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The Underground Economy in Greece: What Official Data Show

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DISCUSSION PAPERS

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CENTRE OF PLANNING AND ECONOMIC RESEARCH

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ABSTRACT

This paper attempts to estimate the size and the trend of the underground economy in Greece defined as the unreported by the National Accounts product and income. Comparing the private consumption expenditure figures of the National Accounts and the corresponding figures from available Family Expenditure Surveys it emerges that the former is considerably smaller than the latter. This implies a gross underestimation of the former variable and an underground economy of at least equal size. Such an underground economy is spotted in almost all private non agricultural sectors and appears to be growing in the 1980s.

1. INTRODUCTION

The underground economy has a different meaning to different scientists. There are many definitions in the academic and scholarly literature with varying ingredients attempting to describe the phenomenon. This derives from the fact that no single term has yet been widely accepted for the underground economy. The criteria chosen and adopted by various researchers differ depending upon the topic they examine. Some are concerned with the extent of tax evasion (O'Higgins, 1981, Internal Revenue Service, 1979), others place emphasis on the inadequacies of Gross Domestic Product measurement (Tanzi 1980, Macaffee 1980, Dilton and Morris 1981), while others in their calculations adopt the wider concept of economic activity (Feige 1979, Gutman 1977).

These concepts and their interrelation can be clarified as follows. At the outset there is the total production or income of a country for a given time period, defined as the maximum volume of production which can be consumed without changing the accumulated wealth of the country. It is desirable that this total production be recorded and measured, since it is a basic index of the level and trend of the country's productivity and welfare. However, because of insurmountable obstacles in measuring the value of some items of total production which are not market priced (e.g. housework and other domestic services), it is not intended for such activities to be included in the National Accounts. These productive activities, which are used by the producers themselves, consist of what is called domestic or household production, the size and distribution of which bear consequences on the people's level of living.

In addition to these household consumption activities for own use, some other productive activities are also excluded from NA, such as unpaid voluntary work offered to volunteer non-profit organizations (churches, political parties or athletic clubs). Because these activities are not market priced, some writers call

them "informal activities" or "informal economy". The household economy and informal economy mainly reflect the deviation between the ideal and functional definition of Gross Domestic Product.

With the exception of these activities, all production of a country should by definition be included in the GDP. However, because of difficulties or inefficiencies of the recording methods and measurement errors some items are not calculated precisely in GDP. All these items of production which, because of errors or other reasons are excluded from NA, are defined as the "hidden" or "underground economy" (Carter 1984, p. 210; Blades 1982, Pavlopoulos 1987). In other words, the underground economy is defined as the set of economic activities which, while according to the routine national accounts practices they should be incorporated into the measured product and income, are not captured by current NA measurement techniques.

Usually, the exclusion of these incomes stems from either the deliberate concealment for tax reasons or the violation of some state regulations. Such incomes are undeclared incomes from entrepreneurial activity, self employment, earnings from (secondary) employment, income in kind and monetary incomes from criminal economic activities. Thus the concept of the underground economy should be distinguished from that of the household and informal economy. For the latter there have not been any attempts to measure and include it in the NA. As they are not recorded, the underground economy together with the informal economy are usually called unmeasured economy in contrast to the measured economy which is called "the formal economy".

Another consideration of production, which appears in relevant studies, refers to the legality of studying activities, i.e. whether production takes place according to existing laws and regulations. The question is whether all illegal production should be considered as a component of the underground economy. The general principle proposed by international organizations is to include in the NA compilations all activities for which

effective demand appears in the market, regardless of the lawfulness of the production process. Presumably inclusion in the NA of activities which are clearly illegal, such as the production and trade of banned "goods" among other things, is incompatible with government spending to prevent such production. The example usually mentioned is that of income from the sale of drugs. At any rate, the criterion applied to the calculation of GDP, and thus of the underground economy as defined here, is not generally whether the production process conforms with existing regulations but whether there exists a demand for the final products.

From these concepts it is apparent that the volume of the underground economy does not coincide with the hidden economy (the latter incorporates the informal economy), nor with illegal production; it is broader. The more developed the national accountancy of one country, the more precise the calculation of GDP and thus the fewer the various measurement errors in calculating incomes and the smaller the underground economy. As, for instance, the national income is not calculated exclusively from income tax records but other sources are used as well, it becomes clear that part of the so called hidden economy is incorporated in the NA. Consequently, the main question is how much income is unknown in the sense that it is not reported anywhere because it escapes the measuring techniques employed by the National Accounts Authority. In this sense, the underground economy can be seen as an aspect of ensuring the completeness of national accounts statistics (Blades 1982, p. 33).

Beyond the statistical definition of the underground economy, it is important to consider the essential features of such activities. These features make it easier to locate the regions and branches of the underground economy and to evaluate its causes and consequences. It is clear that the underground economy can appear in a variety of different activities, starting from informal exchange of agricultural products at a local level

to crimes with economic content. This variety presupposes a corresponding variety of participation motives and a differentiated social disapproval. People, for instance, undoubtedly condemn the trade of drugs, but do not so strongly condemn gambling or the receipt of higher interest than is legal.

A common feature of the underground activities is that they concern production, exchange and consumption of goods and services, with the relevant transactions being executed through informal channels and not, or at least not completely registered by the authorities. Based on the distinction between the formal or exposed economy and the hidden or underground economy, various studies have listed the features of each (Gerry 1987, p. 110). Thus in the informal sector, as contrasted to the formal one, we usually meet: low capital level, simple or obsolete labour intensive technology, limited or nonexisting compliance with the state regulations, neither state support nor credit from banks but from relatives, low or nonexistent publicity, personal relations with the clients and suppliers, irregular working hours and no regular wages and bargaining. Such activities are presumably carried out by individual members or small groups. The bigger the productive unit, the more difficult and less improbable the acquisition of all of these features.

2. SCOPE OF PAPER AND RESEARCH METHODOLOGY

The phenomenon of the underground economy in Greece, or the more popular so-called "paraeconomia" in Greek, has been a recurring theme in the press in the recent years and a source of debate among academicians and policy makers. The discussion is focused on the size and the evolution of the underground economy through time and on the problems it raises as regards the tax, incomes and stabilization policy. In spite of the frequent references to the underground economy, there has not been any systematic research to address this phenomenon for the case of Greece, with the notable exception of a study by Pavlopoulos (1987) which presents a completely theoretical exposition on the phenomenon and an assessment for the year 1984.

The purpose of this paper is to estimate the size of the underground economy in Greece using exclusively published official statistical data. The main question posed is whether - because of the underground economy - national income and product data published by the National Accounts Division are the result of underestimation. In addressing this question, the paper benefits from the idea - which has also been exploited by researchers in other countries - of comparing macroeconomic variables stemming from different official independent data sources. The methodology adopted mainly consists of comparing household expenditures, as compiled by the Family Expenditure Surveys (FES), with the corresponding expenditure provided by the National Accounts (NA). As one person's expenditure of one drachma by definition turns out to be someone's else revenue of one drachma, the income level must be adjusted accordingly.

There are several methods of measuring the underground economy, many of which do not always give reliable estimates. O'Higgins (1980) systematically and critically surveys both the methods used in measuring the size of the underground economy and the empirical findings of relevant studies for various countries.

This paper follows a methodology which relies on comparisons of various official statistical data to conclude whether Gross Domestic Product in Greece is underestimated. Specifically,it compares the items of NA private consumption with the corresponding items of the Family Expenditure Survey consumption (FES). The basic principle upon which this paper is developed is that the purchases made in an economy within a time period are by definition equal to the receipts, i.e. the total household expenditures become revenue for the enterprises. To the extent that all variables in national accounts (with the exception of household expenditure) are precisely estimated, then, whatever the underestimation of the household expenditure in the NA may be, it implies an equal volume of underground economy. This is true in the sense that the level of expenditure and thus of product are equally underestimated. Then, having approximated the level of underestimation in consumption (underground economy) by product groups, and using a bridge matrix, the size of the underground economy is allocated to the various branches of economic activity.

The size of the underground economy in Greece is estimated for three different 12-month periods, as available FES data permit: the whole year 1974, the November 1981- October 1982 and the November 1987- October 1988 periods. These estimates allow us to observe the evolution of the underground economy in recent years. The spotting of data inconsistencies is carried beyond the contrast of NA and FES and extends to the comparison of the number of unemployed receiving unemployment benefits as estimated from the Labour Force Surveys (LFS) and the records of the Manpower Employment Organization (MEO), in order to derive the undeclared employment.

The FES data used are considered by those who know the Greek statistical system to be reliable, or at least not to overestimate the size of private consumption. More specifically, the reliability of the FES derives from the way these data are

collected (daily visits to the households for at least one week), and because there is no serious reason for the people surveyed to declare their expenditures inaccurately. It has been observed internationally that these surveys probably underestimate certain expenditures which are not considered as socially accepted, such as expenditure on alcohol and tobacco, entertainment outdoors and expenditures which form income in kind. Instead, they are recorded as production cost; for instance, private telephone calls from the job. Thus many countries use FES as a basic source for the calculation of macro variables.

It is reasonable, therefore, to assume that the estimate of the private consumption in the FES is lower than that of the NA. If, however, the private consumption of the NA is lower than that of the FES, this can only be interpreted as an indication that there exists at least an equal underestimation of income (underground economy). If we accept that all other items of national expenditure are estimated accurately by the NA, then the excess of FES private consumption compared to that of the NA equals the size of the underground economy.

The assumption that the NA underestimate only the size of the private consumption is debatable. With regard to other national expenditure components, NA estimates of public consumption and investment are precise since they are based on public records. Underestimation problems may exist in private investment expenditures and in private sector foreign transactions. It should be noted, however, that the parties involved have strong reasons to declare these activities to public authorities. On the one hand, private investment projects as well as related bank loan subsidies provided by the state are presumably attractive incentives for the entrepreneurs to declare the exact value of their investment. Dwelling construction without planning permission, the semi-squatting or afthereta as it is called in Greek, is certainly an exception but national accountants try to incorporate this through an upward adjustment

of the volume of the legal house construction, taking into account the value of cement used for construction purposes. On the other hand, export subsidies, which in the examined year 1982, for instance, amounted up to 30% of the exports value, prompt the exporters to declare their exact value. These incentives certainly discourage at least extended export underpricing. Regarding imports, the question is how broad imports smuggling and their overpricing might be. If these activities are rather extensive (a somewhat improbable case because of border policing and other administrative controls), the present estimation of the underground economy is influenced negatively in the sense that income generated in these activities is omitted. Moreover, since imports comprise a negative component of the national expenditure, their exaggeration (because of overpricing) implies underestimation of the national expenditure and value added. Generally, however, import overpricing and export underpricing are influenced by the differences in the tax burden and interest rates between home and abroad, the expected movement in exchange rates and the macroeconomic outlook.

It should be mentioned that private consumption represents a high percentage of national income (79.6% in 1982), while total consumption (private and public) exceeds national income in the years examined. Thus it can be asserted that the major part of the underground economy is connected to the private consumption component.

There have been three nationwide FES in Greece, which were carried out according to the scientific sampling requirements. The first one refers to the year 1974 and includes 7,424 households, the second one was conducted from November 1981 to October 1982 and includes 6,035 households, while the last one was carried out from November 1987 to October 1988 and includes 6,489 households. All these surveys record the sum of the goods and services obtained by observed households, not just through purchases but also from their own production or enterprise and

as compensation in kind. It should be mentioned that the remarkable item of imputed rent for home ownership in the FES was estimated according to what the rent would be if the house were actually rented. The concept of consumption in the FES essentially coincides with the NA definition of consumption. NA define private consumption as the sum of current household expenditure to obtain final products and services for personal satisfaction. The main difference between the NA and the FES is that the latter refers only to the country's households and thus all collective cohabitations and households with members from abroad are a priori excluded.

3. EMPIRICAL ESTIMATIONS

Out first task is to provide estimates of private consumption as derived from the NA and the three FES mentioned. The grossing up of the FES surveys for the entire country was attempted by multiplying samples expenditure by the inverse of sampling percentages, which were 3%, 2% and 2% respectively. Table 1 shows that private consumption of FES in 1974 represented 82.1% of the domestic private consumption of NA for the same year. However, for 1982 and 1988 the corresponding figures are 111.2% and 115.0%.

In order to confront the consumption concepts of the two independent data sources, in Table 2 the consumption of foreigners in the country (mainly tourists) and the consumption of Greek citizens abroad has been excluded from the NA. Moreover, as the two recent FES started in November and finished in October, the corresponding NA consumption has been adjusted accordingly to these time periods. When these necessary adjustments are made, it is seen that 1974 FES consumption represented 85.9% of that of the NA, while in 1982 and 1988 it amounted to 121.0% and 129.4% respectively.

The estimate for 1974 can be safely assumed not to depart very much from reality, since FES underestimate private consumption to some extent (some people avoid declaring the exact amount of tobacco or beverages they consume), and they also exclude expenditure for collective cohabitations such as hospitals and hostels. If this is so, it seems that the NA seriously underestimated private consumption, which indicates an underground economy of the same size. The total expenditure of the FES in 1982 exceeds that of the NA by 21.4%, an excess which cannot be interpreted other than as underground economy. If, however, as seems more reasonable, the value 85.9% is considered as the highest percentage of total consumption that the FES was able to record, it turns out that domestic household consumption

TABLE 1
Comparison of private consumption expenditure from
National Accounts and Family Expenditure Surveys (initial data)

	1974			1982			1988		
	FES Estimate	Nat. Acc. Estimate	FES/NA x 100	FES	Nat. Acc.	FES/NA x 100	FES	NA	FES/NA x 100
Foodstuffs	109.252	146.437	74.6	538.732	642.880	83.8	1.720.610	1.629.471	105.6
Beverages and tobacco	19.272	24.506	78.6	57.790	103.564	55.8	214.565	394.845	54.3
Clothing and footwear	35.991	48.566	74.1	227.616	153.618	148.2	776.227	502.440	154.5
Housing and domestic energy	63.936	50.038	127.8	362.498	211.270	171.6	1.149.877	623.737	184.3
Household equipment	25.450	38.621	65.5	165.298	147.310	112.2	490.257	448.922	109.2
Health and personal care	16.956	17.584	96.4	110.259	87.769	125.6	392.377	288.851	135.8
Education and recreation	19.332	33.505	57.7	99.330	54.615	181.9	364.928	191.380	190.7
Transport and communi-cations	28.982	38.413	75.4	196.330	240.139	81.8	626.915	699.496	89.6
Other goods and services	10.542	3.707	284.8	210.778	171.427	122.9	459.966	577.525	79.6
Total purchases	329.713	401.571	82.1	1.968.697	1.812.522	108.6	6.195.762	5.356.607	115.7

Sources: National Accounts and Family Expenditure Surveys.

TABLE 2

Comparison of private consumption expenditure from National Accounts and Family Expenditure Surveys (adjusted data)

Goods and services	1974			1982			1988			National Accounts underestimation of private consumption expenditure	
	FES	NA	FES/NA x 100	FES	NA	FES/NA x 100	FES	NA	FES/NA x 100	1982 (10)= (6):(3)	1988 (11)= (9):(3)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Foodstuffs	109.252	139.931	78.1	538.732	578.110	93.2	1.720.610	1.466.120	117.4	119.3	150.3
Beverages and tobacco	19.272	23.417	82.3	57.790	92.220	62.7	214.565	347.601	61.7	76.2	75.0
Clothing and footwear	35.991	46.408	77.6	227.616	138.824	164.0	776.227	447.612	173.4	211.3	223.4
Housing and domestic energy	63.936	47.814	133.7	352.498	190.111	190.7	1.149.677	555.634	206.9	142.6	154.7
Household equipment	25.450	37.097	68.6	165.298	132.138	125.1	490.257	402.102	121.9	182.4	177.7
Health and personal care	16.956	16.803	100.9	110.259	76.595	140.3	392.377	258.829	151.6	139.0	150.2
Education and recreation	19.332	32.016	60.4	99.396	49.174	202.1	364.928	169.362	215.5	334.6	356.8
Transport and communications	28.982	36.707	79.0	196.330	213.481	92.0	626.915	625.399	100.2	116.5	126.8
Other goods and services	10.542	3.536	298.1	210.778	154.111	136.8	459.966	516.580	89.0	45.9	29.8
Total purchases	329.713	383.729	85.9	1.968.697	1.626.711	121.0	6.195.762	4.787.578	129.4	140.8	150.6

Source: National Accounts and Family Expenditure Surveys.

in 1982 was underestimated by 40.9%=(121.0/85.9). This suggests that the underground economy amounts to that exact percentage of household consumption. The corresponding figure for 1988 is 50.6%. The assumption adopted here - that FES record 85.9% of total private consumption in 1974 and onwards - requires clarification. It is rather improbable for the 1982 and 1988 FES to have registered a higher percentage of private consumption expenditure than the 1974 FES, since the methodology of carrying out the FES and its application remained exactly the same. Moreover, there were no special reasons for the households surveyed to over- report their expenses; on the contrary, underreporting might be anticipated during the period examined. Thus, the 40% and the 50.6% should be considered as the lower boundary of the underground economy.

Over and above the estimates of total underground economy, Table 2 shows (last columns) how it differs by product groups. For the year 1982 the highest percentages of underground economy occur in education and recreation (235%), in footwear and clothing (111.25%), in household equipment (82.4%), and in health and personal care (39%). On the contrary, there is no sign of underground economy in beverages and tobacco (it might exist but is not captured here) and in the other goods and services. Relatively low percentages of underground economy appear in food expenditure (19.3%), transportation and communication (16.5%) and in housing and domestic energy (42.6%). For the year 1988, the differentiation of the percentages of underground economy by product groups shows almost the same pattern as in 1982, but at higher levels. These percentages do not generally raise questions about their magnitude.

It is impressive that the ratio of FES/NA household consumption for the various product groups is consistently higher in 1982 and 1988 than in 1974 (comparing columns 3, 6, and 9 in Table 2). The unique exception is that of "other goods and services" which is explained by changes in the definition of such

services between 1974 and 1982. It turns out that since 1974 there has been an increase in the underground economy approaching 40% of the domestic household consumption in 1982 and 50% in 1988. The consistency of NA and FES for 1974 suggests the non-existence of underground economy for that year, although this is rather unlikely. The fact is that the National Accounts Division used the outcomes of the 1974 FES as basic input to calculate the relevant aggregates in the NA. Since then, however, the NA Division has abandoned this practice.

The finding that the underground economy since 1974 has shown a rapid increase seems compatible with the evolution of its determinants during the same period. It is known that the underground economy is positively affected by the size of the expected gains of the people involved and the opportunities in participating at such activities (Frey and Weck, 1982). During the period examined there was a rapid increase in the average tax burden (taxes and social insurance contributions from 27% of the GDP in 1974 increased to 32.3% in 1982 and to 35.1% in 1988). Thus the benefits from tax evasion (underground activities) increased. At the same time, various institutional restrictions in market functioning, especially that of the labour market, worked in the same direction. The volume of the labour force employed in the public administration has been proposed as an indicator of such restrictions. In Greece the number of public servants during the period 1977-1989 increased by 3.1% per year.

Opportunities to participate in underground activities expanded during this period. The normal working hours decreased, the overtime hours were reduced and the five-day working week was broadly implemented. Thus the time available for underground activities increased. The sharp rise in the number of retired people, especially those at relatively young ages, worked in the same direction. Also, the number of government pensioners increased by 4.0% per year. Finally, the strengthening of

aggregate demand through public budget deficits influenced the underground economy positively.

In absolute terms, the figures derived for the underground economy as percent of the domestic private consumption at market prices (40.9% for 1982 and 50.5% for 1988) amount to 637,092 million drachmas for 1982 and 2,422,512 million drachmas for 1988, or 27.6% and 31.2% of GDP respectively.

Having estimated the size of the underground economy by consumption goods groups, it could be allocated by economic activity branch with the use of a bridge matrix. Skountzos et al. (1985) have estimated such a matrix for 1975 which shows the economic activity branches from which consumption comes. The outcome of such an exercise, which of course depends heavily upon the reliability and stability of the bridge matrix used, are presented in Table 3, which shows the underground economy in absolute values and as percentages of corresponding GDP. From this table it emerges that in 1982 immense underground economy materialized in manufacturing (329 billion drachmas, or 78% of the official manufacturing gross product) and in the "other services" (61.7 billion or 28% of GDP). On the contrary, there are no traces of underground economy in mining and quarrying, while it appears to be rather minor in agriculture (5.1%) and in banking and insurance (1.7%). Extensive underground economy is observed in the ownership of dwellings (34.3%), which implies equivalent underestimation of the house rents by the NA.

On the one hand it is hard to explain the relatively low percentage of the underground economy in construction, (6%), a branch which is found internationally to be prone to underground activities. On the other hand, the percentage found in electricity, gas, and water supply (20.6%), seems unexpectedly high, since electricity in Greece is produced exclusively by the Public Power Corporation. Only in transactions regarding water and firewood could underground activities occur, partly explaining the above percentage which in absolute terms is rather

TABLE 3

Underground economy by economic activity branch 1982 and 1988

	Gross Domestic Product	Underground economy	% of Underground economy	Gross Domestic Product	Underground economy	% of Underground economy
Agriculture	424.415	21.432	5.1	1.337.316	124.054	9.3
Mining and quarrying	44.841	-	-	120.918	-	
Manufacturing	422.602	329.698	78.0	1.346.696	1.211.918	90.0
Construction	151.669	9.098	6.0	468.454	31.351	6.7
Electricity and water	53.625	11.034	20.6	194.086	38.024	19.6
Transportation and Communication	188.327	59.141	31.4	563.539	260.493	46.2
Wholesale and retail trade	295.000	97.536	33.1	1.233.707	374.193	30.3
Banking and Insurance	55.255	947	1.7	471.961	4.103	0.9
Ownership of dwellings	136.704	46.905	34.3	471.961	161.640	34.2
Health Education Recreation	126.756	8.339	6.6	518.156	34.927	6.7
Public Administration and Defense	247.646	-	-	921.646	-	-
Miscellaneous services	163.848	53.362	32.6	634.232	201.180	31.7
Gross National Product	2.310.688	637.092	27.6	7.760.890	2.422.512	31.21

Source: Column (1), (4), National Accounts, (2) (5), Table 2.

low (11 bl drs). The relevant numbers reflect the share of these economic activity branches in the unreported household expenditure for housing and domestic energy. As a result, therefore, they can be explained only to the extent that the bridge matrix used overestimates the water and electricity share and underestimates that of construction.

It is interesting that, based on our earlier estimates, the underground economy in transportation and communication is found to be lower than that shown in Table 3 (16.5% as opposed to 31.4%). This is attributed to the fact that parts of the unreported household consumption expenditure in all items are receipted, according to the bridge matrix used, by the branch of transportation and communication. The same thing happens to the wholesale and retail trade, where an estimated underground economy of 33.1% exists, while trade was not included in the earlier analysis. It should be mentioned here that the last figure should be taken with some caution, since the bridge matrix used does not display broad profit margins variation by economic branches, as seems to be the case, at least because there was administrative price and profit margin determination in many (but not in all) cases.

Regarding 1988, the same exercise shows that the concentration of the underground economy was rather similar to that of 1982 but at somewhat greater strength. Within the weaknesses of the bridge matrix used including its reference to 1975, the rise of the underground economy in manufacture (from 78% to 90%) and in transportation and communication (from 31.4% to 46.2%) is worth mentioning.

In summary, the estimates of this paper are more or less those which had been anticipated. The estimates of the total underground economy are based exclusively on published official data, FES and NA, and no subjective assumption was made regarding the size of the underground economy. The criticism which is made generally of the FES, and thus of those used here, as mentioned

before, is that they probably underestimate the volume of the household consumption. To the extent that this takes place here these estimates must be considered as the lower boundaries of the underground economy as defined here. Some underestimation of the underground economy is perhaps made in this paper, because probable underground economy in other expenditure components is not captured.

The finding that the GDP at current prices is underestimated by 27.6% in 1982 and by 31.2% in 1988 (while in 1974 there was nowhere near such an underestimation) implies that the average annual growth rate of GDP at constant prices is higher than that derived from published NA. In particular, during the period 1974-1982 the annual GDP growth rate amounts to 4.0% instead of the 3.3% of the NA. The corresponding percentages for the period 1982-1988 are 2.0% and 2.6% respectively. The size of these figures does not at first glance cause surprise (see last section of the paper).

The estimates of the underground economy of this paper could be roughly compared to those reported by Pavlopoulos (1987, Table 14), as the definitions adopted in both studies analytically coincide. Pavlopoulos essentially undertakes a complete reestimation of the GDP for the year 1984 (ch. 5), using various data sources, either official or nearby or even some moderate assumptions. Having reestimated the GDP, he considers the excesses of his estimates over those of the NA as the underground economy. In this way he estimates the total underground economy to be 28.6% of the GDP, but with remarkable differentiation by economic activity branches. A feature of Pavlopoulos' study is that, based upon information from police and other authorities, it includes in the estimation of the underground economy the product of criminal activities such as drugs, prostitution, gold smuggling and bribery of public sector employees. If the product of such criminal activities is excluded, the percentage of the underground economy in Pavlopoulos' study amounts to 25%,

compared to the 27.6% and 31.2% of this paper. Taking into account the shortcomings of the data used and the methodological differences, it seems that the estimates of total underground economy of both studies are rather comparable.

Even though both this paper and the study by Pavlopoulos do not show underground economy in agriculture, in mining and quarrying, in the banking sector and in the public administration, their findings differ regarding the incidence of underground economy in other sectors. Pavlopoulos, for example, estimates the underground economy in manufacture as 15% of the value added, while here it turns out to be about 80%. This percentage derives from the documented underestimation of household expenditure mainly on footwear and clothing, but also on furniture and household equipment, health and personal care. On the other hand, Pavlopoulos' estimate of the underground economy in manufacture is based upon some assumptions which he adopts although aware of their arbitrariness (p. 110). Thus we consider the present estimate, the accuracy of which depends decisively upon the reliability of the bridge matrix used, as closer to reality.

In construction Pavlopoulos estimates the underground economy at 71.1%, while in this study it appears to be only about 6%. It should be mentioned that the purchase of houses is regarded in the FES as an investment and thus is not recorded. FES include only the expenditure on house repair and thus the 6% refers only to such activities. In any case it is rather low and that of Pavlopoulos, which differs from that of the NA only with respect to the cost of construction, is more plausible.

It should be mentioned, however, that efforts which were made to arrive at the size of the non-legal dwelling construction, by comparing for long periods the number of new consumers of domestic electricity with the number of new dwelling permits, were unfruitful. If the non-legal dwelling construction were as broad as some assert, then the number of new domestic

electricity connections should exceed the number of house building permits, which according to published data is not the case.

This study traced underground economy in the whole and retail trade around to 30%, a percentage which is essentially similar to that of Pavlopoulos (28.8%). However, because of the weaknesses mentioned above it might be underestimated. When Pavlopoulos compiles the trade product by multiplying the profit margins by the corresponding national expenditure components of the NA, which as was shown are quite underestimated, he estimates the underground economy in the trade sector to be 36% (p. 118). Similar underestimation of the underground economy perhaps takes place here for the case of transportation and communication.

A broad underground economy was found for dwellings, 34.2%, which implies an equal underestimation of incomes from paid and imputed residence rents. The FES record both the paid and the imputed rent of the main and the secondary (country) residence. Thus it seems unlikely to be seriously underestimated. Pavlopoulos estimates the underground economy in dwellings at a much higher percentage, 90%. The latter percentage, however, is derived by adding to the 1980 stock of dwellings the number of all new dwellings built during the period 1980-1983 without subtracting obsolete dwellings or those demolished during the same period.

If our estimates of the size of the underground economy are more or less correct, then questions arise regarding the accuracy of the labour market statistics and in particular the extent to which unemployment is overestimated and employment underestimated. The existence of an underground economy apparently implies the existence of undeclared employment. Moreover, while the National Accounts Authorities in compiling the GDP make efforts, using indirect methods, to incorporate undeclared production, there are no such efforts for undeclared employment.

The existence of undeclared employment presumably has consequences for the implementation of economic policy, at least in the labour market. Because of undeclared employment, there are tax losses and probably unfair unemployment benefit payments, while employment protection measures might encourage workers towards undeclared employment. Furthermore, if people believe that some workers receive unemployment benefits and at the same time work in clandestine jobs, then the unemployment benefit allowances are clearly socially unjustified and inequitable, while it is probable that workers employed wholly in undeclared jobs might be victims of exploitation.

One possible way to estimate the extent of undeclared employment is to use the previous estimates of the underground economy in order to find the number of the undeclared man hours. This could be done assuming that labour productivity (product per man hour) is the same in both the formal economy and the underground economy. Such an assumption is rather arbitrary, as on the one hand the informal sector is more labour intensive and thus displays lower productivity, while on the other hand it seems to be more adaptable and profitable because of tax evasion. Adopting this assumption and furthermore assuming that employment recorded by the National Statistical Service refers only to the product reported in the NA, it turns out that there is an underestimation of man hours of the same percentage and structure as that of the product. Such an exercise clearly leads to overestimation of undeclared employment, as the reasons for concealing employment are not as serious as is the case for product and income. In other words, there might be many workers who declare their exact number of working hours, but not the exact amount of money that they earn.

Having estimated the size of the unreported man hours, it is extremely difficult to compile the number of workers in the underground economy, because the underground man hours per capita are unknown. A remarkable underestimation of man hours worked is

compatible with a minor underestimation of the number of people employed, if undeclared employment emerges as usual as secondary employment. It seems reasonable to assume that workers who do not declare their secondary employment declare their primary job and thus are correctly considered as employed. Underestimation problems remain for those without a declared job. But it is rather probable that even such workers, if asked, would declare as their job a socially acceptable one similar to what they are actually doing. On the contrary, those with a single casual undeclared job are likely to be considered as unemployed. Thus the existence of an underground economy and undeclared employment does not give rise to serious reservations as regards the reliability of employment and unemployment data.

Another way to estimate the extent of undeclared employment is to examine the differences between various official labour market statistics. Table 4 shows the number of unemployed workers receiving unemployment benefits for the period 1981-1988, as reported by the Manpower Employment Organization (MEO) and estimated in the Labour Force Surveys of NSSG.

TABLE 4

Number of unemployment benefit receivers

	OAED (1)	LFS (2)	(3)=(2)/(1) x 100
1981	17.348	6.400	36.9
1982	18.401	10.900	59.9
1983	20.434	19.400	95.0
1984	20.318	15.100	74.3
1985	30.334	12.400	40.9
1986	50.195	16.900	33.7
1987	54.359	19.100	
1988	48.659		

Source: Column (1), Yearly Statistical Data, OAED.
Column (2), Labour Force Survey, NSSG.

A basic feature of this table is that LFSs systematically and frequently underestimate the number of unemployed workers

receiving unemployment benefits as compared to that of MEO which is compiled from its exact records. This underestimation cannot be attributed to random statistical errors. Thus, while in the spring of 1981 the unemployed workers receiving unemployment benefits were 17,348, the LFS estimated them to be only 6,400. During the same period in 1982 the discrepancy was reduced (18,400 as compared to 10,900) and in 1983 essentially disappeared. Since then the discrepancies have been widening.

This systematic underestimation of the number of unemployed in the LFSs can only be interpreted as an intentional effort on the part of the people questioned to conceal their clandestine employment. The reasonable interpretation of this behavior is that not everyone is convinced that LFSs are carried out only for statistical purposes. Thus, because they are afraid of the possible disclosure of their underground employment, they do not declare either it or their receipt of unemployment benefits. Moreover, they do not consider it wise to declare their possible employment and to hide only their receipt of unemployment benefits, because they fear the possibility that information will be matched between MEO and NSSG, even though such matching is illegal. In the judgement of those responsible for the LFS, the differences between the two columns of Table 4 refer mainly to those seasonally employed in undeclared jobs, who are concentrated in occupations and economic activity branches suitable for such employment, e.g. construction and tourism.

Considering the total difference between the two columns of Table 4 as undeclared employment, the extent of the latter is rather small and does not essentially influence the number and percentage of unemployed derived from LFSs. On the other hand, however, some employment underestimation and unemployment overestimation seems to exist as a result of illegal migrants. At any rate, if the proposed interpretation of the systematic and sizeable deviations in the number of unemployed receiving unemployment benefits is correct, the efficiency and social justi-

fication of the present unemployment mechanism becomes questionable.

4. CONCLUSIONS

The previous analysis has shown that underground economy in Greece, defined as that not recorded in the NA product and income, is high and growing. It is met not only in the service sector, as Pavlopoulos estimates, but in the manufacturing sector as well. Using official statistical data, it emerges that in 1982 the GDP was underestimated by around 27%, while in 1988 the underestimation rose to 31%. Moreover, these percentages should be considered rather as lower boundaries of the underground economy.

These percentages of the underground economy place Greece among the countries displaying a high underground economy. However, similar percentages of underground economy have been estimated and published for other southern European countries. In Italy, for example, even though the Statistical Service of Italy (ISTAT) revised GDP for the period 1975-1977 increasing it by around 9-10%, the underground economy is estimated to be about 20% of the GDP (Blades 1982, p. 34-36). In Portugal, a study carried out for the Ministry of Labour and Social Security estimates the underground economy at 22% of the GDP (OECD 1986, p. 79). Spain's underground economy is estimated to be 15-25% of its GDP and a third of the unemployed are working illegally (The Economist, 1987, p. 22). Thus it becomes clear that the size of the underground economy in Greece does not involve any peculiarity of the Greek economy. On the contrary, it amounts to a level similar to that of other southern European countries, which share the same or similar economic and social features. The finding of a one-digit underground percentage appears only in developed western countries, and not even in all of these.

The existence and variation over time of the underground economy makes NA data misleading signals. The national product and income are generally underestimated. It appears that, utilizing more completely and rapidly all formal independent data

sources, the aggregate NA variables could be estimated more precisely and thus the size of the underground economy could be reduced drastically. The exact estimates of GDP and other aggregate key variables are a sine qua non for the efficient formulation and implementation of economic policy. If, for example, the underground economy is growing while the official data show stagnation, measures to reinforce effective demand will cause unexpected inflation, because the slack productive capacity is lower than what official data show.

A basic finding of this paper is that household domestic consumption was underestimated by about 40% in 1982 and by 50% in 1988, while in 1974 it was rather exactly estimated. This underestimation denotes that during the period examined, especially in the period 1974-1982, either a growth of production and incomes took place, which financed the extra consumption but was not captured by NA estimates, or the consumption financing came from a drastic decrease in the national savings. If the former happened, then the annual rate of growth of the Greek economy has been underestimated by 0.7% for the period 1974-1982 and by 0.6% for the period 1982-1988. Such an underestimation does not sound extremely high. Some indicators show that in fact the rate of growth during the 70s is underestimated. Tourism and the service sector expanded broadly in the 70s. In the period 1975-1982 the number of overnight stays of foreigners in Greece more than doubled and exceeded 40 million, while total overnight stays reached 70 million. Furthermore, according to the General Censuses, the new dwellings constructed during the 70s were over one million, while in the 60s they were 680 thousand. On the other hand, the drop observed in the rate of capital accumulation suggests that a reduction of saving ratio might have occurred. While this paper does not exclude either the one or the other element, it seems that the economic performance of the period examined, and especially in 1974-1982, was not as low as NA data show.

The high underground economy, and thus the high tax evasion, is considered by some journalists, politicians even by economists as the main difficulty in reducing the public sector deficit. The fact, however, that an underground economy of about the same size and percentage is also observed in countries comparable to Greece implies that efforts to reduce tax evasion are inevitably long-term. Even if it were possible to reduce the underground economy to levels experienced by developed countries (e.g. the underground economy in the Swedish economy is estimated for the year 1978 to be 13% (Klovland 1980) without reducing its volume, the latter being very unlikely because tax payments reduce underground activities, the extra public sector revenues would not be sufficient to cover the existing huge public sector deficits.

In 1982, for example, the general government deficit amounted to 15.4% of the GDP, while the whole tax burden amounted to 32.2%. If half of the volume of the underground economy, which in this paper is estimated at 27% of GDP, was taxed by the average tax rate, it would furnish tax revenues equal to 4.5% of GDP, as compared to 15.4% of the general government deficit. The corresponding figures for 1988 are 5.3% and 14.5% of GDP.

Related to this is the usual contention that underground economy reinforces inflation. However, no analytical explanation is offered for such a relationship. The underground production (supply) is at least equal to the demand it creates. Moreover, since part of the underground incomes is saved, total savings are rather higher with than without underground economy.

The real problem with the underground economy is that because of tax evasion the tax incidence is unfair and the competition between firms which pay and those which do not pay taxes becomes unequal and detrimental to those who stick more closely to the rules. In this respect it is indicative that almost three quarters of income tax revenues come from wages, salaries and pensions, even though these items represent just

above half of the national income. Furthermore, it is a common and primary request of the formal economy that the underground economy should be suppressed. Thus the representatives of the formal retail trade complain about the operation of non-formal trade activities (paraemporio), and the unions of hotel owners complain about the operation of undeclared rented rooms and apartments (paraxenodohia).

The main conclusion is that any policy regarding the treatment of the underground economic activity should take into consideration its causes and features. For example, as the underground economy is met with mainly among small family- based businesses, where transactions take place informally at the personal level, the concealment of such exchanges is mutually beneficial for both the seller, who evades taxes, and the buyer, who gets a cheaper price. Such underground generating causes have made the phenomenon international and observed more or less in all forms of economic organization. Any efforts to control and restrict underground activities would not be effective, unless they point to the rationalization of transactions and provide a framework in which human desires for financial reward can find expression.

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