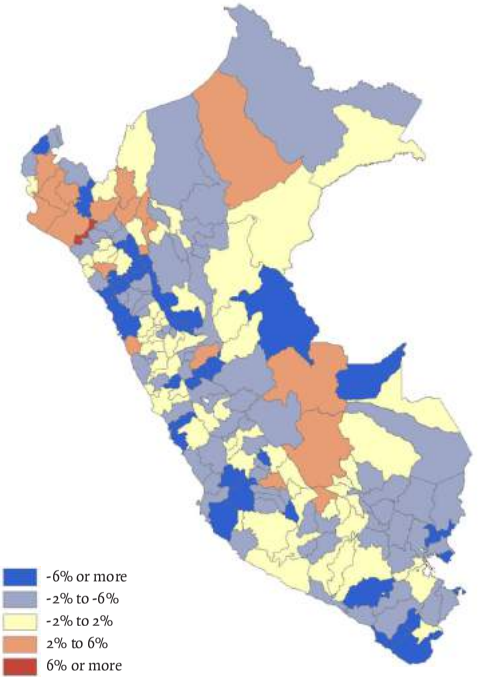



MAP 7.2. HOI – 2007

MAP 7.3. CHANGES IN COVERAGE 1993 - 2007




MAP 7.4. CHANGE IN PENALTY FOR DISPARITY 1993 - 2007




Source: Census data from 1993 and 2007. Compiled by the author.

being non-poor.[6] In 1993, as can be seen in Map 7.1, the greatest HOI values for the variable of being non-poor are primarily concentrated along the central and southern coast, in addition to a few areas in the central Andes that are linked to the *Montaro* River valley, as well as in the northern Andes, in areas strongly linked to coffee and cacao farming. Map 7.2 shows major changes in the HOI associated with the increase in opportunities of overcoming poverty in the coastal provinces. Beyond the coast, the few provinces with high HOI values are in the Amazon and are associated with an informal and unsustainable economic activity: alluvial gold mining.



Map 7.3 shows changes in coverage, which, for this indicator, is no different than the reductions of poverty identified in Map 2. Map 7.4 shows that the provinces whose disparity reductions have contributed to improved HOI are very few, among them *Contralmirante Villar* in *Tumbes*, *Trujillo* and *Virú* in the *Trujillo* region, and *Santa*, *Chimbote* and *Casma* in *Áncash*, in addition to Lima, *Ica*, *Ilo* and *Tacna*. Other areas that stand out are large capitals, such as *San Martín*, *Arequipa* and *Cuzco*. In all cases, one characteristic all of the territories share is that they have an active labor market in a region with great dynamism generated by services, agro-industry, fishing, commerce or, in the case of *Ilo*, mining.

A general analysis of the set of four maps for each of the constructed HOI's reveals outcome patterns that are fairly repetitive. They show improvements in HOI indicators in provinces of the coast and in a few provinces where coverage improvements have been distributed in a manner that does not discriminate against population segments characterized by unfavorable circumstances related to education, ethnicity or rurality.

6 The same set of four maps for each of the opportunities analyzed in this study are available online at www.rimisp.org.

### *Identification of Trapped Territories*

Based on the 12 opportunity indicators discussed in this section, we can identify territories that have never lagged behind, territories that are in opportunity traps, and territories that have demonstrated upward or downward mobility. As with poverty and vulnerability, here a province can be considered lagging behind for each opportunity indicator when its HOI in a given period is half a standard deviation or more below the simple average for all the provinces during this same period. For each HOI we can establish four types of territories:

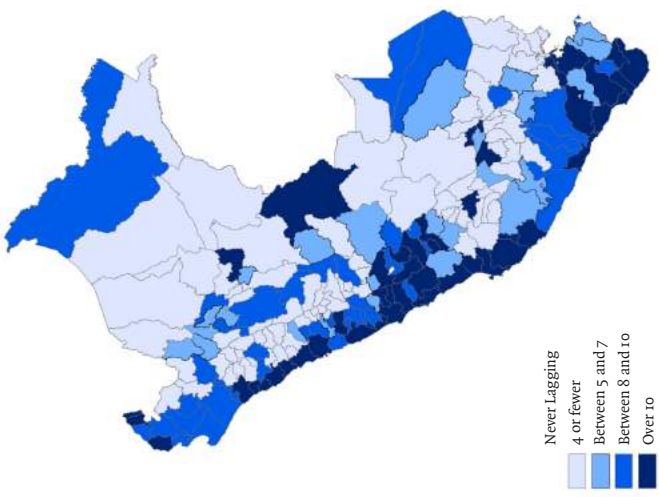


1. Always lagging behind (or trapped): those that were not lagging behind in 1993 or in 2007.
2. Began lagging behind (downwardly mobile): those provinces that were not lagging behind in 1993 but were in 2007.
3. Overcame lagging behind (upwardly mobile): those provinces that were lagging behind in 1993 but not in 2007.
4. Never lagging behind (non-trapped): those provinces that were not lagging behind in either of the two years.

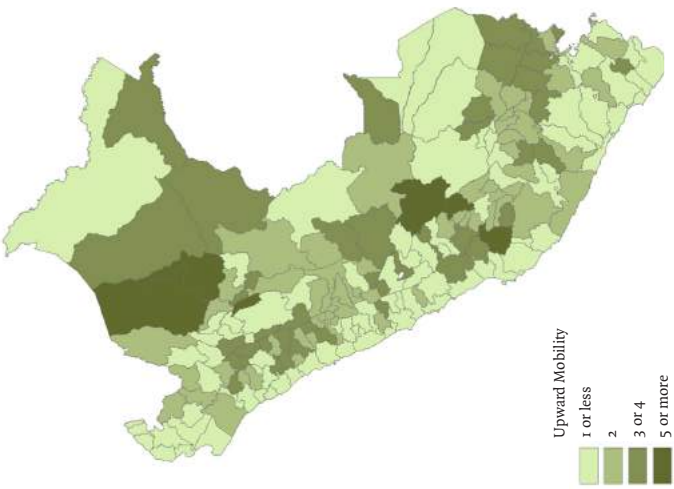
Since we have 12 opportunity indicators, we have opted to show the maps that represent the frequency with which the different provinces appear in each one of the four situations. As can be observed in Map 8.1, once again the provinces with the greatest concentration of opportunities, where there is no lagging position, are the coastal provinces. In addition to these are a few provinces in the central Andes and a few in dynamic cities in the Andes and Amazon, such as *Iquitos*, *San Martín* (as a result of the dynamism of the city of *Tarapoto*), *Coronel Portillo* (as a result of the dynamism of the city of *Pucallpa*) *Huamanga*, *Abancay* and *Cuzco*. All of these are regional capitals.

Map 8.4 shows that the provinces that have opportunity traps are provinces in the northern and southern Andes and the upper Amazon, with the exception of regional capitals, that have managed to not become trapped.

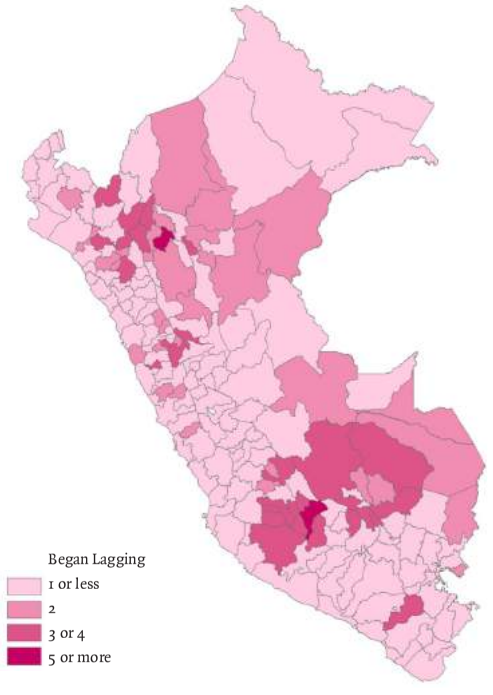
MAP 8.1: PROVINCES THAT ARE NEVER LAGGING BEHIND



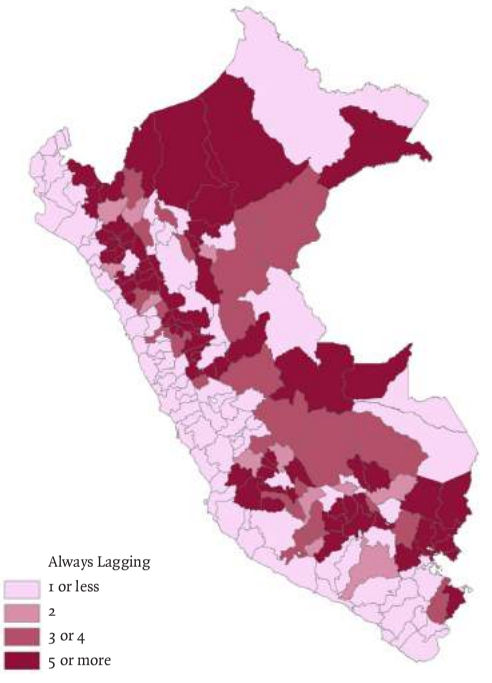

MAP 8.2: UPWARDLY MOBILE PROVINCES



MAP 8.3: DOWNWARDLY MOBILE PROVINCES




MAP 8.4: PROVINCES THAT ARE ALWAYS LAGGING BEHIND




Source: Census data from 1993 and 2007.

In the case of provinces where there is a certain level of upward mobility (Map 8.2), a few areas stand out in the central-northern Andes (the *Áncash* region) and in the southern Andes (*Espinar*). These areas are likely linked to the expansion of mining and the availability of revenues that accrue to local governments from this activity (canon), which have enabled investments for improving public services in these regions.

Combining the four maps, we can characterize the provinces according to the four situations: never lagging behind (when this occurs in fewer than 9 of the HOI considered); always lagging behind (when this occurs in at least 9 of the HOI considered); with upward mobility (when at least 5 indicators improve); and downward mobility (when the situation worsens in at least 5 indicators).

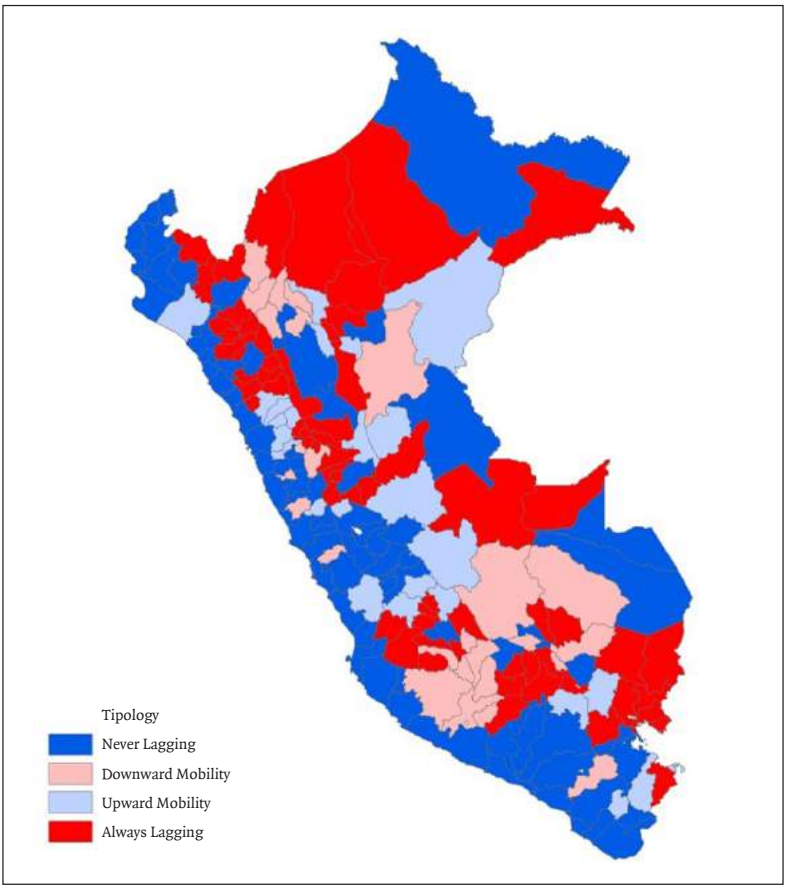


Map 9 summarizes what was characterized in Maps 9.1-9.5, highlighting the great dynamism of the coast, where the provinces were not lagging behind in either of the periods studied. This situation is shared with a few other provinces in the Andes and Amazon, nearly all of which are regional capitals. In this map, we can also observe the stagnation in provinces of the northern and southern Andes (especially the highland provinces of *Cuzco* and *Puno* in the south, as well as the provinces of *Cajamarca* and *Huánuco*). It is also evident that the provinces with downward mobility are highly concentrated in the southern Andes, especially in *Ayacucho*, *Apurímac* and the northern part of *Cuzco*.

## CHARACTERIZATION OF THE TERRITORIES THAT ARE LAGGING BEHIND

Once the territories that had poverty or vulnerability traps, or those that were lagging behind in many of the opportunities studied, have been identified as lagging behind, it is important to characterize these territories and compare them to the provinces that display upward mobility or those that have never been lagging behind in poverty or vulnerability in the majority of the opportunity indicators.

MAP 9: PROVINCIAL MOBILITY TYPES




Source: Census Data from 1993 and 2007.



Table 9 presents the characteristics of the territories according to their total vulnerability dynamic, while Table 10 characterizes the territories according to their opportunity dynamic.

Considering that the territories that are never lagging behind, with regard to both dynamics, are more urban, not to mentionthat the country's largest cities are located within them, it will come as no surprise that over 70 percent of the population but less than half of the territory is located within these areas that are never lagging behind.

TABLE 9: CHARACTERIZATION OF PROVINCIAL DYNAMICS OF TOTAL VULNERABILITY

| | Never Lagging Behind | Upwardly Mobile | Downwardly Mobile | Always Lagging Behind |
|---|---|---|---|---|
| Population | 20,075,083 | 2,209,362 | 2,445,486 | 2,698,238 |
| Number of Provinces | 89 | 21 | 36 | 49 |
| Per Capita Spending | 444.0 | 271.8 | 172.5 | 178.5 |
| Rurality | 11% | 38% | 68% | 67% |
| Altitude | 946 | 1129 | 3296 | 2411 |
| Poverty | 18% | 38% | 75% | 70% |
| Neither Poor nor Vulnerable | 11% | 5% | 10% | 4% |
| Size of Household | 4.0 | 4.1 | 3.8 | 4.2 |
| Head of Household Indigenous Language | 14% | 19% | 56% | 54% |
| Head of Household Years of Education | 9.7 | 7.1 | 5.7 | 5.5 |
| Head of Household Female | 30% | 24% | 28% | 25% |
| Population with Drinking Water (Public System) | 74% | 53% | 38% | 33% |
| Population with Access to Electricity | 85% | 61% | 44% | 43% |
| Population with Refrigerator | 42% | 18% | 2% | 4% |
| Population with TV | 73% | 47% | 19% | 21% |
| Economic Census 2012: Rate per Thousand Inhabitants | | | | |
| Individuals employed in the primary sector | 5.03 | 2.85 | 3.78 | 4.27 |
| Individuals employed in the secondary sector | 25.87 | 9.53 | 2.07 | 2.23 |
| Individuals employed in the tertiary sector | 92.61 | 33.84 | 19.21 | 17.95 |
| Number of businesses in the primary sector | 0.39 | 0.49 | 0.03 | 0.02 |
| Number of businesses in the secondary sector | 3.50 | 2.23 | 1.26 | 1.16 |
| Number of businesses in the tertiary sector | 35.40 | 23.24 | 14.14 | 13.11 |
| Income from Net Sales | 21,390 | 2,128 | 1,510 | 654 |
| %prim | 17% | 4% | 65% | 0% |
| %sec | 26% | 18% | 3% | 13% |
| %ter | 56% | 78% | 33% | 87% |
| Index of diversification-13 sectors (0(least diversified) to 1 (most diversified) | | | | |
| Labor diversification | 0.73 | 0.68 | 0.64 | 0.60 |
| Diversification of number of businesses | 0.60 | 0.58 | 0.52 | 0.50 |
| Diversification of income for net sales | 0.59 | 0.49 | 0.49 | 0.53 |
| % Provinces with mining activity in at least 1 district | 37% | 4% | 65% | 16% |

Source: Economic Census 2012. Compiled by the author.

TABLE 10: CHARACTERIZATION OF THE PROVINCIAL DYNAMICS OF EQUALITY OF OPPORTUNITIES

| | Never Lagging Behind | Upwardly Mobile | Downwardly Mobile | Always Lagging Behind |
|---|---|---|---|---|
| Population | 20,447,804 | 1,880,286 | 1,297,791 | 3,802,288 |
| Number of Provinces | 76 | 26 | 26 | 67 |
| Per Capita Spending | 443.7 | 211.8 | 217.9 | 174.3 |
| Rurality | 10% | 57% | 55% | 72% |
| Altitude | 927 | 2076 | 2378 | 2660 |
| Poverty | 17% | 57% | 55% | 71% |
| Neither Poor nor Vulnerable | 11% | 8% | 6% | 7% |
| Size of Household | 4.0 | 4.1 | 3.9 | 4.1 |
| Head of Household Indigenous Language | 15% | 41% | 52% | 43% |
| Head of Household Years of Education | 9.7 | 6.5 | 6.2 | 5.3 |
| Head of Household Female | 30% | 25% | 26% | 25% |
| Population with Drinking Water (Public System) | 75% | 37% | 48% | 32% |
| Population with Access to Electricity | 86% | 53% | 55% | 36% |
| Population with Refrigerator | 42% | 8% | 7% | 3% |
| Population with TV | 74% | 31% | 31% | 17% |
| Economic Census 2012: Rate per Thousand Inhabitants | | | | |
| Individuals employed in the primary sector | 5.16 | 3.33 | 3.65 | 3.04 |
| Individuals employed in the secondary sector | 26.07 | 4.06 | 3.52 | 1.63 |
| Individuals employed in the tertiary sector | 92.27 | 27.70 | 24.15 | 15.58 |
| Number of businesses in the primary sector | 0.43 | 0.08 | 0.04 | 0.02 |
| Number of businesses in the secondary sector | 3.52 | 1.69 | 1.96 | 0.99 |
| Number of businesses in the tertiary sector | 35.59 | 18.91 | 19.27 | 11.48 |
| Income from Net Sales | 21,111 | 2,397 | 1,372 | 421 |
| %prim | | | | |
| %sec | 0.76 | 0.66 | 0.64 | 0.60 |
| %ter | 0.61 | 0.56 | 0.54 | 0.50 |
| Index of diversification-13 sectors (0 (least diversified) to 1 (most diversified) | 0.61 | 0.51 | 0.51 | 0.51 |
| Labor diversification | 86% | 62% | 38% | 63% |

Source: Economic Census 2012. Compiled by the author.

The levels of rurality in the areas that are always lagging behind and downwardly mobile are substantially greater than those territories that have never lagged behind. In an intermediate area, we find the territories that have achieved upward mobility, representing only 8 percent of the population. As expected, in both tables we can see that the provinces that are never lagging behind are the most modern sectors and those with greater access to goods and public services. They are also spaces where secondary activities (industry) and tertiary activities (services) are highest, and income for per capital sales is substantially higher.



Another characteristic that is important to highlight is the difference that can be found in the degree of income and employment diversification in the territories that have never lagged behind compared to those that have experienced downward mobility. While the territories that are most lagging behind or those with downwardly mobile dynamics have low levels of diversification in terms of their productive apparatus, the territories that have achieved upward mobility have done so by increasingly diversifyingtheir productive apparatus.

Interestingly, mining activity is present in areas that are never lagging behind, as well as in territories that are always lagging behind or have downwardly mobile dynamics.

That said, the presence of mining is significant in upwardly mobile territories, and it improves access to basic goods and services (Table 2), but this is not reflected in significant reductions of monetary poverty that enable inhabitants of these territories to overcome poverty or vulnerability. This finding is interesting because it shows a certain positive dynamic, but one that is in no way sufficient.

## SOCIAL GROUP MOBILITY

Up to this point, we have analyzed issues of poverty and inequality and of inequality of opportunities among individuals and households, analyzing their distribution throughout different territories (provinces).

To a certain extent, this evidence is what the literature on inequality recognizes as vertical inequality or inequality among people (Stewart et al., 2005). This research also recognizes that there is horizontal inequality among social groups. Equally as important as understanding the changes in inequality of opportunities among individuals is understanding the changes that occur at the a social group level.

When calculating equality of opportunities, we can see horizontal inequalities, or the existence of circumstances such as gender, ethnicity, or place of residence, that account for a great deal of the unequal distribution of opportunities for children.



To take this discussion a step further, it is useful to document how certain social groups have converging or diverging dynamics, and how certain historically-marginalized social groups show some degree of upward mobility. In this section, we construct a pseudo-panel with data from 1993 and 2007, including the per capita spending estimates and poverty with which we worked at the beginning of this study. This pseudo-panel allows us to estimate whether there is process of convergence and, if so, its velocity.

### *Constructing Pseudo Panels to Evaluate the Mobility of Social Groups*

Given that census data is anonymized, it is impossible to construct a direct panel of households or individuals from two consecutive censuses; however, we can construct a synthetic panel that summarizes the average characteristics of typical individuals. For our purposes, we are interested in following men and women separately, by age groups, who live in homes with different levels of schooling and who were born in urban or rural areas within the same territories.

Table 11 shows the definitions of three pseudo-panels that we constructed in order to evaluate the existence of mobility among social groups. The three pseudo-panels only differ by territory (or place of origin). The first panel has the greatest level of disaggregation. Its cohorts are the 190 territories (provinces) that we explored in this study. As the first pseudo-panel has a total of 68,092 cells with at

least one observation in the two census years, it is possible that cells with few observations may introduce bias into the analysis. In order to verify how robust the mobility or convergence results are, a panel was constructed in which the number of territories was reduced to 46 (generating 91 regions of origin when they interact with rurality), and a third panel was constructed encompassing 9 large geographic domains (generating 17 regions of origin when interacting with rurality). Table 11 shows that these last two pseudo-panels have 16,938 and 3,666 observations, respectively.



TABLE 11: VARIABLES USED TO CONSTRUCT THE PSEUDO-PANELS

| | Panel 1 | Panel 2 | Panel 3 | Comments |
|---|---|---|---|---|
| Territory | 190 | 46 | 9 | Panel 1: 190 provinces, Panel 2: 24 political regions (Departments), 3 natural regions (Coast, Andes, Amazon, Metropolitan Lima), Panel 3: Domains: Northern Coast, Central Coast, Southern Coast, Northern Andes, Central Andes, Southern Andes, Upper Amazon, Lower Amazon and Metropolitan Lima. |
| Age Group | 13 | 13 | 13 | In 1993: 5-9 years old, 10-14, 15-19, 20-24, 25-29, 30-34, 35-39, 40-44, 45-49, 50-54, 55-59, 60-64, 65 and above. |
| Rurality | 2 | 2 | 2 | Urban / Rural. |
| Gender | 2 | 2 | 2 | Male / Female. |
| Educational Level | 4 | 4 | 4 | HH with no education, HH completed primary, HH completed secondary, and HH with some higher education. |
| Total without Territorial Dimension | 416 | 416 | 416 | |
| Total "Potential" | 79,040 | 19,136 | 3,744 | If all cells had observations. |
| Total Cells with at least One Observation | 68,092 | 16,938 | 3,666 | |

Source: Compiled by the author.

***Presentation of the Convergence Model and its Major Outcomes***

The identification of the existence of both conditional and absolute convergence between countries or between regions within the same country has been intensely studied since the early research carried out by Barro and Sala-i-Martin (1991). The basic idea in these kinds of models is to verify if the territories that lag behind the most are growing at a sufficiently high rate (high in relation to the non-lagging territories), so that the lagging and non-lagging territories converge, thus reducing the inequality between them.

It is important to take into account the fact that in an environment of economic growth and where the coverage of opportunities is expanding, as in Peru during the intercensal period studied, if convergence exists, it would mean that there is evidence of upward mobility among the least privileged groups. Following Fuente (2000), the estimated growth model expressed in logarithms is:



$$g_t \equiv \ln(y_t) - \ln(y_{t-1}) = \alpha + \beta \ln(y_{t0}) + \sum \varphi_i x_i \qquad (5)$$

Where $y$ is the per capita spending of each social group (identified by their age range, gender, education level of the head of household, rurality and territory of origin), while $x$ represents a vector of control variables, which includes characteristics of the individuals and their environment. The variables considered controls in this calculation are the following:

- Average dependency ratio in 1993.
- percent who speak an indigenous language in 1993.
- Average age of head of household in 1993.
- Average educational level in each cell (according to categories: no educational level, completed primary, completed secondary).
- Dummy if female.
- Dummy if indigenous native language.
- Dummy if rural.

It is important to clarify whether the territorial variables are incorporated into the same definition as the pseudo-panel. The variables of age group, gender and educational level define the pseudo-individual, while the territory and rurality variables help define the environment in which this individual was born.

With the estimate obtained in (5) one can calculate the convergence rate (Table 11) and, with this rate, how long it would take for provinces to achieve $y$ percent of the value of equilibrium. The indicator is expressed as:



$$H(\gamma) = \frac{\ln(1-\gamma)}{\ln(1+\beta)} \tag{6}$$

To achieve 50 percent of the value of equilibrium (an indicator known as "half-life") $\ln(0.5)/\ln(1+\beta)$ years are needed. Similar calculations can be undertaken to simulate the number of years needed to shrink gaps by a third, a quarter, or a tenth, etc. For our study, Table 12 presents the number of years required to reduce inequalities by half, while Table 14 presents the number of years needed to reduce the inequalities to a quarter of their current level.

Although an in-depth analysis of the constructed pseudo-panel is beyond the purposes of this study and would be the subject of a separate paper, we are interested in showing here the convergence indicators and the velocity of convergence between the different identified social groups.

Table 12 shows the parameters of absolute and conditional convergence. Strictly speaking, the absolute convergence parameters have already been affected by the construction of the pseudo-panel itself, which means that it is likely that there is an over-estimate of the adjustment velocity. For its part, the conditional convergence picks up characteristics from the panel and from the controls incorporated in the equation (5).

The outcomes in Table 12 indicate that there is convergence between groups based on the different selected indicators. In terms of

TABLE 12: CONVERGENCE OF WELL-BEING INDICATORS BETWEEN SOCIO-ECONOMIC GROUPS (PSEUDO-PANEL) ANNUALIZED RATE

| | Pseudo-Panel 1 | | | | Pseudo-Panel 2 | | | | Pseudo-Panel 3 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Education | Absolute Convergence | | Conditional Convergence | | Absolute Convergence | | Conditional Convergence | | Absolute Convergence | | Conditional Convergence | |
| Welfare ratio | 2.2% | *** | 4.8% | *** | 2.0% | *** | 5.0% | *** | 1.4% | *** | 4.4% | *** |
| Poverty | 3.2% | *** | 4.9% | *** | 3.2% | *** | 5.0% | *** | 0.16 | *** | 4.6% | *** |
| Housing quality | 4.3% | *** | 4.6% | *** | 4.3% | *** | 4.7% | *** | -0.83 | *** | 4.8% | *** |
| Access to Electricity | 2.6% | *** | 4.8% | *** | 2.3% | *** | 5.0% | *** | 0.12 | *** | 4.6% | *** |
| Access to drinking water | 2.4% | *** | 4.4% | *** | 1.9% | | 4.9% | *** | 0.11 | *** | 4.4% | *** |
| Access to Sewage | 1.6% | *** | 4.6% | *** | 1.3% | *** | 4.9% | *** | 0.66 | *** | 4.7% | *** |
| Access to TV | 2.1% | *** | 4.5% | *** | 1.9% | *** | 4.8% | *** | 0.51 | *** | 4.6% | *** |
| Access to Telephone | 1.7% | *** | 4.6% | *** | 1.5% | *** | 4.8% | *** | -0.57 | *** | 4.6% | *** |
| Access to Refrigerator | 2.7% | *** | 4.3% | *** | 2.6% | *** | 4.7% | *** | 0.40 | *** | 4.4% | *** |

Source: Census data 1993 and 2007. Compiled by the author.



access to a PC or access to the Internet, it is not possible to calculate the convergence indicators because, in 1993, there was no access to these services in almost all of the territories. The slowest convergence rates are associated with access to sewage and telephone, two of the opportunities that, along with access to a PC and the Internet, show the most modest improvements in HOI indicators.

Table 13 was constructed from the estimated parameters and shows the number of years needed to reduce inequalities by half. As can be observed, for absolute convergence, the number is reduced only in the indicator of quality of housing and stands at more than 15 years for the indicators for access to electricity or drinking water;

20 years or more in the case of the welfare ratio (which is to say per capita spending as a percentage of the poverty line) or access to a television; and more than 30 years to reduce gaps by half for access to sewage or telephone. For "absolute" convergence, the values are higher when one moves from Panel 1 (the largest panel, encompassing 190 provinces) to Panel 3 (the shortest panel with the 9 domains). The latter highlights a markedly different pattern in large regions within the country.

When we analyze the time it takes to reduce gaps by half for conditional convergence, the time frames are notably shorter. This is expected because the convergence club in the conditional space has already eliminated a substantial part of the differences in opportunity indicators. In other words, individuals can converge quickly with a group that is structurally unequal compared to other groups.



TABLE 13: NUMBER OF YEARS NEEDED TO REDUCE INEQUALITIES BY HALF

| | Pseudo-Panel 1 | | Pseudo-Panel 2 | | Pseudo-Panel 3 | |
|---|---|---|---|---|---|---|
| | Absolute Convergence | Conditional Convergence | Absolute Convergence | Conditional Convergence | Absolute Convergence | Conditional Convergence |
| Welfare ratio | 21.5 | 3.6 | 24.9 | 2.4 | 39.7 | 5.7 |
| Poverty | 11.7 | 3.1 | 12.2 | 2.7 | 18.5 | 4.8 |
| Housing Quality | 5.8 | 4.8 | 6.1 | 4.2 | 6.4 | 3.7 |
| Access to electricity | 16.7 | 3.6 | 21.0 | 2.5 | 141.5 | 4.6 |
| Access to drinking water | 19.3 | 5.3 | 26.5 | 3.0 | 79.9 | 5.4 |
| Access to sewage | 34.2 | 4.8 | 43.0 | 3.1 | 201.0 | 4.1 |
| Access to TV | 23.3 | 5.3 | 27.3 | 3.5 | 112.3 | 4.7 |
| Access to Telephone | 31.3 | 4.8 | 35.4 | 3.6 | 70.2 | 4.7 |
| Access to Refrigerator | 16.0 | 6.1 | 16.9 | 4.4 | 24.0 | 5.4 |

Source: Census data 1993 and 2007. Compiled by the author.

Even still, in order to reduce the gaps using this less strict barrier, it would still take an average of five years depending on the opportunity indicator and the pseudo-panel chosen. What is interesting is that by contrasting the indicators of absolute and conditional convergence, we can clearly see that the convergence clubs, which are created when controls are taken into account for gender, ethnicity, education, place of birth, and migratory characteristics, are markedly different from each other and converge very slowly.

As can be observed in Table 13, the number of years that it takes to reduce the gaps to a quarter of their actual size is substantially higher than the time required to reduce them by half. In this case, with the exception of the indicator for opportunities associated with housing quality, where it would take 11 years, the number of years needed to reduce gaps in indicators to a quarter of their current level



TABLE 14: NUMBER OF YEARS NEEDED TO REDUCE INEQUALITIES TO A QUARTER OF THEIR CURRENT LEVEL

| | Pseudo-Panel 1 | | Pseudo-Panel 2 | | Pseudo-Panel 3 | |
|---|---|---|---|---|---|---|
| | Absolute Convergence | Conditional Convergence | Absolute Convergence | Conditional Convergence | Absolute Convergence | Conditional Convergence |
| Welfare ratio | 42.9 | 7.2 | 49.8 | 4.8 | 79.4 | 11.4 |
| Poverty | 23.5 | 6.2 | 24.4 | 5.3 | 36.9 | 9.7 |
| Housing Quality | 11.6 | 9.7 | 12.1 | 8.5 | 12.8 | 7.5 |
| Access to electricity | 33.3 | 7.3 | 42.1 | 5.1 | 283.1 | 9.2 |
| Access to drinking water | 38.5 | 10.7 | 53.1 | 6.1 | 159.8 | 10.8 |
| Access to sewage | 68.5 | 9.6 | 85.9 | 6.2 | 402.1 | 8.3 |
| Access to TV | 46.6 | 10.5 | 54.5 | 7.0 | 224.7 | 9.4 |
| Access to Telephone | 62.7 | 9.6 | 70.8 | 7.2 | 140.4 | 9.5 |
| Access to Refrigerator | 32.0 | 12.3 | 33.8 | 8.7 | 48.1 | 10.8 |

Source: Census data 1993 and 2007. Compiled by the author.

varies between 24 and 69 years. Clearly, these timeframes may be considered excessive. To wait more than 50 years for critical opportunities, such as access to a telephone or to sewage, is not a desirable situation. Furthermore, if the current dynamics continue, there is no possibility for convergence at all for other services such as access to the Internet.

## CONCLUSIONS AND A POLICY DILEMMA



As we have described above, Peru has experienced significant growth over the past two decades. This growth has gone hand in hand with a reduction in poverty and extreme poverty, not to mention improved access to goods and services. The improvements in the coverage of electricity, drinking water, sewage and telephone have been significant. These have also been accompanied by improvements in educational coverage, especially with regard to primary education. There have also been improvements in housing conditions and access to key goods, such as refrigerators, televisions and computers.

However, we cannot deny the fact that changes at a national level obscure some significant differences. In many cases, certain segments of the population experienced improvements, but at a much slower rate than the average or than more dynamic social segments. Some consider this[7] to be the "Achilles heel" of the economic model that has prevailed in Peru since the 1990's, when the country began to recover from the internal armed conflict to fight terrorism, a macroeconomic crisis and the hyperinflation that besieged the country during the 1990's. For others, these different velocities or abilities to respond to economic growth call for adjustments in order to implement policies that actively seek to level the playing field of opportunities.[8]

7 For an example, please consult Béjar (2006), Francke and Mendoza (2012) or Sánchez-Moreno (2013).

8 For an example, please consult Rey and Rojas (2002) or Escobal et al., (2012).

This study shows that improvements in opportunities have been very unequal. When we focus on children, a segment of the population where we can evaluate the equality of opportunities without taking into account issues of varying productivity or efforts made by adults, the evidence shows that significant progress has been made toward achieving more equal opportunities. That said, a child whose mother has not completed primary education, whose first language is an indigenous one, and who lives in the rural Andes or Amazon has an equality of opportunity indicators that is much lower than a child whose mother has some higher education, whose first language is not an indigenous one, and who lives in one of the country's major cities.



Another principal finding of this study is that there is a strong territorial component to the unequal distribution of opportunities. While in 1993 less than 20 percent of the inequality of opportunities was associated with geographic variables such as region of residence, rurality and altitude (as proxies for the remoteness of a residence), in 2007 more than half of this inequality of opportunities was associated with geographic variables. The evidence presented demonstrates that this outcome is robust over a variety of definitions of region of residence.

The inequality in distribution of opportunities is closely related to the poverty and vulnerability traps we identified. There is also a close relationship with the opportunity traps facing one group of territories (provinces) which chronically lags behind other territories that were able to escape their poverty traps or that have been lucky enough to have never been trapped. The study demonstrates that most of the trapped provinces are found in the northern Amazon and the southern Andes, with trapped provinces also existing in the rest of the Andes (central and northern). Consistent with other studies, there are surprising levels of well-being identified in the southern Amazon (especially *Madre de Dios*). While this dynamic appears positive, it is clearly unsustainable from an environmental standpoint, as it is strongly associated with informal gold mining in this region.

As expected, the territories that never lagged behind are those that are most closely linked to markets (via the Pan-American Highway, maritime transportation, and the few highways and railways that connect the northern coast with the northern Andes and Lima with the central Andes).

The conclusions of this study are a clear warning of the importance of constructing policies that break the pattern of spatial neutrality. Instead they need to focus on benefiting territories that are lagging behind and that do not have a minimum level of opportunities needed to decidedly take advantage of the benefits of economic growth.



The study culminated with an exercise to estimate the velocity at which the territories would converge in the absence of additional policies. The evidence demonstrates the existence of convergence between the social groups identified in the pseudo-panel by their geographic location, rurality, educational level, age, and gender; however, the rates of this convergence can be qualified, without a shred of doubt, as intolerably slow. Reducing the disparity in the different opportunities to a quarter of their current level would take 30 years for electricity or water, and more than 50 years for other critical opportunities such as access to a telephone or to sewage. There is no possibility for convergence for other services, such as access to the Internet, if the current dynamics do not change.

A sustained fiscal effort is needed to implement specific policies that can effectively increase the indicators of equality of opportunities in order to accelerate territorial convergence. This sustained fiscal effort requires a political accord that has yet to be constructed. Making explicit the magnitude of the regional inequalities is an attempt to contribute to the process of constructing the political consensus that is needed to move forward on this issue.

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## APPENDIX 1: DETERMINANTS OF PER CAPITA SPENDING AND POVERTY, PERU: 2007-2009

| Model: | Probit | OLS |
|---|---|---|
| Dependent Variable: | Poverty – 2009 | Welfare Ratio 2009 |
| 2007: Education Head of Household (HH) | -0.07*** | 0.1*** |
| | (0.01) | (0.01) |
| 2007 HH Age | -0.04*** | 0.03*** |
| | (0.01) | (0.01) |
| 2007: HH Age Squared | 0*** | 0*** |
| | (0) | (0) |
| 2007: Gender HH (1=male) | -0.14*** | 0.21*** |
| | (0.08) | (0.1) |
| 2007: Unfinished floor in home | 0.54*** | -0.42*** |
| | (0.06) | (0.04) |
| 2007: Home without sewage connection | 0.31*** | -0.32*** |
| | (0.07) | (0.06) |
| 2007: HH Unmarried Partner | 0.54*** | -0.75*** |
| | (0.07) | (0.11) |
| 2007: HH Married | 0.31*** | -0.51*** |
| | (0.07) | (0.11) |
| 2007: HH No Partner | 0.37*** | -0.4*** |
| | (0.15) | (0.08) |
| 2007: HH in Agriculture | 0.64*** | -0.49*** |
| | (0.09) | (0.08) |
| 2007: HH in Mining, Electricity, gas and water | 0.13 | 0.05 |
| | (0.2) | (0.21) |
| 2007: HH in Manufacturing | 0.35*** | -0.49*** |
| | (0.11) | (0.1) |
| 2007: HH in Construction | 0.55*** | -0.26 |
| | (0.12) | (0.21) |
| 2007: HH in Commerce | 0.3*** | -0.36*** |
| | (0.09) | (0.11) |
| 2007: HH in Transport and construction | 0.26*** | -0.45*** |
| | (0.11) | (0.1) |
| 2007: HH in Government or related activities | 0.21 | -0.27*** |
| | (0.13) | (0.13) |
| 2007: HH in Other Services | 0.19*** | -0.24*** |
| | (0.09) | (0.09) |
| Domain: Amazon | 0.39*** | 0.03 |
| | (0.11) | (0.08) |
| Domain: Northern Coast | 0.28*** | 0.1 |
| | (0.12) | (0.09) |
| Domain: Central Coast | 0.14 | -0.01 |
| | (0.13) | (0.1) |
| Domain: Southern Coast | 0.34*** | 0.11 |
| | (0.15) | (0.13) |

| | | |
|---|---|---|
| Domain: Northern Andes | 0.49***<br>(0.13) | |
| Domain: Central Andes | 0.73***<br>(0.11) | -0.3***<br>(0.08) |
| Domain: Southern Andes | 0.84***<br>(0.11) | -0.23***<br>(0.08) |
| Domain: Metropolitan Lima | | 0.52***<br>(0.16) |
| Rurality | -0.21***<br>(0.07) | 0.35***<br>(0.06) |
| Variation of Number of Members of Household Who Work(2009-2007) | 0.01<br>(0.03) | -0.06***<br>(0.02) |
| Variation of Number of Members of Household (2009-2007) | 0.08***<br>(0.02) | 0.08***<br>(0.01) |
| Constant | 0.03<br>(0.27) | 0.98***<br>(0.25) |
| Observations | 3848 | 3848 |
| Pseudo R2 / R2 | 0.2455 | 0.2537 |

NB: The values in parentheses are standard errors. * p<0.05, ** p<0.01, *** p<0.001.

DETERMINANTS OF PER CAPITA SPENDING AND POVERTY: 1991-1994

| Model: | Probit | OLS |
|---|---|---|
| Dependent Variable: | Poverty – 1994 | Welfare Ratio 1994 |
| 1991: Unfinished Floor in Home | 0.43*** (0.1) | -0.4*** (0.1) |
| 1991: No Sewage Connection in Home | 0.34*** (0.1) | -0.09 (0.1) |
| 1991: HH in Agriculture | 0.24*** (0.14) | 0.05 (0.13) |
| 1991: HH in Mining, Electricity, Gas or Water | -0.47 (0.29) | 0.08 (0.25) |
| 1991: HH in Manufacturing | 0.15 (0.14) | -0.21 (0.14) |
| 1991: HH in Construction | 0.4*** (0.18) | -0.18 (0.18) |
| 1991: HH in Commerce | 0.11 (0.12) | -0.1 (0.12) |
| 1991: HH in Transport and Construction | -0.03 (0.16) | 0.07 (0.15) |
| 1991: HH in Government or Related Activities | 0.05 (0.29) | -0.09 (0.28) |
| 1991: HH in Other Services | 0.09 (0.29) | 0.21 (0.27) |
| 1991: HH Education | -0.08*** (0.01) | 0.11*** (0.01) |
| 1991: Domain: Urban Andes | -0.83*** (0.15) | 0.62*** (0.14) |
| 1991: Domain: Rural Andes | -0.24*** (0.1) | 0.07 (0.09) |
| 1991: Domain: Urban Coast | -0.01 (0.1) | -0.01 (0.1) |
| Variation of Number of Members of Household Who Work (1991-1994) | -0.05*** (0.03) | 0.04 (0.03) |
| Variation of Number of Members in Household (1991-1994) | 0.14*** (0.02) | -0.11*** (0.02) |
| 1991: Gender of HH(1= male) | 0.49*** (0.12) | -0.24*** (0.11) |

| | | |
|---|---|---|
| 1991: HH Married | -0.16***<br>(0.09) | -0.16***<br>(0.09) |
| 1991: HH Age | 0<br>(0.01) | -0.02<br>(0.01) |
| 1991: HH Age Squared | 0<br>(0) | 0***<br>(0) |
| Constant | 0.19<br>(0.4) | 0.82***<br>(0.39) |
| Observations | 1584 | 1584 |
| Pseudo R2 / R2 | 0.1605 | 0.1893 |

NB: The values in parentheses are standard errors. * p<0.05, ** p<0.01, *** p<0.001.

# VII

# CONSTRAINTS AND TRAPS FOR TERRITORIAL GROWTH – TWO TERRITORIES IN THE PERUVIAN ANDES

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## INTRODUCTION

In recent decades, Peru has enjoyed a period of sustained economic growth; however, this growth has not been homogeneous in territorial terms. There have been certain territories that have stagnated or lagged behind the rest of the nation. What are the reasons why certain territories are lagging behind compared to the national growth average? This is the question that guides this comparative study of two territories in the *Cuzco* region.

As a general hypothesis, we suggest that territories remain in lagging positions for two main reasons: the existence of binding constraints and the marginalization of certain populations within the territory. Along these lines, we argue that there are "territorial traps" that exist and that these limit the general economic growth of the territory and the participation of certain poor and/or vulnerable groups in the benefits of growth.

We believe that in order to understand these binding constraints, it is necessary to identify the underlying institutional regulations that create and foment said constraints . It is also necessary to understand the historical, political and economic contexts of these constraints. In order to do so, we approach our analysis from the perspective of

political economy. This focus seeks to understand the many interactions between the economic and political processes at local, national and global levels in order to demonstrate how these influence the processes of institutional change in a particular society.

Following Lefwich (2006), we define an institution as the combination of persistent rules and procedures that structure (but do not determine) the social, economic and political interactions between individuals and social groups that make up a society. Institutions should not be seen as a combination of stable practices that are formed based on the optimal responses to dilemmas of collective action. Following Hall (2010), we understand that institutions are in constant flux *vis-à-vis* the context in which they perform. For this reason, persistence and institutional change can be better analyzed from a historical perspective.



In order to define "territorial traps" it is important to distinguish between two sub-concepts: poverty traps and inequality traps. Rao (2006) understands poverty traps to be situations in which the population of a territory has become "stagnant" in a situation of poverty due to a lack of resources. Meanwhile, inequality traps are defined as "situations where the entire distribution is stable because the various dimensions of inequality (in wealth, power and social status), interact to protect the rich from downward mobility, and prevent the poor from being upwardly mobile" (Roa, 2006:11). Poverty traps may be related to a combination of indicators associated with low standards of living, such as the pillaging of local resources, low levels of education or a lack of employment opportunities, among others (Smith, 2005). However, it is of the utmost importance to analyze the mechanisms that reproduce these situations of poverty, which is to say the mechanisms of self-reinforcement that enable poverty to persist (Azariadis and Stachurski, 2005:326).

Escape mechanisms from poverty and inequality traps are related to the possibility of equitable economic growth. In other words, they are related to the institutional changes that not only allow for economic development of the territory but also for the inclusion of marginal-

ized groups. This escape can occur from external shocks or changes in the economic or social conditions that sustain the traps such as, for example, modifications in the structure of the distribution of power in the state or the reorganization of markets. However, an escape route can also be opened through internal processes of cultural, economic or political transformation, such as conflicts that destabilize institutions (Bebbington, 2012). In each case, changes are evolutionary and cumulative, and each institutional adjustment determines a new scenario that can be favorable or unfavorable for a new transformation (Hall, 2010).



In our study, we have identified three interrelated factors that explain the persistence of these traps. The first is the existence of privileged social groups who use multiple mechanisms in order to appropriate the profits or surplus of a particular territory to the detriment of other groups that are exploited or subordinated. In these cases, the conditions that define the asymmetry among groups can be economic, such as the control of the phases of economic processes, and they can also be political, such as the control of the spaces where public policies are made, goods are distributed or decisions are made. They can also be discursive, such as those that maintain narratives that naturalize the status quo. In these cases, the trap is produced when the social group in power needs, or believes it needs, the subordinated groups to not challenge these conditions in order for the former to maintain its status and benefits.

Secondly, the review of both intra and extra-territorial institutional arrangements leads us to an analysis of spatial scales. As Bourguignon et al., (2007:2) argue, the differences between economic groups are sustained over time by economic, political and social institutions. These institutional arrangements may be present inside or outside of a territory. In the latter case, external dynamics play a leading role in trapping the territory.

Thirdly, the issue of normativity and institutional identity can be a key area in understanding institutional dynamics associated with

territorial development. Institutions can be formal, when they are official and clearly regulated, or informal in nature, when they organize practices that are governed by use and custom. At the same time, they can have a closed identity that makes inter-institutional connections difficult or that constrain their potential for innovation (Abramovay et al., 2008).

This paper argues that territories are constantly being created as a result of diverse dynamics of economic and political construction and deconstruction. The historical divisions within and between territories leave certain areas and populations facing institutional traps that reproduce their situations of poverty or inequality. The interpretations of the causes of these disadvantageous situations, which limit their potential to access salaried work and/or to connect to markets, by local actors lead to binding constraints. We consider the persistence or overcoming of these binding constraints to be associated with three elements. The first focuses on historical processes that reveal the emergence and formal or informal actions of certain key social actors, such as the elite, local organizations or the state. The second deals with institutional policies and arrangements that reinforce or manage the inequality of territories. The third encompasses the geography and environment of the territories, which influence the emergence and identity of certain institutions.



The selection of the territories was based on two criteria. Firstly, we sought territories that, in general, are lagging behind but which include upwardly mobile areas. Based on Escobal (2014), we identified *Calca* as a province that is lagging behind in general, but that has some districts that have improved their situation in the most recent intercensal period. Secondly, we sought territories that demonstrated economic development and comparable policies, in addition to a certain degree of internal territorial interaction. Two territories were chosen: Territory one is composed of the districts of *Calca*, *Taray*, *San Salvador*, *Lamay* and *Coya*, all of which belong to the province of *Calca* and are located in the Sacred Valley of the Incas (*El Valle Sagrado de los*

TABLE 1 – BASIC INFORMATION ON THE STUDIED TERRITORIES

| | Territory 1<br>*Calca – Sacred Valley* | Territory 2<br>*Lares – Yanatile – Quelloúno* |
|---|---|---|
| Area (Km²) | 805 | 4,406 |
| Population * | | |
| 1993 | 40,366 | 26,838 |
| 2007 | 47,310 | 33,170 |
| Monetary Poverty ** | | |
| 1993 | 68.79% | 80.13% |
| 2007 | 68.65% | 49.06% |
| Local Government Budget** (Millions of S/.) | | |
| 2007 | 32,188 | N.A. |
| 2013 | 76,632 | 134,466 |

Source: *National Institute of Information and Statistics (*Instituto Nacional de Información y Estadística* –INEI). **Escobal (2014). ***Ministry of the Economy (*Ministerio de Economía y Finanzas*–MEF).



*Incas*); Territory two, which is made up of *Lares*, *Yanatile* and *Quelloúno*, is located in the *Lares* watershed. While *Lares* and *Yanatile* also belong to the province of *Calca*, *Quelloúno* is part of the neighboring province of *Convención*. As can be observed in Table 1, Territory One is lagging behind, while there have been reductions in poverty in Territory Two during the most recent intercensal period.

This chapter is divided into five sections. In the first section, we present an overview of the territorial, economic and political history of the areas studied in order to demonstrate the territories' constant fragmentation and reconstitution. The second section analyzes how an inequality trap has been created throughout the Sacred Valley (Territory 1). In the third section, we explore the second territory, highlighting the differences between the higher altitude area (*Lares*), which is in a poverty trap, and the lower area (*Yanatile-Quelloúno*), which has managed to escape the trap. In the fourth section, we analyze the connections between the binding constraints, institutionality and social

processes in order to understand the territorial traps and escape routes from them. Finally, we present some reflections and conclusions.

## TERRITORIES IN CONSTRUCTION

### *Territorial Processes of Economic Construction and Dismantling in the Province of* Calca



Around the mid-twentieth century, the economy of *Calca* was focused around *haciendas*, or large agricultural estates. During this era, there were three distinct productive spaces. The lower part of the valley of *Lares*, which today comprises the districts of *Yanatile* and *Quelloúno*, produced sugar cane, sugar-based liquor, coffee and coca. The upper part of the Valley of *Lares*, which today comprises the district of *Lares*, produced and sold South American camelid fiber (the wool of the llama and alpaca). Lastly, the estates located in the Sacred Valley, which today comprises the districts of *Calca*, *Lamay*, *Písac*, *Taray* and *Coya*, produced corn.

The production in the lower areas followed two parallel commercial routes. The sugar, liquor, and coca went to regional markets in *Cuzco* via the town of *Lares* and the capital of *Calca*. The coffee was sold in *Quillabamba*, before being sent to *Cuzco* and other regional markets. Within this economic map, the provincial capital of *Calca* was the administrative and political center of this territoryas it was the entry and exit point for most products from the lower valleys, in addition to being a corn farming center.

In the higher areas of the Sacred Valley and *Lares*, *haciendas* coexisted alongside communities of rural, peasant farmers (*campesinos*), who maintained a largely self-subsistence economy based on potatoes, corn, weaving and textiles that they consumed, used, sold, or exchanged locally or regionally. The principal market was located in the higher area of *Lares*, where *campesinos* from the upper and lower areas went to exchange fruit, potatoes, coca and coffee that wasn't sold on the market.

The agrarian reform changed the panorama. In the lower valleys of *Calca* (*Yanatile - Quelloúno*) and *Convención*, *campesino* mobilizations unleashed an early agrarian reform in the 1970's, restructuring the territorial organization in this area. In the new agricultural political economy of the lower areas, the current districts of *Yanatile* and *Quelloúno* strengthened their territorial ties with the province of *Convención*. As a result, *Quillabamba* (which is the capital of *Convención*) gradually displaced *Calca*'s eponymous capital as the principal political and economic center. It developed an economy based on coffee as a result of the new roads that consolidated the *Quillabamba-Cuzco* route as the coffee's point of exit. This new configuration was even expressed in changes in the political demarcation of the 1980's when the districts of *Yanatile* and *Quelloúno* were created. While the former continued to be part of the province of *Calca*, the latter became an annex of the province of *Convención*.



The commercial route connecting the lowland valleys with the capital of *Calca* lost importance, even though some products like coca continued to be transported along this route. At the same time, the town of *Lares* (half way between *Yanatile* and *Calca*) remained a center for the traditional practices of exchange between the upper and lower areas; however, the volume of exchange is, in economic terms, insignificant compared to the national and international coffee trade.

The agrarian reform was implemented later in the Sacred Valley, and it led to the creation of cooperatives for growing and commercializing corn for the urban and international markets (*haciendas* had already been growing corn). The higher areas of the Sacred Valley, which are less connected to the market, maintained their existing community organization. These communities continued to produce basic crops and, in some cases, textiles, for the local market.

The valley's productive strategy of becoming a center for producing corn for the international market waned with the cooperative crisis of the 1980's. It was slowly replaced by a focus on tourism, which, until then, had been a less important activity. Tourism stagnated,

however, during the 1980's as a result of the political violence of the era, only to experience a resurgence after 1992, particularly in *Cuzco* (Domingo et al., 2012: 82). The districts of the province of *Calca* in Sacred Valley saw in tourism a new opportunity for development, and they sought to integrate themselves into the valley's tourism circuit, which is centered around the town of *Urubamba*, in the neighboring province of the same name. The city of *Calca* sought horizontal connections with *Urubamba* to the detriment of its former vertical integration with the lower districts of the province of *Calca*.



This brief historical summary shows how the province of *Calca* went from being a territory that was economically integrated during the era of the *haciendas* to being fragmented in two territories, which, despite current political and cultural ties, have different territorial-economic dynamics. The districts of *Yanatile* and *Quelloúno* are clearly linked to the dynamic of the lower valley, whose commercial and economic center is in *Quillabamba*; however, its population continues to exchange goods with the district of *Lares*, which has caused it to maintain a certain level of integration with the district (Territory 2). The districts of *Calca* that are located in the Sacred Valley (Territory 1) have consolidated their economic integration with their valley neighbors with a tourism circuit whose center lies in *Urubamba*. Both are peripheral territories of economic centers located outside the province of *Calca*.

### *Territorial Fragmentation and Political Clientelism in the Province of* Calca

In the mid-20th century, the city of *Calca* was the principal economic-administrative center and port of exit for products from the lowland valleys of the province. During this era, the elite was composed of *hacienda* owners, businessmen and urban professionals who filled all the political offices, excluding the rural-*campesino* sector from any political representation. After the agrarian reform, *Calca* lost political and economic importance due to the development of other economic centers and routes: *Quillabamba* with coffee and *Urubamba* with tourism

and the zonal economy. As a result, the elite of the town grew poorer and shrunk in size as many of its members migrated.

A new elite emerged in the province, made up of families of *campesino* origin who slowly migrated from their communities to the city of *Calca* and began looking for spaces of political representation. In 2006, a professional of *campesino* origin, who was not part of the old-guard elite, was elected mayor. The new mayor deployed his base of political support in the communities, unleashing a confrontation between traditional urban families and the new leaders of *campesino* and rural background. With the arrival of government revenues from natural gas pipelines (*canon minero*), the budget of the province grew considerably:26 percent between 2007 and 2013. Competition for these funds generated conflicts among the different political factions. This conflict led to violence, chaos and political fragmentation at a district and provincial level.



This institutional crisis is the result of unresolved rivalries between the old and new elites who have not been able to establish a hegemonic political control in the district capital or in the province of *Calca*. The old elite established power networks, generated exclusion based on urban/rural social divisions, and consolidated certain rules of play. The emergence of *campesino* groups challenged these rules and sought more inclusive politics. With the arrival of the *canon minero*, they sought to institutionalize new and informal (or illegal) rules of play in order to construct networks of clientelism in the municipality. Following Williams et al., (2009), we can see that we are faced with a case in which one of the conditions for growth is not being fulfilled:being "free from the danger of expropriation." In this case, the officials who unlawfully hold the control of the municipality have appropriated public resources for their own benefit, which the author characterizes as looting.

As a result, various district mayors sought to disconnect themselves from the provincial capital. The districts located in the Sacred Valley established a commonwealth that excluded the district of *Calca*,

with the goal of undertaking tourism projects without having to go through the provincial mayor's office. As a result, *Calca* as a province is politically leaderless, which only exacerbates its economic divisions.

## TERRITORY 1: TOURISM DEVELOPMENT IN THE SACRED VALLEY

Many of the districts in *Calca* are located in the Sacred Valley of the Incas. The valley is one of Peru's biggest tourist attractions, and this has created high expectations in the province for development based on tourism;however, as research has demonstrated, tourism can generate inequality. This appears to be the case in *Calca* where the arrival of tourism has generated an inequality trap that restricts its potential for territorial growth. Below we present the factors underlying the reproduction of inequality in this territory.



### *Drive-by Tourism: Limited Opportunities for Territorial Development*

The tourism that is being developed in the Sacred Valley is structured around organized circuits and specific tourist "destinations". The places that aren't part of these circuits only have indirect participation in the industry, such as providing services to businesses from the tourism sector. At the same time, the places that are on the circuits, but don't manage to convert themselves into destinations, are converted into mere points of transit with a limited potential for generating significant income for most of their population.

Tourism in the Sacred Valley focuses on one to three day routes and include destinations such as *Písac, Urubamba* and *Ollantaytambo*. Of these, only *Písac* is located in the province of *Calca*. Tourists generally spend a few hours in this town, visiting the archeological site and the famous folk-art market. Later, the circuit continues to *Urubamba*, where the tourists usually spend the night. The other five districts of *Calca* that have part of their territory in the Sacred Valley (*Calca*, *La-*

*may*, *Coya*, *Taray*and *San Salvador*) are involved in tourism in only a very peripheral manner as drive-by destinations. For this reason, tourism constitutes an important economic activity in *Písac* alone, even though the rest of the districts in the province maintain high expectations for this business to generate development.

The problem seems to be that it is actors from outside the territory, acting in alliance with the local elite and government officials, who manage the tourism business. The bulk of the tourism activity is organized by the public officials responsible for managing tourism and private actors associated with foreign and Peruvian travel agencies. By and large, these actors define where the tourists go and what they will see and experience. Local integration within the tourism business is impossible without the involvement of these actors, who are mostly from outside the territory.



***Urban and Rural Environments:***
***Unequal Access to the Tourism Market***

Urban and rural populations have markedly different levels of access to the tourism business. The urban population is able to integrate itself under better terms, while families who live in high-altitude communities are either not involved or are involved under unfavorable terms. The most paradigmatic example of this process can be seen in *Písac*, where we identify four ways by which the urban population controls the tourism business.

One way is through the control of the major attraction on the tourism circuit in *Písac*: the "Indian" market. Since the 1990's, *Písac* has been promoted as a folk-art center. The "Indian" market became one of the town's main attractions, disconnecting itself from the Sunday market and providing a space where people can go every day (Henrici, 2007). Over the past decade, artisans and urban business people have dominated the business of buying and selling folk art in this market, restricting, either by excluding or by mediating, the access of rural artisans to the market.

Currently, the folk-art market extends throughout the central plaza of *Písac*, which acts as its focal point. This space is managed by the Municipality of *Písac*, which charges a monthly fee to the sellers in each market stall. These businesspeople are either the folk artists themselves, who have their own stall where they exhibit their products, or they are intermediaries who buy and sell folk art. The latter represent the majority. In both cases, however, they are predominantly urban business people. In fact, one of the traditional conditions for accessing the market stalls is being a resident of *Písac*, which excludes the residents of rural communities from selling their products inside the market's perimeter.



Pressured by the communities, the municipality established space in the market on Thursdays and Sundays for artisans from rural communities to sell their products directly to tourists. At the same time, associations of weavers from the *campesino* communities of *Chahuaytire* and *Pampallacta*, both located in *Písac*, have managed to obtain various permanent stalls in the market through their connections with urban brokers. Still, there is a clear disparity in access to points of sale for folk art.

One of the strategies for rural artisans who do not want to depend on urban middlemen to sell their products is to sell them within their own communities; however, the tourists who visit these communities tend to be backpackers who spend little on souvenirs or tourists who arrive as part of a package tour, whose allotted time and space for shopping is determined by the tourism agency (Henrici, 2007). In the case of the latter, the community members cannot dispense with the middleman (the agencies) who demand ten percent of the total of the sales in the communities they visit (interview with a consultant in tourism from *Cuzco*, 3/30/13).

Another mechanism through which urban dwellers corner the folk art market is by controlling the export market. Exports are channeled by specialized export companies that do business with the collectors in the towns. Since the 1990's, some Peruvian and foreign

non-profit organizations have pushed for communities themselves to negotiate directly with foreign agencies in order to export their folk art (Henrici, 2007);however, sometimes eliminating the middleman from the town is not enough to ensure egalitarian negotiating conditions. For example, Perez (2013) tells how in the Center for Traditional Textiles of *Cuzco* (a sales and export company) community employees have to work at least 15 hours a day to fulfill their orders.

A third mechanism of cornering the market is by controlling "authenticity". In the Sacred Valley, tourists seek authenticity, defined as the continuation or permanence of manifestations or objects that are authentic to the Inca culture. The commercialization of this authenticity, however, is managed not by the authentic subjects themselves, but by social groups that are better prepared to "manage the business". In the studied territory, this ability once again belongs to the urban elite.



As Henrici (1999) maintains, the physical presence of "indians" is not the essential condition for maintaining tourism because, in the end, it is not the culture itself that is for sale, but rather a representation of it. The authenticity represented within the framework of the tourism discourse is what is consumed. That is why it has to be managed by an expert group that knows what the tourists hope to find (Hall, 1997). While *campesinos* can have cultural expertise, they don't have the *know-how* to market their own products. Within this panorama, the indigenous, along with their material and immaterialheritage, end up being an input, a central one but an input nonetheless, in a business in which others are managing their traditions.

The fourth way the market is cornered by urban elites is through their greater economic and social ability to offer tourism services. The available lodging and restaurant services are also dominated by urban residents, who not only have access to a privileged space to carry out these activities, but who also have greater economic resources to invest in a business (capital and access to credit) and greater social capital (education, experiences, cultural familiarity),enabling them to interact more efficiently with the average tourist.

### *Limited and Mediated Connections between the Rural Population and the Tourism Market*

The connections between rural communities and the tourism business are based on three principal mechanisms. Firstly, they work as porters carrying luggage for tourists trekking to Machu Picchu along the Inca Trail. It is poorly paid and mostly unregulated work, leading to long-term health problems. In some communities, the men who work as porters are away from their homes for ten days a month or more. During peak times, these communities are left with only women, children and the elderly as is the case in the *campesino* community of *Pampallacta* (Málaga, 2012).



A second connection is through the sale of agricultural products and folk art. In the community of *Huana*, in the district of *Lamay*, for example, an association of native potato growers sells its products to five-star hotels in *Cuzco*, including El *Libertador* and El *Monasterio* (Málaga, 2012). At the same time, therehas been an increase in the raising of guinea pigs in the district of *Coya* for the gastronomic tourism market; however, the market for these products is still quite small.

The third and final connection is through experiential tourism or rural community tourism. There are numerous initiatives within non-governmental organizations and government institutions to promote this kind of tourism; however, it is still a marginal activity, one which has been unable to overcome the model in which earnings are concentrated among the intermediaries. In many cases, families outfit their homes to receive guests, but, as one interviewee explained, "the houses are occupied only three to five days out of the year." In addition, the agencies that bring the tourists to the communities charge a commission per tourist to the association of community members involved in tourism. In addition, they demand 10 percent of their folk art sales. Another means of participation is identified by Perez (2013), who says it is very common for communities to cede considerable portions of their territory to tourism companies so that they can develop a tourism business there.

It is important to mention the effects that tourism can have on the communities from a social standpoint. The arrival of tourism implies a necessary restructuring of the use of resources (natural, energetic, human and financial) (Gascon, 2011). This means that the resources and energy previously used in other activities is diverted to tourism activities. In general, tourism doesn't generate equitable earnings, and so there will always be a group that has transitioned to tourism, does not share in the benefits and loses its control over traditional activities. For example, in the *campesino* community of *Pampallacta* in *Lamay-Calca*, where the majority of men work as porters, there has been a community breakdown at various levels because members of the community no longer participate in community activities.



Why can *campesino* communities with their own institutionalitynot integrate themselves into the tourism market under better conditions? The tourism initiatives in the communities have been put together by associations of families, which is to say with the participation of certain families who form an association that is independent from the community; however, their proliferation has caused an atomization of community organizations in many communities. This situation has had repercussions in the creation (or exacerbation) of conflicts within the community or with other communities, not to mention generating tension between community organizations and the associations.

## TERRITORY 2: *LARES-YANATILE-QUELLOÚNO*: DIVERGING HISTORIES OF AGRICULTURAL DEVELOPMENT

This territory brings together the lower part of the *Lares* watershed (the districts of *Yanatile* and *Quelloúno*) with the upper part of the watershed (the district of *Lares*). It is vertically integrated based on historical practices of trade that still remain today. However, in recent decades, the production for the market in the lowlands has been linked to the province of *Convención*, while the district of *Lares* has become isolated from

the market. In this section, we see the diverging histories in these two areas as an explanation as to why the lower area has experienced more growth and the upper area appears to be stuck in a poverty trap. Our analysis focuses on two aspects: the domestic economies and the collective forms of political-economic representation.

### *Domestic Units and Production Cultures*

*Yanatile and Quelloúno: Diversification and Specialization*



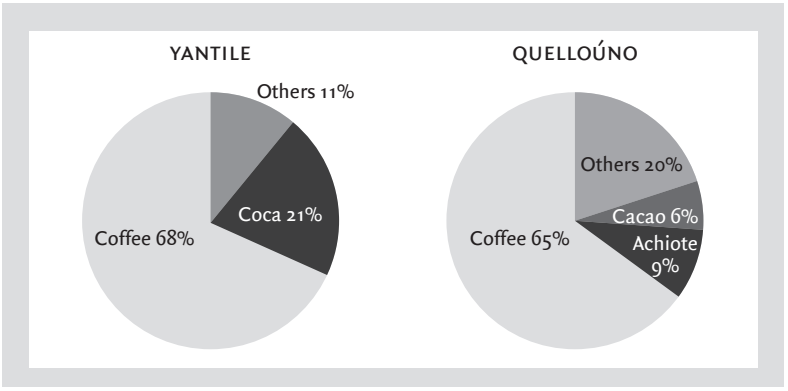
The domestic units of this area have developed two strategies in order to connect to the agriculture and livestock markets without endangering their food security. Firstly, they use a diversified labor force encompassing both salaried workers and family members. Given that the land is worked seasonally in this area, the demand for labor fluctuates. When the salaried labor force is limited, a community member in need can call upon five or six relatives or neighbors to work for him in a reciprocal arrangement known as the "*rol*". The person who requests their help is obligated to pay them a daily rate, give them food twice a day, give them coca leaves to chew and *chicha* (a corn drink). Each of the members of the "*rol*" is able to call upon the group to work on their parcels when they needed, and they are obliged to reciprocate. This institutional arrangement allows for the distribution of the cost of labor that is assumed by a group of domestic units.

Secondly, *campesino* families seek to diversify their crops with products for the market and products for personal consumption, as well as for bartering. Coffee and coca are their most important commodities. They also sell or exchange fruit, *achiote* (a seed used as food coloring) and cacao. For personal consumption, they grow yucca, banana and corn. Normally, a productive unit maximizes the use of its land by cultivating fruit and coffee or fruit and yucca on a single parcel of land. Coca, because of its characteristics, adapts to less fertile and less irrigated land, full sun, and requires less work.

According to the agricultural census of 2012, in *Yanatile* the main crop is coffee, followed by coca. In *Quelloúno* it is coffee, followed by a

varied list of products (see Graph 1). In these districts, 5,396 productive units cultivate 13,608 hectares of coffee and, on average, manage an area of 2.4 hectares each. Some 5,000 productive units cultivate close to 2,084 hectares of coca leaf in the entire valley. Between 10 and 15 percent of the land is cultivated with second tier commercial products and products for personal consumption.

GRAPH 1 – COMPOSITION OF PRODUCTIVE UNITS' CROPS




Source: CENAGRO 2012.

The agricultural calendar allows for the productive unit to have access to a monetary income for eight months of the year, with short agricultural seasons in January and September for coca and in August for *achiote*. There are big agricultural seasons in February and June for coffee, coca and cacao. The availability of products for personal consumption is distributed between two medium-size agricultural seasons: the corn harvest of February and March, and the yucca harvest in November and December. Banana crops are harvested year-round.

The food basket is complemented with basic grain products acquired in the local markets and stores:

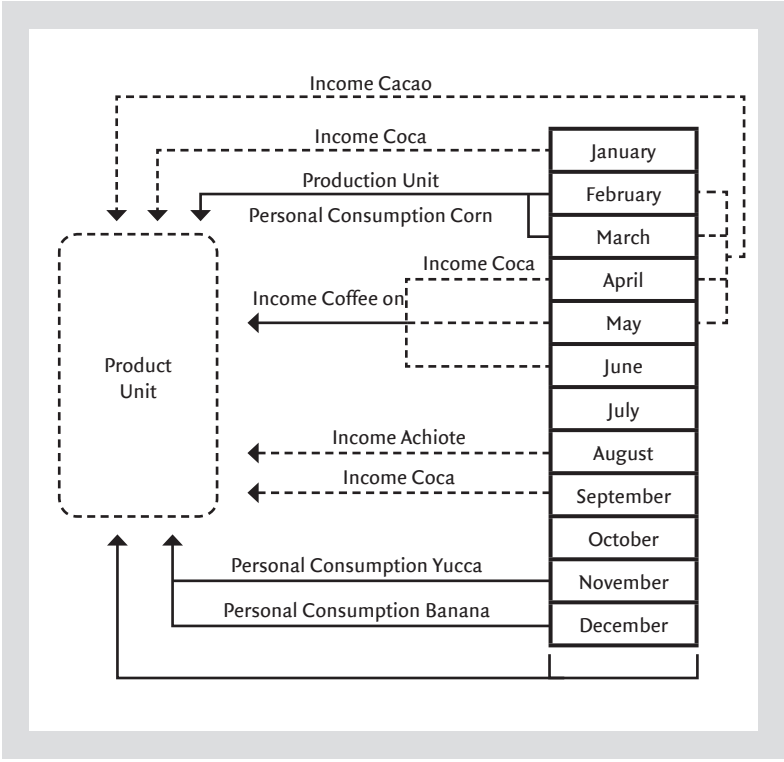
> *"Here in the valley, each* campesino *has his coffee and coca. The coca is like insurance, a petty cash box, which can be used at any moment for an*

*emergency or to make purchases at the market. We bring out coca, and sell it to ENACO. We store hundred pound sacks in our house, and we sell it off according to our needs, just like we do with coffee" (General Secretary of the* Yanatile Campesino *Federation).*

The specialization of the productive units in coffee and coca and, on a second tier, cacao and *achiote*, allows *campesinos* to receive income throughout the year and provides them with a calendar that diversifies the distribution of the crops during the year. This can be observed in the following diagram:



GRAPH 2 – CALENDAR OF THE AGRICULTURAL PRODUCTION UNIT




Source: Own.

*Lares: Diversification for Subsistence*

*Campesino* families from *Lares* depend on relatives to provide labor and on traditional practices of mutual help known as "*ayni*" and "*faena*". *Ayni* is the organization of collective and reciprocal work days during which relatives and neighbors work with one domestic unit at a time. The beneficiary is responsible for providing food, coca, and *chicha* to the workers and is must reciprocate when someone else requires it. In the "*faena*" community, leaders convoke members of the community, usually after an assembly, to work on community projects such as opening an irrigation ditch or repairing a road.



Native potatoes and corn are the main crops found in *Lares*. Both have limited commercialization potential and are primarily grown for personal consumption or for trading. When they decide which crops to grow, *campesinos* mainly focus on the food security of their domestic unit. Any excess they produce is traded or sold, most often in the *Lares* town market.

Another activity in *Lares* is raising camelids whose fibers are used to make clothing and textiles. In the era of the *haciendas*, this fiber was the region's main commodity, but after the agrarian reform, production fell. Currently, in at least three communities in the district, weavers have come together to form associations. With initial investment from NGO's and subsequent investment from the government, they are now selling their products at the hot springs in the area and at a store in *Cuzco*.

***Old and New Actors: Cooperatives, Communities, and Unions***

In the area that corresponds to the current districts of *Yanatile* and *Quelloúno*, the *haciendas* coordinated the markets up until the time of the agrarian reform. *Hacienda* owners worked the best lands and rented drier and hillier lands.[1] For market, they grew mostly sugar

1 In the 1950's, *hacienda* owners directly managed 22 percent of cultivated land parcels, while the renters and their immediate families cultivated the remaining 78 percent (Guillén, 1989: 234).

cane, in order to produce liquor,which was gradually replaced by coffee. To a lesser extent, they sold coca leaves and fruit. These products were linked to two kinds of markets: local markets in the higher areas where there was a demand for coca and liquor, and regional and national markets for coffee. In the 1940's, the National Coca Company (ENACO), which consolidated the legal sale of coca leaves for traditional use, was formed.

The crisis in the *hacienda* system and its transformation was intimately linked to the appearance of a new organization: agricultural workers' unions. The progressive unionization of *campesinos* in the 1940's generated the conditions for a revolution and for subsequent changes in the agrarian structure. In 1958, the Provincial Federation of *Campesinos* of *Lares* and *Convención* was formed. The strengthening of the unions' mobilization and negotiation capacities led to the seizure of lands and the implementation of a property reform in the mid-1960's. At the end of this process, the previous renters took control of the best of the *haciendas*' lands, while the rest of the *campesino* workers were given parcels and shares of land of lesser quantity and quality[2] (Rénique, 1991: 208-226, Encinas, 1986: 34).



After the agrarian reform, the unions played a central role in three processes. Firstly, they ensured access to the land for *campesino* families. The unions established the rules for redistribution of the land and other assets among the *campesinos*. Secondly, the unions constructed a political platform so that *campesino* families could negotiate with ENACO for better terms and prices for the coca leaf. Thirdly, the unions promoted the formation of productive cooperatives and services that could replace the *haciendas* as institutional vehicles for market integration. The first agrarian cooperatives were created from the power bases of the unions, and, in 1967,they formed a second tier association of cooperatives: COCLA.

2 In this area they expropriated and redistributed close to 80,000 hectares by the end of the agrarian reform process. Source: Office of the Agrarian Reform, Departmental Agrarian Unit XX.

The cooperatives were formed to organize the purchase and sale of coffee and, to a lesser extent, cacao and fruit. The coffee cooperatives were organized in COCLA, the association of cooperatives (Remy, 2006). The cooperatives hired people to manage them, while the *campesino* members maintained the political control of the organizations through the assembly. In this sense, the cooperatives were both economic and political platforms for their members when they negotiated on the coffee market.

The cooperative members agreed to separate a portion of their production to the cooperative as membership fees, as well as participating in the oversight of the organization. In exchange, they received a series of benefits such as better prices, access to credits, training and technical assistance. At the same time, the cooperatives provided a series of services, including the transportation of products, financing for agricultural seasons, credits to help modernize production, partial agricultural insurance and the identification of new markets. This setup was maintained until the 1980's thanks, in part, to the existence of agricultural and livestock banks and high coffee prices.

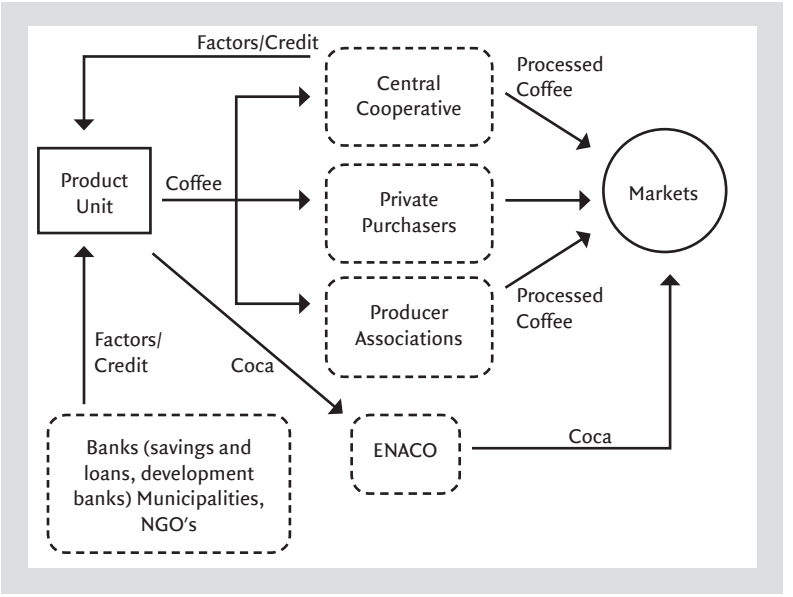


In the 1980's and 1990's, the cooperative system deteriorated, particularly producer cooperatives. With the liberalization of the economy, a new group of actors entered the business, including private intermediaries and associations of producers who were not in cooperatives. In this context, COCLA, as a second-tier services cooperative, remained active but lost important segments of the market to private actors.

The producers did not perceive the liberalization of the economy as a positive step given that they lost their capacity to negotiate with the market. The diversification of market channels resulted in a drop in coffee prices that affected local producers. There are new initiatives seeking to reactivate the cooperatives, albeit with different characteristics. The initiatives that have garnered the most attention are cooperatives such as the Services Cooperative of *Yanatile-Lacco Yavero*, which the municipalities are promoting. These cooperative models are financed by local governments that seek to turn them into orga-

nizational platforms to connect producers directly with brokers and certifiers, so that they can secure better prices through greater control over the various stages of the process. However, these initiatives have only just been implemented and their benefits remain to be seen.

GRAPH 3 – INSTITUTIONAL ARRANGEMENTS IN THE LIBERALIZED ECONOMY




Source: Own.



In the district of *Lares*, the principal *campesino* organization has been and continues to be the community itself. It regulates access to collective goods, such as pastures, and coordinates collective actions, such as the *faena*, for the provision of goods. The community organization has maintained the political and economic stability of the domestic units within the territory. In order to deal with land conflicts or livestock theft, it created *campesino* patrols that coordinate with the community organization. The communities and patrols are the organizations that regulate the day-to-day life of the *campesino* families.

In order to help the *campesino* families develop goods and services for the market, the NGO's and the local government have promoted the creation of producer associations. The impact of these associations is very limited;the only one that has been relatively successful is the weavers' association, which brings together women from various communities to sell their textiles at the *Lares* hot springs and in a store in *Cuzco*.



## TRAPPED AND EMERGING TERRITORIES: ANALYSIS OF THE STUDIED CASES

In the territories presented in this paper, social actors have identified binding constraints whose existence is explained by certain underlying institutionality and defining social processes. In this section, the relationship between these binding constraints, institutionality and processes are explained in order to define the institutional traps and escape routes that stem or facilitate economic development in the territories studied.

## TERRITORY 1: CONSTRAINTS AND INSTITUTIONALITY RELATING TO TOURISM DEVELOPMENT

### *Binding Constraints and Underlying Institutionality*

In the first territory, four binding constraints were identified. Firstly, the tourism that has developed in the area is essentially drive-by tourism organized around specific destinations. This activity is primarily controlled by outside actors, who act in coordination with members of the local elite. The agencies design the tourism packages, and these do not result in significant earnings for the territories of the province, *Písac* being the exception. This situation is reflected in the following quote:

> "*If you are big, you already have the whole route laid out. You go from* Písac *to your company's restaurant on the buses that your company owns. There are even companies that are partners in jewelry stores in* Písac *and* Ollantaytambo, *or they have standing agreements...the medium-sized ones, those that get their tourists from agencies in Cuzco, they have a little more flexibility; they offer the tourist more options, although they also have standing agreements with the owners of the stores and restaurants*" (COPESCO Plan Consultant).



This binding constraint is associated with two different forms of institutionality. First are the rules of access to the tourist markets, which are established primarily by agents and interests from outside the area. The destinations and circuits and the conditions of access to them are defined by agencies in *Cuzco* in response to their perception of the demands of domestic and international tourists. The local urban elite negotiate the rules of the tourism business, and the tourism agencies corner the opportunities.

The second binding constraint identified is the urban elite's economic marginalization of the communities from the principal point of sale in the valley: the *Písac* folk-art market. The following quotes show the challenges community members face competing with urban businesspeople who are well established in the market.

> "*Here everyone works with the town's permission, and our spots are ours by tradition. We work with suppliers from other areas...we sell in volume, according to the spot you get and if you have contacts at tourism agencies that can get you* gringos, *but we compete in folk art.The associations of weavers sell their products, their textiles, but those don't sell so well....they make their textiles, and they can be expensive...but they sell only a few. Those of us from the city sell in volume*" (Folk-art seller in *Písac*).
>
> "*Things at the Písac folk-art market have gotten complicated...the communities that have been able to form associations have entered the market and can compete, and the municipality helps them by trying to build a folk-art*

*market, by forging agreements with NGO's, but it is difficult to compete with the businesspeople" (Písac Municipal Government Official from the Economic and Social Development Office).*

This constraint can be explained by the rules of access to the market that urban actors have established. Based on this institutionality, the urban population secures not only the best position for sales in the market, but they become the intermediaries for the sale of rural artisans' products.

The third constraint is the absence of an adequate supply of tourism services. A municipal official from *Calca* explained it as follows:



*"Here in* Calca, *since there aren't many tourists, there are hardly any hotels. A few at most, like this one in the central plaza.There are others, but they are not high quality. There are more in* Urubamba *and in* Yanahuara" (Councilman and Acting Mayor, *Calca* Province).

This constraint refers to two forms of institutionality. Firstly, the rules that establish what type of services are attractive to tourists, as indicateda above,are defined by external agents. Secondly, the rules of access to the social or economic capital necessary to improve services marginalize the rural *campesino* population.

This is closely related to the fourth constraint: the lack of adequate public investment in services that promote rural tourism. In particular, there is a lack of investment in rural roads to improve access from the valley to the highland communities. The president of the community of *San José de Urco*, which is located in the upper part of the district of *Calca*, mentions this constraint in his testimony.

*"In general, connecting with highland communities is difficult. The roads were only constructed 30 years ago to get to the valley (the cloud forest), but the roads to the communities, these were built and expanded in the past few years"* (Councilman and Acting Mayor, *Calca* Province).

This constraint is related to two institutionalized practices. The first is the fact that the rules governing access to public investments benefit urban dwellers, who claim to have more familiarity with the tourism business. Secondly, in the town of *Calca*, informal rules that respond to networks of clientelism trump the formal rules for the allocation of public funds.

***Inequality Trap in the Sacred Valley***

We believe that the way in which tourism has developed as the principal option for economic growth in the Sacred Valley has generated an inequality trap. This trap is framed by historical processes that have aided the emergence of three factors that define it.



The first is the dominant role of external actors in defining tourism destinations and circuits. "Drive- by" tourism is managed by external actors, such as COSITUC[3], tourism companies and agencies, that negotiate with the local elite in order to create tourism circuits that focus on certain "destinations" that exclude vast expanses of the valley. The alliance between external actors and the local elite restricts the potential to expand tourism to other areas of the valley. The highland communities that are marginalized look for ways to integrate themselves into the activity by selling their labor (in disadvantageous conditions) as porters.

The second historical process was the consolidation of an urban elite in *Písac* that has ties to the tourism industry and that restricts the access of rural communitiesto this business. This elite is made up of families of artisans from the town, government officialsand small, urban businesspeople who, prior to the agrarian reform, lived under the control of *hacienda* owners. In recent decades, NGO programs to provide training have improved their capacity to get involved in the tourism industry.

3 The Committee for Integrated Cultural Tourism Services of Cuzco (COSITUC) is the committee that the Provincial Municipality of Cuzco, the National Institute of Culture-Cuzco and the Regional Office of Tourism and Foreign Commerce created through the Integration Agreement for Cultural Tourism Services in Cuzco.

This elite sustains their political power, stating that tourism is the only development opportunity open to them. This discourse strengthens their leadership position. In this context, they base their power on three abilities. In economic terms, their power is based on their ability to access financial capital in order to provide services and dominate the best points of sale for services or merchandise. In political terms, it is based on their ability to associate with external actors and on their political savvy, which enables them to control public offices. In cultural terms, they subordinate *campesino* groups, especially those from the highlands, by managing their authenticity.



The third historical process is the absence of a strong organization to enable their integration into the market. Tensions exist between the old communal organization that still exists and the more recently-formed producer associations that have been unable to establish their own institutional space. In this process, the communities,the principal rural organizations,have lost their productive capacity (there is a lack of labor because men work as porters), their political cohesion (associations of experiential tourism) and their negotiating abilities (they are not seen as allies in the development of the tourist industry).

## TERRITORY 2: CONSTRAINTS AND INSTITUTIONALITY RELATING TO AGRICULTURAL DEVELOPMENT

### *Underlying Constraints and Institutionality*

In the second territory in this study, we identified four binding constraints on growth. Firstly, geographic-environmental conditions are a binding constraint. In *Lares*, the altitude and climate are constantly identified as limitations for the growth of agriculture and livestock. In contrast, in the lower territories of *Yanatile-Quelloúno*, environmental conditions are considered to be advantageous for agriculture.

> *"Here, coca, everything grows. In the clay dirt of the hillsides, where it is difficult for other plants to grow, coca grows well, and it doesn't need much work"* (Director of ENACO – *Yanatile*).
> *"The valley is fertile…it produces oranges, coffee, cacao, coca, fruit… what's missing is investment, good roads and industrial plants"* (Mayor of *Yanatile*).

These geographic and environmental limitations are associated with the inability to produce certain crops with market demand, such as coca and coffee in the lower areas.



A second binding constraint is deficient public investment in roads, which, if they actually existed, could improve access to regional markets for the producers of *Lares*. In contrast, *Yanatile* and *Quelloúno* have received significant investment in recent decades, which has helped the territory to become a coffee growing area. The following testimonies from producers in *Lares* show the importance of highways for market integration.

> *"There are no highways here. In recent years, roads to some communities have been built. There was only the main one to do go down to* Calca, *to the valley that way"* (*Member of the Campesino Community of Huacahuas, Lares*).
> *"With the highways to the communities that have been built recently there has been some development. Now you can sell some potatoes at the market. The lack of highways was always holding us back here [in Lares]"* (President of the *Campesino* Community of *Lares*, *Lares*).

This binding constraint is related not just to the formal rules related to the distribution of public investment, but also to the differences in the ability to negotiate more investment in various districts. *Lares* is a district with little revenue or capacity to negotiate with provincial and regional governments. Worse still, as a result of the political problems in the capital of *Calca*, the ability of the district to attract public investment has been even more restricted. The districts of *Yanatile* and *Quelloúno* have overcome this constraint thanks to greater public and

private investment. The *hacienda* owners, the cooperatives that came afterwards, and the unions effectively pressured government offices for greater investment. In some cases, they have participated directly in public-private investment in highway construction and improvement.

Furthermore, the producers in *Lares* have no culture of producing for the market. Rather, the bulk of their production is earmarked for personal consumption. This predisposition becomes a third constraint in the territory. In contrast, *Yanatile-Quelloúno* has a culture of producing for the market. Families there combine their production for the market with production for personal consumption. The following testimonies demonstrate this difference:



> *"We have always sold very little, potatoes for seed, alpaca wool, but a little, potatoes....we do more trading. Still, now we use more money since the buses came; more gringos come up this way, and there are more things to sell and buy"* (Community Member of Cachin, *Lares*).
>
> *"It is not like in the higher communities, like those of our grandfathers.They can't sell their land, or buy...it's harder because you have to consult the community...here, since the seizure of lands, the reform, that era, since our fathers migrated. I did too, the elders have deeds, and we have more land.... if you save up or get a loan you can buy more land....and we can sell coffee and coca, achiote, to buy a television or travel"* (Campesino, Chancamayo sector of *Yanatile*).
>
> *"Here in the valley, each* campesino *has his coffee and coca. The coca is like insurance, a petty cash box, which can be used at any moment for an emergency or to make purchases at the market. We bring out coca, and sell it to ENACO. We store hundred pound sacks in our house, and we sell it off according to our needs, just like we do with coffee"* (*General Secretary of the* Yanatile Campesino *Federation*).

This constraint is related to the rules that determine how the *campesino* units in *Lares* manage their production. Food security for the families is their priority when choosing what type and how much of

the crops to grow . In *Yanatile* and *Quelloúno*, the families have learned to establish production rules that allow them to be more market-oriented without neglecting to grow food for their families.

Lastly, the fourth constraint identified in *Lares* is associated with the absence of institutional vehicles for improved sales and/or negotiations with the marketplace. The producer associations have not managed to come together. In contrast, in *Yanatile-Quelloúno* the unions emerged as political platforms to secure land ownership and to negotiate with the state for the sale of coca. The cooperatives emerged as collective institutional platforms for insertion into the coffee market. The following quotes reflect the difficulty of consolidating these institutional vehicles in *Lares*, and the importance of the various kinds of associations in *Yanatile*'s insertion in the marketplace.



> *"There are difficulties working with the community. That's why many of us have formed committees, breeders' associations, forestry associations, in order to work in a more specialized manner. The community is like the assembly. Decisions are made there, but it isn't the right place for working all the time, towards goals....For example, we have a rewards program according to how much each family produces, in guinea pigs, fiber, milk, etc....by family, by committee, not by community"* (Official from the *Pachamama* NGO, *Raymi*, *Lares*).
>
> *"The cooperative, in general all of them, gave us credits, agricultural inputs, they sold you things, basic goods; they covered the loading fees for their trucks....when that's the way they worked, people were in good shape... now, you either sell to COCLA or to people who go to* Quillabamba *to buy, and your coca to ENACO; sometimes they pay you in advance for your harvest when the price is good...and the Campesino Federation has strikes and negotiates better prices when the coca is low"* (*Campesino*, from the Santiago Sector of *Yanatile*).

This restriction must be interpreted within the context of the rules and political-productive organization of each one of the areas

that share this territory. In *Lares*, the *campesino* community has maintained itself as the principal local organization, but it has not become a platform for market insertion. The associations have sought to fulfill this role, but they have not been successful in institutionalizing themselves. In contrast, in the lower valleys of *Yanatile* and *Quelloúno*, the unions and cooperatives set the stage for the establishment of rules for commercialization and negotiation with the marketplace.

### *Divergent Histories: Poverty Traps in* Lares *and Emergence in* Yanatile-Quelloúno



In *Lares*, there have been social processes that, together with the geographic and environmental conditions of the district, have created what we can conceptualize as a poverty trap. Meanwhile, in the districts of *Yanatile* and *Quelloúno* binding constraints that lead to this trap have been overcome.

After the agrarian reform, the families in *Lares* maintained a productive "culture" oriented towards subsistence and were unable to sustain the camelid fiber market which the *haciendas* had used. The production and commercialization of fiber had previously been managed by the owners of the *haciendas*,and this production dissipated after the agrarian reform. Neither the state nor the new owners were able to reconstruct or build new camelid fiber circuits. In contrast, after the reform, producersfrom *Yanatile* and *Quelloúno* reaffirmed their involvement in the coffee and coca market. The productive "culture" that combines market and subsistence products was strengthened with the acquisition of land. The inhabitants of these communities reinforced their institutional practices of mixed production in a more favorable context once they secured ownership of the land.

In *Lares*, the unions that formed after the agrarian reform did not prosper, while the *campesino* community gained strength as the leading organization. The institutional practices of this organization were successful in securing access to common resources for subsistence production. However, these practices revealed their limitations when the

community sought new ways in which to insert itself into the market. Municipal and NGO initiatives to create producer associations to establish the rules of market production have had limited impact to date.

In contrast, the mobilization of *campesinos*,which unleashed an early agrarian reform in *Yanatile* and *Quelloúno*, created the conditions necessary for the emergence of unions and cooperatives, organizations that have acted as legitimate vehicles for local producers to negotiate and integrate themselves into the market. It is probable that the absence of communities in this area allowed for the emergence and consolidation of new organizations, such asthe unions and cooperatives. The political and economic practices that were institutionalized at the heart of these organizations have proven to be a key factor for the upward mobility of this territory.



Lastly, low levels of public and private investment in *Lares*are partially the result of its leaders' limited capacity for negotiation and the absence of private actors with economic power. As a result, the communities of *Lares* are in a situation of double marginalization: they are marginalized by the economic centers and coffee and tourism circuits, and they are also politically marginalized from the centers of power in the province. In contrast, the producer families from *Yanatile* and *Quelloúno* have managed to attract public and private investment as a result of the political and economic power of their organizations. The local organizations have known how to negotiate with the government and privatesector actors based on common political and economic interests associated with the regulation of the production of coca and the expansion of the coffee business.

## Conclusions

The economic and political history of the study area demonstrates how territories are in constant construction and reconstruction. In economic terms, the study demonstrates how territories like those in

the province of *Calca*, which were once connected, can divide into territories that develop their own dynamics. In political terms, the study demonstrates how the creation of different kinds of elite groups and networks of clientelism affects territorial governance. In the capital of *Calca*, the conflict between the old and the new elite, in a context of accusations of corruption, has brought about a situation of mismanagement in the province, in the face of what Sen calls a "credible compromise" (Sen, 1977). As a consequence, the districts of the province have sought new political-territorial connections.



The study is careful to explain how the rules of play that underlie the binding constraints are intimately tied to the historical processes that promoted their creation or created the conditions necessary to overcome them. These histories are constructed on the foundation of external factors, such as the resurgence of tourism in the Sacred Valley, and internal factors, such as the construction of a "culture" of *campesino* production in the markets of *Yanatile* and *Quelloúno*, which clearly outline the limits and rhythm of institutional changes. Most important are the ways in which these exogenous factors are linked to endogenous ones. The comparison between territories suggests that when local actors manage to negotiate exogenous interventions under good terms, as in the case of the territory of *Yanatile-Quelloúno*, the results are more encouraging than when external actors impose conditions, as in the case of tourism development in *Písac*.

Following Sach (2003), we find that geographic and environmental conditions influence the appearance or absence of certain forms of institutionality and organizations, as in the territory of *Lares–Yanatile-Quelloúno*. When we talk about these types of natural determinants, it is important to understand that these manifest themselves as restrictions only in certain social contexts. In *Lares*, the "natural" isolation associated with its climate and altitude is associated with at least two interrelated social conditions: the lack of a services infrastructure, such as highways and roads, and the absence of marketable activities, such as the production of crops for the market or the development

of tourism. In *Yanatile-Quelloúno* or *Písac*, which are naturally isolated, these conditions are not present.

In the territories studied, the historical process that most influenced these configurations is the reform and post-agrarian reform eras. In the Sacred Valley, the agrarian reform did not eliminate the urban-rural social divisions, nor did it lead to a capitalistic development that was more inclusive. The subsequent orientation towards tourism development ended up reconstructing old social divisions. In contrast, in the valleys of *Yanatile* and *Quelloúno*, perhaps because it was an earlier and more endogenous process, the reform generated conditions for the emergence of institutionality and organizations, such as unions and cooperatives, that were able to orient and fine tune changes that have facilitated economic growth.



A key historical aspect in understanding the territorial traps and the escape routes from these traps is the process of replacement, reconstitution or elimination of the elite. The political processes in the capital of *Calca* have produced conflicts between the old and new elite, while in *Lares* this power group has not formed in the same way. In *Písac*, the urban elite that emerged (subordinate to external actors) with the development of tourism as an economic activity ended up reproducing social inequality in the territory with pre-reform era practices of social exclusion. Only in *Yanatile-Quelloúno* have the old elite and their exclusionary practices been reproduced by new forms of more inclusive political representation and economic institutionality. In contrast to the earlier cases, the new elite in *Yanatile-Quelloúno* has constructed a territorial vision for the future that has been fundamental for the avoidance of territorial traps.

However, the traps and upward mobility of territories are not solely explained by historical-structural processes of change linked to any number of economic and political factors; they are also explained by the establishment of institutionality linked to specific public policies. For example, the improvement of the frameworks in place for allocating public investment funds to roads and education could give the rural ar-

eas of the Sacred Valley or *Lares* greater possibilities for upward mobility. Better planning and the regulation of the tourism market could help establish more democratic access to this market and eventually end the pattern of exclusion of rural actors by the urban dwellers of *Písac*.

The comparison of the two cases reveals that a key factor for promoting public investment lies in establishing democratic forms of management that incorporate local needs and interests during the planning process. For example, in *Yanatile-Quelloúno*, government investment in roads responded to common local and regional interests in improving the ability for coffee to access external markets. The government investment not only improved communication but also reinforced institutionalized practices of coffee production by strengthening producers' access to the market. In contrast, government investment in *Lares* is not only scarce, but it appears to respond to extra-territorial interests. Government investment should be focused on strengthening the local, institutionalized assets and practices that contribute to overcoming territorial traps.



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# METHODOLOGICAL APPENDIX

## 1) QUANTITATIVE METHODOLOGY USED IN THE STUDY



We constructed the quantitative analysis in three complementary stages. In the first, we analyzed patterns of poverty and vulnerability in the territories during the most recent intercensal period. This analysis allowed us to identify territories that this study refers to as "trapped" because their well-being indicators were lagging behind the rest of the nation during the periods analyzed. It also allowed us to identify upwardly mobile territories (ones that went from a lagging position to a non-lagging one); downwardly mobile territories (ones that went from not lagging behind to lagging behind) and, lastly, those that were never lagging behind.[1]

In the second stage, we took a multidimensional approach to poverty, analyzing inequality in access to key goods and services, using the Human Opportunity Index. This index allowed us to adjust the average coverage of the studied variable (one that generally refers to access to public services or a situation of well-being) by the inequality of access to this opportunity that exists among different groups in the population, including geographic variables such as the urban/rural condition. This analysis was undertaken for minors in each of the countries. This strategy allowed us to focus on the impact of variables considered "circumstances", which is to say situations beyond the control of the individual. These variables usually had to do with the household and geographic area where the minor lives.

1 A territory is considered to be lagging behind when it is half a standard deviation below the average of all the territories.

Lastly, we studied patterns of social mobility, applying a pseudo-panel technique in order to identify the existence of patterns of income convergence. In other words, we determined whether the social groups that were lagging behind demonstrated growth rates that would allow them to close the income gap with non-lagging groups. If convergence patterns were found, this technique allowed us to determine how long the process would take.

### *1.- Estimates of Poverty and Vulnerability*



There are no multipurpose surveys or surveys of income and household expenditures at a territorial level needed for this study. For this reason, we relied on income and household spending estimates that were spatially disaggregated, which we obtained by employing the Poverty Mapping methodology (Elbers et al., 2003). This methodology combines spatially-disaggregated data from the population censuses with detailed income and spending data, usually obtained from multipurpose surveys, in order to estimate income/spending levels at the most granular level possible, in spatial terms.

For the Chile study in particular, we used the estimates of communal poverty calculated by RIMISP (Modrego et al., 2009), which uses two sources of communal microdata from the 1992 and 2002 censuses in addition to data from the CASEN surveys from 1992 and 2003.

For Mexico, we used estimates of municipal poverty calculated by the National Council for the Evaluation of Social Development Policy (*Consejo Nacional de Evaluación de la Política de Desarrollo Social*, CONEVAL, 2012). In Peru, we used estimates that Escobal and Ponce (2008) constructed combining information from the household surveys (ENAHO) and the 1993 census in order to estimate 1993 provincial spending and poverty indicators. This calculation was subsequently updated for 2007, combining data from the census and household survey from that year (Escobal y Ponce, 2010).

**Estimates of Vulnerability**

Even when a household is above the poverty line based on its socioeconomic characteristics, it has the potential to become poor at a given time. We define vulnerability as the income threshold under which there is an elevated risk of becoming poor. Following the work of López Calva and Ortiz Juárez (2011) and Ferreira et al., (2013), we used a three-stage methodology that is based on a household panel. Firstly, we constructed a transition matrix, in which we looked for individuals in poverty in a base year, and we then followed them until a specific end date, identifying how many of them maintained this condition, how many changed and how many stayed non-poor. Using these results, in the second phase, we used a logit regression in order to estimate the probability that, given a household's characteristics in the base year[2], it will remain or become poor by the end date.



$$p_{it} = E\left(poor_{i,t+1} \middle| X_{it}\right) \quad (1)$$

Where $poor_{i,t+1}$, is assigned the value 1 if the household stays or becomes poor, and $X_{it}$ corresponds to a vector of observable characteristics of a household in a base year.

The third stage uses the same vector of characteristics of the household used in the logit regression to estimate a linear regression that determines its per capita level of income:

$$lnY_{it} = \alpha + X_{it} + \varepsilon_i \quad (2)$$

Where $lnY_{it}$ corresponds to the natural logarithm of per capita household income in the base year. Undertaking these two calculations, we identify an income/spending threshold below which a person has a 10 percent or less chance of becoming poor. López de Calva and Ortiz Juárez (2011) applied this method in Chile, Mexico and Peru, establishing an income threshold of $10 PPP 2005.

2 Such as the educational level of the head of household, occupation, geographic locations family composition, etc.

For Chile and Peru, we estimated *ad hoc* measurements of vulnerability that enabled us to incorporate the territorial heterogeneity with which we analyzed poverty in these countries. For Mexico, we used the World Bank US $10 PPP per capita, per day, and differentiated the amounts for rural and urban areas based on poverty thresholds as stated by CONEVAL, after taking into account the relative sizes of rural and urban populations. However, the poverty lines estimated for Chile and Peru are very close to the lines proposed by the World Bank.

Variations in the percentage of the population that are in a vulnerable situation can be desirable for well-being or not, depending upon what happens with the poor and highest income groups. For example, an increase in the number of vulnerable is socially desirable if it is associated with a reduction of the percentage of the population living in poverty. If, however, this increase is associated with a reduction in the percentage of the population in the highest-income bracket (middle class or non-vulnerable), it is not socially desirable.



We cannot directly conduct the vulnerability analysis, rather we have to conduct it using two alternatives methods. The first method includes vulnerable segments and poor segments in one group of analysis, which in this study we call "total vulnerability". The second analyzes changes in vulnerability in parallel to changes in poverty and in the middle class. These dynamics are summarized in the following table.

### *2.-The Human Opportunity Index and Shapley Decomposition*

Changes in the economic status of households and individuals is just one measurement of well-being. These indicators must be complemented with multidimensional indicators in order to demonstrate the differences in opportunities that the inhabitants of a territory have.

The distribution of opportunities in the territories is measured by a methodology based on the work of Roemer (1998), which has been empirically applied by the World Bank for several countries. It is known as the Human Opportunity Index (World Bank, 2006).

TABLE 1 — OUTLINE TO IDENTIFY DETERIORATION OR IMPROVEMENT IN WELL-BEING DUE TO CHANGES IN VULNERABILITY RATES

| # | | | | |
|---|---|---|---|---|
| | **Improvements in Well-being Based on Increases in Vulnerability Rates** | | | |
| 1 | Increase in Vulnerability | Decrease in Middle Class | < | Reduction in Poverty |
| 2 | Increase in Vulnerability | No Change in Middle Class | and | Reduction in Poverty |
| 3 | Increase in Vulnerability | Increase in Middle Class | < | Reduction in Poverty |
| 4 | Increase in Vulnerability (*) | Decrease in Middle Class | = | Reduction in Poverty |
| | **Improvements in Well-being Based on Decreases in Vulnerability Rates** | | | |
| 5 | Decrease in Vulnerability | Increase in Middle Class | and | No Change in Poverty |
| 6 | Decrease in Vulnerability | Increase in Middle Class | > | Reduction in Poverty |
| 7 | Decrease in Vulnerability | Increase in Middle Class | > | Increase in Poverty |
| 8 | No Change in Vulnerability | Increase in Middle Class | = | Reduction in Poverty |
| | **Deterioration in Well-being Because of increase in Vulnerability Rates** | | | |
| 9 | Increase in Vulnerability | Decrease in Middle Class | > | Reduction in Poverty |
| 10 | Increase in Vulnerability | Decrease in Middle Class | and | No Change in Poverty |
| 11 | Increase in Vulnerability | Decrease in Middle Class | > | Reduction in Poverty |
| | **Deterioration in Well-being Because of increase in Vulnerability Rates** | | | |
| 12 | Decrease in Vulnerability | No Change in Middle Class | and | Increase in Poverty |
| 13 | Decrease in Vulnerability | Increase in Middle Class | < | Increase in Poverty |
| 14 | Decrease in Vulnerability | Decrease in Middle Class | < | Increase in Poverty |
| 15 | No Change in Vulnerability | Decrease in Middle Class | = | Increase in Poverty |
| 16 | No Change in Vulnerability | Decrease in Middle Class | = | Increase in Poverty |

The <symbol means less than; the >symbol means greater than; and the = symbol means equal to.

(*) Among others, this case clarifies the need for value judgments about the trade-offs between middle class and the poor when analyzing changes in vulnerability. Compiled by the authors.

Taking children aged 18 and under as the unit of analysis,[3] the Human Opportunity Index (HOI) evaluates the average availability of a good or service, referred to as an advantage in this literature , and applies a penalty for its uneven distribution among the population.

Conceptually, the HOI seeks to determine to what extent personal circumstances beyond the control of individuals (such as place of birth, wealth of the household of origin, ethnicity or gender) influence the probability of accessing advantages that are necessary for well-being and development (Aroca et al., 2013).



In its formula, HOI is defined by the average coverage of an advantage ($\overline{p}$) penalized for its unequal distribution (1-D). This penalization is calculated with a dissimilarity index that estimates the probability of access to the good/services of *k* groups in society, as defined by the circumstances:

$$D = \frac{1}{2\overline{p}} \sum_{k=1}^{m} |p(x_k) - \overline{p}| \beta_k \quad (3)$$

Where $p(x_k)$ is from a logit model that estimates the probability of access to the advantage for each group. k; $\beta_k$ indicates indicates the participation in the population of each of these *k* groups, and $\overline{p}$ corresponds to the average coverage level of the advantage being analyzed. Using the dissimilarity index, we construct the HOI in the following way:

$$IOH(\text{advantage}_j) = \overline{p}_j(1 - D(j)) \quad (4)$$

We can see that the HOI value depends positively on the average coverage of the advantage $\overline{p}_j$ and negatively on its unequal distribution. $(1 - D(j))$.

3 The idea here is that access to goods and services should be perceived as a right and not associated with personal effort. This is the reason why these indicators are not usually constructed for adults because their outcomes depend, in addition to their circumstances, on the effort they make.

The circumstances tend to combine characteristics of minors (such as gender and age) with the households in which they live (such as gender and education of head of household, and whether he or she belongs to an indigenous group). Characteristics of the place of residence can also be included, such as whether it is rural or a state/regional capital.

The HOI is characterized by being a decomposable measurement. As a result, one can evaluate what percentage of its evolution corresponds to variations in the average coverage of the advantage and what percentage corresponds to variations in its equitable distribution:



$$\mathrm{IOH}_{t+1} - \mathrm{IOH}_t = \Delta\bar{p} + \Delta\mathrm{D} \tag{5}$$

$$\Delta\bar{p} = \bar{p}_{t+1} \cdot (1 - \mathrm{D}_t) - \bar{p}_t \cdot (1 - \mathrm{D}_t) \tag{6}$$

$$\Delta D = \bar{p}_{t+1} \cdot (1 - \mathrm{D}_{t+1}) - \bar{p}_{t+1} \cdot (1 - \mathrm{D}_t) \tag{7}$$

Following Araar (2008) one can also decompose the dissimilarity index:

$$(\bar{\mathrm{p}}_{t+1}\mathrm{D}_{t+1}) - (\bar{\mathrm{p}}_t\mathrm{D}_t) =$$
$$\left(\bar{\mathrm{p}}_{t+1}\mathrm{D}_{within,t+1} - \bar{\mathrm{p}}_t\mathrm{D}_{within,t}\right) + (\bar{\mathrm{p}}_{t+1}\mathrm{D}_{between,t+1} - \bar{\mathrm{p}}_t\mathrm{D}_{between,t}) \tag{8}$$

With access to national and territorial level indicators, we can decompose the dissimilarity penalty into two parts: one that is associated with the existing dissimilarity in the coverage between different territories, and another penalty that is related to the dissimilarity of coverage within a territory.

Following Soloaga and Chávez (2010) and Hoyos and Narrayan (2011), the inequity component expressed by the dissimilarity index can also be subject to a Shorrocks-Shapley (1999) decomposition, through which we can identify the contribution of each circumstance to the total inequality.

This methodology identifies to what extent the inequality measure changes when a new circumstance is incorporated; however, as

can be clearly seen in Formula (3), the effects of incorporating a new circumstance are closely related to the previously-incorporated circumstances. To isolate the effect of a circumstance, we must consider the effect that this has on all the possible subgroups of pre-existing circumstances and then take the average of these possible changes. Mathematically this is expressed as follows:

$$D_A = \sum_{S \subseteq n \setminus \{A\}} \frac{|s|!(n-|s|-1)!}{n!} [D(S \cup \{A\}) - D(S)] \qquad (9)$$



Where $n$ corresponds to the set of all the existing circumstances; S is a subgroup of circumstances that excludes circumstance $A$ (or a group of circumstances); $D(S)$ corresponds to the dissimilarity index with the set of circumstances S; and $[D(S \cup \{A\})$ is the estimated dissimilarity index with the set of circumstances S and the circumstance $A$.

The contribution of the circumstance to the dissimilarity index is expressed as:

$$M_A = \frac{D_A}{D(n)}; donde \sum_{i \in n} M_i = 1 \qquad (10)$$

### *3. Social Group Mobility*

Along with the analysis of the dynamics of poverty and opportunities on an individual level, it is important to evaluate the mobility of social groups. This distinction is associated with what is called the difference between vertical and horizontal inequalities (Stewart, 2000). To the extent that mobility or the absence of it is associated with specific populations, we can determine whether the persistence of inequality between social groups stems from poverty traps. To study this phenomenon, we evaluated whether certain social groups had divergent or converging dynamics, and to what extent the historically-excluded social groups registered any upward mobility or not. The lack of surveys that follow the trajectories of the same people over time and that are representative of the analyzed sub-national units limited our abil-

ity to analyze these populations. However, by using the pseudo-panel technique, in which people are grouped together based on characteristics that do not vary over time (such as gender, ethnic origin and date of birth), we can approximate a mobility analysis of particular social groups. In this case, we constructed pseudo-panels based on the information from the two most recent censuses, in addition to the estimates of income, spending, and poverty obtained through Poverty Mapping.

This technique allowed us to follow pseudo-individuals, defined by average characteristics of the groups to which they were assigned, at two points in time and evaluate the existence or absence of mobility patterns for income, spending or access to goods and services. In order to evaluate this mobility we calculate the following growth model:



$$g_{it} \equiv \ln(y_{it}) - \ln(y_{it-1}) = \alpha + \beta \ln(y_{it0}) + \sum \varphi_k x_k + u_{it} \quad (11)$$

Where $y_i$ represents the per capita spending of each social group $i$ (or some alternative well-being indicator), and $x_k$ represents a vector of control variables that include average characteristics of the people of social group $i$ and their environment.

Based on the estimates in (11), we were able to calculate convergence rates and the amount of time it would take territories to achieve $\gamma$% of the equilibrium value, an indicator expressed as follows:

$$H(\gamma) = \frac{\ln(1-\gamma)}{\ln(1+\beta)} \quad (12)$$

For example, to achieve 50 percent of the equilibrium value (the indicator known as "half-life"), it would take $\ln(0{,}5)/\ln(1+\beta)$ years. Similar calculations can be undertaken to estimate the number of years needed to reduce the gap by a third, a quarter, or a tenth of its original value. This method allows us to estimate absolute convergence patterns, which is when no control for variables other than the

spending in the first year are taken into consideration.[4] We can also calculate conditional convergence, which reflects characteristics of the panel and of the controls incorporated into the equation (11).

## 2) QUALITATIVE METHODOLOGY

### *Questions, Hypothesis and Conceptual Framework*



What are the factors that cause localized poverty and inequality traps? To answer this question, it was necessary to use a qualitative methodology, to collect information and to analyze it. This qualitative component maintains a synergy with the quantitative one in two ways. Firstly, in each country the two teams worked in close coordination. Secondly, the territories for the qualitative portion of the study were chosen based on the quantitative analysis. In fact, this territory selection process was a shared effort between the two research approaches.

To respond to this research question, we started with the following hypothesis:

There are territorial poverty and inequality traps that, by and large, are determined by political-institutional factors that are territory-specific and cross-cutting.

Certain territories have overcome their traps and redefined the rules that mediate their relationships with power centers. This is to say, that they have established new equilibrium points and political solutions both internally and at the highest levels of the country's political-administrative hierarchy.

As a hypothesis, we maintain that these new equilibriums are achieved through institutional changes that help remove constraints that limit general economic growth and, in a more specific manner, that limit the potential of the groups that lag behind the most.

4 Strictly speaking, the parameters for absolute convergence have already been affected by the construction of the pseudo-panel itself. For this reason,it is probable that there is an overestimate of the speed of adjustment.

The conceptual framework for this component is based on five arguments:

1. Territories remain in lagging situations for two main reasons:
   - The existence of binding constraints.
   - The existence of conditions that marginalize or subject certain populations within the territory to lagging positions.

   This is to say, territorial traps are products of conditions that limit:
   - The economic growth of the territory.
   - The participation of the poorest and most vulnerable groups in the benefits of growth.

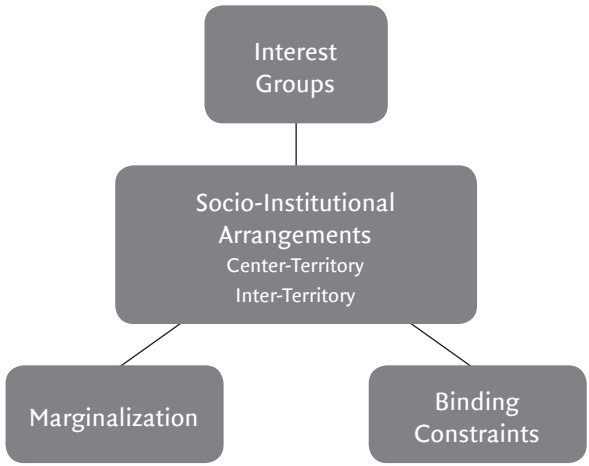
2. These conditions exist due to factors that are external to the territory, in addition to certain social and institutional factors that can exist within the territory and/or within the relationship between the territory and the centers of power (we assume that they usually exist in both environments).

3. These arrangements persist or change as a consequence of the exercise of power by interest groups or coalitions of these groups.

4. These groups manage to impose/induce certain arrangements through strategies that include direct interference, the restriction of the rights of others, or the consolidation of ideas that structure thinking on how "how things should be done".

5. History has a significant, albeit not decisive, influence on the nature of these factors, conditions and power groups.

   These are the proposed causal relationships and the key variables for investigating these relationships. To sustain these arguments, the analysis not only sought to demonstrate the causal relationship identified, but it also considered alternative explanations.






6. We proposed that it was highly likely that the traps/escapes were partially, or largely, determined by social and institutional relationships that exist within the territory and that exist outside the territory but manifest within it. They may also exist as arrangements that determine relationships between the territory and other levels (for example, the rules that determine the location of power in planning processes that affect the territory; the formulas for defining the spatial distribution of taxes; or the spatial distribution of government funding for education, etc.).

   We also proposed that it was highly likely that the traps/escapes were partially, or principally, determined by interest groups from outside of the territory, and that they, in coordination with territorial actors, or on their own, promoted their interests by defending or fostering certain institutional arrangements. These interest groups can be private, government or civil society actors.

   Both the hypothesis and the elements of the conceptual framework guided the interviews, defining not only the interview topics, but also the criteria for selecting who would be interviewed.

***Selection of Territories and Interview Subjects***

The process for selecting the study territories is outlined in the first chapter and will not be repeated here. The territory defined the principal space for the interviews, but as a result of the conceptual framework suggesting the importance of extra-territorial actors in defining and changing territorial traps, it was necessary to interview key sources at a regional/departmental/state and national level in addition to a territorial level.

The methodology followed three general steps, each of which had specific objectives with implications for the selection of interviewees and the content of the interview.



The first step had the following objectives:

- Identify the binding constraints and dimensions of lagging and marginalization in the territory.
- Identify the social and institutional arrangements that sustain these conditions.
- Identify historical conditions that underlie these social arrangements, the extent of the lagging position, and the constraints.

This identification process was based on interviews with key sources and a review of secondary-source literature on the region and territory. In these interviews, sources were asked to identify:

- The binding constraints in the territories and/or the constraints that the territory has overcome.
- The dimensions of lagging and marginalization in the territory and/or those that the territory has overcome.

These interviews were of the dialog/conversation type in the sense that once the interviewee identified possible constraints, the interviewer asked if these factors really satisfied the concept of a binding constraint with regards to its meaning in the context of the study,

adapted from Hausmann, Rodrik and Velasco (2006). Obviously, the interviewers didn't use the term binding constraint, but they expressed the idea in a way that made sense in a local context.

After identifying the binding constraints and the dimensions of lagging and marginalization, they were asked about the factors that sustained these conditions. While the emphasis was on factors of a social and institutional nature, the interviewer allowed the interviewee to talk about what he/she thought was important.

In this phase of the study, we interviewed the following types of key sources:



- Regional Government: directors of offices that deal with economic issues and social/indigenous issues; elected officials.
- Municipal government: depending on the structure of the team,managers and experts from economic and social development units; elected officials.
- Chamber of Commerce/Industry.
- Producer organizations.
- *Campesino* organizations.
- NGO's.
- Religious authorities.
- Journalists and Academics.

In general, the process of identifying and contacting the sources followed a "snowball strategy" (in which one source, either directly or through their answers, suggested other people who would be important to interview), and it was also ethnographic in nature (in the sense that being present in the territory allowed us to successfully coordinate certain interviews). The process began with interviews with local and regional authorities.

Despite being a "dialog style" interviews, the interviewer asked certain common questions in each interview, including:

- Who are the groups that most lag behind and are marginalized in the territory? How would you characterize their economic activities? How do they organize themselves socially? Where are they located?
- How would you characterize their condition of lagging or marginalization? What are the big ideas used by the interviewee to talk about this lagging and marginalization?
- How do you explain this situation of lagging and marginalization? What factors do you think are the biggest determinants of this situation of lagging and marginalization?
- Do these factors have to do with economic, cultural, political, environmental or social factors? What is the order of importance of these factors? Please elaborate on the nature of these factors.
- Are there factors that were sources of a situation of lagging and marginalization that they have overcome? Which ones? How do you explain the ability to overcome these factors?
- When there were economic improvements in the territory, did these marginalized and lagging groups share in the improvements? Were they able to take advantage of them? How do you explain these trends?
- Who are the other socio-economic groups (non-marginalized, well-to-do) in the territory? Have they changed over time, or have they remained the same?
- How would you characterize their economic activities and the ways in which they organize themselves socially and politically? Where are they located?
- How would you explain their relative socio-economic well-being and their conditions of wealth? What factors do you believe are the most influential in this situation of well-being and their position of having more influence in the territory?
- Do these factors have to do with economic, cultural, political, environmental or social factors? What is their order of importance? Please elaborate on the nature of these factors.

- In periods of economic improvement in the territory, did these groups share in the improvements? Were they able to take advantage of them? How do you explain this trend?

Even though there was some overlap in the binding constraints, the dimensions of lagging/marginalization and socio-institutional factors identified by the different interviewees, the answers also demonstrated a certain scattering. For this reason, in some cases, we conducted a second interview to discuss these diverse answers and see if the interviewee wanted to elaborate.



In the re-interview, we returned to the obstacles to economic growth that the interviewee identified as existing or that no longer existed as situations of lagging or marginalization in the territory. For each obstacle and factor, we asked how they explained its existence or the fact that it had been overcome. We asked if they thought that certain social actors or organizations wanted these factors to remain or change and why.

In the second step, based on these interviews and documentary , not to mention everyday conversations performed within the territory itself, we prepared a map of actors who influence or could influence the territorial dynamics. This map identified the actors considered important in the reproduction of the socio-institutional arrangements that sustain the binding constraints and marginalization in the territory. It also included their interests and visions for the territory; the socio-institutional arrangements through which these processes take place; the location of these actors relative to the territory (territorial, regional, national, international); and the relative influence of the actors in these processes. This map also included a historical aspect, distinguishing between actors who no longer have influence; actors who have acquired a level of influence they didn't have before; and actors who have exercised influence over an extended period of time. In addition to the interviews, the documentary review process and the experience of the teams helped us understand the history of the actors and institutions in the territory.

The map served to identify a second group of people to interview. These interviews were based on the people and coalitions identified as most influential in determining the conditions that affected the constraints and situation of lagging and marginalization in the territories. These interviews explored these actors' interests, visions, history, social networks and economic and political projects. They also explored their role in determining, sustaining or changing both the binding constraints and the conditions of marginalization in the territories. Before conducting the interviews, we assumed they would include actors with economic power and interests in agribusiness, industry, tourism etc., and/or owners of large properties, in addition to those with political power (formal or informal) and social power (NGO's and priests). With one or two exceptions, this was the case.



The interviewer asked the following questions:

- How would you characterize the development of this territory? What has it been like?What is it like now? What could it be like?
- How do you understand your role in the territory's development?
- From your perspective, what are the principal assets and liabilities in the territory?
- Previous interviews have identified the following as the principal constraints on economic growth in the territory (they were given a list of identified binding constraints). Do you agree with this list? Could you put this list of constraints in order of importance? Are there some constraints that you actually see as assets?
- Previous interviews identified the following as the main factors that limit the ability of certain social groups to share the benefits of economic growth in the territory. Do you agree with this list? Could you put these factors in order of importance? Do you see any of these factors as assets?

With these questions, we sought to understand how the interviewed actors tried to influence the institutional arrangements that

most affect the territory and how they, through their political practices, social relationships and use of resources under their control, inserted themselves into the process of perpetuating and changing these arrangements.

Lastly, in the third and final phase of the field work, we sought interviews with some key sources who were not identified in the first two phases, but who have a certain level of importance in the territory. These included interest groups or people who live in the nation's capital, from both the public and the private sector, in addition to people with a certain level of privileged knowledge of the territories and their relationships with national and regional institutions.



If interviewees consented, the interviews were taped. Although we had neither the time nor the resources to make a complete transcript of the interviews, certain sections that were identified as important were transcribed, enabling us to use direct quotes from the interviewees in the final text. These quotes played an important role in the analysis and interpretation of the collected information. On average, 40 people were interviewed for the study in each country.

### *Analytical Strategy*

The strategy of collecting data generates information of an interpretive nature, which is to say the information is based on the interpretations of the interview subjects;however, they were not pure opinions because the interview style took the form of a dialog, so the interviewees had to justify and explain their interpretations, sometimes comparing them to the interpretations of other interviewees. In this sense, the information that came out of the interviews was not "soft" or anecdotal, but rather it had already been subject to quality and coherence tests. Where possible, the constructions of meaning that the actors put forth were contrasted with available historical and statistical information gathered through the documentary review process. This lent a certain validity to them when these coincided. When they did not, the interview progressed to a deeper level with the actors in the subsequent interviews.

A first level of analysis was to construct different models of the causal relationships that emerged in the interviews, in the form of the simple model presented above. In this process, the team evaluated the internal coherence of each causal model in addition to its coherence with visions of the other interviewees. In this validation process, the team's analysis was paramount, given the members' global vision obtained through the interviews, their knowledge of the territory and possible explanations for the answers obtained.



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