

The importance of the hidden economy in Hungary in 1995-96

An estimation on the basis of the empirical analysis of household expenses¹

by I. J. Tóth

Introduction²

Hidden economy³ is a phenomenon that can be found in all market economies. Governmental measures must take into consideration the importance of hidden economy within the national economy, especially when its ratio is considerable or increasing. In transition economies this problem needs even more attention since besides the radical transformation of the legal economy the economic sector which was earlier referred to as "second economy" (Sik, 1992) went through a change similar in proportions, and in the years previous to and following the transition the extent of the hidden economy compared to the official GDP was estimated to be considerable, with an increasing tendency (Lackó, 1992b and Árvay-Vértes, 1994)⁴.

This research is the second in the sequence the goal of which is to estimate the extent and amount of unregistered expenses within the total expenses of households⁵. In this

¹The present work is a shortened and revised version of a study carried out by the author within the framework of the National Strategical Research Program of the Hungarian Academy of Sciences, published under the same title.

² The research and the empirical survey conducted by the KOPINT-DATORG Rt and Tárki which included 1000 households were carried out with the support and at the request of the Prime Minister's Office. The research was also supported by the Orex Trading Rt and the Hungarian Tobacco Trade Union. We would like to express our thanks to János Köllő, András Köves, Mária Lackó, Mihály Laki, György Lengyel, Endre Sik, Zsolt Spéder and Róbert Tardos for their remarks on the various versions of the study, to Erika Révész and József Tarjányi from the Tárki staff for their valuable advice and help during the preparation of the survey, as well as to my research assistant, Réka Tóth, for her work in the research. The calculations found in this study were carried out by the author, he is responsible for any errors which may occur.

³When describing the concept of hidden economy in our study we take the EUROSTAT classification into account (Árvay-Vértes, 1994 and Willard, 1989). The KSH (Central Statistical Office) working group (Bede Kovics et al, 1995) uses a similar classification for "human activities" described in the Hungarian National Accounts. According to this in the concept of hidden economy we do not take into consideration work done at home, do-it-yourself activities, voluntary work (community services), exchange of products between households, criminal activities, activities which are productive but not legal (e.g. production and trade of drugs). This distinction is significant in order to avoid the error in the direct comparison between the concept and the results of the analysis which are based on the definition of the hidden economy from another point of view (Laczkó, 1995 and Lackó, 1997).

⁴Lackó's cash earning model shed light upon the continuously increasing tendency of the illegal economy between 1970-1989 (Lackó, 1992b). According to his estimation illegal economy increased from 6% to 20% as to the percentage of GDP between 1971-1989. On the other hand, a comprehensive investigation carried out at the beginning of the 90s put the amount of the hidden economy to 12% of the official GDP, and to 27% in 1992 (Árvay-Vértes, 1994).

⁵In accordance with our earlier analysis (Tóth, 1996b) those expenses can be considered non-registered purchases when the buyer does not get a receipt or a letter of guarantee in the case of more valuable goods. In

sense, it can be considered as a repetition of our earlier (1995) investigation⁶ but, owing to the fact that it is a repetition, it undertakes more than previously: it tries to estimate whether there has been a change as to the extent of the observed phenomenon, and if so, in what way. In other words, how the amount of unregistered expenses changed in a year within all expenses of a household.

There is another way in which we wish to contribute to the better understanding of the phenomenon of hidden economy: similarly to our previous empirical analyses (Tóth, 1996a and Tóth 1996b) we will try to test the assumptions that might explain the presence of hidden economy in the expenses of various households.

As a result of the effectiveness of norms related to tax disciplines, great significance is attributed to a part of hidden economy which might affect a wide range of the population. It is possible that the part of the hidden economy which is related to public expenses is only a small portion of the hidden economy, but its importance is greater than its ratio. From the point of view of public opinion on hidden economy, collective consciousness and norms related to hidden economy, it is very important to know how often it occurs in a household that, as a buyer a person participates in a transaction which is considered as part of the hidden economy. Its extent and the probability of its occurrence is important because they show to what extent illegal economic activity is accepted by the members of the society and to what extent they accept the norms that approve of these. When judging illegal economic activities it is not the same when these occur occasionally and to a small extent, or when it is the everyday practice of a wide range of the population.

In the followings we will first describe data sources that were used and the basic theories of estimation, and then the estimations of the amount of unregistered expenses among the examined expenses which were obtained during the 1996 survey. Following this, we will do the same in the case of the aggregated groups of expenses, too. Also, we will try to estimate the amount of unregistered expenses in the case of expenses which the survey did not include: this will enable us to give an estimate of the range of unregistered expenses as to all of the expenses of Hungarian households in 1996. Finally, we will examine the relationship between unregistered expenses, social status, income and financial status of households, as well as the relationship between the characteristics of their residences.

Data sources

these cases we can suppose that these transactions will not appear in any kind of statistics or in any forms submitted to the tax authorities. More generally these can be described as expenses which do not appear in official statistics. This includes the wages of illegal employees paid by the entrepreneurs. We will not deal with the latter as this research only covers household expenses.

⁶The previous investigation - similarly to this one - was supported the the Prime Minister's Office. The results can be seen in (Tóth, 1996a), (Bóc - Klauber, 1996) and (Tóth, 1996b).

The study is based on two surveys - each included 1000 households -, enquiring about the shopping habits of the households. The first took place in November-December 1995 (VASAR95), the second in the following year, 1996 (VASAR96). Both surveys were conducted by SRIC (Social Research Information Center). When examining the affinity toward unregistered expenses, besides the above, another database which was compiled of the above two (VASAR56) was also used.

In Section 3 we used a settlement-based database (VASUT) set up by Janos Kollo which, besides the characteristics of the settlements, provides information on their public transportation network, accessibility of larger settlements in the neighbourhood, and the expenses of daily commuting. These data are used only in the case of households outside of Budapest. Besides these, we also use some data from the 1994 version (T-STAR94) of the Central Statistical Office (CSO) database which includes data on 3200 settlements in Hungary as well as the data of the 1996 survey of the Hungarian Household Panel (MHP96)⁷.

In the case of VASAR95 and VASAR96 the *household* was the unit of observation, while in the case of the other two sources of data it was the *settlement*. Due to the fact that while conducting VASAR95 and VASAR96 the codes of the settlements which are used by CSO were also recorded and the survey included about 70 settlements, we had a chance to compile the VASAR data and the two settlement-based databases⁸. This seemed to be a sensible venture as the settlement-based information was meant to play an important supplementary role in explaining the amount of unregistered expenses within the household expenses.

Methods and Limits of Estimation

Within the expense structures of the households some parts of the expenses were assessed during both the 1995 and the 1996 surveys. Our goal was to collect information for the widest possible range of household expenses and to separate the registered and unregistered expenses within the assessed expenses. This method serves as basis for the estimation of the amount of registered expenses besides the expenses included in the survey and all household expenses. During the survey an expense was determined to be registered or unregistered on the basis of the place of purchase and whether a bill was made out or not. Besides stores operating with over 5 employees (1) we distinguished between the so-called small shops, in which the number of employees does not exceed 5 (2) and market and street purchases (3)⁹. All things bought in the first belong to the category of registered expenses, in

⁷For the MHP 1996 survey see the report summarizing the first results of the research (Sík - Tóth, 1997).

⁸We are grateful to János Köllő and Gábor Kézdi for making this solution possible.

⁹In Hungary this latter is the so-called "KGST (comcom or flea) market" (Sík, 1997). The logics of the method we used were the same as the concepts of the research carried out by McCrohan and Smith who investigated the

the second case we only considered them registered if the salesperson made out an invoice with the cash register, otherwise they were listed as unregistered. Things bought in markets and on streets were all considered as unregistered expenses.

If the place of purchase did not supply any useful information (e.g. in the case of consumer durables or services) the value of goods obtained was considered unregistered if the receipt or the letter of guarantee was missing¹⁰.

We have four ways of estimating the unregistered expenses, gradually generalizing the results of estimations obtained from the surveyed expense items. These steps are the following:

1. First we calculated the amount and the ratios of the registered, the unregistered and the total expenses as to the surveyed expenses.
2. The same was done in the case of the surveyed expenses while the separate expense items were compiled into aggregated groups of expenses and within this we determined the average estimated ratios of the unregistered expenses.
3. Taking into consideration the data of the CSO household statistics (CSO, 1997) we also calculated the ratio of unregistered expenses within the total expenses of the households.
4. Finally, on the basis of the ratios obtained for the surveyed expenses we tried to determine the possible ratio of unregistered expenses as to the whole economy.

Thus, the first step is to estimate the observed turnover, then the total expenses of the households, and finally we can make some careful statements as to the total turnover of retail trade.

When estimating the surveyed expenses we started out from elementary data related to each expense item (often the goods themselves) and summarizing these reached an estimated sum of the total expenses in the samples of registered and unregistered expenses. For the summarizing we used yearly total in the case of each expense item.

After this we formed four aggregates ($j=1, \dots, 4$), which also show the yearly expenses and their structures: food and consumer goods (1), clothing (2), other goods (3), services (4). Accordingly, we used the following equation:

$$CS_j = \sum_{i=1, n} cs_{i,j} \text{ és } CNR_j = \sum_{i=1, n} cnr_{i,j}$$

extent of the hidden economy in the sale of goods and services. The results of their analyses can be well compared to our results (McCrohan - Smith, 1988).

¹⁰Thus, if the travelling agent gave a receipt or a letter of guarantee, this transaction was considered as registered.

where $cs_{i,j}$ is the estimated total sum used for each elementary expense item and $cnr_{i,j}$ is the total of unregistered expenses, i the number of elementary expense items surveyed ($i=1,2,...,n$), where n is the number number of all surveyed elementary expenses in the j -th expense aggregate. Due to the above:

$$CR_j = CS_j - CNR_j \quad (1)$$

Then taking into consideration all the expenses:

$$\begin{aligned} CSS &= \sum_{j=1,4} CS_j, \\ CNRS &= \sum_{j=1,4} CNR_j \text{ and} \\ CRS &= CSS - CNRS \end{aligned} \quad (2)$$

where CSS marks all the expenses, CNRS all unregistered and CRS all registered expenses included in the survey¹¹.

Besides this, we calculated the average expense of a household with regard to each expense item, each aggregate and all expenses, that is, the above sums were divided by the number of surveyed households.

If we want to estimate the amount of unregistered expenses within each expense item and the total expenses, we have to bear in mind that not all of the expenses we regarded unregistered can really be considered as such¹².

Besides these, we also have to take into consideration that the survey did not cover all the expenses of a household, e.g. the questionnaire did not include the purchase of cars or gasoline, and home building or catering as services. This is important because in the area not covered by the survey the proportion of unregistered expenses *is not the same* as in the surveyed area. In this case the unregistered amount within all expenses (NRH_{SC}) depends on the amount registered for the surveyed and not surveyed expenses (NRH_{OC} and NRH_{NOC}), as well as on the amount of surveyed expenses within all expenses (C_O/C_S):

$$NRH_{SC} = NRH_{OC} \times C_O/C_S + NRH_{NOC} \times (1 - C_O/C_S), \quad (3)$$

¹¹When summarizing the non-registered and registered expenses as well as the total expenses we disregard the fact that the registered expenses totally, the non-registered expenses do not or only partly include VAT or duties related to the purchase or the value of the goods. Neither the buyer nor the seller can be charged for the full amount of duties not paid by the buyer in relation to a non-registered purchase because that is the sum they divide between themselves during the transaction. We have no information as to the distribution itself but it can be reasonably supposed that under the taxation conditions valid in 1996 this sum is divided half-and-half between the buyer and the seller (Tóth, 1997).

¹²For distortion factors to be taken into consideration see (Tóth, 1996a).

where $0 \leq C_0/C_S \leq 1$.

If from among the expense groups (CS_j) which form CSS we take those $c_{i,j}$ expense items in the case of which it can be *a priori* acknowledged that the unregistered amount is zero ($NRH_{c_0} = 0$) then the unregistered amount can be obtained as follows:

$$NRH_{CS_j} = (c_{0=1,n,j} \times 0 + (CS_j - c_{0=1,n,j}) \times NRH_{OC_j}) / CS_j \quad (4)$$

After this, using the same method as in the analysis of the 1995 survey (Toth, 1996b) we calculated two quotients for each aggregated expense item: the amount of unregistered turnover within all expenses and as compared to all registered expenses (NRSH és NRRH). We used the following equations to calculate the minimum and maximum values for both quotients:

$$NRSH_{min,j} = CNR_{min,j} / (CNR_{min,j} + CR_{max,j}) \quad (5)$$

$$NRSH_{max,j} = CNR_{max,j} / (CNR_{max,j} + CR_{min,j}), \quad (6)$$

where CNR_j and CR_j are the average amount of unregistered and registered expenses, respectively, in the j -th aggregated expense group in the sample of surveyed households. Lower indices min and max show the minimum and maximum values of these averages calculated with the standard error. We assume that in the case of e.g. $NRSH_{min}$ the average of the actual unregistered expenses in all Hungarian households falls onto the lower borderline of the reliability range¹³, while in the case of the average registered expenses we use the maximum value for our calculations. Thus, using the sums and proportions of the average registered and unregistered expenses of the 1000 households we can deduce the extent of unregistered expenses within the expenses of all Hungarian households.

Equation (4) could be used if we wanted to make estimations as to the total turnover of retail trade. However, here we come across the problem that we don't know the amount of household expenses related to retail trade.. First we would have to know the total turnover of retail trade (not only the part covered by the CSO survey), and then we would have to divide this among the households, the government, the enterprises, the non-profit sector, and the expenditure of foreigners¹⁴. In the lack of a reliable empirical background we cannot calculate this, we can only assume that with relation to retail trade the amount of unregistered expenses is lower than the minimum unregistered expenses estimated for the surveyed household expenses.

¹³The averages were calculated at a standard reliability level of 95%.

¹⁴It is obvious, that the expenses we defined non-registered are an insignificant part of the retail purchases of enterprises. The situation is not so unambiguous in the case of foreigners' expenses.

The estimated amount of unregistered expenses in 1995 and 1996

Estimations regarding the surveyed expenses

Similarly to our experiences during the analysis of the 1995 survey, services form the widest range in which unregistered expenses can be estimated. If we examine each expense group - all surveyed expenses shown in Table 1 - then the value of NRSH can be estimated in the ### 1,5% zone and NRRH in the ### 2,5% zone for both years.

Table 1

The estimated amount of unregistered expenses within the surveyed expenses of Hungarian households in 1995 and 1996 (%)

Household expenses	The estimated amount of unregistered expenses within the surveyed expenses		The estimated amount of unregistered expenses compared to the registered expenses	
	NRSH		NRRH	
	1995 (1)	1996 (2)	1995 (3)	1996 (3)
Food and consumer goods	11-14	13-16	14-16	15-20
and within this, food	12-14	13-17	13-17	15-20
consumer goods	11-15	12-16	12-18	13-20
Clothing	25-33	25-32	33-49	34-46
Other goods	6-10	9-13	7-11	10-15
Services	35-50	41-51	55-100	69-103
All surveyed expenses	17-20	19-22	20-25	24-29

From Table 1 it can be seen that *the interval in which the average amount of the unregistered expenses of the households can change has increased in the case of each expense group both within all the expenses and as compared to the registered expenses.*

In accordance with this, in the case of all surveyed expenses and all Hungarian households, the amount of unregistered expenses can be estimated as 19-22% in 1996 as compared to 17-20% in 1995.

The increase which can be observed as compared to 1995 can result from two things: on the one hand, due to the increase of unregistered expenses in the case of some expense items and, on the other hand, from the increase in the weight of expense items of higher unregistered ratios. The extent of the increase, however, cannot be considered statistically significant, thus, we cannot declare that the amount of unregistered expenses has increased within the expenses of all Hungarian households. Nevertheless, it can be stated that between

1995 and 1996 there was no decrease, as according to our estimations this amount couldn't have decreased significantly.

Estimations regarding all household expenses

The above calculations - even though they enable us to follow through the changes in the amount of unregistered expenses - have a significant deficiency. As we have previously mentioned, they do not enable us to determine the amount of unregistered expenses within all household expenses. To be more precise, this is due to two things: on the one hand, the ratios between the weights of the surveyed aggregated expenses do not correspond to the ratios between the aggregates of the actual household expenses. On the other hand, out of the household expenses we have to select those expenses which we cannot possibly classify as unregistered expenses (e.g. household energy consumption).

Thus, first each expense item has to be considered as to their actual weight to enable us to give an estimation for each surveyed aggregated expense item for all households. This only solves the smaller problem, the examination of each elementary expense item of the households still remains to be done. The calculations for the estimation of all household expenses can only be carried out after this. For this reason we followed the above described procedure and examined each expense item included in the household statistics in order to exclude all expenses where the possibility of them being unregistered expenses is insignificant or equal to zero.

As several of the steps was essentially different from what we used in a study published previously (Bóc-Klauber, 1996) - using the data of the 1995 survey - and as a result of this the obtained estimation results are also significantly different from the ones published there, it seemed necessary to recalculate the data of the 1995 survey and, for the sake of comparison, publish the data for both years in this study¹⁵.

Table 2 includes the final results of the calculations. If we look at the numbers in this table it is conspicuous that, considering all household expenses in 1995, the amount of unregistered expenses was 10-13%, while in 1996 it was 11-14%. If we compare the unregistered expenses with the registered ones, then in 1995 the amount is 11-15%, while in 1996 it is 12-16%¹⁶.

¹⁵The difference is probably due to the mistake we are making when we "project" the non-registered amounts obtained for the surveyed household expenses onto the whole trade turnover. Even the direct generalization as to the expenses of a household - as we can see later - can cause serious mistakes. We have already mentioned the difficulties of making any estimations as to total trading.

¹⁶We know, however, that household statistics do not include all household expenses which are part of our national economy and shows an amount which is about 28% lower (KSH, 1996). According to this, in 1995 the average per capita expense was HUF 94.764/0,72=270.506 in Hungarian households. According to the KSH the

Table 2*The amount of unregistered expenses within all household expenses*

Household expenses	The estimated amount of unregistered expenses within all expenses (NRSH)	
	1995	1996
Food	9-10	9-12
Consumer goods	10-14	12-15
Clothing	25-33	25-32
Other	3-4	4-5
Services, home building, purchase of property	15-22	18-22
Total expenses	10-13	11-14

The possible extent of the hidden economy within the whole of the economy

Taking into consideration the amount of the unregistered expenses of households the possible extent of the hidden economy as to the GDP can also be determined. Before we start describing the results it would be useful to look at the relationship between the hidden economy and the GDP. When calculating the GDP in Hungary the CSO (Central Statistical Office) includes a significant part of the hidden economy into the GDP, thus, the GDP produced by the economy or the extended GDP (GDPs) can be divided into parts which are declared or belong to the hidden economy¹⁷:

$$GDP_S = GDP_D + GDP_{HE} + GDP_{HNE} \text{ and}$$

$$GDP_O = GDP_D + GDP_{HE},$$

$$GDP_H = GDP_{HE} + GDP_{HNE}. \text{ where}$$

difference is due partly to items they denied, did not want to mention or forgot, and partly to the fact that people with higher incomes were better represented in the survey. The question now is what category should we put the HUF 75.742 average per capita expense which does not appear in the household statistics. If we include all of it with the non-registered expenses, then its amount would jump to 33-35% in 1995 and to 34-36% in 1996. Although it can be assumed that the expenses which were denied, not mentioned or forgot are probably very likely non-registered expenses, it does not seem well-founded to consider all missing expenses non-registered. Another argument against handling all missing expenses as non-registered is that in our sample there were less people with high incomes. In case of these households it can be assumed that within their expenses the amount of registered expenses is not higher than in our report. After this all we need to estimate is that within the omitted expenses how much are the expenses of households with higher incomes who were left out. A well-founded estimation of the distribution of the concealed expenses can be carried out with the use of the data of the Hungarian Household Panel and the microsimulating database of Társi.

¹⁷See also Árvai-Vértes, 1994

GDP_D = declared (explicitly exposed) GDP which appear in tax return forms and official statistics,

GDP_{HE} = GDP produced by concealed activities; it's amount is estimated in the official statistics using different methods, thus it is part of the official GDP,

GDP_O = the official GDP

GDP_{HNE} = a part of the GDP produced by concealed activities but this is not included in official statistics,

GDP_H = all GDP produced in the hidden economy

If we wish to express the sum of unregistered expenses as a percentage of the officially calculated GDP then, using the GDP ratios characteristic for 1994 for our calculations, we can state that the extent of hidden economy related to household consumption in 1995 could be considered 5-8% of the official GDP. This ratio is twice the amount measured by the same methods in Great Britain at the end of the 1970s (2,3%) and three times as much as was estimated on the basis of a survey conducted in 1981 in the USA¹⁸, but it is still a lot lower than some assumptions and empirical research results estimating the extent of hidden economy which put the ratio of the hidden economy to be one third of the official GDP in Hungary at the beginning of the 90's. In our opinion this deviation is not only a result of the different definitions of hidden economy or the different estimating processes, but it means a real difference. We can either assume that, compared to a peak around the beginning of the 90's, by the second half of the nineties the ratio of hidden economy really did decrease in Hungary, or that there had been no change as compared to earlier years, only previous researches overestimated the extent of hidden economy at those times.

If we assume that in the case of transactions we did not include in our survey (community consumption, accumulation of fixed assets, export and import) the weight of hidden economy is twice what we estimated (which is an obvious exaggeration) then, at the whole, its amount would be about 16-20% of the official GDP. *That is, the extent of hidden economy would be still lower than the value estimated at the beginning of the 90's.*

If we assume that the extent of hidden economy can be neglected in the area of public consumption, accumulation of fixed assets and foreign trade but during the statistical observation of the households the difference between the declared and the actual expenses, that is, the concealed or forgotten expenses are listed as unregistered expenses, then *the ratio of hidden economy can be considered 17-18% of the official GDP in 1995.*

¹⁸Data source: Willard, 1989

Even if we accepted these ratios it would not mean that the official GDP should be increased by this much to reach the "total or extended GDP". Using various estimating methods the CSO builds a significant part of the hidden economy into the official GDP. In 1992, for example, the ratio of the hidden economy estimated in such a way was over 10% of the official GDP (Árvay-Vértes, 1994). As we have no way of knowing what percentage of the official GDP the declared GDP is at the present¹⁹, we cannot tell how much the official GDP should be increased by to reach the actual GDP using our definition of the hidden economy. It is probable that, considering the possible development of the statistical estimating methods, the ratio of the hidden economy which is included in the official GDP is nowadays higher. That is, in 1996 the official GDP doesn't have to be increased by 17-18% to reach the total GDP, as it had been estimated in 1992 (Árvay-Vértes, 1994)²⁰.

4. Possible explanations for affinity toward unregistered purchases

Assumptions

After getting a picture of the average amount of unregistered household expenses, let us examine how the investigated households are divided as to the ratio of unregistered expenses within their expenses. Furthermore, let us examine what characteristics of the households and their places of residence are related to the affinity of the households toward unregistered purchases²¹. Can we establish the range and characteristics of the groups of households which are usually characterized by a high amount of unregistered expenses, that is, by more intensive participation in transactions that are part of the hidden economy?

During our investigation we compiled the 1995 and 1996 data and used both as the basis for calculation. If there was no relevant data to be used for the examination of household characteristics for 1995 (e.g. subjective judgement of the financial situation of the household), we only used data collected in 1996. This transformation made a sense because - as it could be seen previously - there was no significant difference between the amount of unregistered expenses in the two years as to the aggregated expense items or to all recorded expenses. Thus, we assumed that the effects of the factors responsible for the ratios of unregistered expenses were not different either during the two years.

The compilation was made possible by the fact that the questionnaires used in the two surveys were almost the same and so they could be easily transformed into a new database.

¹⁹The KSH does not carry out calculations in relation to these.

²⁰If we consider that the declared GDP is 90% of the official GDP, then on the basis of the data we obtained the amount of hidden economy is about 18-20% of the declared GDP. This also means, that the official GDP should be increased by 7-8% to reach the extended GDP.

²¹The definitions and distribution of the investigated variables can be seen in Supplement 1.

Several assumptions can be made during the examination concerning the affinity of the households towards unregistered expenses. These are the followings.

Income standards. First of all, it seems evident that the affinity of a household towards unregistered expenses is in a very strong negative relationship with the per capita income (EHJOV) of the household: the amount of unregistered expenses is higher in households with lower income standards, than in the expenses of the well-to-do²². It is obvious that in poorer households people are probably more often forced to adapt to this kind of consumption. A form of this is the purchasing of goods at a lower price which would mean the increasing of unregistered expenses within the expenses of the household²³.

Property. The effect of the financial condition (HVAGYON) can be assumed to be similar to that of the incomes: the richer households have less unregistered expenses than the poorer.

The perception and the dynamics of the financial circumstances. With relation to the influence of incomes it can be assumed that it is not the actual income condition but its subjective perception that plays an important role in the amount of unregistered expenses²⁴. On the other hand, it is not the actual standard of income but the dynamics of the income that is more closely related to the involuntary adaption of the consumers, that is, to the ratio of unregistered expenses within the recorded expenses.

Accordingly, the ratio of unregistered expenses depends, on the one hand, on the subjective perception of the standards of income and, on the other hand, on the changing of the standards of income. We expect that those who perceive their financial circumstances to be bad, instead of considering their actual standard of income, will have more unregistered expenses. Also, the ratio of unregistered expenses is higher within the expenses of households which report a lowering of their standards of income.

We used two variables to measure the subjective perception of the standard of income: the first was the ordinal variable describing the financial circumstances of the family (SZAHELY), and the other was a continuous variable sensitive to the deviation between the

²²Analyses carried out on the basis of the 1995 survey did not verify the assumptions related to the negative effect of the income. Measuring the income standard of a household as to the per capita income in the household we found no significant relationship between the surveyed expenses and the non-registered expenses at any level of acceptance. We could not disclose any kind of relationship even when we examined the non-registered ratios related to each expense group (food and consumer goods, clothing, other goods, or services) one-by-one (Tóth, 1996a).

²³It should be added, that empirical analyses examining the supply and prices of the flea markets warn us that in many cases the low prices of the flea markets are only an illusion for the buyers (Czakó, 1997).

²⁴The subjective perception of the income standard can also be a relevant accounting factor independent of the actual income standard (Lengyel-Tóth, 1996).

actual and the expected standard of income (DEPRIVH). This yields the ratio of the difference between the expected and actual incomes as to the actual incomes.

To approximate the dynamics of the perceived incomes we used the ordinal variable describing the changes in the financial circumstances of the families during the last year (CSAHELY).

Social status. The choice between the registered and unregistered expenses can also be comprehended as the choice between the non-material advantages (guarantee) and the tangible, material advantages (lower price). The attitudes of consumers preferring one or the other are quite different. When buying the same products some consumers prefer registered purchases in order to obtain enforceable guarantee, while others prefer to buy cheaper and for this they are willing to waive the sense of safety which is provided by the guarantee. This difference in preferences is related to the social status of the consumers, that is, the social status of the members of the household can have an influence on the shopping habits of the household. We assume that households where the members are better educated and of higher social status spend less on goods and services purchased in unregistered form than the ones with lower social positions. We measured the social position by the qualification of the head of the household (HFOISK).

Entrepreneur in the family. In Hungary it can be observed that the budgets of those who are self-employed in the form of enterprises and of micro-enterprises based on family participation are considerably intertwined with the household budgets. The results of empirical analyses (Tóth-Ábrahám, 1996) also indicate that, in order to minimize tax obligations, some enterprises include the day-to-day expenses of the household in the expenses of the enterprise as production consumption. As a result of this we expect that the presence of an entrepreneur in a household (VALLALK) decreases the affinity towards unregistered purchases because goods purchased in this form, in the absence of invoices, cannot be accounted for as expenses of the enterprise.

The size of the settlement. In Hungary the areas that serve as bases for most of the flea markets are concentrated mainly in the larger towns and in Budapest. It can be assumed that the range of goods they offer increases with the size of the settlement²⁵. As a result of this, we expect that there is a close connection between the type of settlement the household is located in (TELEP) and the affinity towards unregistered expenses: the ratios are probably higher among those who live in larger settlements - *ceteris paribus* - than among those who live in smaller settlements.

²⁵The results of empirical investigations related to the supply and size of the flea markets indicate the same (Czakó, 1997).

Availability and transaction costs. The other way in which the size of the settlement also has an influence is that the expenses related to the actors of the unregistered transactions vary, that is, the *transaction costs* related to the purchases are different. It makes a difference where and how often the given goods can be purchased, how long it takes and how much it costs to get there, and what chances the members of the household have to go to the closest flea market.²⁶ Thus, we suppose that in the households of those settlements where the network of public transportation to the neighbouring larger towns and to the county towns is better developed the ratio of unregistered expenses is higher. The situation is similar if there is a car in the given household (AUTO), because that can widen the range of easily accessible places of unregistered purchases.

The rest of the variables used as indicators of the availability show how many larger settlements within 40 kilometers of the household can be reached by bus (BUSZ), by train (VONAT), or either one of these (KAPCS).

Environment. When examining the shopping habits of the households it cannot be left out of consideration that this can be influenced by contextual effects. The norms shown by neighbouring households can also influence the shopping habits of the given household. We assume that if the income standards of people living in the same settlement are high, then this fact decreases the ratio of unregistered expenses. To measure the income standard characterizing a settlement we divided the taxable income of all of the taxpayers by the number of inhabitants and according to this quotient we listed the households into ten categories. The variable obtained (NADOALAP) shows which of the ten income categories the settlement of the given household belongs to.

State of development of the business network. Still talking about the contextual effects, we expect that if the commercial infrastructure of a settlement is well developed, then there are more shops with a better chance for registered purchases and a wider range of goods, and this will decrease the affinity of the inhabitants of the settlement towards unregistered expenses. The deficiencies and under-development of the official commercial network contributed significantly to the formation and survival of flea markets which provide for unregistered purchases. The flea markets can be considered as supplementals, whereas if the latter is well-developed, the chances for the formation of the former are worse.

The level of development of the commercial network is indicated by the number of department stores as to ten thousand inhabitants (ABCR) and the number of all retail stores - not including the pharmacies - also as to ten thousand inhabitants (SHOPR).

²⁶The relevancy of the assumption related to availability is verified by the results of János Köllő's study examining the conditions of local unemployment and commuting (Köllő, 1997).

Results

Now let us take a look at the distribution of the households according to the ratio of unregistered expenses within the surveyed groups of expenses and within all the surveyed expenses! In the followings we will analyse the amount of unregistered expenses one-by-one within each expense group (consumer goods, durable goods, clothing, services) and within all expenses, not including food (C2FH). We decided to exclude money spent on food because the method we used (household survey) was the least accurate when estimating the amount of unregistered expenses²⁷.

The distribution of the households according to the unregistered expenses directs our attention to three facts.

First of all, the unregistered expenses have no or hardly any significance in the recorded expenses of a large number of the households; secondly, all expenses of a considerable number of households are paid in the form of unregistered expenses; and thirdly, taking into consideration all of the recorded expenses, it can be seen that there is a decrease in the number of households where the ratio of unregistered expenses are increasing.

These all indicate that the phenomenon of unregistered expenses plays a role within the expenses of a limited group of households and only in the case of a small proportion of them can we say that they have a dominant role within the recorded expenses. This can be clearly seen if the households we questioned during the two surveys are listed in two categories as to the amount of unregistered expenses (See Table 3).

²⁷In the case of expenses related to food we can only estimate the amount of non-registered purchases as in the traditional vegetable-markets the farmers are not obliged to give receipts and also, in the case of the other salesmen not giving a receipt does not mean that the value of the purchase will not be declared in their tax return forms.

Table 3

The distribution of households as to the unregistered expenses within the different groups of expenses

Groups of expenses	Average ratio of unregistered expenses	Ratio of unregistered expenses (%)			n
		Zero	Around average	Above average	
	(%)	(0)	(1)	(2)	
1. Consumer goods* (ELFHR)	11,2	85,5	14,5	-	1361
2. Clothes (RFHR)	36,4	52,2	9,5	38,4	1170
3. Other goods (VFHR)	14,0	71,4	6,6	21,9	1893
4. Services (SFHR)	53,8	14,8	32,4	52,8	1702
5. Surveyed expenses (1+2+3+4) (C2FHR)	27,0	16,2	45,6	38,2	1980

*: In the case of consumer goods the categories are: 0 - there is none, 1 - there are some

Let's turn our attention to the examination of the relationship between the ratio of the above factors and the unregistered purchases. For this purpose we carried out logistic regressional and ordinate logit estimations, the subordinate variables of which were the ordinate variables which were calculated according to the ratios of unregistered expenses²⁸. In the models we try to estimate to what extent and in what direction a unit change of the illustrative variables changes the probability of the ratio of unregistered expenses of a household's expenses to fall into one of the given categories²⁹.

²⁸On the other hand, due to the fact that the distribution of C2FHR is a Poisson-type distribution, it seemed appropriate to use Poisson regression. Also, for the values of variables showing the ratios of non-registered expenses as expense groups we also carried out simple linear regressional estimations to test the effect of each explanatory variable. The direction of the effects estimated on these bases do not differ from those obtained during the ordinate logit estimations.

□ For detailed description of the ordinate logit model see Computing Resource Center, 1992.

Table 4*Results of the logistic regression and ordered logit estimations (MODELL1)*

independent variables	dependent variables					
	ELFHR (1)	RFHR	VFHR	SFHR	C2FHR	C2FHR2
VALLALK	-0,0849	-0,2102	0,1932	-0,1945	-0,1327	-0,0863
HFOISK	-0,0278	-0,2863**	-0,1014*	-0,0165	-0,0147	-0,0507
AUTO	-0,3913*	-0,0148	0,2319**	-0,2568**	0,0823	0,0148
EHJOV	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
TELEP	0,4192**	0,0069	0,2167**	-0,1084**	0,1004**	0,1075**
IDO	0,0700	0,0275	-0,0554	0,0551	0,1474*	0,1642*
Constant	-2,7672**	-	-	-	-	-
Cut point 1	-	-0,7486	1,3188	-2,2032	-1,3172	-0,6042
Cut point 2	-	-0,3358	1,7022	-0,5275	0,8147	0,1128
Cut point 3	-	-	-	-	-	0,8398
N	1298	1118	1831	1642	1912	1912
Chi ² =	44,82	35,79	28,87	25,46	11,44	11,55
Log Likelihood	-1036,093	-1030,7916	-1371,8288	-1623,3136	-1948,7978	-2548,9106
Prob #### Chi ²	0,0000	0,0000	0,0000	0,0003	0,0756	0,0728
Pseudo R ²	0,0415	0,0171	0,0104	0,0078	0,0029	0,0023

(1): logistic regression

*: p #### 0,10

**: p #### 0,05

The effect of the examined factors were tested by two models. In the first one those variables were used as illustrative variables which were at our disposal during both surveys (MODELL1). These were the following: VALLALK, HFOISK, AUTO, EHJOV, TELEP, and IDO. In the second one (MODELL2) the above variables were supplemented by those which characterized the settlement's level of development and the living standards of the people living there, which we only had during the 1996 survey. The former group included the number of larger settlements which were within 40 kms and were accessible by public transportation (KAPCS), the average taxable income of the people living in the settlement (ADOALAPO), the number of department stores as to ten thousand inhabitants. The latter group includes the financial situation of the households and the perception of changes in the financial circumstances (DEPRIV és CSAHELY)³⁰. Accordingly, this model only includes data of the 1996 survey and on households outside of Budapest.

The results of the calculations are included in Table 4. These results show that there are no uniform effects between the different groups of expenses. The characteristics of the

□ As we used the variable KAPCS which we defined as having the value "missing" in the case of households in Budapest, results appearing in MODELL2 are only related to households outside the capital.

households have a different effect on the ratio of registered expenses in each group of expenses.

We cannot confirm our hypothesis concerning the presence of an entrepreneur in the family - although the estimation results in the same effect as was assumed - because the effect of the variable used for measurement (VALLALK) is not significant in any of the cases.

The effect of the social status which was measured by the education of the head of the household (HFOISK) is more unambiguous: households of high social status buy less clothing and other consumer goods in unregistered form. This confirms the hypothesis concerning the relationship between the choice of non-material advantages - material advantages and social status: *when making a decision related to a product those of higher status value the non-material advantages higher, while those of lower status value the advantage of the price*. We can also say that those of higher status can be described by the model of quality-sensitive consumers, while those of a lower status by the model of price-sensitive consumers (Galasi - Kertesi, 1985).

Since the flea markets offer mainly clothing (Czakó, 1997) we can say that *in the trade of clothing which makes up a significant part of the business of flea markets with the increasing of education the probability for unregistered purchases decreases*.

The car which is owned by a household (AUTO), as we have mentioned among the assumptions, can mean two things: on the one hand, as a piece of property it can measure the financial circumstances of the household and, on the other hand, as a means of transportation it can improve the chances of the household for shopping. This effect promotes unregistered purchases because it makes those markets accessible at which the household can have the advantage of a better price which cannot be had without a car.

The proportions of the parameters we obtained are the same: the almost 68% decrease in the chance of unregistered purchases in the case of consumer goods can be related to the financial situation of the households. In the case of these goods the place of purchase - in the case of unregistered purchases - is the street itself, and this is a phenomenon which occurs mainly in cities. Because of this the role of cars as means of transportation can be neglected. The situation is the same in the case of services as we cannot talk about the changing of the place of purchase as a precondition of the purchase.

In both cases (consumer goods and services) we suspect that the financial situation of the household is behind the decreasing influence that the ownership of a car has on registered expenses. Among the richer households the purchasing of these groups of goods in unregistered form is more limited.

In the case of other goods the ownership of a car can also be considered as an improvement of the shopping possibilities and an indicator showing the financial situation of a household. The shopping possibilities of households which are richer and own a car are better than those of the poorer and they use this advantage to increase the ratio of unregistered purchases within their expenses. On the other hand, in the case of people living in bigger towns where - due to better public transportation - the transactional costs of purchases are lower to start with, a higher unregistered ratio can be estimated than in the case of people living in smaller towns or villages. *The negative influence of the social status of the household warns us that - similarly to buying clothing - households of higher status behave as quality-sensitive shoppers in the case of these goods, too.* Non-material advantages such as quality and guarantee are more important to them than lower price.

The negative influence of the size of the settlement can be related to the unified influence of AUTO and TELEP: more people living in larger settlements have cars, and the probability of a family using their neighbours' car or some relatives' car who live in the same settlement for shopping is also higher. In lack of a car - since we assume a positive relationship between the goods offered in the markets and the number of people living in the settlement where the markets are - the place of the market also influences the demand.

Our hypothesis concerning the negative influence of the standard of income (EHJOV) *is not confirmed by the results obtained either in relation to the certain groups of expenses or in the cases of the aggregated expenses.* According to the models a household's standard of income has no significant influence on the ratio of unregistered expenses at none of the usual levels: people with higher incomes are just as likely to buy at a higher or lower rate in unregistered form as households with lower incomes. This result corresponds to the one obtained during an earlier investigation (Tóth, 1996a).

The absence of the income's influence can be linked with the fact that, while in the case of people with lower incomes shopping is more frequent at flea markets where goods are cheaper and of lower quality, the ratio of shopping in registered form is not higher among households with higher incomes who shop here less frequently because these people often buy more expensive and better quality products from craftsmen who don't issue invoices either³¹.

The size of the settlement where the household is located (TELEP), however - excluding the services - is in a positive relationship with the ratio of unregistered expenses in each case. According to this - in case there is no difference between two households as to all examined characteristics - this ratio is the highest in the households in Budapest and the

□ Zsolt Spéder called my attention to this fact. The results of a survey which covered the management of households in a provincial town and the surrounding area indicated the same (Spéder, 1997)

lowest in the case of people living in villages. This result is due to the uneven distribution of the unregistered markets (flea markets) as to the types of settlements: *most of these markets (with the widest range of goods) are in the capitol and in the county towns*. This means, that these are more accessible for people who live in settlements where there is a market making unregistered purchases possible and the ratio of unregistered expenses within their expenses is higher than in the case of people who live in settlements where there are no markets like this.

This is especially valid in the case of consumer goods because in case of these it is mainly in the streets and in the markets that cigarettes, alcoholic beverages or coffee can be purchased in unregistered form. Out of all expense groups estimations related to these come closest to the practical data (pseudo $R^2 = 0.0415$).

In the case of services the above train of thought cannot be logically valid as in this case the place of transaction cannot be unambiguously determined: it takes place either in a shop, or at the seller's place of work, or at a place designated by the seller. The empirical results show another kind of relationship: *it is the ratio of unregistered expenses that is estimated to be the highest in the households of smaller settlements*. And this result is probably related to the fact that, e.g. services in villages are done on the basis of mutual help between the households in the form of a direct exchange of services or goods (a) or in the form of monetary transactions (b) ³². A professional supplier living in the same village is looked upon by the buyer as a member of a household with whom they are in day-to-day contact. Due to this personalized relationship the ratio of unregistered sales is higher in the villages than in towns.

The effect of the IDO models is always positive and significant in the aggregated model. The direction of its effect is not surprising if we remember that in 1996 the amount of unregistered expenses was somewhat higher in all households than in 1995. The only difference is that at the household level the model estimates a significant increase between 1995-96, while in the aggregated estimation this change was not found to be significant.

It must be added to the above that the reliability of the models used for the estimation of the unregistered ratios (C2FHR és C2FHR2) within the aggregated expenses is questionable. The models obtained don't really explain the differences in the amount of unregistered expenses. The knowledge of the analyzed household expenses contributed only in a small extent to a more accurate determination of unregistered expenses.

□ In the first case there is no money involved in the transactions (these are not included in our circle of observation) while in the second case money is used as the means of payment. Our analysis of the two recordings supply information on the amount of unregistered within the latter. According to this, in the case of monetary transactions the amount of registered expenses increases with the size of the settlement.

We expected a somewhat better result in the case of the second model (MODEL2) which also contained variables describing the financial situation of the households, the state of development of the settlements, the living standards of their inhabitants. According to our results, however, in most of the cases the newly included factors did not improve the reliability of the estimations significantly. In the cases of clothing it is also the effect of the social status of the household and the availability of the flea markets (AUTO) that is more significant. The higher social status decreases while the ownership of a car which characterizes the financial circumstances of a household increases the ratio of unregistered expenses. The model estimating the ratios related to other consumer goods does not supply an acceptable result: here the variants do not promote the estimation of the ratio of unregistered expenses significantly. In the case of services the obtained results were acceptable and it was the influence of the newly included variants that was significant. The negative influence of the size of the settlement stood out the same way as in the previous model. *This can be supplemented by the fact that - as we expected - in settlements where the average income of the inhabitants was lower the ratio of unregistered expenses was higher within the expenses of the households.* The role of the other two factors (public transportation connections and number of stores in the area), however, is quite puzzling: according to both, higher ratios of unregistered expenses can be estimated in settlements with more developed infrastructures.

Table 5

The results of the ordered logit estimations (MODELL2)

independent variables	dependent variables					
	ELFHR (1)	RFHR	VFHR	SFHR	C2FHR	C2FHR2
VALLALK	0,3065	-0,2102	0,5206*	-0,4089+	-0,2534	-0,1464
HFOISK	-0,0129	-0,3597**	-0,0880	-0,1083	-0,1084	-0,1316
CSAHELY	-0,3519+	-0,0149	-0,8241	0,0620	-0,0490	-0,0184
AUTO	0,4844	0,4568*	0,3226+	0,0235	0,3730*	0,2645
EHJOV	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
DEPRIV	0,0000	0,0000	0,0000	0,0000	0,0000	0,0000
TELEP	0,1568	0,1923	0,0865	-0,5079**	-0,2901+	-0,1883
ADOALAPO	0,0098	-0,1782	0,0500	-0,3458**	-0,0418	-0,0779
KAPCS	0,0158	-0,1025	-0,0858	0,3217**	0,2378**	0,1935
ABCRO	-0,0098	-0,0093	-0,1314	0,2737*	0,0780	0,0110
Constant	-1,8228	-	-	-	-	-
Cut point 1	-	-1,1635	0,8653	-2,8626	-1,7409	-1,0220
Cut point 2	-	-0,7340	1,1965	-1,0835	0,5037	-0,3206
Cut point 3	-	-	-	-	-	0,4695
N	490	435	713	639	748	748
Chi ² =	8,719	29,89	13,50	54,82	21,33	18,08
Log Likelihood	-179,7705	-393,0639	-499,30	-601,49	-745,75	-992,39
Prob #### Chi ²	0,5562	0,0000	0,1968	0,0000	0,0189	0,0537
Pseudo R ²	0,0271	0,0366	0,0133	0,0436	0,0141	0,0090

(1): logistic regression

+: p < 0,10

*: p #### 0,05

**.: p #### 0,01

With relation to all recorded expenses (C2FHR és C2FHR2) it can be seen that the results obtained are not independent of how we determine the variable which shows the ratio of unregistered expenses. In the first case the estimation supplies a significant value while in the second case it does not. The results of the first estimation *confirm the role of availability in the amount of unregistered expenses*: both the ownership of a car and the better transportation possibilities point toward a higher unregistered amount. In this case the increase in the size of a settlement decreases the willingness to pay in an unregistered form. This probably results in the fact that - as we've previously mentioned - in the expenses of households in smaller settlements other households play a greater role while the role of professional retailers or vendors is less important than in the households of larger settlements.

5. Conclusions

Our results show that in Hungary in the middle of the nineties the extent of the hidden economy as compared to the officially reported GDP is not negligible. During the first part of the economic transition, in the midst of the recession - when the living standards of a significant part of the households decreased or were at risk - an important characteristic of the behaviour of a significant part of the households was that they obtained some of the necessary goods in unregistered forms.

This fact, however, does not mean that all household take advantage of this possibility in an equal proportion. On the contrary, from the results of the analysis it could be seen that this *type of behaviour* is only *characteristic of a small proportion* which decreases parallel to the increasing ratio of unregistered expenses. This means that the proportion of households which depend significantly on the advantages provided by the hidden economy is very limited.

On the other hand, it must be mentioned that, considering the maximum ratios which we estimated in comparison to the official GDP (17-18%), the extent of hidden economy in Hungary can be estimated to be lower than shown by the results of other analyses. According to the model which uses the electric energy consumption of households as the basis for estimation (Lackó, 1997) in 1994 the ratio of the hidden economy was around 31%. There can be two reasons for the significant difference in the results: 1) the difference in the calculation of hidden economy; 2) differences resulting from the methods used for estimation. The first refers to the fact that our definition of the hidden economy is more limited than the one used by the method estimating on the basis of electric energy consumption (e.g. any do-it-yourself activities of the households are not included in our definition of hidden economy, while in the other one they are included). The other reason for the difference can be due to the fact that estimations based on surveying households and assessing the structure of expenses usually show the extent of the hidden economy to be lower than ones based on other methods. In the United States, for example, assessing the expense structure of the households the ratio of the hidden economy was 1,5% in 1981, while on the basis of cash demand it was 6,1%³³. Among other things this can be the result of the fact that estimations assessing the expense structure of households only include the part of the economic actors and transactions, where the household is one of the acting parties. On the other hand, when the estimation is carried out on the basis of direct questioning it can happen that the people questioned - because of the negative moral

□ Data sources: Willard, 1989 and Morris, 1993

judgement of the phenomenon of hidden economy - will lessen the actual amount of their unregistered expenses³⁴.

The models estimating the amount of unregistered expenses provide several lessons for us.

The first of these is that the income and financial condition of a household or the perception of these, as well as the size and infrastructure of the settlement where the household is can only partly explain the affinity of the given household towards unregistered expenses. The explanation for this fact can be that, besides factors describing the actual circumstances of the household and how the members of the household see it, *the role of the unintentional, ad-hoc decisions of the household can also be important*. The decision between the registered and unregistered form of expenses is not always based on a sensible argument. Frequently it is determined independently of the buyer's decisions that a transaction is considered to be a registered or an unregistered expense (will they issue an invoice or not). In some of the cases the buyer does not have the option to choose the unregistered expense (if he/she did, the vendor would refuse to do business with him/her).

On the other hand, the survey that was based on households can only show how unregistered transactions happen from the side of demand, but we only have suspicions as to the reasons and structure on the side of supplies. The existence of unregistered transactions is influenced by the behaviour of the suppliers and the structure characteristic of the given local market.

Another lesson is that the determination of the amount of unregistered expenses in the case of some expense groups is influenced by various household and contextual characteristics, as a matter of fact, the same factor can have a different effect in the case of different expense groups.

Furthermore, the results obtained show that - contrary to public opinion - there is no discernible relationship between the income standards of a household and their affinity toward

□ Similar situation can be expected when "economy" creates negative associations in the minds of the people questioned. In this case the households are more likely to estimate the sum of their expenses and loans more fully and accurately, than that of their incomes and savings. On the other hand, looking at the incomes of the members of the household as well as the items which appear or do not appear in their tax return forms, it can be seen that in the case of the two income groups the results of the household survey are different. In the case of the declared incomes the sums calculated for the households are the same as that shown by the macrostatistics, while in the case of incomes which were not declared the estimation based on the household survey supplied a sum which is over 30% less (Kolosi et al., 1996).

unregistered expenses. It is the same if we consider the per capita income characteristic of a household or the difference between the desirable and the actual incomes.

The surrounding, however, have a significant effect on the amount of unregistered expenses and thus confirms our previous results (Toth, 1996b). The influence of public transportation connections is significant and positive: if out of two settlements belonging to the same category from one more large settlements can be reached, then this increases the possibility that in that settlement the ratio of unregistered expenses is higher within the expenses of the households. This relationship verifies the relevancy of the assumption regarding availability.

Finally, we must mention a tendency that, in the long run, can influence the ratio of unregistered expenses as to household expenses. By this we mean the changing of the shopping habits: as compared to 1995, in 1996 the surveyed households shopped more in larger department stores. On the basis of this it is likely that after the large shopping malls appeared in Hungarian trade they attracted a significant part of the people who usually did their shopping in flea markets. According to this, the network of flea markets which play an important role in the unregistered expenses of the households will become scarce not as a result of police actions or taxation measures but due to the increasing role of shopping malls built by large commercial companies.

References

- Andorka, R. (1993): Elégedetlenség, elidegenedés, anómia (Discontent, Alienation, Anomy). In: Sik, E. - Tóth I. Gy.: Egy év után... Jelentés a Magyar Háztartás Panel II. hullámának eredményeiről. Magyar Háztartás Panel Műhelytanulmányok 3., Budapest: Budapesti Közgazdaságtudomány Egyetem, Társi, Központi Statisztikai Hivatal.
- Andorka, R. (1997): Elégedetlenség, lelki problémák, elidegenedés, anómia. (Discontent, Mental Problems, Alienation, Anomy.) In: Sik, E. - Tóth I. Gy.: Jelentés a Magyar Háztartás Panel 5. hullámának eredményeiről. Magyar Háztartás Panel Műhelytanulmányok 8. Budapest: Budapesti Közgazdaságtudomány Egyetem, Társi, Központi Statisztikai Hivatal.
- Andorka, R.- Spéder, Zs. (1994): Szegénység alakulása 1992 és 1994 között. (Changes in the Conditions of the Poor Between 1992 and 1994) In: Tóth, I.Gy. (Ed.): Társadalmi átalakulás 1992-1994. Jelentés a Magyar Háztartás Panel 3. hullámának eredményeiről. Budapest: Budapesti Közgazdaságtudomány Egyetem, Társi, Központi Statisztikai Hivatal
- Árvay, J. - Vértes, A. (1995): The share of the private sector and the hidden economy in Hungary (1980-1992). GKI Gazdaságkutató Rt. Budapest, p. 204.

- Bedekovics, I. - Hüttl, A. - Oláh, S. (1995): Non-observed economy in the Hungarian National Accounts. Paper prepared for a Workshop on implementation of SNA/ESA, Prague, 16-20 October,
- Bóc, I. - Klauber, M. (1996):): "A feketekereskedelem és a feketeszolgáltatások súlya a nemzetgazdaságban", (The Weight of Illegal Trade and Services in the National Economy), *Külgazdaság*, Vol. XL, No.6, pp. 21-35.
- Computing Resource Center (1992): Stata Reference Manual: Release 3. 5th ed. Santa Monica, CA.
- Central Statistical Office (KSH) (1996): Household Budget Survey, 1994. I. Budapest, Központi Statisztikai Hivatal
- Central Statistical Office (KSH) (1997): Household Budget Survey, 1995. Adattár. Budapest, Központi Statisztikai Hivatal
- Czakó, Á. (1997): "Négy város négy piaca. A népi kereskedéstől a kgst-piacokig" (Four markets of four cities. From popular trading to the comecon (flea-) markets), *Közgazdasági Szemle*, Vol. XLIV. No. 4. pp. 339-355.
- Elffers, H. - Weigel, R. H. - Hessing, D. J. (1987): "The consequences of different strategies for measuring tax evasion behavior", *Journal of Economic Psychology*, No. 8. pp. 311-337.
- Ékes, I. (1984): "A láthatatlan személyi jövedelmek becslési módszerei", (Estimation methods of invisible personal incomes), *Statisztikai Szemle*, August-September, pp. 862-871.
- Frey, S. B. - Weck, H. (1983): "Estimating the shadow economy: a 'naive' approach", *Oxford Economic Papers*, Vol. 35. pp.23-44.
- Galasi, P. - Kertesi, G. (1991):): "A hálapénz ökonómiája" (Economics of thank-you money) *Közgazdasági Szemle*, Vol. XXXVIII. No. 3. pp.260-288.
- Kolosi, T. - Szívós, P. - Bedekovics, I. - Tóth, I. J. (1996): Munkaerőpiac és jövedelmek (Labour Market and Incomes) In.: Sik E. - Tóth I. Gy.: Társadalmi páternoszter 1992-1995. Jelentés a Magyar Háztartás Panel 4. hullámának eredményeiről. Budapest: Budapesti Közgazdaságtudomány Egyetem, Társi, Központi Statisztikai Hivatal, pp.7-32.
- Köllő, J. (1992): "Zsibvásár az aluljárókban"(Flea-markets in the Subways), *Közgazdasági Szemle*, Vol. XXXIX. No. 6. pp. 538-549.
- Köllő, J. (1997): "A napi ingázás feltételei és a helyi munkanélküliség Magyarországon."(Conditions of Daily Commuting and Local Unemployment in Hungary), *Esély*, No. 2, pp. 33-61.
- Lackó, M. (1992a): "Az illegális gazdaság aránya Magyarországon 1970-1989 között. Egy monetáris modell". (The Extent of Illegal Economy in Hungary Between 1970-1989. A Monetary Model), *Közgazdasági Szemle*, Vol. XXXIX., No. 9. pp. 861-882.

- Lackó, M. (1992b): Az illegális gazdaság aránya - készpénzkeresleti modell. (The Extent of Illegal Economy - A Model for Making Cash). Manuscript, MTA Közgazdaságtudományi Intézet.
- Lackó, M. (1995): "Rejtett gazdaság nemzetközi összehasonlításban". (Hidden Economies in International Comparison), *Közgazdasági Szemle*, Vol. XLII, 1995, No. 5, pp. 486-510
- Lackó, M. (1997): The Hidden Economies of Visegrád Countries in International Comparison: A Household Electricity Approach, IEHAS, Budapest, p. 39.
- Lengyel, Gy. - Tóth, I. J. (1996): "Az életszínvonallal való elégedetlenség társadalmi tényezői". (Social Factors of Dissatisfaction with the Standard of Living), *JEL-KÉP*, No.1. pp. 31-46.
- McCrohan, K. F. - Smith, J. D. (1986): "A Consumer Expenditure Approach to Estimating the Size of the Underground Economy", *Journal of Marketing*, April, Vol. 50. No. 2., pp. 48-60.
- Merton, R. K. (1968): *Social Theory and Social Structure*, The Free Press
- Morris, B. (1993): Editorial Statement, *International Economic Insights*, Vol. IV. Number 6.
- Särndal, C. E. - Swensson, B. - Wretman, J. (1992): *Model Assisted Survey Sampling*. New York: Springer Verlag,
- Sik, E. (1992): "From the Second to the Informal Economy", *Journal of Public Policy*, Vol. 12. No. 2., pp. 153-175.
- Sik, E. (1996a): Fekete fogyasztás. (Black Consumption.) In: *Sik, E. - Tóth, I. Gy.: Társadalmi páternoszter 1992-1995. Jelentés a Magyar Háztartás Panel 4. hullámának eredményeiről*. Budapest: Budapesti Közgazdaságtudomány Egyetem, Társi, Központi Statisztikai Hivatal pp.82-89.
- Sik, E. (1996b): "Egy ló-öszvér a lovakról és a szamarakról. Adalék a második gazdaság hazai esztörténetéhez", (A 'Horse-Mule' on Horses and Donkeys. A Contribution to the Theoretical History of the Second Economy in Hungary), *Közgazdasági Szemle*, Vol. XLIII. No. 7-8., pp. 704-725.
- Sik, E. (1997): "A kgst-piachely a mai Magyarországon". (The comecon (flea-) market place in Hungary today), *Közgazdasági Szemle*, Vol. XLIV. No. 4., pp. 322-338.
- Sik, E. - Tóth I. Gy. (ed.) (1997): Az ajtók záródnak (?!). (The Doors are Closing (?!)). Jelentés a Magyar Háztartás Panel 5. hullámának eredményeiről. Magyar Háztartás Panel Műhelytanulmányok 8, Budapest: Budapesti Közgazdaságtudomány Egyetem, Társi.
- Spéder, Zs. (1990): "'Láthatatlan jóléttermelés'. Az önellátó termelés jellegzetességei és hozzájárulása a nemzet gazdaságához", (Production of Invisible Prosperity. The Characteristics of Self-sufficiency and Its Contribution to National Economy), *Közgazdasági Szemle*, Vol.. XXXVII. No. 11. pp. 1264-1278.

- Spéder, Zs. (1996): Fogyasztási válságok a háztartások gazdálkodásában (Consumption Crises in Household Management). In: *Sik, E. - Tóth István György: Társadalmi páternosztter 1992-1995. Jelentés a Magyar Háztartás Panel 4. hullámának eredményeiről.* Budapest: Budapesti Közgazdaságtudomány Egyetem, Tárki, Központi Statisztikai Hivatal, pp. 61-73.
- Spéder, Zs. (1997): "Háztartások egy kistérségben", (Households in a Small Region), *Szociológiai Szemle*, No. 1., pp. 5-37.
- Spicer, M. W. (1990): On the Desirability of Tax Evasion: Conventional Versus Constitutional Economic Perspectives. In: *Public Finance/Finance Publiques* Vol. XLV. No. 1. pp. 118-126.
- Tanzi, V. (1983): "The underground economy. The causes and consequences of this worldwide phenomenon", *Finance and Development*, Vol. 20., No. 4. December, pp. 10-13.
- Tóth, I. J. (1996a) (ed): .): Nem regisztrált lakossági vásárlások a kiskereskedelemben és a szolgáltatások piacán, (Unregistered Public Purchases in Retail Trade and in the Market of Services). Kopint-Datorg Műhelytanulmányok, No.21, p.68
- Tóth, I. J. (1996b): "A nem regisztrált lakossági vásárlások mértéke és társadalmi összetevői", (The volume and social components of non-registered purchases by the population), *Közgazdasági Szemle*, Vol. XLIII. November, pp. 1010-1032.
- Tóth, I.J. (1997): A fekete gazdaság egyes szegmenseinek becslése Magyarországon - 1996. (A nem regisztrált lakossági vásárlások empirikus vizsgálata a kereskedelemben és a szolgáltatások piacán). (The estimation of the segments of black economy in Hungary - 1996. (Empirical examination of unregistered public purchases in trade and in the market of services)). KOPINT-DATORG Rt. March, p.78 and Supplements
- Tóth, I. J. - Ábrahám, Á. (1996): "Income Structure and Distribution of the Tax Burden. (A Study of the Personal Income Tax Returns of 1994)", *Acta Oeconomica*, Vol. 48., Nos. 3-4, pp. 271-295.
- Tóth, I. J. - Semjén, A. (1996): "Tax Behaviour of Small and Medium-size Enterprises", *Review of Sociology of the Hungarian Sociological Association*, Special Issue, pp. 67-87.
- Willard, J-Ch (1989): "L'économie souterraine dans les comptes nationaux", *Economie et Statistique*, No. 226.

M1. Definition of variables used in the analysis and distribution of households according to the variables

<i>Name of Variable</i>	<i>Definition of Variable</i>	<i>Explanation of Categories</i>	<i>Distribution of households according to the categories of the given variable (%) or average values</i>
GAKTIV	Are any members of the family economically active? (n=2006)	1: yes 0: no	71,1 28,9
CSTAG	Number of people in the household (n=2006)	average	2,9
GYEREK	Number of children (n=2006)	average	0,8
HFOFOGL*	Occupation of the head of the household (n=963)	1: independent 2: junior manager 3: physical worker in agriculture 4: skilled worker 5: unskilled worker 6: senior manager 7: professional 8: other white-collar	9,7 5,2 8,7 33,7 21,6 9,0 3,9 8,1
VALLALK	Is there an entrepreneur in the household? (n=2002)	1: yes 0: no	15,5 84,5
HFOISK	Qualification of the head of the household (n=1998)	1: elementary school 2: industrial school 3: secondary school 4: college/university	36,3 28,0 23,4 12,2
MNELKR	Is anyone unemployed in the household? (n=2006)	1: yes 0: no	14,9 85,1
HFODOL*	Position of the head of the household in the labour market (n=995)	1: inactive 2: active, unemployed 3: active, employed	37,0 7,9 55,1
HOSSZES	Total income of the household (n=2006)	average (HUF)	473.545
HVAGYON*	Total possessions of the household: house, valuable assets, money, securities (n=997)	average (HUF)	2.983.185
HVAGYON2*	Total possessions of the household: house, properties, valuable assets (n=997)	average (HUF)	2.943.614
EHJOV	Total yearly income for one member of the household (n=1948)	average (HUF)	181.218
DEPRIV*	Opinion on the financial circumstances: the sum which they think is necessary for an adequate standard of living, minus the actual total income of the household, divided by the latter (947)	average	1,168
SZAHELY*	Individual opinion on financial circumstances (n=992)	1: are managing well 2: can hardly manage 3: have problems	15,7 50,8 33,5

M1. Definition of variables used in the analysis and distribution of households according to the variables (continued)

<i>Name of Variable</i>	<i>Definition of Variable</i>	<i>Explanation of Categories</i>	<i>Distribution of households according to the categories of the given variable (%)</i>
CSAHELY*	How did the financial circumstances of your family change in the past 12 months? (n=997)	1: became significantly worse 2: became worse 3: haven't changed 4: improved 5: improved significantly	27,3 46,4 22,9 2,8 0,5
TELEP	Type of settlement	1: village 2: town 3: county town 4: Budapest	35,4 25,9 19,4 19,3
AUTO	Is there a car in the household? (n=2007)	0: no 1: yes	60,2 39,8
VASUT	Number of train connections (n=1515)	0 1 2 3 4 or more	27,5 20,7 31,0 7,7 13,1
BUSZ	Number of bus connections (n=1515)	0 1 2 3 4 or more	7,7 26,5 28,0 27,3 10,6
KAPCS	Number of public transportation connections (train or bus) (n=1515)	0 1 2 3 4 or more	3,3 23,6 27,2 22,3 23,4
SHOPR	Number of shops as to 10.000 inhabitants (1901)	average number	152,4
ABCR	Number of department stores as to 10.000 inhabitants (1901)	average number	0,779
ADOALAP	Taxable income calculated for one inhabitant of the settlement	average (HUF)	127.762,7
IDO	Year of survey	0 - 1995 1 - 1996	1007 1000

*: only had the data for the year 1996

M2. Variables related to the amount of unregistered expenses

<i>Name of the variable</i>	<i>Definition of the variable</i>
CFH	Unregistered amount as to all expenses
C2FH	Unregistered amount as to registered expenses, not including food
C2FHR	Unregistered amount as to expenses, not including food - at ordinal measurement level
	0 - there is none
	1 - average, at the most
	2 - above average
C2FHR2	Unregistered amount as to expenses, not including food - at ordinal measurement level
	1 - under 5%
	2 - 5 - 15%
	3 - 15- 30%
	4 - above 30%
ELFH	Amount related to consumer goods
RFH	Amount related to clothing
VFH	Amount related to other goods
SFH	Amount related to services