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**Poverty and Ethnicity**  
*A Cross-Country Study of Roma Poverty in  
Central Europe*



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**Poverty and Ethnicity**  
*A Cross-Country Study of Roma Poverty in  
Central Europe*

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*Washington, D.C.*

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## FOREWORD

Addressing severe poverty among the Roma minority is a central component of the World Bank's work on economic and human development in Central and Eastern Europe. Living standards for Roma have deteriorated more severely during the transition to a market economy than they have for other population groups, and Roma have been poorly positioned to take advantage of emerging economic and civic opportunities.

Although it is widely understood that Roma are the main poverty group in many of the countries in Central and Eastern Europe – including the countries addressed in this report: Hungary, Romania and Bulgaria – information about their actual living conditions and the reasons for their deep poverty has long been scarce. This paper analyzes the first cross-country survey of Roma households in the region, and provides a unique opportunity to assess the welfare of Roma from a quantitative perspective in three countries.

The findings reinforce those of earlier qualitative case studies. They underscore the multidimensionality of Roma poverty and its relation to low education levels, poor health status, high unemployment, inadequate housing, as well as exclusion within society. In the three European Union accession countries analyzed in this report – Bulgaria, Romania and Hungary – Roma constitute deep pockets of poverty.

These results highlight the complex challenge countries in Central and Eastern Europe face in addressing poverty among Roma and building inclusive societies. While specific policies and programs need to be formulated at the country level, this report identifies common approaches and actions and contributes to further discussion of policy options among national governments, Roma communities, non-governmental organisations and international organisations.



Johannes F. Linn  
Vice President  
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## ABSTRACT

Roma are the main poverty risk group in many of the countries of Central and Eastern Europe. However, information on their living conditions, and the characteristics of their poverty is scarce, fragmented and often anecdotal. This paper analyzes data from a new cross-country household survey conducted by the Center for Comparative Research, in the Sociology Department of Yale University. The survey is the first of its kind which addresses the ethnic dimension of poverty across countries, covering Roma in Hungary, Bulgaria and Romania.

The paper finds that welfare among Roma households is significantly lower than that of non-Roma in terms of both material deprivation (consumption and income), and other measures of deprivation, including housing status, education levels and employment opportunities. Multivariate analysis confirms that, controlling for other household characteristics, there is a strong negative association between Roma ethnicity and welfare. A large part of this association appears to be due to differences in endowments and opportunities, but there is also an important component that is “structural.” This component may reflect the influence of past and present discrimination, exclusion, and cultural factors which may affect access to public services – for example through language barriers.



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# 1. INTRODUCTION AND BACKGROUND

Roma, or 'gypsies,' are a unique minority in Europe. Unlike other groups, Roma have no historical homeland and are found in nearly all countries in Europe and Central Asia. Current estimates suggest that between 7 and 9 million Roma live throughout Europe, making them the largest minority in Europe. Their origins are the subject of much debate. Historical records indicate that Roma migrated from northern India into Europe in waves between the ninth and fourteenth centuries.<sup>1</sup> While some Roma groups are nomadic, the vast majority of Roma in Central and Eastern Europe have settled, some during the Austro-Hungarian and Ottoman empires, and others more recently under socialism.

The collapse of the socialist regimes in Central and Eastern Europe created new opportunities for all citizens, including Roma. For the first time in decades, minorities were able to express their ethnic identity, participate in civil society, and engage in previously forbidden economic activities. However, these gains have been offset by a dramatic reduction in opportunities in many respects. For many Roma, the collapse of the socialist state has led to an erosion of security in jobs, housing and other services, and in the absence of viable economic opportunities, to the emergence of severe poverty.

Indeed, a recent World Bank report on poverty in Europe and Central Asia (ECA) identified Roma as one of the main poverty risk groups in the region.<sup>2</sup> Roma are both poorer than other population groups and more likely to fall into poverty and remain poor. The roots of Roma poverty are intertwined with many of the factors which are correlated with poverty throughout the region— including low education levels, unemployment, and large family sizes. The unfavourable starting point of Roma at the outset of the transition period – with low education levels and overrepresentation among low skilled jobs – also led to disadvantages on the labour market.

Despite the awareness of low living standards among Roma in Central and Eastern Europe, information on their living conditions, and the characteristics of their poverty is scarce, fragmented and often anecdotal. Measurement problems are daunting and include: undersampling in censuses and household surveys; privacy legislation in many countries which prohibits gathering of data by ethnicity; the reluctance of many Roma to identify as Roma; and the incredible diversity of Roma groups and sub-groups. Even the few household surveys which have included ethnicity have been limited in their

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<sup>1</sup> For more on Roma history refer to Crowe, 1996 and Fraser, 1995.

<sup>2</sup> World Bank, 2000a, *Making Transition Work for Everyone: Poverty and Inequality in Europe and Central Asia*. World Bank, 2000b, *Roma and the Transition in Central and Eastern Europe: Trends and Challenges*. "Europe and Central Asia" refers to the World Bank's region, encompassing the 27 transition economies and Turkey.

ability to capture the Roma population.<sup>3</sup> This paper examines the nature and determinants of Roma poverty in three countries in Central and Eastern Europe: Bulgaria, Hungary and Romania, in order to inform the development of programs and policies to address the issues.

A defining characteristic of Roma is their diversity. There are numerous subdivisions of Roma based on various cross-cutting divisions, including family groups and religion. Ethnographers have identified 60 different groups in Bulgaria and similar diversity is believed to exist in other countries. In addition to these ethnic differences, there is significant diversity among Roma settlements: rural/urban, assimilated/non-assimilated, homogenous/heterogeneous, as well as affiliations with different religious denominations. Some groups speak variations of the Roma language, while others do not. As a result, analysis of Roma as a group is extremely difficult. The Dataset used for this study allows for some disaggregation of Roma groups, for example by settlement type and language. However, even these categories are too broad to adequately capture Roma diversity, and conclusions are necessarily tentative.

## DATA

This paper analyzes data from a new cross-country household survey conducted by the Center for Comparative Research, in the Sociology Department of Yale University. The survey is the first of its kind which addresses the ethnic dimension of poverty across countries and allows for a quantitative assessment of the living conditions of Roma in the region. The survey assessed living standards in six countries in the region: Bulgaria, Romania, Slovakia, Hungary and Russia. In three of the countries – Bulgaria, Romania, and Hungary – Roma households were oversampled in order to gain a more representative picture of their living conditions.<sup>4</sup> Data from these three countries are the focus of this analysis. The Dataset included both household and individual level questionnaires, both of which are used here. More information on the survey is included in the Technical Annex.

The Dataset represents a valuable input to analysis of Roma, as the three countries included in the survey comprise a significant share of Roma living in the region. Approximately 3.5 million Roma are thought to live in Bulgaria, Romania and Hungary combined – amounting to an estimated 40 to 50 percent of the total Roma population in Europe, and some 70 to 90 percent of the Roma population in the countries which are currently in accession negotiations with the European Union.<sup>5</sup>

Throughout the paper data from both the national random samples and the “Roma oversamples” are used. When the analysis focuses solely on Roma, the entire Roma

---

<sup>3</sup> For example the Romania LSMS has consistently estimated Roma at 1.5 percent of the general population, while accepted unofficial estimates are 8-10 percent.

<sup>4</sup> The original survey also attempted to include an oversample of Roma in the Slovak Republic, but due to problems encountered during the fieldwork this was abandoned.

<sup>5</sup> Population estimates are based on Liegeois, 1994. The EU accession countries are: Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, the Slovak Republic and Slovenia.

sample is used – e.g. both the Roma from the random sample, and Roma from the ethnic oversample (Table 1). In some cases, the samples are analyzed separately. On these occasions, this is noted in the text.

**Table 1: Yale Dataset, Household Survey Sample Sizes<sup>1</sup>**

	Random Sample	Ethnic Oversample <sup>2</sup>	Total	Total Roma <sup>3</sup>
Bulgaria	1005	474	1479	564
Hungary	936	330	1266	365
Romania	1011	270	1281	310

*Source:* Yale Dataset 2000, own calculations

<sup>1</sup> Due to incomplete information, 40 observations were dropped from the random sample. Non-Roma observations from the ethnic over sample (236) were also dropped.

<sup>2</sup> These figures include only the Roma from the ethnic oversample as the analysis in this paper does not use the non-Roma observations from the ethnic oversample.

<sup>3</sup> See Section 2 for the definition of Roma.

Ethnicity was identified in the survey through a number of different questions, including self-identification; interviewer identification; and language. As a result, the Dataset provides an unprecedented opportunity to analyze the situation of Roma across countries and to explore the linkages between ethnicity and poverty more broadly.

This paper provides an empirical picture of the links between Roma ethnicity and poverty in the three countries, focusing on comparisons in welfare status between Roma and non-Roma populations. The following section, Section 2, discusses differing definitions of ethnicity and basic characteristics including demographic characteristics, housing conditions and geographic distribution. Section 3 analyzes poverty, its level and correlates. It also looks at the determinants of poverty using multivariate analysis, and isolating the effects of Roma ethnicity. The final sections, Sections 4, 5 and 6, look at several non-income dimensions of welfare, including education, labor market status, access to social protection benefits, and coping strategies. Section 7 concludes and offers some policy recommendations based on the findings reported here and in other studies. The Technical Annex offers a detailed description of the data and methodologies used, and includes some basic statistical tables.

## 2. WHO ARE ROMA?

A central question in analysis of Roma is defining who should be counted<sup>6</sup>. As mentioned above, Roma are a very diverse minority, comprised of many groups and subgroups, many of which have little contact with each other, or may not consider themselves Roma at all. Roma live throughout Europe and over centuries have acquired linguistic, cultural and religious attributes from the various countries in which they have lived – in addition to varying levels of integration through intermarriage and other interactions. As a result, it is difficult to identify Roma based upon distinctive characteristics such as appearance, language or family names.

The Yale Dataset takes a multifaceted approach to the issue of ethnicity, including questions on self-identification, interviewer identification, language, parents' language, appearance, and family name.<sup>7</sup> In a recent paper Ladányi and Szelényi, discuss the various perspectives on ethnicity included in the data (Ladányi and Szelényi, 2001). The survey methodology allows for differing definitions of ethnicity and a more nuanced understanding of differences among Roma in the different countries. The following section discusses these differences.

In this paper the broadest definition of Roma is used. If either the individual, or the interviewer indicated that the individual was Roma using any of the criteria included in the survey, all members of household are assumed to be Roma for the purposes of the analysis.<sup>8</sup> This is justified by the policy interest of this paper – if policies affect ethnic minorities, they may do so regardless of personal identity.

The Roma population can be estimated in different ways using the survey data (Table 2). After identification by the interviewer, self-identification yields the largest population. Very few individuals who self-identified as Roma were not identified by the interviewer as Roma – two in the case of Bulgaria, and none in Hungary and Romania. On the other hand, the interviewers identified a large number of people as Roma who did not self-identify as Roma. In Bulgaria, 24 percent of those identified as Roma by the interviewer did not self-identify. The corresponding shares for the other two countries are 38 percent in Hungary, and 61 percent in Romania. It is difficult to know how to interpret these results. It may be that Roma in Romania are more integrated than Roma in Bulgaria and feel more Romanian (or Hungarian) than Roma. Conversely, it could be that Roma in Romania are more afraid of identifying as Roma than are Roma in the other countries.

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<sup>6</sup> For a more in depth discussion of this in the context of the Yale Dataset see Ladányi and Szelényi, 2001.

<sup>7</sup> The results in this section are based on the individual questionnaire using individual weights.

<sup>8</sup> Ethnicity questions are only contained in the individual questionnaire, therefore it is necessary to use data from the individual questionnaire to determine the ethnicity of all the individuals in the household. Of the households in which no member completed the individual questionnaire, two indicated that they lived in a traditional Roma home. All of the members of these two households were assumed to be Roma. All other households in which no member completed the individual questionnaire were dropped. The omission of these observations was taken into account before tabulating the survey size reported in Table 1.

**Table 2: Roma Population Sizes by Type of Identification (% of random sample)**

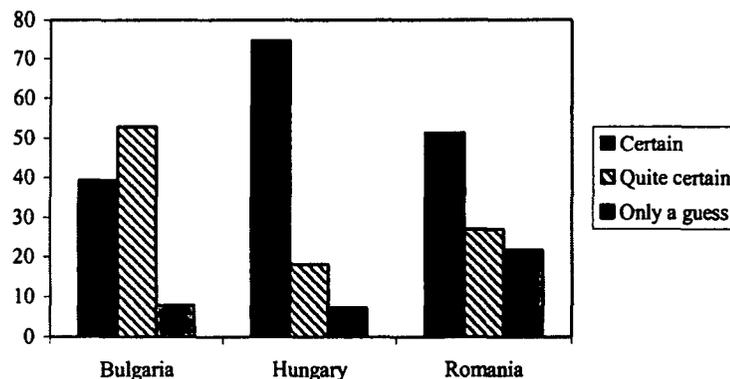
	Bulgaria	Hungary	Romania
Self-Identification	6.6	3.1	1.2
Language	6.2	1.7	1.6
Mother's Ethnicity	7.2	3.1	1.1
Father's Ethnicity	6.9	3.5	1.2
Spouse's Ethnicity	6.6	1.1	0.8
Interviewer Identification	8.7	5.0	3.1

Source: Yale Dataset.

It could also be that only certain groups of Roma self-identify as Roma. The share of the population self-identifying as Roma is relatively close to the share of the population who report speaking the Roma language at home. For example, in Hungary only the Wallach Roma speak the Roma language. The other two main groups of Roma in the country, the Beash and Rumungro Roma, generally speak Romanian, and Hungarian respectively. This could mean that self-identification is more likely to capture the Wallach, while other Roma are less likely to consider themselves Roma. The data also suggest that ethnic identity may be weakening over time. In Bulgaria and Hungary, the share of respondents who identify their parents as Roma, is higher than the share who identify themselves as Roma.

Another possible explanation for the discrepancies in types of identification is interviewer error (Figure 1). In Bulgaria the interviewers noted that they were 'certain' or 'quite certain' that the respondent was Roma in 87 percent of cases, while in Hungary the figure was 94 percent. In contrast, in Romania interviewers were certain or quite certain in their identification of Roma only 68 percent of the time, and were uncertain the rest. This might indicate that Romanian interviewers have a more inclusive definition of Roma, and were more willing to guess than interviewers in other countries. Because Romania was also the country with the largest share of contradictions between self-identification and interviewer identification, it could also be that Romanian interviewers were more prone to errors, or that it is simply more difficult to categorize ethnicity in Romania, than in other countries.

**Figure 1: Certainty of Interviewer Identification**  
(% of cases that the interviewer identified as Roma)



Source: Yale Dataset, own calculations. Data from the individual questionnaire.

The factors which interviewers took into account when determining whether a respondent was Roma vary across countries (Table 3). In all three countries, the top three factors were skin color (top reason in Hungary), self-identification (top reason in Bulgaria) and way of life (it is not clear how interviewers interpreted this). Language was the next most important factor, particularly in Bulgaria. Language was also important in the case of Romania. Fewer interviewers noted that family name was an important determinant of ethnicity.

**Table 3: Identification of Ethnicity by Criteria (according to interviewer, % of Roma cases)**

Criteria	Bulgaria			Hungary			Romania	
	Very Important	Important	Not Important	Very Important	Important	Not Important	Very Important	Not Important
Skin Color	37	46	17	68	32	0	45	31
Language	48	44	8	31	40	29	55	16
Way of Life	54	38	8	49	24	20	47	21
Family Name	11	17	72	30	20	50	14	63
Self-Identification	55	26	19	68	12	19	45	43

Source: Yale Dataset.

Notes: Includes Roma from the Random Sample. Uses individual weights.

## THE SIZE OF THE ROMA POPULATION

Estimates of the size of the Roma population differ widely across sources and can be quite controversial. A range of factors complicate identification of ethnicity in surveys, including undersampling of areas where Roma are likely to reside, difficulties in locating and identifying populations which may not be officially registered, and problems with self-reporting. Roma may opt not to self-identify for various reasons, such as fear of discrimination (Barany, 2001).

It is interesting to compare the size of the Roma population identified in the Yale Dataset with other sources. Table 4 shows the share of Roma the random samples for the three countries, in comparison with existing household surveys and unofficial estimates. The household surveys are nationally representative living standards surveys from 1997. These surveys are larger in size than the Yale Dataset: in Bulgaria 2,432 households, in Romania 40,000 households, and Hungary 2,712 households. In all cases, the share of the Roma population identified in the Yale data is larger than the household survey, with the largest difference in the case of Bulgaria (10.4 percent in comparison with 6.5).

**Table 4: Roma Populations: A Comparison of Surveys (% of population)**

	Yale Dataset <sup>1</sup>	Household Surveys <sup>2</sup>	Unofficial Estimates <sup>3</sup>
Bulgaria	10.4	6.5	8 - 10
Hungary	4.3	4.0	5 - 6
Romania	4.9	2.3	8 - 11

Notes: <sup>1</sup> Random sample only. Individual observations from the household survey, uses original (non-rescaled) household weights. <sup>2</sup> All surveys from 1997: Bulgaria Integrated Household Survey; Romania Integrated Household Survey; Hungarian Household Panel.

Source: Based on estimates from local officials and Roma leaders, figures represent midpoints of ranges (Liegeios, 1994).

These differences may be attributable to a number of factors – including the fact that the Yale survey was conducted three years after the household surveys. Differences in the methodology for identifying ethnicity may have played a role. In Romania and Bulgaria, ethnicity was determined based upon self-identification, whereas in Hungary – where the difference between the Yale and household Datasets is the smallest – was based upon the identification by the interviewer. Finally, as ethnicity was a focus of the Yale survey, greater attention was paid to sampling of Roma neighborhoods, and interviewers may have been more likely to conduct interviews in Roma neighborhoods and settlements.<sup>9</sup>

Unofficial estimates of the Roma population are based upon estimates of local government officials, researchers, and Roma community leaders. The estimates are notably higher than the in the Yale Dataset. These differences might be due to two issues. First, local experts may be better able to identify Roma communities than the research teams which conducted the other surveys. Second, local experts may have an incentive to make high estimates of the Roma population living in their area to highlight the issue for policy purposes.

## DEMOGRAPHICS

There are notable demographic differences between Roma and non-Roma populations in all of the countries. Roma have higher rates of population growth and larger families than non-Roma. This is evident from the survey which indicates that Roma households are nearly twice the size of non-Roma (Table 5).

<b>Table 5: Average Household Size (persons)</b>			
	Bulgaria	Hungary	Romania
Non Roma	2.8	2.5	3.0
Roma	4.2	4.2	5.1

*Source.* Yale Dataset

*Note:* includes Roma from random and oversamples. Weighted by household.

Roma women have more children and begin having children at an earlier age than non-Roma women. In all three countries, non-Roma women begin having children between age 22 and 23, while the average age for Roma women ranges between 19 and 20.<sup>10</sup> The data for Bulgaria and Romania also indicate that Roma women have, on average, one more child than non-Roma women: two for non-Roma women and 3 for Roma women. These trends have consequences for women’s reproductive health. Evidence from other surveys indicates that Roma women are more likely to have complications during pregnancy, as well as premature births and low birth weight babies, than non-Roma women (Puporka and Zádori, 1999). As will be seen below, having larger numbers of children is also correlated with poverty.

Due to higher birth rates, the Roma population is notably younger than other population groups (Table 6). Consistently, across the countries, the share of children in

<sup>9</sup> This was not the case in Slovakia, which was included in the Yale Dataset, but it appears that Roma settlements were not sampled there.

<sup>10</sup> Based on data from the random sample, includes only women who answered the individual questionnaire, weighted by rescaled individual weights.

the total Roma population is much higher than for non-Roma. While children make up between 26 and 34 percent of the Roma population, the share for non Roma is 10 to 13 percent. Similarly, due to lower life expectancy, there are many fewer elderly Roma than non-Roma. In Bulgaria and Romania, there are three to four times more non-Roma who are over 65 than non-Roma. In Hungary the differences were even more pronounced. Because of differentials in life expectancy between men and women, there are five times more elderly non-Roma men than Roma men, and nearly 8 times more Roma women.

**Table 6: Population Breakdown By Age, Gender, and Ethnicity**

	Bulgaria				Hungary				Romania			
	Roma		Non Roma		Roma		Non Roma		Roma		Non Roma	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
age 0-5	9.7	9.2	2.5	3.0	12.8	11.2	4.2	4.1	11.9	10.7	4.2	5.0
age 6-10	10.7	8.1	4.5	2.8	12.3	13.0	5.3	4.8	6.9	5.7	4.9	4.8
age 11-15	10.6	8.6	6.2	4.2	9.5	9.6	3.9	3.9	12.4	11.9	7.1	5.9
age 16-64	64.7	68.0	69.4	68.3	62.0	63.0	69.8	62.2	64.5	65.8	69.4	66.0
age 65+	4.4	6.1	17.4	21.7	3.4	3.2	16.8	25.0	4.4	6.0	14.4	16.3

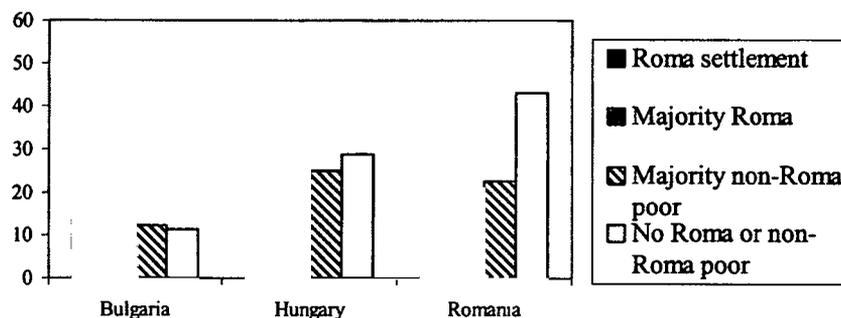
Source: Yale Dataset. Own calculations.

Note: Includes Roma from random and oversamples. Based on household observations, weighted by rescaled household weights.

## LIVING CONDITIONS

The profile of Roma in the samples by type of neighborhood varies significantly. Bulgaria stands out in this regard. Nearly 60 percent of Roma sampled were identified as living in Roma settlements (Figure 2). In contrast, the largest share of Roma in the Hungarian and Romanian samples were more integrated – living in areas where the non-Roma were the majority. This result may be a reflection of methodological issues, and differing interpretations of what a “Roma settlement” means across countries. Differences in sampling may also account for the result. It may be that different types of Roma – who were more likely to live in settlements— were sampled in Bulgaria, than in the other countries.

**Figure 2: Roma by Settlement Type (% of Roma)**

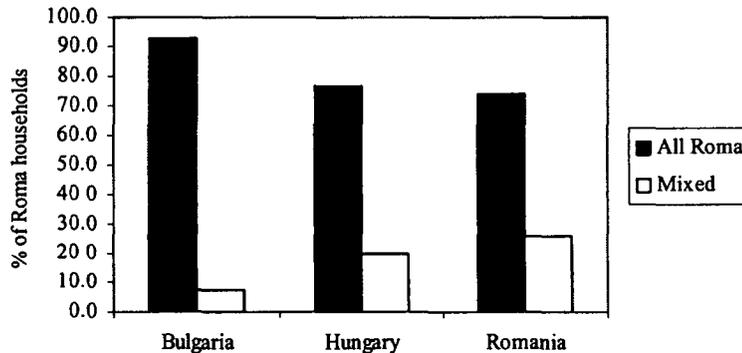


Source: Yale Dataset, own calculations.

Note: Includes all Roma (from random and ethnic oversamples), individual questionnaire; based on interviewer categorization of settlements and poverty.

The composition of Roma households roughly mirrors these living patterns. In Bulgaria, over 90 percent of Roma households were comprised of Roma only, while in Hungary and Romania the figure was around 70 percent (Figure 3). This makes sense, as Bulgarian Roma were more likely to live in settlements, and hence had fewer opportunities to interact with non-Roma. On the other hand, Roma in the Hungarian and Romanian samples are more integrated, and therefore have been more likely to intermarry with non-Roma (Figure 3).

**Figure 3: Ethnic Composition of Roma Households**



*Source* Yale Dataset, own calculations.

*Note:* Includes all Roma (from random and ethnic oversamples), individual questionnaire; based on interviewer categorization of settlements and poverty.

Conditions in Roma houses are significantly poorer than for non-Roma, underscoring the multidimensionality of poverty. As Table 8 illustrates, access to utilities, including electricity, heating and water are significantly lower for Roma households. Only 9 percent of Roma houses in Bulgaria, and 10 percent in Romania had access to hot water. Access to bathroom facilities and indoor toilets is similarly low. Few Roma households have telephones: only 12 percent in Bulgaria, 41 percent in Hungary, and 26 percent in Romania. This in contrast with between 58 and 81 percent for non-Roma households. Roma also reported that their housing was in poorer conditions than non Roma. Over 50 percent of households in Bulgaria reported that they had wet walls and leaky roofs, significantly more than in the other countries. This reflects the fact that more Roma in the Bulgarian sample live in Roma settlements, where housing conditions are generally poorer than in more integrated neighborhoods.

**Table 7: Housing Characteristics by Ethnicity (% of households)**

Households with:	Bulgaria		Hungary		Romania	
	Non-Roma	Roma	Non-Roma	Roma	Non-Roma	Roma
Electricity	99.6	94.5	99.0	98.1	99.1	94.5
Central or gas heating	16.1	4.1	78.6	35.3	51.2	25.6
Cold running water	96.8	67.6	92.0	65.3	67.4	41.4
Hot running water	39.1	9.4	83.2	45.1	35.3	10.7
Sewer or cesspool	90.3	52.3	58.3	33.4	53.6	30.0
Telephone	80.6	12.1	76.0	41.4	58.2	26.4
Bathroom/shower	82.5	23.5	88.8	50.2	54.3	18.9
Indoor toilet	65.2	15.0	86.4	49.9	52.6	18.3
Wet walls	20.6	50.4	16.6	40.1	21.0	44.9
Leaky roofs	19.2	54.2	9.6	33.0	14.8	40.2
Earthen floor used for sleeping	7.4	36.7	5.8	13.2	19.3	39.0

*Source.* Yale Dataset. Own calculations

*Notes:* Includes Roma from the random and ethnic samples. Uses rescaled household weights.

## LOCATION

Despite public perceptions about the large concentrations of Roma in capital cities, the majority of Roma in the survey live in other towns and rural areas. Less than 7 percent of Roma in Bulgaria live in Sofia, less than 12 percent in Hungary live in Budapest, while in Romania only 17.5 percent of Roma live in Bucharest (Table 9). In both Hungary and Bulgaria, Roma are more likely to live in smaller towns and rural areas than non-Roma.<sup>11</sup> In Romania, a larger share of Roma and non-Roma alike live in urban areas.

**Table 8. Location (% of population)**

Location	Bulgaria		Hungary		Romania	
	Non-Roma	Roma	Non-Roma	Roma	Non-Roma	Roma
Capital City	13.3	6.7	16.0	11.2	6.7	17.5
Other Urban	57.8	50.3	46.5	44.5	51.1	42.2
Rural	28.9	43.0	37.4	44.3	42.2	40.3

*Source:* Yale Dataset, own calculations. Includes data from the random and ethnic samples.

*Notes:* Individual level observations from the Household Survey. Uses rescaled household weights.

Between 40 and 43 percent of Roma in each of the countries live in rural areas, and in Bulgaria and Hungary, more Roma than non-Roma live in rural areas. The large share of Roma in rural areas has policy implications, because of the challenges of accessing social services, which may be geographically remote or isolated. Roma interviewed for a qualitative study in Romania reported difficulties in getting to health centers, schools and social assistance offices because of long distances, or poor roads and local infrastructure (World Bank 2002b). Isolation in geographic areas, as well as in Roma settlements in urban areas, can also affect access to employment, if Roma are unable to get to jobs, or identify opportunities.

<sup>11</sup> In the survey “urban” referred to towns with a population between 10,000 and 100,000; “rural” referred to towns and villages less than 10,000.

### 3. POVERTY AND WELFARE

Poverty is a multidimensional phenomenon, that goes well-beyond a narrow lack of material consumption or resources. It encompasses many other aspects, including the psychological pain of being poor, a sense of vulnerability to external events, and a sense of powerlessness vis-à-vis the institutions of the state and society (World Bank 2000a and 2000b). The Council of Europe (1995) has defined poverty as affecting those “persons, families or groups of persons whose resources (material, cultural and social) are limited to the extent that they exclude them from the minimally accepted lifestyle of the countries where they live.” Unfortunately, measuring these non-material dimensions of poverty is extremely difficult as, often, the information needed to do so simply does not exist. In this analysis we thus focus mainly on a more narrow definition of welfare that identifies poverty with a lack of material consumption or income.

#### POVERTY LINES AND POVERTY RATES

Annual household expenditures are used as the main measure of household welfare. Because measures of poverty are very sensitive to the treatment of household composition, two sets of results are presented based on (i) per capita expenditure (obtained by dividing total household expenditure by number of household members); and (ii) per equivalent adult expenditures, where expenditures are adjusted for both the size and composition of the household. Although they are not reported here, we also calculate results based on *total* household expenditures. In general, adjusting for household size (e.g. per capita or equivalent adult) tends to yield much larger differences in poverty risks between Roma and non-Roma than using unadjusted household expenditures. This is because Roma households tend to be much larger.

Tabulating simple means from our Dataset illustrates that Roma and non-Roma households in the three countries tend to have very different levels of welfare. As shown in Table 10, mean per capita and mean per adult equivalent expenditures in Roma families are significantly lower (by 13 percent) than among non-Roma households. The characteristics of Roma and non-Roma households also differ significantly, indicating that there are also substantial disparities in non-income dimensions of welfare such as access to education or housing quality. As an example: while only 13 percent of non-Roma had primary education or less, as much as 41 percent of Roma fell into this category.

The comparison of mean adult equivalent expenditures already gives a sense of the large differences in welfare between Roma and non-Roma families. However, our primary interest in this section is to measure poverty and deprivation - that is, the extent to which families are not able to meet what is considered to be a socially acceptable standard of basic needs. In order to do this, we need to first choose a poverty line or an appropriate measure of these “needs”. Since measures of poverty tend to be very sensitive to the choice of the poverty line, in this report we use several different lines. This allows us to test the robustness of our results.

<b>Table 9: Household Expenditure and Characteristics (mean)</b>		
	<b>Non-Roma</b>	<b>Roma</b>
Log adult equivalent expenditure (US\$ PPP)	5.52	4.81
Household Size	2.8	4.4
Number of children	0.4	1.2
Share urban	65	58
Share female headed	24	12
Age HH head	50	40
Number working adults	0.9	0.6
Share employed (HH head)	43	25
Share unemployed (HH head)	10	43
Share out of the labor force (HH head)	47	32
Education:		
Share less primary	13	41
Share completed primary	18	36
Share some secondary	55	23
Share some higher	14	0
Share living in a settlement*	--	32

Source: Yale Dataset, own calculations. Data from random and ethnic Samples, weighted by household.

\* Roma only, share represents share of households.

A first poverty line is a relative line, equal to 50 percent of median expenditure. This line is useful for measuring poverty on a national standard, and for international comparisons of the characteristics of the most deprived individuals in any country. Many international comparisons of poverty rates, such as those carried out by the Luxembourg Income Study, are based on such a relative line. This line is typically calculated on an equivalent adult basis, and this is what we do here (although for comparison purposes we also report the calculations obtained on a per capita basis). Households whose per equivalent (or per capita) expenditures were less than 50 percent of the median were classified as poor.

The two other poverty lines we use are absolute poverty lines based on purchasing power parity: US\$2.15 purchasing power parity (PPP) per capita per day; and US\$4.30 PPP per capita per day. These are standard poverty lines that allow comparisons of real values between countries. These are typically calculated on a per capita basis. For comparability purposes, we do the same here.

These two PPP lines were used in the recent World Bank study on poverty and inequality in the Europe and Central Asia (ECA) Region (World Bank, 2000). The US\$2.15 per capita per day line can be interpreted as a standard of absolute deprivation for this region, while the US\$4.30 per capita per day line can be considered a more appropriate poverty line for the higher middle-income countries. In this sense, the \$4.30 line represents an adequate poverty line for Hungary, while the US\$2.15 line may be more appropriate for poorer Bulgaria or Romania (see World Bank 2000).<sup>12</sup>

<sup>12</sup> We have also calculated poverty rates poverty lines set at 40,50 and 60% of *mean* expenditures; at 40 and 60% of *median* expenditures; and at \$1.07PPP *per capita* per day. All these were calculated on a per capita and per equivalent basis. The general pattern of results does not change very much, although the point estimates of poverty do vary significantly.

To simplify the comparison between all three of these lines, Table 11 presents the different poverty lines in local currency for an individual; a couple without children; and a couple with children.

	Bulgaria (leva)		Hungary (forints)		Romania (lei)	
Poverty Lines in US\$PPP	2.15	4.30	2.15	4.30	2.15	4.30
Poverty Lines in Local Currency						
Individual	43	86	7,228	14,455	348,145	696,290
Couple: no children	72	144	12,155	24,311	585,508	1,171,016
Couple: 2 children	121	242	20,443	40,886	984,703	1,969,407

Source: IMF, Yale Dataset 2000. Own calculations. Based on adult equivalent

Table 12 summarizes the poverty rates for all three countries under the three different poverty lines. The table shows that in all three countries poverty rates among Roma are several times higher than among the non-Roma.

Country	50% of median		\$2.15PPP	\$4.30PPP
	Per equiv. adult	Per capita	Per capita	Per capita
<b>Bulgaria</b>				
Roma	36.1	37.2	41.4	80.1
Non-Roma	3.8	3.4	4.1	36.8
<b>Hungary</b>				
Roma	24.5	26.3	6.6	40.3
Non-Roma	4.5	3.6	0.5	6.9
<b>Romania</b>				
Roma	39.5	43.1	37.6	68.8
Non-Roma	10.9	11.1	7.3	29.5

Source: Yale Dataset, own calculations.

The highest level of absolute poverty among Roma households is found in Bulgaria, followed closely by Romania. Even at the lower US\$2.15 line, 41 percent of all Roma households in Bulgaria and 38 percent in Romania are found to be poor – a remarkably high proportion. At the higher line of \$4.30 PPP per capita, 80 percent of Roma households in Bulgaria and almost 70 percent of those in Romania are poor. Poverty among non-Roma households at the \$4.30 line in both of these countries is also high, but significantly below (less than one-half) the levels observed among Roma. Although absolute poverty among Roma households is lower in Hungary, the difference between the situation of Roma and non-Roma households is equally stark. About 7 percent of Roma households in Hungary are poor based on the US\$2.15 line, as compared to only 0.5 percent of non-Roma households. At the higher US\$4.30 absolute poverty line - arguably a more appropriate one for Hungary — as many as 40 percent of Roma households are found to be poor, in comparison with 6.9 percent of non-Roma households.

The differences in poverty rates between Roma and non-Roma when using the relative poverty line are also very large in all three countries. On a per equivalent basis

Hungary and Bulgaria look fairly similar: relative poverty among non-Roma households oscillates around 4 percent; while among Roma households it is close to 25 percent in Hungary and about 37 percent in Bulgaria. In Romania, the differences between relative poverty rates for Roma and no-Roma are equally large, but poverty among the non-Roma is noticeably higher than in Bulgaria or Hungary, indicating a more skewed distribution of expenditure for all households.

As expected, poverty looks worse among Roma households when using the per capita line, which basically reflects the fact that Roma households have a large number of children. The per capita figures treat every household member as having the same consumption needs, whereas the figures based on per equivalent adult allow for lower consumption needs among children.

Why are poverty rates so different between Roma and non-Roma households? In large part, this due to differences between Roma and non-Roma households in the underlying correlates of poverty, especially educational achievement, employment status and household size. The next section explores these correlates of poverty for all households, before examining the characteristics of poverty among Roma only.

## WHO ARE THE POOR?

### Correlates of poverty

The main correlates of poverty for Roma and non-Roma alike are employment status of the household head, educational achievement of the household head and number of children, although the nature of the relationship varies significantly across countries and between Roma and non-Roma families (Table 13).

**Table 12: Main Poverty Correlates (poverty Rate, in %)**

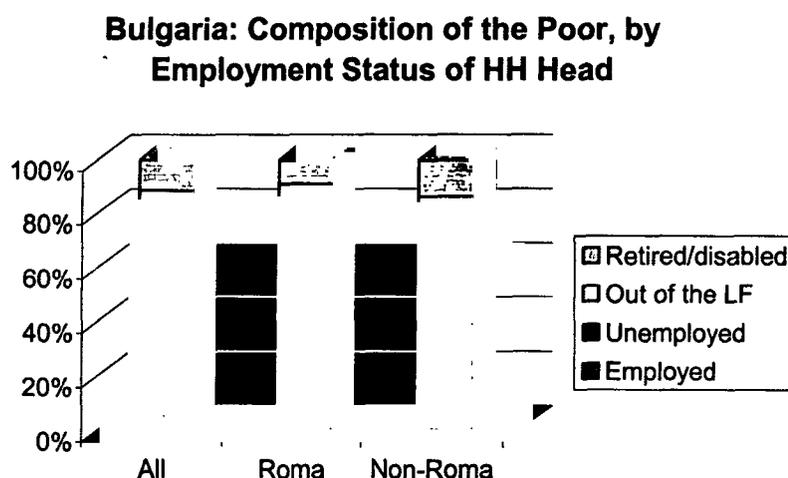
	Bulgaria		Hungary		Romania	
	Roma	Non-Roma	Roma	Non-Roma	Roma	Non-Roma
<b>Education:</b>						
No school	31.24	na	39.63	47.4	84.25	16.52
Primary	39.81	5.25	27.24	5.07	42.56	16.04
Secondary	31.33	2.85	6.24	1.47	31.81	7.47
Higher	0	0.81	0	0	0	0.63
<b>Employment status:</b>						
Employed	20.53	3.33	15.27	2.46	15.56	8.47
Unemployed	48.54	9.06	34.53	15.12	45.31	26.14
Out of LF	46.66	2.24	50.28	6.90	69.38	20.47
Retired/disabled	17.39	1.17	19.81	2.71	32.86	7.14
<b>Number of children</b>						
Zero	25.24	2.47	14.23	2.79	27.30	7.32
One	34.66	6.14	23.33	3.68	38.84	13.51
Two	49.08	5.57	28.96	9.91	52.67	26.37
Three	59.16	15.79	41.98	11.20	73.39	50.34
Four	65.54	na	82.76	44.18	59.87	64.90

*Source:* Yale Dataset. Own calculations Poverty line based on 50 percent of Median of per capita expenditure. Data from random and ethnic Samples, weighted by household.

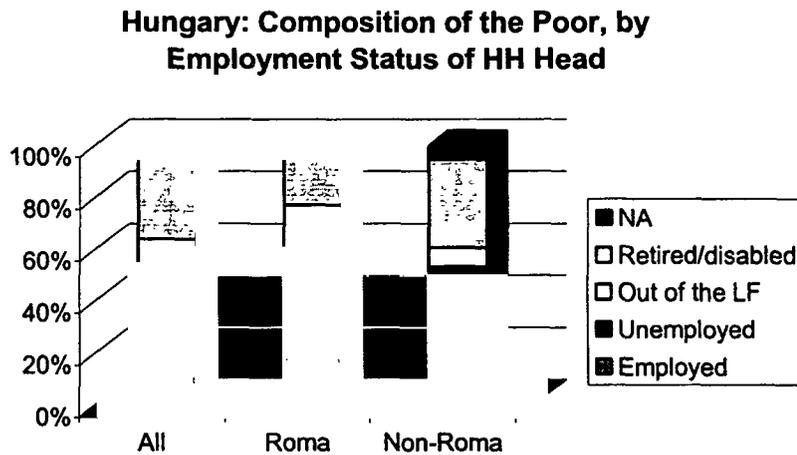
The risk of poverty is highest among families where the household head has low levels of education or is unemployed, and among families with three or more children. However, the association between poverty and these correlates seems stronger for non-Roma families than for the Roma. For example, among non-Roma families where the head has no education at all, the poverty rate is several times that of families where the head has secondary education. Yet among Roma families, poverty tends to be relatively high irrespective of educational attainment (with the possible exception of Hungary). Similarly with respect to employment status: among non-Roma families, the risk of poverty in households where the head is unemployed is several-fold that of households where the head is employed; yet among Roma families headed by an employed person, the risk of poverty remains high. As we will see in the multivariate analysis below, once all these factors are taken into account simultaneously, the evidence suggests that there is nevertheless a strong association between education, employment and household size and poverty among the Roma. However, conditional on being Roma, the probability of being poor is higher than that of non-Roma, irrespective of educational achievement and employment status.

Although these poverty correlates (education, employment status, number of children) are associated with a high risk of poverty, this does not mean that households with these characteristics necessarily constitute the bulk of the poor. In fact, the composition of the poor largely reflects the weight of each demographic group in the overall population. As a result, when it comes to the composition of the poor, we see significant differences between Roma and non-Roma households. Among non-Roma families, a sizeable fraction of those who are poor are so-called “working poor”, e.g. the head of household is employed. Among the Roma, the fraction of household heads who are working is much lower; and their weight in the composition of the poor is correspondingly lower also. In the large majority of poor Roma families, the head of household is unemployed. In the case of Romania, moreover, many of these unemployed heads of household appear to have left the labor force altogether (Figures 4a, 4b and 4c).

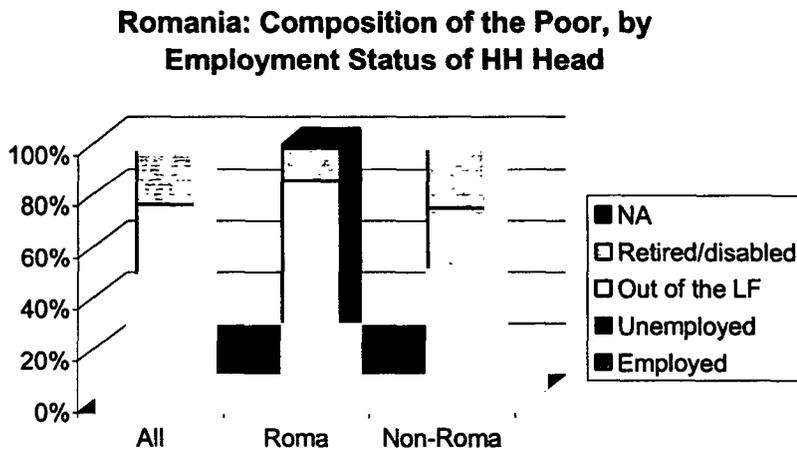
**Figure 4a: Bulgaria: Composition of the Poor by Employment Status**



**Figure 4b: Hungary: Composition of the Poor, by Employment Status**



**Figure 4c: Romania: Composition of the Poor, by Employment Status**



Source: Yale Dataset, own calculations.

Similar differences are visible in the composition of the poor by educational attainment, while among non-Roma a sizeable fraction of poor heads of households have primary or secondary education, the bulk of poor Roma households are headed by someone with primary, or less than primary, education.

### Multivariate analysis of poverty

The discussion in the previous section focused on the univariate analysis of poverty. That is, we examined how poverty rates differ across households based on a single differentiating characteristic such as education or employment status. However, often many household characteristics are correlated among themselves. For example, we found that households where the head has a low level of education are more likely to be poor. However, household heads with low education may also face a higher probability of being unemployed. And being unemployed is also correlated with a higher probability

of being poor. Does low education increase the risk of poverty directly? Or does it increase poverty through its impact on employment status? Or both? To answer these questions we need to carry out our analysis in a multivariate framework, so as to control for the differential influences of diverse factors.

In order to do this we run simple regressions of log adult equivalent expenditures on a set of household characteristics. We first run log adult equivalent expenditure of each household on the characteristics of the household head, which is defined to be the main income earner. As a second experiment, we run the same regression on individuals, where all individuals in a household have the same per capita expenditure, but their own characteristics. Results are very similar for both, but conceptually we prefer treating the household as the unit of observation as this reflects more accurately how the data were collected. This approach also takes into account the fact that the household will tend to make joint decisions as regards household consumption, investments and labor market activity.<sup>13</sup> Correspondingly, Table 14 summarizes the results obtained running the regressions with the characteristics of the household head.

**Table 13. Determinants of Adult Equivalent Expenditure, Country Regressions**

Explanatory Variables	Bulgaria		Hungary		Romania	
	(1)	(2)	(1)	(2)	(1)	(2)
Age	0.0006 (0.35)	0.0009 (0.54)	0.0005 (0.42)	-0.0004 (-0.28)	0.0021 (1.35)	0.0007 (0.44)
Urban	-0.0958 (1.62)	-0.0970 (-1.64)	0.0461 (1.15)	0.0450 (1.12)	0.2913** (6.77)	0.2886** (6.74)
Roma	-0.3977** (-6.92)	-0.4037** (-6.96)	-0.2075** (-4.79)	-0.1913** (-4.40)	-0.2751** (-4.37)	-0.2363** (-3.60)
Female-headed	-0.1487* (-2.11)	-0.1384* (-1.96)	0.0012 (0.03)	-0.0135 (-0.30)	-0.0319 (-0.46)	-0.0585 (-0.86)
Comp. Primary	0.2492* (2.83)	0.2463* (2.78)	0.0003 (0.00)	0.0052 (0.07)	0.1786* (2.06)	0.1861* (2.14)
Some Secondary	0.2954** (4.05)	0.2935** (4.02)	0.1719* (2.52)	0.1767* (2.58)	0.3763** (4.73)	0.3859** (4.86)
Some Higher	0.4956** (5.88)	0.4958** (5.89)	0.4315** (5.47)	0.434** (5.49)	0.6227** (6.77)	0.6273** (6.86)
Employed	0.2359** (3.58)	0.2191** (3.05)	0.1015* (2.10)	0.1175* (2.40)	0.2001** (3.60)	0.2239** (3.89)
Unemployed	-0.1120 (-1.48)	-0.1279 (-1.63)	-0.1775* (-2.01)	-0.167* (-1.86)	-0.2082** (-2.93)	-0.179** (-2.49)
No. of children	-0.0899** (-3.26)	-0.0909** (-3.31)	-0.0982** (-5.04)	-0.010** (-5.09)	-0.2059** (-7.97)	-0.2002** (-7.78)
No. working adults	--	0.0137 (0.80)	--	-0.0268 (-1.75)	--	-0.0407* (-2.36)
Constant	4.4689**	4.6175**	10.2889**	10.3727**	6.5417**	6.6712**
No. obs	1473	1473	1264	1264	1320	1320
No. strata	9	9	6	6	11	11
R squared	0.175	0.175	0.142	0.145	0.243	0.248

Notes: t-statistics in parenthesis. . \* significant at 0.05 level; \*\* at 0.01 level. Robust errors.

Source: Own calculations on Yale Dataset.

<sup>13</sup> Treating the household as a unit, however, prevents us from addressing issues linked to the intra-household allocation of consumption. But the data were not deemed adequate to address such intra-household issues to begin with.

As illustrated in Table 14, there is a strong negative association between ethnicity and welfare, even when controlling for other characteristics. The Roma dummy is large, negative, and strongly significant in all six regressions, ranging from a low of 20 percent in the Hungary regressions to a high of 40 percent for Bulgaria. In other words, controlling for other household characteristics, per adult equivalent expenditure of Roma households is between 20 and 40 percent lower than that of non-Roma households - a very large differential.

The other explanatory variables tend to have their expected signs, albeit their size and significance varies across countries. The number of children for example, is strongly negatively associated with per adult equivalent consumption in all three countries. Employment is positively associated with welfare in all cases, while unemployment shows a negative association (although not always strongly significant). The urban and female dummies are largely insignificant except in the case of Romania, where urban has a strong positive impact on welfare. Age and number of working adults in the household turn out insignificant all cases. The relationship between education of the household head and household welfare is, as expected, positive. But there are noticeable differences in the returns to education across countries: completed primary education in Hungary has little added value relative to incomplete primary (the omitted group), and the return to secondary education is lower than in either Bulgaria or Romania. Returns to higher education –in terms of higher household consumption- are high in all three countries, but highest in Romania.

The most striking result in these regressions is undoubtedly the large, negative coefficient on ethnicity, which confirms our prior finding that welfare is lower among Roma families –even when controlling for household characteristics. The next section looks at the determinants of poverty among Roma households in more detail.

### **DETERMINANTS OF POVERTY AMONG ROMA HOUSEHOLDS**

The above discussion applied the same underlying model to welfare among Roma and non-Roma households. However, there is no reason why returns to education or other characteristics need be the same for both Roma and non-Roma. If Roma families live in different areas, engage in different activities or have different behaviors as regards to basic household investment and consumption decisions. Then the returns to household characteristics -in terms of welfare- may be quite different. The U.S. and European literature on poverty and social exclusion, for example, finds that socially or economically excluded groups may often adopt behavior patterns that differ from the majority population, and which affect the return to productive endowments and the overall welfare of the excluded population (Loury, 1999; Silver, 1994). Such differential behaviors, while being beneficial in the short run, can have a negative long-term impact and reduce prospects of escaping poverty. For this reason, it is useful to examine the determinants of poverty among Roma only, and to include in the regression explanatory variables which may be of little relevance to the majority population, but quite important to the welfare of the Roma.

One factor that has been shown elsewhere to have a large influence over behavioral patterns is location. Residential differentiation or segregation can lower returns to productive endowments for minority groups relative to the returns on the same endowments for the overall population (van der Walle and Gunewardena, 2001; Nord, 1998). For the Roma, the location effect is probably best captured by the difference between those living in a Roma settlement versus those living in a more integrated neighborhood. We thus choose to include a dummy for “living in a Roma settlement” into our explanatory regressions.

Another factor which may be important is whether a household self-identifies itself as Roma, or whether the identification was done by the interviewer. Households who self-identify as Roma are presumably from less integrated and more traditional Roma communities, and hence may be poorer than other Roma. A recent qualitative study of Roma in Slovakia found that less integrated communities were more likely to be poor than other Roma (World Bank, 2002a).

In order to examine the determinants of poverty among the Roma-only sample, we ran regressions of log adult equivalent expenditure on household characteristics, location, and the self-ID dummy. However, because the number of observations in the Roma only sample is limited and because the Roma groups are relatively homogenous - at least when compared to the broader sample - the country-specific regressions turned out to have relatively low explanatory power. To get larger variance among households, and improve the efficiency of our estimates, we thus opted for estimating a pooled regression model on the Roma sample obtained by combining the Roma only samples for all three countries. Expenditures were all converted to a common currency (\$PPP) using the PPP exchange rates, and country fixed effects were added to the model to allow the constant terms to differ.<sup>14</sup> The results of the pooled regressions are presented in Table 11 below. For comparison purposes we present the coefficients obtained also from running the simplest specification (without the settlement dummy) on the full sample as well as on the Roma-only sample.

A first striking result of the pooled regressions on the full and Roma-only samples is how different the coefficients are when one runs the model on just the Roma population. This suggests that, as we suspected, imposing the same model on the Roma and non-Roma samples may be inappropriate (note: this issue will be explored further in the section below). Some of the most noticeable differences are that (i) the age and female coefficients are very different for the two populations, with age being associated with higher levels of welfare among the Roma; (ii) the returns to primary and secondary education are somewhat lower for the Roma, while that on higher education is very high; (iii) employment has a much bigger positive effect on Roma welfare than in the model for the full sample, and surprisingly, unemployment among the Roma is associated with a positive welfare effect (relative to out of the labor force). Also interesting is the fact that the negative effect of number of children is more modest among the Roma than in the full sample.

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<sup>14</sup> In practice, these country-specific constant terms combine the joint effects of the excluded dummies and of other country-specific variables omitted from the regression (and presumed uncorrelated with the included right-hand side variables).

**Table 14: Determinants of Adult Equivalent Expenditure, Pooled Regressions**

Explanatory Variables	Full Sample		Roma-Only Sample	
	(1)	(1)	(1)	(2)
Age	0.0009 (0.92)	0.0066** (3.61)	0.0066** (3.30)	0.006** (3.30)
Urban	0.0989** (3.49)	0.0956* (2.34)	0.0956* (2.34)	0.0992* (2.43)
Roma	-0.2764** (-8.12)	--	--	--
Female-headed	-0.0737* (-2.01)	-0.0005 (-0.01)	-0.0005 (-0.01)	-0.007 (-0.10)
Comp. Primary	0.1721** (3.38)	0.1529** (3.08)	0.1529** (3.08)	0.1302* (2.59)
Some Secondary	0.2913** (6.43)	0.2358** (3.08)	0.2358** (3.08)	0.2014** (3.33)
Some Higher	0.5291** (10.21)	0.7469** (2.93)	0.7469** (2.93)	0.6757* (2.66)
Employed	0.2097** (5.94)	0.4434** (7.36)	0.4434** (7.36)	0.4333** (7.29)
Unemployed	-0.1155* (2.59)	0.1232* (2.02)	0.1232* (2.02)	0.1254* (2.07)
No. of children	-0.1461** (-10.13)	-0.0767** (-4.56)	-0.0767** (-4.56)	-0.073** (-4.28)
No. working adults	-0.0211* (-2.09)	-0.0159 (-1.25)	-0.0159 (-1.25)	-0.0141 (-1.10)
Living in Settlement	--	--	--	-0.120* (-2.64)
Self-ID Roma	--	--	--	-0.0796* (-1.84)
Country Effects:				
Bulgaria	-0.1374**	-0.1362**	-0.1362**	-0.595
Hungary	0.3224**	0.4834**	0.4834**	0.510**
Constant	5.1214**	4.3333	4.3333	4.4372**
No. obs	4057	1234	1234	1232
No. strata	26	26	26	26
R squared	0.246	0.254	0.254	0.262

Notes: t-statistics in parenthesis. \* significant at 0.05 level; \*\* at 0.01 level. Robust errors.

Source: Own calculations on Yale Dataset.

The settlement variable is negative, indicating that controlling for other characteristics, adult equivalent expenditures are lower for Roma households living in Roma-only settlements than for those living in other locations. However, the variable is not strongly significant, so it is hard to assess the importance of these settlement effects. Overall, it is interesting to note that the model has more explanatory power for the Roma sample – based on the R-squared figure – than it does for the full sample, which lends some support to the notion that the underlying models are unlikely to be the same.

## DIFFERENCES IN ENDOWMENTS OR DIFFERENCES IN RETURNS TO THE SAME CHARACTERISTICS?

The above analysis clearly indicates that Roma households tend to have lower levels of welfare (as measured by adult equivalent consumption) than non-Roma households in all three countries. Moreover, the evidence suggests that the association between household characteristics and household expenditures, and hence living standards, may not be the same for Roma and non-Roma families or, in other words, that the “returns” to economic and demographic characteristics are not the same for Roma and non-Roma.

To what extent are lower levels of welfare among Roma households due to poor economic characteristics rather than to lower returns to the same characteristics? In order to explore this, we apply the standard Blinder-Oaxaca decomposition (Blinder, 1973; Oaxaca, 1973) to the analysis of household adult equivalent expenditures.<sup>15</sup> We estimate group-specific regressions of adult equivalent expenditure on household characteristics using the household as the unit of observation, and then used the estimated parameters to decompose the mean inter-group differential into what is attributable to differences in productive characteristics and what is due to differences in returns to characteristics. Essentially we calculate:

$$(1) \quad \ln E_m^* - \ln E_R^* = \beta_m (X_m^* - X_R^*) + X_R^* (\beta_m - \beta_R)$$

where the  $\ln E^*$ s and  $X^*$ s represent the predicted mean log adult equivalent expenditures and mean characteristics of the respective majority (m) and Roma minority (R) groups.<sup>16</sup> The first right hand side component in the equation is the differential in adult equivalent expenditures attributable to differences in observed characteristics of the groups, weighted by the coefficients estimated for the majority. The second component is the differential attributable to between-group differences in the returns to given household characteristics. This second component reflects structural differences, which may include current and past discrimination, but also long-standing differences in group behavior and differential cultural development. Although the first component reflects differences in endowments, it too can be affected by past discrimination if the latter influenced, for example, access and quality of schooling.

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<sup>15</sup> A similar approach was used for the analysis of ethnic disparities in Viet Nam, by Van de Walle and Gunewardena, 2001.

<sup>16</sup> Here the majority group is used as reference, but a similar decomposition could be done using the Roma group as the reference.

**Table 15: Determinants of Household Expenditures, Majority and Roma Regressions**

	Majority	Roma
Bulgaria fixed effect	-0.139** (-4.13)	-0.138* (-2.19)
Hungary fixed effect	0.315** (10.75)	0.479** (4.70)
Age HH head	0.000 (0.46)	0.006** (3.23)
Employment HH head	0.202** (5.41)	0.475** (7.33)
Unemployment HH head	-0.134* (-2.70)	0.128* (1.95)
Female Head	-0.078* (-2.08)	0.028 (0.35)
Urban	0.098** (3.24)	0.092* (2.12)
Completed Primary (HH head)	0.169* (2.86)	0.159** (3.07)
Some Secondary (HH head)	0.293** (5.80)	0.231** (3.69)
Some Higher (HH head)	0.528** (9.41)	0.674* (2.75)
Number of children	-0.159** (-9.31)	-0.080** (-4.40)
Number of working adults	-0.023* (-2.01)	-0.015 (-1.16)
Constant	5.159**	4.340**
Number of Observations	2832	1234
R-square	0.208	0.226

Notes: t-statistics in parenthesis. \* significant at 0.05 level; \*\* at 0.01 level. Robust errors.  
Source: Own calculations on Yale Dataset.

Table 16 presents the regression results for the majority and for the Roma groups. The results are similar to those observed in the previous section when comparing the Roma sample to the full sample. Namely, the negative impact of children on household welfare is much smaller for Roma households than for non-Roma ones. The association between lower welfare and female headed household disappears in the Roma equation (perhaps because there are relatively few female headed households in the Roma sample). The much stronger positive impact of employment on welfare among Roma households is again noted as is the peculiar positive association between unemployment and welfare (relative to the omitted group, which is out of the labor force). Returns to primary and secondary education are somewhat lower among the Roma, and there is a clear positive association between age of the household head and welfare which does not exist among non-Roma families.

The results of the Oaxaca decomposition, carried out using these parameter estimates and mean values of characteristics for both groups, are presented in Table 17. The mean difference in log adult equivalent expenditure between non-Roma households is 0.711 (e.g. adult equivalent expenditure for non-Roma households, when controlling for all factors, is 71 percent higher on average than for Roma households). Of this difference, almost two-thirds (63 percent) is explained through differences in

characteristics, and just over a third (37 percent) through differences in returns to those characteristics. This suggests that differences in endowments do indeed explain a large fraction of the observed differences in welfare between the non-Roma and the Roma groups. Much of this may reflect huge differences in educational endowments and access to education.<sup>17</sup>

**Table 16: Decomposing Sources of Ethnic Inequality**

Difference in log adult equiv. Expenditures	Source of difference due to:	
	Different characteristics	Different returns to characteristics
0.7114	0.4476	0.2638

Note: majority group used as reference.

Source: own calculations, Table 12. Yale Dataset.

<sup>17</sup> As suggested by the work of Van de Walle and Gunewardena (2001) in Viet Nam, this result could be biased by the fact that in the Oaxaca decomposition we cannot take into account location. A relatively large share of Roma families do live in segregated settlements, and it is possible (as weakly suggested by Table 11) that returns to characteristics for those families living in settlements may be quite different than for those living in more integrated neighborhoods. However, since there are no non-Roma families living in these settlements, it is impossible to carry out the decomposition in a way that “takes out” this locational effect.

## 4. EDUCATION

### EDUCATIONAL ATTAINMENT

The previous section underscored the strong links between education and poverty—and in particular the high returns to post-secondary education. Differentials in education between Roma and non-Roma are stark across countries. In all three countries Roma have lower educational attainment than non-Roma. The majority of Roma have primary education or below, while most non-Roma in the three countries have some secondary, post-secondary or university education (Table 18). Bulgaria provides the most dramatic example, 89 percent of Roma had primary education or less, while only 10 percent had some secondary education. Less than 1 percent of Roma in all countries continued past secondary school. In contrast, 33 percent of non-Roma had primary or below, while 54 percent of the population continued on to secondary school and 14 percent to tertiary. Results are similar for Hungary and Romania.

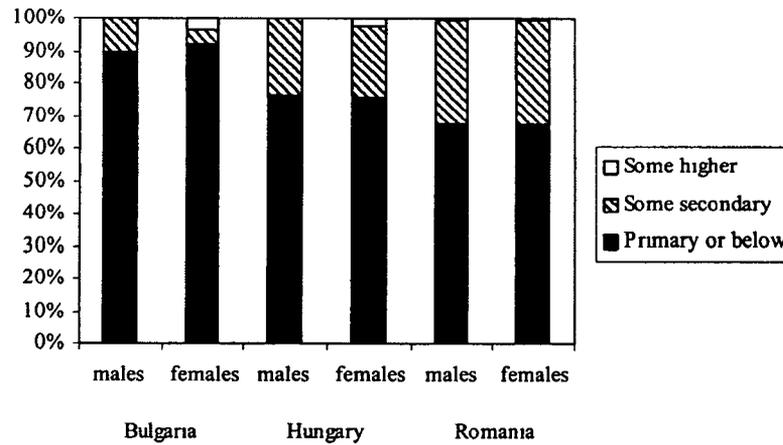
**Table 17: Educational Attainment by Ethnicity (age 18+)**

	Bulgaria		Hungary		Romania	
	Non Roma	Roma	Non Roma	Roma	Non Roma	Roma
<b><i>Primary or Below</i></b>	<b>32.71</b>	<b>89.6</b>	<b>34.96</b>	<b>76.36</b>	<b>33.09</b>	<b>66.53</b>
No Education	1.34	14.97	0.25	4.33	1.94	13.39
Incomplete Primary	9.35	39.6	10.71	22.12	14.99	27.98
Complete Primary	22.02	35.03	24	49.91	16.16	25.16
<b><i>Some secondary</i></b>	<b>53.76</b>	<b>9.58</b>	<b>52.97</b>	<b>23.35</b>	<b>56.34</b>	<b>32.4</b>
Completed Primary and Apprenticeship	2.24	1.8	25.51	18.98	18.92	13.1
Incomplete General Secondary	2.34	1.59	6.14	1.48	6.61	8.99
Completed General Secondary	19.42	3.03	17.51	2.68	23.91	8.98
Secondary and Vocational	29.77	3.17	3.81	0.21	6.89	1.32
<b><i>Higher education (Complete and Incomplete)</i></b>	<b>13.53</b>	<b>0.46</b>	<b>11.99</b>	<b>0.2</b>	<b>10.44</b>	<b>0.31</b>
Incl post-secondary and university						
No Answer	0	0.36	0.08	0.1	0.13	0.77

Source: Yale Dataset. Own calculations.

Comparisons across countries are difficult, because of differences in education systems and the definitions of education levels, particularly at the secondary level. Of those who do attend secondary school, a greater share of Roma appear to have participated in vocational and technical programs than non-Roma students. This has implications for labor market prospects, as workers with narrow technical and vocational training have been less able to adapt to changing demands for skills than those with more flexible, academic backgrounds. Given these caveats, it does appear that the education level of Roma in Bulgaria is lower than in the other countries, particularly at the secondary level. Only 10 percent of Roma in Bulgaria had some secondary education, in contrast with 23 percent in Hungary and 32 percent in Romania.

**Figure 5: Educational Attainment of Roma by Gender**



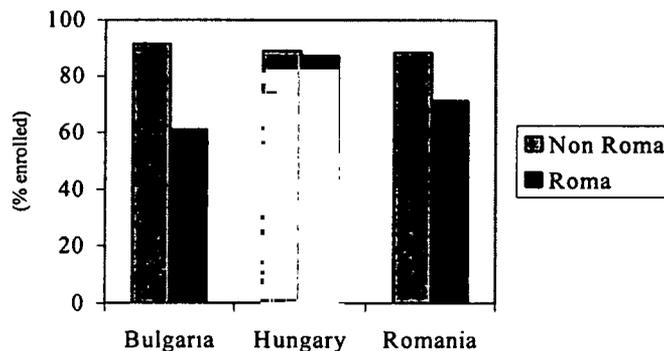
Source: Yale Dataset. Own calculations.

Some gender differences also appear in the data. Most strikingly, women in Bulgaria and Hungary were more likely to have higher education than men. This may be because girls were more frequently enrolled in general secondary education, which allowed them to continue on to higher education, than boys, who were more frequently in narrow technical and vocational training. Data for Hungary and Romania show that Roma girls were more commonly graduates of general secondary education than boys. Again, definitions of types of secondary education may limit these comparisons across countries.

### ENROLLMENTS

Disparities in enrollments between Roma and non-Roma suggest that the gaps in educational attainment will persist into the next generation. In Bulgaria and Romania, the data show a significant difference in enrollment levels for children of basic school age. In Bulgaria, enrollment rates for Roma were 33 percent lower, while in Romania, the difference is 20 percent (Figure 6). In Hungary, the gap in enrollments was not significant, at less than 2 percentage points.

**Figure 6: Enrollments in Education**  
(% of children aged 6-14)



Source: Yale Dataset. Own calculations.

Enrollment rates only tell part of the story. In some cases, students may enroll at the beginning of the year, but may not actually attend school. Qualitative studies have found this to be the case for poor Roma communities, where the costs of education for families are high (World Bank 2002a; 2002b). It is also important to note that enrollment rates calculated from the Yale survey data indicate only whether children are enrolled in school – and not whether they are enrolled in the appropriate level of education. In contrast with conventional enrollment rates, the rates presented above indicate whether children between 6 and 14 were enrolled at all – this may be misleading if there are many children repeating grades.

## 5. LABOR MARKET STATUS

Because of low education and skill levels, Roma fare more poorly on the labor market than non-Roma (Table 19). Fewer Roma work, and significantly more are unemployed, or out of the labor force. Unemployment rates for Roma differ substantially across countries, ranging from 63 percent in Bulgaria (in comparison with 25 percent for non-Roma), to 12 percent in Romania (compared to 8 percent for non-Roma). Cross-country comparisons should be treated with caution, however, as respondents may have interpreted the definition of unemployment differently in the three countries. For example, in Romania, only 12 percent of Roma were categorized as unemployed, but a significantly higher share of the working population (61 percent), claimed to be out of the labor force. The situation was nearly the reverse in Bulgaria, where 63 percent reported being unemployed, and 15 percent out of the labor force. In Romania this may have been because unemployed who were not officially registered reported themselves as being “out of the labor force”. More Roma reported being out of the labor force in Hungary and Romania, while in Bulgaria the difference was not significant. This category includes students, housewives, those on maternity leave and respondents reporting that they were ‘doing nothing.’

**Table 18: Labor Force Status by Ethnicity (age 15-60)**

	Bulgaria		Hungary		Romania	
	Non Roma	Roma	Non Roma	Roma	Non Roma	Roma
Employed	48.4	14.2	57.0	24.1	42.9	20.1
Unemployed	25.2	62.6	7.4	24.7	8.4	12.0
Out of the labor force	15.6	14.7	18.9	35.6	34.5	60.5
Pensioners (old age and disability)	10.4	8.5	15.5	13.1	13.5	6.6
NA (refused or don't know)	0.5	0.0	1.3	2.6	0.8	0.8

*Source:* Yale Dataset. Own calculations.

*Notes:* Includes Roma from the random and ethnic samples. Data from the household questionnaire weighted by household.

### EMPLOYMENT

Roma who are employed are most commonly working in industry and services (Table 20). This is consistent with pre-transition employment patterns, when Roma were most frequently employed in low skilled jobs in industry, including manufacturing and mining. Fewer Roma reported working in education, social services and public administration – with the exception of Romania, where 14 percent of Roma were working in public administration. The low levels of Roma employment in these areas may limit access to these services, including education and health care, as there are few Roma who can bridge cultural barriers and facilitate interactions between Roma and non-Roma service providers.

**Table 19: Employment by Sector (% of employed)**

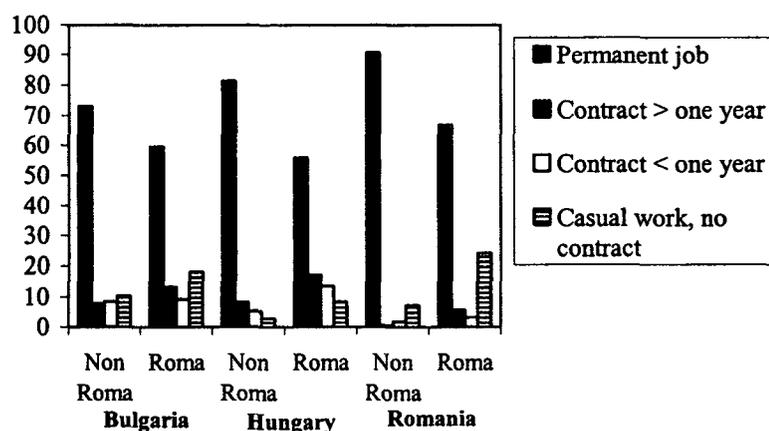
	Bulgaria		Hungary		Romania	
	Non Roma	Roma	Non Roma	Roma	Non Roma	Roma
Agriculture	6.1	12.6	7.7	5.7	8.3	9.1
Industry (including mining and transportation)	29.3	31.4	34.0	41.2	37.1	26.3
Trade (including hotels and restaurants)	15.7	8.8	15.1	20.6	11.7	18.0
Education, science, culture, and media	18.3	4.8	9.5	1.6	12.2	2.0
Social services and health	4.6	6.1	7.3	4.7	7.7	1.9
Financial services	3.9	0.0	1.9	0.0	0.9	0.0
Public administration (including armed services)	7.5	1.7	5.2	9.3	5.5	13.9
Private services (including working in households)	4.8	13.7	13.8	10.8	3.5	8.1
Other services	7.8	20.9	4.8	6.1	12.9	16.8

Source: Yale Dataset. Own calculations.

Notes: Includes Roma from the random and ethnic samples. Data from the household questionnaire weighted by household.

More Roma than non-Roma reported working in jobs without a permanent contract (Figure 7). Roma were more commonly employed in jobs with either no contract at all, or contracts of less than one year. This likely reflects the large share of Roma who are active in the informal sector. Even among Roma who reported that they were not employed, nearly twice as many Roma in all three countries claimed to be doing some kind of side work. These patterns indicate a higher level of vulnerability of Roma in the labor market.

**Figure 7: Employment by Type of Contract**



Source: Yale Dataset. Own calculations.

Notes: Average duration of all reported unemployment spells. Data from the individual questionnaire, weighted by rescaled individual weights.

## UNEMPLOYMENT

As noted above, unemployment in Bulgaria and Hungary is much higher for Roma than non-Roma (Table 21).<sup>18</sup> The majority of unemployed in all countries reported being registered with labor offices. Those not registered are likely to be long-term unemployed or discouraged workers who may have reported being out of the labor force, rather than unemployed. Few unemployed reported being enrolled in public works programs. The exception is Hungary, where participation in public works was made mandatory for those receiving unemployment benefits. As many or more unemployed Roma than non-Roma reported that they were looking for work. In Bulgaria and Romania the share was 94 percent. This contradicts public perceptions that many Roma are unwilling to work and not looking for jobs.

**Table 20: Unemployment (% of population 18-60)**

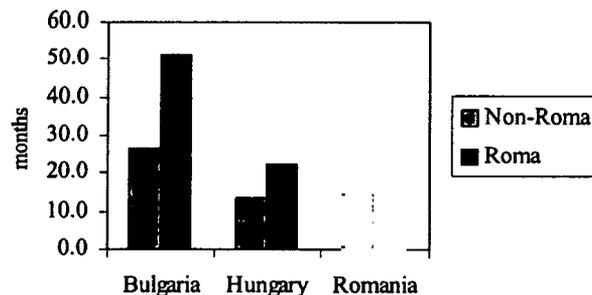
	Bulgaria		Hungary		Romania	
	Non Roma	Roma	Non Roma	Roma	Non Roma	Roma
<i>Unemployed, of which:</i>	25.0	64.7	7.6	21.1	12.0	14.3
Registered as unemployed	48.8	59.2	65.9	59.7	54.7	52.6
Looking for work	88.0	94.1	76.9	75.6	84.5	94.4
Working in public works	1.3	3.8	20.3	21.8	2.4	9.1

*Source:* Yale Dataset. Own calculations.

*Notes:* Includes Roma from the random and ethnic samples. Data from the individual questionnaire weighted by rescaled individual weights.

The duration of unemployment is also longer for Roma. The gap is particularly significant for Bulgaria, where the average duration of unemployment was 27 months, while it was 51 for Roma. Long-term unemployment has been consistently high in Bulgaria during the transition period. The severe length of unemployment indicates the persistence of a stagnant pool of long-term unemployed who are unable to reenter the labor market, and among whom there is a sizeable fraction of Roma.

**Figure 8: Duration of Unemployment (months)**



*Source:* Yale Dataset. Own calculations.

*Notes:* Average duration of all reported unemployment spells. Data from the individual questionnaire, weighted by rescaled individual weights.

<sup>18</sup> Unemployment data for table 21 differ from table 19 because 19 comes from the household and 21 from the individual questionnaires.

## 6. SOCIAL ASSISTANCE AND COPING STRATEGIES

### SOCIAL ASSISTANCE

Social protection benefits are important sources of income for all households in the region. For Roma and non-Roma alike, state transfers comprised about half of total household income. Because of their differing characteristics, Roma and non-Roma tend to rely on different benefits. Roma are more frequently eligible for, and receive, child allowances, unemployment benefits and social assistance benefits. These benefits are typically linked to larger family sizes, and greater likelihood of being poor and unemployed (Table 22). Roma in Bulgaria are 6 times more likely to be eligible for social assistance than non-Roma; they are 4 times more likely in Hungary; and 3 times more likely in Romania. In Hungary, Roma were four times more likely to receive unemployment benefits. In contrast, pensions are less important for Roma, because they are less likely to have a contribution history and be eligible for benefits, and due to the smaller share of elderly within the Roma population.

**Table 21: Eligibility for Social Protection Benefits (% of households which should receive benefits)**

	Bulgaria		Hungary		Romania	
	Non-Roma	Roma	Non-Roma	Roma	Non-Roma	Roma
Housing <sup>1</sup>	6.5	21.8	4.7	11.2	6.8	5.3
Child allowances	21.9	47.1	24.9	68.5	38.2	63.3
Social assistance	5.8	35.3	7.0	25.2	3.6	9.7
Old age and disability	61.3	41.2	60.6	38.6	3.6	9.7
Scholarships and stipends	2.2	0.4	4.1	2.9	0.8	2.3
Unemployment benefits	4.8	8.6	5.6	27.1	7.7	13.3
Other compensations	0.4	0.3	2.8	2.3	3.8	2.2
Arrears in state transfers (% owed more than zero)	3.0	9.2	1.2	0.5	2.0	6.4

Source: Yale Dataset. Own calculations.

Notes: <sup>1</sup> percent actually receiving.

Inter-country differences in eligibility reflect contrasting program design and eligibility criteria across countries. For example, financing and delivery of social assistance benefits in Romania is completely decentralized, as a result, benefits are not paid in many poor municipalities. In Bulgaria programs are partially decentralized, and similar issues are present. This is reflected in the lower level of social assistance eligibility, for all groups, than in other countries, and the higher level of arrears reported in the table. In Bulgaria and Romania, Roma reported a greater amount of arrears than non-Roma. This is due to a higher level of decentralization of benefit program in these countries, and consequently, greater vulnerability of benefit receipt to local government budget constraints.

## COPING STRATEGIES

Households have employed a range of different strategies to deal with poverty. Roma in all three countries were traditionally not landowners, and have generally not benefited from property restitution and from the privatization process implemented during the past decade. As a result, they are less likely to rely on own production of crops, for sale or home use, than non-Roma. This is reflected in the data, which illustrate that non-Roma are more likely to cultivate agricultural land or a garden than Roma (Table 23). Non-Roma also report a higher share of food from own production than Roma.

**Table 22: Household Coping Strategies (% of households)**

	Bulgaria		Hungary		Romania	
	Non Roma	Roma	Non Roma	Roma	Non Roma	Roma
Cultivate a garden	43.9	31.2	45.2	32.4	42.5	30.4
Cultivate a small household garden*	17.4	23.1	21.5	19.8	14.7	14.9
Cultivate any agricultural land	29.8	10.8	12.5	4.4	30.9	18.2
Average hectares	1.9	1.2	1.9	2.5	2.0	1.8
Gather herbs, mushrooms, wood	5.7	18.3	4.7	16.5	10.8	18.2
Average share of food from own production	20.6	11.5	11.4	8.2	21.0	15.1
Keep animals	39.4	25.9	28.6	31.2	48.6	44.1
Average number of cows	0.1	0.1	0.0	0.0	0.2	0.1
Average number of pigs	0.3	0.1	1.0	0.6	0.7	0.5
Average number of chickens	5.1	1.7	7.6	7.1	7.7	4.7
Households actively saving **	2.1	0.8	2.1	4.6	3.3	1.5
Households w/ savings ***	21.5	2.9	26.9	6.3	14.5	6.1

*Notes:*

Includes Roma from random and oversamples. Based on household observations, uses rescaled household weights.

\*Those that indicated they had a small household garden did not give information on the size of the garden.

\*\* Households that saved, lent or invested more than zero (0) in the last 12 months.

\*\*\* Households that indicated that they have savings.

Source: Yale Dataset, own calculations.

Nearly one-third of households in all countries report having some animals. In Bulgaria and Romania, non-Roma households are more likely to keep animals, while in Hungary it is the reverse. Consistent with recent qualitative studies of Roma communities in Romania and Slovakia, Roma in the survey are significantly more likely to engage in small scale gathering of herbs, mushrooms and wood (World Bank 2002b; Rughinis 2000). This is connected with the overall higher likelihood of Roma to participate in the informal economic activities. Finally, saving is more prevalent among non-Roma than Roma, a reflection of the disparities in income.

## **7. CONCLUSIONS AND POLICY IMPLICATIONS**

### **MAIN FINDINGS**

The evidence from existing qualitative analysis of the situation of Roma in Central Europe suggests that the roots of pervasive Roma poverty are closely linked to low education levels, limited employment opportunities and more unfavourable health status. This qualitative literature emphasizes how the unfavourable starting point of Roma at the outset of the transition period – with low education levels and overrepresentation among low-skilled jobs – have led to disadvantages on the labour market. Compounded by discrimination and low expectations of employers, Roma have had more difficulty re-entering the job market than other groups, and have consequently become caught in a vicious circle of impoverishment. Additional barriers, including a lack of access to credit and property ownership combined with an over-dependence on social benefits have created an inter-generational poverty trap for many Roma families. Persistent disadvantages in education, including low school attendance and overrepresentation in special schools, which limit future opportunities, create a high probability that without policy interventions the next generation of Roma will continue to remain in poverty.

The Dataset used in this paper allows for an unprecedented analysis of poverty among Roma from a complementary quantitative perspective. The results confirm the findings of existing qualitative studies, and provide further depth. Our analysis finds that welfare among Roma households is significantly lower than that of non-Roma in terms of both consumption and income, and other measures of deprivation, including housing status, education levels and employment opportunities. The multivariate analysis confirms that controlling for other household characteristics there is a strong negative association between Roma ethnicity and welfare. A large part of this association appears to be due to differences in endowments and opportunities, but there is also an important component that is “structural”. This structural component may reflect the influence of past and present discrimination, exclusion, and cultural factors which may affect access to public services – for example through language barriers.

An additional factor that is found to matter significantly is geographic location. Living in a Roma settlement has an independent negative effect on welfare, indicating that segregation of Roma in separate settlements is closely connected to poverty. This suggests the need for policies which provide opportunities for Roma to move out of out of settlements, and to participate in integrated education and jobs within the mainstream school system and labor market.

### **POLICY IMPLICATIONS**

Addressing the issues facing the Roma is a challenging task that will take experimentation, time and patience. Initiatives need to be adapted to specific country and local circumstances, taking into account the varying conditions and needs of different Roma communities. Nevertheless, we can identify some common elements which are key to improving well-being and opportunities across Roma communities. These include, most notably, efforts to increase overall economic opportunities and especially

employment among Roma; measures to improve their access to education and the quality of education they receive; measure to improve their health status; measures to improve their access to adequate housing and supporting infrastructure; and measures to provide direct support and assistance to poor Roma families.

The findings of this report indicated that Roma in integrated settings, outside of isolated, marginalized settlements are better off. In the first place this suggests that policies and approaches which facilitate integration and promote inclusion of Roma into employment, education and public services are critical. There are trade-offs between broad-based policies, and those targeted specifically to Roma. In some areas, interventions which are targeted to Roma may be necessary, for example education programs which help Roma children overcome language barriers. Targeted programs can be tailored to meet the specific needs of Roma, but may create divisions among communities and resentment that some groups are receiving special treatment. Broad based programs may be easier to administer, and may be more politically popular, and perhaps facilitate integration and cohesion. On the other hand, untargeted programs may be ill suited to reaching the poorest and most isolated Roma settlements.

Programs need to aim to promote integration while respecting cultural expression and identity. In the first place this can be achieved by increasing the participation of Roma in program design and delivery. Since the problems of Roma are multi-sectoral, policy and projects could also be designed to address multiple issues. Integrated approaches may be more effective in reaching project goals and objectives. Increasing the participation of Roma in social service delivery is another mechanisms for ensuring better program implementation, and ensuring that programs meet their goals. Such participation can facilitate interaction between providers and beneficiaries, and reduce cultural barriers. Roma personnel can also provide important role models for children. While specific policies need to be tailored to country circumstances, the following discusses a number of common themes.

#### Increasing Employment Opportunities

Improving employment conditions for Roma is inherently linked to the overall success of the transition process in the region. Economic growth can be a driving force in creating economic opportunities and reducing poverty. In this context, a priority for countries in the region remains implementing policies that promote and sustain growth, while maximising social welfare outcomes. This includes sound macro-economic policies as well as micro-level policies to support labour market flexibility and mobility.

In this context, special attention needs to be paid to ensure that growth translates into broad-based employment creation, and that policies do not induce a bias against the creation of low skilled jobs. Misdirected policy interventions, such as too high minimum wages or high payroll taxes, which de facto induce employers to destroy low-productivity jobs and which work against the creation of such jobs, are particularly damaging to the Roma given their overrepresentation among low-skilled workers.

In order for the Roma to be able to take advantage of new economic opportunities it is critical that they improve their levels of skills. Improving their access to education, starting from very early levels is key in the medium term (see below), but for the cohorts

of adult Roma that are already in the labor force, innovative training schemes and other forms of active labor market policies are needed. But given their mixed record, these need to be carefully evaluated and monitored on a continuous basis. Experiments with income generating programs can also be useful – but again careful evaluation is needed to ensure that they are contributing value. Given the relatively high cost per beneficiary of these programs, selective experimentation and testing of approaches is probably warranted. Also needed to improve Roma employment and labor force participation are efforts to reduce the work disincentives created by inadequate social transfer schemes, and measures to combat discrimination, including adequate mechanisms for appeal and enforcement.

### Increasing Access to and Quality of Education

Education has a central role to play in securing improvements in employment options, welfare and social status. Addressing the educational gap of Roma has as a consequence been a priority for government and NGO involvement. Educational initiatives need to take place at different points within the educational cycle.

An important starting point is reducing barriers that keep Roma children from starting school in the first place. Many children are discouraged from starting school because of difficult economic circumstances at home and because of cultural differences, including language. Economic constraints can be addressed through the coordination of social assistance and educational policies to alleviate the cost of education for poor families. But policies should also be aimed at building correct incentives and rewarding positive outcomes. For example, linking social assistance with school attendance is one way to encourage families to send and keep their kids in school.

Preschool programs are important bridges for preparing children for the classroom environment and overcoming language and cultural differences. Initiatives to reduce dropouts and facilitate continuation to secondary and tertiary education are also critical. Mentoring activities and extracurricular activities that provide tutoring are one positive example. More generally, improving the quality of education for Roma students can have a positive impact on attendance and school outcomes. A key element of this is reducing negative discrimination within the school system and especially diminishing the role of special schools and institutions. Improving the training of teachers to increase their ability to work in a multicultural environment is another important aspect of improving the quality of education that Roma children receive.

### Re-designing Social Protection

The design of social assistance programs requires close attention to ensure that they do not create strong work disincentives, which can lead to poverty traps. At the same time, it is important to improve the targeting and effectiveness of transfers reaching poor Roma families. Greater involvement of social workers within Roma communities, better training of social workers to increase cultural awareness and sensitivities, and greater involvement of Roma personnel in social assistance can help in this direction.

### Improving Housing

Because of the wide diversity in the types of settlements and communities where Roma live, housing is a complex area, which requires close coordination between central and local governments and communities. An important priority in housing policy is the presence of effective legislation and enforcement mechanisms which prevent discrimination and clarify property ownership. In many slum areas and settlements, unresolved questions regarding the ownership of buildings and residency rights blur responsibilities for upgrading and maintenance, and block incentives for residents to invest in and maintain properties.

Equally important considerations in housing are policies and programs which ensure adequate mechanisms for community involvement and choice. Because of the legacy of failed housing programs and projects during the socialist era, this is particularly critical and there are few experiences to draw from to date. A number of facilities have emerged recently which provide promising opportunities for communities and households to apply for resources for community development and upgrading of housing, including micro-credit arrangements and social funds.

## TECHNICAL ANNEX

### THE YALE DATASET

The “Yale Dataset” is a survey designed and implemented by a team of researchers led by Professor Ivan Szelenyi, chair of the Yale Sociology Department. The original Dataset includes five countries: Bulgaria, Hungary, Poland, Romania, Russia and Slovakia. For the purposes of the analysis of Roma data from three countries were analyzed.

The surveys are nationally representative. For each country, the survey contains an individual and a household questionnaire. The household questionnaire general information about each individual within the household, as well as detailed information on household consumption. The individual questionnaire gathered more specific information about one randomly selected individual from within each household. Information from both questionnaires is analyzed here.

Analysis of the household survey in the report was conducted at both the aggregated household level, as well as for the individual level (e.g. taking into account each individual included in the household roster). This was used, for example, for calculation of enrollment rates, which include data on each child in the household. This analysis of individual observations from the household survey should not be confused with analysis based on the individual observation units from the individual survey, which contained a richer questionnaire in some areas, but a far smaller number of observations. The source of data are noted in the table notes.

In addition to the random sample, the Dataset included an ethnic oversample of the Roma population. A small number of non-Roma were included in the ethnic oversample. These observations were dropped for this analysis. The paper analyzes both the random sample, as well as “Roma only” analysis of Roma from both the random sample and the ethnic oversample. At other times, Roma from the ethnic oversample and the whole random sample are used together for comparative purposes.<sup>19</sup>

### CONSTRUCTION OF THE CONSUMPTION AGGREGATE

The household questionnaire contains a module for estimating consumption. The questionnaire includes an aggregated question hd4, which asks the respondent to give the total amount spent on food and non-food items during the last month. In addition, consumption module contains 16 questions on household expenditures. These individual items were aggregated to create the welfare measure. The means of this variable (both

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<sup>19</sup> When the Roma from the ethnic oversample are used with the Random Sample, the weights associated with the Roma observations from both the Random and Ethnic samples are adjusted downwards, so that the weighted proportion Roma in the sample remains unchanged. See below for further discussion of the weighting procedures.

weighted and un-weighted, and disaggregated by country) were compared to those for hd4 (the original measure of total expenditures at the household level.) The results are displayed below.

ALL MEANS	Weighted	Weighted	Un-weighted	Un-weighted	# obs / total obs <sup>20</sup>
	hd4	Composition	hd4	Composition	
Overall	<b>20507.91</b>	<b>23812.34</b>	<b>22163.96</b>	<b>25712.26</b>	4099 / 4357
Bulgaria	250.621	251.443	275.0803	277.3627	1448 / 1530
Hungary	<b>60807.14</b>	<b>70837.1</b>	<b>65848.07</b>	<b>76620.23</b>	1318 / 1427
Romania	2688.872	2935.653	2748.67	3006.364	1333 / 1400

**Bold text indicates that the 95% confidence intervals do NOT overlap.**

The above means were calculated omitting some data points due to incomplete information on the itemized breakdown of 258 households. When data points were unavailable for calculating consumption, the corresponding value of hd4 was also omitted from the above calculation of means. In order to use this new value of expenditures for the consumption aggregate, regressions were run to “fill-in the blanks” in the itemized expenditure data by letting the difference between the consumption aggregate and hd4 be the independent variable and the known quantities of the itemized consumption be the independent variables.

**Consumption of livestock and home-grown produce.** According to the survey, the mean response to question hb23: “During the past 12 months, what percentage of your food consumption did you produce (or collect) yourself?” was 15.8 percent (Including the “non applicable” responses as zeros and excluding the “refused to answers” and the “do not knows.”) If we assume that total values consumed on food is equal to [“cash value expended on food”] \* [1 / [1 - 0.158]], we would see, on average a household expenditure increase of 21.6 leva in Bulgaria, an increase of 4763.1 forints in Hungary, and an increase of 203.8 lei in Romania. These adjustments were applied to the data.

#### WEIGHTING THE SURVEY DATA

The Yale Roma data set includes an ethnic oversample for which the majority of observations are categorized as Roma. To increase the efficiency with which observations about the Roma may be drawn, the researchers wish to include these extra Roma observations in the sample. However, the inclusion of such observations will result in a Dataset that is no longer random, and which no longer accurately reflects the characteristics of the population. Subsequently it is neither correct to look at average statistics for the sample as a whole, nor to consider the results of regression analysis, as the assumptions of the Gauss-Markov theorem are no longer satisfied.

Sample weights were adjusted for the analysis of the random and ethnic samples. This solution, in part, depends on the nature of the Roma observations contained in the ethnic oversample. If the nature of these observations are displayed to be non-random, when compared to the “randomly” sampled Roma observations that are a natural part of

<sup>20</sup> Unlike Table 1, these figures reflect the initial data set, i.e. before any data points were dropped.

the random sample portion of the data set, it will be necessary to in some way correct for the selection bias displayed in the over-sample Roma observations. As this study focuses on poverty and its correlates, the key variable of interest is the household expenditure variable.

This examination was performed, and the 95 percent confidence intervals of the expenditure means (by country) for the random sample Roma and the sub sample Roma overlapped, so it is deemed unnecessary to perform any type of sample selection correction such as applied by Heckman.

Given that the two groups of Roma samples (from the ethnic oversample and the random sample) did not, on average, appear to be drawn with a different selection method, and given that the purpose of the regression analysis is explanatory (rather than for the purpose of testing a model) the researchers believe that weights can be used such that the Roma observations from the ethnic over sample can be used to increase the efficiency of the results with respect to Roma ethnicity without biasing the sample.

To do this on a household level, the household weight assigned to each Roma household, in both the ethnic and random samples, will be scaled by the fraction of Roma households in the random sample divided by the sum of Roma households in the random and ethnic samples (all these numbers refer to the weighted samples). Thus after the weighting, the effective number of Roma observations in the sample will remain unchanged. However, because the actual number of Roma observations are far larger than the “effective” number of Roma observations after the new weights are applied, the efficiency with respect to the Roma variable is higher than it would have been otherwise.

## STATISTICAL APPENDIX

	Bulgaria					
	Non-Roma		Roma		Overall	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Log adult equivalent expenditure (US\$ PPP)	5.33	0.64	4.64	0.70	5.28	0.67
Household Size	2.78	1.41	4.22	2.50	2.90	1.57
Number of children	0.29	0.59	1.11	1.25	0.35	0.70
Share urban	0.70	0.46	0.58	0.50	0.69	0.46
Share female headed	0.25	0.43	0.13	0.34	0.24	0.43
Age HH head	50.36	17.62	39.88	15.13	49.53	17.65
Number working adults	0.88	0.99	0.43	0.76	0.85	0.98
Share employed (HH head)	0.42	0.49	0.20	0.40	0.40	0.49
Share unemployed (HH head)	0.16	0.37	0.58	0.50	0.19	0.40
Share out of the labor force (HH head)	0.42	0.49	0.22	0.42	0.41	0.49
Education:						
Share less primary	0.11	0.31	0.52	0.50	0.14	0.35
Share completed primary	0.22	0.41	0.34	0.48	0.23	0.42
Share some secondary	0.53	0.50	0.13	0.34	0.49	0.50
Share some higher	0.14	0.35	0.01	0.10	0.13	0.34
Share living in a settlement*	--	--	0.54	0.50	--	--

*Source:* Yale Dataset, own calculations. Data from random and ethnic Samples, weighted by household.

\* Roma only, share represents share of households.

	<b>Hungary</b>					
	<b>Non Roma</b>		<b>Roma</b>		<b>Overall</b>	
	<b>Mean</b>	<b>Standard Deviation</b>	<b>Mean</b>	<b>Standard Deviation</b>	<b>Mean</b>	<b>Standard Deviation</b>
Log adult equivalent expenditure (US\$ PPP)	5.79	0.51	5.32	0.54	5.78	0.51
Household Size	2.52	1.37	4.19	2.12	2.57	1.43
Number of children	0.31	0.71	1.34	1.42	0.34	0.76
Share urban	0.64	0.48	0.57	0.50	0.64	0.48
Share female headed	0.27	0.45	0.21	0.41	0.27	0.44
Age HH head	51.65	19.07	39.64	12.26	51.28	19.01
Number working adults	0.93	1.07	0.70	0.94	0.92	1.07
Share employed (HH head)	0.44	0.50	0.33	0.48	0.44	0.50
Share unemployed (HH head)	0.06	0.23	0.32	0.48	0.07	0.25
Share out of the labor force (HH head)	0.50	0.50	0.34	0.48	0.49	0.50
<b>Education:</b>						
Share less primary	0.13	0.34	0.22	0.42	0.13	0.34
Share completed primary	0.21	0.41	0.50	0.51	0.22	0.42
Share some secondary	0.52	0.50	0.27	0.45	0.52	0.50
Share some higher	0.13	0.33	0.01	0.07	0.12	0.33
Share living in a settlement*	--	--	0.15	0.36	--	--

*Source:* Yale Dataset, own calculations. Data from random and ethnic Samples, weighted by household.

\* Roma only, share represents share of households.

	Romania					
	Non-Roma		Roma		Overall	
	Mean	Standard Deviation	Mean	Standard Deviation	Mean	Standard Deviation
Log adult equivalent expenditure (US\$ PPP)	5.45	0.73	4.78	0.95	5.43	0.74
Household Size	3.03	1.61	5.09	2.83	3.10	1.71
Number of children	0.44	0.77	1.37	1.46	0.47	0.82
Share urban	0.61	0.49	0.57	0.50	0.60	0.49
Share female headed	0.21	0.41	0.10	0.30	0.21	0.41
Age HH head	47.87	17.07	39.53	12.97	47.58	17.00
Number working adults	0.87	0.96	0.70	1.03	0.86	0.97
Share employed (HH head)	0.43	0.50	0.30	0.46	0.42	0.49
Share unemployed (HH head)	0.08	0.27	0.18	0.39	0.08	0.28
Share out of the labor force (HH head)	0.49	0.50	0.52	0.51	0.49	0.50
Education:						
Share less primary	0.15	0.36	0.30	0.47	0.16	0.37
Share completed primary	0.12	0.32	0.27	0.45	0.12	0.33
Share some secondary	0.59	0.49	0.41	0.50	0.59	0.49
Share some higher	0.14	0.34	0.00	0.07	0.13	0.34
Share living in a settlement*	--	--	0.13	0.34	--	--

Source. Yale Dataset, own calculations. Data from random and ethnic Samples, weighted by household.

\* Roma only, share represents share of households.



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