WHAT DO WE KNOW ABOUT THE SIZE OF THE UNDERGROUND ECONOMY IN ITALY BEYOND THE "COMMON WISDOM"? SOME EMPIRICALLY TESTED PROPOSITIONS.

by
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Introduction.

It is commonly thought that the underground economy is larger in Italy than in most other developed countries. Although this assertion has some appeal and also some support in the "impression" one gets from visiting the country, because the living standard appears to be higher than, for instance, in the UK, the actual figures stemming from the application of several methods to measure it are rather disappointing. It was beyond our scope to measure the size of the underground economy in, say EU countries and to make comparisons among them, but we did find that the comparisons appearing in the public debate and also in the specialized literature either lacked empirical support or were incorrectly made. Leaving aside the problem of comparing figures obtained from different methodologies our aim is to provide empirically sound estimates of the size of the underground economy in Italy, and first of all, to draw attention to the fact that the supposed process of expansion of the underground economy does not show up very clearly from the figures. Actually the figures seem really to disprove the ongoing idea, spread in the country by several commentators, of a "growing" underground economy. Our point is to show that by applying well-known methods of measuring the underground economy and by using the official available data, this widely circulating idea is not very sound (or can be questioned). That is to say, we did not find convincing empirical evidence capable of supporting the common view that a process of expansion in Italy's shadow economy is under way.

A lack of empirically grounded analysis characterize the studies at regional level as well. In addition a different story may appear when trying to measure the size of the underground economy separately for the

center-north and the south of the country. The dualistic feature of the italian economy emerges also with respect to the nature and size of the shadow economy. This is the reason of our attempt to measure the size of the underground economy, not only separately for the center-north and the south of the country, but also by regions. To reach such results has proved not to be an easy task, as we explain, but we believe them to be quite interesting, and fairly sound.

Our emphasis will be more on the dynamics than on the level of the measured underground economy for obvious reasons, and our aim will be to give a tentative explanation of the phenomenon by interpreting the empirically calculated figures rather than by surface reporting or common perception. Actually the dynamics, as it appears from the figures, suggests looking for structural reasons, and that the underground economy does not follow a growing trend but rather fluctuates around a stable mean.

The first section of the paper is concerned with the country as a whole, while the second one is dedicated to the understanding of the differences in the working of the economy in the center-north and in the south. Different results and motivations concerning the underground economy in the two parts in which we have split the country, lead to different policy implications. In fact we consider impossible to effectively combat the underground economy by means of a nationwide economic policy. Finally a measure of the welfare loss from the underground economy is proposed.

I.1 *The country as a whole.*

Although in the past, especially during the '80s, there have been attempts to measure the underground economy in Italy, in the '90s the interest in pursuing this type of exercise seems to have disappeared. "Rumors" concerning the existence of an hidden economy do frequently appear in the press and in public debates, but the interest among economists in actually measuring it (not to mention the government's will of combating it by the government) is hard to be found. Our aim is to evaluate, as accurately as possible, the size of the underground economy in Italy since 1970 by using several methods and to offer tentative explanations.

II.2. *The monetary Tanzi method applied to Italy.*

In by now well-known papers, Tanzi ('80, '82,'83) approaches the problem of measuring the underground economy by specifying a demand for currency equation that contains an income tax variable and allows to calculate the effect of a change in the tax level on that demand. Then the fundamental hypothesis is made that in the underground economy the transactions are carried out in cash for the obvious reason of not leaving traces. The ratio of currency holdings to money is estimated by using real per capita income, interest rate on time deposits, the ratio of wages and salaries in national income and the aggregate effective income tax rate, as independent variables. The estimate of currency holdings in the hypothesis of zero income tax is then used to estimate the "excessive" currency holdings due to the existence of the underground economy. The size of the underground economy is then calculated simply by multiplying the excessive currency by the velocity of money prevailing in the (regular) economy. We apply the Tanzi method to Italy. In doing this we make some changes in the specification of the demand for currency equation in order to better adapt it to our economy. The demand for currency we estimate is the following [1]:

[1] $(LC_t - LM2_t) = b_0 + b_1 LTDIR_t + b_2 LWSNI_t + b_3 LR_t + b_4 LYX_t + \Xi_t$

where:

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L = log

$\boldsymbol{b}_i$ = coefficients (i=0,...,4)

C = currency holdings by households

M2 = stock of money (defined as M2, i.e. currency holdings + bank deposits + other deposits) held by the household sector

TDIR = effective rate of direct taxation

WSNI = ratio of wages and salaries in agriculture and building sectors to total wages and   salaries

R = net return to bank deposits

YX = domestic real per capita demand

Ξ = error term due to the stochastic nature of the equation.

The expected sign for both the effective rate of direct taxation and the ratio of wages and salaries in agriculture and building sectors to total wages and salaries is positive while the expected sign for both the net return to bank deposits and the domestic real per capita demand is negative. The reasons for expecting these signs can be briefly sketched as follows. An increase in direct taxation encourages people to evade taxes and to be active in the irregular economy where cash is commonly used in order to avoid leaving traces, therefore when direct taxation increases the demand for currency increases as well. Equally the demand for currency has to increase if an increase in wages and salaries paid in the agricultural and building sectors occurs because in Italy these wages and salaries are very often paid in cash, while wages and salaries in other sectors are more commonly paid by checks. As for the net return to bank deposits, it is clear that when it increases the opportunity cost of holding currency rises leading to a decrease in its demand. Finally when real domestic per capita demand increases we expect an evolution in the system of payments moving out from currency towards checks and other more sophisticated ways of payment such as electronic money.

To actually estimate the equation, we calculate the financial flows of the household sector only, for two reasons. First this is the main sector which demands currency to evade and second this is the sector whose demand for currency depends primarily upon the above explicative variables (while the banks' currency holding is, for instance, partially determined by the required reserves). Therefore we use the currency held by households and consistently we calculate M2 held by the same sector.

The effective direct tax rate has been calculated as the ratio of total direct revenues collected by the public sector to national value added at factor costs. Two alternative hypothesis are then evaluated concerning the tax variable, namely the zero tax rate case, i.e. the absence of taxes, and a positive but minimum tax rate of a reference year. Finally as a proxy of technical progress in the system of payments we have chosen domestic real per capita demand instead of real gross national income per capita. The choice is motivated by the consideration that what we want is a scale variable for the demand for currency holdings by residents. We therefore excluded exports and inventories variations.

The data used are presented in table 1, in the Appendix, which covers the period 1970-1997.

I.3 *Results.*

To add confidence to our estimates we transformed the above equation [1] in a "statistical system" by overparametrisizing it. According to a (relative) recent econometric approach, the use of a system to start with allows to avoid possible errors by making regressions with variables in level. In doing this we follow Hendry's methodology, known as "general-to -specific" and, starting from an ADL (1,1), we arrive at the following equation [2]:

[2]
$$\Delta(LC-LM2)_t = a_1(\Delta LTDIR_t) + a_2(\Delta LWSNI_t) + a_3(\Delta LR_t) + a_4(\Delta LYX_t) +$$
$$(b_5-1)[(LC-LM2)_{t-i} + b_0 + bLTDIR_{t-11} + b_2LWSNI_{t-1} + b_3LR_{t-1} + b_4LYX_{t-1}] + E_t$$

The residuals of equation [2] (E_t) should be homoschedastic innovation while this was not the case in equation [1]. This makes equation [2] an appropriate benchmark. The empirical results are presented in table 2 in the Appendix[1].

After having carried out all the necessary tests, we arrive at the long run solution of equation [2].

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[1] Remember that although we are following Tanzi's alternative hypothesis, we use our adaptation of the Tanzi equation to better depict the italian economy. Namely we consider: the financial flows of the households sector only; salaries and wages of agriculture and building sectors instead of all wages and salaries and the real domestic per capita demand instead of the real per capita income.

[2'] (LC-LM2)=3.61+0.44*LTDIR-0.20*LR-2.41*LYX

We are now in a position to calculate the size of the underground economy by using the Tanzi method.

Multiplying the natural level of the estimate for each year by the corresponding actual M2, the estimated (natural) currency is calculated (CBAR). Then we calculate how much currency would be demanded in the two alternative hypotheses, first, of a zero tax rate (=absence of taxation) and, second, of the minimum tax rate of a reference year (which happen to be first year of the period considered, i.e.,1970) (CBAR1) The difference between those magnitudes, CBAR and CBR1, gives the *illegal money.* Multiplying the illegal money by the velocity of money, supposed to be the same for legal and illegal transactions, a measure of the underground economy is obtained.

The results appear in the Appendix where tables 3 and 4, respectively, show our estimates for the period 1970-1997 corresponding to the two above alternatives The first alternative (table 3) is based on the strong hypothesis of a zero tax rate and therefore it is not entirely satisfactory. Quite naturally we tried other possible hypothesis on which to base our estimates. A reasonable one (as in Tanzi) was to measure increases in the underground economy due to increases in tax rates during the period. The minimum tax rate prevailing in the period, which happen to be the one of year 1970, was taken as the reference for the calculation of yearly increases. This second alternative (table 4) appears to be more realistic but it has its flaw in assuming absence of hidden economy in the reference year (this is the reason why the first entries of the last two columns in table 4 are nihil). The important thing to notice is that both alternatives do not show an increasing trend. Even the second one which is in fact less clear, does not capture an increasing trend, at least after the '80s.

I.4 *The size of the underground economy according to two other methods. The statistics of the labour market .*

Another method for calculating the size of the underground economy is to use the statistics of the labour market. Some definitions are necessary

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to understand the significance of the figures recorded by our Central Statistical Office (henceforth ISTAT). First, the figures refer to the number of the "working positions" and not to the number of physical workers. Each worker employed in a firm (called production unit) that has its residence in the country, might be engaged in some other productive activity outside the firm, and therefore one worker can correspond to more than one working position. The ISTAT transforms the various types of working positions in the equivalent units of labor (ULA). From the point of view of the compliance with respect to the social security contributions law, a working position can be either "regular" or "non regular". The non regular positions are split into four subcategories. The first subcategory, called irregular (IRR), is obtained by subtracting from the number of people who declare themselves employed in the statistics of labour supply (survey on work force and population census), the number of the working positions declared by the firms.The second subcategory, called undeclared (UND), is made up by the number of the working positions of those persons who do not declare themselves as employed; the third one is made up by the number of non resident foreigners (F) and the fourth one, by the number of workers who hold a second job besides the principal one (DOUBLE). Figures for the period 1980-1997 are reproduced in table 1 in the text.

In the national accounts the level of employment is actually measured in the equivalent units of labour (ULA) calculated as above. As is immediately clear, these data cannot help in measuring employment in completely "unknown" firms, i.e. illegal firms, but they do help in measuring the demand for non regular labour by the legal firms, which is what we are looking for.

Table 1. Subcategories of non regular workers (measured as % of total ULA).

	IRR	UND	F	DOUBLE
1980	10,81%	2,66%	1,24%	6,39%
1981	10,63%	2,44%	1,46%	6,61%
1982	10,52%	2,18%	1,75%	6,86%
1983	10,37%	2,38%	1,95%	7,42%
1984	10,32%	2,57%	2,07%	7,70%
1985	10,32%	2,30%	2,19%	7,65%
1986	10,42%	2,25%	2,30%	7,84%
1987	10,34%	2,07%	2,40%	8,09%
1988	10,36%	1,96%	2,40%	8,13%
1989	10,28%	1,91%	2,48%	8,05%
1990	10,36%	1,79%	2,46%	7,93%
1991	10,51%	1,68%	2,47%	7,92%
1992	10,65%	1,71%	2,64%	7,62%
1993	10,47%	1,54%	2,80%	7,81%
1994	10,25%	1,26%	3,00%	8,07%
1995	10,11%	1,25%	3,07%	8,02%
1996	10,03%	1,18%	3,13%	7,98%
1997	10,05%	1,36%	3,23%	7,92%

Sources: ISTAT.

From a quick look at the table it appears how the underground economy in the sense of non regular workers does not show a clear trend. By taking the two most important subcategories, the first (IRR) and the fourth (DOUBLE), we see that a sort of counterbalancing effect is taking place, because the small decrease in IRR is practically compensated by the increase in DOUBLE. The overall percentage is in fact almost the same in the first and the last year of observation, being 17.20 in 1980 and 17.97 in 1997, while it reaches a peak in 1990, with 18.29 (the figures at five year intervals are the following 17.97 in 1985, 18.29 in 1990, 18.13 in 1995). This is not trivial since according to a widespread opinion in Italy, not only at the journalistic level, the underground economy in terms of workers employed is greatly expanding, and for some commentator, even

"exploding". Only the subcategories of foreigners (F) is actually growing but it does not seem to be the most meaningful category for explaining the underground economy, not to mention its relatively unimportant magnitude.

I.5 *The magnitude of tax evasion of indirect taxes.*

By using the regional data[2] of value added at factor costs and those of net indirect tax revenue by region, we can obtain a conventional[3] measure of the evasion of indirect taxes. This measure, and its dynamics, can give an idea of the dimension, and of the developments, of the underground both at national and regional level. We start by defining the effective indirect tax rate as the ratio between the indirect revenue (collected) and the value added at factor costs; we calculate region by region the effective indirect tax rate and then we consider that the region showing the highest effective indirect rate is the one without evasion[4]. By then applying such maximum effective tax rate to every region's value added, we obtain the amount of revenue that every region would have produced if there were no evasion. Comparing those figures with the actual revenue obtained from the indirect taxes region by region (data available from national accounts, ISTAT), we end up with a magnitude representing the dimension of the evasion. Summing up all magnitudes for the 20 regions we obtain the total national amount of evasion. We then get the percentage of evasion by dividing the total amount of evasion by the actual total revenue from indirect taxes. Figure 1 in the text shows the results of this simple exercise.

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[2]The procedure here followed is in a sense instrumental to the second section of the paper.

[3]Possibly not the best, but certainly reasonable.

[4] It is interesting to notice that there is one region that shows, for the sixteen years of observation, the maximum effective rate, and this is the Valle d'Aosta.

Figure 1. Evasion of indirect taxes
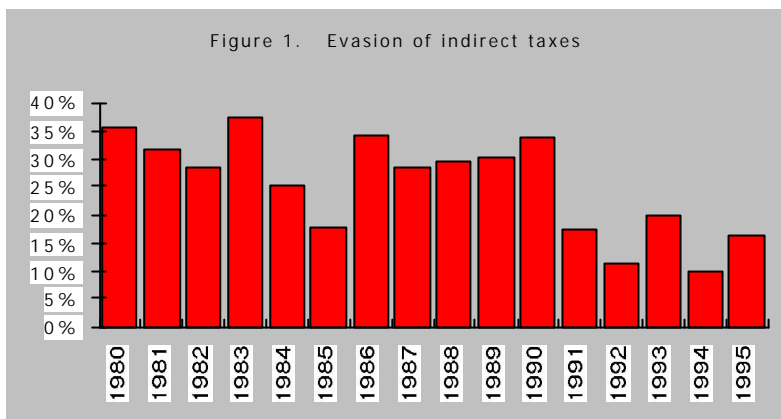
The importance of figure 1 rests for us not so much in its accuracy as a measurement of evasion, but rather in its capability of showing, uncontroversially, that indirect tax evasion is not increasing. On the contrary, we have to accept the fact that after 1990 this type of evasion seems to be shrinking (see Section II).

I.6 *A proposal for the choice of explicative variables of "non regular" workers.*

What we want to measure is the concealed (or hidden) employment, in units of labour, as it emerges for the country as a whole and for the individual regions. In doing this exercise we start by assuming that a large majority of underground workers would prefer to work in the regular sector but they face no other choice: either to work underground or be unemployed. Very simply we assume that the level of employment, in the underground sector, is demand determined.

As far as we know there does not exist a well tested demand for labour in the underground sector, we therefore make our hypothesis based on generally accepted stylized facts for Italy and suggest the following explicative variables, for which we are provided with the empirical data necessary to estimate the demand for non regular workers by regular firms.

We start by noticing that the concealed employment appears, from

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the statistics of the ULA, to be concentrated in some sectors more than in others. The sectors showing the highest figures are: primary, buildings, textile, commerce, hotels and similar services, repair and recreational services and services to firms, domestic transport, and services to the families (example: baby sitting). We then exclude from our calculations the last two sectors, namely domestic transport and services to families, for different reasons. The first, for lacking value added figures at the regional level and the second for the fact that our aim is to specify a proper demand for labor by firms. In 1997 for instance with a share of total underground employment of 22.5% (in absolute value 5 millions ULA) the netting out procedure brings us to 16.7% as the actual figure.

Then we assume that the interest in hiring non regular workers has four main motivations. The first one is represented by the increase in what we may define as the firm's "flexibility". This flexibility has actually two components. The first one is linked to the labour market (firms can hire and fire non regular workers without complying with the very many italian regulations; firms can easily ask for longer or shorter working hours; non regular workers are non-unionized, etc.), while the second one is linked to the cycle, demand for the firm's goods). The effects of these two components are intimately linked. The labour market conditions allow, or do not allow, to alleviate the effect of the business cycle on the firm. On the other hand if it were not for the business cycle, the labour market condition would become less important to the firm.

The second motivation consists in lowering the labour costs through the avoidance of paying social security contributions and the third one consists in paying a lower wage to the workers.

The fourth factor and the most important for the present interpretation of the underground economy, is the expected penalty, given by the probability of being detected multiplied by the magnitude of the penalty. This is an unknown variable because the probability of being detected is the one that each firm regards as appropriate, and is therefore a subjective magnitude. It has been a major aim of our work to arrive at a reasonable dimension for this variable, aim that we pursued in the following way. Firms determine the optimum number of non regular workers by equating marginal revenues to marginal costs, where the marginal costs are represented by the expected marginal penalty plus the unitary wage for the non regular worker. At the outset marginal revenues are greater than

marginal costs but, when the amount of underground ULA increases, marginal revenues start to decrease for marginal gain in flexibility decreases when more non regular workers are added, while, at the same time, the distance between regular and non regular wages paid to the two categories of workers shortens. With a growing number of non regular workers hired, less workers remain unemployed or, in other words, those who are still unemployed are in a less stringent economic situation and therefore will accept to work underground only at a greater wage. Marginal costs are increasing even in the case of a constant unitary wage for the non regular worker because both the risk and (possibly) the penalty increase with the hiring of more and more non regular workers. The risk increases because a disproportion of non regular workers will more likely attract control activity by the state, and the penalty to be paid if detected increases because it is usually linked to the amount hidden. In the end we arrive at the following equation [3].

[3] $CMA = RUT_n + CAM = (RUL - RUT) + (RUT - RUT_n)$

where:
CMA = expected marginal cost
CAM = expected marginal penalty (probability of been detected multiplied by the magnitude   of the penalty)
RUL = gross unitary wage for regular worker (in equivalent units of labour ULA)
RUT = unitary wage for regular worker (idem, regular ULA)
RUT_n = unitary wage for the non regular worker (idem, non regular ULA).

The first term in the right hand side of equation [3] is the per capita social security contribution and the second term is the difference between regular and non regular unitary wage. The equation allows to calculate the expected penalty which is an unknown magnitude for it includes the probability of being detected defined in the subjective manner as above explained. If the equation is indeed valid in every period, then the expected penalty is given by equation [4]:

[4] $CAM = (RUL - RUT) + (RUT - RUT_n) - RUT_n$

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Unfortunately equation [4] should not be seen as the end of our story because it does not include the gain in flexibility. The inclusion of a specific variable for flexibility has proven to be difficult because its two components are both poorly measurable. However we could not afford to loose it completely because it gives precious information for the interpretation of the underground economy, and at the same time we could not risk to add errors in our measure of expected penalty (CAM). We therefore plug out of the CAM the two components of the firm's flexibility leaving to the other two variables, namely IDIS and IVARSCO (see below), to capture the role we want flexibility to play in our model.

Having obtained what we call "expected penalty", we are in a position to estimate the non regular ULA (IULN) by a regression. The effect of the structure of the economy enters the regression through the ratio between the value added in the sectors where the underground is more widespread and the total value added (IVAQUO). The rate of unemployment is chosen as a proxy for the rigidity in the labour market (IDIS). The inventories variations (IVARSCO) represent the effect of the business cycle, and the effect of total saving in terms of social security contributions not paid on the wages of the non regular workers is given by the wedge (in percentage) between the gross and net wage for regular workers (ICUNEO).

The data used in the estimation appear in table 5 in the Appendix, where there also appears, as table 5 B, the matrix of correlation among regressors. As it appears, except for the cycle, the regressors are highly correlated . Furthermore some experiments using (log) level variables show that the D.W. statistics is very low. We therefore resort to overparametrize the relation to start with.

After the testing down procedure we got the results shown in table 5A and long run solution linking the above-mentioned variables, (the prefix "L" stands for log):

[5] LIULN=11.7+0.33*LIDIS-0.42*LICAM

In equation [5], in which the signs of the regressors are those expected, there are two very important "survived" regressors: the rigidity of the labour market and the expected penalty (defined and obtained in the manner explained above), that we now propose to consider as a proxy for

the "credibility" of the state. Equation [5] is fairly important because it allows us to estimate the regional underground economies which were our main concern. On this matter it is also important to notice that the validity of equation [5] is reinforced when comparing the regional data it provides with those calculated by ISTAT (confront 3.1). We cannot go much deeper because our degrees of freedom are too few, but it is worthwhile to notice that equation [5] does not show structural breaks (see table 5A in the Appendix). This implies that in the sample nothing has happened of the kind that, according to our interpretation, is necessary to change the "natural rate of underground".

I.7 *Lessons to be drawn.*

The above exercises carried out to empirically estimate the size of the underground economy in the period 1970-1997 have shown, clearly and at the least, the following two things, one of which was not expected.

The first is that, not surprisingly, the "level" of the underground economy, even as a percentage of GDP, can significantly vary as a result of different methods used to actually estimate it. It is therefore very questionable, if not intrinsically incorrect, to make comparison among countries by means of figures obtained by different method of estimation. And it is also questionable to make comparisons among figures obtained by the same method, say the monetary Tanzi method, but using different econometric techniques. Thus the recently circulated figures about a much greater size of the shadow economy in Italy than in other developed countries, are as such rather unconvincing to us. They appear to be based more on "common sense" than on measurement exercises.

The second and most important thing is that, no matter how different the levels of the underground in Italy can turn out to be with different methods of calculation, the dynamics shown is just about the same with every method used. The underground economy, during the 27 years-period of observation, "fluctuates" around an average value without actually showing the increasing trend we are commonly told about. Of course, as we are emphasizing, the underground economy varies with the cycle, with the social security wedge, with the tax rates, but is remarkably stable around its mean.

Graph 1 in the Appendix, which reproduces our estimates based on

the (adjusted) Tanzi method, shows clearly these facts.

But also the ratio between non regular and regular workers (or ULA), namely our second and different source of measuring the size of underground economy, is remarkably stable. While from our third source, corresponding to the "direct" method of measuring the size of the underground economy through the calculation of the amount of tax evasion of indirect taxes, comes an even more clear-cut denial of the supposed expansion of the underground sector. Tax evasion varies during the period of observation but it shows signs of a declining rather than rising trend .

This somehow puzzling stability in the size of the underground economy, needs tentative, and possibly empirically based, explanations. From a statistical-econometric point of view we actually found an equilibrium relation among the variables proposed by Tanzi to explain the underground economy. From an economic point of view the interpretation (or the significance) of our results is more difficult because the concept of an economic equilibrium is complicated in itself. In other words, the substantial stability observed in the percentage of the underground to GDP says that our economy has always functioned with a more or less constant proportion of the irregular to regular[5] economy over the observed years. Let us assume therefore that there exists in Italy a "natural rate of underground", that is to say that the underground economy is a relatively stable structural phenomenon. But having made this assumption, a further quite natural question comes to one's mind. How is it possible that during the 27 years of observation no government (and there were many, since several of them lasted only months) succeeded in combating the underground? Is it just a government failure or do we need another answer? And the answer we propose is that no government has been ever committed to combat it, because the underground had a positive role to play, as it appears from our macroeconomic interpretation of the period.

First it is possible to show that the existence of the underground economy was combined with revenue gains, instead of losses, from 1970 up to 1985. And it is also difficult to think that it was just by a coincidence that the government resorted to its first, and, from the revenue point of

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[5] We use underground, irregular, shadow, hidden, black, etc., as interchangeable terms.

view, very successful tax amnesties right in the '80s when the revenue gains from the underground were loosing grounds. We reach this conclusion after having carried out an empirical exercise along the von Zameck (1989) methodology to calculate the rate of growth of nominal GDP necessary to avoid tax losses from tax evasion. Graph 2 in the Appendix shows our findings.

Second, after the mid '80s, when the tax loss from tax evasion and the extra revenue from tax amnesties tend to counterbalance, if we turn to the labour market, we find a natural explanation for the persistence of the natural rate of underground. It is in fact in 1984 that the rate of unemployment reaches its two digits figure, namely 10.4%, and since then never falls below 10% (see table 5). When the official rate of unemployment is high, non regular employment is favorably seen by the government, the trade unions, and the workers themselves, who would have no other choice but to be unemployed.

Third, in 1993 and for the following two years, after 8 years of a fairly constant share, the share of the underground economy registers a significant increase of two percentage points, according to our adjusted Tanzi method. But what is, to some extent, remarkable is that even the labour market method to measure the underground shows similar results. In fact the rate of real (at 1990 prices) per capita production from concealed ULA jumps up by two-three percentage points right on 1993. The reason for this can be found in the Maastricht agreements coming into effect. In order for Italy to meet the terms, public debt had to be drastically reduced, namely public expenditure reduced and/or tax revenue increased. The huge debt was the result of economic policy choices made over the past two decades, aimed at securing "social peace" by increasing public expenditure. The restrictions imposed by the Maastricht treaty required the government to enact a restrictive budgetary policy (which it did), but nothing was required concerning the size of the irregular economy, which therefore could replace that finction. In other words, we suggest to explain the peak by its counterbalancing social role with respect to the now restrictive budgetary policy. After a few years, the structural reasons prevailed once again, and the rate tends to revert to its natural level.

Finally, next to the absence of a commitment by the government to combat the irregular economy, and after a careful study of the macro data for the period, we are convinced that the proportion has been more or less

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stable due to precise structural reasons. Indeed the relevant "structural" features of our economy, which we consider responsible for the persistency of the phenomenon, have never changed. Those features can be found in the very foundations of the working of the private and public sectors and their reactions going both ways. For reasons that will become clearer in the next section, we claim that in order to substantially reduce the irregular economy, a change in the "structure" of our economy is necessary. We do not deny that a reduction in tax rates or in the social security wedge might help, as well as a temporary increased probability of being detected when evading taxes. But our thesis is that these types of intervention can affect the irregular economy only marginally without really reaching out to the structural roots[6]. These structural roots are primarily (i) the "low level of credibility" of the state, (ii) the "high level of inefficiency" of the public administration and its interaction with the private sector, and (iii) the way such interaction has developed during the period. The first structural cause is important for explaining the irregular economy, especially in the South, while the second one is indeed a "special cause"[7] for the existence of the underground sector. We want to draw attention to the fact that an inefficient public administration not only is bound to tolerate the existence of a large irregular sector, (it is of course true that the more efficient is the fiscal administration the less is the evasion), but it also creates the best opportunities for firms to go underground right in the service sector, for some services that should be provided by the public administration are in fact not produced. (To the extent that, for instance, the mail system becomes unreliable, mail delivery will be easily provided by underground young people.)

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[6] We also argue that the underground economy in the Center-North part of the country is a substantially different phenomenon from the underground in the South.(see section II).

[7] The point we want to make is not that an inefficient public administration is bound to tolerate a large irregular sector (that is certainly true) but that an inefficient public administration actually boosts the irregular economy because it leaves basic needs unsatisfied (un-delivery of mail in a reasonable certain time span, for instance).

Section II.

II.1 *The South vs the Center-North.*

The definition of Italy as a dualistic economy must be given a stronger meaning than the usual one, because the two parts of the country, the center-north and the south, are not simply two areas at different stages of development or just showing different levels of per capita income, they are two different realities. This is true with respect to both the private and public sector, in the sense that both sectors respond to different motivations in the two parts of the country. Just to mention a few practical examples, no private firm would locate in the south unless public incentives were given because in the South the productivity is lower than in any other part of the country. And there has always been some granting of incentives, either as a fiscal relief of the corporate income tax and/or social security contributions, or as a subsidy to interest on borrowed capital, or as a transfer per worker employed etc. On the other hand less services or facilities have been provided by the government in the south, like road and rail infrastructures. At the same time, employment in the public sector in the south has been motivated largely by the aim of disguising unemployment , which in turn meant a lower productivity for public administration in the south than in the rest of country. Graph 3 in the Appendix gives the relationship between the rate of unemployment and employment in the public sector - from 1980 to 1995 - in the south. It shows a strong positive correlation between these two variables until the end of the '80s. The '90s tell us another story. Due to the Maastricht agreement a strong reduction in the deficit was necessary. Italy's effort to comply with the terms of the agreement was indeed remarkable: the tax burden jumps by an amount that no one would have thought possible, whereas the reduction in expenditures proved to be much harder. At best it was possible to halt their growth, as is shown by the behaviour of public sector employment in the south in the last part of the period.

These aspects give an idea of the reasons why labour and capital productivity are lower in the south than anywhere else in the country. But they also show that the working of the two economies is very different in that it obeys to different rules. Huge differences can also be found with respect to the "sociology" of the regions (fertility   rate, number of

religious and civil marriages, number of divorces, literacy rate, school attendance, etc.), not to mention the more widespread phenomenon of (mafia like) organized crime . Since we are interested in measuring the irregular product rather than the illegal one, we can avoid entering into this topic in detail but we cannot completely forget it either. It is impossible to overlook the fact that because of the presence of age-old- criminal organizations, the mentality of most people, including those not involved with the criminal activity, is inevitably different from the rest of the country. Citizens in the South are more skeptical, to say the least, than citizens in the Center-North with regard to the authority of the state. In other words, the "credibility" of the state in general is absolutely and relatively low in this part of the country. In terms of our exercise, in which the credibility of the state enters through the subjective probability of being detected, we expect to find that the variable incorporating this aspect plays a more important role in explaining the underground economy in the southern regions than in the other ones.

II.2 *How to exploit aggregate national account data to get regional information.*

The fact that the regions in the south of Italy are under many respects different from the others has convinced us that for a proper understanding of the reasons for the existence of an underground economy in the South, for its present size, and for how it has been developing, it was necessary to perform empirical exercises of the type carried out for the country as a whole and based, of course, on regional data. Unfortunately, since regional data are rather lacking (we do not have for instance underground wages and salaries by regions), the only way was to try to acquire the basic data (the empirical starting point) by "exploiting" the very many aggregate data and the very few regional ones. This is what we performed by using our estimated aggregate (national) demand function for the concealed workers, reported as equation [5]. As we explain below, it has been possible to regionally redistribute the total concealed ULA on the basis of the regional counterparts of the national independent variables of equation [5]. In doing so we got two results. First, by comparing the data we produce with those (actually very few) provided by ISTAT, we ended up with a sort of an indirect validation of equation [5]. Second, the data we

arrived at made it possible to analyze the existence and evolution of the underground economy in the south by means of empirically based propositions. This result, meaningful in itself, shows also how it is possible that the aggregate national data are able to provide a credible description of the system as a whole, in spite of the strong and old rooted elements of dualism which characterize Italy. In other words this indirect validation means that the parameters (i.e. the elasticities) are the same all over the country and that the regional differences depend only on the different values of variables: in each region firms do not react differently to credibility, or rigidity; they simply live in a different environment.

We applied the elasticities obtained for the national demand for the concealed workers (or ULA) to the log regional data of the independent variables (See table 7 CAM_i, 8 DIS_i in the Appendix). We performed the technical routine operations necessary to make their mean consistent with the national one and then, after going back to the natural values, we were able to get our regional result by multiplying them by the ratio $ULA_{regional}$ /$ULA_{national}$. We then proceeded to eliminate the forecasting error of equation [5]. By comparing the values produced by the equation with those of the time series 1980-97 of national concealed ULA provided by ISTAT, we adjusted our figures on these. This adjustment was then applied to our regional data derived from the (regionalized) equation [5][8] to eliminate the forecast error and finally we used the regional data available for just one year, namely 1991[9], to correct our data from this "cross sectional" error. The complete results of our procedure are shown in the Appendix (table 9). Here it is worthwhile to notice (see table 2 below) how close our figures are to the few others available for splitting the country, if not in each individual re gion, at least in two large areas grouping the regions of the Center-North and those of the South. Even for the "worst" year, the farthest back one, 1980, figures are quite satisfactory for our story.

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[8] Of course the adjustment was made in such a way that the sum of the 20 regions is consistent with the national figure.

[9] Pascarella-Trivellato, 1996.

Table 2	ISTAT	ISTAT	Equation [5]	Equation [5]
YEAR	Center-North concealed ULA %	South concealed ULA %	Center-North concealed ULA %	South Oncealed ULA %
1980	16.03	32.70	17.18	30.44
1981	------	-----	17.57	29.73
1982	------	-----	17.80	29.63
1983	------	------	18.60	30.24
1984	------	------	19.32	30.29
1985	------	------	18.97	30.42
1986	------	------	18.92	31.74
1987	------	------	18.64	32.80
1988	------	------	18.21	33.86
1989	------	------	17.74	34.37
1990	------	------	17.48	34.33
1991[10]	17.51	34.36	17.51	34.36
1992	-----	------	17.75	33.98
1993	18.00	33.90	18.26	33.00
1994	16.72	33.39	18.30	32.93
1995	------	------	18.03	33.38

The fact that the figures shown above, coming from different sources and in our case obtained by following a somewhat complicated procedure,

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[10] Figures are the same by construction (see text).

are quite close, add confidence to the findings. And what we find is, first that there does exist empirical evidence for the general common knowledge of a greater concentration of concealed workers in South second, that for both parts of the country the percentage of concealed workers (ULA) seems to fluctuate rather than following a trend. We will come back to this later.

II.2 *Empirical results.*

When focusing on figures concerning the 8 regions that make up the south of Italy, or the Mezzogiorno (numbered in the tables of the Appendix from 13 to 20), a number of interesting things emerge, some expected and some not.

We already saw how much more concealed employment (in ULA) is present in the South than in the Center-North. This empirical finding is a largely expected one, for it has always been known that the economic performance of the South lags behind the rest of the country. In the case of concealed employment the lagging behind story implies a higher concealed percentage in the South, as is in fact shown by the figures. But looking more closely at the figures it emerges that the lagging behind story is at least an incomplete one. In ten years from 1980 to 1990 the distance between the Center-North figure and that of the South increases significantly (from 13.26 in 1980 to 16.85 in 1990). Thus either the South was simply loosing ground or it was instead behaving according to some south-specific mechanism.The conventional wisdom has it that with respect to certain connotations (or indicators) of economic development the lagging-behind theory might be valid, in the sense that the South would keep pace with the rest of the country , and also do some catching up. But we have doubts, because neither per capita income nor per capita consumption are closing the gap, on the contrary the ratio between the per capita GDP in the South and the per capita GDP in the Center-North was 58% in 1980 but only 55% in 1995. However, this theory does not seem to be applicable in the case of the underground economy. In the five years after 1990 the distance shortens: was it going back to some sort of south-specific structural level or was the South catching up? Both explanations are possible but we are inclined to believe that specific structural features might explain the economy of the South better than the lagging-behind or

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catching up interpretations, because of the evidence coming from various sources.

The data for the 8 southern regions call for some specific explanation. Of the 8 regions, two, Basilicata and Sardinia, show a surprisingly equal percentage of concealed workers to total employment in 1980 and 1995 (30% and 27% circa and respectively); but even for them it is not so safe to give a common explanation because, for example, when during the 15 year period, the percentage of concealed workers varies in both, when in Basilicata it was at its peak, in 1992, in Sardinia it was at its bottom. Only one region, Abruzzo, shows a significant decrease of two percentage points, and interestingly, this was the region with the lowest percentage in 1980, its position being maintained in every year. In 1995, the last year of observation, there are as many as 5 regions out of the 12 located in the Center-North, which show a higher percentage of concealed workers than that of Abruzzo, while in 1980, the first year of observation, there were only two. One would have expected a decrease in the regions with the highest percentage, if an explanation of the business cycle type were to apply to the underground of Italy. But this fact did not turn out, and it did not turn out even in the reverse case, as we see now. The responsibility for the higher figures in the South relative to the Center-North must therefore be given to the remaining 5 regions (Molise, Campania, Apulia, Calabria, Sicily), as is the case. Once again we notice that of these regions those showing a greater increase in the 15 years are not necessarily the ones starting with the lowest percentage: the second and third highest regions at the start (Campania and Sicily) show the greatest increase during the period of around five points. The highest region at the start (Calabria, with a 43%, practically the double of Abruzzo's figure for that year) still gains more than 1.5% in 1995 with respect to 1980, after having reached a skyhigh peak of around 48% in 1989 and 1990. It is indeed difficult to read one single story into these figures, but some attempts at an explanation must be made.

We can now turn our attention to the regional dimension of the underground economy by using the concept, and measure, of tax evasion of indirect taxes, already mentioned for the country as a whole in section I.5. Table 3 in the text shows the figures for the conventional splitting of the country into two zones, the Center-North and the South, while the figures for the whole country are from figure 1 in the text.

Table 3

YEAR	Indirect tax evasion – nationwide %	indirect tax evasion- -Center-North %	indirect tax evasion- -South %
1980	35.40	30.10	55.23
1981	31.66	25.99	53.39
1982	28.41	23.29	47.40
1983	37.27	30.45	62.44
1984	25.00	17.95	51.70
1985	17.61	14.07	29.60
1986	34.2	30.84	44.65
1987	28.41	24.51	41.68
1988	29.61	27.27	35.65
1989	30.12	26.28	43.24
1990	33.95	32.24	39.37
1991	17.29	15.60	22.58
1992	11.24	10.03	14.99
1993	20.04	17.91	26.87
1994	9.88	8.09	15.65
1995	16.34	15.63	18.58

As is immediately apparent, the South has always contributed more than the Center-North to the nationwide rate of evasion. This result is among the expected ones, being an empirical confirmation of the common knowledge. But it is not the only story arising from the figures in the table. First we see that the year 1990 appears to be the last one of an exceptionally high tax evasion, either at the national or regional level: in 1991 some 16 percentage points of tax evasion are lost in each column. A tentative explanation has to be proposed. Second we see also that up to

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1990 the distance between the two areas is greater then the corresponding one for the next five years. No more than 6 percentage points divide the two areas after 1990 (and in 1995 the difference is just of 3 percentage points), while during the previous ten years we find 32 and 34 percentage points of distance (in 1983 and in 1984, respectively). Did this happen just by coincidence, or does it hide some specific cause, such as the theory of a catching up among regions at different stages of development? We propose a tentative explanation, not as the final word on the matter of course, but with a view to draw attention to the "peculiarity" of the South, whenever it emerges. Here the peculiarity that might have played some role in generating such great distance among the two areas up to 1990 is a government provision introduced in 1977, and in place up to 1990, called the "negative value added tax". This provision was introduced as an incentive to private investments in the South, and it was then extended to the whole country for just four years (1983-86). The expiration of the provision after 1990 can have contributed also to making the year 1990 a turning point both with respect to the nation and to the distance between the two areas. The provision consisted in the possibility for firms to deduct from their value added tax liability a percentage[11] of their investments carried out in that year. Apart from the judgment on the effectiveness of the provision on expanding private investment, it is clear that when calculating the difference between the actually collected value added tax, which belongs to the indirect tax revenue, and the hypothetical one corresponding to the maximum rate actually paid by any region (in our case Valle d'Aosta), the amount of value added actually "not due", appears as evaded. Moreover, looking again at the figures, even the 1983 jump in all three figures can be explained, at least partially, by the extension of the provision to the entire nation. Finally, in 1990 the provision is definitely repealed.

A last glance at the table tells that the underground economy, or just the evasion calculated in a conventional way by comparing the actual revenues collected with those that should have been, is for sure not increasing, neither at the national nor at areas level. The first column

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[11] The percentage was 4% for 1977-83; then, and for the three years up to 1986, it was extended to the whole country and raised to 6% (in the South the two rates added up); after 1986 and up to 1990 it was still 6% but in operation in South only.

clearly shows that evasion is not increasing: this result is unexpected in the sense that it contradicts, empirically, the common wisdom. To us it is a confirmation that there is no empirical support for the common wisdom. Turning now very briefly to the regional figures, reproduced in the Appendix as table 5 BA, we notice that they show some interesting things. By comparison with the regional tables concerning the concealed ULA we see that only one region (Abruzzo) is indeed a "virtuous" one, showing a declining tendency both in terms of concealed ULA and of indirect tax evasion. All regions show a clear sign of improvement in respect to compliance, but not to concealed ULA. The worst three regions, those with the highest presence of concealed ULA and with a positive rate of increase , first, do not coincide with the three worst in terms of evasion and second, they do show the greater reductions in evasion. Calabria, the first worst in terms of concealed ULA, shows instead a great reduction in evasion of more than 70 percentage points, which is the fourth better result (the best one being that of Molise with a 44 percentage points reduction in its rate of evasion).

Finally let us focus on the suggestions coming from our regionalized equation [5]. The availability[12] at regional level of the variables used in our equation allows us to estimate , region by region, the different sources of the underground economy, namely what we call the "rigidity" of the labour market and the "credibility" of the state. The rigidity of the labour market is actually represented by the rate of unemployment , while the credibility by the expected penalty as previously defined. Tables 7 and 8 in the Appendix reproduce these magnitude region by region.

Without entering into too many details, what the tables show at a first glance is how the 8 southern regions, exhibit a higher level of rigidity (DIS_i, where i=1,2, ..., 20 stands for regions) than any other region in the center-north, year by year (with an exception, see below) . This finding is in line with the common knowledge, namely that the lagging behind part of the country is characterized by more unfavourable conditions in the labour market than in the rest of the country, in terms not only of less number of

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[12] One last calculation is necessary to be able to actually estimate the expected penalty in every region. We made the reasonable hypothesis that the proportion between the regular and the non regular wages at the national level carries over in each individual region.

available jobs but also of longer duration of unemployment when fired[13]. Thus, in our tables the values of DIS for the regions in the South are higher than those in the Center-North. Only one region in the South shows a DIS in 1995 lower than the DIS in three regions in the Center-North (Latium, Liguria, Umbria).This is the virtuous region Abruzzo we already met.

The tables reproducing the expected penalty by regions, called CAM_i, seem to us to be very meaningful. First because, after carrying out several calculations, we have "figures" upon which to base a debate at the regional level. Second, because it is possible to read in these tables a story of the South opposed to the story of the Center-North (as expected), but at the same time also separate stories for the single regions. Third, it is possible to figure out whether the two areas are likely to continue to develop as in the past, or whether there are signs of ongoing substantial changes.

What immediately appears at a first glance, is that in general the expected penalty is lower in the South than in the C-N. Taking the expected penalty to represent the "credibility" of the state, we find that a lower credibility of the state matches with the previous result of a greater tax evasion. Further, this low credibility of the state represents a structural cause underlying the irregular economy, which, if not removed, leads to the reasonable expectation that the future development will very much stay on the same track of the past. It also appears immediately that the credibility in every regions (with only one exception, Piedmont) has increased substantially during the 16 years of observation, independently of its (measured) starting level. The fact that the credibility is increasing in every regions of the country comes as good news, but the fact that the rate of growth of the credibility is not greater for the regions showing a lower level comes as a bad news. The distance between the two areas stays unchanged and to us this comes as no surprise since the government attitude has been to regard the underground economy as a national phenomenon, of different size in different areas of the country, but of the same nature overall. We believe that here lies the core of the

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[13] Meaningful figures for the comparative disadvantage of the south are given by comparing the ratio between the number of long term and of short term unemployed people searching for jobs in the south and the same ratio in the center-north. Those figures, for 1995, are 4.5 and 2.3 respectively.

problem: the nature of the irregular economy in the two areas of the country is not the same for the main causes of it are not the same. Therefore we have not so much a problem of size, but rather a problem of understanding its specific causes. Another fact shown in the tables, which needs a deeper inquiry, is that in general a lower credibility is associated with the smaller size of the region, both in the Center-North and the South. Making no claim to a full explanation of this fact, it may be that firms have internalized the behaviour of the fiscal authorities who, during the period of observation, concentrated their controls in the largest regions. From this point of view it is suggestive that Campania's CAM is the highest in the south for Campania is the region more subject to controls. Also very suggestive is Graph 4 in the Appendix showing the average CAM for groups of regions with less than 1 million residents and groups of regions with more than 4 million residents: there is a clear positive correlation between population and CAM.

Turning now briefly to individual regions we notice that only one region, Piedmont that belongs to the Center-North '80s, instead of the steadily increasing one of all other regions. We must add that Piedmont was the region with the highest figure in 1980, definitely out of line for that year, and in the average in 1995. Next it is worthwhile to notice that the highest expected penalty is that of Lombardy (another region belonging to the Center-North). It was the second highest in 1980, after Piedmont, but is the highest in 1995. Finally, two more points. Once again we notice the behaviour of Abruzzo as the region of the South probably closer to those of the Center-North than to those of the South and moreover it looks like being the only one for which the catching up story seems to hold. It was closer to the regions of the Mezzogiorno in 1980, but is now (1995 is the last available year) closer to those of the Center-North. Also under the credibility's respect it is not too far from those. Another interesting case is represented by Campania, a region of the South with high ULA and tax evasion. This region shows that credibility can be increased by the government, in the sense that the expected penalty can go rapidly up, as happened in the '90s, putting the region at the top, with a respectable advantage, in the ranking of the southern regions. Actually in the '90s the fiscal authority concentrated its control activities in this region. As is obvious, the gains in credibility can only come as a result of facts and actions, and not of announcements, however though.

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II.4 *Policy implications.*

The story we have been telling is that the South is so diverse a reality from the rest of Italy that it is necessary to resort to specifically designed policies if we want the underground economy in the South to emerge. We cannot expect to cure the same illness, namely the existence of the underground, with a nationwide economic policy because what we may regard as the same illness is actually due to very different causes.

We have stressed the importance of making available empirical evidence in support of a plausible story for our Mezzogiomo. While in the literature taxes are the principal cause of the hidden economy, and hence the frequent argument in favour of a tax reduction policy (and of a simplification of the tax code), in the South of Italy this is not the case. In the South of Italy special tax provisions have been almost always in use with respect to different taxes. Social security contributions, which are a major cause of the underground in developed countries, have been practically relieved since 1968 in the South, in the sense that they have been partially or totally paid by the government on behalf of the firms (the aim of this tax relief being to encourage firms to produce, and hire people, in the South). During the period 1980-1995 the social contribution wedge in the center-north has been higher than that in the south by 1000 basis points. In 1980 the wedge was 27.6% in the South and 39.9% in the Center-North. For 1995 the corresponding figures are 35.8% and 45.3%: the wedge is increasing in both areas but the divergence is hardly disappearing. Thus no one can reasonably expect any improvement in the South from a nationwide policy initiative aimed at reducing social securities contributions. Almost the same story applies to the corporation income tax, which is again in general another major incentive to produce underground. A favourable treatment has been in general granted to the corporations operating in the South, either with a reduced rate, often half of the national rate, but in some year even nihil, or with other provisions. Again no one could reasonably expect any improvement in the South from a nationwide reduction in corporate taxation. In brief we do not suggest tax reductions as a policy to combat the underground in the south. It can be a useful policy for the center-north of the country, as the standard literature on the subject seems to suggest. What we recommend is to increase the "credibility" of the government in the South, to remove some

"rigidity" in both the north and the south, and, above all, to increase efficiency in the public administration. Its inefficiency allows the underground economy and tax evasion to flourish, and, more than this, it actually creates opportunities for small business to be active in the underground economy.

Section III.

A possible measure of the welfare loss from the underground economy in the South.

A part from all considerations based on strict equity grounds, we can look at the existence of the underground in terms of welfare loss. We saw that the size of the underground economy is larger in the South than in the Center-North, we therefore found more meaningful to try to measure the welfare loss for this part of the country. We believe that after decades of conventional wisdom about the economic conditions of the Mezzogiorno, we can improve our understanding of it only if we are provided with tentative but empirically tested propositions. Along with this way of reasoning, we calculate the welfare loss for the south as a "magnitude" to be taken into consideration when resorting to policy interventions.

Wrong policies were implemented in the past, in the sense that, while they were a burden for the rest of the country, they proved to be utterly ineffective for the development of the south. Favourable tax treatments have in general been applied, special public agencies have re-distributed income, public transfers have gone to the southern part of the country, legally or illegally (for instance through the exploitation of a generous pension system for the disabled), but little or nothing has been done to avoid the flourishing of the underground economy and the welfare loss it produces in terms of labour market distortions. The magnitude of the welfare loss is exceedingly high both as percentage of the real GDP of the South and of total real GDP, being in 1995 around 8% of the first one and around 4% of the second (at 1990 prices). There are in fact reasons to believe that these figures underestimate the phenomenon since our calculation is made on the basis of the difference between wages in the regular economy and wages in the irregular one, and it does not take into account the social security contributions not paid on the non regular work force, which are in fact postponed wages.

Our point is that one has to consider also the welfare loss of the hidden economy when analyzing the economic situation of the Mezzogiorno in order to devise effective policy interventions for curing its specific ill. To this end we have constructed an index, called "super-misery" index, by adding up the poverty index provided by ISTAT and based on consumption, the unemployment rate also provided by ISTAT,

and our welfare loss in terms of GDP of the south. We get of course only a rough measure (because for instance we did not weight the three different components of the index) but it can give a comprehensive idea of the aggregate performance of the South as compared to the Center-North. In graph 5 in the Appendix the super-misery index for the period 1980-1995 is shown. The upper curve, which reproduces the supermisery index of the south, shows a diverging path from the lower curve which represents the supermisery index of the country as a whole. It also shows that from 1993 on, the divergence is getting larger. It is probably not surprising that right in 1993, when the effects of the restrictive budgetary policy necessary to meet the Maastricht parameters begin to emerge clearly, the south gets worse. But from the comparison of the two indexes there also emerges the greater volatility of the southern one. A possible explanation may be found in the type of government policy interventions during the whole period. Those interventions were able to produce only short run effects because, in our view, they did not affect the structural causes of the poor economic performance of the south.

Finally in graph 6 in the Appendix we reproduce the components of the supermisery index of the south. Although a deeper analysis would be necessary, a glance to the graph gives a view of the countercyclical behaviour of the index. When the cycle is favourable, as from the mid '80s to their end, the index goes up while when the cycle reverses, as in the early 90s, the index seems to decrease. This reinforce the view that the main forces underlying the performance of the South and of its hidden economy are of a structural nature.

Conclusions and further research .

Two main conclusions come from our empirically based exercises:
i)   structural causes are at the origin of the underground economy in Italy,
ii)   the two parts of the country, the Center-North and the Mezzogiorno, show a different type of underground, and not simply different sizes of it.

In fact the standard explanations for the existence of a shadow economy in a developed country in terms of high direct taxes, high social security contributions, too many labour market regulations, and the

business cycle, are all applicable to Italy, but with two clarifications. First, they are less important than the structural causes, since all types of estimates we performed seem to indicate a remarkable "stability" in the measured size of the underground economy. Second, the mentioned standard explanations are, possibly, more helpful in explaining the underground economy in the Center-North than in the South.

It is our aim to further investigate into the reality of the Mezzogiorno and to produce more empirical evidence of the aggregate size of the underground economy in Italy. So far we found that it is not growing. We are inclined to think that the confidence in our "against the stream" conclusions might be strengthened by future research.

Appendix:
Tables and Graphs

TABLE 1.   BASIC DATA

	CURRENCY	M2	YX	WSNI	R	TDIR	
						1st alt………..2nd alt.	
1970	5113.000	34095.00	12.14425	14.77221	4.716410	5.451116	
1971	5703.000	40420.00	12.39867	14.03682	4.352560	5.643678	0.192562
1972	6934.000	47799.00	12.59134	13.82990	4.048300	6.196297	0.745181
1973	7767.000	58251.00	13.24273	13.87809	4.230020	5.835894	0.384778
1974	8727.000	71993.00	13.46210	13.69382	6.813523	5.610600	0.159484
1975	10137.00	89797.00	13.53804	13.23558	3.570000	5.997957	0.546841
1976	11505.00	108447.0	13.69919	12.72310	6.123600	6.890788	1.439672
1977	13010.00	132592.0	14.11538	12.55874	8.314800	7.752471	2.301355
1978	15254.00	159205.0	14.31683	12.03190	9.096001	8.951447	3.500330
1979	17213.00	188886.0	15.02773	11.37887	8.000000	8.632529	3.181413
1980	19454.00	216481.0	15.85474	11.18576	7.512000	9.828189	4.377073
1981	22840.00	248261.0	15.94648	11.03551	8.672001	11.17312	5.722000
1982	25281.00	296831.0	15.93297	10.80020	10.04304	12.08468	6.633564
1983	28363.00	323739.0	16.10646	10.56710	11.14848	12.67265	7.221532
1984	31166.00	369324.0	16.22558	10.02257	10.25250	12.92579	7.474679
1985	34882.00	413799.0	16.52478	9.828171	6.067500	13.31794	7.866828
1986	37362.00	457203.0	16.97844	9.642244	6.659999	13.17412	7.723003
1987	40812.00	501026.0	17.38896	9.218372	5.340000	13.73128	8.280167
1988	44479.00	561696.0	18.09420	9.026606	4.822999	13.90118	8.450068
1989	52700.00	644188.0	18.40917	8.983199	5.110000	14.90945	9.458338
1990	55262.00	757067.0	18.56614	8.831717	5.173000	15.06491	9.613795
1991	60741.00	836142.0	18.87620	8.659206	5.166000	15.21919	9.768072
1992	68121.00	891923.0	18.72099	8.920878	5.985000	15.40886	9.957740
1993	71476.00	962055.0	18.42913	8.608252	5.453000	17.01435	11.56323
1994	76549.00	985546.0	18.21648	8.214859	4.340000	15.82952	10.37840
1995	78258.00	968967.0	18.24468	7.826747	4.515000	15.60165	10.15054
1996	79777.00	1001420.	18.46684	7.450693	4.737700	16.19053	10.73941
1997	85535.00	940380.0	18.17590	7.372008	3.525900	17.03914	11.58802

Sources: Bank of Italy, Istat.
CURRENCY and M2 are in billions of liras; YX are in milions of 1990 liras; the others are percentage.

TABLE 2. DIAGNOSTIC TESTS AND RESULTS. EQUATION [2]

Dependent variable: $\Delta(LC - LM2)$

Current sample: 1971 to 1997
Number of observations: 27

Mean of dependent variable	= -.018518
Std. dev. of dependent var.	= .055056
Sum of squared residuals	= .029754
Variance of residuals	= .156600E-02
Std. error of regression	= .039573
R-squared	=.622461
Adjusted R-squared	= .483367
Durbin-Watson statistic	= 1.82944
Breusch/Godfrey LM: AR/MA1	= .051109 [.821]
Breusch/Godfrey LM: AR/MA2	= .174228 [.917]
Ljung-Box Q-statistic1	= .019331 [.889]
Ljung-Box Q-statistic2	= .082696 [.959]
Wald nonlin. AR1 vs. lags	= 5.10514 [.403]
ARCH test	= .109528 [.741]
CuSum test	= .422934 [.854]
CuSumSq test	= .176158 [.629]
Chow test	= .481572 [.845]
LR het. test (w/ Chow)	= -6.47343 [1.00]
Jarque-Bera normality test	= .555509 [.757]
F-statistic (zero slopes)	= 4.47513 [.004]
Akaike Information Crit.	= -3.38016
Schwarz Bayes. Info. Crit.	= -5.83408
Log of likelihood function ..	= 53.63213

Variable	Estimated Coefficient	Standard Error	t-statistic	P-value
C	2.27859	.938726	2.42732	[.025]
Δ LWSNI	.995171	.339927	2.92760	[.009]

Δ LR	-.094072	.041572	-2.26284	[.036]
Δ LYX	-1.58569	.571499	-2.77461	[.012]
LTDIR(-1)	.274713	.137508	1.99780	[.060]
LR(-1)	-.128493	.044653	-2.87762	[.010]
LYX(-1)	-1.51560	.561573	-2.69885	[.014]
LCM2(-1)	-.629096	.206889	-3.04074	[.007]

TABLE 3. The underground economy in Italy - Tanzi method (1st alternative)

	CURRENCY		UNDERGROUND ECONOMY	
	ILLEGAL ;	LEGAL	LEVEL ;	AS%OF DD*
	====================		================	
1970	2851.347	13316.65	11847.63	21.41189
1971	3344.632	15563.37	13154.71	21.49041
1972	4111.915	18802.09	14550.41	21.86946
1973	4229.101	23822.90	14107.18	17.75225
1974	4441.273	29157.73	14344.18	15.23189
1975	6515.860	29600.14	25028.71	22.01294
1976	7494.099	36117.90	27721.69	20.74899
1977	8632.824	45161.18	31452.03	19.11559
1978	10761.97	53310.03	39129.07	20.18752
1979	11403.15	66760.84	40061.87	17.08060
1980	12606.38	80044.62	47061.09	15.74919
1981	14968.52	95816.48	55893.10	15.62207
1982	18243.26	113218.7	68077.50	16.11329
1983	19520.62	116898.4	83605.70	16.69880
1984	22517.95	134103.0	94086.30	16.79153
1985	27353.33	148411.7	115449.8	18.43071
1986	27601.93	170374.1	116735.0	16.20078
1987	30613.17	184982.8	131193.6	16.54920
1988	32072.22	204624.8	138492.4	15.67367
1989	36330.56	232061.4	149632.3	15.65558
1990	41980.80	249593.2	177801.0	16.81969
1991	44829.62	289548.4	180861.1	15.48260
1992	47679.02	299092.0	196144.2	15.94125
1993	57648.66	312315.3	227023.8	18.45848
1994	61032.16	322091.8	240150.1	18.94868
1995	58804.75	324577.3	237547.6	18.11734
1996	59718.55	345511.4	244917.6	17.28410
1997	63739.84	375039.2	246653.7	16.99552
=========================			=====================	

- Domestic Demand; CURRENCY and LEVEL are in billions of

liras.

TABLE 4. The underground economy in Italy - Tanzi method (2nd alternative)

| | CURRENCY | | UNDERGROUND ECONOMY | |
	ILLEGAL ;	LEGAL	LEVEL ;	AS % OF DD*
1970	0.000000	16168.00	0.000000	0.000000
1971	75.86670	18832.13	246.5973	0.402858
1972	331.8374	22582.16	977.6804	1.469467
1973	185.9937	27866.01	530.4082	0.667457
1974	83.87891	33515.12	235.6860	0.250272
1975	397.3447	35718.66	1264.832	1.112429
1976	1061.928	42550.07	3334.398	2.495713
1977	1758.820	52035.18	5561.416	3.380060
1978	2930.256	61141.74	9289.327	4.792562
1979	2915.575	75248.42	9087.719	3.874600
1980	3946.018	88704.98	13292.75	4.448473
1981	5456.986	105328.0	18536.54	5.180944
1982	7184.213	124277.8	24423.35	5.780770
1983	8017.662	128401.3	31262.87	6.244220
1984	9403.676	147217.3	35791.08	6.387614
1985	11702.39	164062.6	44680.28	7.132879
1986	11707.00	186269.0	45286.66	6.284996
1987	13410.07	202185.9	52579.43	6.632545
1988	14179.18	222517.8	56304.31	6.372157
1989	16876.45	251515.6	64131.62	6.709900
1990	19636.70	271937.3	76333.62	7.221040
1991	21110.45	313267.6	78719.67	6.738792
1992	22633.37	324137.6	85915.76	6.982642
1993	29052.86	340911.2	104814.9	8.522120
1994	29469.57	353654.4	105608.4	8.332871
1995	28137.15	355244.8	103850.5	7.920496
1996	29235.87	375994.1	110181.4	7.775620
1997	32149.06	406629.9	114742.0	7.906221

* Domestic Demand; CURRENCY and LEVEL are in billions of liras.

TABLE 5.   REGRESSION DATA SET

	Iuln	Ivaquo	Idis	Ivarsco	Icuneo	Icam
1980	4656,5	50,25%	7,60%	16539	36,65%	9025,0
1981	4662	50,12%	8,40%	4114	35,13%	9275,6
1982	4726,5	50,41%	9,10%	9886	36,18%	8839,7
1983	4938,2	51,32%	9,90%	4494	37,31%	9413,8
1984	5080,8	51,36%	10,40%	8842	36,50%	9469,7
1985	5081	51,87%	10,70%	13827	36,98%	9328,4
1986	5198,1	51,78%	11,10%	14768	38,42%	9472,7
1987	5239,1	52,43%	12,00%	17419	37,59%	9840,9
1988	5277,5	51,96%	12,00%	10882	37,86%	10164,2
1989	5252,3	52,10%	12,00%	8861	40,07%	10266,9
1990	5258,4	51,88%	11,00%	10361	40,36%	11236,9
1991	5310	52,64%	10,90%	6148	40,13%	11498,5
1992	5265	53,03%	11,50%	7005	40,97%	11255,4
1993	5113,3	52,50%	10,20%	-516	41,85%	11565,3
1994	5034,6	52,96%	11,30%	7960	41,47%	11535,4
1995	4993,2	53,61%	12,00%	8197	42,43%	11567,1
1996	4963,5	53,82%	12,10%	3529	43,62%	12326,24
1997	5009,9	53,63%	12,30%	17082	45,51%	12878,33

Sources: ISTAT for Iuln, Idis, Ivarsco . Our elaboration for the rest.
Iuln are thousands of ULA; Ivarsco are billions of liras; Icam are thousands
of liras at 1990 prices.

TABLE 5B. CORRELATION MATRIX (the prefix L stands for log)

	LIVARSCO	LIDIS	LICUNEO	LICAM
LIDIS	0.10950	1.00000		
LICUNEO	-0.21428	0.65800	1.00000	
LICAM	-0.27876	0.64228	0.95519	1.00000

LIVAQUO   -0.11235   0.85103   0.89645   0.88456

TABLE 5A DIAGNOSTIC TESTS AND RESULTS. EQUATION [5]

Dependent variable: Δ LIULN
Current sample: 1981 to 1997
Number of observations: 17

Mean of dependent variable	= .430303E-02
Std. dev. of dependent var.	= .017171
Sum of squared residuals	= .180064E-02
Variance of residuals	= .150054E-03
Std. error of regression	= .012250
R-squared	= .618312
Adjusted R-squared	= .491083
Durbin-Watson statistic	= 2.23483
Breusch/Godfrey LM: AR/MA1	= .543948 [.461]
Breusch/Godfrey LM: AR/MA2	= 6.89992 [.032]
Ljung-Box Q-statistic1	= .648187 [.421]
Ljung-Box Q-statistic2	= .901099 [.637]
Wald nonlin. AR1 vs. lags	= 2.75958 [.599]
ARCH test	= .014672 [.904]
CuSum test	= .237743 [1.00]
CuSumSq test	= .280233 [.300]
Chow test	= 1.69030 [.255]
LR het. test (w/ Chow)	= 6.08946 [.014]
White het. test	= 15.4476 [.348]
Jarque-Bera normality test	= 1.65509 [.437]
F-statistic (zero slopes)	= 4.85983 [.015]
Akaike Information Crit.	= -5.72671
Schwarz Bayes. Info. Crit.	= -8.31953
Log of likelihood function	= 53.6771

Variable	Estimated Coefficient	Standard Error	t-statistic	P-value
C	3.13392	1.11189	2.81856	[.016]
LIULN(-1)	-.268490	.141325	-1.89980	[.082]
LICAM(-1)	-.113867	.035197	-3.23518	[.007]
LIDIS(-1)	.088848	.043858	2.02582	[.066]

Δ LIVAQUO   .607579   .399597   1.52048 [.154]

In the following tables (from 6 to 9) regions are numbered. The corresponding names are the following:

NORTH
1) Piedmont; 2) Valle d'Aosta; 3) Lombardy; 4) Trentino Alto Adige; 5) Veneto; 6) Friuli Venezia Giulia; 7)Liguria; 8) Emilia Romagna.

CENTER
9) Tuscany; 10) Umbria; 11) The Marches; 12) Latium.

SOUTH
13) Abruzzo; 14) Molise; 15) Campania;16) Apulia; 17) Basilicata; 18) Calabria; 19) Sicily; 20) Sardinia.

TABLE 6.INDIRECT TAX EVASION BY REGION (North=1-8;Center=9-12;South=13-20)

REGION	1	2	3	4	5	6	7	8
1980	26,06%	0,00%	30,96%	15,78%	17,54%	28,67%	60,27%	38,48%
1981	25,21%	0,00%	18,85%	12,04%	17,53%	20,37%	64,53%	32,93%
1982	17,86%	0,00%	16,39%	9,61%	16,92%	18,83%	94,24%	27,14%
1983	27,79%	0,00%	23,82%	10,74%	24,35%	23,36%	88,97%	32,28%
1984	15,50%	0,00%	10,13%	6,50%	15,84%	14,22%	50,41%	18,57%
1985	14,14%	0,00%	9,11%	0,17%	14,22%	18,04%	38,85%	12,67%
1986	31,91%	0,00%	22,33%	11,30%	33,27%	53,73%	76,63%	29,68%
1987	25,02%	0,00%	18,78%	1,07%	34,54%	44,71%	30,51%	26,83%
1988	31,14%	0,00%	22,08%	3,88%	37,33%	50,75%	35,23%	29,07%
1989	27,52%	0,00%	21,58%	6,03%	28,77%	57,93%	38,44%	25,15%
1990	32,29%	0,00%	28,70%	17,66%	35,35%	47,20%	35,54%	30,66%
1991	14,92%	0,00%	12,84%	5,83%	15,27%	27,20%	25,21%	14,16%
1992	8,72%	0,00%	6,23%	4,14%	10,67%	17,08%	13,27%	8,36%
1993	14,63%	0,00%	12,98%	13,50%	21,65%	32,83%	21,47%	17,47%
1994	8,44%	0,00%	5,11%	9,63%	10,55%	19,35%	9,53%	8,75%
1995	19,94%	0,00%	13,31%	9,06%	17,19%	30,05%	16,00%	15,71%
REGION	9	10	11	12				
1980	19,34%	78,96%	23,40%	37,89%				
1981	25,68%	83,02%	26,19%	34,07%				
1982	25,57%	78,98%	19,58%	28,44%				
1983	29,04%	78,99%	31,47%	40,26%				
1984	16,44%	55,65%	10,27%	34,27%				
1985	15,16%	54,43%	7,89%	17,65%				
1986	30,98%	66,77%	27,69%	32,83%				
1987	20,43%	50,70%	40,47%	22,34%				
1988	22,49%	57,13%	33,95%	25,81%				
1989	22,93%	51,52%	29,22%	27,95%				
1990	28,42%	55,00%	38,50%	36,51%				
1991	9,81%	27,14%	12,62%	23,95%				
1992	4,55%	19,09%	8,77%	22,48%				
1993	14,00%	27,85%	18,86%	26,55%				
1994	4,55%	14,80%	6,61%	9,95%				
1995	12,35%	23,54%	12,22%	15,86%				

REGION	13	14	15	16	17	18	19	20
1980	60,04%	277,09%	42,65%	101,05%	159,26%	85,61%	28,75%	32,58%
1981	74,75%	1204,70%	37,68%	72,55%	233,38%	97,05%	31,13%	33,55%
1982	56,98%	276,84%	57,15%	50,57%	167,04%	57,60%	24,97%	29,60%
1983	52,40%	172,02%	54,37%	92,54%	133,05%	85,49%	43,39%	51,42%
1984	62,75%	308,79%	40,75%	116,11%	172,72%	26,00%	31,83%	31,23%
1985	40,38%	152,39%	20,44%	44,31%	88,42%	37,52%	20,06%	17,08%
1986	57,07%	170,05%	33,44%	63,35%	184,50%	36,81%	37,45%	28,60%
1987	38,23%	126,12%	30,56%	60,25%	106,11%	60,89%	32,47%	30,45%
1988	32,92%	122,60%	38,53%	57,36%	93,58%	19,81%	20,56%	25,59%
1989	35,62%	102,47%	59,05%	46,99%	83,89%	63,45%	23,76%	22,82%
1990	39,38%	96,00%	49,07%	47,11%	66,27%	20,06%	31,87%	23,09%
1991	18,35%	54,96%	21,35%	29,50%	59,12%	18,70%	19,64%	14,21%
1992	13,72%	38,75%	11,01%	25,37%	51,90%	0,17%	13,73%	13,95%
1993	29,62%	59,01%	25,72%	30,22%	59,83%	27,28%	23,47%	17,34%
1994	15,17%	39,19%	13,32%	35,67%	47,47%	3,73%	8,71%	5,42%
1995	19,04%	42,27%	18,77%	27,10%	54,83%	15,47%	14,01%	3,80%

TABLE 7.   EXPECTED PENALTY BY REGION (THOUSANDS OF LIRE). CAMi; i=1..20

NORTH	cam1	cam2	cam3	cam4	cam5	cam6	cam7	cam8
1980	21067,9	2355,4	13943,4	2995,1	6248,4	3579,3	4391,8	6489,8
1981	20950,1	3066,2	16495,5	3810,7	7755,2	4552,6	5520,5	7981,8
1982	20404,3	3385,4	19195,0	4241,7	8911,2	5107,5	6195,3	9046,3
1983	21184,3	4166,1	22658,1	5161,6	10601,1	6117,4	7385,7	10795,2
1984	20945,4	4850,4	24992,3	5805,0	11870,5	6851,8	8361,9	12132,6
1985	20804,0	5001,0	27883,9	6223,5	12897,3	7305,9	8988,7	13189,4
1986	21008,1	5149,6	30736,1	6656,5	14112,3	7874,2	9661,8	14274,7
1987	21673,6	5989,2	33070,2	7424,4	15432,4	8680,4	10599,3	15625,1
1988	22369,3	6724,8	36408,0	8247,4	17082,9	9387,5	11568,3	17263,4
1989	23107,5	6878,2	40860,8	8629,0	18767,1	9788,3	12053,5	18800,8
1990	24234,5	8044,1	45881,2	10103,4	21623,4	11453,2	13967,1	21378,0
1991	24654,5	8941,7	49471,4	11314,1	23690,2	12846,9	15424,0	23626,6
1992	24309,6	8960,8	51312,8	11335,2	24713,1	13011,8	15439,8	24643,9
1993	23789,9	9297,2	52591,0	11852,7	25744,1	13543,7	15873,2	25573,0
1994	23359,8	9660,3	53127,8	12291,5	26236,7	13982,6	16275,4	26188,6
1995	23480,5	10171,8	56808,8	12914,6	28043,7	14557,0	17040,4	28057,0

Center	cam9	cam10	cam11	cam12
1980	5765,7	2918,1	3364,6	7692,1
1981	7196,2	3751,7	4301,1	9381,2
1982	8263,3	4103,2	4789,6	10830,3
1983	9811,7	5042,2	5861,5	13361,8
1984	10931,1	5707,8	6642,7	14917,6
1985	11971,7	6045,2	7073,6	16496,4
1986	12937,0	6406,2	7582,7	18332,0
1987	13912,1	7082,5	8448,3	20053,3
1988	15121,2	7752,7	9094,7	22222,4
1989	16313,0	7997,9	9478,9	23827,7
1990	18797,1	9284,6	11088,7	27723,6
1991	20741,6	10325,0	12394,2	30574,6
1992	21299,3	10313,2	12491,5	31854,9
1993	22103,3	10706,8	13006,7	33103,5
1994	22465,4	11104,7	13335,8	34295,3
1995	23699,7	11676,6	14027,8	36270,2

SOUTH	cam13	cam14	cam15	cam16	cam17	cam18	cam19	cam20
1980	2852,8	2373,5	5123,5	4006,3	2341,0	2844,3	4497,5	3208,4
1981	3676,2	3124,0	6385,0	5017,1	3074,3	3686,3	5640,6	4104,2
1982	4089,8	3445,9	7446,0	5741,1	3399,4	4185,6	6459,6	4592,6
1983	5016,3	4219,5	8992,9	7024,1	4196,5	5095,8	7812,4	5574,0
1984	5799,2	4713,9	10118,9	7994,0	4740,5	5845,0	8829,8	6407,4
1985	6179,9	4903,8	11082,5	8658,9	4987,4	6191,4	9516,8	6831,6
1986	6639,7	5198,1	12016,1	9404,4	5321,6	6734,1	10420,0	7300,9
1987	7389,8	5864,1	13197,6	10374,0	5934,5	7443,4	11488,2	8182,8
1988	8044,7	6450,6	14417,2	11382,2	6557,5	8135,1	12618,7	8857,0
1989	8219,1	6464,5	15468,2	12074,6	6621,5	8245,9	13524,6	9172,4
1990	9727,5	7553,7	17914,4	13968,3	7861,9	9704,6	15720,4	10758,7
1991	10808,9	8478,7	19691,1	15534,0	8951,5	10648,5	17546,8	12097,0
1992	11004,3	8477,3	20199,5	16023,0	8736,0	10627,8	17999,0	12161,8
1993	11489,0	8850,0	20943,2	16689,1	9313,1	11203,5	18849,1	12737,2
1994	11922,5	9472,4	21418,1	17066,8	9397,3	11570,6	19274,4	13166,8
1995	12735,6	9974,3	22298,4	17964,5	10160,1	12100,3	20267,4	13696,7

TABLE 8.   RATE OF UNEMPLOYMENT BY REGION (Source: ISTAT) DISi;

NORTH	dis1	dis2	dis3	dis4	dis5	dis6	dis7	dis8
1980	5,30%	2,08%	4,52%	3,37%	5,46%	4,14%	7,73%	5,67%
1981	6,59%	2,04%	5,47%	5,14%	6,34%	6,48%	6,83%	6,32%
1982	7,33%	4,08%	6,25%	6,65%	7,17%	7,29%	6,55%	6,69%
1983	8,45%	6,00%	6,94%	5,63%	8,31%	8,62%	8,20%	7,67%
1984	8,75%	6,00%	7,52%	6,40%	9,42%	8,67%	10,13%	8,55%
1985	9,57%	4,17%	7,72%	7,14%	8,71%	9,09%	8,46%	8,20%
1986	9,19%	4,08%	7,43%	6,40%	7,75%	8,94%	9,19%	7,85%
1987	9,39%	5,88%	6,96%	6,04%	7,52%	9,11%	10,54%	7,50%
1988	8,29%	5,88%	5,79%	4,64%	6,90%	8,48%	10,59%	6,29%
1989	7,52%	5,77%	4,94%	4,12%	5,85%	7,04%	10,21%	5,49%
1990	6,79%	3,77%	4,05%	3,03%	4,80%	6,68%	9,28%	4,60%
1991	6,96%	3,64%	4,08%	2,98%	4,54%	5,95%	8,92%	5,01%
1992	8,08%	3,70%	5,10%	3,24%	5,40%	6,00%	9,38%	5,15%
1993	7,08%	5,45%	5,77%	4,24%	5,35%	6,95%	9,23%	6,01%
1994	8,21%	5,56%	6,38%	4,22%	6,25%	7,16%	10,53%	6,12%
1995	8,43%	5,56%	6,17%	4,23%	5,65%	7,41%	11,69%	6,07%
CENTER	dis9	dis10	dis11	dis12				
1980	6,44%	7,55%	5,33%	8,90%				
1981	7,33%	9,06%	5,70%	9,89%				
1982	7,88%	9,97%	6,02%	9,81%				
1983	9,49%	11,01%	6,58%	9,21%				
1984	9,40%	11,80%	7,40%	9,63%				
1985	8,84%	12,72%	6,92%	10,26%				
1986	9,28%	11,37%	7,70%	10,40%				
1987	9,28%	10,82%	8,62%	10,18%				
1988	9,27%	10,60%	7,96%	10,75%				
1989	9,22%	10,47%	7,45%	12,67%				
1990	8,28%	9,23%	6,59%	11,99%				
1991	8,10%	10,17%	6,89%	11,44%				
1992	8,93%	10,12%	7,39%	11,20%				
1993	8,13%	7,08%	6,63%	9,90%				
1994	8,57%	9,17%	6,55%	11,19%				

1995	8,53%	9,73%	6,64%	12,75%				
SOUTH	**dis13**	**dis14**	**dis15**	**dis16**	**dis17**	**dis18**	**dis19**	**dis20**
1980	8,96%	9,56%	12,61%	8,44%	12,55%	15,53%	10,26%	15,79%
1981	9,01%	10,53%	13,69%	9,69%	15,06%	13,35%	11,52%	15,42%
1982	9,49%	10,24%	14,31%	10,54%	14,66%	15,09%	12,12%	16,90%
1983	9,92%	12,00%	14,79%	11,15%	13,28%	16,03%	13,96%	17,19%
1984	9,59%	10,24%	14,23%	12,22%	11,16%	16,18%	14,19%	19,53%
1985	11,02%	9,23%	14,41%	12,76%	14,40%	17,49%	14,76%	21,54%
1986	11,39%	9,85%	17,68%	14,32%	20,08%	17,95%	16,21%	20,49%
1987	10,68%	11,59%	23,25%	16,40%	19,92%	21,64%	18,19%	19,90%
1988	9,88%	12,59%	23,55%	17,15%	21,43%	24,78%	22,03%	19,78%
1989	11,93%	13,24%	22,90%	16,75%	21,12%	26,86%	23,80%	19,25%
1990	10,21%	13,97%	20,78%	15,72%	19,84%	24,64%	22,61%	19,69%
1991	10,55%	15,22%	21,41%	16,13%	20,90%	23,23%	22,98%	18,66%
1992	11,49%	15,38%	22,96%	16,19%	22,58%	21,65%	23,34%	19,16%
1993	8,87%	13,28%	19,38%	13,90%	14,88%	20,27%	19,68%	18,27%
1994	9,19%	16,41%	21,53%	15,13%	16,51%	21,53%	22,07%	19,74%
1995	9,43%	16,54%	25,26%	16,76%	17,92%	23,46%	22,55%	21,04%

TABLE 9. PERCENTAGE OF CONCEALED ULA BY REGION PERCi; i=1..20

NORTH	PERC1	PERC2	PERC3	PERC4	PERC5	PERC6	PERC7	PERC8
1980	10,26%	21,82%	14,62%	25,22%	19,43%	13,09%	23,24%	18,17%
1981	11,63%	20,40%	15,27%	27,66%	19,62%	14,49%	21,28%	18,16%
1982	12,57%	25,57%	15,50%	29,81%	19,93%	14,84%	20,64%	18,14%
1983	14,05%	28,95%	16,23%	28,11%	21,11%	15,78%	22,42%	19,12%
1984	15,02%	28,62%	16,85%	29,44%	22,13%	15,88%	24,09%	19,90%
1985	15,78%	25,36%	16,51%	30,17%	21,16%	15,97%	22,35%	19,26%
1986	16,11%	25,85%	16,27%	29,38%	20,36%	16,00%	23,18%	19,08%
1987	16,39%	28,16%	15,80%	28,19%	19,88%	15,83%	23,93%	18,53%
1988	16,20%	28,06%	14,91%	25,79%	19,35%	15,64%	24,16%	17,51%
1989	15,91%	28,40%	13,86%	25,01%	18,11%	14,84%	24,13%	16,60%
1990	16,43%	25,14%	13,47%	23,02%	17,41%	14,90%	23,97%	16,17%
1991	17,10%	24,71%	13,60%	22,71%	17,10%	14,20%	23,61%	16,61%
1992	17,89%	24,56%	14,30%	23,09%	17,63%	14,01%	23,74%	16,28%
1993	17,96%	28,72%	15,36%	25,85%	17,99%	15,08%	24,29%	17,60%
1994	18,60%	27,80%	15,47%	24,85%	18,39%	14,69%	24,58%	17,14%
1995	18,79%	27,31%	14,94%	24,45%	17,36%	14,68%	25,07%	16,67%
CENTER	PERC9	PERC10	PERC11	PERC12				
1980	18,55%	21,46%	16,33%	21,96%				
1981	18,56%	21,61%	15,85%	22,02%				
1982	18,55%	22,19%	15,93%	21,35%				
1983	19,91%	22,81%	16,36%	20,74%				
1984	19,97%	23,35%	17,01%	21,17%				
1985	19,14%	23,77%	16,46%	21,09%				
1986	19,59%	23,21%	17,24%	21,08%				
1987	19,46%	22,42%	17,54%	20,64%				
1988	19,64%	22,41%	17,30%	21,06%				
1989	19,54%	22,66%	17,10%	22,26%				
1990	19,39%	22,27%	16,78%	22,39%				
1991	19,20%	22,90%	16,91%	22,00%				
1992	19,42%	22,61%	17,07%	21,24%				
1993	19,28%	20,53%	16,84%	20,86%				
1994	19,06%	21,59%	16,23%	20,95%				
1995	18,68%	21,64%	16,02%	21,48%				

SOUTH	PERC13	PERC14	PERC15	PERC16	PERC17	PERC18	PERC19	PERC20
1980	22,50%	27,64%	31,63%	26,18%	30,33%	43,04%	31,26%	27,85%
1981	21,32%	26,77%	31,18%	26,25%	30,28%	38,56%	31,09%	26,21%
1982	21,42%	26,27%	30,65%	26,35%	29,69%	39,36%	30,86%	26,62%
1983	21,63%	27,60%	31,03%	26,75%	28,48%	40,08%	32,39%	26,75%
1984	21,19%	26,29%	30,69%	27,53%	26,86%	39,99%	32,59%	27,76%
1985	21,99%	25,37%	30,17%	27,47%	29,15%	40,74%	32,53%	28,40%
1986	22,44%	26,31%	32,51%	28,69%	33,02%	41,25%	33,62%	28,23%
1987	21,50%	27,09%	35,14%	29,54%	32,24%	43,19%	34,39%	27,30%
1988	21,13%	27,99%	35,56%	30,16%	33,14%	45,55%	36,89%	27,55%
1989	22,96%	29,25%	35,19%	30,04%	33,77%	47,88%	37,86%	27,67%
1990	22,16%	30,48%	34,96%	30,19%	33,60%	47,42%	38,14%	28,48%
1991	22,30%	31,10%	35,31%	30,31%	33,71%	46,51%	38,10%	27,70%
1992	22,54%	30,87%	35,38%	29,62%	34,56%	44,93%	37,48%	27,58%
1993	21,10%	30,03%	34,25%	28,79%	30,41%	44,76%	36,12%	27,71%
1994	20,56%	30,67%	34,37%	28,70%	30,67%	44,06%	36,37%	27,43%
1995	20,26%	30,21%	35,82%	29,19%	30,65%	44,69%	36,01%	27,67%

Graph. 1. The puzzling stability of the
underground economy in Italy (Tanzi method)

underground economy as % of Domestic Demand
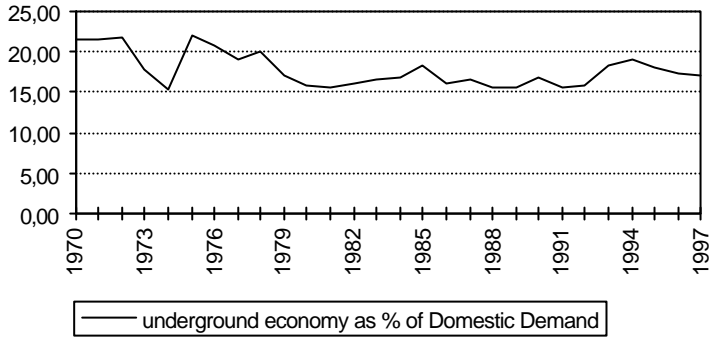
Source: our elaborations (see text)

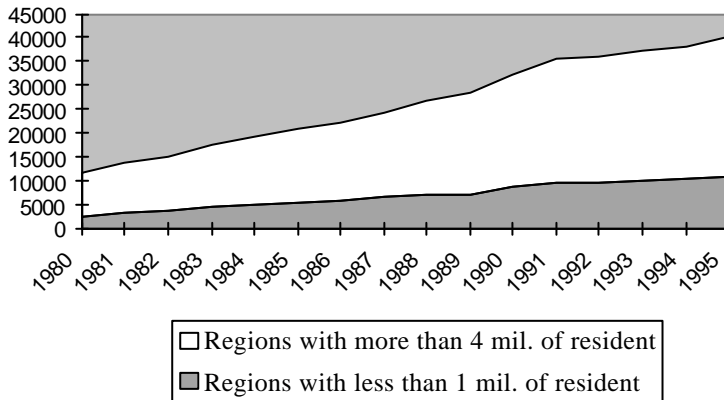**Graph. 2. Gain or loss (as % of GDP) from tax
evasion (Von Zameck method)**

Rate of nominal GDP necessary to avoid the tax loss

Rate of nominal GDP (National account)
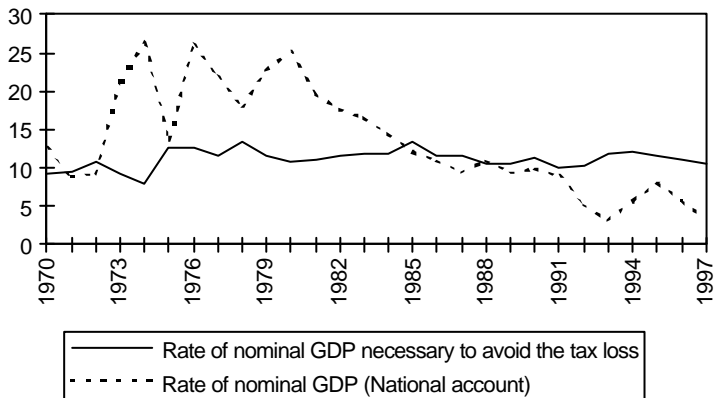
Sources: ISTAT and our elaborations (see text)

Graph 3. Relation between the rate of
unemployment and the employment (thousands
of ULA) in the public sector in the South
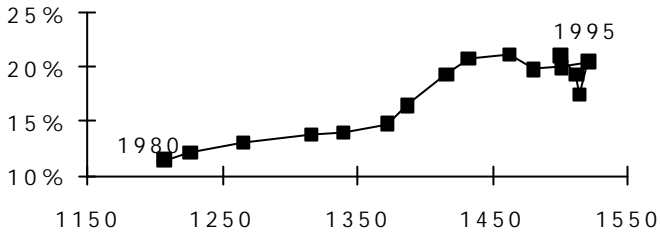
Source: ISTAT

Graph 4. Regional population and regional expected
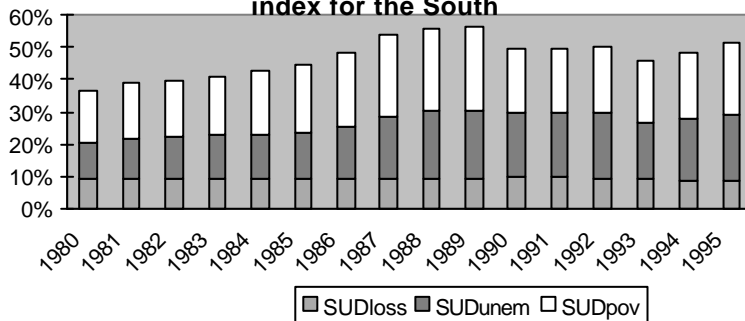penalty (average in thousands of Liras)

☐ Regions with more than 4 mil. of resident
▨ Regions with less than 1 mil. of resident

Source: our elaborations (see text)

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Graph 5. "Super misery" index for Italy as a whole (...) and for the South (-)
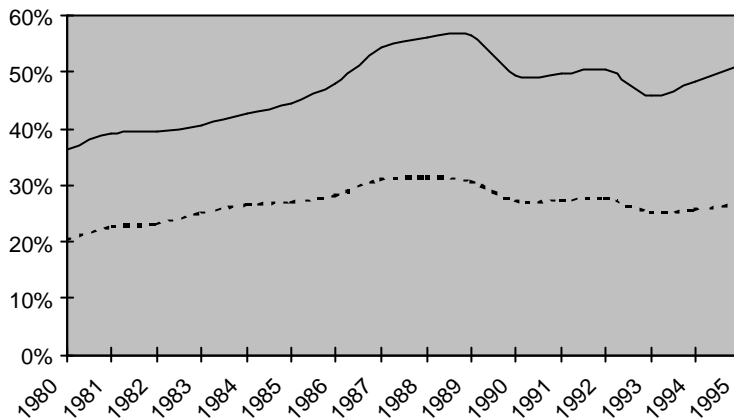
Source: our elaborations (see text)

Graph 6. Components of "super misery" index for the South

SUDloss   SUDunem   SUDpov

Source: our elaborations (see text)

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Von Zameck W., "Tax Evasion and Tax Revenue Loss: another Elaboration

of the Peacock-Shaw Approach", *Public Finance/ Finances Publiques,* 1989, vol.44, n.2.

List of Symbols

L= log
β_i= coefficients
C= currency holdings by households
M2= stock of money
TDIR= effective rate of direct taxation
WSNI= ratio of wages and salaries in agricultural and building sectors to total wages and salaries
R= net return to bank deposits
YX= real domestic per capita demand
CBAR = estimated currency holdings
CBAR1=estimated currency holdings in Tanzi's hypothesis
ULA = equivalent units of labour
IRR= irregular working positions
UND= undeclared " "
F= foreigner " "
CMA= expected marginal cost
CAM= expected marginal penalty
CAM_i: i=1,2,……..,20 stands for regions
RUL= gross unitary wage for regular worker
RUT= unitary wage for regular worker
RUT_n= unitary wage for non regular worker
IDIS= rate of unemployment (total country)
DIS_i= rate of unemployment of individual region
IVARSCO= inventories variations
IULN= non regular units of labour (total country)
IVAQUO= value added (total country)
ICUNEO= percentage wedge between gross and net wage for regular worker
Center-North: 8 (i= 1,….,8) regions in the north + 4 (i= 9,….,12) regions in the center
South (or Mezzogiorno): 8 (i= 13,……….,20) regions in the south.