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Measuring the Informal Sector and the Non-Observed Economy (NOE): Use of mixed surveys - direct and indirect measurements
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Since the concept of the "informal sector" was first introduced in the International Labour Organisation's 1972 report on Kenya, the question of how to measure it statistically has regularly been raised as economic research fleshed out the concept and the definition became more precise. The work described in this paper was undertaken with the aim of defining the role played by the informal sector in the recession which affected many developing countries at the end of the Eighties and of identifying any causal links which might exist between them. In other words, is the informal sector capable of softening the blow of recession, that is, to a certain extent, take over from the modern sector in creating wealth, given that that sector is less able to do so in a recession and under the adjustment policies that have been put into place?

Research on the statistical measurement of the informal sector has developed in tandem with improvements in our understanding of it. Estimates are now made on the basis of both indirect (national accounting) and direct (the results of household or establishment surveys) sources.

The main ways of measuring the NOE and the informal sector: direct and indirect measurements

Indirect estimates of the NOE including the informal sector :

1. Comparing accounting balances taken from the national accounts

The first macroeconomic evaluations of the informal sector were carried out by national accountants who were attempting to determine its importance to the economy by estimating its relative weight within the GDP, which might explain the origins of part of the country's wealth.

This type of indirect estimate is based on comparing various aggregates and accounting balances (particularly by examining the input-output tables (IOTs)). Since direct statistical information on the informal sector is lacking, its precision is often questionable.

The final balances are often the results of estimates based on "expert opinion", with the experts in question being those of the country's national accounting system. This means that the final figures are internally consistent, as they have come from the national accounts, but they are not scientifically valid as they are not based on statistical work.

2. Labour input method:

The statistical method is a specialised extension of the indirect methods used by national accountants. It was developed in-depth by ISTAT, the Italian national statistical institute. Italy has been using this method to calculate its GDP since 1987.

The basic idea underlying the method is that a country's production, and therefore its GDP, should not be estimated only from traditional sources (measuring industrial production and services on the basis of enterprise surveys) but also on the basis of data on employment.

Information on employment and the population (population censuses, labour force surveys (LFS), administrative data on employment, etc.) are considered by their very nature to be a better reflection of reality than direct observation of production. That is, the extent of underestimation is smaller.

Using these employment data indirectly by applying them to productivity coefficients for the manufacturing sector (by sector and by branch) results in an estimate of overall production which is, systematically, greater than the estimate based on enterprise surveys. The non-observed economy is considered to account for the difference.

The basic outline of this method is as follows:
* Determination of the total number of hours worked in the form of "full-time equivalent jobs".
* Determination of the labour input at constant compensation during the base period, including employers, the self-employed, and employees.
* All sources of information are used when determining the labour input so as to estimate the components of the labour market, including the underground economy and the informal sector.
Data on employment comes from two main sources: enterprise surveys (enterprise side), and household surveys (household side: demographic censuses and surveys, LFS, etc.).
The results from these two kinds of surveys are considered to be a good reflection of reality, thus making it possible to re-estimate production.
The two sources of information are compared by determining which employment estimates are more exhaustive, and therefore considered to be more reliable.

* The resulting final estimate of employment is applied to the estimates of value added (and thus to GDP) calculated using conventional methods (production, consumption and/or income approaches).
* The value added by employment in the underground economy and the informal sector is estimated by applying a specific method ("input of labour × average per capita values") to each branch of activity and, where possible, breaking it down further by the size of the production unit.

* Lastly, overall value added is obtained by aggregating the results obtained for each branch and size.

* N.B.: In compliance with EU Directives in this field, any data on illegal activities which might be obtained are not included here.

Direct estimates of the informal sector :

1. Use of enterprise surveys – establishment censuses/surveys:

The first attempts at making statistical measurements were carried out by comparing establishment censuses and surveys with the goal of laying a foundation for surveys which would then provide more reliable measurements of the concept being studied.
A census consists of locating all informal activities (fixed locations and itinerant or home-based businesses). A sample of these is then taken and used to carry out a survey of the owners of the establishments.

There have been several conceptual and organisational problems with this approach:
- coverage was not exhaustive (the sampling frame did not take into account itinerant activities);
- cost was often extremely high considering the quality of the results (particularly when they are based on an establishment census, whether formal or informal)
- and lastly, it was extremely difficult or even impossible to update the information, short of carrying out a new census.

This type of investigation therefore revealed both its conceptual and its financial limits.
That is, using it implies that, at the same time, other specific surveys on the parts of the informal sector which it fails to measure also be carried out, an obvious shortcoming of the system.

Nonetheless, the work done laid the groundwork for other methods which would target questions at both households and establishments.

2. Using mixed surveys:

These methods include the characteristics of household service. They have the same properties, particularly with regard to precision (the degree of precision may vary, but can always be measured using statistical tools). Moreover, they provide an *exhaustive field* of the area being studied, while, at the same time, they are considerably *less expensive* than any census.

For this reason they are a methodological improvement over other systems.

Some of these surveys propose to analyse the NOE employment via a kind of LFS specifically conceived to focus on informal employment. ILO has thus developed a specific mixed survey. Some other types of mixed surveys propose to combine an employment approach with an enterprise (establishment) interview ; that is what is called the double "HH-enterprise" approach. The first survey successfully implemented was the Mexican survey (1989). At last, some of the mixed surveys analyse the phenomenon in terms of **employment**, **production** and **consumption** in the geographical area being studied. One example of this is the 1-2-3 system, that is the type of mixed survey whose implementation has been regularly supported by Eurostat and the European Commission since the mid nineties.

Objectives of 1-2-3-type mixed surveys

This system is used in order to achieve two objectives:

* a *macro-economic* objective, by attempting to provide information which might be of interest to both economic modellers and national accountants concerned with defining a good method for including the informal sector in the national accounts. This objective is achieved by measuring *employment* and *informal production* together with the *consumption* of goods and services provided by the informal sector.

* a *socio-economic* objective, by describing the conditions under which informal activities are carried out, thus making it easier to devise policies in support of small or micro-enterprises as part of national or international projects. This analysis also makes it possible to relate this informal activity with the issue of poverty.

Three types of modules are used to achieve these two objectives. They are distributed one after the other to the households who live in the area being studied:
- the first module measures employment, stating whether it is formal or informal;
- the second module measures production generated by the informal activities which were detected during the first stage;
- the third module analyses household consumption in relation to its origin and once again makes a distinction between demand on the informal sector and demand on the modern (or formal) sector .

The concepts used in the 1-2-3 system use the international definitions of employment and of the informal sector

The informal sector covers all activities which fall completely or partly outside national rules, insofar as they are not registered in one or more existing administrative registers.

The detailed definition of informality used for 1-2-3 surveys is based on the rules and criteria laid down by international organisations:
1. the 1993 SNA (rev. 4) published by the United Nations Statistical Office;
2. the ILO resolutions on the operational statistical definitions of employment[1] and of the informal sector[2].

Consequently, the 1-2-3 system uses the following definitions for informal activities[3] :
"any active person who is employed (within the meaning of the 1982 ILO resolution) is considered to be the "head of an informal production unit" insofar as, in their main or secondary activity, as an employer or for their own account, they carry on an activity that is unregistered and/or has no formal written accounts. "

This definition therefore covers the following two concepts[4]:
- the concept of *unincorporated business*, according to the terminology recommended by the SNA93 (that is, the production unit of the institutional sector of households), defined by the absence of formal written accounts;
- the concept of *informality* according to ILO terminology, by dint of non-registration.

The size of the establishment, which is also one of the criteria in the definitions laid down by the ILO, has not,

[1] Resolution concerning statistics of the economically active population, employment, unemployment and underemployment, adopted by the Thirteenth International Conference of Labour Statisticians (ICLS), ILO, Geneva, 1982.
[2] Resolution concerning statistics of employment in the informal sector, ILO, Fifteenth ICLS, Geneva, 1993.
[3] See Backiny and Bardon, "Concepts et indicateurs du marché du travail et du secteur informel", in Série Méthodes No 2, Afristat, December 1999, 63 p.
[4] See Bardon R., "The 1-2-3 survey : principles, definitions and operations – The case of Yaoundé and Antananarivo", presentation at the seminar "Le secteur informel dans les pays du bassin méditerranéen', ISTAT, Rome, MEDSTAT programme, 3 to 5 May, 1998

up to now, been used in any implementation of the 1-2-3 system. However, this variable is included when questioning heads of enterprises, so there is nothing to prevent it being used where necessary.

From this it follows that the informal sector as measured by the 1-2-3 system is the set of informal production units. It is therefore consistent with the principles of national accounting set out in the SNA93, which, in the end, makes it easier to include it in any given country's national accounts.

NB : as far as possible the questionnaire of the 1-2-3 survey permanently refers to the principles proposed by the

Content: the main steps in 1-2-3-type mixed surveys

1-2-3 surveys are carried out in three phases. The goal of the first phase is to identify households' economic activities and employment, and, more specifically, how these are related to the informal sector, which is the main focus of the study.

The main stages of the survey.

The proposed method is based on a system of surveys which combines households and informal producers. The system can be broken down into three phases:

- 1. The **first phase (employment)** is a survey of households, determining the supply of labour and the potential for the individuals to become part of the labour market: the structure of employment (participation rate, unemployment rate, pay, professional mobility) and working conditions (premises, working hours). It also allows us to identify the **heads of Informal Production Units** (IPU), who are the source of informal activities and who will be interviewed during the next stage. For the purpose of determining this sub-population, questions designed according to the definition of informality adopted (cf. paragraph 2.3) will make it possible to identify the individual who is the head of a given IPU.

- 2. The **second phase (informal sector)** uses a survey of those involved in the informal sector to determine the components of the IPUs' economic activities. It is concerned in particular with investigating their behaviour in matters of employment, prices, production, investment and competition. It also offers an analysis of how the informal sector fits into the national economy (study of inputs, outputs and customer structure). Finally, it helps in drawing up the national accounts, supplying information for estimating the informal sector (and more specifically the sequence of … production account, etc., until the capital account).

- 3. Finally, the **third phase (consumption)** analyses households' consumption, making it possible, more specifically, to pinpoint the origin of the demand addressed to the informal sector. This is attacked from two different angles: (a) estimating the amount of expenditure per type of product of the various categories of households, and (b) assessing the respective weights of the formal and informal sectors in households' expenditure.

Phases 2 and 3 therefore look at the informal sector both from the perspective of supply, as a component of the productive sector, and from the perspective of demand, expressed as the proportion of consumption satisfied in the informal sector. Phases 2 and 3 enable us to reconstruct the link between the informal sector and the productive sector as a whole (Where do the informal sector's inputs come from? For whom is its output intended?). This provides us with material for making macro-economic estimates that will make it easier to formulate national economic policies.

Action relating to the NOE implemented by EC-Eurostat: the principles.

Eurostat has been looking at the problem of the NOE and how to measure it statistically since 1995. It has chosen to focus, insofar as it is possible, on two of the methods described above:
- an indirect method - the Labour input method ;
- an indirect method - mixed surveys, more specifically, the 1-2-3 system.

The reasons for this decision were the following:

1. In existing national statistical systems (NSS), the Labour input method has proven to be the indirect measurement system which provides a good performance with little cost.

2. Provided that all national sources of information on employment and production can be used, the labour input method can provide results at a lower cost, since it does not require any additional survey to be carried out to estimate the NOE.
Using this method is even more effective, since the NSS has a considerable number of sources of information on employment and production (statistical or administrative sources) at its disposal. Moreover, the amount of detail provided by this information will make the method even more effective.

It also makes it possible to provide estimates of the informal sector and underground activities.

3. Notwithstanding the above, using mixed surveys, and the 1-2-3 system in particular, may prove more effective, particularly where:
- information on employment and production, whether from statistical or administrative sources, is limited in a given country;
- information which does exist is a poor quality: infrequent or one-off surveys, lack of details, poor reliability with regard to carrying out statistical surveys, limited updates of administrative sources (files of employees or enterprise/establishment registers).

Using the 1-2-3 system does however take more effort than any indirect method, as it requires a specific survey to be carried out.

Moreover, it only measures the informal sector proper, which it completely compartmentalises, according to the concepts in the national accounts. And it does not measure underground activities.

4. However, it is possible to keep down the cost of carrying out a mixed survey which looks at employment, informal sector production and household consumption. As it is made up of modules that apply to households and concern employment and consumption, mixed surveys can, by definition, quite easily find a place in a pre-existing system of national surveys (employment surveys, labour force surveys, household budget surveys, household consumption surveys).

5. The 1-2-3 system produces the most complete kind of mixed survey, as it looks at employment, production and consumption in the informal sector simultaneously.

6. Thanks to its modular design, the 1-2-3 system can be used flexibly. So it can be integrated into national statistical systems according to the surveys that are currently implemented on a regular base (LFS, HBS, HCS, and even census of population, agricultural census, etc.).

Actions relating to the NOE implemented by the European Commission: the projects.

These concern the two fields of public statistics which focus on improving knowledge of the non-observed economy in a country or region, i.e.:
- the national accounts, which should, as from now, (try to) take the NOE into account when being compiled;
- statistics on the enterprises and/or households which are most directly affected by the statistical measurement of informal activities.

From these starting points, the action taken covers audits and balances of work which have already been completed. And, to improve existing situations, it also makes available technical assistance and expertise.

At present, the NOE is (was/will be) being addressed by **7 European projects** in **40 countries** in Africa (sub-Saharan Africa and the Mediterranean countries), Asia (China, Bangladesh, ASEAN) and in TACIS region. As for the **1-2-3 system**, it has been (will be) implemented in **21 countries.**

From 1995, **TACIS programmes** had some specific components on NOE in 9 out of 12 TACIS countries. These programmes realised a country assessment on NOE, and proposed some tools (more specifically the Labour Input Approach) in order to insure the exhaustiveness of the NA, according to the SNA93 directives. For the time being, nothing was envisaged to use the mixed surveys in order to better estimate the informal sector.

Other passed or on-going programmes:

Western Africa: PARSTAT-WAEMU Project (1998-2002)

A number of lines of action have been planned within the framework of the multilateral surveillance carried out by the WAEMU. These are intended to ensure the convergence of member states' macroeconomic policies and performances. For example, one of them is a proposal for a common methodology for calculating GDP. With a view to this, the 1-2-3 surveys (actually only parts 1 and 2 in this case) have been implemented in the seven countries of the WAEMU in 2002-03, and were launched again recently in most UEMOA countries.

Mediterranean countries : MED-NOE Project (1999-2002)

This is a component of the MEDSTAT programme. It was decided on as a result of the conclusions of a 1997 task force. The main goal concerns harmonisation and attaining exhaustiveness in the various national accounting system of the countries in the region. To achieve this, particularly in the household sector, it was decided to draw up indicators which would be capable of evaluating as precisely as possible the NOE and its various components (illegal/underground/informal sector).

To this end, in addition to the work more specifically related to compiling national accounts, it was decided to carry out specific surveys on the informal activities among households in any countries which volunteered. Up to now, the 1-2-3 system has been implemented and/or scheduled in the three Maghreb countries (Morocco, Algeria and Tunisia), and mixed surveys similar to the 1-2-3 system had been scheduled in Palestine (never achieved because of the political situation).

A follow up of the activities was decided in the on-going MED-NA II programme (06-09).

ASEAN Statistical programme (08-10):

It will be launched soon, with similar objectives than the ones of the MED-NOE programme, with the final purpose to facilitate the regional integration, by facilitating the harmonisation of regional statistics (especially GDP).

Other national programmes:

They were realised in China (1998-02), Bangladesh (02-03) and Madagascar (1995-2002) during the same period, with similar objectives.

Conclusion

1. The action regarding the NOE taken at the instigation of the Commission, has become well known for advocating the application of original methods whose effectiveness has been proven **–** the labour input method and the 1-2-3 system - and which are intended to measure an economic concept which is present in all developing countries but which, even today, remains practically *terra incognita* in statistical terms.

2. **Using an indirect method** such as the **labour input method** is recommended for countries where the structure of the labour market and statistical production are relatively comparable with those in the OECD countries.
It makes it possible to provide estimates regarding the informal sector and the underground economy.

3. Using this method **(labour input apporach**) is also recommended for countries which are not willing (or able) to commit additional funds to measuring the NOE, as it is very inexpensive (nothing more than possible technical assistance is required).

4. For **countries which lack the capacity to produce statistics**, particularly in the fields of **enterprise and household surveys**, the Commission **recommends** using a **1-2-3 system**, or a similar mixed survey system.
Moreover, incorporating such a mixed survey system into the NSS at regular intervals (for example, every three or every five years) would be desirable.

Applying this system does not preclude the use of complementary methods, to provide estimates on the underground economy and on illegal activities.

5. The 1-2-3 system, or any other mixed system based on the same principles, has the following **advantages**:

- It studies informal employment on the basis of a household survey. This is the **best approach** (most value for money) **to outlining a system of statistics on employment** in developing countries. More generally, provided that a survey is carried out every year, the 1-2-3 system can monitor activity over time, a *sine qua non* for understanding the macroeconomic dynamics of any given country.

- It is the best way to construct a representative sample of informal production units, and, therefore, **to define the informal sector** in a way that is as **compatible** as possible with the **concepts of national accounts set out in the SNA93**.

6. Work on the NOE in general, and on the informal sector in particular, by implementing the labour input method and the 1-2-3 system, as recommended by the Commission, contributes to providing a view of the GDP of developing countries that is closer to the reality on the ground. This is therefore directly in line with the Directives put forward by the United Nations along with the implementation of SNA93.

It has now been established that the informal sector proper can be analysed effectively by using a suitable mixed survey system which looks at both employment and production, and the 1-2-3 system is the most advanced example of such a system.

Sample schedule for carrying out work on the NOE.

* Year 0 (cf. base year for national accounts): 1-2-3 mixed survey.

- Direct estimate of the informal sector.
- Use of the data from phase one ("Employment") to help calculate coefficients for estimating underground activities.

* Years 1 to 4: the implementation of an employment or labour force survey (LFS). Use of the labour input method.

- Estimates of the informal sector and underground activities using the labour input method, based mainly on the employment survey.

* Year 5: implementation of a new 1-2-3 mixed survey

- Direct estimate of the informal sector.
- Use of the data from the 1-2-3 survey to adjust the information on the previous years.

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