

SOCIAL EXCLUSION AND
POVERTY REDUCTION IN
LATIN AMERICAN AND
THE CARIBBEAN

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Editors

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SOCIAL EXCLUSION AS A DISTRIBUTION THEORY*

ADOLFO FIGUEROA

Why do countries differ in their degree of inequality? The answer to this question mostly has come from economic literature on growth and distribution. Some economists emphasize the link from output to distribution (Kuznets 1955), others from distribution to growth (Lewis 1954; Kaldor 1957). These links have a theoretical shortcoming, however; production and distribution are both endogenous variables in the standard general equilibrium theories (neoclassical, classical and Keynesian).

Even if these hypotheses could be generated from a theoretical system, the empirical evidence is statistically weak. A recent article by Furman and Stiglitz (1998) shows that there is very little evidence of the statistical relationship between inequality and growth (or income levels), and the existing data is from chronologies and cross-referenced information. Their conclusion is mainly based on a new international set of data compiled by the World Bank, which they call "the most comprehensive and carefully constructed" in existence (p. 226).

According to the same set of data, countries with similar levels of income show significant differences in their degrees of inequality. This is clearly the case in Third World countries. For instance, Latin America appears to be the region with the highest degree of income inequality in the world. The region has maintained this position since the 1950s (Deininger and Squire 1996).

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Why do Third World countries or regions differ in inequality? The aim of this paper is to develop a theoretical framework that attempts to explain such differences. The basic idea is to examine the role of the initial conditions in the process of growth and distribution. Some countries "were born" more unequal, more heterogeneous, than others. Standard theories have made this factor into an abstraction. These theories have assumed societies where all individuals are homogeneous in every respect, except in their endowments of economic assets. No other assets are allowed to exist in the economy. This assumption will be abandoned here. An abstract heterogeneous society, which I will call the Sigma economy, will be constructed here.

The paper is organized as follows. The theoretical construction is presented in sections one through three. Section four contains the empirical corroboration of some of the predictions of the theory—data from Latin American countries are utilized for this purpose. The paper ends with a section of conclusions.

A HETEROGENEOUS SOCIETY

Sigma is a capitalist democracy. Individuals are endowed with three types of assets: economic, political and cultural. Economic assets include several forms of capital: physical, financial, and human. Physical and financial forms of capital are highly concentrated in one social group, the capitalists.

Political assets are defined as the capability of exercising rights. Citizenship is thus a political asset, which gives rise to rights and duties. Due to inequality in the distribution of political assets, a hierarchy of citizens is created in society. As a consequence, social groups lower in the hierarchy have relatively limited access to economic rights established by society. Economic rights take the form of public goods, such as education, health services and social protection systems.

Sigma is a multicultural society. Groups differ in culture. These distinct cultures, however, do not have the same social valuation. They are ordered into a social hierarchy according to a valuation that has been historically constructed. Therefore, social groups are endowed with different cultural assets which are valued according to a hierarchy that attributes different value to their culture. The characteristics defining valuation may include race, language, gender, religion, caste, regional origin and customs. Cultural assets provide individuals with either social prestige or social stigma, which leads to discrimination and segregation. This unequal valuation of

cultural assets implies the existence of groups with different social status in society. In synthesis, while economic assets indicate what a person has, political and cultural assets indicate who a person is.

Contrary to economic assets, political and cultural assets are intangible; they are not tradable, and therefore they have no market value. However, as in the case of economic assets, they can be accumulated. The struggle for civil rights is the mechanism by which political rights are accumulated. It is clear that cultural assets can also be accumulated by individuals and groups through education, migration, social organization and *intermarriage, among other methods*.

The characteristics of the Sigma economy can be summarized by the following set of assumptions:

Institutional context. Rules: There is private property of the economic assets, and individuals can exchange goods subject to the norms of market and non-market exchange. There also exist formal and informal norms of discrimination and segregation in access to political and cultural assets. Organizations include households, capitalist businesses, and the government. Government controls the supply of money and public goods.

Rationality of agents. Individuals conform to the notion of *Homo economicus*. They seek to maximize their own material well being. They act pursuing self-interest.

Market relations. The market system operates with Walrasian and non-Walrasian markets.¹ There is overpopulation in the labor market, which means that the Walrasian wage rate is below the worker's subsistence income. Thus, the labor market is non-Walrasian. There is no market for physical capital services; that is, owners do not rent out their physical capital and prefer profits to rents.

Initial conditions. Individuals are endowed with unequal quantities of economic, political and cultural assets. The richer groups have more of every asset or the more valuable assets.

1. A market is Walrasian when the equilibrium price clears the market, eliminating any excess demand or excess supply (as in the potato market). Hence, market rationing of goods operates through prices. By contrast, a market is non-Walrasian when the equilibrium price does not clear the market. This market operates with quantitative rationing. Thus, in this market people are unable to realize the exchange of goods in the quantities they are willing to exchange at the prevailing market prices. This does not happen in a Walrasian market.

A MODEL OF THE SIGMA ECONOMY

In order to derive empirically testable hypotheses from this theory, a model of the Sigma economy must now be established. There are five assets in the economy: physical capital, human capital (high skill and low skill), political assets and cultural assets. There are three social groups: the capitalists and two types of workers. Ownership of physical capital is concentrated among the capitalists. The high skill workers will be called 'y-workers' and the low skill will be called 'z-workers.' Capitalists and y-workers have the same endowments of political and cultural assets, but these endowments are lower for z-workers. Capitalist businesses employ y-workers to produce good B, the only commodity produced in this economy. There is an overpopulation of y-workers. The total capital stock is insufficient to employ the total labor supply.

The 'z-workers' are endowed with lower amounts of all assets. In particular, they are workers with low human capital for the technology being used in the capitalist sector. Thus, their human capital endowments are not suitable for wage employment. They are not employable. They are not part of the labor supply in the labor market; that is, they tend to be excluded from the labor market. Capitalist firms cannot make profits employing them, because they would need to invest much in their training. At the same time, y-workers are in plentiful supply. It is the lack of profitability that lies behind the total exclusion of z-workers from the labor market.

THE LABOR MARKET

Capitalist firms seek profit maximization. In order to achieve this objective, firms need to apply incentives to extract the optimum work-intensity from y-workers (Shapiro and Stiglitz 1984, Bowles 1985). To make missing work costly for workers, the market wage rate must be higher than the opportunity cost of workers. In the Sigma economy, this opportunity cost is given by the income that workers can make as self-employed producers in the subsistence sector. The marginal productivity of labor in the subsistence sector is assumed to be subject to diminishing returns. The larger the quantity of self-employed workers the lower the marginal income in the sector; alternatively, the smaller the quantity of labor in the subsistence sector the higher the marginal income. Thus, when firms wish to employ

more y-workers, maintaining the same work intensity, they would need to pay higher wages, because the opportunity cost of workers increases.

On the wage-employment plane, there will be three curves now, instead of the traditional demand and supply curves of economics textbooks. The labor demand curve shows a downward slope, the supply curve (given by the curve of the marginal productivity of labor in the subsistence sector) an upward slope, and the effort extraction curve (which lies above the curve of the marginal productivity of labor in the y-subsistence sector), also an upward slope. The equilibrium wage is determined by the intersection of the demand and effort extraction curves. At this market wage rate there will be excess labor supply. This excess can not be eliminated automatically by a fall in the real wage rate. The labor market is not like the potato market; it is a non-Walrasian market.

As a "second best" solution, the workers who are excluded from wage employment will choose between unemployment and self-employment. The worker will evaluate the expected wage when engaged in the activity of job seeking (and being unemployed) against the sure income that can be made if self-employed in the subsistence sector. If the worker's expected wage rate is higher, he will choose to seek a job; if the expected wage rate is lower he will choose self-employment. Assume the expected wage is equal to the market wage rate multiplied by the probability of finding a job. Given this probability, the expected wage is a fraction of the market wage rate. Once the wage rate is known, the expected wage is also determined. Workers will seek jobs until the expected wage is equal to the opportunity cost in the subsistence sector, that is, until it is equal to the marginal productivity of labor in the subsistence sector. Thus, the allocation of workers to unemployment and self-employment is also determined. The incomes of the self-employed are lower than the market wage rate.

Z-workers are self-employed in small units of production, in which they produce good B with a traditional technology. Thus, z-workers produce good B with lower productivity compared to self-employed y-workers. In the Sigma economy, there are two subsistence sectors, one for each type of worker, with different levels of productivity.

GENERAL EQUILIBRIUM

The model of the Sigma economy presented here has three sectors: the capitalist sector and two sub-sectors—the y-subsistence sector and the

z–subsistence sector-where workers can make income as self–employed producers. There are two markets: labor and commodity B.²

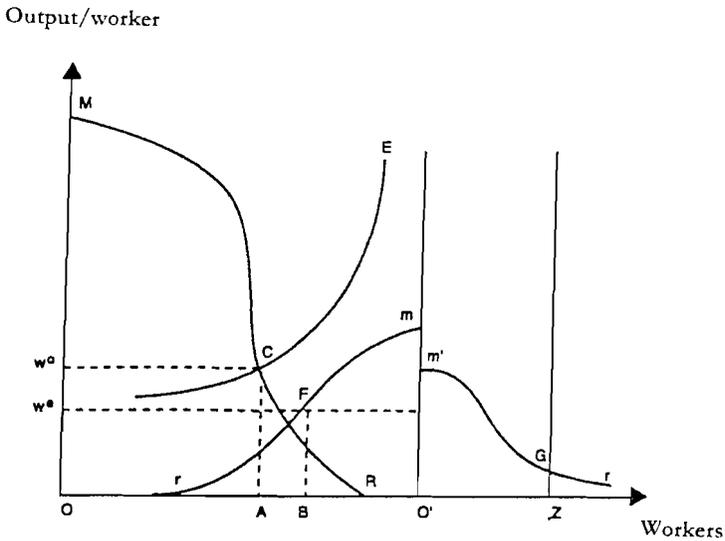
Given the technological (input–output) relationship between labor and production of commodity B, it is sufficient to establish the equilibrium conditions of the labor market to arrive at general equilibrium. These conditions were shown above. So, the labor market determines the wage rate, the level of employment, and the excess supply of y-labor. Given this solution in the labor market, the allocation of the surplus labor into unemployment and self-employment is also determined, as well as the mean income in the y-subsistence sector.

In the z-sector, workers seek to maximize total output with the use of their total labor supply, which is given. Because there is no interaction between the z-sector and the rest of the economy, the general equilibrium solution is separable in the z-subsistence sector in respect to the rest of the Sigma economy.

The general equilibrium is illustrated in Figure 1. Output per worker is measured on the vertical axis and the number of workers on the horizontal axis. The number of y-workers is equal to the segment OO' , and $O'Z$ is the number of z-workers. MR represents the marginal productivity of labor in the capitalist sector, mr is the marginal productivity curve in the y-subsistence sector (measured from the origin O' and towards the origin O), and $m'r'$ is the marginal productivity curve in the z-subsistence sector. Curve E measures the effort extraction curve. The equilibrium wage rate (w^e) is determined by the intersection of curve E and with curve MR which is also the labor demand curve. The excess labor supply is equal to AO' . This wage rate determines the expected wage rate w_e , which in turn determines the allocation of the excess labor supply of labor to unemployment (AB) and self-employment (BO'). Total income in the capitalist sector is equal to the area under the curve MC , total income in the y–subsistence sector is equal to the area under curve mF , and total income in the z–subsistence sector is equal to the area under curve $m'G$. Their sum makes up equilibrium national income.

2. In what follows the emphasis will be given to the relationships between the capitalist sector and the subsistence sectors through the labor market. So, we can safely ignore other markets that are needed to establish general equilibrium at large.

Figure 1



National income (Y) of equilibrium and its distribution can be represented by the following equation:

$$\begin{aligned}
 Y &= P + W + V_y + V_z \\
 &= P + w D_y + v_y L_y + v_z L_z
 \end{aligned}$$

Profits (P), wages (W), and total income in the two subsistence sectors (V_y and V_z) will make up national income. Labor incomes can be broken down into mean incomes (w , v_y , v_z) and quantities of workers employed in each sector (D_y , L_y , L_z). The condition of equilibrium in the labor market is $w > v_y$ and social exclusion leads to $w > v_y > v_z$. The z -workers will constitute the poorest group in society. (See Appendix for a formal presentation of the general equilibrium solution).

The structure of national income tells us that in the Sigma economy there are different sources of income, which lead to inequality. There is inequality between capitalists and workers, but also amongst workers. Not all y -workers get the same income; not all z -workers get the same income.

The exogenous variables of the system include the stock of capital and technological knowledge, and the initial distribution of economic, political and cultural assets among individuals. State policies and external shocks to the economy are also exogenous. The endogenous variables include the level of national income and its distribution. If exogenous variables remain unchanged, the equilibrium values of the national income and its distribution

will repeat themselves period after period. Changes in the exogenous variables will modify the equilibrium values of the endogenous variables in particular directions, and empirical predictions can be logically derived from this theoretical model.

EXCLUSION FROM CREDIT AND INSURANCE MARKETS

The labor market generates inequality among *y*-workers. The *y*-workers who are excluded from the labor market have the same skills as of those included; thus, why should they remain relatively poor? To set up a new business or to increase productivity in the existing units of the subsistence sector, financing is needed. Because owners do not rent out their capital, workers can not set up businesses by renting capital. They must buy capital. Workers do not have sufficient savings to finance capital accumulation, so bank credit is needed.

However, the logic of the banks excludes workers from this market. Banks seek a dual objective: maximize profits and minimize risk. Because the unit cost per dollar declines with the size of the loan, banks prefer to give large loans; moreover, because of incomplete information, banks minimize risk by requiring collateral, the value of which depends positively on the loan size. Hence, banks set minimums on loan size and wealth, which determine who their clients will be. The logic of banks will exclude potential borrowers that own capital in amounts below the threshold value or have no capital at all. The credit market is non-Walrasian; it is not like the potato market either.

There is also the risk of destruction of the capital stock. This risk can be insured through the insurance market, an instrument for spreading out risk. However, the insurance market is not Walrasian either. The reasons are similar to those of the credit market. Transaction costs are too high for insuring small businesses. Insurance companies prefer to do business with large firms. Thus, producers in the subsistence sector are subject to the risk of uninsured individuals. They are vulnerable to negative shocks to capital endowments.

In sum, as a result of the economic rationality of banks and insurance companies, and information costs, the *y*-workers who were excluded from the labor market are also excluded from the credit and insurance markets. They can not escape from relative poverty; self-employment and unemployment are their only viable, second best options. *Z*-workers are excluded from

credit and insurance markets as well. The factors that explain the exclusion of y-workers from these markets operate with even greater force in regard to z-workers. They can not escape from poverty either.³

EXCHANGE RULES IN MICRO-SOCIETIES

Because z-workers are excluded from the insurance market, they seek individual ways to self-insure against risks and also collective ways to spread out risk. Because z-workers are excluded from the credit market, they seek peer loans. Thus, social networks are created as a mechanism that provides social protection and opportunity. As a result of their exclusion from financial and insurance markets, z-workers live in encapsulated communities or micro-societies.

Within a closed micro-society, economic exchange can not take the form of market exchange. In such a small society individual interdependence is very high and multiple exchange is predominant. Hence, exchange relations cannot be impersonal. The micro-society is composed of networks created to solve the problem of uninsured individual risks, a problem that cannot be solved through the market system. The rationality of self-interest cannot be the only motivation of individuals, for the economic consequences may be negative for all. Individual behavior based on this rationale may generate economic losses for the rest of the members of the community. The individual could then suffer a social sanction for that behavior. Given that multiple exchange prevails in the community, the individual could be excluded from other sorts of exchange as well and suffer additional economic losses.

What are the rules of non-market exchange? They can be summarized as follows. Non-market exchange is still voluntary and based on the logic of self-interest, yet it is not impersonal. Individuals are restricted by the norms of the social network in addition to the constraints imposed by their own resource endowments. These norms include reciprocity and redistribution. "I help you now that you are in need, with the understanding that you

-
3. The Sigma economy will have a segment of the labor force that is not wage earner. This segment includes part of the y-workers and all z-workers. They are excluded from the labor market and from the credit market, the two mechanisms under which workers can be exploited, as Roemer (1982) has shown. The wage earners-those y-workers who are fully integrated into the capitalist system-are the richest among all workers. The excluded are poorer, and because the degree of exclusion is higher for z-workers, these make up the poorest group. Joan Robinson's well-known dictum "The only thing that is worst than being exploited is not being exploited" applies very forcefully to Sigma society

will help me when I am in need" (*Hoy por ti mañana por mí.*) is a principle of exchange. The economic balance of the relationship is attained in the long run, not in every transaction. Therefore, the law of one price for each good does not hold. Money cannot buy everything within social networks.

The social network constructed by the poor is a survival strategy, not a development strategy. It allows each worker to reduce risk. It is a mechanism that provides a safety net. No individual goes hungry or homeless because of a negative external shock to endowments. At the same time, however, no individual can escape easily from the network – that is, from poverty – even if presented with external opportunity. The rules of reciprocity and redistribution set limits to one's options. This is the other side of the coin of social protection. Non-market exchange protects individuals against risk but condemns them to share the poverty of the entire group. By contrast, market exchange does not protect individuals collectively against risk, but allows them to escape poverty individually.

If micro-societies are open to the larger economic system, such as a capitalist economy, the rules of exchange will be dualistic. Individuals will have access to market exchange. Therefore, social norms within the community will not be as binding as in the closed case. The more developed the markets, the weaker the constraints determined by social norms. In the Sigma economy, z-workers will be assumed to live in a closed micro-society, where non-market exchange rules dominate all transactions. Market exchange will be ignored at this point. (This will not be the case of y-workers; they live in more open societies and participate in exchange under market rules.)

SOCIAL REPRODUCTION

While the y-workers who are self-employed in the subsistence sector could adopt new technologies that are being developed in the capitalist sector, and thereby increase labor productivity, they do not. Given the differences in technology, and given that technological innovations cannot occur continuously but adoption can, the y-subsistence sector should be able to grow even faster than the capitalist sector. Given its technological lag, there is much room for the growth of productivity in the y-subsistence sector. The self-employed could not be limited by a lack of human resources in adopting new technologies, because labor is homogeneous. Under these circumstances, the main factor preventing the y-subsistence sector from growing is access to credit. The process of adopting new technology requires

financing. However, workers in this sector lack savings, and, as we have seen, are excluded from credit and insurance markets.

The z-workers also remain poor, even though their existence in a capitalist society should provide opportunity for adopting technological innovations and increasing productivity. Actually, the z-sector should also be able to grow faster than the modern sector, where innovations occur only intermittently. In this case, the limitation comes from z workers' endowments of human capital, which are very low for the present stage of technological development. Even if there were a subset of new technologies that they could adopt, they would not be able to do so because they would need external financing and means to spread out the risk. But, like the y-workers, they are also excluded from credit and insurance markets.

Why are z-workers unable to accumulate human capital? First, because they are poor. They lack the financing capacity needed to accumulate physical and human capital. Second, they are excluded (in quantity and quality) from access to economic rights in the form of public goods, such as education, health and social protection. This is a problem of political exclusion. Thirdly, they are segregated, which makes the acquisition of skills required for the modern technology very costly. This is a cultural exclusion problem.

Because z-workers have a cumulative disadvantage in society, their capacity to organize themselves and demand access to rights is limited. In this case, collective action is limited by the exclusion problem, not by the Olsonian problem – or the "free ride" problem. Olson intended to answer the question: why is there little class action in the real world? His theory is that collective action will not occur if the individuals that make up the group act guided by the logic of self-interest (Olson 1965). In micro-societies, however, free – riders will suffer social sanctions. The Olsonian problem will not appear. The limits to collective action come from the problem of exclusion. z-workers are too poorly endowed with economic, political and cultural assets to participate fully in the democratic process. The endogenous transformation of a heterogeneous society into a homogeneous one – the transformation of z-workers into y-workers – will proceed at a very slow pace.

z-workers will thus make up the "hard core" of exclusion. As a consequence, they will become the poorest group in society, and will remain so. In the Sigma society, the poorest groups are not only people with the lowest incomes, there are also different groups – people poorly endowed with non-economic assets.

Three markets play a crucial role in the reproduction of inequality in the Sigma economy: labor, credit, and insurance. These markets can be called

basic markets. Given the initial condition of unequal distribution of economic, political and cultural assets in the Sigma society, inequality will be reproduced in the process of capital accumulation in the capitalist sector. A segment of y-workers will be excluded from the basic markets. Z-workers are left behind in the process of economic growth, for they are excluded not only from the basic markets, but also from political and cultural assets. This latter exclusion-which will be called 'social exclusion,' as opposed to economic exclusion-puts even more constraints on z-workers for accumulating capital, particularly human capital. What is particular to Sigma society – as a capitalist democracy – is social exclusion.

Although the distribution of assets is individual, the mechanisms of exclusion do not operate on an individual basis. Individuals represent social groups. Exclusion is systematic regarding social groups, even though it may be a random process among the individuals that belong to a particular group. The concept of exclusion in this theory refers to *social* exclusion, as opposed to individual exclusion. Social exclusion is the result of a historical event, a fundamental shock to society. This set of assumptions may be called *social exclusion theory*. Hence, Sigma theory (the logical construction of Sigma Society) includes the social exclusion theory.

The Sigma society was born heterogeneous; it was born very unequal in terms of economic, political and cultural assets and will remain so or change slowly. This will be the characteristic of the long-run equilibrium. In the Sigma society the long-run degree of inequality will basically depend upon its initial distribution of assets. In this society, there is dependence on the historical path of society. To change this path significantly, another exogenous shock to change the initial conditions will have to occur. The other exogenous variables will have either minor effects or just short-run effects.

SOME EMPIRICAL EVIDENCE: THE LATIN AMERICAN COUNTRIES

Theories are constructed in order to be empirically tested, so is Sigma theory. What are the empirical predictions that can be derived from the Sigma theory? This paper gives greater emphasis to those empirical predictions of the theory that refer to the z-sector. These are the simplest to derive, and address the question of poverty more directly.

The effect of changes in the exogenous variables of the system on the z-sector can be summarized as follows:

- (a) Capital accumulation together with technological change in the capitalist sector (an upward shift of the labor demand curve) will have the effect of raising both the wage rate and the level of employment, reducing the level of self-employment of y-workers, while the change in unemployment is undetermined. There will be no effect on the z-subsistence sector. The capital accumulation process may eventually eliminate the excess supply of y-type labor, but z-type labor will remain untouched.
- (b) Increase in the z-population will have the effect of reducing the marginal productivity of labor in the z-sector, and then will reduce average income. Overall income inequality will rise.
- (c) Increase in the productivity of the z-sector will have no effects on the capitalist sector.
- (d) Among societies with similar capital endowments and technology, income inequality will be higher in Sigma societies than in more homogeneous societies.⁴

In social science, the empirical testing of a theory is done using statistical analysis. Any single observation can neither refute nor confirm a theory. The validity of a theory is understood in statistical terms, within the law of large numbers. Unfortunately, empirical data on the distribution of national income in developing countries are not abundant. Most data on inequality refer to labor income, not national income, because they come from household surveys; moreover, they show information for only a few years per country. Hence, the requirement for disproving the theory cannot be met.

In this study, I will pursue a more modest objective. I will make use of some pieces of evidence from Latin American countries to test the hypothesis that countries with a large proportion of indigenous populations function as if they were Sigma economies, where indigenous populations represent z-workers. It seems indisputable that this population is endowed with the lowest amount of economic, political and cultural assets (as valued by the dominant culture). The relative proportion of the indigenous population will

4. Consider two other abstract societies that are defined as follows: *Omega society* where z-workers do not exist but there is overpopulation of y-workers, and *Epsilon society* where z-workers do not exist and there is no overpopulation of y-workers. Suppose the three societies are similar in technology and capital stock; in other words, suppose the three societies have the same labor demand curve. It is clear that these societies will show a certain order of inequality. Sigma society will be the most unequal, Omega will follow and Epsilon will be the less unequal society. In general, societies that are more overpopulated and more heterogeneous will show higher degrees of inequality.

be used as the indicator to determine "indigenous countries." The following propositions appear to be warranted by existing data and, thus, give empirical support to the hypothesis.

COUNTRIES WHERE THE SHARE OF INDIGENOUS POPULATIONS IS HIGHER ARE MORE UNEQUAL

In Latin America, there exists a diversity of countries in terms of ethno-cultural traits. Two extreme groups can be distinguished. The more homogeneous group includes Argentina, Uruguay, Venezuela and Costa Rica. The more heterogeneous group includes Mexico, Guatemala, Colombia, Ecuador, Peru and Bolivia. The conquest may be considered the fundamental shock. Today indigenous populations constitute a significant proportion of the total population of these countries. Members of these populations still maintain part of their ancient culture and live mostly in rural peasant communities. The Caribbean and Brazil may also be included in this second group. The presence of blacks, who were brought in as slaves from Africa, in addition to the presence of indigenous communities, has created a society that is multi-ethnic and multi-cultural, which is also the case in the other countries of the group.

Studies made in the 1970s on the distribution of national income – not on labor income alone – showed that income inequality in the second group was consistently higher than in the first in the 1950s and 1960s. As shown in Table 1, the mean Gini coefficients for Costa Rica and Argentina were 0.37, 0.43; whereas for Peru, Brazil, Colombia and Mexico they were in the range of 0.54-0.62; and Chile's figure was 0.50. Chile appears to be an intermediate case, both in terms of social heterogeneity and inequality.

The most complete recent information on national income distribution, based on five or more observations in the period 1950-1993, is also shown in Table 1. This set of data contains only five countries. This statistical information also confirms the high positive correlation that seems to exist between social heterogeneity and inequality. The low value of the Pearson coefficient of variability for each country suggests that income distribution has not varied much within each country.

This long-run persistence both in the degree of inequality and in the order of inequality by countries is striking. In terms of the two groups of countries mentioned above, the second group was born more heterogeneous and more unequal than the first and has remained so. This empirical result is consistent with Sigma theory. The degree of income inequality seems to

Table 1

**LATIN AMERICA: INEQUALITY IN EIGHT COUNTRIES IN
SELECTED YEARS DURING 1950–1993**

Country	Weisskoff–Figueroa 1950–1970		Altimir 1950–1993		Pearson c.v (%)
	Number of observations (years)	Gini coefficient Mean Value	Number of observations (years)	Gini coefficient Mean value	
Brazil	2	0.58	7	0.62	4.0
Peru	1	0.62	–	–	–
Mexico	3	0.54	8	0.55	4.0
Colombia	1	0.58	6	0.50	6.7
Chile	1	0.50	–	–	–
Argentina	3	0.43	–	–	–
Venezuela	–	–	5	0.42	9.8
Costa Rica	1	0.37	9	0.42	4.1

– Not available

Source: Weisskoff and Figueroa (1976), p. 91; Oscar Altimir's estimates appear in Thorp (1998), Appendix Table VIII.1, p. 352.

be a structural characteristic of a country. The German naturalist Alexander Humboldt wrote in his *Voyages* that economic and social inequality was the feature that most impressed him on his visit to the region now called Latin America. This was published around 1850. One hundred and fifty years later, inequality is still a key characteristic of this region.

It can be shown that the higher degree of inequality in the second group of countries is due in large part to their shares of indigenous populations. If we recalculated national income omitting the participation of the indigenous population, the result would be a slightly lower level of national income but a significantly more equal society. The reason is simple: a large number of people and a small amount of income would be deducted from the original national income.

Let us examine the case of Peru. In the mid-seventies, the top decile of the population received 50 percent of the national income, and the bottom third received only 5 percent (Webb, 1977). The indigenous population constituted the vast majority of this lower group. With the recalculation, the

ratio between the top decile and the bottom third decreases from 10 to 4 times. The mean income increases by 40 percent.

The indigenous populations are at the base of the income pyramid of each country in the region. In the 1980s, the incidence of poverty among the indigenous population in Bolivia was 64 percent (versus 48 percent for the non-indigenous), in Guatemala 87 percent (*versus* 54 percent), in Mexico 81 percent (versus 18 percent), and in Peru 79 percent (*versus* 50 percent) (Psacharopoulos and Patrinos 1994). The hard core of poverty is to be found among the indigenous populations.

It seems quite clear that the indigenous populations make up the poorest groups in Latin America. And because they are endowed with the lowest amounts of economic, political and cultural assets, the indigenous populations appear to possess the attributes of the category of z-workers.

THE PERSISTENCE OF THE PEASANT ECONOMY IN INDIGENOUS COUNTRIES

As predicted by Sigma theory, economic growth in the capitalist sector has not eliminated the peasant economy in Latin America. Mostly indigenous populations constitute this economy. These populations have been subject to exclusion mechanisms during the process of economic growth that has taken place in the capitalist sector. Such exclusion could explain why the expansion of capitalism in Latin America has not managed to transform the peasantry into wage labor, as it did in Europe.⁵

The fact that there are peasants in non-indigenous countries also may be the result of a different process: such countries started overpopulated but not socially heterogeneous. In any event, this case does not disprove Sigma theory. This theory would be rejected if countries that started capitalist

5. In the late seventies, the distinguished historian Eric Hobsbawm gave a lecture in my university and began by asking the audience the following question: why do we still observe the peasantry in the Andes of Peru? Nobody answered. He then explained to us the case of Scotland. In the XVIII century the mountains of Scotland were also populated by peasants. Less than one century of capitalist development was enough to transform that peasantry into wage labor. Today those mountains are empty, he concluded. After many years, I think I have the answer to his question. Peru (as well as the other Latin American countries with important ancient civilizations) was born as Sigma society, where the peasantry has been subject to mechanisms of social exclusion. This was not the case in Europe. The ancient European countries resemble the Omega society, that is, overpopulated but without z-workers. These countries developed much more easily to become Epsilon societies. Sigma societies must first become Omega societies before they can reach the level of Epsilon societies.

development as indigenous are non-indigenous now; or if they continue to be indigenous, the composition of social groups in the agricultural sector as peasants, wage earners and capitalists are not associated to ethnicity. The presence of ethnic groups in the social structure is distributed randomly. In this case, contrary to what Sigma theory predicts, initial conditions would not count.

A significant out-migration of the rural population has taken place in recent decades in Latin America. This is usually explained by the large difference in the mean incomes between urban and rural areas. While this process of rural out-migration is hardly surprising, what is less expected is that people still live in rural areas. Why are they still there if income differences with urban areas still persist? One possible explanation comes from the exclusion theory: most of the indigenous population is not part of the supply in the urban labor markets.

Under other forms of production in the past, the indigenous populations provided the basic labor force, and it was profitable for landlords to employ them. But that system of production (the hacienda system) did not function with labor markets. Furthermore, over time technology changed and capitalist production expanded, requiring particular kinds of skills, including proficiency in Spanish and new work ethics. Workers suitable for capitalist production, the y-workers, increased over time. But, as shown above, the indigenous populations have been left behind.

THE MARKET SYSTEM IS LESS DEVELOPED IN AREAS WHERE INDIGENOUS POPULATIONS ARE PROMINENT

Most empirical studies have found that the peasant communities in Latin America carry out monetary exchange with the outside world. Economically, they are not isolated communities. However, such empirical evidence cannot be taken as an indication that they are fully integrated into the capitalist sector. Figueroa's detailed family budget study (1984) of indigenous peasant communities in the Peruvian Andes showed four findings:

- (a) Economic exchange of goods and labor was carried out through market and non-market exchange.
- (b) Economic exchange with other indigenous communities and with the self-employed producers in provincial towns was very significant.

- (c) As labor supply, peasants exchange part of their labor force with other peasants on a reciprocity basis, part is sold to local farms and households, and another part is sold as casual labor in formal labor markets.
- (d) In quantitative terms, the study calculated that, on average, peasant families exchange half of their total output, and that labor income accounts for 25 percent of total income.

The well-known argument developed by Schumpeter (1934) that "the peasant sells his calf just as cunningly and egotistically as the stock exchange member his portfolio of shares" (p. 80) does not seem to fit with what one observes in rural indigenous communities of Latin America. Such behavior refers to peasants selling their products in an urban market to buyers that they scarcely know. But this is not their usual form of exchange. Within their community and within their social network, peasants hardly behave like stock exchange brokers. Here non-market exchange dominates.

The high degree of integration between the rural and the urban self-employed (between the two subsectors within the subsistence sector) seems to be a perfect match of demand and supply. Given their endowments of economic assets, including human capital, these groups can produce only goods of low quality; and given their low incomes, these are the goods and services for which there is a high demand. This is consistent with the observation that the subsistence sectors produce mostly "inferior goods," as judged on a national scale of revealed preferences.

If these subsectors produce inferior goods and are poor, they are complementary economies. To show this, a theoretical model with more than one commodity would be needed. In a world with only one good, the z-sector and y-sector could not exchange that single good. In this simple world, therefore, these sectors could be considered as though they were separate economies, or two sectors with no interrelations. The latter is precisely the assumption made in this model of the Sigma economy. This exchange is ignored, as it is considered non-essential in the process of productivity growth of these subsistence sectors.

Because the peasantry participates in the market exchange of goods and casual labor, its real income would also depend upon relative prices in the market. But the theory ignores the effect of these relative prices; they are not considered essential in the process of productivity growth of the peasant economy. Although there is market exchange in the peasant economy, the theory makes an abstraction of this, *as if* there were no exchange. The theory assumes that changes in relative prices can have a *level* effect on income (a

jump), but not a *growth* effect (a continuous increase in labor productivity and income).⁶

What is quite clear in Latin America is the fact that the market system is less developed in the rural areas where indigenous populations are predominant. For the peasantry, transaction costs with the market seem to be higher than within their social networks. Public goods (transportation and communications systems) are needed for market development, but governments invest very little in the provision of these public goods in areas where indigenous populations are predominant. This is consistent with the hypothesis of political exclusion. And without developed markets it will be very costly for the peasantry to have economic growth.

TECHNOLOGICAL INNOVATIONS ARE LIMITED IN AREAS WHERE THE INDIGENOUS POPULATIONS ARE PROMINENT

Empirical studies on the Latin American peasantry have found that there are demand and supply limitations with regard to the adoption of technological innovations. Only a small fraction of the peasantry has adopted new technologies. A study carried out within the ECIEL Program⁷ surveyed thirteen micro-regions with peasant communities in four countries (Brazil, Mexico, Paraguay and Peru) in order to explain this low rate of adoption. The conclusion was that such adoptions require higher levels of working capital and human capital that peasants lack. New technologies are more intensive in working capital and human capital. Increasing productivity using modern technology requires a capacity for numerical calculation, literacy, and a command of Spanish. But it takes 6 to 7 years (more than complete primary schooling) to acquire such skills. Technological innovation, then, requires a level of education that most of the peasantry does not possess. Peasants with post primary education, offered mostly in urban areas, were able to adopt new technology (Figueroa, 1986).

The segregation of rural peasant communities makes learning at school very costly in terms of resources and time. Not only is rural education low

6. Lucas makes similar assumptions (1988) in his development theory. For instance, he argues that trade liberalization – a change in relative prices originated by tariff reductions – would have a level effect but not a growth effect on national income.

7. ECIEL is an acronym for Estudios Conjuntos para la Integración Económica Latinoamericana. It was the most important research network of the region during the seventies and eighties.

quality, but the native cultural environment makes it more difficult to master the numerical and Spanish language skills needed to participate in the process of technological modernization. As a result, technological change in peasant communities proceeds at a very slow pace. The young try to escape segregation by moving to the city, accumulating human capital there, and becoming integrated into the formal labor market. The fact is that the quantity and quality of public schools are very low in areas predominantly populated by indigenous people. Thus, the lower level of schooling observed in these areas is consistent with the hypothesis of political and cultural exclusion. Hence, the social exclusion theory explains why it is so difficult to reduce the hard core of rural poverty in Latin America.

According to Sigma theory, what is essential for income growth in the rural subsistence sector of Latin America is growth in labor productivity, which requires investment in human capital and in the adoption of technological innovations. Relative market prices, including real wages, are not essential factors. Even though the indigenous populations partially participate in market exchange, this exchange has been ignored, except for exchange in the credit and insurance markets, which are very important for capital accumulation and technological innovations. What is crucial is the development of the market system in rural areas, rather than changes in relative prices. This is one of the assumptions made by the model of Sigma theory presented here. The empirical predictions derived from this model have proven to be consistent with the basic facts of the Latin American reality. There is no reason to reject this theoretical model at this point.

Is Latin America the region of the world where social heterogeneity is the most pronounced? If this were so, the fact that its degree of inequality is also the highest in the world would be consistent with Sigma theory. Could one say that the First World countries were born more equal and that is why they show the lowest degree of inequality today? More empirical work is needed to answer these questions.

CONCLUSIONS

In this study a new theoretical approach has been developed by introducing two assumptions to standard economic theories:

- (a) Individuals participate in market exchange endowed not only with different quantities of economic assets-as standard theories say-but also with different quantities of political and cultural assets.

- (b) There is a hierarchy of markets, with labor, credit and insurance markets playing a vital role in the generation and reproduction of inequality. They have been called *basic markets*. Neither are all individuals homogenous, nor do all markets play the same role.

This set of assumptions constitutes what has been called *Sigma theory* in this study. Assumption (a) has been called *social exclusion theory*. Thus, Sigma theory includes social exclusion theory. Social exclusion is the particular trait of the Sigma society among other abstract capitalist societies. Sigma theory deals with the long-run determinants of inequality in a heterogeneous society. The initial inequality in the distribution of assets is the most significant exogenous variable in the determination of the future degree of inequality. In the Sigma society, history does matter. The society will have forces that tend to reproduce the initial conditions of social inequality. Sigma theory does not intend to explain the short-run variations of inequality, which may be attributed to other exogenous factors, such as external shocks and macroeconomic policies.

The pieces of evidence from Latin America that have been presented here seem to be consistent with a set of predictions of Sigma theory. Countries that are ethnically more heterogeneous are also more unequal. Within countries, areas where the indigenous populations are predominant show a significant peasant economy, less developed market system and slower rates of technological modernization. In every country, the indigenous population is placed among the poorest. These empirical results seem to suggest that the indigenous population conform to the notion of z-workers.

Given the initial endowments, today's assets held by individuals are the result of the economic and social process. The former is exogenous and the latter is endogenous. As with economic and political assets, today's distribution of cultural assets is endogenous. The existence of cultural and ethnic diversity shows that Latin American countries do not operate as a 'melting pot.' In fact, this cultural and ethnic diversity is not a problem *per se*; it is the hierarchy of diverse groups that is problematic. This hierarchy has become part of the mechanisms of segregation or social exclusion. Those with cultural assets not valued by the dominant culture were excluded in the past. As a result, they were unable to accumulate human capital, and for this reason they are excluded today, and will continue to be excluded in the future as long as the cultural hierarchy is maintained.⁸ As prescribed by

8. During my stay as Tinker Visiting Professor at the University of Texas at Austin, in the fall of 1997, I observed a heated national debate on U.S. racism initiated by a law professor of this university. He said, "Black-Americans and Mexican-Americans cannot compete with White-Americans in academic terms because their cultures do not condemn failure". I was surprised that no one tried to explain why this culture would be so. Social exclusion theory

Sigma theory, the transformation of heterogeneous societies into homogeneous ones has proceeded at a very slow pace in Latin America.

In general, inequality in a capitalist society is the result of both social integration and social exclusion. Inequality is generated not only by market exchange. Exclusion from basic markets is also an important mechanism for generating inequality. In some cases (as in the Sigma society), inequality may also reflect social exclusion, as a result of which the poor are scarcely integrated into market exchange. In this particular sense, inequality reflects market failure.

In the First World, as Okun (1975) argued, rights have been established to redistribute assets and set limits to inequality. Hence, government behavior is subject not only to budget constraints, but also to compliance with the protection of these rights. By contrast, in the Third World, government behavior appears to be conducive to the persistence of workers' exclusion. It is politically more profitable to govern through clientelistic relations than by establishing and securing rights. On the demand side, because the poor are fragmented and have weak organizations – due to their low endowments in economic, political and cultural assets – their voice is too weak to demand rights. In this particular sense, inequality also reflects the failure of the state.

In this study, social exclusion has been referred to as the mechanism for an economic process, whereas poverty is the result. Poverty is the endogenous variable; exclusion variables are exogenous. However, exclusion is usually presented in literature as a synonym for poverty. Some authors have even developed measures of exclusion indicators as part of their construction of poverty indicators. By doing this, they have mixed indicators of cause and effect, of exogenous and endogenous variables.

Poverty can only be understood in relation to the situation of the wealthy. As a social problem, poverty will exist as long as there is inequality. If the rich become richer and the poor remain in the same economic condition, poverty will increase. Social actors can see poverty mainly in relative terms. The use of the well-known "poverty line" as an instrument to measure poverty has validity only in the short run. As economic growth takes place and new goods are created and consumed by the rich, the social concept of poverty changes, and the poverty line needs to be raised.

would say that this culture is endogenous, that is, a result of the process of segregation. At that time I read a book on multiculturalism in America by Glazer (1997) which implicitly gives great support to this view, a book that also showed me that the segregation of blacks in U.S. has many similarities with the case of indigenous populations in Latin America. Glazer uses intermarriage as an index of segregation and he finds that 97% of black women marry black men. The fact that the Gini coefficient of the U.S. is above the average of the First World is also consistent with exclusion theory.

When poverty is derived from inequality – as it is in capitalist societies – it cannot be analyzed in isolation to successfully explain its origins or to design policies to reduce it. As shown in this study, there are exclusion mechanisms in the generation of inequality. Changing these mechanisms can reduce inequality and poverty. The most important policy implication that can be derived from the social exclusion theory is that, in heterogeneous societies, political and cultural assets must be redistributed along with economic assets. In view of this conclusion, it is disturbing that poverty is usually discussed independently of inequality.

APPENDIX

NATIONAL INCOME DISTRIBUTION IN THE SIGMA ECONOMY

The determination of output, real wage rate, and employment in the capitalist sector is obtained from the following set of equations:

Production function in the capitalist and y-subsistence sectors:

$$\text{Capitalist sector} \quad Q = F(D_y, K), F_1 > 0, F_{11} < 0 \quad (1)$$

$$\text{Y-sector} \quad Q = G(L_y, K_y), G_1 > 0, G_{11} < 0 \quad (2)$$

The Labor market equilibrium is determined by the following equations:

$$\text{Labor demand} \quad D_y = f_1(w, K), f_1 < 0, f_2 > 0 \quad (3)$$

$$\text{Labor supply} \quad S_y = H(w, K_y), H_1 > 0, H_2 > 0 \quad (4)$$

$$\text{Effort extraction} \quad E_y = m H(w, K_y), m > 1 \quad (5)$$

The symbol w represents the real wage rate, K is the capital stock in the capitalist sector, K_y is the capital stock in the y-subsistence sector. Both capital stocks are exogenously given. Because capitalist firms seek to maximize profits, the marginal productivity of labor must be equal to the wage rate in a competitive market. Hence, the curve of the marginal productivity of labor in the capitalist sector is also the labor demand curve. The supply curve is the curve of the marginal productivity of labor in the y-subsistence sector, the opportunity cost of labor. The effort extraction

function is obtained by an upward shift of this marginal productivity curve, that is, of the supply curve. The equilibrium condition in the labor market is:

$$D_y = E_y \quad (6)$$

Call the equilibrium wage rate w° , and the equilibrium quantity of labor demanded D_y°

The total amount of y-labor is $L_y^* > D_y^\circ$. Thus, the excess supply of labor is determined. Let Π (a positive number but smaller than one) represent the probability to find a job in the labor market. Then, the expected wage rate w^e is equal to

$$w^e = \Pi w^\circ \quad (7)$$

The allocation of the y-workers excluded from the labor market into unemployment (U_y) and self-employment (L_y) is determined from the following equation:

$$w^e = G_1(L_y, K_y) \quad (8)$$

Hence,

$$L_y^* = D_y^\circ + L_y^\circ + U_y^\circ \quad (9)$$

The production function in the z-subsistence sector is represented by

$$Q_z = N(L_z^*, K_z) \quad (10)$$

Total labor supply of z-workers (L_z^*) is self-employed in the production process. This equation alone determines total output, as well as the average productivity of labor in this sector. Because of differences in technology and human capital, the average productivity in this sector is smaller than the corresponding value in the y-subsistence sector.

Hence, national income (Y) is equal to

$$Y^\circ = O^\circ + O_y^\circ + O_z^\circ \quad (11)$$

The distribution of national income can be represented as follows:

$$Y^\circ = P^\circ + w^\circ D_y^\circ + v_y L_y^\circ + v_z L_z^* \quad (12)$$

Here P is total profits; v_y and v_z represent the mean income in the y-subsistence sector and z-subsistence sector. It follows that $w > v_y v_z$. There is inequality between capitalists and workers, and also among workers.

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