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USES AND ABUSES OF ESTIMATES OF THE UNDERGROUND ECONOMY

*Vito Tanzi**

Not all economic activities take place in full view of government officials who can, thus, record them in the national accounts or can tax and regulate them. Some activities take place within the household and, because of the difficulties of measuring them, the output they produce is not measured by the national account and is not taxed. (See Thomas, 1992). Some activities are inherently criminal and do not generate an output that can be considered valuable to society even though it may generate pecuniary gains to those who engage in them (murders, kidnappings, stealing, extortion). Some activities are considered illegal in some countries and legal in others even though they generate an output considered valuable by at least a part of society (narcotics production and distribution, prostitution, gambling). These activities can be large in some countries and should be counted in the national accounts of all countries although they rarely are. Their omission affects the comparability of data across countries. The incomes generated by illegal activities are rarely taxed.¹ Many other activities, such as those associated with the subsistence or informal sectors, are estimated, rather than measured, and are generally not taxed because of the low value they generate to those who engage in them. In conclusion there are many reasons, beside the ones discussed in this paper why the measurements of national output may not be complete.

About two decades ago, a few economists became convinced that many normal economic activities, that should be measured and taxed, were taking place ‘underground’ or in the ‘shadow’ thus presumably escaping the attention of the statistical offices, of the tax authorities, and, more generally, of the government regulators. Some of these economists also claimed that, like Alice in Wonderland, these hidden activities were growing in a ‘ridiculous fashion’. (See Gutmann, 1977; and Feige, 1979).

By the late 1970s, the role of government had grown enormously, so that the level of taxation and the tax rates had risen sharply and regulations had proliferated in many countries. See Tanzi and Schuknecht (1997). These developments had created strong incentives for individuals and enterprises to go ‘underground’ to avoid taxes and regulatory restrictions. Thus, a good case could be made that what came to be called the underground economy was a phenomenon to worry about. Newspaper articles were ready to accept the

* The views expressed are strictly personal and should not be attributed to the IMF.

¹ Although, for example, the German tax authorities have tried to tax the incomes of prostitutes while the U.S. government sent Al Capone to jail on grounds of tax evasion. Some countries have tried to tax the proceeds from corruption.

notion that the underground economy had increased significantly over the years, thus casting doubts on the accuracy of official economic statistics and raising the prospect that large increases in tax revenue were possible, if only the underground could be taxed.² The economic slowdown of the 1970s was explained away by some economists as largely a problem of statistical measurement. See Feige (1989).

At that time, I was among the relatively small group of economists paying attention to this matter. I contributed a few papers to the subject and edited what, at least in English, was probably the first book on the underground economy. (See Tanzi, 1982). A method for estimating the size of the underground economy developed in one of these papers (see Tanzi, 1980), became popular with researchers and was applied by them to several countries. However, by the mid-1980 I had lost interest in the topic, partly because (a) the economics profession and the relevant institutions, including the one where I worked, were relatively indifferent to the issue; (b) I had become uncomfortable with the rather extravagant claims being made by some writers about the size of the underground economy; and (c) I was becoming progressively less clear about the meaning of what was being measured.

After a hiatus of about 15 years, I was recently drawn back to the subject. In the meantime, especially in Europe, concerns about the underground economy had moved from the universities to the national statistical offices and to Eurostat. Given the time interval that had passed, I was curious to assess how much progress had been made in the literature during this period. My perusal of the literature indicated that the methods used to estimate the size of the underground economy had not changed much, although they had become technically more sophisticated in their applications. See the survey by Schneider and Enste (1998) and the book edited by Lippert and Walker (1997). Most of the methods now in use had been applied in the various papers included in Tanzi (1982). Also, the definition of the underground economy had remained an unsettled question.³ Finally, the estimates of the underground economy obtained applying different methods to the same country have continued to be uncomfortably divergent. In fact, rather than decreasing, the range of these estimates has increased. For example, the estimates of the underground economy, expressed as percentages of GDP, provided by different studies using different methods, range from 1.4% to 47.1% for Canada, and from 6.2% to 19.4% for the United States, respectively. See Smith (1997, p. 17). In Germany the estimates range from 14.5% to 31.4% of GDP. See Schneider and Enste (1998). Therefore, a fair assessment must be that the real progress made during this period in measuring the underground economy in a reliable way has been relatively modest.

There cannot be any question that the underground economy is a real phenomenon with important implications that deserve attention and study.

² Governments often argue that they will reduce their fiscal deficits by combatting tax evasion.

³ This is not a minor or semantic issue but one of fundamental importance.

To a large extent it originates because of the activities of the government in the tax and regulatory area. It thus deserves careful analysis to explain its origin, its impact on the official economy, its behaviour over time, and its size. Obviously, the larger is its size, the more distorted are the estimates of the official economy and of the tax base likely to be. Thus, reliable estimates of its size would be useful to policymakers. Unfortunately, as long as the estimates remain as divergent as they have been, they cannot provide much of a guidance for policy and especially not much of a guide for adjusting the official GNP data. A government cannot make major policy changes on the basis of these estimates unless it can focus on one that is more believable than the others. However, the higher are the estimates, the greater should be the incentives on the part of the government to remove the factors that promote the underground economy.

1. National Accounts and National Interests

The estimates obtained for the underground economy using the various methods now available have been used by some economists to express strong judgements about (a) the accuracy of the national accounts, (b) the significance of the unemployment statistics; (c) the size of tax evasion; and (d) for other purposes. In this section I discuss briefly why national accounts data may acquire political importance and why this may, possibly, have implications for the use made of estimates of the underground economy.

Let me start with the measurement of GNP. Latin American cynics refer to National Accounts (*Cuentas Nacionales* in Spanish) as *Cuentos Nacionales*, or national tales. This play on words reflects their scepticism about the accuracy with which the official national accounts measure the value of national production. Even greater scepticism has been expressed about the national accounts of the economies in transition. This alleged lack of accuracy, of course, may simply reflect the difficulty of the task; it should be recalled that it was not too long ago that the measurement of the value of the national product was considered as impossible enterprise. The scepticism may be affected by the fact that the budgets that governments have given to the statistical offices have not been particularly generous, especially in recent years, thus making it difficult for statisticians to do a good job. However, it may also reflect the existence of strong incentives that at times discourage some countries from generating reliable data.

In some countries the official national accounts data must pass an explicit or, more often, an implicit political test because the *political* authorities have to approve the estimates made by the statistical offices before they can be released as *official* statistics. In a country I once visited, the President of the country had to give his okay before substantially-revised national accounts data could be published. This situation is probably not rare, and one hears of countries where new estimates have been made by the statistical office but have

not been released for a variety of reasons, none relating to the quality of the new data.⁴

A political interest in the official estimate of the national accounts is easily explained by the fact that important national or political interests have come to depend on the size of the official GNP. Thus, incentives have been created that push for the generation of higher, or occasionally, lower estimates. Let me mention some of these incentives.

In countries where the share of total taxes into GNP (the tax burden) is a controversial political issue, the government in power may have an interest in showing a higher or lower estimate of GNP depending on whether it wants to elicit political support for increasing or reducing the level of taxation. Thus the size of GNP becomes a debated issue. This, for example, has been the case in Peru where some opponents of the government in the private sector argue that GNP is overestimated thus showing a lower tax burden than they believe is the reality.

The estimate of GNP may determine the size of the voting power of a country, and the potential access to credit to which a country is entitled, in the IMF or in other institutions such as the World Bank and the regional development banks.⁵ By determining the per capita income, GNP determines whether a country qualifies for special, low-interest loans, as under the IDA or the ESAF programmes of the World Bank and the IMF. It also determines whether a country will be part of exclusive groups of countries such as the G-5, the G-7, the G-10, the G-22, or others. Some prestige may be derived from belonging to these groups. The GNP data also determine a country's measured economic performance over time, the share of the fiscal deficit or public debt into GNP, or some of the variables. The policymakers may thus have an interest in issuing data that help them claim that their policies have had desirable results.

Let us consider, briefly, the importance that the size of a member country's GNP has within the European Union. First, the Maastricht criteria, related to the fiscal deficit and the public debt, and the fiscal goals set by the Stability Pact, are all expressed as shares of GNP. A higher GNP makes it easier for a country to meet these objectives. On the other hand, the financial contributions that the European countries make to the budget of the European Union, i.e., the financial costs of belonging to the Union, are based on the GNP of each member state. Therefore, member countries may have an incentive to report lower GNPs. For this reason, the official size of the countries' GNPs is an important issue for the European Commission.

The European Commission, and Eurostat, have been given the mandate to promote national accounts estimates that are 'reliable, comparable, and exhaustive'. Until Eurostat gives its stamp of reliability to a country's GNP, the European Commission will consider the current official GNP data as 'provisional'. Until that time, the Commission will maintain a formal 'reservation'

⁴ I am not aware of any study that has surveyed the issue of the political independence of statistical offices even though this is surely an important issue.

⁵ When quota increases are discussed by the IMF Board of Executive Directors, GDP estimates become controversial statistics.

on these data. See Hayes and Lozano (1998). If there are underground or other activities not being counted in the official data, an adjustment in the data will be needed to remove the 'reservation'. An upward adjustment to the existing GNP data could be financially costly for countries because of the impact it would have on the contributions to the budget of the Community.

Underground activities are not the only, or necessarily the most, important reason for the existence of a potential discrepancy between official and correct GNP data. Some economists have claimed that fully accounting for underground economic activities could significantly raise the GNP of several countries. Italy, for example, would magically become one of the richest countries within the Community. The adjustment could also dramatically change the ranking of countries in terms of per capita income. Unfortunately, as long as the estimates of the underground economy continue to be as divergent as mentioned above, they will not help much in this process. Eurostat should depend on its own means to induce the countries' statistical offices to produce better estimates.

Countries should: (a) guarantee total political independence to the statistical offices so that they are under pressure to publish data that are the best they can produce; (b) the statistical offices (and also the tax administrations) should be given the means necessary to pursue their functions in the most professional and complete way possible; and (c) from the literature on the underground economy and on tax evasion, governments should learn that high marginal tax rates and particular regulations provide a fertile ground for underground economic activities. Thus, in conclusion, while the literature on the underground economy is useful, the empirical estimates are, still, much less so.

2. Abuses of Estimates of the Underground Economy

Like all output, the output produced by the underground economy requires inputs such as labour and capital. It may be realistic to assume that the output produced underground is more labour intensive than the output produced by the official economy. The reason is that the individuals who operate in the underground economy are often less educated than those who work in the official economy; also, they provide mostly labour intensive services. They use more labour-intensive techniques and, often, capital or tools borrowed from the official economy. Thus a large estimate of the underground economy implies a large use of labour by it. An important question then is where this labour comes from. A common conclusion has been that the underground economy draws labour from the official labour supply. If this were true and a country had full employment, the growth of the underground economy would imply a slowdown of the official economy.

2.1 *Underground Economy and Unemployment Rates*

Some of those who work underground may be people who could work in the official economy but, for a variety of reasons, prefer to work underground; or

people who have jobs in the official sector but carry out sideline activities on weekends, evenings, or even during official working hours. The former are part of the official labour force and are likely to be classified as unemployed. Some are retirees, receiving pensions, who are, thus, officially out of the labour market. Given the ongoing aging of the population, and the fact that retirement ages are lagging behind increases in life expectancy, retirees are likely to become an increasing share of the underground work force. Some are illegal immigrants not officially entitled to work in the country. Some are minors or housewives. Except for those in the first group, these workers are not part of the official work force. They should thus have no impact on the unemployment rate. Only if they absorb jobs that could have been taken by the unemployed in the official work force can they contribute to unemployment. Nonetheless, some of the output produced by the underground economy is produced by people who are officially listed as unemployed and who may be drawing unemployment benefits. This raises the question about the accuracy of the unemployment statistics and the relationship between the underground economy, the official national accounts statistics, and the official unemployment rate.

Some observers have argued that the high unemployment rates observed in recent years in some countries should not be a major concern because of the underground economy. In other words, according to this view, there may not be a major unemployment problem but mainly a measurement problem. This will happen if people who are in the labour force and who are officially listed as unemployed are in fact making a living in underground activities. But as we have seen the relation between the underground economy and the unemployment rate is ambiguous.

For OECD countries there seems to be a broad relation between panel data estimates of the size of the underground economy and the official unemployment rates. Over the years, the unemployment rates have been increasingly broadly in line with the reported increases in the estimates of the underground economy. Furthermore, the countries where the underground economy is estimates to have increased the most (such as Italy and Spain) are the same countries reporting the highest unemployment rates. This, of course, supports the view that the two developments may be linked in the sense that some of those reported as unemployed are actually busy working underground. This possibility has been a concern to the European Commission in part because of its implications for the measurement of GNP.

On February 22, 1994 the European Commission issued Decision 94/168/E.C. which established a uniform work programme that each member state would follow to verify the exhaustiveness of the GNP estimates. One aspect of this Decision was the use of the employment data to validate the national accounts. As Hayes and Lozano (1998, p. 3) have put it: 'If the data sources which are used to estimate production and/or value-added in the national accounts can also be used to yield an estimate of employment, then the employment estimate can be assessed for completeness against the estimates of employment available from demographic data sources. If the comparison

shows a deficiency in the employment estimates underlying the national accounts, then there are probably grounds for believing that production and value added are understated.' In this case the deficiency in the employment estimates can be multiplied by the value added per unit of employment (VAPUE) derived from the national accounts in order to evaluate the missing output.

At least two basic assumptions enter into these calculations. First, that the VAPUE in the official output is the same as in the missed output. To the extent that those who work underground have less skills, less education, and less capital than those in the official economy, this may be a questionable assumption. Second, that the demographic data sources give an accurate measure of employment. This is also a rather strong assumption. Both of these assumptions raise questions about the validity of the approach and about the possibility of translating underground output into underground employment and *vice versa*.

2.2 *Underground Economy and Tax Evasion*

Estimations of the underground economy have been used by some economists to determine tax evasion. *Mutatis mutandi* tax data have also been used to estimate the national accounts. Not too many students of the underground economy have shown awareness of the fact that there are two definitions and, thus, two measures of the underground economy: one being national production or income that is missed by the statistical offices when they calculate the value of the national product; the other is revenue not reported to, and not discovered by, the tax authorities produced in underground activities. The first measure of underground economic activities implies that the country is richer than the official statistics show. The second implies that the government receives less revenue than it should.

These two measures may or may not have much in common. It is conceptually possible to have a lot of income or revenue not reported to the tax authorities, and thus to have a lot of tax evasion, while the measurement of the national income is not understated.⁶ Of course, this does not mean that GNP is measured correctly but simply that the measurement error does not depend on the size of the underground economy.

Assume, for example, that the statistical office does not make use of tax statistics in its estimation of national accounts but it measures production and income, either from reports obtained directly from enterprises and from other sources or from direct estimates or even guesses of what it can observe. For example, agricultural income is at times measured by making estimates about annual crops and by multiplying the estimated output by the market prices. Thus, the agricultural sector could be exempt from taxes, as it is in several

⁶ Much tax evasion has nothing to do with the underground economy. For example, one may simply cheat on one's tax declaration by overestimating deductions or by underreporting income or sales under the assumption that the tax administration will not be able to discover the evasion.

countries, or it could evade taxes, as it often does, while still being estimated in an unbiased way by the national accounts.

The statistical offices make many assumptions in their attempts at measuring national production and they measure much production through indirect means. For example, they estimate the rental value of buildings or the income in the informal sector in this way.⁷ They are likely to miss the target in many cases or even to miss it by large amounts, but it is not obvious that they miss the target necessarily in a way that underestimates the value of production. Peter Reuter (1982), who analysed in detail the relationship between tax evasion and the underground economy in the United States, pointed out that only a small part of the measurement of the U.S. GDP relied on tax data.

In recent decades, and especially since 1960, the population of the industrial countries has been subjected to higher tax rates and, possibly, to more stringent regulations. Thus, strong incentives have been created for individuals and enterprises to evade taxes and especially income taxes, value-added taxes, and social security taxes, or to get around the regulations. At the same time, the tax administrations are likely to have become more efficient through the use of computers or in other ways. The attempt on the part of individuals to evade taxes has taken many forms, but it has also resulted in the creation of an underground economy.

Available estimates of tax evasion are large for many countries. Some of these estimations have been made using a currency demand approach in which taxes are important independent variable in an estimating equation. In the equations derived from this method, the increase in tax rates is shown to have a statistically significant impact on the dependent variable that often is the ratio of cash to total money demand. The expectation is that as tax rates rise, in order to evade taxes, individuals tend to conduct more transactions in cash rather than through the use of cheques. Thus the ratio of cash to total money supply rises. Making assumptions about the income supported by this use of cash, provides an estimate of the size of the underground economy. Then assuming that the average tax rate for the underground economy is the same as that for the official economy, an estimate of tax evasion can be calculated. See Tanzi (1980 and 1983). Several assumptions are necessary to make these calculations. It should be obvious that the estimation of the underground economy so derived is different from the one that implies a downward bias in the measurement of GNP. Also, the tax evasion so estimated is not necessarily a measure of a country's total tax evasion but of the tax evasion caused by the underground economy defined as described.

Some of the available estimates of tax evasion do not come from regression equations but from fiscal audit data.⁸ This alternative method, first developed by the U.S. Internal Revenue Service, attempts to determine unreported income and tax evasion through an intensive audit of a large sample of tax

⁷ Of course, the tighter is their budget and the less efficient is their use of resources, the less effective they will be.

⁸ There are other ways of estimating tax evasion, but some of them make use of the national income data to compare reported incomes or sales with those estimated by the statistical offices.

declarations and of individuals who have failed to file a tax return but can be identified through other sources. If well done, this method can provide a good estimate of tax evasion. However, it is not necessarily the tax evasion connected with the underground economy.

The 1994 Decision of the European Commission mentioned earlier required the member countries to assess the possibility of using fiscal audit data to validate GNP. Apparently, this method has been used profitably by France. See Hayes and Lozano (1998), p. 5. The European survey would cover countries where taxes are significantly used in estimating the national accounts and countries where little use is made of them. Two problems are worth mentioning. First, in some countries, confidentiality laws prevent the use, by the statistical offices, of tax data available to the tax authorities.⁹ Second, in some countries, such as the United Kingdom, random audits, necessary to get a representative sample, are forbidden by law. Furthermore, in some countries such as Italy, because of the complexity of the tax laws, the results of fiscal audits are often challenged in the courts by the taxpayers. Thus the question arises as to whether the *initial* result of an audit, or the final decisions, after various administrative and judiciary steps would have been exhausted, should be used to determine unreported income.

3. Concluding Remarks

This short paper has surveyed some issues in the literature on the underground economy putting special attention to the potential uses of the results obtained from studies that attempt to measure the size of the underground economy. It has emphasised that some measures of the underground economy relate to economic activities that are presumably not captured by the statistical offices that prepare the national accounts. Other measures, such as those made using currency demand equations or through tax audits, relate much more to incomes or transactions not reported to the tax authorities. These two measures may have little in common with each other although they may cover overlapping phenomena.

The paper has called attention to the increasing number of incentives which may influence a country to report inflated or deflated estimates of GNP. Some of these incentives may neutralise each other. The existence of underground activities is an indication that the official estimates of GNP *may* not be correct. However, it, by no means, proves that this is the case. A distressing aspect of the literature is the wide range of estimates, for the same country, obtained using different methods. These ranges do not give one great confidence in the estimations and leave one confused as to what to do with them. If some of the estimates were correct, they would imply that many countries are much richer than normally believed.

The paper has also discussed briefly the relationship between the underground economy on the one hand and the unemployment rates and tax

⁹ The estimation of the tax gap in the United States has been done by the Internal Revenue Service.

evasion on the other. It was shown that the current literature does not cast much light on these relationships even though the existence of large underground activities would imply that one should look more deeply at what is happening in the labour market and in the administration of taxes. In conclusion, we are still far from the time when the results of studies of the underground economy can have immediate consequences for policy or for the adjustment of various macroeconomic variables.

International Monetary Fund

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