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Inequality, Ethnicity and Social Disorder in Peru

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Abstract

A statistical regularity has been documented in several empirical studies: More unequal countries tend to show a higher degree of social disorder. Peru is a country with recurrent political instability and social disorder that also displays a pronounced degree of inequality. What is the role played by ethnicity in this relationship?

In this paper we propose a new way of defining ethnic groups in Peru based on Peruvian geography and history, which corrects the standard view based on language differences alone. With this new definition we contrast the empirical hypothesis of three theoretical frameworks relating inter-group inequality and social disorder. We present empirical estimates of interethnic inequalities on human capital, labour market, and income. The econometric results show that the educational level of people depends upon ethnicity; moreover, there is exclusion, not discrimination, in the access to high skilled positions.

We evaluate the roles of different social actors in the reduction of inequality. Although the indigenous populations have experienced significant gains in absolute terms, they have not experienced gains in relative terms. Therefore, horizontal inequalities in Peru are significant and persistent, and contribute largely to overall inequality. The role of horizontal inequalities in the instability of Peru seems to be important, but as a latent factor. Horizontal inequalities do contribute to the social disorder in Peru, but not much in a direct way. Ethnic conflict is not the prime mover of social disorder. This apparent paradox is explained by the fact that Peru is a multiethnic and hierarchical society, where the indigenous populations are second rate citizens. In sum, in explaining inequality in Peru, ethnicity matters.

These empirical results are consistent with the predictions of Sigma Theory (Figueroa 2003) and with some of the predictions of Horizontal Inequality Theory (Stewart 2001), but inconsistent with Neoclassical Theory, even when social heterogeneity is introduced in its analysis (Becker and Murphy 2000).

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Inequality, Ethnicity and Social Disorder in Peru

By Adolfo Figueroa and Manuel Barrón[1]

1. Theoretical approaches

A statistical regularity has been documented in several empirical studies: More unequal countries tend to show a higher degree of social disorder (Fajnzylber *et al.* 2002, Bourguignon 2000). Why is this? Does ethnicity play a role in this relationship? If so, what is this role?

Standard economics implicitly assumes a capitalist society that is socially homogeneous. Ethnic groups may exist, but their existence is not an essential factor for understanding the process of production and distribution in society. It is <u>as if</u> ethnic groups did not exist. In addition, for standard economics, general equilibrium implies social order.

A recent work by Becker and Murphy (2000) introduces social heterogeneity into the analysis. These authors present a theory of social group formation. In the long run, individuals are free to choose their social groups. This choice leads to inequality and segregation, but it does not generate social violence. Therefore, even in this case, standard theory predicts social order.

Some empirical hypotheses on the role of ethnicity in the causal relationship between inequality and social disorder can be derived from other theoretical approaches, in which ethnicity and inequality are essential factors in explaining the economic process (cf. Stewart 2001, Figueroa 2003). Stewart introduces the notion of "Horizontal Inequalities" (HI), defining the concept as inequalities among culturally defined groups (p. 2). This stands in opposition to the notion of "vertical inequalities", which measures inequality over the entire range of individuals or households. She puts forward the hypothesis that the crucial factor differentiating violent from peaceful life in multicultural societies is the existence of severe horizontal inequalities (in economic and political terms). In such cases, culture becomes a powerful mobilising agent that leads to political disturbance (p. 2).

An underlying assumption of HI theory is that culture is a powerful mobilising agent for collective action whenever people cannot switch from one cultural group into another. It is the collective action of groups that generates social violence. Thus, the connection between inequality and social disorder is given by the cultural differences between social groups. If culture is associated with ethnicity, it follows that multi-ethnic societies with pronounced horizontal inequalities would tend to be socially violent.

Figueroa (2003) develops a relation between inequality and social disorder through the theoretical construction of an abstract society, called sigma society. Sigma is an abstract capitalist society in which individuals participate in the production process endowed with

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unequal quantities of economic and social assets. Inequality in social assets refers to political and cultural differences among ethnic groups, which are historically determined. The foundational event of sigma society created a relationship of domination among ethnic groups (as in the case of colonial systems). Sigma society is then a multi-ethnic society with a hierarchy of ethnic groups. As a result, there are first-class and second-class citizens. Sigma society is a class society but a multi-ethnic society as well. It is also assumed that sigma is an overpopulated society. Sigma theory predicts that income inequality is pronounced and that exclusion mechanisms reproduce this inequality. In particular, ethnic groups that were dominated at the onset of the foundational shock of society have become the poorest groups of society. This population is called the z-population.

The connection between inequality and social disorder is made through the theory of limited tolerance to inequality (Figueroa 2003). Individuals tolerate inequality so long as it is not too high. As part of their selfish motivation, individuals have thresholds of tolerance towards inequality. If their incomes, in absolute or relative terms, are lower than those thresholds, social disorder will arise. Hence, unequal societies are prone to social disorder.

In sigma society, social disorder comes from class struggle (collective action) or from individual intolerance to excessive inequality. Sigma theory predicts that z-workers cannot generate strong collective action and social disorder directly; hence, ethnic conflict is not the dominant force behind social disorder. The reason is that z-workers are not only the poorest, but also the dominated ethnic group. However, ethnic conflicts become significant whenever political actors take up the ethnic question in order to challenge the system. In any case, sigma theory predicts that income inequality will not be reduced endogenously.

As research questions for multi-ethnic societies, three interesting and competing hypotheses can be derived from these theoretical approaches: (a) ethnic conflict is the prime mover of social disorder; (b) class conflict is the prime mover of social disorder; and (c) social disorder is independent of the degree of inequality of society. Peru is a multi-ethnic country that permits investigation of these hypotheses on the role of ethnicity. These research questions will guide this study.

In this study, social violence and social disorder will be used synonymously. In addition, a distinction will be made between individual and collective violence. Social disorder may be the result of individual or collective action. Usually social disorder is defined as collective action. The problem with this definition is that people may not be able to carry out collective action to show their intolerance to inequality because collective action occurs under special conditions only (Olson 1971).

2.   A brief historical background of Peru

To better understand the theory-reality connection underlying this study, it is important to review the basic facts about Peruvian history (as they appear in the standard literature). First, geography is key. Peru is divided into three physical regions: the coast, a long strip of land between the Pacific Ocean and the Andes; the Andes themselves; and the Amazonian region east of the Andes. The coast is desert land, interrupted by about 20

valleys of very fertile land; the Andes are semi-arid, and the Amazonian region is a tropical rain forest.

In the pre-colonial history of Peru, the Inca state is well known. However, Inca civilization marked the culmination of almost 3,000 years of social development and lasted a very short period of roughly 300 years (c.1200-1532). If the pre-colonial period were made equal to one hour, the Incas would represent the last five minutes only. Thus, the Incas did not mark the beginning of Andean civilization but rather were its inheritors. They originated in the Southern Andes and expanded over multi-ethnic territories where other civilizations had developed, such as:

> Tiawanaku, which emerged in part of the Southern Andes of present-day Peru (extending to parts of Bolivia, Chile and Argentina);
> Wari, which emerged in part of the Southern and Central Andes and expanded later to the Southern and Central Coast; and
> Chimu, which emerged in part of the Northern and Central Coast.

The only region of Peru where no significant pre-Inca civilization seems to have existed is the Northern Andes (except for the Caxamarcas). The Amazonian region was mostly under populated, given the small size of its indigenous population relative to the area.

The Incas expanded and covered all Peruvian territory, except the Amazonian region, and reached parts of Bolivia, Chile, Argentina and Ecuador. But this period of expansion lasted only 94 years (1438-1532). In such a short period, they had to govern a territory that was not only large, but also ethnically diverse. Hence in remote areas, they governed through local elites. The domination was mostly military. Quechua was the official language of the state, but not necessarily of the people. Government officials from provinces had to go to Cusco to learn Quechua. It is likely that in such a short period, the Incas could not impose Quechua on its entire territory. The Spaniards arrived in 1532 and introduced their culture as the main element of domination, including Catholicism and Spanish.

The indigenous-linguistic map of contemporary Peru (Figure 1) shows that, among indigenous languages, Aymara is spoken in the extreme Southern Andes, in the Altiplano (Tiawanaku origin); Quechua is spoken mostly in the Southern and Central Andes; and several other indigenous languages are spoken in parts of the Amazonian region. In the rest of Peru, Spanish predominates. Surprisingly, there is no legacy of the indigenous languages of the Chimu and Wari civilizations. Hence, the linguistic map does not represent fully the ethnic diversity of Peru. Indigenous languages are only partial indicators of the country's ethnic diversity; the legacy of the civilizations predating the Incas, and of the Incan and colonial periods goes beyond language. For instance, in the Northern coast, people speak Spanish (this area appears mostly blank in the map), but most are descendents of the Chimu civilization.

The colonial period lasted about 300 years (1532-1821). Spanish colonial domination was concentrated in the coastal area of Peru (with Lima and the port of Callao as centres) and also in some parts of the Andes where mines were exploited. The Spaniards did not expand evenly along Peruvian territory. They conquered but could not dominate culturally, especially linguistically. Lima and the Pacific coastal region were their preferred places. This initial condition generated path dependence for the

establishment of new populations. The Republic did not change this path. In this period, blacks from Africa were introduced to the country as slaves.

The Republic has lasted about 180 years (1821 to the present). During this time, Chinese were also introduced as semi-slaves. Later, voluntary immigrants included mostly Europeans and Japanese. Hence, ethnic minorities in present-day Peru include descendents of Africans, Chinese and Japanese.

Another important feature of Peruvian history is the concentration of the population around Lima-Callao. This city was founded by Spaniards and made the centre of the colonial power, the Vice-royalty of Peru. Since then, it has continued to be central, concentrating today almost a third of the national population, while the second largest city (Arequipa) is only one-tenth of its size.

In contrast, the Amazonian region was almost untouched during the colonial period. During the Republic, some European immigration programs took place, and these immigrants colonized the upper lands of the Amazonian region. As a result, some cities were created, which are currently among the largest in the region, with no indigenous populations (Oxapampa, La Merced, Satipo, Quillabamba). By contrast, the largest city in the Amazonian region, Iquitos, is located in the middle of scattered areas inhabited by indigenous peoples.

Analysts usually measure ethnic diversity in Peru by the linguistic map. As explained above, this is not quite right. In this study, we instead propose a new criterion of ethnicity. In a simplified manner, the Peruvian ethnic map can be presented as follows: rural populations consist of descendents of indigenous populations, while the cities are a mix of indigenous, mestizo and white populations. This legacy of history is what one observes in contemporary Peru.

3. Peru's social structure: Class and ethnicity at the beginning of the 21st century

The existence of social classes implies unequal individual endowments of economic assets, including land, and physical and human capital. Owing to a lack of data on individual endowments of physical capital and land, human capital will be the only variable used in this study. In a socially homogeneous society, human capital may be measured by years of schooling alone because cultural factors do not distinguish people. In a socially heterogeneous society, by contrast, schooling is far from a reflection of human capital. Individuals' quantities of human capital (seen as a factor of production in the labour market) not only depend on their stock of knowledge and skills (acquired through education), but also upon cultural traits such as native language, religion, customs and even race, because these factors affect demand for the individual's labour services. However, in this study, years of schooling will be considered as equivalent to human capital, given that data on differences in quality of education and on the cultural components of human capital are not available. Notice that the bias of this measurement underestimates the magnitude of horizontal inequalities.

How can ethnic groups be distinguished empirically? Theoretically, ethnic markers include race, language, religion and place of origin. In the case of Peru, data on race are mostly unavailable or unreliable. The usual way to measure race is by self-identification

of the individual. This method has proven to be unreliable in a hierarchical society where whites constitute the dominant group, because people tend to hide the stigma of being non-white. More sophisticated methods are needed to circumvent this problem, as shown in the case of Brazil (Lovell 1999, Silva 2001); however, these methods have not been used in Peru when racial data have been collected, such as in the 1940 Census or 2001 National Household Survey (Enaho).

Language is only a partial marker of ethnicity in Peru. As discussed above, indigenous languages are spoken by a subset of descendents of indigenous populations. Spanish is the common language even in regions where well-developed pre-colonial civilizations existed. Today, not all indigenous populations speak indigenous languages. In addition, other minority ethnic groups, such as Africans, Asians and Europeans all speak Spanish. Hence, language cannot be used as ethnic marker in Peru. Further, religion cannot be used as a social marker in a country that is largely catholic (about 95 percent of the population), and in which Catholicism cuts across almost all ethnic groups.

Place of origin seems to be a more appropriate ethnic marker in Peru. Geography and history support this idea. To simplify, three ethnic categories will be considered: white, mestizo and indigenous. The white population is found mostly in Lima and in large cities of the provinces. The indigenous population is concentrated mostly in rural areas. Mestizos are spread out almost everywhere. Therefore, rural areas are predominantly indigenous. In Lima and the capital cities of Departments, lower proportions of indigenous people and a higher proportion of mestizos reside. The white population is very small in Peru and predominates in the residential districts of Lima. In order to distinguish these three ethnic categories within the three natural regions of Peru, seven "ethnic regions" have been defined. In Peru, the ethnic background of individuals can be predicted from their place of birth.[2]

Using these empirical definitions of human capital and ethnicity, Peruvian social structure in 2002 can be summarized in a matrix form (Table 1). The rows show formal education achievement and the columns indicate our construction of the variable "ethnicity", based on place of birth.[3] For this purpose, seven geographical categories are distinguished. The city of Lima-Callao is separated into two areas: "Lima-core", the residential districts of Lima where most white populations live, and "Lima-periphery", where most immigrants live. This separation is necessary to account for the fact that Lima is now inhabited by all the country's races and ethnicities owing to migration. The "Local core" is composed by the residential district of the largest cities of the provinces, which are mainly white and mestizo regions.

The Andean region is divided into the Southern Andes, with Quechua and Aymara as the predominant languages, and the Central and Northern Andes, where Spanish dominates over Quechua. The rest of the Coast and the Amazonian region complete the seven categories.

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[2] Benabou (1996) made quite a similar argument for the United States: "In the United States, a person's income, education, ethnic background and lifestyle can be predicted from his zip code" (p.584). However, while Benabou refers to place of residence, we refer to place of birth.
[3] Enaho is a survey stratified by place of residence, not place of birth. See Appendix B for details on the transformation to stratification by place of birth.

It is worth noting that political leader and thinker Haya de la Torre in 1923 characterized the Peruvian ethnic mixture in a very similar way. He observed that the Coastal workers were indigenous, Asian, black, white, or a combination of these categories; while Andean workers were indigenous, somewhat mixed with white in the North, and pure Quechua or Aymara in the South.[4] As will be seen, this statement is very consistent with our definitions of ethnic regions.

The order of the ethnicity variable, defined as the degree of predominance of indigenous populations (from low to high), ranges from Lima-core to Southern Andes, as shown in Table 1. "Serranos" or "Andinos" are people born in the Andes and hold the highest stigma as an indigenous social group. These two categories are therefore placed at the end of the social hierarchy. People born in the Amazonian region share most of this stigma too. In the rural areas of the Coast, there are also indigenous people, but they are seen as "costeño", which indicates a higher social status. "Limeño-miraflorino" (Miraflores is part of Lima-core) has the highest social prestige as non-indigenous. The remaining categories ("Lima-periphery" and "Local core") are seen mostly as mestizo regions.

Sigma theory predicts that access to education opportunities varies according to the ethnicity of social groups. Table 1 shows lower levels of education for groups born in predominantly indigenous regions. Illiteracy rates ("No level" of schooling) are higher in the Andes. Only 12 percent of the people born in the Andes attained a post-secondary qualification, no matter where they lived. Note that region refers to place of birth, not place of residence. At the other extreme, this share is 66 percent for the group born in Lima-core. Therefore, the conclusion about ethnic exclusion in access to education seems warranted.

With these given endowments of human capital and social assets, how is labour allocated to the market? According to sigma theory, the labour market operates with exclusion; and z-workers, particularly, are excluded because they do not have enough human capital to be employed in the modern sector of the economy. This exclusion mechanism is based on the human capital endowment of workers rather than on racial or ethnic discrimination. In the functioning of the labour market, sigma theory predicts exclusion (unequal access to human capital) not discrimination (unequal pay for the same level of human capital), and that the labour market excludes by education.

However, because unequal access to education discriminates against z-workers, the result is that indirectly the labour market excludes by ethnicity. It is as if the labour market operated to exclude workers by ethnic markers. If there were racism, that would be an additional contributing factor. Sigma theory predicts that indigenous workers, when they become engineers, are not paid lower wages than white engineers; rather, the crux of inequality lies in the fact that no indigenous workers are engineers. Not wage discrimination but exclusion from education is the significant factor in the functioning of the labour market. In sum, sigma theory predicts a higher proportion of self-employed among indigenous workers.

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[4]   The full statement is: "Nuestro problema social radica, pues, en la costa y en la sierra. El obrero costeño es o de raza yunga (indio regional), o negro, o chino, o blanco, o de la mezcla de estos tipos: mestizo, injerto o mulato. El obrero de la sierra es el indígena, algo cruzado con el blanco, en el Norte, y quechua o aymará puro, en el Sur" (Haya de la Torre 1984 [1923]: 24).

Table 2A presents occupational status by ethnic group for the economically-active population (EAP) aged 25 or older.[5] For people born in the Andes, the proportion of self-employed is about two-thirds, whereas for those born in Lima-core, it is 23 percent. The higher the value of the ethnicity variable, the higher is the proportion of self-employed workers. Hence, as predicted by sigma theory, exclusion from the labour market is ethnically biased.

Sigma theory predicts that class structure is related to ethnicity. This relationship can also be seen in Table 2B. Considering only four categories of social classes – owners of physical capital, white-collar workers, blue-collar workers and the self-employed – it is clear that class position depends upon human capital endowments. As Table 2B shows, becoming a white-collar worker requires an average of 14.5 years of schooling, while for blue-collar workers the requirement is 9 years.

Sigma theory also predicts a relationship between human capital endowments and ethnicity. People born in Lima-core have 14 years of education, on average, while those born in the Andes have an average of 7 years. Thus, by transitivity, there exists a relationship between ethnicity and class, which seems to be confirmed empirically in Table 2C. The table shows clearly that the position of ethnic groups in the class structure defined by human capital endowments is not random. Four classes arise from the table: the upper class refers to those with university education; the middle class, roughly to high-school graduates; and the lower class, to those with incomplete high school. The fourth class has not proceeded beyond primary education, and is called the underclass, for with this level of education people are mostly excluded from the labour market. In general, the average white worker belongs to the upper class; the average mestizo, to the middle class; and the average indigenous worker belongs in part to the lower class and in part to the underclass.[6]

This result has consequences for social mobility. If access to a white-collar occupation (mostly professionals) is taken as criterion of social mobility, Table 2C shows that only about 10 percent of the Andean indigenous population has attained such a social standing, whereas Amazonian and Coastal indigenous people show higher rates of success (14 percent and 18 percent respectively). After 180 years of republicanism, these rates are very low. They might be even lower if we consider that some white-collar workers may be white people born in these regions.

Had the capitalist class been included in Table 2, we would have the class and ethnic structure of Peru, that is, its social structure. Nevertheless, the economic elite in Peru is so small that it can be ignored in the matrix. The concentration of physical capital is very pronounced in Peru with the largest thousand firms in the hands of no more than 900 families (Figueroa 2001). Ethnically, the economic elite is mostly white.

As to the hypothesis of exclusion rather than discrimination in the labour market, the study of Ñopo *et al.* (2004) sheds some empirical light. The study is based on the urban

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[5]   The female EAP for rural areas is usually underestimated (Figueroa 2001), but this does not seem to be the case in the 2002 Enaho. The estimated male/female ratio is very similar for urban and rural Peru (between 1.2 and 1.3), for different ranges of ages: from 14 on, from 25 on, from 14 to 65, and from 25 to 65.

[6]   It is not possible to construct a similar table for 1993 because the Census contains information on years of schooling for high school non-graduates only.

labour market of Peru, and their findings include the existence of exclusion (whites have more years of schooling) and also discrimination. They report a premium of 12 percent on the wages of white compared to indigenous workers, once controlling for other characteristics. However, this is not a significant premium. If qualitative differences in schooling and cultural factors were included, such as a lack of corporate culture and poor command of Spanish among the indigenous population, this premium would tend to disappear.

Table 2 gives a snapshot of Peru's social structure in the year 2002, after nearly two hundred years as a Republic. This structure coincides that of a sigma society. How has it changed over time? The available empirical data can give us some knowledge of these changes. Table 3A shows the level of education for each ethnic group according to the 1993 census, with results quite similar to those presented in Table 1. Table 3B presents Peru's class and ethnic structure for 1993. The proportion of white-collar workers is higher in 1993 than in 2002, however the proportion of self-employed is lower. But – and more importantly for our hypothesis – the order of both occupational categories remains the same. The same conclusion applies to the ethnic structure.

The last national census to ask about self-declared race was conducted in 1940. According to this census, 46 percent of the population was indigenous. Recently, the National Household Survey of 2001 asked a question on race. Twenty six percent of those sampled self-declared themselves to be indigenous. However, 27 percent gave "no answer", most of which might be indigenous people unwilling to admit their race.[7] (Other race categories, such as black and yellow, were very small in both sources). Whatever the degree of confidence of these sources, they suggest that the proportion of the indigenous population in Peru is very significant, if we take these proportions as lower limits. As argued before, some indigenous people may have self-identified as mestizo, but the opposite could have hardly occurred.

In this study, the ethnicity variable has been defined as an ordinal variable only. The proportion of indigenous population increases as we move from categories A1 to E. The upper limit would be to consider as indigenous all people born in Regions B, C, D and E, knowing that some may not be indigenous. The resulting share would be 70 percent.

Using the relationship between education and degree of ethnicity shown above, the 35 percent that have not reached high school would mostly represent the indigenous population. This would be the lower limit.

4.   Horizontal and vertical inequalities

Estimates of horizontal inequalities in Peru do not exist, but they can be constructed now. Statistically, a frequency distribution of a variable X for the entire population, with mean M, can be decomposed into N sub-frequency distributions with means M_1, M_2, …, M_N, corresponding to the N social groups that make up the total population. Horizontal inequality refers to the differences in the mean values M_1, M_2, …, M_N. In this measure, inequality within each social group is ignored. Vertical inequality refers to the inequality in the frequency distribution of the entire population.

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[7]   Authors' calculations from the 2001 Enaho.

In this study, horizontal inequality will be measured using the ethnic categories described above. Two variables will be utilised for measurement: the stock of human capital and the flow of income. Tables 3C and 3D depict the results.

In terms of human capital, Table 2B showed that the gap in mean years of education between Andinos and the national mean is two years; this gap increases to eight years compared to the Lima-core group. Is this gap closing? National Census data allow us to calculate these differences from 1876, but for the category of illiteracy only. The ratio of illiteracy in the Southern Andes to the rest of the country was 1.2 in 1876; this figure has <u>increased</u> over time, reaching 2.3 in 1993 (Table 3C). In short, the gap is widening, not closing![8]

In terms of differences in income flows, recent data on income inequality are unavailable. Income distribution studies in Peru refer to the early 1970s and 1980s (Webb and Figueroa 1975, Figueroa 1982). In those studies, the peasantry (mostly indigenous people) constituted the poorest social group: its share of national income was about 5 percent, although its population share was near 30 percent. The Gini coefficient for Peru was estimated at about 0.60.

Poverty studies dominate in recent periods. An estimate of the incidence of poverty that is useful for this study has been calculated based on a national sample for 1994 (Figueroa 2001). This estimate is based on household expenditure. The survey includes Lima and the three natural regions, separated into urban and rural areas. It should be noted that these estimates refer to place of residence, not place of birth. Given that rural populations are mostly born in those areas, at least for these groups, the estimates can be taken as good approximations of the ethnic categories defined in this study.

Table 3D presents poverty incidence by region. The poverty line is defined at the 40 percentile. Lima shows the lowest incidence, whereas people living in the rural Andes and rural Amazonian area show the highest incidence. Almost two-thirds live under the poverty line in these areas. This proportion is about 50 percent in the rural coastal area. It is clear that the poverty incidence is higher in the rural Andes, where the proportion of indigenous people is higher.

Inequality in human capital is consistently pronounced and should lead to persistent and large inequalities in the flows of incomes. The indigenous population is very large. For instance, the Andinos represent about 45 percent of Peru's total population (Tables 1 through 3). Most are poor, with incomes below the poverty line (set at the 40 percentile of the national income distribution), and they account for one-third of total poverty (Table 3D). If Andinos were set aside in calculations of the national income distribution, the high Gini coefficient – measuring vertical inequality – would decrease substantially.

In sum, empirical data suggest significant horizontal inequalities in Peru. This is the case for the two variables examined: the stock of human capital and the flow of incomes. The difference in human capital was measured by years of schooling alone. If corrections were introduced to take into account differences in the quality of education, the

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[8] The concept utilised in this calculation is place of residence, not place of birth. However, immigration into the Southern Sierra is insignificant, whereas out-migration is significant; thus, these residents still represent a relatively higher proportion of indigenous population than do other regions.

differences in the stock of human capital would be even wider. If human capital were estimated to include a measure of corporate culture incorporating the requirements to participate fully in the labour market, those differences would increase further still. Differences in human capital measured by years of schooling tend to underestimate the true differences. Thus, our calculations tend to underestimate horizontal inequality.

Horizontal inequalities contribute significantly to the very high degree of vertical inequality in Peru. If horizontal inequalities were eliminated, Peru's Gini coefficient of nearly 0.60 would fall, possibly to 0.40. This is the figure shown by Latin American countries with insignificant shares of indigenous people, such as Argentina and Costa Rica (Figueroa 2001a, Table 1: 37).

The next issue is to study the determinants of horizontal inequality. This is the endogenous variable. Why are horizontal inequalities pronounced and persistent in Peru? What are the exogenous variables? Sigma theory and HI theory suggest several exogenous variables to explain these empirical facts. The rest of the paper examines the effect of the following variables on horizontal inequalities: individual behaviour (focusing on decisions to migrate), collective action, government behaviour and the effect of initial conditions.

5.   Internal migration and inter-marriage

After the enormous waves of internal migration that took place in Peru, inequality in schooling should have been reduced. In the case of the United States, for instance, the gap in mean years of schooling between whites and blacks was reduced from five years in 1940 to one year in 1980 (Smith and Welch 1989, Table 9, p. 531). The argument is that the massive emigration of blacks from the South to the North greatly helped this process of convergence.

What happened in Peru? Massive emigration of indigenous populations has also taken place, but the differences in schooling remain wide. Table 4 presents the current residence and birthplace matrix for household heads in 2002. It shows that the large majority of people live in the same region where they were born. People who migrate move from the district of birth to another district, but mostly stay within the same region. Looking at the diagonal of this matrix, one can see that in Regions B, C, and E the ratio varies between 66 percent and 78 percent. The exception is Region D, where the figure reaches only 55 percent. People who were born in the Central and Northern Andes emigrate relatively more than those born in the Southern Andes. Region A3, predominantly mestizo, shows only 32 percent in its diagonal. Note that 36 percent of household heads born in A3 migrated to Lima, whereas the share for the other regions fluctuates between 10 percent and 20 percent; so it follows that mestizos migrate more to Lima than indigenous people.

The conclusion seems to be that indigenous populations migrate less than mestizos do, and that it is easier for mestizos to migrate to Lima. This empirical finding is consistent with a prediction of sigma theory, which is that z-workers are excluded from labour markets, being confined in their indigenous communities.

The significance of segregation can be seen in two additional variables: inter-marriage and inter-generational transition of languages. Table 5 presents the inter-marriage matrix

by ethnicity according to the 2001 Enaho. It shows that inter-ethnic marriage is not significant when ethnicity is measured by the individual's mother tongue. For instance, 86 percent of indigenous women married indigenous men, and 93 percent of non-indigenous women married non-indigenous men. It is likely that a Quechua-speaking person will marry another Quechua speaker. Similarly, the results indicate that 84 percent of females from the Southern Andes married men from the Southern Andes.

Do children of Quechua speakers have Quechua as their mother tongue? Table 6 presents the inter-generational transition matrix for languages for 2001. It shows that indigenous languages are strongly transmitted from parents to children, and even to grandchildren. For the sample as a whole, about 75 percent of children of indigenous people speak the indigenous language as their native language. This proportion is 70 percent for grandchildren.

In sum, in Peru, neither migration nor inter-marriage constitute mechanisms of social equalization. There are no natural or endogenous mechanisms to eliminate horizontal inequality in the choices made by individuals.[9] On the contrary, free choice leads individuals to segregation, as predicted by sigma theory and also by neoclassical theory (Becker and Murphy 1999).

6.   Collective action

HI theory predicts that severe horizontal inequalities will cause social violence. Have horizontal inequalities led to ethnic conflict and violence in Peru? The violence generated by ethnic conflict may induce institutional changes and endogenously reduce horizontal inequalities. But this effect would require collective action. By contrast, according to sigma theory, the empirical hypothesis is that in Peru, ethnic conflict is relatively weak because the indigenous populations are z-workers.

In Peru, it is well known that collective action operates effectively at local level in indigenous communities. In these communities, several public goods, such as irrigation systems, are maintained through community action. However the accumulation of public goods themselves appears to be more the decision of the government or other external agents than the result of community-wide collective action.

Collective action among indigenous populations at the inter-communal or national level has occurred with different frequencies in some periods in Peru. These actions were directed mostly to the struggle against extreme labour exploitation until the 1950s, and then to access to land from the 1950s to 1969, before the Velasco land reform (Kapsoli 1982). Table 7A summarizes the history of major peasant movements since 1892. Almost all took place in the Andes, so they refer to indigenous populations. These movements were collective and met with repression. They ended about 1965. Since land reform, they have almost disappeared.

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[9]   Recall that language is just a partial ethnic marker. As stated in Section 2, only some indigenous populations have an indigenous language as their mother tongue. So, the results of Table 5A and Table 6 apply for the "hard core" of the indigenous populations. Hence, the generalisation to the whole Peruvian population is made from the results of Table 5B.

As shown in Table 7A, collective action has not been directed to get access to other rights, such as more or better education. Nor has access to more political rights been a significant objective. This behaviour is what the Maslowian theory of the hierarchy of human needs would have predicted (Maslow 1954). In order to secure their survival, indigenous communities do not give highest priority to more education or political rights, but rather to more land and less exploitation.

The fact that collective action takes place mostly at the communal level is consistent with Olsonian theory, for free riders in small societies suffer social sanctions (Olson 1971). It is also consistent with the theory of evolutionary psychology, according to which altruism will dominate selfish behaviour in situations of group survival (Sober and Wilson 1998), situations in which indigenous communities are always bounded.

Another source of information about peasant movements for the period 1957-64 (Guzmán and Vargas 1981) allows us to calculate the number of peasant movements by region. It shows they were most intense in the Coast but significantly less so in the rest of the country. This is shown in the first part of Table 7B. But those in the Coast refer mostly to wage earners against haciendas; that is, they are mostly class rather than ethnic conflicts. The movements which (from the information given by Guzmán and Vargas) are most likely to be ethnic conflicts are depicted in the second part of Table 7B. (See Appendix F for the methodology and further details on what was and was not considered an ethnic conflict). About 60 percent of these reported peasant movements were considered to be ethnic conflicts.

An indicator is needed to assess the intensity of class conflicts compared to ethnic conflicts in Peru. Such indicator is not easy to construct and a point estimate would be very doubtful. So, as with our calculation of the indigenous population in Peru, we will give an upper bound and a lower bound for ethnic conflicts. This will allow us to estimate a lower bound and an upper bound for the ratio of the intensity of class conflicts to ethnic conflicts. The upper bound for ethnic conflicts was estimated considering all the movements reported by Guzmán and Vargas as ethnic conflicts. The lower bound was estimated considering only the movements that we classified as ethnic conflicts.[10] To ensure that we are not biasing the results towards the hypothesis of sigma theory, the doubtful cases were considered ethnic movements (so the real lower bound might be lower than what we report).

A simple comparison of the number of peasant movements against the number of wage-earner strikes indicates an average of 22 peasant movements per million rural inhabitants per year and 74 strikes per million urban inhabitants per year in the 1957-1964 period. Considering only ethnic movements, the number falls to an average of 12 ethnic movements per million rural inhabitants per year.[11] Hence, class conflicts (measured only by strikes) had between 3.3 and 6.2 times the intensity of ethnic

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[10] An ethnic conflict is a conflict (violent or not) between indigenous and non-indigenous populations that does not include class relations. So, if indigenous people fight against hacendados for higher wages or less hours of work, it is not an ethnic conflict. But if the same indigenous people fight against the same hacendados for control of land, it is an ethnic conflict. See Appendix F for further details.

[11] There were 2433 strikes between 1957 and 1964 (Ministerio de Trabajo 1973, Table 2.1, p II-2), 753 peasant movements and 448 ethnic conflicts (Table F1). There were 4,698,178 urban inhabitants and 5,208, 568 rural inhabitants in 1961 (Table F1).

conflicts. If we had included other aspects of class conflict, such as collective negotiations or strike menaces, these bounds would be even higher.

Although the period analysed is very short, it is quite important because this period (which preceded the Land Reform Program) is supposed to have had the highest intensity of ethnic movements. Land access problems were the major mobilising factor behind ethnic conflicts, particularly for the indigenous populations of the Andes. And shortly after the period covered by Guzmán and Vargas, Velasco's government started the Land Reform Program (1969-1974). After the Land Reform Program, peasant movements almost disappeared. So it seems that in the analysed period, ethnic movements peaked. Hence, if in this period class conflict dominated ethnic conflict, it is most likely that this has been so throughout the republican period.[12]

In sum, and as predicted by sigma theory, class conflicts seem to be more significant than ethnic conflicts in Peru. Recently, coca leaf growers have initiated collective action seeking new government policies. However wage earners have shown more persistent collective action and they have louder political voice than indigenous populations.

7.   Government behaviour

How do governments take horizontal inequalities into account? Sigma theory predicts that governments will take no action to attack horizontal inequality because z-workers are second-rate citizens. In a very unequal society, governments always face the problem of administering the inequality. The political struggle is about how to solve this problem, which includes the issue of horizontal inequalities. Political actors and political parties may then include the question of ethnicity in their motivations. The other hypothesis derived from sigma theory is that the effect of horizontal inequalities on social disorder operates mostly via the political struggle. This is an indirect effect.

The problem of land concentration has been a political issue in Peru for many years. Victor Raul Haya de la Torre, and soon after, José Carlos Mariátegui, two of the most distinguished political leaders and thinkers of the twentieth century, were the first to make it a political issue in the 1920s (Haya de la Torre 1984 [1923]; Mariátegui 1968 [1928]). The guerrilla movements of the 1950s and 1960s utilised the agrarian question as a major political challenge to the system. The Revolutionary Government of the Armed Forces, led by General Velasco in 1968, resulted from this political instability. Velasco implemented a massive land reform program during the 1969-1975 period. As part of this program, Velasco also abolished formally the term indígenas (indigenous) and replaced it by campesinos (peasants) to describe the indigenous populations (this change in the language has continued up to the present). This may be the clearest example of an indirect effect of structural horizontal inequality on the political instability of Peru.

Another indirect effect is the development of political groups with violent actions, such as Sendero Luminoso and MRTA (Movimiento Revolucionario Tupac Amaru) in the 1980s

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[12]   The sample data is consistent with this statement: For the first half (1956-1959), the quantity of ethnic movements seems stable. In the second half (1960-1964), the number of ethnic movements increased continuously, mostly owing to the generalisation of land invasions.

and early 1990s. Because indigenous people were not the leaders of these subversive groups, analysts have concluded that the civil war was not an ethnic conflict. On the surface, this observation seems to be correct: this was not an ethnic conflict in that it was not whites or mestizos against indigenous people. In fact, according to the final report of the Truth and Reconciliation Commission, only 23 percent of the captured terrorists were indigenous;[13] however, four-fifths of the 70,000 people killed during this war were indigenous people, defined as those who speak an indigenous language. Therefore, the civil war can also be seen as an endogenous outcome of a very unequal society, where horizontal inequalities are a very important contributor to overall inequality. In fact, this was the conclusion of the Truth and Reconciliation Commission.[14]

Thus, the empirical observation that a society with significant horizontal inequalities shows periods of social violence is consistent with the predictions of both sigma and HI theory. Theoretically, it is as if the war were an ethnic conflict.

The end of Sendero Luminoso is usually attributed to the collective action of the indigenous populations (the so-called rondas campesinas or peasant patrols). But as some studies have shown, this collective action was exogenously induced by the armed forces (Starn 1996). The indigenous populations remained in the middle of the forces in conflict during the civil war launched by Sendero Luminoso.

The fact is that Peru has had a very unstable political system since its republican foundation. Table 8 presents Peru's political regimes since 1821. This table shows that Peru has had about 120 governments in 180 years, which implies an average of 1.5 years per government. In addition, only 47 percent of these governments can be defined as democratic. This result is consistent with the predictions of sigma theory. The impact of horizontal inequality seems to be mostly indirect, in generating political instability.

Several presidents of Peru expressed openly their concern for the backwardness of the indigenous populations (Kapsoli 1982). The best signal that Peru's political elites did not ignore the ethnic problem is a statement made by Riva Agüero, one of the most influential conservative thinkers of the early twentieth century, who (surprisingly) stated that Peru's fate is strongly linked to the destiny of the indigenous people.[15] The underlying factors in the observed guerrilla movements of the 1960s and in the subversive movements of the 1980s included the problem of horizontal inequalities. The fact that all these movements initiated their activities in the Andes (not in the Coastal region or in Lima) reveals something about their motivations. The political class, however, has not changed institutions in a way that would reduce or eliminate horizontal inequalities. Economic or social assets have not been transferred to the indigenous populations. For instance, the land reform program reached only 20 percent of Peru's rural workers and only an estimated 10 percent of the indigenous peasantry (Figueroa 1977).

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[13]   Authors' calculations based on the Final Report database.

[14]   On the issue of whether the civil war was an "ethnic conflict", the Commission says that it was not; however, it adds that there was an ethnic component hidden in the conflict: racism in Peru led public opinion to neglect and underestimate the killings of indigenous people for over a decade (CVR 2003: 101-103). Indeed, the war became a national issue only when the violence reached Lima, the A1 region, which occurred in 1992.

[15]   The full statement is "La suerte del Perú es inseparable de la del indígena; se hunde o se redime con él, pero no le es dado abandonarlo sin suicidarse" (Riva Agüero 1995: 187).

The reason is simple to understand. The land reform program sought to transfer the property from the landowner to the worker under the principle of "land for the tiller" (<u>tierra para el que la trabaja</u>). Most indigenous farmers were self-employed on their small plots of lands and thus had no land to reclaim. As a result, wage earners working in the large plantations in the modern agricultural sector of Peru were the main beneficiaries of the land reform program. Politically, these workers had more voice than the indigenous populations.

During the García government (1985-1990), the peasantry living in the Southern Andes region received credit at zero interest, but as part of a discretionary and populist policy, not as a policy conducive to the generation of an economic right. Once the Garcia government completed its term, the programme ended. Many governments have implemented social expenditures favouring indigenous populations, but none of them has established the right of these people to social protection.

Political theory assumes that governments are guided by the motivation of seeking votes, subject to the fiscal budget constraint and the structure of pressure groups. This theory predicts that fiscal policy will seek political profitability, which means that politicians prefer discretionary expenditure to expenditure on rights. Thus, governments have no incentives to create new rights but follow "populist policies" instead.

In the Peruvian democratic system, indigenous populations vote and, given their large size, one should expect that they would receive attention from the political elites. Certainly, the median voter theory (Black 1948) would predict this behaviour. Why do governments neglect indigenous populations? Clearly, the median voter theory fails to explain the Peruvian case. One reason would be that this theory assumes a socially homogeneous society: there are no second-rate citizens.

In Peru, governments serve the indigenous populations through discretionary expenditures alone, which increase in periods of elections (Figueroa 2001, Chapter IV). After elections, the attention diminishes. Indigenous populations have no power to voice their dissatisfaction with this behaviour. For one thing, they are second-rate citizens. Moreover, they are culturally and geographically fragmented. In Peru, the rural areas are made up of a large number of small towns (about 15,000) with less than 500 people each (Figueroa 2001: 82). Real transformation requires rights, which these populations have no power to generate in the voting game. The results of the land reform, as discussed above, are consistent with the hypothesis that governments have no incentives to create rights, and this includes "revolutionary" governments. Land reform policy neither transferred land to indigenous populations nor reduced horizontal inequality.

Education policy has not contributed to reducing horizontal inequality either. Beyond formal declarations about educational rights, this reduction would require particular actions in rural schools. But these schools are of very low quality owing, in part, to the fragmentation – cultural and geographical – of the rural population and, in part, to their low political voice. Rural schools are very small, and generally staffed with a single teacher and insufficient materials (Figueroa 2001).

A programme of intercultural (bilingual) education has been recently introduced in indigenous areas. An ethnographic study carried out in the region of Cusco, which

involved 18 consecutive months of observation of the process of trying to implement bilingual education, shows that parents opposed this programme because they did not accept the teaching of Quechua in schools; they demanded their children to go to school to learn Spanish (García 2003).

The illiteracy problem is severe in the indigenous population. According to the 1993 National Census, the rate of illiteracy is 13 percent in Peru, 30 percent in rural areas, and 72 percent among rural old women (INEI 1994, Volume 1: 787-788). Crash adult literacy programs have been applied in Peru on several occasions. The literature evaluating these programmes tends to be very critical, especially in the case of adult women (Portocarrero 1995, Zamalloa 1990). These programmes have not had any significant impact.

As in the case of land reform, education policies have not had a major effect in reducing horizontal inequality. This results from the fact that these programmes were given, not gained; that is, they did not arise from collective action among indigenous peoples, and as a consequence, they were not directed to secure real transformations. Governments just used these instruments as part of a populist strategy.

Governments also applied specific policies aimed at integrating the indigenous populations into "national" society. The most important such policy was applied in the 1960s, the National Plan for the Integration of the Indigenous Population (Plan Nacional de Integración de la Población Aborigen). This plan was based on two previous projects – Vicos (Huaraz) and Tambopata (Puno) – initiated in the early 1950s. These projects and the Plan were carried out under the influence and financial support of external agents, such as the United Nations, FAO, UNICEF and Cornell University (Vicos Project). The Plan included multi-sectorial activities, such as technical assistance, credit, health and rural schools (Ministerio de Trabajo y Asuntos Indígenas 1965).

The Plan lasted until the 1970s. Even though there is no literature evaluating its results, it is safe to say that this plan has not left any significant mark: it is not remembered nor are governments invoked to undertake similar measures. The Plan was, it seems, another type of populist policy that Peruvian governments applied to indigenous populations.

8.   Institutional changes and path dependence

A multi-ethnic society can operate as socially homogeneous if rights are universal. The creation of rights implies changes in the rules under which society operates; it implies a re-foundational shock in society, a new social contract. The question is whether the foundation of the Republic implied a re-foundational shock, i.e., radical discontinuity with the Spanish colonial system. In particular, were the indigenous populations granted universal rights?

State constitutions are supposed to represent social contracts. The first Constitution of 1823 established universal rights in very general terms, without any particular reference to the fact that Peru was a socially heterogeneous and hierarchical society. Citizenship was a right restricted to those Peruvians who were born free (thus excluding slaves and possibly indigenous populations in situations of serfdom), and who were able to read and write (thus excluding indigenous populations). The same principles were applied in

the four constitutions drafted in the following ten years. The new Republic maintained until about 1860 both the slavery and tax systems levied upon the indigenous populations (Flores 1999). Many colonial institutions continued in the new Republic. It is clear that the establishment of the Republic did not imply a re-foundational shock in Peruvian society, as many Peruvian historians have argued (e.g., see Flores 1999, Contreras and Cueto 2000).

Peru has had 12 constitutions during the 180 years of the Republic. The 1856 Constitution abolished slavery, but citizenship still required knowing how to read and write. The 1920 Constitution declares for the first time, one hundred years after independence from Spain, that the state recognizes the existence of indigenous communities and seeks to protect them. The 1933 Constitution also declares that the state protects the indigenous communities, particularly their lands. The 1979 Constitution includes explicitly the indigenous communities of the Amazonian region in these rights. The last 1993 Constitution declares that the state recognizes the multi-ethnic nature of Peruvian society, including the right to use indigenous languages as official languages in the regions where they are predominant. However, most of these declarations were only formalities, with no real effect.

Has the Peruvian state created specific rights that were socially equalising? Education is always expected to be an equalising factor. In all constitutions, it is written that the state guarantees the population free primary education. The 1979 Constitution declares that the state guarantees the right of indigenous communities to receive freely elementary education in their native languages. In the 1993 Constitution, this declaration does not appear. Again, these rules are a mere formality, with no practical value.

Formally, therefore, Peru is a society of universal rights and even some specific socially equalizing rights, but these rights are not put into practice. The reality is different. This gap led historian Jorge Basadre to say that a fundamental distinction needs to be made between the "formal Peru" and the "real Peru" (el Perú formal vs. el Perú real). The "formal Peru" is the one depicted by the constitutions. The "real Peru" is the country shown in the tables presented so far, with a significant gap between ethnic groups after almost two centuries of Republic organization and rhetoric.

Any legal system contains implicit assumptions about society. In the case of Peru, the implicit assumption is that the society is socially homogeneous. If the assumption were that Peru is a socially heterogeneous and hierarchical society, its legal system would be different, owing to a base of different principles. The rights of indigenous populations would be an integral part of a single legal system, which is not the case now. Indigenous populations could then be granted rights that are universal and specific, individual and collective. Peruvian legal theorists have recently recognized this problem (Ballón 2002).

Do institutions change endogenously or exogenously? If the latter, institutional changes would have nothing to do with class or ethnic conflicts in society; if it were the former, these conflicts would matter. Can indigenous populations induce directly or indirectly institutional changes in a sigma society? If they could generate social violence and thereby induce changes in the rules under which society functions, including more rights for the indigenous populations, their problem of exclusion would be solved endogenously. But, as shown above, it seems that in Peru these institutional changes do not occur in this manner. Even if they had been endogenous outcomes, horizontal

inequalities prevailed. Institutional changes have not generated a more homogeneous society.

What is the reason for this? As sigma theory predicts, indigenous populations have no political voice to enforce rights granted by the dominant class, much less to attain rights that correspond to their culture, such as communal property rights, equal rights before the law and the right to cultural diversity. Some social progress has occurred over time in Peru, but mostly for the capitalist sector. Wage earners have gained more social protection than indigenous populations in rural areas. The implication is, as shown above, that class conflicts dominate over ethnic conflicts. The workers unions in Peru are politically much stronger than peasant or indigenous organizations. This is so although worker unions represent a much smaller share of workers, with few unions at the national level (only three), compared to the much larger size of indigenous populations and their 36 organizations at the national or regional level (Oxfam 2004: 88).

9.   Econometric results

The relationships portrayed in previous tables between ethnic background (defined by place of birth) and variables such as social class and education level might be affected by other factors. For example, as shown in Table 4, most people (at least the household heads) live in the region where they were born. So it may be the case that the underlying relationship is between social class, education level and place of residence, not place of birth. Likewise, many other variables may affect the relationships shown so far. In order to make clear that "place of birth matters", several econometric tests were performed, controlling for variables including place of residence, age and gender. This section essentially translates Tables 1 and 2 into statistical terms. Wherever a probabilistic model is used, the results of logistic regressions are presented, because of the ease of calculating the marginal effects at any point of the logistic curve (i.e., for any given predicted probability). The results for equivalent probit regressions, which are strongly consistent with the logit specifications, are summed up in Appendix G.

As pointed out earlier, the data were obtained from the Enaho of 2002, a national household survey conducted yearly by the Peruvian statistical institute (INEI) since 1995. For the first group of regressions (Tables 9 and 10), the sample refers to individuals that, at the time of the survey, were aged 25 years or older. This threshold was chosen because education is usually acquired by that age.

As previously stated, sigma theory predicts that indigenous people will be excluded from the process of accumulating human capital. Therefore, empirically we should observe different stocks of human capital between ethnic groups. Further, there should be a negative relationship between the percentage of indigenous people in a region and the region's stock of human capital. This relationship should prevail no matter where the individual lives: their ethnic background should mark them for life.

The first set of regressions relates to Table 1. First we ran a simple OLS regression with "years of schooling" as the dependent variable. The main results are shown in the first column of Table 9. The ethnicity variable entered the equation in two ways: as an intercept and as a variable affecting the slope of the variable "age". The category of comparison is A1 (Lima-core) in both cases. This means that if the coefficient for any ethnic group is statistically different from zero, the intercept (or slope) for that region is

different from the intercept (or the slope) for the individuals born in A1. This is the basic analysis we will use throughout this section.

Individuals born in Regions A3, B and C share the same intercept as A1 (because the hypothesis that their coefficients are different from zero cannot be rejected at a 95 percent confidence level). Individuals born in A2 and in the Andes (Regions D and E) have lower intercepts than the rest. Regarding the slopes, just those born in A2 have a similar slope to A1; the rest have steeper (more negative) slopes.[16] Therefore, even after controlling for place of residence, place of birth matters. Since regions were defined according to the ethnic background of their inhabitants, it follows that ethnic origin is a strong determinant of the years of education an individual will receive, independently of where he (she) lives. Note that no region is statistically equal to A1: every region has either a lower intercept or a steeper slope, which conforms with the hypothesis of a hierarchy of ethnic groups. In addition, the magnitude of the coefficients in general is consistent with sigma theory. The Andeans, the "most indigenous" of all groups, have not just a lower intercept, but a steeper slope too. Among the Andeans, those born in the Southern Andes have the lowest intercept and steepest slope.

Take, for example, a man born in the Southern Andes, aged 42, who migrated to Lima-Periphery. The model predicts he will have 9.4 years of schooling. This means that this individual has not completed the third year of high school (recall that there is one year of pre-school, 6 of elementary school and 5 of high school). For an individual with similar characteristics (male, aged 42, and living in A2), but born in Lima-core, the model predicts 13.3 years of schooling, i.e., post high-school education. The mere fact of being born in different places (i.e., having a different ethnic background) implies a difference of 4 years of schooling.

Next, we tested whether the probability of completing several education levels (elementary, high school and post high school) was affected by ethnic origin. After the first test, this might seem redundant. Nevertheless, using another type of econometric specification – non-linear probabilistic models – adds more detail to this general finding. Recall our hypothesis that indigenous people achieve lower levels of education. Columns 2 to 4 in Table 9 summarize the main results of the logit specification, with the columns referring to elementary, high school and post high school education respectively.

The dependent variables are region of birth, region of residence, sex and age. The ethnicity variable was included both as the intercept and in interaction with age, as before. For elementary school, none of the ethnic variables is significant. Apparently there are no ethnic differences at the lowest levels of schooling. Nevertheless, at high school and post high-school levels, the results differ dramatically. In both cases, the (intercept) ethnic variables are highly significant, indicating that, ceteris paribus, ethnicity is associated with important differences in the accumulation of human capital. After controlling for place of residence, there may not be important inter-ethnic differences at

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[16]   The negative coefficient for "age" may seem surprising. However, remember that the sample is composed of individuals over 25 years old, so they have finished the process of accumulating years of schooling (our measure of human capital). Hence, the negative coefficient simply means that older individuals had accumulated less years of schooling than younger individuals.

lower levels of education, but there are at medium and higher levels. In short, there are ethnic differences between high-skilled workers and the rest of the labour force.

Compared to A1, all other ethnic groups have a lower probability of achieving any given level of education. Further, the magnitude of the coefficients is generally in accordance with the predictions of the theory. In any case, individuals born in the Southern Andes have the lowest probability of completing high school or post high-school education.

Take, for example, a 30 year old female resident of A2 (Lima-periphery), who has the stigma of having been born in the Southern Andes. She has a probability of 81 percent of completing elementary school, 39 percent for high school, and 10 percent for post high-school education. If she had been born in Lima–core, the probabilities would have been 97 percent, 90 percent and 40 percent, respectively. Note that the difference for elementary school is small, but the probabilities of completing high school and post high-school education would be two and four times higher, respectively.

The tests presented so far make it straightforward to conclude that in Peru, ethnicity is a key determinant of the human capital stock an individual will acquire along his (her) life. It is important to highlight that in the examples presented above, the individuals live in A2 (Lima-Periphery), the region most immigrants from the rest of Peru choose as their destination. These examples were made in order to challenge the commonly-heard hypothesis that Lima is a "melting pot". As we see, this hypothesis is strongly rejected, because the mere fact of living in Lima does not erase ethnic stigma. All the differences estimated by our models apply to people living in Lima.

The second set of regressions test whether the results of Table 2A have statistical meaning. To do so, we tested whether or not the probability of working as a white-collar worker or, in a broader sense as a wage earner (which includes white and blue-collar workers), was affected by ethnicity. Table 10 presents the main findings.

In the first and third columns, the model includes ethnicity, but not years of schooling. Here, the ethnic variables are all significant. But after controlling for years of schooling (second and fourth columns), ethnicity is no longer significant. The first column suggests that the higher the value of the ethnic variable, the lower the probability of being a white-collar worker. Therefore, a non-indigenous worker has a higher probability of being a white-collar worker than an indigenous worker. This could be either exclusion or discrimination. The second column clarifies this seeming paradox. If ethnic origin were important even after controlling for years of schooling, there would be discrimination. Given that once controlling for schooling, ethnic background becomes irrelevant, we find evidence for exclusion and not discrimination in the labour market. If two individuals from different ethnic groups have the same years of schooling, both have the same probability of being employed as a white-collar worker. The problem lies in the fact that ethnic groups have unequal access to education (Tables 11, 1A, 3A and 3C). Therefore, it is as if ethnic origin determined the probability of being a white-collar worker.

So far, the analysed regressions are for people who acquired education in the past. It is straightforward to ask if this is changing. Do Peruvian children today face equal conditions, no matter where they – or their parents – were born? To analyse the process of accumulating of human capital, we tested for a relationship between lagged years of schooling and ethnicity. The dependent variable here is mean lag years of the household head's children. In this case, "ethnic background" was measured in two ways: by the

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place of origin of the child and of the household head. In doing so, we attempt to test if the ethnic background of the parents affects the process of human capital accumulation of their children, i.e., if there is some degree of inter-generational mobility.

Table 11 presents the main results of the regressions. In the first part of Table 11, we analysed lagged years of schooling for individuals until they reached 14 years of education, which is roughly the average level for white-collar workers (see Table 2B). Individuals aged 6 to 20 years old composed the sample. As seen in the first column, the ethnicity of the household head is not a determinant of lagged years of schooling. Nevertheless, the individual's ethnic origin is an important determinant of lagged schooling. In the second column, the unit of observation is the household and the dependent variable is mean years of lagged schooling for each household. The results show that the ethnic origin of the household head is not a determinant of the years of schooling of his (her) children.

The second half of Table 12 shows the main results for a similar set of regressions, but for individuals 12 to 20 years old. This helps to analyse the lag in years of schooling for intermediate and higher levels of education, leaving aside elementary school (a 12 year old should be in the first year of high school). The results are the same as in the first part: the ethnicity of the household head is not a determinant of the lag in years of schooling, but the place of birth of the individual is.

In general, the results from Table 11 suggest some degree of inter-generational mobility, because once controlling for other variables, the household head's place of birth does not determine the years of education of his (her) children. Nevertheless, the child's birthplace is indeed a determinant of the lag in years of schooling. We may conclude that despite some degree of inter-generational mobility, the process of accumulating human capital in *today's* Peru is indeed affected by ethnic origin, and, again, the indigenous are the worst-affected. This is also consistent with the predictions of sigma theory.

10.   Conclusions

Peru is a country with recurrent political instability and social disorder. It also displays a pronounced degree of inequality. The social structure encompasses class and ethnic relations. This study shows that in Peru, horizontal inequalities among ethnic groups are severe and contribute largely to overall inequality. As a result, indigenous populations constitute the poorest groups. Inequality is a structural feature of Peru. Since the beginning of the colonial period – its foundational shock – inequality has always been there, persistently, just like the Andes.

Why do horizontal inequalities persist? This study has examined several exogenous variables in light of sigma and HI theory: migration, collective action, government policy and initial conditions. All these factors contribute to the persistence of horizontal inequalities, while none contributes to their reduction. In the Peruvian case, therefore, initial conditions – i.e., its foundational event – count. There is path dependence in the process of the production and reproduction of inequality.

These empirical results are consistent with the predictions of sigma theory. As the theory predicts, differences in human capital between indigenous and white populations (a measure of horizontal inequality) have not tended to converge over time in Peru.

Although the indigenous populations have experienced significant gains in accumulating human capital in absolute terms, they have not experienced gains in relative terms. The collective action of indigenous populations has been relatively weak in challenging the system and thereby reducing horizontal inequality. Neither education policies nor land reform have helped either. In Peru, class conflict has produced more mobilization than ethnic conflict.

The coexistence of pronounced horizontal inequality and social disorder in Peru is also consistent with the predictions of HI theory. However, there is one qualification to make. The role of horizontal inequality in contributing to instability in Peru appears to be important, but as a latent factor, an excuse that political agents can use to challenge the system at any time. Horizontal inequalities do contribute to social disorder in Peru, but not as directly as HI theory assumes. Ethnic conflict is not the prime mover of social disorder. Neoclassical theory can explain horizontal inequalities because it can explain the existence of segregation in multi-ethnic societies. However it cannot link horizontal inequality and social disorder.

In terms of the main hypotheses posed at the beginning of this study, our empirical results suggest that class conflict mobilises people more than ethnic conflict in Peru. Indeed, the econometric tests presented in Section 9 tend to corroborate the more specific hypotheses derived from sigma theory on the relationship between the accumulation of human capital and ethnicity. First, they suggest that ethnicity matters. Ethnic background is an important determinant of the level of education individuals acquire along their lives.

Second, the level of education is a key factor in the probability of being employed as a white-collar worker, which can be used as a threshold for social mobility. In the labour market, once controlling for years of schooling, ethnic background becomes unimportant. This means that two individuals with the same amount of schooling but different ethnic backgrounds have the same probability of being employed as white-collar workers. However, the core of inequality rests on the fact that indigenous groups are excluded from the process of accumulating human capital, i.e., that they do not have the same probability of acquiring education. This finding implies that exclusion, not discrimination, is the main issue in the labour market.

Third, among individuals who are acquiring education today, despite some degree of inter-generational mobility, ethnic origin appears to be a determinant of their lag in years of schooling. Since the lag reflects empirically the process of accumulating human capital, we may say that this process is ethnically biased against indigenous populations. Indigenous children have bigger lags than non-indigenous children, so it is likely that they will acquire less human capital, and therefore be excluded from the labour market in the future.

Peru, in short, seems to resemble the sigma society. According to sigma theory, political and cultural rights constitute the instruments to reduce horizontal inequalities, thereby transforming a socially heterogeneous and hierarchical society into a socially homogeneous one. This transformation, in the light of the Peruvian experience, does not seem to occur endogenously. Of course, the problem with multi-ethnic and multi-cultural societies is not the diversity of cultures; it is the hierarchy within them. There are multi-ethnic countries that belong to the First World, but horizontal inequalities are negligible in those countries.

Which social agent should carry out such a transformation? The usual answer is the government. This study suggests that governments have a myopic view of horizontal inequality. Their logic in administering inequality is based on the premise that class struggle dominates ethnic conflict over income. Politically, therefore, the former dominates the latter. The "ethnic question" has existed for many years but governments do not see it. Indigenous people are invisible in Peru, except when episodes of violence put them in the media. Even the expansion of the illegal trade in coca leaves as inputs to drugs, one of the most pressing current problems in Peru, is seen mostly as a legal problem; it is neither associated with survival strategies of some indigenous populations nor as part of the problem of horizontal inequality. Governments do not understand correctly the ultimate factors determining political instability in Peru but rather follow just the proximate factors according to their political rationality.

The economic elites also seem to ignore the significance of horizontal inequalities in the political instability of Peru. For them, the Andes is merely a region to profit from mining. Because social order is a public good, they have no incentive to get involved in the issue of overall inequality, let alone its horizontal dimension. The question of which social agent might be capable of inducing a re-foundational shock in Peruvian society remains open.

Figure 1. Indigenous-linguistic map of Peru

Source*: www.ethnologue.com/show_map.asp?name=Peru*

Table 1. Peru: Education and region of birth, 2002 [1] (First entry is percentage of national population; the second entry, in parentheses, is percentage of region).

Educational level up to:	Peru	Region of birth												
		A1		A2		A3		B		C		D		E	
No level **[3]**	10.60	0.01	(0.3)	0.11	(0.8)	0.72	(5.0)	1.10	(6.5)	0.56	(7.0)	4.24	(17.3)	3.85	(19.0)
Elementary	35.03	0.17	(6.2)	1.39	(10.9)	3.48	(24.1)	5.97	(35.3)	3.88	(48.4)	11.47	(46.7)	8.61	(42.5)
High School	32.45	0.69	(25.4)	6.19	(48.7)	5.20	(36.0)	6.62	(39.2)	2.51	(31.3)	5.65	(23.0)	5.49	(27.1)
Superior non university	9.85	0.63	(23.1)	2.07	(16.2)	2.05	(14.2)	1.78	(10.5)	0.57	(7.1)	1.60	(6.5)	1.13	(5.6)
Superior university	10.42	1.04	(38.3)	2.49	(19.6)	2.65	(18.4)	1.23	(7.3)	0.44	(5.5)	1.38	(5.6)	1.07	(5.3)
Post graduate	0.75	0.13	(4.8)	0.16	(1.3)	0.20	(1.4)	0.03	(0.2)	0.04	(0.5)	0.08	(0.3)	0.04	(0.2)
No data	0.89	0.05	(1.9)	0.31	(2.4)	0.14	(1.0)	0.17	(1.0)	0.00	(0.0)	0.12	(0.5)	0.08	(0.4)
Peru	100.00	2.72	(100.0)	12.72	(100.0)	14.44	(100.0)	16.91	(100.0)	8.01	(100.0)	24.55	(100.0)	20.27	(100.0)

Notes:
[1] *For people aged 25 and older at the time of the survey.*
[2] *A1: Lima – core, A2: Lima – periphery, A3: Local core, B: Rest Coast; C: Amazonian; D: Rest Andes; E: Southern Andes.*
[3] *Includes pre-school.*

Source: *Enaho, 2002 (See Appendix C for the methodology used in the calculations).*

Table 2A. Peru: Class and region of birth, 2002 [1] (First entry is percentage of national population; the second entry, in parentheses, is percentage of region).

Classes:	Peru	Region of birth												
		A1		A2		A3		B		C		D		E	
Big employer [3]	0.26	0.01	(0.5)	0.01	(0.1)	0.02	(0.2)	0.04	(0.3)	0.04	(0.5)	0.09	(0.4)	0.04	(0.2)
Small employer [4]	5.75	0.11	(3.9)	0.32	(2.6)	0.81	(5.9)	1.00	(6.3)	0.45	(5.6)	1.83	(7.3)	1.17	(5.3)
White Collar	18.88	1.41	(50.4)	4.47	(37.0)	4.01	(29.0)	2.79	(17.6)	1.09	(13.5)	2.81	(11.3)	2.17	(9.8)
Blue Collar [5]	16.66	0.29	(10.5)	2.27	(18.8)	2.42	(17.5)	3.76	(23.8)	1.04	(12.8)	3.67	(14.7)	3.19	(14.4)
Self employed – Urban [6]	25.85	0.62	(22.1)	3.36	(27.8)	4.45	(32.2)	4.75	(30.0)	2.03	(25.1)	5.42	(21.7)	5.17	(23.4)
Self employed – Rural [6]	26.12	0.02	(0.7)	0.07	(0.6)	0.96	(6.9)	2.12	(13.4)	3.05	(37.7)	10.32	(41.3)	9.58	(43.3)
Other	0.14	0.02	(0.6)	0.02	(0.1)	0.02	(0.1)	0.02	(0.1)	0.00	(0.0)	0.03	(0.1)	0.04	(0.2)
No data	6.34	0.32	(11.4)	1.58	(13.0)	1.13	(8.2)	1.34	(8.5)	0.38	(4.7)	0.82	(3.3)	0.76	(3.4)
Peru	100.00	2.80	(100.0)	12.09	(100.0)	13.82	(100.0)	15.82	(100.0)	8.08	(100.0)	25.00	(100.0)	22.10	(100.0)

Notes:
[1] *For EAP aged 25 or older at the time of the survey.*
[2] *A1: Lima – core, A2: Lima – periphery, A3: Local core, B: Rest Coast; C: Amazonian; D: Rest Andes; E: Southern Andes.*
[3] *Employer in charge of more than ten employees.*
[4] *Employer in charge of ten or less employees.*
[5] *Includes household employees.*
[6] *Includes family non-remunerated workers.*

Source*: Enaho, 2002 (See Appendix D for the methodology used in the calculations).*

Table 2B. Peru: Mean years of schooling by region of birth and class (standard deviation in parentheses), 2002 [1].

Class	Peru	Region of birth						
		A1	A2	A3	B	C	D	E
Peru	9.1 (5.3)	14.7 (3.2)	12.7 (3.4)	11.2 (4.8)	9.7 (4.7)	8.3 (4.5)	7.2 (5.1)	6.9 (5.1)
Big employer [3]	10.2 (4.9)	17.0 --	11.6 (5.5)	13.1 (6.3)	9.9 (5.6)	11.5 (4.6)	8.3 (4.4)	9.1 (3.8)
Small employer [4]	9.0 (4.8)	15.6 (2.1)	13.9 (3.6)	11.4 (4.5)	9.7 (4.7)	8.5 (4.0)	7.1 (4.5)	7.4 (4.7)
White collar	14.5 (3.2)	15.9 (2.4)	14.5 (2.7)	14.9 (2.9)	13.9 (3.3)	14.5 (3.0)	14.2 (3.6)	13.8 (3.8)
Blue collar [5]	9.0 (4.1)	10.6 (2.8)	11.2 (2.9)	9.8 (3.8)	9.3 (3.9)	8.1 (3.8)	7.9 (4.3)	7.9 (4.2)
Self employed – urban [6]	9.1 (4.7)	13.9 (3.4)	11.8 (3.3)	9.8 (4.6)	9.0 (4.5)	8.4 (4.0)	7.8 (4.8)	7.7 (4.8)
Self employed – rural [6]	4.8 (3.9)	9.0 (3.7)	8.4 (3.8)	5.5 (4.4)	6.1 (4.1)	6.0 (3.4)	4.5 (3.7)	4.4 (3.9)
Other	10.4 (5.7)	15.0 --	7.6 (8.5)	12.2 (3.9)	9.6 (5.3)	7.0 --	9.5 (6.1)	10.2 (6.3)
No data	10.6 (4.8)	14.4 (2.8)	12.1 (3.1)	11.2 (4.7)	10 (4.6)	9.3 (4.4)	8.6 (5.3)	8.6 (5.1)

Notes:
[1] *For EAP aged 25 or older at the time of the survey.*
[2] *A1: Lima – core, A2: Lima – periphery, A3: Local core, B: Rest Coast; C: Amazonian; D: Rest Andes; E: Southern Andes.*
[3] *Employer in charge of more than ten employees.*
[4] *Employer in charge of ten or less employees.*
[5] *Includes household employees.*
[6] *Includes family non-remunerated workers.*

Source: *As in 2A.*

Table 2C. Peru: Class and ethnicity, 2002 (First entry is mean years of schooling; the second entry, in bold, is the percentage of the population in the category).

Classes by human capital:	Ethnicity (Region of birth)						
	A1	A2	A3	B	C	D	E
Upper class							
White collar	15.9	14.5	14.9	13.9	14.5	14.2	13.8
	57.6	**42.6**	**31.7**	**19.4**	**14.2**	**11.7**	**10.2**
Self-employed	14.0						
	30.4						
Middle class							
Blue collar	10.6	11.2	9.8	9.3			
	12.0	**21.7**	**19.1**	**26.1**			
Self-employed		11.9	10.1	9.2			
		35.7	**41.6**	**39.8**			
Low class							
Blue collar					8.1	7.9	7.9
					13.5	**15.3**	**15.0**
Self-employed					8.4	7.7	7.6
					32.4	**30.1**	**29.8**
Underclass							
Self-employed			5.5	6.1	6.0	4.5	4.4
			7.6	**14.7**	**39.8**	**42.9**	**45.0**
Mean years of education	14.7	12.8	11.2	9.7	8.3	7.1	6.8
Total labour force	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Notes:
[1] *A1: Lima – core, A2: Lima – periphery, A3: Local core, B: Rest Coast; C: Amazonian; D: Rest Andes; E: Southern Andes.*
[2] *Category "Big employer" has been ignored owing to its very small size.*
[3] *Categories "Other" and "No data" have been ignored.*
[4] *Category "Small employer" has been added to "Self employed".*
[5] *Categories "Self employed - Urban" and "Self employed – Rural" have been merged in Regions A1 and A2 because they represent less than one percent of the population in those regions.*

Source: *Tables 2A and 2B.*

Table 3A. Peru: Education and region of birth, 1993 [1] (First entry is percentage of national population; the second entry, in parentheses, is percentage of region).

Education level up to:	Peru	Region of birth						
		A1	A2	A3	B	C	D	E
No level **[3]**	1.53	0.01 (0.3)	0.03 (0.3)	0.10 (0.8)	0.19 (1.1)	0.14 (2.0)	0.52 (2.2)	0.47 (2.2)
Elementary School	34.59	0.15 (6.4)	1.38 (12.4)	2.93 (23.7)	6.61 (37.3)	3.29 (47.4)	10.43 (43.2)	8.49 (39.3)
High School	27.30	0.72 (30.2)	4.91 (43.9)	4.26 (34.6)	5.64 (31.8)	1.62 (23.3)	4.76 (19.7)	4.43 (20.5)
Superior - Non University	8.59	0.51 (21.4)	1.94 (17.3)	1.53 (12.4)	1.72 (9.7)	0.42 (6.0)	1.25 (5.2)	0.99 (4.6)
Superior - University	11.82	0.95 (39.9)	2.67 (23.9)	2.63 (21.3)	1.78 (10.0)	0.36 (5.2)	1.63 (6.8)	1.37 (6.3)
No data	16.17	0.04 (1.8)	0.25 (2.2)	0.88 (7.1)	1.79 (10.1)	1.11 (16.0)	5.57 (23.0)	5.88 (27.2)
Peru	100.00	2.37 (100.0)	11.18 (100.0)	12.34 (100.0)	17.73 (100.0)	6.95 (100.0)	24.17 (100.0)	21.63 (100.0)

Notes:
[1] *For people aged 25 or older at the time of the census.*
[2] *A1: Lima – core, A2: Lima – periphery, A3: Local core, B: Rest Coast; C: Amazonian; D: Rest Andes; E: Southern Andes.*
[3] *Includes pre-school.*

Source: *National Census, 1993 (See Appendix C for the methodology used in the calculations).*

Table 3B. Peru: Class and region of birth, 1993 [1] (First entry is percentage of the total population; second entry, in parentheses, is the percentage of region).

Class:	Peru	Region of birth						
		A1	A2	A3	B	C	D	E
Big employer [3]	0.40	0.04 (1.5)	0.09 (0.7)	0.08 (0.6)	0.06 (0.4)	0.02 (0.2)	0.05 (0.2)	0.04 (0.2)
Small employer [4]	2.31	0.11 (3.9)	0.34 (2.8)	0.40 (3.1)	0.42 (2.4)	0.15 (2.1)	0.43 (1.9)	0.35 (1.7)
White collar	26.15	1.76 (61.8)	5.91 (48.8)	4.94 (39.0)	4.57 (26.7)	1.18 (16.5)	3.78 (16.3)	3.17 (14.8)
Blue collar [5]	21.49	0.28 (9.7)	2.21 (18.3)	2.13 (16.8)	4.62 (27.0)	1.30 (18.2)	5.57 (24.0)	4.56 (21.3)
Self employed – urban [6]	26.91	0.52 (18.3)	2.86 (23.6)	3.73 (29.5)	5.06 (29.5)	1.76 (24.6)	6.02 (26.0)	5.94 (27.7)
Self employed – rural [6]	16.74	0.01 (0.2)	0.06 (0.5)	0.61 (4.8)	1.33 (7.7)	2.22 (31.0)	5.93 (25.6)	6.20 (28.9)
Other	0.00	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)	0.00 (0.0)
No data	6.00	0.13 (4.4)	0.63 (5.2)	0.78 (6.2)	1.08 (6.3)	0.54 (7.5)	1.42 (6.1)	1.19 (5.5)
Peru	100.00	2.85 (100.0)	12.1 (100.0)	12.66 (100.0)	17.14 (100.0)	7.17 (100.0)	23.19 (100.0)	21.45 (100.0)

Notes:
[1] *For EAP aged 25 or older at the time of the census.*
[2] *A1: Lima – core, A2: Lima – periphery, A3: Local core, B: Rest Coast; C: Amazonian; D: Rest Andes; E: Southern Andes, F: Foreign country.*
[3] *Employer in charge of more than ten employees.*
[4] *Employer in charge of ten or less employees.*
[5] *Includes household employees.*
[6] *Includes family and non-remunerated workers.*

Source: *National Census, 1993 (See Appendix D for the methodology used in the calculations).*

Table 3C. Peru: Illiteracy rates for census years.

Census year	Southern Peru [1]	Peru	Ratio
1876	93	81	1.15
1940	85	60	1.42
1961	69	39	1.77
1972	57	27	2.13
1981	42	18	2.34
1993	30	13	2.32

Notes: **[1]** *Includes departments of Apurimac, Ayacucho, Cusco, Huancavelica and Puno.*

Source: *National Censuses. Taken from Contreras (2004, Table 7.2).*

Table 3D. Peru: Poverty incidence by region, 1994 (percentage) [1].

Region	Poverty Incidence	Poverty Structure
Peru	**40.0**	**100.0**
Lima	21.0	15.5
Urban Amazonian	35.4	5.4
Urban Coast	36.1	17.1
Urban Sierra	39.6	16.3
Rural Coast	49.6	5.1
Rural Amazonian	65.4	8.8
Rural Andes	65.4	31.8

Notes:
[1] *The poverty line is defined at the 40 percentile of the population. In US dollars, this poverty line was equivalent to a little more than a dollar per person per month using household expenditures.*

Source: *Figueroa (2001, Table 7.2, p.139).*

Table 4. Peru: Inter-regional migration matrix, 2002 [1] (First entry is percentage of national population; the second entry, in parentheses, is percentage of region).

Region of Residence	Peru	Region of birth												
		A1		A2		A3		B		C		D		E	
A1	4.74	0.81	(48.5)	1.31	(14.2)	1.23	(8.9)	0.27	(1.7)	0.16	(1.8)	0.60	(2.2)	0.16	(0.7)
A2	24.54	0.78	(46.9)	7.17	(77.4)	3.72	(26.9)	2.81	(17.7)	0.69	(8.1)	5.20	(19.4)	4.05	(17.2)
A3	8.92	0.04	(2.5)	0.16	(1.7)	4.37	(31.6)	1.16	(7.3)	0.67	(7.8)	1.06	(3.9)	1.43	(6.1)
B	18.04	0.01	(0.8)	0.34	(3.7)	1.87	(13.5)	11.01	(69.4)	0.20	(2.3)	3.21	(12.0)	1.32	(5.6)
C	10.57	0.01	(0.4)	0.07	(0.7)	0.97	(7.0)	0.23	(1.5)	6.66	(78.2)	1.88	(7.0)	0.72	(3.1)
D	15.84	0.00	(0.1)	0.07	(0.8)	0.42	(3.0)	0.15	(1.0)	0.07	(0.8)	14.81	(55.2)	0.31	(1.3)
E	17.37	0.01	(0.7)	0.14	(1.5)	1.26	(9.1)	0.23	(1.5)	0.08	(0.9)	0.09	(0.4)	15.55	(66.0)
Peru	100.00	1.67	(100.0)	9.27	(100.0)	13.84	(100.0)	15.86	(100.0)	8.52	(100.0)	26.85	(100.0)	23.55	(100.0)

Notes:
[1] *For household heads.*
[2] *A1: Lima – core, A2: Lima – periphery, A3: Local core, B: Rest Coast; C: Amazonian; D: Rest Andes; E: Southern Andes.*

Source: *Enaho, 2002 (See Appendix B for the methodology used in the calculations).*

Table 5A. Peru: Inter-marriage matrices, by mother tongue, 2001 [1].

Mother tongue

	Non-Indigenous	Indigenous	Total
Non-Indigenous	66.2	4.1	70.4
Indigenous	5.0	24.6	29.6
Total	71.2	28.8	100.0

Mother's mother tongue

	Non-Indigenous	Indigenous	Total
Non-Indigenous	57.6	5.6	63.3
Indigenous	6.5	30.2	36.7
Total	64.2	35.8	100.0

Father's mother tongue

	Non-Indigenous	Indigenous	Total
Non-Indigenous	59.8	6.0	65.8
Indigenous	6.3	27.9	34.2
Total	66.1	33.9	100.0

Maternal grandparents' mother tongue

	Non-Indigenous	Indigenous	Total
Non-Indigenous	53.6	7.2	60.8
Indigenous	7.6	31.6	39.2
Total	61.3	38.7	100.0

Paternal grandparents' mother tongue

	Non-Indigenous	Indigenous	Total
Non-Indigenous	54.9	7.1	61.9
Indigenous	8.1	30.0	38.1
Total	63.0	37.0	100.0

Notes:
[1] *For household heads and spouses. The columns are for females, the rows are for males.*
[2] *Indigenous languages: Quechua, Aymara, other indigenous languages.*
[3] *Non-indigenous languages: Spanish, foreign languages.*

Source: *Enaho, 2001 (See Appendix E for the methodology used in the calculations).*

Table 5B. Peru: Inter-marriage matrix, by region of birth, 2002 [1].

Male	Female								
	Peru	w/o spouse	A1	A2	A3	B	C	D	E
w/o spouse	19.17	0.00	0.31	2.16	3.22	2.81	1.30	4.83	4.43
A1	1.43	0.18	0.33	0.31	0.12	0.13	0.00	0.18	0.10
A2	7.12	1.03	0.39	3.28	0.76	0.59	0.21	0.44	0.36
A3	10.65	1.44	0.22	0.84	4.62	0.97	0.69	1.01	0.83
B	13.02	1.59	0.05	0.76	0.99	8.11	0.25	0.80	0.42
C	7.18	0.86	0.07	0.13	0.51	0.21	4.87	0.36	0.17
D	22.01	2.74	0.09	0.83	1.10	1.01	0.75	14.86	0.62
E	19.09	2.69	0.08	0.42	1.08	0.49	0.25	0.66	13.41
Peru	100.00	10.57	1.59	8.79	12.45	14.39	8.34	23.14	20.35

Notes:
[1] *For household heads*
[2] *A1: Lima – core, A2: Lima – periphery, A3: Local core, B: Rest Coast; C: Amazonian; D: Rest Andes; E: Southern Andes*

Source: *Enaho, 2002 (See Appendix B for the methodology and detail of the calculations)*

Table 6. Peru: Inter-generational transmission of language, 2001 [1].

Maternal grandparents' mother tongue	Non-Indigenous [2]		Indigenous [3]		Total
Mother's mother tongue	Non-Indigenous	Indigenous	Non-Indigenous	Indigenous	
Mother tongue					
Non-Indigenous	57.5	1.1	4.7	7.1	70.3
Indigenous	0.7	1.4	0.4	27.2	29.7
Total	58.2	2.5	5.1	34.3	100.0

Paternal grandparents' mother tongue	Non-Indigenous		Indigenous		Total
Father's mother tongue	Non-Indigenous	Indigenous	Non-Indigenous	Indigenous	
Mother tongue					
Non-Indigenous	58.5	0.7	5.3	5.8	70.3
Indigenous	1.1	1.4	0.8	26.4	29.7
Total	59.7	2.1	6.1	32.2	100.0

Notes:
[1] *For household heads.*
[2] *Indigenous languages: Quechua, Aymara, other indigenous languages*
[3] *Non-indigenous languages: Spanish, foreign languages*

Source:
Enaho, 2001 (See Appendix E for the methodology used in the calculations).

Table 7A. Peru: Major Peasant Movements, 1892-1965 [1].

Place and date	Type of violence	Causes	Consequences	Mobilising agent
Andahuaylas 1892	Individual (robbery)	n.s. [2]	Repression	n.a. [3]
Huánuco 1886	Individual (bandolerismo)	n.s.	n.s.	n.a.
Cerro de Pasco 1896	Individual (bandolerismo)	n.s.	n.s.	n.a.
Ancash 1885	Collective (uprisal)	Forced labour	Repression	Atusparia, Ucchu Pedro / internal
Puno 1886-1887	Collective (multiple uprisings)	Labour conditions similar to slavery, "*contribuciones*" (contributions)	Authorities proposed the creation of schools to disseminate ideological publicity in favour of the Peruvian state	Bolivian Indigenous / external
Castrovirreyna 1887	Collective (the Prefecto was captured)	*Contribuciones*	n.s.	n.s. / apparently internal
Chiclayo 1887	Collective (town uprising)	*Contribuciones*	Change in the payment system	n.s. / apparently internal
Cuzco 1894	Individual (bandoleros)	*Contribuciones*	n.s.	n.a
La Mar 1895	Collective (town siege)	Abuses of the priest and the local judge	Repression	n.s. / apparently internal
Cerro de Pasco 1893	Collective (violence between towns)	Law on Indigenous Land	To solve the problem, the lands had to be distributed to each peasant. (Disintegration of the communities.)	n.s. / apparently internal
Ilave 1896	Collective (town siege)	Fear of expropriation by the government	Repression	n.s. / apparently internal
Huanta 1896	Collective (takeover of the town)	*Estanco de la Sal* (tax on salt, an essential good)	Repression	n.s. / apparently internal
Cuzco 1896	Collective (town uprising)	*Estanco de la Sal*	Repression	n.s. / apparently internal
Juli 1896	Collective (town siege)	*Estanco de la Sal*	Repression	n.s. / apparently internal
Tocroyoc 1921	Collective (rebellion)	Abuses of the landlords (gamonales)	Repression	Domingo Huarca / internal

Table 7A (continued). Peru: Major Peasant Movements, 1892-1965 [1].

Place and date	Type of violence	Causes	Consequences	Mobilising agent
Lauramarca, Palca y Torca 1922	Collective (indigenous people uprising)	Abuses of the landlords (gamonales). Peasants requested 8 hour working days, and revision of wages and the hacienda property title	Repression	Francisco Chilihuani delegado ante el CPDIT/ internal
Ayaviri 1920	Not a peasant movement. It was invented by the gamonales as an excuse to kill peasants and impede their uncovering the abuses committed against them.			
Azángaro 1920	Individual (bandolerismo)	Land concentration, via the absorption of communal lands	Repression	n.a.
	Collective (mass actions – there is no further specification)	Land concentration, via the absorption of communal lands	Repression	Instigadores / apparently internal
Huancané 1923	Collective (legal protest)	Abuses of the gamonales (free labour, tortures, assassinations)	Repression	Ezequiel Urviola / internal
La Mar 1923	Collective (legal protest)	Abuses of the gamonales	Repression Probably some demands were conceded.	Paulino Romero / internal
Yanahuara 1924	Collective (legal protest and "mass pressure")	Tax on guarapo (alcoholic beverage ritually consumed)	Elimination of the tax for the carnivals of that year. Afterwards, unknown.	n.s. / apparently internal
Cajarmarca 1919-1925	Individual (bandolerismo)	n.s (Apparently, excessive wealth of gamonales)	Repression	n.a.
Huarautambo 1943	Collective (hacienda siege)	Free labour, forced sale within the hacienda, represalias against the peasants, no liberty of religious beliefs.	Concession of some demands, though many of them were just were a formality.	n.s. / apparently internal
Yanahuanca w.d.	Collective (strike)	Systematic expropriation by the hacienda, lack of education for the sons and daughters of the peasants.	Liberty of commerce, 8 hour working days, end of reprisals, rotation of cultivos (hacendados expelling peasants from the best lands). The expulsion of colonos from the haciendas was facilitated.	Aprista leaders/ external (APRA is external for the peasantry)

(Continues…)

Table 7A (continued). Peru: Major Peasant Movements, 1892-1965 [1].

Place and date	Type of violence	Causes	Consequences	Mobilising agent
Chinchobamba and Andaymayo 1947	Collective (strike)	Exploitation of the hacendados	Repression of strikers. S/0.20 increase of daily wage for peasants who did not strike.	APRA / external
Andahuaylas 1952	Collective Action (collective acquisition of hacienda and formation of cooperative)	Abuses of the hacendados	Failure of the cooperative, assignation of individual land plots.	Francisco Gavonel, (aprista leader) / external
Chamis and Pallán 1946	Collective (strike, legal protest)	Abuses of the hacendados	Payan: Repression to the leaders Chamis: n.s.	Aprista leaders/ externals
Quiullacocha w.d. (1946)	Collective (strike, legal protest)	Increase in the rent of the pastures, abuses by Cerro de Pasco	In 1963, wage increase from S/1.50 to S/.6.00, the usual in mining.	n.s. / apparently internal
Rancas w.d. (1958 – 1963)	Collective (legal protest; after its rejection, violence)	Land expropriation y policies of harassment by Cerro de Pasco mining company.	The army took political control of the department and suspended constitucional warranties for 30 days. On December 1st 1963, Cerro de Pasco and Junin were declared zones for agrarian reform.	n.s. / apparently internal
La Chala 1964	Collective (legal protest; after its rejection, violence)	Land expropriation	Land invasion by the peasants (invasion).	n.s. / apparently internal
Shumpillán Huanchayllo 1964	Collective (land invasion, expulsion of the hacendado)	"old conflict" between the community and the hacienda	Repression	n.s. / apparently internal

Notes:
[1] *This table is a summary of Kapsoli's text, but includes some additional interpretations.*
[2] *n.s.: not specified.*
[3] *n.a.: not applicable.*
[4] *w.d.: without date. The years in parenthesis are the best approximations derived from Kapsoli's text.*

Source: *Kapsoli (1982).*

Table 7B. Peru: Peasant movements and ethnic conflicts by region, 1956-1964.

Regions	Percentage of rural population, 1961 [3]	Share of peasant movements or ethnic conflicts, 1956 – 1964 [4]	Ratio [3] / [4]	Index Coast=100
Peasant Movements [1]				
Coast	0.22	0.32	1.47	100.0
Amazonian	0.09	0.07	0.77	52.2
Northern and Central Andes	0.34	0.29	0.86	58.6
Southern Andes	0.35	0.32	0.90	61.4
Ethnic conflicts [2]				
Coast	0.22	0.19	0.86	100.0
Amazonian	0.09	0.08	0.89	103.2
Northern and Central Andes	0.34	0.36	1.07	124.4
Southern Andes	0.35	0.36	1.04	120.8

Notes:
[1] *Peasant movements include class and ethnic conflicts, conflicts between indigenous populations and government responses.*
[2] *Ethnic conflicts are conflicts (violent or not) between indigenous and non-indigenous populations, originating in colonial heritage.*

Source:
[3] *National Census, 1961.*
[4] *Guzmán and Vargas, 1981.*

(See Appendix F for details.)

Table 8. Peru: political regimes since Independence, 1821 – 2001.

From	To	Regime [1]	Presidents
28/07/1821	20/09/1822	Non Democratic	San Martín.
20/09/1822	23/06/1823	Democratic	Luna Pizarro, Torre Tagle (2), La Mar, Riva Agüero.
23/06/1823	02/09/1824	Non Democratic	Sucre, Torre Tagle.
02/09/1824	16/02/1826	Democratic	Bolívar.
24/02/1825	04/06/1827	Non Democratic	La Mar (2), Unanue (2), Santa Cruz.
09/06/1827	06/06/1829	Democratic	La Mar, Salazar.
06/06/1829	22/11/1833	Non Democratic	Gutiérrez (2), Gamarra, Reyes, Tellería, del Campo.
20/12/1833	22/02/1835	Democratic	Orbegoso.
04/01/1834	20/04/1845	Non Democratic	Bermúdez, Salazar (2), Salaverry, Gamarra, Lavalle, Santa Cruz, Tristán, Gamarra, Menéndez (3), Crisóstomo, Vidal, Figuerola (2), Vivanco, Nieto, Elías.
20/04/1845	05/01/1855	Democratic	Castilla, Echenique, Medina.
05/01/1855	25/10/1858	Non Democratic	Castilla, Raygada.
25/10/1858	28/11/1865	Democratic	Castilla (2), Del Mar, San Román, Diez Canseco (2), Pezet.
28/11/1865	02/08/1868	Non Democratic	Prado, La Puerta, Diez Canseco.
02/08/1868	22/07/1872	Democratic	Balta.
22/07/1872	02/08/1872	Non Democratic	Gutiérrez, Herencia.
02/08/1872	23/12/1879	Democratic	Pardo (2), Costas, Prado, La Puerta.
23/12/1879	10/07/1881	Non Democratic	Piérola, García-Calderón.
10/07/1881	25/12/1882	Democratic	García-Calderón, Montero.
25/12/1882	03/06/1886	Non Democratic	Iglesias (2), Arenas
03/06/1886	04/02/1914	Democratic	Cáceres (2), Morales, Borgoño, Piérola, López de Romaña, Candamo, Calderón, Pardo, Leguía, Billinghurst.
04/02/1914	15/05/1914	Non Democratic	Benavides.
15/05/1914	04/07/1919	Democratic	Benavides, Pardo.
04/07/1919	12/10/1919	Non Democratic	Leguía.
12/10/1919	25/08/1930	Democratic	Leguía.
25/08/1930	08/12/1931	Non Democratic	Ponce, Sánchez, Elías, Jiménez, Samanez.
08/12/1931	27/10/1948	Democratic	Sánchez, Benavides, Prado, Bustamante.
27/10/1948	28/07/1950	Non Democratic	Odría, Noriega.

Table 8 (continued). Peru: political regimes since Independence, 1821 – 2001.

from	to	Regime [1]	Presidents
28/07/1950	18/07/1962	Democratic	Odría, Pardo.
18/07/1962	28/07/1963	Non Democratic	Pérez, Lindley
28/07/1963	03/10/1968	Democratic	Belaúnde
03/10/1968	28/07/1980	Non Democratic	Velasco, Morales
28/07/1980	05/04/1992	Democratic	Belaúnde, García, Fujimori
05/04/1992	28/07/1995	Non Democratic	Fujimori
28/07/1995	28/07/2001	Democratic	Fujimori (2), Paniagua.
Total			114 governments
Democratic			54
Non Democratic			60

Notes:
[1] *Democratic: Elected by general elections, by the Congress, or legal successor of a ruler elected by elections or the Congress; Non Democratic: rulers who attained power by <u>Coup d'Etat, Junta de Notables, Delegación,</u> and successors of a ruler who attained power by any of these means.*
[2] *In parenthesis, number of periods of government.*

Source: *Tuesta S., Fernando (2002).*

Table 9. Peru: Years of schooling and probability of completing several education levels, 2002 [1].

	Years of schooling (OLS)		Elementary school (Logit)		High School (Logit)		Post High School (Logit)	
	Coef.	Signif.	Coef.	Signif.	Coef.	Signif.	Coef.	Signif.
Region of Birth [2]								
A2	-1.29	**0.05**	0.23	**0.84**	-1.53	**0.02**	-1.55	**0.00**
A3	0.82	**0.20**	-0.25	**0.82**	-1.48	**0.02**	-1.06	**0.02**
B	0.44	**0.49**	-0.42	**0.70**	-1.52	**0.02**	-0.88	**0.05**
C	-0.22	**0.73**	-0.50	**0.65**	-2.08	**0.00**	-1.35	**0.01**
D	-1.69	**0.01**	-1.51	**0.16**	-2.39	**0.00**	-1.47	**0.00**
E	-1.87	**0.00**	-1.53	**0.16**	-3.04	**0.00**	-2.13	**0.00**
Region of Residence [3]								
A2_res	-3.31	**0.00**	-1.32	**0.00**	-1.70	**0.00**	-1.57	**0.00**
A3_res	-3.26	**0.00**	-1.58	**0.00**	-1.64	**0.00**	-1.18	**0.00**
B_res	-5.11	**0.00**	-2.29	**0.00**	-2.44	**0.00**	-2.02	**0.00**
C_res	-6.62	**0.00**	-2.95	**0.00**	-3.22	**0.00**	-2.40	**0.00**
D_res	-6.09	**0.00**	-2.68	**0.00**	-2.84	**0.00**	-2.17	**0.00**
E_res	-4.60	**0.00**	-2.25	**0.00**	-1.95	**0.00**	-1.41	**0.00**
Age	-0.10	**0.00**	-0.04	**0.05**	-0.62	**0.00**	-0.04	**0.00**
Age*A2	0.02	**0.21**	-0.01	**0.54**	-0.07	**0.00**	0.03	**0.01**
Age*A3	-0.04	**0.02**	-0.02	**0.40**	0.02	**0.10**	0.02	**0.13**
Age*B	-0.05	**0.00**	-0.02	**0.31**	0.01	**0.36**	0.00	**0.85**
Age*C	-0.04	**0.02**	-0.02	**0.40**	0.01	**0.56**	0.01	**0.45**
Age*D	-0.03	**0.04**	-0.01	**0.55**	0.01	**0.28**	0.01	**0.31**
Age*E	-0.05	**0.00**	-0.02	**0.37**	0.01	**0.28**	0.01	**0.33**
Gender [6]	-1.76	**0.00**	-0.98	**0.00**	0.01	**0.26**	-0.25	**0.00**
Constant	22.45	**0.00**	8.07	**0.00**	7.14	**0.00**	2.98	**0.00**
Observations	37858		37858		37858		37858	
Wald chi2	955.52**[7]**		4519.58		4636.72		2070.49	
Prob > chi2	0.0000**[8]**		0.0000		0.0000		0.0000	
Pseudo R-squared	0.38**[9]**		0.25		0.23		0.13	
Log-pseudo likelihood	4.1532**[10]**		-17595.143		-19875.175		-14212.622	

Notes:
[1] *For people aged 25 or older at the time of the survey.*
[2] *X: individuals born in Region x.*
[3] *X_res: individuals resident in Region x.*
[4] *A1: Lima – Core, A2: Lima – Periphery, A3: Local core, B: Rest Coast, C: Amazonian, D: Rest Andes, E: Southern Andes.*
[5] *Regression with robust standard errors.*
[6] Gender: Male = 0, Female = 1.
[7] F statistic.
[8] Prob > F.
[9] R-squared.
[10] Root mean squared errors.

Source: *Enaho, 2002.*

Table 10. Peru: Probability of being a white-collar worker or wage earner, 2002 [1].

Years of schooling	White collar				Wage earner			
	Model 1		Model 2		Model 3		Model 4	
	Coef.	Sign.	Coef.	Sign.	Coef.	Sign.	Coef.	Sign.
Region of Birth [2]								
A2	-0.33	**0.04**	0.55	**0.59**	-0.20	**0.23**	-0.58	**0.44**
A3	-0.55	**0.00**	0.20	**0.84**	-0.18	**0.29**	-0.50	**0.49**
B	-0.82	**0.00**	0.21	**0.83**	-0.39	**0.02**	-0.30	**0.68**
C	-0.89	**0.00**	-2.26	**0.03**	-0.57	**0.00**	-1.22	**0.10**
D	-1.16	**0.00**	-0.75	**0.44**	-0.53	**0.00**	-0.39	**0.59**
E	-1.60	**0.00**	-0.49	**0.61**	-0.84	**0.00**	-0.58	**0.42**
Region of Residence [3]								
A2_res	-0.55	**0.00**	0.22	**0.16**	-0.30	**0.04**	0.06	**0.70**
A3_res	-0.35	**0.01**	0.24	**0.14**	-0.47	**0.00**	-0.15	**0.33**
B_res	-1.15	**0.00**	-0.14	**0.39**	-0.60	**0.00**	-0.01	**0.95**
C_res	-1.30	**0.00**	0.20	**0.28**	-1.12	**0.00**	-0.31	**0.06**
D_res	-1.40	**0.00**	-0.19	**0.28**	-1.37	**0.00**	-0.69	**0.00**
E_res	-0.90	**0.00**	-0.15	**0.37**	-1.01	**0.00**	-0.54	**0.00**
Schooling			0.38	**0.00**			0.12	**0.02**
Schooling*A2			-0.05	**0.53**			0.04	**0.48**
Schooling*A3			-0.02	**0.72**			0.05	**0.40**
Schooling *B			-0.04	**0.59**			0.01	**0.83**
Schooling *C			0.16	**0.04**			0.09	**0.11**
Schooling *D			0.04	**0.59**			0.03	**0.56**
Schooling *E			0.01	**0.86**			0.03	**0.53**
Gender [6]	-0.11	**0.01**	0.03	**0.54**	-0.78	**0.00**	-0.68	**-0.11**
Constant	0.50	**0.01**	-5.41	**0.00**	2.00	**0.00**	0.04	**0.50**
Observations	26400		26400		26400		26400	
Wald chi2	1261.85		2075.65		1495.73		2470.3	
Prob > chi2	0.000		0.000		0.000		0.000	
Pseudo R2	0.0816		0.3098		0.0767		0.1465	

Notes:
[1] *For economically active population aged 25 or older at the time of the survey.*
[2] *X: individuals born in Region x.*
[3] *X_res: individuals resident in Region x.*
[4] *A1: Lima – Core, A2: Lima – Periphery, A3: Local core, B: Rest Coast, C: Amazonian, D: Rest Andes, E: Southern Andes.*
[5] *Regression with robust standard errors.*
[6] *Gender: Male = 0, Female = 1.*

Source: *Enaho, 2002.*

Table 11. Peru: Lag in years of schooling, until 14 years of education (OLS) [1].

	Since elementary school				Since high school			
	Individuals		Households		Individuals		Households	
	Coef.	Signif.	Coef.	Signif.	Coef.	Signif.	Coef.	Signif.
Region of birth **[2]**:								
1. Individuals								
A2	0.39	**0.00**			0.51	**0.00**		
A3	0.29	**0.00**			0.46	**0.00**		
B	0.58	**0.00**			0.83	**0.00**		
C	0.59	**0.00**			0.93	**0.00**		
D	0.73	**0.00**			1.10	**0.00**		
E	0.87	**0.00**			1.24	**0.00**		
2. Household head								
A2_hh	-0.04	**0.71**	-0.07	**0.60**	-0.24	**0.24**	-0.16	**0.42**
A3_hh	-0.05	**0.68**	-0.07	**0.61**	-0.14	**0.47**	-0.08	**0.64**
B_hh	0.03	**0.79**	0.06	**0.67**	-0.09	**0.65**	0.09	**0.66**
C_hh	0.03	**0.82**	0.01	**0.97**	0.02	**0.91**	0.14	**0.48**
D_hh	0.11	**0.34**	0.16	**0.24**	0.05	**0.78**	0.21	**0.26**
E_hh	-0.01	**0.97**	0.11	**0.43**	-0.14	**0.47**	0.10	**0.61**
Region of residence **[3]**:								
A2_res	0.19	**0.12**	0.33	**0.01**	0.15	**0.43**	0.34	**0.06**
A3_res	0.30	**0.03**	0.38	**0.00**	0.26	**0.23**	0.51	**0.01**
B_res	0.29	**0.04**	0.55	**0.00**	0.30	**0.20**	0.73	**0.00**
C_res	0.70	**0.00**	0.96	**0.00**	0.86	**0.00**	1.46	**0.00**
D_res	0.62	**0.00**	0.99	**0.00**	0.79	**0.00**	1.50	**0.00**
E_res	0.30	**0.03**	0.72	**0.00**	0.35	**0.10**	1.10	**0.00**
Age **[6]**	0.18	**0.00**	0.15	**0.00**	0.33	**0.00**	0.32	**0.00**
Schooling_hh **[7]**	0.00	**0.06**	0.00	**0.02**	0.00	**0.08**	0.00	**0.14**
hh_female **[8]**	0.11	**0.01**	0.09	**0.06**	0.16	**0.01**	0.13	**0.08**
Constant	-2.27	**0.00**	-1.70	**0.00**	-4.91	**0.00**	-4.60	**0.00**
Observations		23478		10422		10227		6484
F statistic		162.02		86.47		62.92		44.9
Prob > F		0.0000		0.0000		0.0000		0.0000
R squared		0.22		0.19		0.16		0.14
Root MSE		1.5447		1.2783		1.9509		1.8047

Notes:
[1] *For the sons and daughters of the household head who were, at April 1rst, 2002, between 6 and 20 years old ("elementary school" columns); and between 12 to 20 years old ("high school" columns).*
[2] *X: individuals born in Region x.*
[3] *X_res: individuals resident in Region x.*
[4] *A1: Lima – Core, A2: Lima – Periphery, A3: Local core, B: Rest Coast, C: Amazonian, D: Rest Andes, E: Southern Andes.*
[5] *Regression with robust standard errors.*
[6] *Age for households refers to the average age of the sons of the household head.*
[7] *schooling_hh: years of schooling of the household head.*
[8] *hh_female: the household head is a female.*

Source: *Enaho, 2002***.**

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Appendix A. Enaho 2002 sampling methodology

The Peruvian statistical institute, INEI, has conducted yearly since 1995 the National Household Survey, Enaho (<u>Encuesta Nacional de Hogares</u>). In 2002, it carried out the largest survey in the series, which covered more than 18.5 thousand households and 85 thousand individuals. The sample is based on the information from 1999-2000 pre-census and on cartographic material, which estimated the total number of households in Peru (at near 6.1 million) and their distribution by department. The universe and the sample refer to the place of residence of the households and individuals. The confidence interval of the sample estimates is 95 percent. Table A.1 shows the universe values, the distribution of the sample by departments and the implicit (average) expansion factor.

The source of all calculations and tables presented in this Appendix and others is the Enaho 2002 database. The databases and technical documentation can be downloaded from www.inei.gob.pe.

Table A1. Enaho 2002: Sampling stratification, department-level breakdown.

Department	Households			Individuals		
	Estimated universe	Sample size	Average expansion factor	Estimated universe	Sample size	Average expansion factor
Amazonas	98,838	619	159.7	455,352	2,847	159.9
Ancash	250,572	824	304.1	1,170,884	3,890	301.0
Apurímac	111,154	567	196.0	490,721	2,509	195.6
Arequipa	265,074	794	333.8	1,135,810	3,421	332.0
Ayacucho	132,671	833	159.3	582,078	3,794	153.4
Cajamarca	317,721	844	376.4	1,564,770	4,135	378.4
Callao	163,638	328	498.9	727,961	1,471	494.9
Cusco	289,362	774	373.9	1,268,341	3,392	373.9
Huancavelica	103,695	682	152.0	465,280	3,095	150.3
Huánuco	181,517	740	245.3	863,911	3,611	239.2
Ica	166,045	770	215.6	728,409	3,535	206.1
Junín	284,122	799	355.6	1,299,176	3,673	353.7
La Libertad	339,917	766	443.8	1,574,080	3,554	442.9
Lambayeque	234,279	780	300.4	1,164,656	3,998	291.3
Lima	1,810,586	2,108	858.9	8,320,664	9,723	855.8
Loreto	182,196	658	276.9	970,649	3,493	277.9
Madre de Dios	25,176	487	51.7	109,727	2,151	51.0
Moquegua	43,526	642	67.8	167,718	2,449	68.5
Pasco	60,045	546	110.0	280,310	2,559	109.5
Piura	337,425	952	354.4	1,738,847	4,911	354.1
Puno	313,214	785	399.0	1,329,614	3,354	396.4
San Martín	171,173	682	251.0	807,931	3,187	253.5
Tacna	80,290	626	128.3	307,631	2,443	125.9
Tumbes	50,207	467	107.5	216,134	2,036	106.2
Ucayali	101,199	525	192.8	479,555	2,484	193.1
Peru	6,113,642	18,598	328.7	28,220,209	85,715	329.2

Source: *Enaho, 2002.*

Appendix B. Sample size and regions

The 2002 Enaho collected information on the place of birth (at district level) of each individual surveyed. The question then becomes how to transform a sample initially designed by place of residence into another by place of birth. To maintain the representativeness of this new sample structure, the same initial weights were applied to households. The districts were then aggregated into eight "ethnic regions", as described in Section 2 of the text. This permitted estimation of the implicit value of the universe for each region.

Once grouped by the place of birth of the household head, the 2002 Enaho has the sample size, average expansion factors and estimated universe shown in the first three columns of Table B1.The resulting structure by "ethnic regions" is highly consistent with that obtained from the 1993 National Census. Also, the structure for each "ethnic region" without the weights is very similar to that obtained with weights.

All the tables reported in this paper were replicated without the expansion factors. The results were very similar to those obtained with the expansion factors. Although not reported here, they are available upon request.

To transform household data into EAP data, we calculated the number of workers aged 25 or older in each household, which averaged two. The last three columns of Table B1 present the number of those individuals, the average expansion factors and the corresponding estimated universe for the economically active population aged 25 or older.

The definition of the ethnic regions is as follows:

A1: Lima – core: districts of Barranco, Jesus Maria, La Molina, Lince, Magdalena, Miraflores, Pueblo Libre, San Borja, San Isidro, San Miguel, Santiago de Surco and Surquillo;
A2: Lima – periphery: province of Callao and all the districts of Metropolitan Lima not included in Lima – core;
A3: Local – core: districts that are capital of provinces that are capital of their departments (except for the district of Lima);
B: Rest Coast: excludes Metropolitan Lima and Local core;
C: Amazonian: excludes Local core;
D: Central and Northern Andes: excludes Local core;
E: Southern Andes: excludes Local core; and
F: Foreign country.

These regions cover the whole country without overlapping. We used the INEI definitions for "Coast", "Amazonian", "Andes"; "Northern", "Central" and "Southern", with one exception. According to the INEI definition, the Andean areas of the departments of Ayacucho and Huancavelica are included in the Central Andes. Nevertheless, according to the reasoning of Section 2, they should be included in the Southern Andes. Since our definitions were thought *ethnically* and not just *geographically*, we included the Andean parts of Ayacucho and Huancavelica in the Southern Andes.

In order to construct the inter-regional migration matrix, the household heads were grouped by region of birth and by region of residence. The regions of residence were

defined with exactly the same definition as the regions of birth, as described above. Table B2 shows the matrix in absolute values.

To construct the inter-marriage matrix by region of birth, the regions of birth of the household head and his (her) spouse were determined. Then the information was collapsed by pairs in order to obtain the inter-marriage matrix presented in Table B3.

Table B1. 2002 Enaho: Number of households by region of birth of the household head [1].

Region of birth	Households				EAP 25+				EAP 25+ per household
	Number of households	Average expansion factor	Estimated universe	Share of households (%)	Number of individuals	Average expansion factor	Estimated total	Share of EAP 25+ (%)	
A1	114	895	101,989	1.7	308	916	282,086	2.8	2.8
A2	837	677	566,920	9.3	1,707	713	1,216,751	12.1	2.1
A3	2,962	286	846,163	13.8	5,054	275	1,391,040	13.8	1.6
B	2,906	334	969,883	15.9	4,819	330	1,592,390	15.8	1.6
C	2,011	259	520,684	8.5	3,125	260	813,990	8.1	1.6
D	4,458	368	1,641,679	26.9	6,838	368	2,517,102	25.0	1.5
E	5,260	274	1,439,504	23.5	8,174	272	2,224,908	22.1	1.5
F	31	635	19,693	0.3	30	586	17,576	0.2	0.9
No data	19	375	7,129	0.1	27	457	12,335	0.1	1.7
Peru	18,598	329	6,113,643	100.0	30,082	335	10,068,177	100.0	1.6

Notes:
[1] *For households, region of birth of the household head. For EAP 25+, region of birth of the individuals.*
[2] *A1: Lima – Core, A2: Lima – Periphery, A3: Local core, B: Rest Coast, C: Amazonian, D: Rest Andes, E: Southern Andes, F: Foreign Country.*

Source: *Enaho, 2002.*

Table B2. Inter-regional migration matrix, 2002 [1].

Region of Residence	Region of Birth									
	Peru	A1	A2	A3	B	C	D	E	F	No data
A1	289,506	49,502	80,381	74,911	16,417	9,521	36,458	9,871	12,446	0
A2	1,500,193	47,853	438,648	227,680	171,697	42,133	317,897	247,890	3,965	2,429
A3	545,065	2,576	9,637	267,187	70,636	40,700	64,503	87,423	1,357	1,047
B	1,103,022	867	20,902	114,609	673,325	12,215	196,387	80,776	290	3,652
C	646,011	378	4,210	59,522	14,154	407,415	114,996	44,133	1,203	0
D	968,190	110	4,582	25,452	9,354	4,015	905,656	19,020	0	0
E	1,061,656	704	8,560	76,802	14,300	4,685	5,783	950,390	432	0
Peru	6,113,643	101,989	566,920	846,163	969,883	520,684	1,641,679	1,439,503	19,693	7,129

Notes:
[1] *For household heads.*
[2] *A1: Lima – core, A2: Lima – periphery, A3: Local core, B: Rest Coast; C: Amazonian; D: Rest Andes; E: Southern Andes, F: Foreign Country.*

Source: *Enaho, 2002.*

Table B3. Peru: Inter-marriage matrix, by region of birth, 2002 [1].

Male	Female										
	Peru	w/o spouse	A1	A2	A3	B	C	D	E	F	No data
w/o spouse	1,172,162	--	18,850	131,931	196,858	171,845	79,263	295,373	270,757	4,274	3,011
A1	87,403	11,140	20,228	18,697	7,610	8,093	164	10,801	6,310	4,360	0
A2	435,253	62,677	24,140	200,408	46,363	36,133	12,697	26,954	22,176	3,705	0
A3	651,073	88,034	13,283	51,559	282,463	59,516	42,219	61,818	51,003	655	524
B	796,100	97,425	3,075	46,547	60,561	495,958	15,307	48,887	25,714	233	2,394
C	439,210	52,742	4,142	7,727	31,171	13,036	297,667	22,071	10,483	171	0
D	1,345,389	167,554	5,570	50,618	67,342	61,701	46,148	908,245	37,910	301	0
E	1,166,941	164,208	4,930	25,499	66,306	29,787	15,573	40,153	819,921	564	0
F	15,419	1,779	2,927	3,877	2,777	1,757	758	0	0	1,543	0
No data	4,693	798	0	691	0	1,981	0	262	0	0	962
Peru	6,113,642	646,357	97,144	537,553	761,451	879,807	509,796	1,414,563	1,244,274	15,805	6,891

Notes:
[1] *For household heads and their spouses.*
[2] *A1: Lima – core, A2: Lima – periphery, A3: Local core, B: Rest Coast; C: Amazonian; D: Rest Andes; E: Southern Andes, F: Foreign Country.*

Source: *Enaho, 2002.*

Appendix C. Education and region of birth

The 2002 *Enaho* includes a module on education containing data of all individuals above three years old. The original module covered 78,396 individuals (18,598 households). The first step was to construct the "years of schooling" variable. The Peruvian educational system has the following levels (the length in years is in parentheses): pre-school (1-2), elementary (6), high school (5), superior (5 to 7 for university and 3 for technical careers) and post graduate (usually 2). Since the survey does not include the number of years if the respondent is in pre-school, one year of schooling was assigned to those in pre-school. Second, when the individuals reported zero years of incomplete elementary schooling, they were assigned to pre-school, and thus given one year of schooling. Third, there is no information on the length of the university career of post-graduates, so we have assigned 5 years (the median for all pre-graduate careers), though some careers (like law or medicine) take more time. Since there are more non-indigenous physicians and lawyers, this reduces the years of schooling of the non-indigenous groups, underestimating the HI and biasing the results against our hypothesis, i.e., it reduces inequality in human capital.

From the 78,333 individuals for whom there is information on place of birth, there is complete information on years of schooling for 78,058 individuals (18,598 household heads). From this group, we selected the people aged 25 or older at the time of the survey; when expanded, they total almost 13 million (Table C1). The same procedure was applied to the 1993 Census, with Table C2 presenting the results.

With the information in Table C1, we can illustrate the concept of Horizontal Inequalities. As an example, we show the horizontal inequality between individuals born in A (Lima and Callao) and E (Southern Andes) in terms of years of schooling (Figure C1). The blue line shows the observed density function of the educational level for individuals born in Lima and Callao. It peaks at the high-school level and is biased towards higher levels of education. By contrast, the density function corresponding to individuals born in the Southern Sierra peaks at elementary school and is biased towards lower levels of education.

The usual studies would analyse the dotted line, which shows the vertical inequality. The aggregate density function is slightly biased towards the lower levels, but it is nearly unbiased. By contrast, the analysis of horizontal inequality shows that the sample is formed by two clearly different groups: one biased towards higher levels of education and the other biased towards lower levels.

Table C1. Peru: Education level by region of birth, 2002 [1].

Level of education	Peru	Region of birth								
		A1	A2	A3	B	C	D	E	F	No data
No level **[3]**	1,376,983	1,183	14,658	92,979	719634	142,397	73,341	330,899	340	1,553
Elementary school	4,548,786	21,965	180,629	452,538	1805271	774,723	504,024	802,755	2,625	4,257
High school	4,214,786	89,491	803,564	674,706	930577	860,732	326,106	515,923	6,364	7,324
Superior – Non University	1,279,358	81,437	267,700	266,030	240148	231,775	74,478	114,324	2,080	1,386
Superior – University	1,353,798	134,999	323,500	344,666	211917	160,075	57,048	106,483	13,874	1,235
Post Graduate	97,235	16,921	20,980	26,295	10838	3,729	5,357	4,741	8,113	262
No data	115,743	6,741	40,045	18,675	19007	22,556	97	6,783	1,577	262
Peru	12,986,689	352,737	1,651,075	1,875,889	3937392	2,195,987	1,040,450	1,881,908	34,972	16,278

Notes:
[1] *For people aged 25 and older at the time of the survey.*
[2] *A1: Lima – core, A2: Lima – periphery, A3: Local core, B: Rest Coast; C: Amazonian; D: Rest Andes; E: Southern Andes, F: Foreign Country.*
[3] *Includes pre-school.*

Source: *Enaho, 2002.*

Table C2. Peru: Education level by region of birth, 1993 [1].

Level of education	Peru	Region of birth								
		A1	A2	A3	B	C	D	E	F	No data
No level [3]	143,863	672	2,969	9,701	17,720	13,273	48,971	43,785	204	6,568
Elementary school	3,249,266	14,322	130,028	274,919	621,399	309,510	980,165	797,896	3,850	117,177
High school	2,564,350	67,349	461,184	400,624	530,116	152,263	447,106	416,625	10,301	78,782
Superior – Non University	807,462	47,671	181,941	143,756	161,257	39,200	117,809	93,106	4,050	18,672
Superior – University	1,110,842	89,007	251,026	247,496	166,988	34,038	153,532	128,628	15,791	24,336
No data	1,518,898	3,964	23,500	82,866	168,190	104,384	523,135	552,353	1,803	58,703
Peru	9,394,681	222,985	1,050,648	1,159,362	1,665,670	652,668	2,270,718	2,032,393	35,999	304,238

Notes:
[1] *For people aged 25 or older at the time of the census.*
[2] *A1: Lima – core, A2: Lima – periphery, A3: Local core, B: Rest Coast; C: Amazonian; D: Rest Andes; E: Southern Andes, F: Foreign Country*
[3] *Includes pre-school*

Source: *National Census, 1993.*
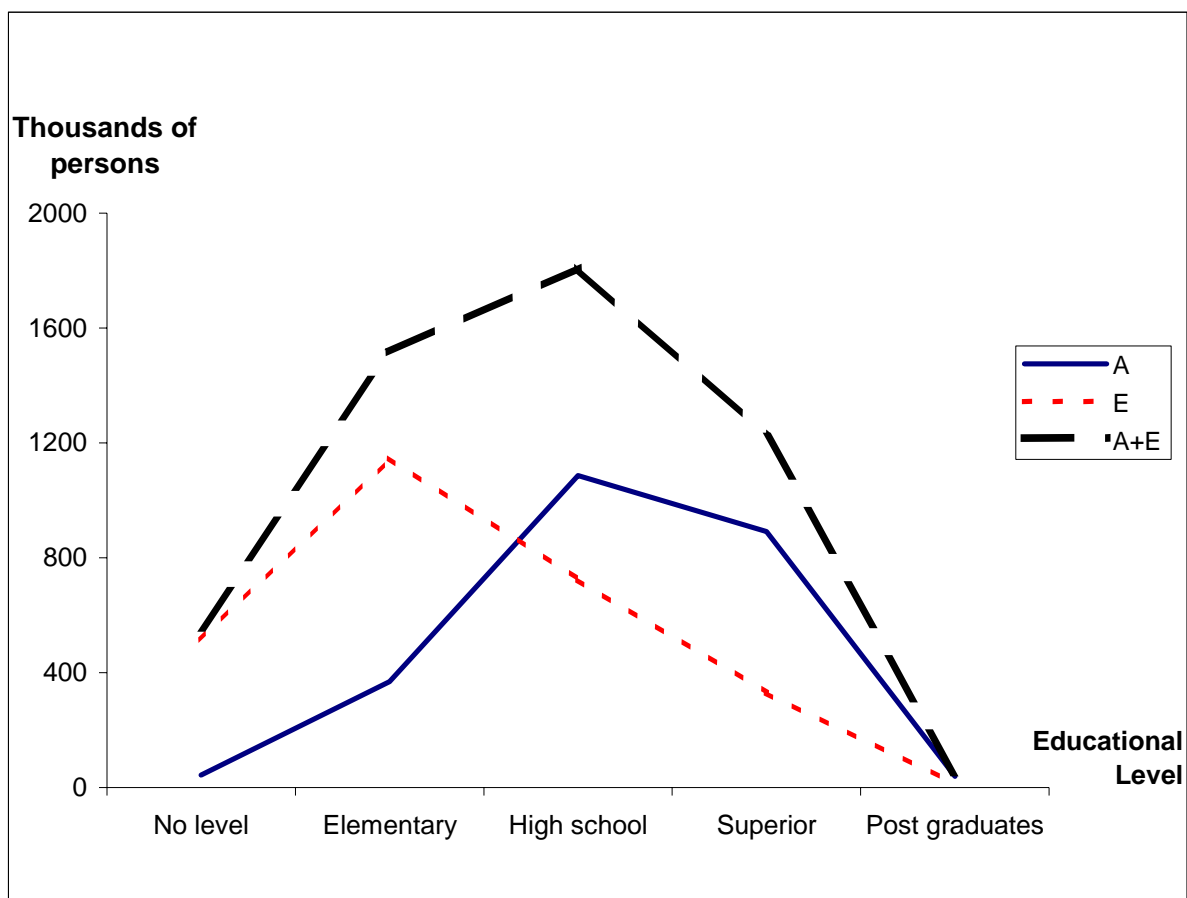
Figure C1. Vertical vs. horizontal inequality in education

Source: *Enaho, 2002*.

Appendix D. Social classes and ethnic groups

The 2002 *Enaho* includes a module on labour containing all individuals who, at the time of the survey, were above 14 years old. The original sample contains 56,371 individuals (Table D.1).

For these observations, the information on place of birth for 50 individuals (19 household heads) is missing. After cleaning these observations, 56,321 individuals remain, of which 18,579 are household heads.

The employed population consists of:
- people above 14 years old who participated in any economic activity, for at least one hour, during the period of reference (the week before the survey was taken);
- dependent workers who did not work because they were sick, on vacation, on strike, etc. but were paid;
- independent workers who were temporarily absent from work during the period of reference, but the firm where they work continued functioning;
- non-remunerated family workers who worked 15 hours or more during the period of reference; and
- members of the army and the police.

The unemployed population were:
- people 14 years old or older who during the previous week were actively seeking a job; and
- non-remunerated family workers who worked for less than 15 hours during the week prior to the interview.

Therefore, 39,873 individuals were included in the EAP, 16,162 were excluded and 336 were removed owing to a lack of information.

For the purposes of this study, the labour categories were grouped in the following clusters: big employers, small employers, white collar, blue collar, self employed–urban, self employed–rural and "other". Big employers are those in charge of more than ten remunerated workers; small employers are in charge of ten or less. In the Peruvian context, the threshold of ten remunerated workers is used by the INEI (the Peruvian statistical institute) to differentiate formal and informal employers.

The breakpoint between urban and rural is related to the size of the population: if there are 2000 or less individuals, the population is defined as rural; if there are more than 2000, it is labelled urban. This is also the threshold used by the INEI.

The "self employed worker" category includes a common figure in Peruvian labour market: the non-remunerated family worker. These workers are members of the family (or extended family) who do not receive money for their work, but rather food, a place to live and sometimes, education.

The application of our definitions does not alter the number of usable observations. The resulting sample was merged with that in Table 1 to include information on the education level of each labour category for the 56,371 observations in the labour questionnaire.

To make the comparisons with the previous tables more straightforward, we selected the EAP who, at the time of the survey, were 25 years old or older. This gave an estimated total of roughly 10 million people. Table D2 shows the results.

Table 2A shows the class composition of each ethnic group, while Table 2B shows the mean years of schooling (obtained as described in Appendix C) by labour category (as described above) and ethnicity for the EAP over 25 years old. Table 2C was obtained merging the information in Table 2A and Table 2B. The same procedure was applied to the 1993 Census database to obtain Table D3.

Table D1. Enaho 2002: Labour category and labour status.

Labour Category (INEI definitions)	Employed	Unemployed [1]	Non EAP [2]	No data	Total sample
Employer	2,082	0	0	0	2,082
Independent Worker	13,912	0	0	0	13,912
White Collar	6,407	0	0	0	6,407
Blue Collar	6,278	0	0	0	6,278
Non-remunerated Family Worker	7,079	238	1,767	0	9,084
Household Employee	991	0	0	0	991
Other	92	16	49	0	157
No data	0	2,778	14,346	336	17,460
Total	36,841	3,032	16,162	336	56,371

Notes:
[1] *Includes hidden and open unemployment, as well as non-remunerated family workers who work less than 25 hours per week.*
[2] *EAP: economically active population.*

Source: *Enaho, 2002.*

Table D2. Peru: Labour category and region of birth, 2002 [1].

Labour Category	Peru	Region of birth								
		A1	A2	A3	B	C	D	E	F	No data
Big employer [3]	26,532	1,453	1,355	2,501	9,574	4,168	4,005	3,477	0	00
Small employer[4]	579,163	10,871	32,026	81,801	219,562	100,478	45,690	82,408	5,483	845
White Collar	1,900,550	142,256	449,120	403,492	347,044	281,418	109,691	154,561	9,214	3,753
Blue Collar[5]	1,677,455	29,617	227,697	243,464	462,054	379,424	104,285	228,963	37	1,915
Independent – Urban [6]	2,602,474	62,225	336,425	447,925	697,915	479,294	204,384	368,200	1,554	4,552
Independent – Rural [6]	2,629,933	1,963	6,724	96,579	1,290,564	213,671	307,276	712,359	390	408
Other	13,813	1,623	1,790	1,561	4,077	2,214	185	2,364	0	00
No data	638,259	32,080	158,726	113,719	104,571	134,614	38,474	54,317	896	862
Peru	10,068,180	282,086	1,213,862	1,391,041	3,135,361	1,595,281	813,990	1,606,648	17,576	12,335

Notes:
[1] *For EAP aged 25 or older at the time of the survey.*
[2] *A1: Lima – core, A2: Lima – periphery, A3: Local core, B: Rest Coast; C: Amazonian; D: Rest Andes; E: Southern Andes, F: Foreign Country.*
[3] *Employer in charge of more than ten employees.*
[4] *Employer in charge of ten or less employees.*
[5] *Includes household employees.*
[6] *Includes family non-remunerated workers.*

Source*: Enaho, 2002.*

Table D3. Peru: Labour category and region of birth, 1993 [1].

Labour Category	Peru	Region of birth								
		A1	A2	A3	B	C	D	E	F	No data
Big employer [3]	21,369	2,299	4,625	4,198	3,232	823	2,643	1,992	1,015	542
Small employer [4]	124,030	6,040	18,409	21,285	22,391	8,063	23,176	19,066	1,890	3,710
White collar	1,404,210	94,671	317,380	265,348	245,481	63,462	202,752	170,030	10,995	34,091
Blue collar [5]	1,154,250	14,907	118,731	114,409	248,363	69,957	298,917	245,156	1,112	42,698
Independent – urban [6]	1,445,326	28,016	153,577	200,437	271,635	94,738	323,228	319,263	3,565	50,867
Independent – rural [6]	899,061	367	3,227	32,505	71,186	119,419	318,443	332,950	432	20,532
No data	19	1	11	2	4	0	1	0	0	0
Other	322,465	6,798	33,990	42,005	58,059	28,876	76,109	63,773	768	12,087
Peru	5,370,730	153,099	649,950	680,189	920,351	385,338	1,245,269	1,152,230	19,777	164,527

Notes:
[1] *For EAP aged 25 or older at the time of the census.*
[2] *A1: Lima – core, A2: Lima – periphery, A3: Local core, B: Rest Coast; C: Amazonian; D: Rest Andes; E: Southern Andes, F: Foreign country.*
[3] *Employer in charge of more than ten employees.*
[4] *Employer in charge of ten or less employees.*
[5] *Includes household employees.*
[6] *Includes family and non-remunerated workers.*

Source: *National Census, 1993.*

Appendix E. Language

Despite our argument that language is just a partial ethnic marker, it is a useful tool in identifying the hard core of the indigenous population. The 2002 Enaho does not include any question about language. Nevertheless, the 2001 Enaho does, so we will use the results of this survey to construct the matrices for inter-marriage by mother tongue and for inter-generational transmission of language.

In every case, the population was grouped in two, according to whether they (or their parents or grandparents, according to each matrix) speak an indigenous or a non-indigenous language. Indigenous languages comprise Quechua, Aymara and the languages of the Amazonian. As seen in Figure 1, this list is far too long to write out comprehensively. Non-indigenous languages include mainly Spanish but also foreign languages.

Table E1 shows the inter-marriage matrices by mother tongue. The first matrix shows inter-marriage by mother tongue of the individuals. The second and third show inter-marriage by the mother tongue of the mother and father, respectively. The fourth and fifth matrices show inter-marriage by the mother tongue of the maternal and paternal grandparents, respectively. In every case the diagonal dominates, meaning there is very little inter-marriage between the indigenous and non-indigenous speakers. This means that the indigenous hard core has little contact with the rest of the population.[17]

Table E2 shows the inter-generational transmission of language matrix. It shows how indigenous languages pass from parents to sons, and from grandparents to grandsons. Here the positions (1,1) and (4,4) dominate over the rest. This means that the language passes from grandparents to grandsons almost without alteration. Roughly 85 percent of the population speaks the same language as their grandparents. Taking maternal or paternal grandparents gives the same result.

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[17]   Remember that there are indigenous people who speak non-indigenous languages, mainly Spanish.

Table E1. Peru: Inter-marriage matrices, by mother tongue, 2001 [1].

Mother tongue

	Non-Indigenous	Indigenous	Total
Non-Indigenous	2,602,848	162,565	2,765,413
Indigenous	196,595	968,829	1,165,424
Total	2,799,443	1,131,394	3,930,837

Mother's mother tongue

	Non-Indigenous	Indigenous	Total
Non-Indigenous	2,266,170	221,479	2,487,649
Indigenous	257,006	1,186,901	1,443,907
Total	2,523,176	1,408,380	3,931,556

Father's mother tongue

	Non-Indigenous	Indigenous	Total
Non-Indigenous	2,350,286	236,856	2,587,142
Indigenous	248,063	1,096,525	1,344,588
Total	2,598,349	1,333,381	3,931,730

Maternal grandparents' mother tongue

	Non-Indigenous	Indigenous	Total
Non-Indigenous	2,109,171	282,211	2,391,382
Indigenous	300,087	1,240,859	1,540,946
Total	2,409,258	1,523,070	3,932,328

Paternal grandparents' mother tongue

	Non-Indigenous	Indigenous	Total
Non-Indigenous	2,157,354	278,339	2,435,693
Indigenous	318,681	1,177,955	1,496,636
Total	2,476,035	1,456,294	3,932,329

Notes:
[1] *For household heads and spouses. The columns are for females, the rows are for males.*
[2] *Indigenous languages: Quechua, Aymara, other indigenous languages.*
[3] *Non-indigenous languages: Spanish, foreign languages.*

Source: *Enaho, 2001.*

Table E2. Peru: Inter-generational transmission of language, 2001 [1].

Maternal grandparents' mother tongue	Non-Indigenous **[2]**		Indigenous **[3]**		Total
Mother's mother tongue	Non-Indigenous	Indigenous	Non-Indigenous	Indigenous	
Mother tongue					
Non-Indigenous	2,295,185	42,898	185,787	283,057	2,806,927
Indigenous	26,252	54,945	16,208	1,087,525	1,184,930
Total	2,321,437	97,843	201,995	1,370,582	3,991,857

Paternal grandparents' mother tongue	Non-Indigenous		Indigenous		Total
Father's mother tongue	Non-Indigenous	Indigenous	Non-Indigenous	Indigenous	
Mother tongue					
Non-Indigenous	2,336,173	29,367	211,829	229,801	2,807,170
Indigenous	45,275	55,046	30,375	1,054,234	1,184,929
Total	2,381,448	84,413	242,204	1,284,035	3,992,100

Notes:
[1] *For household heads.*
[2] *Indigenous languages: Quechua, Aymara, other indigenous languages.*
[3] *Non-indigenous languages: Spanish, foreign languages.*

Source: *Enaho, 2001.*

Appendix F. Peasant movements and ethnic conflicts between 1956 and 1964

There is no systematic database tracking Peruvian peasant movements over a long period of time. Kapsoli (1982) makes reference to the major movements only. The compilation made by Guzmán and Vargas (1981) is a valuable exception. Despite the short span of time (just nine years), the analysed period covers the years prior to the Land Reform Program, when peasant movements peaked.

Guzmán and Vargas elaborate a chronology of peasant movements from newspapers of different views to incorporate information from different sides. Obviously, there is still a bias because their sample includes only movements that were included in the press. The selection of a wide set of newspapers reduces this bias, so any missing movements are likely to be very few in number and of little importance.

Guzmán and Vargas include many types of movements: land invasions, legal actions (including formal letters to the President and letters published in newspapers), strikes, fights between indigenous communities, etc. The first part of Table F1 presents the number of peasant movements by ethnic region. As one may see, the social disorder (measured by the number of incidents) generated by these movements clearly increased in the last years analyzed as land reform became imminent. Afterwards, as discussed in the standard literature, the peasant movements lost relevance.

As we may see, not every movement listed by Guzmán and Vargas is an ethnic conflict. The number of movements that most probably were ethnic conflicts is presented by ethnic region in the second part of Table F1. As stated in the text, an ethnic conflict is a conflict (violent or not) between the indigenous and non-indigenous population that does not include class relations. So, if indigenous people fight against <u>hacendados</u> for higher wages or less hours of work, it is not an ethnic conflict. But if the same indigenous people fight against the same <u>hacendados</u> for the control of land, it is an ethnic conflict.

More explicitly, we have considered as "ethnic conflict" every conflict caused by abuses originating from relations of colonial domination, e.g., land expropriation, free labour, payments for grazing on previously communal lands. Some cases are very clear, such as "union declares strike for higher wages", or "indigenous community recovers lands previously stolen by hacendados", but many are more ambiguous, such as "peasants denounce abuses by the hacendados". Violence is not a necessary condition for a conflict, since conflicts may be legal in nature.

The following conflicts were considered ethnic:

1. Conflict between members of a community and employees.
2. Conflict between peasants and authorities. Although authorities were not always white, they generally represented the interests of white people. Hence, it was <u>as if</u> they were struggling against whites.
3. Congresses of peasant federations or associations of peasant communities where ethnic problems were explicitly treated.
4. Non-indigenous groups struggling together with indigenous groups in support of the latter, e.g., blue-collar workers and peasants demanding land reform.
5. Achievement of legal recognition by a community.

The following were not considered ethnic conflict:

1. Conflicts between indigenous communities, even if they were for land.
2. Conflicts originated by unions in search of higher wages, less working hours or extra payment for extra working hours.

Each region consists of the following departments: <u>Coast</u>: Callao, Ica, Lambayeque, Lima, Moquegua, Piura, Tacna and Tumbes. <u>Amazonian</u>: Amazonas, Loreto, Madre de Dios and San Martín. <u>Northern and Central Andes</u>: Huánuco, Junín and Pasco. <u>Southern Andes</u>: Apurímac, Ayacucho, Huancavelica and Puno.

Since some departments cover more than one region, they were separated at the province level. Ancash was considered in the Northern and Central Andes, except for the provinces of Casma and Santa, which are in the Coast. Arequipa was considered Southern Andes, except for the provinces of Islay and Camaná, which are in the Coast. Cajamarca was considered in the Northern and Central Andes, except for province of Jaen which is in the Amazonian. Cusco was considered in the Southern Andes, except for the province of La Convención, which is in the Amazonian. La Libertad was considered in the Northern and Central Andes, except for the provinces of Trujillo and Pacasmayo, which were included in the Coast.

Table F1. Peru: Peasant movements by region, 1956-1964.

| Region | 1956 | 1957 | 1958 | 1959 | 1960 | 1961 | 1962 | 1963 | 1964 | 1956-1964 | Population, 1961 | |
											Rural	Urban
Peasant Movements [1]												
Coast	12	25	28	25	33	30	37	42	21	253	1,144,339	3,016,211
Amazonian	5	2	5	1	5	4	18	10	4	54	1,766,549	631,706
Northern and Central Andes	8	13	23	12	23	33	37	55	25	229	1,826,944	751,255
Southern Andes	5	11	11	17	17	25	51	65	45	247	470,736	299,006
Total peasant movements	30	51	67	55	78	92	143	172	95	783	5,208,568	4,698,178
Ethnic Conflicts [2]												
Coast	10	7	5	5	8	9	8	30	8	90		
Amazonian	5	2	4	0	3	3	11	8	2	38		
Northern and Central Andes	6	12	16	9	18	18	31	50	13	173		
Southern Andes	5	5	7	12	13	22	33	45	31	173		
Total ethnic conflicts	26	26	32	26	42	52	83	133	54	474		

Notes:
[1] *Peasant movements include class and ethnic conflicts, conflicts between indigenous populations and government responses.*
[2] *Ethnic conflicts are conflicts (violent or not) between indigenous and non-indigenous populations.*

Source: *Guzmán and Vargas (1981) and National Census (1961).*

Table G1. Peru: Probability of completing of several education levels, 2002 (Probit specifications) [1].

	Elementary School			High School			Post High School		
	Coef.	Mg. Effect	Signif.	Coef.	Mg. Effect	Signif.	Coef.	Mg. Effect	Signif.
Region of birth [2]									
A2	0.31	0.09	**0.58**	-0.60	-0.21	**0.09**	-0.93	-0.13	**0.00**
A3	0.27	0.08	**0.62**	-0.54	-0.19	**0.12**	-0.63	-0.10	**0.02**
B	0.25	0.08	**0.64**	-0.54	-0.19	**0.12**	-0.59	-0.10	**0.03**
C	0.24	0.07	**0.66**	-0.92	-0.29	**0.01**	-0.89	-0.12	**0.00**
D	-0.34	-0.12	**0.52**	-1.12	-0.37	**0.00**	-0.94	-0.15	**0.00**
E	-0.35	-0.12	**0.51**	-1.50	-0.45	**0.00**	-1.31	-0.18	**0.00**
Region of residence [3]									
A2_res	-0.67	-0.23	**0.00**	-0.96	-0.33	**0.00**	-0.94	-0.15	**0.00**
A3_res	-0.84	-0.31	**0.00**	-0.92	-0.29	**0.00**	-0.70	-0.10	**0.00**
B_res	-1.24	-0.45	**0.00**	-1.40	-0.42	**0.00**	-1.18	-0.16	**0.00**
C_res	-1.63	-0.59	**0.00**	-1.87	-0.44	**0.00**	-1.37	-0.15	**0.00**
D_res	-1.48	-0.54	**0.00**	-1.63	-0.45	**0.00**	-1.25	-0.16	**0.00**
E_res	-1.22	-0.45	**0.00**	-1.12	-0.35	**0.00**	-0.87	-0.13	**0.00**
Age	-0.02	-0.01	**0.12**	-0.36	-0.14	**0.00**	-0.03	-0.01	**0.00**
Age*A2	-0.01	0.00	**0.38**	-0.03	-0.01	**0.00**	0.02	0.00	**0.02**
Age*A3	-0.02	-0.01	**0.16**	0.01	0.00	**0.30**	0.01	0.00	**0.14**
Age*B	-0.02	-0.01	**0.08**	0.00	0.00	**0.86**	0.00	0.00	**0.66**
Age*C	-0.02	-0.01	**0.11**	0.00	0.00	**0.78**	0.01	0.00	**0.26**
Age*D	-0.02	0.00	**0.18**	0.00	0.00	**0.68**	0.01	0.00	**0.19**
Age*E	-0.02	-0.01	**0.09**	0.00	0.00	**0.67**	0.01	0.00	**0.15**
Gender [6]	-0.56	-0.18	**0.00**	0.00	0.00	**0.63**	-0.14	-0.03	**0.00**
Constant	4.11	--	**0.00**	3.85	--	**0.00**	1.76	--	**0.00**
Log pseudo likelihood			-17634.1			-19876.9			-14189.6
Observations			37858			37858			37858
Wald chi2			5102.29			5372.68			2172.75
Prob > chi2			0.0000			0.0000			0.0000
Pseudo R2			0.25			0.23			0.13

Notes:
[1] *For people aged 25 or older at the time of the survey.*
[2] *X: individuals born in Region x.*
[3] *X_res: individuals resident in Region x.*
[4] *A1: Lima – Core, A2: Lima – Periphery, A3: Local core, B: Rest Coast, C: Amazonian, D: Rest Andes, E: Southern Andes.*
[5] *Regression with robust standard errors.*
[6] Gender: Male = 0, Female = 1.

Source: *Enaho, 2002.*

Table G2. Peru: Probability of being a white-collar worker or wage earner, 2002 (Probit specifications) [1].

	White collar						Wage earner					
	Model 1			Model 2			Model 1			Model 2		
	Coef.	Mg. Effect	Signif.	Coef.	Mg. Effect	Signif.	Coef.	Mg. Effect	Signif.	Coef.	Mg. Effect	Signif.
Region of birth [2]												
A2	-0.21	-0.05	**0.03**	0.41	0.09	**0.48**	-0.12	-0.05	**0.24**	-0.34	-0.13	**0.45**
A3	-0.34	-0.08	**0.00**	0.30	0.06	**0.59**	-0.10	-0.04	**0.31**	-0.30	-0.11	**0.48**
B	-0.51	-0.12	**0.00**	0.41	0.08	**0.46**	-0.24	-0.09	**0.02**	-0.20	-0.07	**0.65**
C	-0.54	-0.12	**0.00**	-0.90	-0.10	**0.13**	-0.35	-0.13	**0.00**	-0.69	-0.24	**0.11**
D	-0.70	-0.16	**0.00**	0.03	0.01	**0.96**	-0.32	-0.12	**0.00**	-0.22	-0.09	**0.60**
E	-0.93	-0.20	**0.00**	0.17	0.03	**0.76**	-0.51	-0.19	**0.00**	-0.32	-0.12	**0.45**
Region of residence [3]												
A2_res	-0.34	-0.09	**0.00**	0.10	0.02	**0.25**	-0.18	-0.07	**0.04**	0.04	0.01	**0.70**
A3_res	-0.22	-0.06	**0.01**	0.13	0.02	**0.18**	-0.29	-0.11	**0.00**	-0.09	-0.04	**0.33**
B_res	-0.68	-0.15	**0.00**	-0.10	-0.02	**0.31**	-0.36	-0.14	**0.00**	0.00	0.00	**0.97**
C_res	-0.76	-0.15	**0.00**	0.07	0.01	**0.53**	-0.69	-0.24	**0.00**	-0.19	-0.07	**0.06**
D_res	-0.81	-0.17	**0.00**	-0.14	-0.02	**0.17**	-0.83	-0.29	**0.00**	-0.42	-0.15	**0.00**
E_res	-0.54	-0.12	**0.00**	-0.11	-0.02	**0.26**	-0.62	-0.23	**0.00**	-0.33	-0.12	**0.00**
Schooling				0.23	0.04	**0.00**				0.07	0.03	**0.02**
Schooling *A2				-0.03	-0.01	**0.42**				0.02	0.01	**0.50**
Schooling *A3				-0.03	0.00	**0.47**				0.03	0.01	**0.39**
Schooling *B				-0.05	-0.01	**0.25**				0.01	0.00	**0.80**
Schooling *C				0.06	0.01	**0.16**				0.05	0.02	**0.13**
Schooling *D				-0.01	0.00	**0.72**				0.02	0.01	**0.58**
Schooling *E				-0.03	-0.01	**0.45**				0.02	0.01	**0.58**
Gender [6]	-0.07	-0.02	**0.00**	0.02	0.00	**0.54**	-0.48	-0.19	**0.00**	-0.40	-0.16	**0.00**
Constant	0.31	--	**0.00**	-3.19	--	**0.00**	1.22	--	**0.00**	0.01	--	**0.97**
Log pseudo likelihood			-12427			-9421			-16686			-15435
Observations			26400			26400			26400			26400
Wald chi2			1261.9			2071.4			1595.2			2798.8
Prob > chi2			0.0000			0.0000			0.0000			0.0000
Pseudo R2			0.08			0.30			0.08			0.15

Notes:
[1] *For people aged 25 or older at the time of the survey.*
[2] *X: individuals born in Region x.*
[3] *X_res: individuals resident in Region x.*
[4] *A1: Lima – Core, A2: Lima – Periphery, A3: Local core, B: Rest Coast, C: Amazonian, D: Rest Andes, E: Southern Andes.*
[5] *Regression with robust standard errors.*
[6] *Gender: Male = 0, Female = 1.*

Source: *Enaho, 2002.*

Appendix H. Software and databases

This technical appendix details the programs used to analyse the databases utilized in the paper.

The databases from the 2001 and 2002 *Enaho* were downloaded from www.inei.gob.pe.

The database from the 1993 census was obtained on CD format from the INEI.

The database from the Truth Commission was downloaded from www.cverdad.org.pe.

In all the cases, the original format was SPSS 9.0 for Windows. The databases were transferred to Stata 7.0 format with DBMS/COPY for Win95/98/NT V7.0.5 (with the option shrink sizes, to minimise space). Finally, we used Intercooled Stata 8.2 to work with the databases.