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Dissection of the Informal Sector: Measurement of Characteristics of the Informal Sector and its Connections with the Rest of the Economy

Lourdes Ferran, Universidad Central de Venezuela
Luis Guerrero, Banco Central de Venezuela

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DISSECTION OF THE INFORMAL SECTOR

Measurement of Characteristics Within the Informal Sector and Connections With the Rest of the Economy

Lourdes Ferran
lourdes@ferran.net

Luis Guerrero
lguerrer@bcv.org.ve

ABSTRACT

As a continuation of a paper for a former meeting of the expert group on informal sector statistics, the present paper concentrates on the measurement of socio-economic characteristics of the components of the informal sector and its ties with the rest of the economy and society. In addition to the analysis in terms of economic units and individuals, in order to bring out the social aspects, it proposes measurement and analysis based on households. With this purpose in mind, the paper presents the results of a survey carried out in Venezuela with data on national scale and for several sub-regions based on different degrees of urbanization. The last part introduces an in-depth study based on cluster analysis.

INTRODUCTION

This paper concerns itself with the measurement of some of the characteristics of the informal sector including the strength of its connections with the rest of the economy in order to open a window on the multifarious universe of the informal sector. In a paper presented at the sixth meeting of the Expert Group on Informal Sector Statistics (Delhi Group) in Rio de Janeiro on the Operationalisation from the point of view of the policy-maker, we assessed the existing statistics, concepts and classifications concerning the informal sector in relation to the requirements of the policy maker. In that paper we stressed the need to obtain more information regarding the characteristics within the informal sector, its corporeity, its connections with the rest of the economy and society and hence the need to take into account, not only the person engaged in it individually, but also her (his) family and dependants. In substance, we proposed to focus on the informal sector from a socio-economic approach, designing an informal sector in terms of households.

From that point of view that paper insisted on the usefulness for the policy maker of information covering the universe of units with the characteristics of informality.

> "…to look, not at one single group, but simultaneously at all these groups, confronting advantages and disadvantages (of different policy measures) and estimating the over-all result. … In a general way, what you do in one part of this universe of small and medium sized units, affects, either favorably or unfavorably, other participants. And in order to analyze the complex of results and consequences, you need a map depicting, not only a particular group or sub-group, but also one with a coverage that presents all the areas concerned. In other words, to create a set of statistics that would enable the decision taker to analyze simultaneously the incidence of any single decision on all the interrelated groups and subgroups."

Furthermore, the paper pointed out the importance of compiling intra-sectoral characteristics:

> "In the same way as maps show not only outlines of regions, but also different particulars, like population density, distribution of economic activities, etc. our statistics in addition to the presentation of head counts, for the whole area of interest, will have to contain the aspects directly useful for policy purposes."

That paper included in its purview productive units beyond the usual definition of the informal sector, which, however, are excluded from the present presentation.

PRESENT STRUCTURE AND OUTLINE

The present paper intends to initiate the construction of the "map" as envisaged there: an endeavor that unavoidably has to proceed step by step depending on the availability of information. Thus, it is a first installment of a project which intends to survey the innermost parts of the informal sector including its changes through time. This last item should shed light on the incidence the cyclical movements of the economy have on the informal sector. Do informal activities increase in periods of economic downturn and disappear again when the economy improves? Or, once created, these informal activities will continue their existence, thus giving a new composition to economic structure? Continuity or temporality is significant, not only for the units involved, but also for the economic and social conditions of the whole society.

An innovative feature of the project is to highlight the incidence of the level of education. The correlation between the level of education and economic and social attainment has been widely studied for the nation as a whole, but to our knowledge not much exhaustive analysis has been done specifically for the informal sector. In this case the knowledge needed for survival might be rudimentary: reading, numeracy and writing and the ability to understand and communicate with others, crucial in the case of ethnic minorities speaking a different language. But this rather limited extend of education is a serious impediment for their further advance in society.

However, contrary to what has been done in the past, to take into account exclusively the educational level of the head of the household, we propose to extend the analysis to all members of the household. This is important as the level of education is different for different members of the household, especially for different age groups and usually the level improves from one generation to the next. Socio-economic analysis concentrates mostly on examining the capital or the labour intensity of the group under consideration. However, it has been demonstrated that there is an additional factor that has a bearing on the economic and social well-being. This factor is the educational level and in general the level of knowledge. There is a difficulty in quantifying "knowledge" and we have not found a procedure to measure what could be called "knowledge intensity". So we use instead "educational intensity", which undoubtedly covers only part of the problem.

SOURCES

The data used in the present paper are taken from the official Household Income and Expenditures Survey carried out in Venezuela in 2005, with 8,440 households representing 6,143,097 households nationwide. The findings, calculations, and estimates are solely of the authors and they do not represent official figures of the BCV.

The survey covers the whole territory of the nation, divided into five statistical areas comprising: 1) the capital region, 2) main cities, 3) medium size cities, 4) small cities, and 5) towns with 25,000 inhabitants or less including rural.

The statistics shown here are based on the following operational definition of the informal sector: it comprises all households which have members that obtain income from jobs in the informal economy, these workers are:

1) Non-professional own account workers and

2) Employers and employees employed in enterprises of less than five workers. Enterprises with employees who are professionals by education and perform a professional job were excluded.

3) Agricultural workers are excluded.

It has to be kept in mind that the analysis is based on the households, their total income and all their members.

The fact that our data proceed from an expenditure and income survey, which includes detailed questions related to demographic, social and economic subject matters, allows us to focus simultaneously on a wide range of problems. In addition, the data collected permit studies associated with persons as well as households.

How far is this approach justified? No doubt it creates additional requirements as far as information is concerned. On the other hand we can expect that the household composition and its characteristics have an important effect on the manner in which the informal sector functions.

NATIONAL DATA

We begin by presenting data on households, total and employed population divided into four classes, three of them representing the informal sector. These classes indicate the weight represented by the income of informal workers. The table reflects the influence of informal workers in

a) the composition and

b) the income of households.

We consider four classes. In class 1 the contribution of informal workers to household income is less than 30%, so that informal income is a supplementary source of income for the household.

In class 2 the contribution is between 30 and 50%, that is, the income from informal activities complements the household income. Class 3 refers to households where income from informal activities is the main source of income, that is, it represents more than half of the total income of the household. These classes could be called “degree of informality”. Class 4 represents the rest of households.

TABLE 1 TOTAL AND EMPLOYED POPULATION BY TYPE OF EMPLOYMENT 2005

Class	population	dependants	employed population		households
			informal	other	
1	2,677,776	1,468,251	522,204	687,320	495,502
2	2,352,157	1,398,037	524,695	429,426	424,980
3	9,355,981	5,750,301	2,946,785	658,895	2,109,587
Informal Sector	14,385,914	8,616,589	3,993,684	1,775,641	3,030,069
4	11,996,890	8,414,646		7,575,928	3,113,028
All households	26,382,804	17,031,235		9,351,569	6,143,097

Source: data base of III national household income and expenditure survey 2005 Central Bank of Venezuela
Class is determined by the contribution of informal workers to the household income
Class 1 = less than 30 % Class 2 = between 30 and 50 %
Class 3 = more than 50 % Class 4 = includes the rest of households

Table 1 “Total and Employed Population by Type of Employment” shows, distributed by classes, the corresponding population, the number of dependants, the number of employed workers, specifying if they are engaged in informal activities, and the number of households in each class.

Figures from the table show that the informal sector, as defined here, covers around fifty percent of households. As can be seen, in class 1 there are more remunerated workers whose jobs are outside the informal activities, in class 2 the situation is the reverse, but not for much. In class 3, however, there are almost 5 times more workers whose employment is related to informal activities.

Annual data conceal one aspect of income that is especially harmful in the case of the informal sector: its volatility. While incomes from salary usually represent a more or less continuous flow of income throughout the year, in the case of an informal activity there might exist considerable ups and downs, even periods of no income at all.

TABLE 2 ANNUAL INCOME BY SOURCE millions of Bs. 2005

Class	wages and salaries	mixed income	informal income	income from capital	monetary and in-kind transfers
1	7,441,010	1,816,226	1,707,682	117,969	1,816,528
2	4,490,941	1,161,796	2,572,593	59,704	1,135,835
3	11,828,251	11,060,829	20,583,214	285,705	3,726,939
Informal Sector	23,760,203	14,038,851	24,863,491	463,380	6,679,303
4	36,931,806	4,701,240		1,610,593	13,060,626
All households	60,692,009	18,740,091	24,863,491	2,073,973	19,739,930

Class is determined by the contribution of informal workers to the household income
Class 1 = less than 30 % Class 2 = between 30 and 50 %
Class 3 = more than 50 % Class 4 = includes the rest of households
Source: data base of III national household income and expenditure survey 2005 Central Bank of Venezuela

Table 2 "Annual Income by Source", refers to source of income in each of the classes mentioned above, discriminating between wages and salaries, mixed income, income from capital and finally transfers (in cash and in kind). Class 1 derives only 15% of its total income from activities in the informal sector, almost the same amount this group obtains from transfers. Classes 2 and 3 depend more on their informal activities, getting 37% and 76% respectively.

TABLE 3 ANNUAL INFORMAL INCOME BY SOURCE millions of Bs. 2005

class	wages and salaries paid by informal enterprises	mixed income earn by informal enterprises	Total informal income
1	1,027,884	679,798	1,707,682
2	1,641,772	930,821	2,572,593
3	9,926,195	10,657,019	20,583,214
Informal Sector	12,595,852	12,267,638	24,863,491

Class is determined by the contribution of informal workers to the household income
Class 1 = less than 30 % Class 2 = between 30 and 50 %
Class 3 = more than 50 % Class 4 = includes the rest of households
Source: data base of III national household income and expenditure survey 2005 Central Bank of Venezuela

Another interesting finding is that classes 1 and 2 get more than half of their informal income (60% and 64% respectively) from wages and salaries paid by informal enterprises. In general, these enterprises constitute a very important source of income for households of the informal sector (55% for the informal sector as a whole); the mixed income is not as important as one would have anticipated it to be (see table 3). The conditions of these salaried workers are precarious, 71% of them do not have written contracts.

TABLE 4 PER CAPITA INCOME CATEGORIES

Class	per capita Hh income		income per employed person Bs.			
	Bs.	index	Informal worker	index	Other worker	index
1	4,208,779	108	3,270,145	53	10,984,039	188
2	2,937,537	75	4,903,027	79	7,172,701	123
3	2,904,935	75	6,984,973	112	3,499,598	60
Informal Sector	3,152,961	81	6,225,703	100	7,285,011	125
4	4,789,765	123			11,622,057	199
average	3,897,255	100			5,835,236	100

Class is determined by the contribution of informal workers to the household income
Class 1 = less than 30 % Class 2 = between 30 and 50 %
Class 3 = more than 50 % Class 4 = includes the rest of households
Source: data base of III national household income and expenditure survey 2005 Central Bank of Venezuela

Table 4 “Per Capita Income Categories”, takes up the data of the foregoing tables to show, for each of the categories, the per capita income of the household and income per employed person. As could be expected, households whose income does not depend on workers in the informal sector have the highest per capita income. Even if in some exceptional case, income from informal activities might be high, the data show that in general informal incomes tend to be lower than their formal counterpart. Class 1, where informal workers’ contribution is negligible or lower than 30%, have the highest household per capita income. This is understandable, because the income from informal employment is mainly a supplement for these households and the income from informal activities, as shown in the table, is the lowest; however, workers from this class operating outside informal activities earn more than those in classes 2 and 3.

In Class 2, where income from informal employment is between 30 and 50%, the per capita income, again, is considerably lower than the average.

This trend continues, in what concerns the per capita income for the households of Class 3 (the hard core of the informal sector), who derive their income entirely or mostly from work in the informal sector. However, this group does not fit into the trend as far as income per employed is concerned. A circumstance that reflects one of the characteristics of informal employment sector: its heterogeneity, including persons whose earnings might be high or very low.

TABLE 5 PERSONS PER HOUSEHOLD AND DEPENDENCY RATES

class	persons per household	dependency ratio
1	5.40	1.21
2	5.53	1.47
3	4.43	1.59
Informal Sector	4.75	1.49
4	3.85	2.35
All households	4.29	3.18

Class is determined by the contribution of informal workers to the household income
Class 1 = less than 30 % Class 2 = between 30 and 50 %
Class 3 = more than 50 % Class 4 = includes the rest of households
Source: data base of III national household income and expenditure survey 2005 Central Bank of Venezuela

There is another interesting variable to have a look at: the dependency rate. It indicates the number of persons (unemployed or economically inactive) per employed member of the household. The national average is 3.18. For the informal sector the value goes from 1.21 for class 1 to 1.59 for class 3, which has the lowest average size of the sector and the highest dependency ratio.

It reaches its highest value for class 4. An unexpected result, because high dependency rate is usually associated with poverty; it reflects the heterogeneity of the households included in this class.

Level of education

The households were also distributed according to the level of the education of the entire household. They were classified in four groups taking into consideration the level attained by each member relating the number of years of education attained to their age. This led us to estimate what we call the “deficit of education”. The procedure was as follows: the deficit of education of each member was obtained deducting from the number of expected years of schooling according to the age of the person, the number of years of study actually achieved by each member. The expected years of study derives from the existing system of education. The household deficit in turn is the sum of those of the household members.

The results are shown in tables 5 and 6. The first group (first column) has the lowest level of education, with an average deficit of 13.3 years; the second an average of 7.8 years: the third has 4.3 years and the fourth 1.1 years of deficit.

TABLE 5 HOUSEHOLDS OF INFORMAL SECTOR BY EDUCATIONAL LEVEL

	HOUSEHOLDS BY EDUCATIONAL LEVEL				
class	**1**	**2**	**3**	**4**	
1	7,593	123,356	266,999	97,554	495,502
2	11,395	113,621	228,075	71,889	424,980
3	121,425	588,759	982,876	416,527	2,109,587
Informal Sector	140,413	825,736	1,477,950	585,970	3,030,069

Class is determined by the contribution of informal workers to the household income
Class 1 = less than 30 % Class 2 = between 30 and 50 %
Class 3 = more than 50 % Class 4 = includes the rest of households
Educational level measured by the household educational deficit in years, 1 = 13.3, 2 = 7.8, 3 = 4.3, 4 = 1.1
Source: data base of III national household income and expenditure survey 2005 Central Bank of Venezuela

Class 3, which includes the bulk of the sector, has a third of it in an appalling situation, with a deficit of 8 years or more.

TABLE 6 HOUSEHOLDS OF INFORMAL SECTOR BY EDUCATIONAL LEVEL %

	HOUSEHOLDS BY EDUCATIONAL LEVEL %				
class	**1**	**2**	**3**	**4**	
1	2%	25%	54%	20%	100%
2	3%	27%	54%	17%	100%
3	6%	28%	47%	20%	100%
Informal Sector	5%	27%	49%	19%	100%

Class is determined by the contribution of informal workers to the household income
Class 1 = less than 30 % Class 2 = between 30 and 50 %
Class 3 = more than 50 % Class 4 = includes the rest of households
Educational level measured by the household educational deficit in years, 1 = 13.3, 2 = 7.8, 3 = 4.3, 4 = 1.1
Source: data base of III national household income and expenditure survey 2005 Central Bank of Venezuela

What are the characteristics of class 3 related to education? It seems that those members working in informal activities have less years of study. Younger members are in a much better position. This is also reflected by the average household age.

TABLE 7 CHARACTERISTICS of HOUSEHOLDS in CLASS 3 by LEVEL OF EDUCATION

	HOUSEHOLDS BY EDUCATIONAL LEVEL %				
	1	**2**	**3**	**4**	
informal workers	6%	29%	48%	17%	100%
professional workers	4%	28%	48%	19%	100%
dependants	3%	23%	53%	21%	100%
< than 15 years old	1%	17%	56%	26%	100%
average household age	47.7	36.2	26.6	24.5	29.3

Educational level measured by the household educational deficit in years, 1 = 13.3, 2 = 7.8, 3 = 4.3, 4 = 1.1
Source: data base of III national household income and expenditure survey 2005 Central Bank of Venezuela

Another finding was that the informal workers were, in general, worse prepared in terms of years

of schooling, than the rest of the work force.

Income strata

Behaviour of households depends on their income. They were classified according to their income in four groups. The first and second includes households under the poverty line. The first refers to extreme poverty. The third and fourth includes households over the poverty line, the distinction based on being under or over the national average per capita income.

TABLE 8 CHARACTERISTICS of HOUSEHOLDS of the INFORMAL SECTOR by INCOME STRATA

	INCOME STRATA				
	1	**2**	**3**	**4**	**total**
Households	171,397	747,721	1,300,457	810,494	3,030,069
Informal Workers	211,882	932,172	1,805,190	1,044,441	3,993,684
Dependants	821,194	2,804,652	3,674,167	1,316,577	8,616,589
Average household age	23.7	24.9	29.0	34.1	29.9
Population	1,092,403	4,024,445	6,232,314	3,036,752	14,385,914
< than 15 years old	501,040	1,573,485	1,934,272	651,468	4,660,264

1 = extreme poverty 2 = other poor 3 = non poor under national average per capita income

4 = non poor over national average per capita income

Source: data base of III national household income and expenditure survey 2005 Central Bank of Venezuela

Table 8 shows that 31% of households in the informal sector fell below the poverty line, with a 6% in extreme poverty. This situation compares with 28% and 6% for all households.

Making the same calculation for the core of the informal sector, class 3, it is found that 35% are in poverty conditions, and 7% in the worst situation.

TABLE 9 CHARACTERISTICS of HOUSEHOLDS in CLASS 3 by INCOME STRATA %

	INCOME STRATA			
	1	**2**	**3**	**4**
Households	7%	28%	41%	23%
Informal Workers	6%	26%	45%	23%
Dependants	12%	36%	39%	13%
Average household age	22.9	24.8	28.7	34.1

1 = extreme poverty 2 = other poor 3 = non poor under national average per capita income

4 = non poor over national average per capita income

Source: data base of III national household income and expenditure survey 2005 Central Bank of Venezuela

Gender

Both types of households (male headed and female headed) have the same average age. They

also coincide more or less as far the percentage of informal workers in the total of members of the household (32% and 31%) and as to the percentage of dependants in the household (62% and 61%). But even though the average household age is the same, there are more, percentagewise, younger members in female headed households.

Another striking feature is the fact that professional workers represent a higher percentage in female headed households. Tables 11, 12 and 13 show additional characteristics of the two sets of the households related to the income status.

TABLE 11 CHARACTERISTICS of MALE HEADED HOUSEHOLDS in CLASS 3 by INCOME STRATA %

	INCOME STRATA			
	1	**2**	**3**	**4**
Households	5%	27%	44%	24%
Informal Workers	4%	24%	47%	24%
Dependants	9%	34%	42%	14%
< than 15 years old	10%	35%	42%	14%
Population	7%	30%	44%	19%
Average household age	22.7	24.6	28.7	33.9

1 = extreme poverty 2 = other poor 3 = non poor under national average per capita income

4 = non poor over national average per capita income

Source: data base of III national household income and expenditure survey 2005 Central Bank of Venezuela

TABLE 12 CHARACTERISTICS of FEMALE HEADED HOUSEHOLDS in CLASS 3 by INCOME STRATA %

	INCOME STRATA			
	1	**2**	**3**	**4**
Households	11%	31%	35%	22%
Informal Workers	10%	28%	41%	21%
Dependants	18%	40%	32%	10%
< than 15 years old	20%	38%	32%	9%
Population	15%	35%	35%	15%
Average household age	23.1	25.1	28.6	34.7

1 = extreme poverty 2 = other poor 3 = non poor under national average per capita income

4 = non poor over national average per capita income

Source: data base of III national household income and expenditure survey 2005 Central Bank of Venezuela

TABLE 13 PARTICIPATION of FEMALE HEADED HOUSEHOLDS in CLASS 3 by INCOME STRATA %

	INCOME STRATA			
	1	**2**	**3**	**4**
Households	57%	39%	31%	34%
Informal Workers	56%	38%	31%	31%
Dependants	51%	37%	28%	26%
< than 15 years old	53%	39%	31%	29%
Population	52%	38%	30%	29%

1 = extreme poverty 2 = other poor 3 = non poor under national average per capita income

4 = non poor over national average per capita income

Source: data base of III national household income and expenditure survey 2005 Central Bank of Venezuela

TABLE 14 CHARACTERISTICS OF MALE HEADED HOUSEHOLDS IN CLASS 3 BY EDUCATIONAL LEVEL %

	EDUCATIONAL LEVEL				
	1	**2**	**3**	**4**	
informal workers	8%	32%	47%	14%	100%
< than 15 years old	1%	19%	58%	23%	100%
dependants	3%	24%	54%	19%	100%
households	5%	27%	51%	17%	100%
Educational level measured by the household educational deficit in years, 1 = 13.3, 2 = 7.8, 3 = 4.3, 4 = 1.1					

Source: data base of III national household income and expenditure survey 2005 Central Bank of Venezuela

TABLE 15 CHARACTERISTICS OF FEMALE HEADED HOUSEHOLDS IN CLASS 3 BY EDUCATIONAL LEVEL %

	EDUCATIONAL LEVEL				
	1	**2**	**3**	**4**	
informal workers	3%	25%	50%	22%	100%
< than 15 years old	1%	15%	52%	32%	100%
dependants	2%	21%	52%	25%	100%
households	4%	27%	45%	25%	100%
Educational level measured by the household educational deficit in years, 1 = 13.3, 2 = 7.8, 3 = 4.3, 4 = 1.1					

Source: data base of III national household income and expenditure survey 2005 Central Bank of Venezuela

Gender and education. Differences concerning the educational level of male and female headed households are shown in the tables 14 and 15. As indicated in the tables the figures are again for the households of Class 3, which is the core of the informal sector. The last line of these tables shows the situation for the whole household, lines one, two and three the same for the different components of the household, such as “informal workers”, “dependants” and members less than 15 years old.

The lower range of educational level (Col 1 and 2) is approximately equal in both types of household (5% and 27% versus 4% and 27%). At the middle level (Col 3) the difference is more pronounced (51% against 45%) in favour of the male headed. But the most remarkable difference shows up at the highest level as shown in the table (Col 4): a quarter of all women headed households falls into this category, but it is only one fifth in the other households; more precisely, 25% and 17%.

The difference is not only with respect to the whole household, but also to its participants. Thus, for the informal workers it is 22% and 14%; 32% against 23% for those under 15 years; and 25% against 19% for the dependants; always in favour of the female headed households.

REGIONAL DATA

The foregoing data correspond to the nation as a whole. The next set of tables show the results by territorial sub-divisions. The investigation classified the territory in five regions: Metropolitan Area of Caracas, Main cities, Medium size cities, Small cities and Rural Area.

TABLE 14 INFORMAL SECTOR BY REGIONS

			Employed population		
regions	**population**	**dependants**	**informal workers**	**other**	**households**
1	1,399,602	787,054	420,362	192,186	322,594
2	4,189,409	2,474,685	1,177,674	537,050	883,893
3	3,235,105	2,008,841	855,325	370,939	695,271
4	3,784,176	2,256,488	1,120,319	407,370	774,914
5	1,777,622	1,089,520	420,005	268,096	353,397
	14,385,914	8,616,589	3,993,684	1,775,641	3,030,069

Source: data base of III national household income and expenditure survey 2005 Central Bank of Venezuela

The more than 14 million population of the informal sector were distributed among the five regions in a similar structure as the total population of the nation, corresponding a little less to the Metropolitan Area, difference that goes to Small Cities.

Taking into consideration all remunerated workers, informal sector workers' were relatively more numerous in Small size cities (50%), while in the Metropolitan Area of Caracas they were only a third of all remunerated workers residing in it.

The dependency ratio takes the highest value for Medium Size Cities, 1.64, and the lowest for the Metropolitan Area, 1.28

TABLE 15 ANNUAL PER CAPITA INCOME OF INFORMAL SECTOR BY REGIONS thousand of Bs.

	class 1		class 2		class 3		INFORMAL SECTOR	
regions	total pc income	informal pc income	total pc income	informal pc income	total pc income	informal pc income	total pc income	informal pc income
1	6,079	918	4,251	1,544	4,370	3,382	4,664	2,564
2	4,449	689	3,293	1,186	3,283	2,419	3,520	1,878
3	4,619	651	2,669	992	2,591	2,074	3,013	1,580
4	3,503	561	2,727	1,063	2,727	2,047	2,848	1,686
5	2,587	397	1,888	745	1,856	1,360	1,999	1,074
All regions	4,208	637	2,937	1,093	2,904	2,200	3,152	1,728

Source: data base of III national household income and expenditure survey 2005 Central Bank of Venezuela

There are marked differences among the per capita income of households of the informal sector when reviewed by regions. In rural areas this per capita income is only 67% of that of the Metropolitan Area of Caracas. This is also true for all three classes.

CLUSTER ANALYSIS

Methodology

The above analysis used classifications of households according to a particular characteristic: income, education, place of residence. In order to examine the data in more detail, we also use an alternative method of classification that takes into account several characteristics simultaneously: housing conditions, disposable income per member, educational level and dependency ratio.

The method used is the multivariate data classification, which aims to achieve a classification or grouping system that allows data to organize into groups, so that data within a group are "similar" between them, or "uniform", while those belonging to different groups are "dissimilar" to those of other groups.

We chose to use the methods of non hierarchical classification, due to efficiency in the processing software used (SAS version 9.0) when working with a database with more than 100 individuals. This algorithm starts with the *k* initial "seeds" that are randomly selected from the data set, the *k* clusters are created by associating every observation with the nearest mean. The

centroid of each of the *k* clusters becomes the new means; this procedure is repeated until convergence has been reached. For this study various tests were conducted to determine an optimal number of clusters according to the structures generated.

The method minimize the distance between two clusters by

$$D_{KL} = \left\| \overline{X}_K - \overline{X}_L \right\|^2$$

If $d(x , y) = | x - y |^2$, then the combinatorial formula is

$$D_{JM} = [(N_K D_{JK} + N_L D_{JL})/(N_M)] - [(N_K N_L D_{KL})/(N_M^2)]$$

The distance between two clusters is defined as the (squared) Euclidean distance between their centroids or means.

Variables

Every index was normalised to facilitate the interpretation. Figures close to 100 correspond to the highest quality, level or maximum value of the index, in contrast, figures near to 0 correspond to the lower quality, level or minimum value of the index**.**

1.- Housing Quality Index
This indicator is calculated by using multiple methods of correspondence, considering variables related to infrastructure and services of dwellings. A combination of the elements of the infrastructure as durability of walls and roof, type of floor and the availability of sewage were taken as indicator of dwellings quality.

2.- Rate of per capita income
It refers to the total monetary and nonmonetary income earned by all household members divided by the total number of persons in the household.

3.- Level of education of the household
This index refers to the sum of the educational deficit or surplus of all household members. This deficit or surplus is obtained taking the expected years of schooling of each household member according to her (his) age, minus the sum of years of study actually achieved by each member

4. - Dependency Ratio

This ratio is obtained dividing the total number of members in the household by the number of employed persons in the same household.

ANALYSIS

This methodology was applied to classes 1 and 2 together and to class 3. It was obvious that in each set there were different groups. Three clusters for each set were finally selected. In this way we obtained six groups within the informal sector. The characteristics of the different clusters inside the same class show the heterogeneity of the households configuring the informal sector.

The first set which includes households of classes 1 and 2, has 3 clusters: the first and third have certain similarities, their per capita income are not too distant, but the quality of their dwellings are quite apart. The dependency ratio of the third cluster is better than that of the first and they reside mostly in urban areas. The main activities, in which the households of both clusters are employed, are trade and services. For both, their informal income is just a third of their total income. The situation of those included in the second cluster is definitely better. The per capita income is three times higher. The informal income is only a fourth of the total income. The quality of dwellings and dependency ratio are definitely good. Their members work mostly in clerical occupations. 35% of households of the first cluster are poor while less than 8% of those in the third are in such situation. 90 % of households of the second cluster are above the national per capita income.

The second set represents the hard core of the informal sector, class 3. The first cluster gathers together the more numerous number of households, 53% of households of class 3. A sizable fraction of them is poor or in a vulnerable position. The per capita income of households included in this cluster is 75% of the corresponding to the second cluster and is substantially inferior to that of the third cluster, which includes the wealthiest households of the sector. The quality of dwellings of this first cluster is much better than that of the second cluster, but is just in the middle of the scale. The dependency ratio and the educational index are high; the indexes are in the lower side of the scale. The household is relatively young. The average size of the households is considerably higher than the national figure. In average only a third of the household members are employed and earn an income. The most important group in the non-economically active members is the students. 65% of the households are male headed, a common

trait for class 3. A third is engaged in the trade sector and 13% have members doing domestic services.

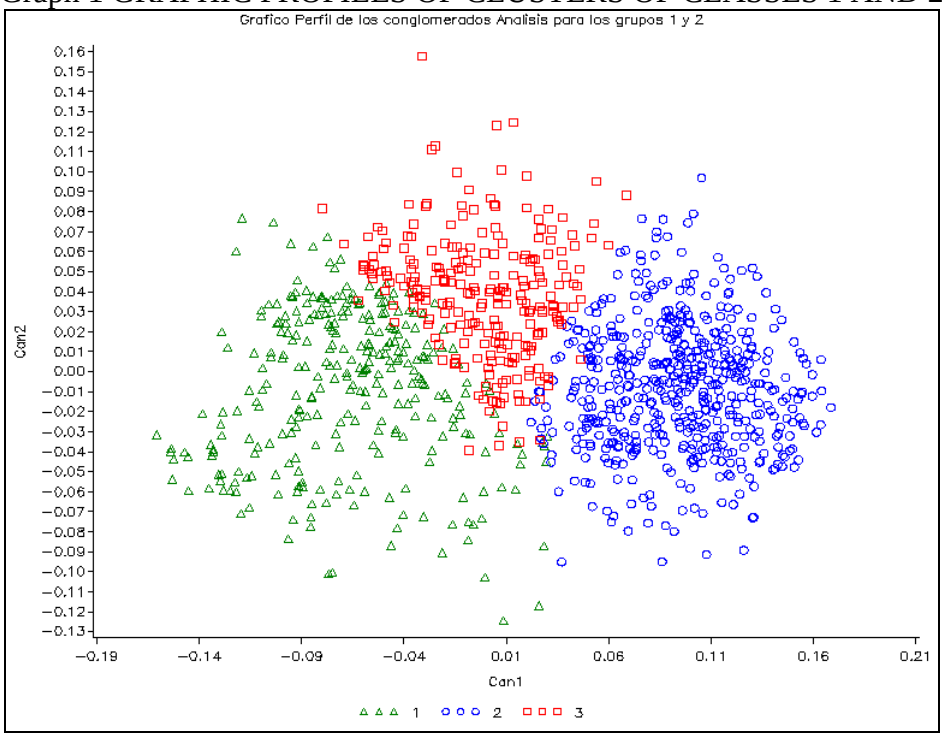
The second cluster of class 3 gathers households mainly residing in rural areas and small cities, which explains the bad conditions of their dwellings. They are in better conditions than those of the first cluster, but still 37% of them are under the poverty line and 50% in vulnerable situation. The educational index is low. The dependency ratio is in the middle of the scale, the result of having, in average, almost half of their members employed and earning an income. A little more than a third is engaged in the trade sector, 14% in construction activities and 14% have members doing domestic services.

The third cluster is by far the wealthiest. Their dwellings are in good conditions. Only 15% is in vulnerable situation, 85% is over the national per capita income. The educational index and the dependency ratio are relatively in good standing. They reside mainly in urbanized areas. The activities in which they mainly engage are trade (38%) and transport (13%). The average size of household is 3.5 and the average age is 34.6 years.

Cluster 2 of the first set and cluster 3 of second set are similar in various ways, though still showing differences between them. Members of households of cluster 3 of class 3 are mainly engaged in trade and services, while those in cluster 2 of classes 1 and 2 are mostly dedicated to clerical and managerial occupations.

The following graphs and tables show the clusters above described.

Graph 1 GRAPHIC PROFILES OF CLUSTERS OF CLASSES 1 AND 2



Graph 2 GRAPHIC PROFILES OF CLUSTERS OF CLASS 3

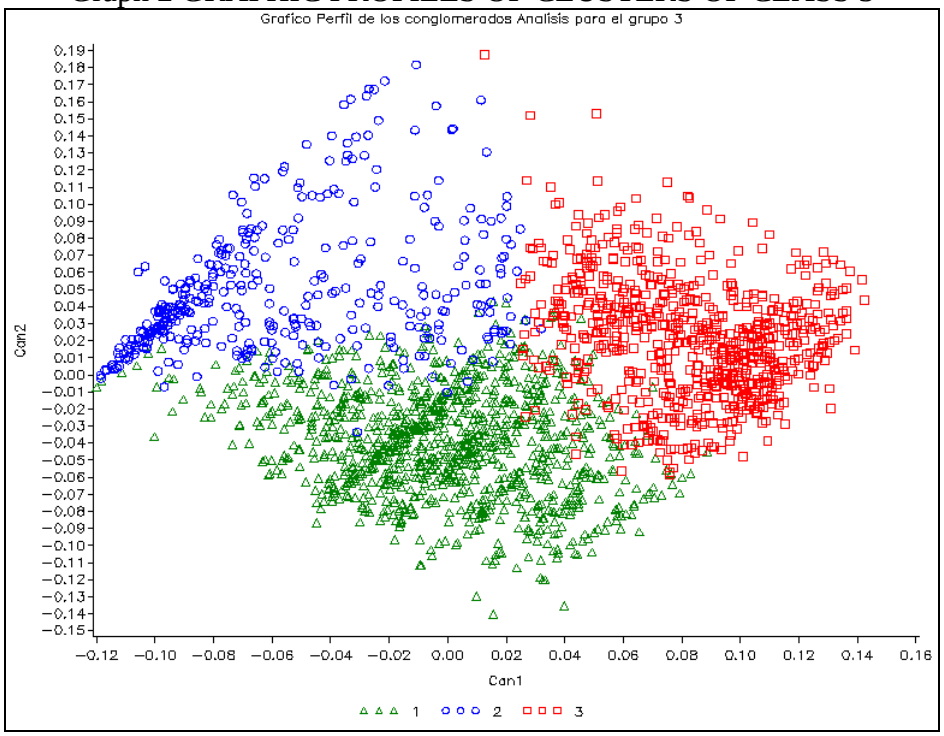


TABLE 16 HOUSEHOLDS' PROFILE CLASS 3

		clusters			Total
		1	2	3	
dwellings quality index	average	56.2	12.8	75.2	50.4
Per capita Income Index	average	36.5	46.4	91.8	51.8
Total per capita Income,	average	1,632,081	2,200,638	7,095,872	3,048,308
educational index	average	27.6	21.5	46.8	30.6
dependency rate	average	29.5	44.6	60.1	40.2
number of dependents	average	3.8	2.6	1.6	3.0
size of household	average	5.3	4.2	3.5	4.6
average age of household	average	25.3	27.6	34.6	28.1
less than 15 years old	average	2.3	2.2	1.5	2.1
less than 15 years old attending to school	average	1.9	1.9	1.4	1.8
less than 15 years old not attending to school	average	1.4	1.4	1.1	1.4
Status of individual					
employed with income	%	34.2	48.1	63.2	44.3
unemployed	%	4.6	2.3	1.9	3.4
household work	%	13.8	10.7	8.0	11.7
students	%	27.6	20.8	17.3	23.6
less than 7 years old	%	16.6	15.9	6.7	14.1
Sex of head of household					
Male	%	64.8	64.0	63.6	64.3
Female	%	35.2	36.0	36.4	35.7
Economic activities					
Manufacturing	%	9.7	10.3	9.3	9.7
Construction	%	10.0	13.5	3.9	9.4
Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	%	32.7	33.9	37.8	34.2
Hotels and Restaurants	%	3.9	3.1	6.4	4.3
Transport, storage and communications	%	11.6	9.0	13.3	11.4
Real estate, renting and business activities	%	4.7	2.7	3.8	4.0
Education	%	1.5	2.5	4.5	2.4
Health and social work	%	0.6	0.8	1.4	0.9
Other community, social and personal service activities	%	8.7	3.7	8.4	7.4
Activities of private households as employers and undifferentiated production activities of private households	%	12.6	13.7	6.7	11.5
Occupations					
Clerks	%	26%	23%	30%	12.0
Skilled agricultural and fishery workers	%	18%	17%	14%	7.4
Craft and related trades workers	%	9%	7%	11%	4.2
Plant and machine operators and assemblers	%	33%	45%	23%	14.7
Regions					
Metropolitan Area of Caracas	%	8.7	2.2	20.6	10.0
Main cities	%	27.7	25.1	34.6	28.7
Medium size cities	%	25.1	15.1	18.2	21.1
Small cities	%	30.0	26.9	23.9	27.8
Rural areas	%	8.5	30.7	2.6	12.4
Strata by income level					
Extreme poverty	%	9.3	7.7	.	6.7
Other poor	%	37.3	29.1	0.5	26.7
Non poor, income < national average	%	51.5	50.1	14.5	42.5
Non poor, income > national average	%	1.9	13.1	85.0	24.0
% total households in class 3	%	53%	24%	23%	100%
% total households in the informal sector	%	37%	16%	16%	70%

Source: Data base of III National Household Income and Expenditure Survey 2005 CENTRAL BANK OF VENEZUELA

TABLE 17 HOUSEHOLDS' PROFILE CLASSES 1 AND 2

		Clusters			Total
		1	2	3	
dwellings quality index	Ave	36.4	75.3	70.8	57.6
Per capita Income Index	Ave	43.1	94.8	56.9	63.8
Total per capita Income,	Ave	2,008,789	6,870,385	2,638,783	3,801,241
educational index	Ave	26.3	54.7	31.3	37.1
dependency rate	Ave	34.5	61.3	47.6	46.7
number of dependents	Ave	4.6	1.9	2.9	3.3
size of household	Ave	6.8	4.5	5.3	5.7
average age of household	Ave	25.9	33.4	32.3	30.0
less than 15 years old	Ave	2.6	1.4	1.9	2.2
less than 15 years old attending to school	Ave	2.1	1.3	1.6	1.8
less than 15 years old not attending to school	Ave	1.5	1.2	1.2	1.4
Status of individual					
employed with income	%	37.0	61.6	45.4	47.3
unemployed	%	5.0	2.6	3.3	3.8
household work	%	13.1	6.9	10.2	10.3
students	%	26.9	17.4	22.2	22.6
less than 7 years old	%	14.9	6.0	8.8	10.4
Sex of head of household					
Male	%	62.8	51.4	56.8	57.5
Female	%	37.2	48.6	43.2	42.5
Economic activities					
Manufacturing	%	10.1	10.2	16.9	11.7
Construction	%	5.2	5.0	5.2	5.2
Wholesale and retail trade; repair of motor vehicles, motorcycles and personal and household goods	%	26.6	28.0	27.2	27.2
Hotels and Restaurants	%	6.5	3.1	5.8	5.2
Transport, storage and communications	%	7.6	10.0	7.9	8.5
Real estate, renting and business activities	%	6.3	7.7	3.6	6.1
Education	%	5.6	10.7	3.5	6.8
Health and social work	%	1.9	4.9	4.2	3.5
Other community, social and personal service activities	%	3.7	6.9	8.7	5.9
Activities of private households as employers and undifferentiated production activities of private households	%	11.0	1.3	5.2	6.4
Occupations					
Clerks	%	25%	24%	26%	25%
Skilled agricultural and fishery workers	%	12%	12%	18%	13%
Craft and related trades workers	%	10%	8%	8%	9%
Plant and machine operators and assemblers	%	39%	13%	28%	25%
Regions					
Metropolitan Area of Caracas	%	4.7	20.1	14.4	12.2
Main cities	%	20.5	38.7	35.6	30.2
Medium size cities	%	28.3	27.5	24.4	27.1
Small cities	%	26.1	12.2	21.9	20.4
Rural areas	%	20.3	1.4	3.8	10.1
Strata by income level					
Extreme poverty	%	4.8	.	0.5	2.2
Other poor	%	31.0	.	7.2	14.9
Non poor, income < national average	%	56.6	10.4	82.9	47.2
Non poor, income > national average	%	7.6	89.6	9.5	35.8
% total households in classes 1 and 2	%	43%	34%	24%	100%
% total households in the informal sector	%	13%	10%	7%	30%

Source: Data base of III National Household Income and Expenditure Survey 2005 CENTRAL BANK OF VENEZUELA

MAIN FINDINGS

The analysis of the informal sector in terms of households brings out results that are not easily obtainable otherwise. The demographic, social, cultural and economic characteristics obtained by this procedure explain more in depth its behavior and possible reactions to different occurrences.

While this sector harbors half of the households and of the population of the nation, it is extremely heterogeneous and hence difficult for statistical handling. An appropriate type of classification is therefore crucial for its interpretation .and its usefulness for policy purposes.

A central element in the classifications used in this paper was the contribution of informal workers to the household income, which in a way, could be interpreted as the “degree of informality”. This modus operandi turned out to be a fruitful procedure facilitating useful analysis. When classifying households following this criterion, we organize them in three classes: class 1 when the contribution is equal to 30% or less; class 2 when the contribution is between 30 and 50%; and the third class when the contribution is more than 50%.

When examining the total and employed population by type of employment, we see that out of the 14 million people who are the total population of the informal sector, 2.67 million belongs to class 1; 2.35 million to class 2: and 9.35 million to class 3. This distribution means that when a household has one or more members working in informal activities usually their earnings are essential for the household. Classes 1 and 2 include households where the income from informal activities is complementary to earnings from other sources.

The relation with the rest of the economy constitutes an important element of the economic level of households. In class 1 more persons are employed outside the informal sector than within the sector; in class 2 the number of employed outside the sector are only slightly inferior to the employed within the sector; but in class 3 the proportion change drastically, there are five times more workers with employment related to informal activities.

An important information is the source of income. Class 1 derives only 15% of its total income from activities in the informal sector, almost the same amount this group obtains from transfers. Class 2 gets 37%; while class 3 depends mostly on its informal activities, 76%.

Another interesting finding is that salaries from informal enterprises constitute a very important source of income for households of the informal sector (55% for the informal sector as a whole); the mixed income is not as important as one would have anticipated it to be. Classes 1 and 2 get more than half of their informal income from wages and salaries paid by informal enterprises.

The conditions of these salaried workers are insecure, 71% of them do not have written contracts which means that they are unprotected. This situation, that is, the quantitative importance of these salaried workers combined to their precarious conditions takes us to think that there is a need of a policy to help them, either including them under the national social insurance or to induce them to organize in cooperatives.

The households were also distributed according to the level of the education of the entire household. They were classified in four groups taking into consideration the level attained by each member relating the number of years of education attained to their age. This led us to estimate what we call the “deficit of education”. The deficit has been classified in four categories: category 1 represents a deficit of 13.3 years; category 2 a deficit of 7.8 years; category 3 a deficit of 4.3 years; and category 4 a deficit of 1.1 years.

Class 3, which includes the bulk of the sector, has more than a third of it in an appalling situation, with a deficit of 8 years or more and only 17% in the fourth category. They were, in general, worse prepared in terms of years of schooling, than the rest of workers. Younger members are in a much better position; one fourth has a deficit of around one year. The dependants in this sector have done more years of schooling than the informal workers.

The educational level differs, not only by age groups, but also by gender. At the lowest level male headed and female headed households are approximately equal; at the middle level the female headed are below the male headed households, but at the highest level the female headed come out ahead: 25% are on the highest level, while only 17% of the male headed households fall into this category.

The impact of income difference was measured by classifying the households by income strata. They were classified according to their income in four strata: the first and second includes households under the poverty line. The first refers to extreme poverty. The third and fourth includes households over the poverty line, the distinction based on being under or over the

national average per capita income. 31% of households in the informal sector fell below the poverty line, with a 6% in extreme poverty. This situation compares with 28% and 6% for all households. Making the same calculation for the core of the informal sector, class 3, it is found that 35% are in poverty conditions, and 7% in the worst situation.

Both types of households (male headed and female headed) have the same average age. They also coincide more or less as far the percentage of informal workers in the total of members of the household and as to the percentage of dependants in the household. But even though the average household age is the same, there are more, percentagewise, younger members in female headed households. Another striking feature is the fact that professional workers represent a higher percentage in female headed households.

In order to find out whether there are differences worthy of note among regions, the investigation classified the national territory in five regions: Metropolitan Area of Caracas, Main cities, Medium size cities, Small cities and Rural Area. Taking into consideration all remunerated workers, informal sector workers' were relatively more numerous in Small size cities (50%), while in the Metropolitan Area of Caracas they were only a third of all remunerated workers residing in it. The dependency ratio takes the highest value for Medium Size Cities, 1.64, and the lowest for the Metropolitan Area, 1.28. There are marked differences among the per capita income of households of the informal sector when reviewed by regions: in rural areas this per capita income is only 67% of that of the Metropolitan Area of Caracas; this is true for all three classes.

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