A SYSTEMATIC APPROACH TO THE HIDDEN AND INFORMAL ACTIVITIES

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ABSTRACT

The paper proposes a method to deal with the non-observed economy in compiling national accounts. The first step is to identify the different types of non-observed activities and to determine its traces in the observation. The second step is to come up with an explicit estimate of each of the distinguished non-observed activities. These, together with the basic statistical data form the starting point for the compilation of the national accounts.

Key Words: non-observed economy, illegal activies, underground activities, commodity flow method, social accounting matrix, national accounts

1. INTRODUCTION

The subject of this paper, the Non-Observed Economy, applies to the statistical perspective of a range of topics: from under-coverage an underreporting at one side, to household production, organised crime and different forms of fraud at the other side. A national statistical office is expected to take a position. First of all because these topics affect the perception of the users of statistics on the quality and reliability of our statistics in general. And related to this, because the users specifically ask for information on these topics. Therefore it is important to highlight that

1. many phenomena can be estimated, but not all estimates can be based on reliable statistical observations;
2. the estimation of tax-evasion and fraud are not part of the core business of most statistical offices.
3. the national accounts aim at a complete and exhaustive description of the economy, as defined by the SNA'93 or the ESA'95 the European Community's extension of it.

Nevertheless, the users of our statistics show a clear interest in statistics on (parts of) the non-observed economy, because of its possible impact on matters like the labour market, consumption, investments, the income distribution and related matters (poverty), the relative economic importance of crime, taxes, imports and exports and the capital markets. Further, the extent to which the non-observed economy is included in the national accounts' estimates is generally considered as a measure of quality.

In this paper a method is proposed to deal with the non-observed economy in compiling national accounts in a systematic way. It is assumed that the main method used in compiling the national accounts is the *commodity-flow approach*. However, the proposed systematic approach also holds when the expenditure method or the income method is dominant.

2. CONCEPTS AND DEFINITIONS

The non-observed economy is the total of all relevant economic activities that are hidden from statistical observation. This is something else than the hidden and the illegal economies (see also Van Eck and Kazemier, 1988 and 1989). Those comprise of the activities that are hidden for reasons related to fiscal law and social security regulations (tax-fraud, tax-evasion) or for reasons related to criminal law (illegal activities). Of course there is overlap, but one can also think of activities that have nothing to do with criminality or tax evasion, but that are still unobserved, for example the production of small informal enterprises. On the other hand there is a good chance that part of fiscally hidden or even criminal activities are covered by statistical observation, for example the production of prostitution. Therefore, it is useful to start with a conceptual framework that illustrates the phenomena under discussion.

The production boundary
Production is defined in chapter 6 of the SNA. According to section 6.6 of the SNA, production is an activity in which inputs are used to produce outputs. Inputs are restricted to labour, capital, goods and services; outputs are goods and services. Economic analysis of production, however, generally does not apply to all kinds of production, but is mainly restricted to "economic production". Economic production is production carried out under the control

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[1] The views expressed in this paper are those of the authors and do not necessarily reflect the views of Statistics Netherlands.

and the responsibility of an institutional unit (SNA 6.15). This excludes purely natural processes, which happen without human involvement or direction, like the unmanaged growth of fish stocks in international waters and the unmanaged growth of non-cultivated woods. Activities that are productive according to this definition satisfy the conditions of the third party criterion of Hawrylyshyn (1977), interpreted as "activities which can also be performed by others to obtain the same results". Examples of non-productive activities are sleeping, eating and drinking.

The national accounts are even more restrictive. They also exclude "household activities that produce domestic or personal services for own final consumption within the same household, except for services produced by employing paid domestic staff" (SNA 6.17). There is one exception: the services of owner occupied dwellings (SNA 6.29). Own-account production of goods within households is included: e.g. the production of agricultural products, the production of other primary products including the supply of water, the processing of agricultural goods and other kinds of processing. However, if there is strong evidence to believe that the size of this kind of production is quantitatively unimportant, one can neglect it in practice (SNA 6.24). Do-it-yourself activities fall outside the production boundary of the SNA, except for major do-it-yourself activities in the case of dwellings.

No exceptions are made for illegal and concealed production. Both types of production fall within the production boundary, as long as their legal or non-hidden counterparts do. So, both should be estimated and included in the national accounts statistics.

Illegal, underground and informal production
Illegal production is "(a) the production of goods or services whose sale, distribution or possession is forbidden by law; (b) production activities which are usually legal but which become illegal when carried out by unauthorised producers; e.g. unlicensed medical practitioners." (SNA 6.30). For many countries the most important illegal activities (in terms of value added) are production of and trade in drugs, prostitution, the production of (some kinds of) pornography, gambling without license, the production of and trade in copies of films, sounds-records, books and computer software without paying copyrights, smuggle, theft, bribery and blackmail. Part of these types of production fall within the production boundary of the national accounts. However, for practical reasons and a severe lack of data, it is not included in the national accounts estimates of many countries. A general methodology to measure illegal activities is not yet available. Examples can be found in Van der Werf (1997), Groom et al (1998) and Rey (1997).

Underground or concealed production is legal production which is kept hidden for public authorities (SNA 6.34). In general, the most important reasons to keep activities hidden is to avoid the payment of taxes or the payment of social security contributions. Other reasons can be the evasion of legal standards with respect to, for example, minimum wages and safety or health standards, or the sometimes legal obligation to complete statistical questionnaires or other administrative forms. The latter reason often coincides with one of the other reasons to commit fraud.

Informal production is the production of the informal sector. The term "informal sector" is defined by the ILO and consists of units which produce goods and services with the primary objective of generating employment and incomes to the persons concerned. Formal employer-employee relations generally do not exist and if they exist, they are mostly based on casual employment, kinship or personal and social relations (SNA Annex 4: (ELO) 5.1). For statistical purposes the informal sector is defined as the group of production units which form part of the household sector. (SNA Annex 4: (ELO) 6.1) In every day practice, however, the informal sector is defined as the group of self-employed plus the production units below a specified level of employment (small enterprises) .

Non-observed activities
Non-observed activities are activities that fall outside the statistical observation. The main reason that activities remain unobserved is that the units that perform the activities are not included in a business register or other (available) register. In many countries only the large enterprises are registered and observed in enterprise statistics. The smaller enterprises are generally not included. Secondly, some kind of activities, for example illegal activities, are deliberately made impossible to measure. The size of these activities can only be estimated from secondary sources. A third reason for the existence of an non-observed economy is that the traditional survey tools are not perfect (non-response, under-reporting), that business registers are not always complete and up-to-date (under- and over-registration) or that the local law does not permit direct measurement for privacy reasons. Table 1 contains a simplified two-dimensional classification of the non-observed economy.

Table 1. The main reasons for the existence of a non-observed economy.

	Formal production	Informal production	Underground or concealed production	Illegal production
1. Not registered		X		X
2. Non-response	X		X	
3. Under-reporting	X		X	

3. THE COMMODITY FLOW METHOD

There are several methods used in compiling National Accounts. The commodity-flow method is recommended by Statistics Netherlands to countries in transition. Luttikhuizen (1997) called it the bottom up approach. It starts with a co-ordinated survey design for the business statistics. In such a design data is collected for each branch of industry. For smaller enterprises sometimes an sample survey is used. Larger enterprises, however, are all included in the survey. The exact breakdown between larger and smaller enterprises may vary from country to country, depending on the number of enterprises in a country and the resources available at the national statistical offices.

To be sure that the returns of the survey are correct, a micro editing procedure can be applied. In this procedure the information of the individual unit is analysed and checked for internal consistency. Further it is compared with the outcomes of the branch as a whole (by means of averages and ratios) and previous information from the same enterprise (by means of growth-rates of the main economic indicators like turnover, paid wages and salaries and intermediate inputs). If information is lacking or wrong, it is checked at the enterprise. If this is impossible or if it yields unsatisfactory results, the missing or wrong information is imputed using data from other enterprises.

For large samples, of for example medium- and small-sized firms, macro-editing is a good and cheaper alternative. In that case, the outcomes of the total survey are analysed, and only major errors are corrected. The survey results after macro-editing are in general as reliable as the results after comprehensive micro-editing. The main reason is that relatively small errors often cancel out and therefore only have a minor impact on the total outcomes.

Important is an accurate use of weighting schemes and grossing-up procedures to end up with estimates that are valid for the economy as a whole. This aspect is, among others, described in manuals of Statistics Netherlands and in a publications of international organisations.

After the results of the survey have been calculated and raised, the next process starts: partial integration. In that process all relevant information is used to come up with a final estimate of the production structure of each branch. Remaining problems, probably not sufficiently dealt with, are under-registration, underreporting of income or turn-over and overreporting of costs or intermediate consumption. For these, several additional methods are available (Kazemier, 1993).

4. SOCIAL ACCOUNTING MATRICES

Besides information on production, international trade and financial flows, much more information may be available, which can be of use in the compilation of national accounts. One may think of information on the labour market (labour force surveys), on household consumption (expenditure surveys), on income (income statistics, tax-returns), on time-use (time-use surveys), or just demographic data (censuses). Of course, these data can be used in an ad hoc way, for example to estimate the size of the non-observed activities or to gross up the results of production statistics, as is advocated in the previous chapter. But what is really needed, is a framework in which this kind of data and the core data used in the commodity-flow method can be put together in an integrated way.

The "System of National Accounts" presents such a framework: a Social Accounting Matrix. Essentially, a social accounting matrix is the presentation of the National Accounts in matrix format. But it can be more than that. It can be used to link data on socio-economic phenomena (such as employment, income distribution, education and leisure), environmental data (for example, on pollution, CO_2-emissions and others) and demographic data, with the traditional macro-economic indicators like Gross Domestic Product and Net National Income. Examples of these are the NAMEA and the SESAME. The first links national accounts data with environmental data (Keuning and De Haan, 1996; Keuning and Timmerman, 1995); the latter is a general framework to link national accounts data with all kind of other data to show the various aspects of welfare and well-being like income and poverty, social inclusion, education, health, leisure et cetera (Van de Ven, Kazemier and Keuning, 2000).

There are important similarities between a social accounting matrix (SAM) and an input-output table. An input-output table is a schematic representation of all flows of goods and services in the economy. Each row presents the destination of the goods and services produced in each branch; each column presents the goods and services, imports and primary inputs used in each branch.[2] The corresponding financial flows go the opposite direction. Consequently, each row of an input-output table can be considered as the income-side of the production-account of a branch of industry, and the corresponding column as the cost-side of that account. A social accounting matrix is just an extension of an input-output table, combining the production accounts, the income (distribution) accounts, the expenditure accounts and capital accounts within one all-embracing matrix.

Each account in a SAM can be broken down by a different classification. Traditionally, the production accounts are broken down by industry (and type of commodity), the income (distribution), expenditure and capital accounts by institutional or functional sector. In the Dutch case the SAM is supplemented by a specification of the investments (broken down by industry of origin and destination, and by type of fixed asset) and the financial accounts (broken down by institutional sector and by type of financial asset).

Up till here a SAM is little more than an alternative way of presenting the full system of national accounts, although the constraints of the system become more clear then in the traditional T-accounts: each row and corresponding column must sum up to the same amount. In terms of input-output tables: outputs must equal inputs. This transparency is one of its strengths. In the every day practice of national accounting it is not unusual that, after filling in all the accounts up to the financial accounts, a non-explainable statistical discrepancy pops up. The SAM is a helpful tool to trace the cause of this.

The real strength of a SAM, however, becomes available when one goes beyond the traditional national accounts. The introduction of alternative (sub)classifications, alternative units of measurement and alternative definitions (even an alternative production boundary, see Kazemier and Exel, 1992) is quite simple. Internal consistency is easily maintained. The new or additional constraints in terms of "outputs must equal inputs", introduced by those extensions, become visible at first glance. It is just this quality of a social accounting matrix which makes it an excellent tool for adding alternative data sources in the compilation process of the national accounts. An example for the Indonesian case can be found in Keuning (1995).

5. INCLUDING UNOBSERVED ACTIVITIES: A WAY TO GO

5.1. IDENTIFICATION OF NON-OBSERVED ACTIVITIES FROM A STATISTICAL PERSPECTIVE

Tabel 1 in section 2 presents an overview of the main components of the non-observed economy and how it generally affects the registration of units and the reporting of respondents. However, when it comes to estimation of the different components, this table does not suffice. In that case the possiblilities for observation must be the starting point. This is done in table 2. The dimension on the horizontal axes categorizes the statistical units, for example enterprises and own account workers, that generate production, value added et cetera. These units can be registered in a business register, the list generally used for business sampling purposes, or not. The other dimension identifies one of the inputs used in the production process. The most obvious input to be used for this analysis is labour. Generally, labour input is well administered. In special cases, however, for example in cases of tax evasion, the payroll is deliberately incomplete.

In table 2, distinction is made between units that are included in a business register and units that are not. All government units, non financial corporations, financial corporations and non profit organisations are assumed to be in the business register. The same applies to the own account workers as far as registration is obliged. This group of units is summarized under 'Incorporated enterprises'. The remainder is grouped under 'household uncorporated enterprises'.

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[2] The rows of an input-output table can be replaced by a make-matrix, which specifies the goods and services produced in each branch. The columns of an input-output table can be replaced by a use-matrix, which specifies all goods and services used by each branch. The advantage of make and use tables is that there is a close linkage with the specifications available in production statistics. However, they do not provide information on the flows of goods and services between branches of industry, as input-output tables do.

Table 2. Production of goods and services by enterprises and not registered own account workers versus labour inputs: a classification of unobserved activities from a statistical perspective.

Labour	Incorporated enterprises		Household unincorporated enterprises
	Registered in the business register	**Not registered** in the business register	**Not registered** own account workers
Administered	H1	H3	
Not administered	H2	H4	H5

Hidden production by registered units, related to administered labour inputs

Quadrant H1 presents the confrontation of output of registered enterprises using administered labour. If errors or gaps occur in this quadrant, it can only be because of an explicit restriction of the sample frame (for example when only enterprises with more than a given number of employees are surveyed), errors in the sample frame, misreporting and non-response. Underreporting of production related to the underreporting of labour costs is not part of this quadrant but is part of quadrant H2, as one may assume that all administered labour will be reported.

Adjustment for restrictions of the sample frame to the larger enterprises can be made by assuming that the production, turnover, value added et cetera per worker of the smaller enterprises equal those of the smallest enterprises included in the sample. Of course, this can only be done if the number of employees is the criterion whether to include or not an enterprise in the sample frame. If, for example, the reported turnover in last year's tax return act as a criterion, the latter variable should be used for adjustment.

Sample frame errors can be adjusted for by means of the labour force survey. Provided that the data from the labour force survey on the supply of labour is of sufficient quality, it can be used to reweight the other variables in the business surveys, like production, intermediate consumption, operating surplus, value added et cetera to correct for errors. This is even more the case when a detailed confrontation at a branch-level is possible.

However, corrections for sample frame errors do not correct for underreporting of turnover and overreporting of costs, both decreasing value added. Examples of these can be found in Árvay and Vértes (1995). It must be noted that enterprises that overreport cost not necessarily commit fraud. It can also be caused by the differences between business accounting and national accounting. For example, income in kind is often correctly booked as intermediate consumption in terms of business accounting and tax laws, while in terms of national accounting it should be booked as part of the wages and salaries, and thus as part of the value added. Other reasons for misreporting can be inadequate bookkeeping practices, which is the case in many transition countries.

Special cases are overreporting or underreporting of both turnover and cost at the same time. This misreporting does not necessarily affect value added. However, it does affect the confrontation of supply and use of goods and services and the estimates of the final consumption categories like household consumption and capital formation, especially if these are calculated as a residual. This may lead to difficulties in the compilation of the sector accounts. Therefore, one must correct for this kind of bias.

Insight into what extent this phenomenon exists and the size of the resulting bias can come from a detailed comparison of the individual survey returns, both cross-section and over time. This should be part of the normal data-editing process. Further, a one time special investigation may yield results which can be used for several years and may lead to improvements of the questionnaire.

To correct for non-response, one can use data taken from the response. For example, if an enterprise did not provide a breakdown of intermediate consumption by product, one can borrow this structure from enterprises of similar size in the same branch of industry. A same technique can be used to impute values for enterprises, which were not surveyed because of a cut off in the sample frame. In this case one can borrow the structure and other of the enterprises in the survey, closest in terms of size and branch. Note that if not all enterprises in the register are surveyed regularly, especially when there is a systematic cut off in the sample design, the maintenance of the business register is seriously hampered. In that case one needs information from other sources, for example tax files or the VAT-administration, to update the register.

Hidden production by registered units, directly related to not administered labour inputs.

Quadrant H2 reflects the output of registered enterprises by the use of not administered labour. If labour is kept hidden it is most likely that this is done to evade taxes and social contributions. Actually, it is underreporting of

labour costs. If the only purpose is to evade income taxes and social contributions, it may be very possible that other variables are not biased, except for operation surplus that now also includes the hidden labour. However, to decrease the risk of being caught (and perhaps to evade taxes on operating surplus also), most enterprises will also underreport other variables to such an extent that the reported figures suggest a normal production structure. It may be clear that, although in principle all enterprises (perhaps except governmental organisations) might commit such a fraud, the opportunities to do so are the best for small enterprises with a rather simple production structure, so with a relatively high labour input: trade, construction, repair, services et cetera.

There are at least three ways to correct for this kind of bias in the figures. The first one is the so-called Italian method. This method uses the data of the labour force surveys to re-weight the outcomes of the business surveys and is quite similar to the method to adjust for sample frame errors and restrictions. There is only one additional requirement: the results of the labour force surveys must implicitly or explicitly include hidden labour supply. If the labour force surveys as such do not satisfy this requirement, it is sometimes possible to enrich the results with data from other sources, for example special one time surveys, and by means of assumptions. A second solution is to conduct special investigations on the hidden labour supply (see for example Van Eck and Kazemier, 1989). A third solution is to rely on assumptions, expert knowledge and incidental research.

Hidden production in not registered enterprises due to problems in the register

This case reflects problems in the registration. One reason may be that enterprises are wrongly classified. Most common are errors in the branch of industry code and in the size code. If, for example, only larger firms in a number, but not all branches of industry are surveyed, a wrong code me lead to an unjust exclusion from the sample frame.[3] To get insight in the size of this problem, one has to keep track of the number of unjustly included units in the sample. If this number is very small, than this problem can probably be neglected. If, on the contrary, the number of unjustly included enterprises is relatively high, it is necessary to put additional effort in maintaining the business register. The relative number of unjustly included enterprises and their characteristics like size and legal form may lead to a argumented guess (guestimate) of the size of this phenomenon in terms of hidden value added, hidden labour force, et cetera. Making guestimates can be part of a qualitative analysis. The earlier mentioned Italian method may also help.

Another reason can be that the register is not up to date enough. In that case new enterprises are missing while the number of already dead enterprises will be relatively high. Again, the only long-term solution is to put extra effort in the maintenance of the business register, while a short time solution can be the application of the Italian or comparable method. The number of employees in new enterprises, however, is mostly not very high. The same applies to variables like value added, wages and salaries and operation surplus.

A third reason can be that enterprises are missing because there is no need or obligation to do so. In this case, the Italian method does not provide sufficient results, except that the labour force survey may give a first impression of the relative importance, measured in terms of number of employees, of these enterprises. If the number of enterprises is low, and if there are no reasons to assume an exceptional high value added per employee, an acceptable guess of its size is possible. However, in many cases there are reasons to assume that enterprises that need not register significantly differ from those that have to. Then a special investigation in the size and the structure of these enterprises is needed. One may think of area sampling, city market analysis, special surveys, et cetera. In general it can be assumed that, on average, the value added per worker is less than in registered enterprises. However, this assumption needs be proven.

Hidden activities in not registered enterprises, related to not administered labour inputs

Quadrant H4 may contain the production of the same enterprises as those in quadrant H3, but then for as far as production is related to hidden labour. In this respect there are similarities with the distinction between quadrant H1 and H2, and if these enterprises were included in the register, the problems were similar to those in H2. Therefore, if the sizes of quadrants H1 to H3 are known, the size of quadrant H4 can be deduced from these. The more detail on H1-H3 there is available, the better the estimate of quadrant H4.

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[3] A wrong code in a record in the business register may also lead to unjust inclusion in the sample frame of a different branch of industry. This complication is not addressed in the description of quadrant H1 of table 2. It is assumed that these errors are already corrected for in the normal data-editing process that preceeds the tabulation of the results of the business surveys.

This would be true if quadrant H4 did not also contain all enterprises that normally would be registered but for one reason or another want to be kept out of any control by the government. These enterprises may include those that produce illegal products or produce products in an illegal way. How to deal with these specific units falls outside the scope of this paper. For more details on this topic, see Van der Werf (1997).

Hidden activities by not registered own account workers
Quadrant H5 presents the production of not registered own account workers. In general these are part of the informal sector. The production unit mostly coincides with a household or a small number or related households. Bookkeepings are mostly absent. The main reason that the production of the informal sector is often not fully covered in the national accounts is just because they are not measured. However, if the number of households involved in the informal sector is known, for example from labour force surveys or population censuses, an estimate can be made assuming that the production value and value added are almost the same for own account workers registered, or a certain percentage of it. If there is no data available on registered own account workers, a minimum estimate can be made by assuming that the mixed income of households involved in the informal sector equals the minimum amount of money needed to make a living.

Not included in the table is own account production for own use that needs to be included in the national accounts. In most Western European and North American countries, this is almost negligible. However, there are also many countries where these activities are quite substantial. If wished, one may include these activities in this quadrant.

5.2. THE ORGANISATION OF ESTIMATES OF NON-OBSERVED PRODUCTION

In the previous section a tool was introduced to analyse the different aspects of the non-observed economy. With that tool, together with the results of additional research, insight is gained in the size and character of the non-observed economy. This section will introduce a frame in which the results of the previous section can be organized in a systematic way. The advantage of doing so is at least threefold. Firstly, it provides the statisticians who are in charge of the national accounts with a systematic and complete picture of all information on the hidden economy that can be deduced from the available datasources without duplicating the work of the national accountants. Secondly, it can serve as a database of information on the non-observed economy, which can easily be updated each year without much effort. Thirdly, it enables to determine priorities and posteriorities when it comes to allocating resources.

This section builds on table 2 in the previous section. It is assumed that the commodity-flow method is leading in the compilation of the national accounts. A similar framework, however, will do if the income method or the expenditure method is the leading method.

The purpose of the frame is to collect all information used in the compilation of the national account as far as relevant for the estimation and allocation of the non-observed economy. The layout of the frame is inspired by the layout of the supply and use tables. For each row and column of these tables the information on the most important variables is summarized. For the different branches of industry, a breakdown is made that corresponds with the branches distinguished in the business surveys. In addition each branch of industry is broken down by size class, at least as far as hidden activities are assumed to be present. If the smallest enterprises were not included in the sample, the smallest size class sampled should be shown separately. The same applies for branches of industry with a relatively large informal sector, for example trade, construction, furniture and services. The exact breakdown should follow from the investigations described in the section 5.1. A schematic example of such a breakdown is presented in table 3. The vertical axis shows the breakdown of the branches of industry; the horizontal axis the various variables of interest.

Each cell in table 3 may contain several layers. This is visualized in table 4. The first layer should contain the raw outcomes of the surveys (or administrative files) after normal data editing and weighting (Q in table 4). These are the raw figures of quadrant H1 in table 2. A second layer should contain the adjustments (Q1 in table 4) for sample frame errors, misreporting and non-response not linked with the use of hidden labour. So Q+Q1 should be the best estimate of non-hidden activities in registered enterprises. The next four layers Q2 to Q5 contain the adjustments for hidden activities linked with not administered labour in registered (quadrant H2 in table 2) and not registered units (H4), hidden activities linked with administered labour in not registered units (quadrant H3 in table 2) and the activities in the informal sector, both hidden and not hidden (quadrant H5 in table 2). Each adjustment should be accompanied with a qualitative statement or quantitative measure of its quality and if available, supplemented with alternative adjustments. The final layer, Q6, is the national accountants' decision.

Table 3. A schematic breakdown of branches of industry by variable of interest

Available layers:	Total production	Intermediate consumption	Final consumption					Primary cost				
			Household consumption	Government cons.	Investment	Exports	...	Wages and salaries	Social contributions	Taxes minus subsidies	Operation surplus	...
- Layer 1: survey results (H1) - layer 2: adjustments for H1 - layer 3: adjustments for H2 - layer 4: adjustments for H3 - layer 5: adjustments for H4 - layer 6: adjustments for H5 - layer 7: national accounts decision												
Business surveys												
• **Agriculture**			-	-	-	-						
- **2+ employees**	-	-						-	-	-	-	
- **1 employee**	-	-						-	-	-	-	
- **0 employees**	-	-						-	-	-	-	
• **Mining**	-	-						-	-	-	-	
• **...**	-	-	-	-	-	-		-	-	-	-	
• **Construction**			-	-	-	-						
- **25+ employees**	-	-						-	-	-	-	
- **10-25 employees**	-	-						-	-	-	-	
- **2-9 employees**	-	-						-	-	-	-	
- **1 employee**	-	-						-	-	-	-	
- **0 employees**	-	-						-	-	-	-	
• **...**	-	-	-	-	-	-		-	-	-	-	
Custom forms:												
• **Exports**	-		-	-	-	-						
• **Imports**	-		-	-	-	-						
Tax returns:												
• **Wages and salaries**	-							-	-	-	-	
• **VAT**	-	-	-	-	-	-		-	-	-	-	

The estimates in this three-dimensional table are based on the confrontations of datasources and additional special investigations. Some of these confrontations may be far more detailed than ever possible in the context of the national accounts. It may even lead to new statistics supplementing the national accounts. In such cases one might talk about so-called partial integration. A good example of partial integration is the construction of labour accounts out of a large number of datasources like the labour force survey, employment survey (which is the counterpart of the business survey, but then for enterprises) and surveys on earnings, see Leunis and Verhagen (1999). Another example is the energy-accounts, which combines the results of special surveys on the production, transformation and use of energy, data on the imports and exports of energy and fuels et cetera, resulting in energy balances per branch of industry and per type of fuel. More information on energy accounts can be found in, for example, Eurostat (2000). All partial integration projects have in common that they focus on one single topic which is not fully covered or not sufficiently detailed in the national accounts.

After having completed table 4 for all variables of interest (except column Q6), the information in this table is used in the compilation of the national accounts. In that compilation process almost all data available is confronted with each other and reconciled. Such a confrontation is only possible on a rather high degree of aggregation. For that reason, details that matter for a good adjustment for hidden activities should be included in the table.

5.3. SETTING PRIORITIES

Table 4 can be a good tool for setting priorities in the allocation of resources. Adjustments that are relatively small aren't probably worth any additional effort. Large adjustments, however, especially those that are based on rather weak assumptions or datasources need extra research. Depending on the main causes of the ajustments, different actions may be taken. For example, hidden production in registered enterprises related to administered labour (Q1 in table 4; H1 in table 2) is the main problem the preferable actions are the improvement of the business register by

eliminating registration errors and improving the coverage of the business surveys, both the number of branches covered and the number of size classes included in the sample.

Table 5.3. A schematic breakdown of branches of industry by type of adjustment

Available variables of interest:
 	
- *Total production*
- *Intermediate consumption*
- *Final consumption*
  - *Household consumption*
  - *Government consumption*
  - *Investment*
  - *Export*
- *Primary costs*
  - *Wages and salaries*
  - *Social contributions*
  - *Taxes minus subsidies*
  - *Operation surplus*
	Q
	Survey results after normal data editing and weighting
		Q1
		Adjustments for hidden activities in registered enterprises not linked with hidden labour
			Q2
			Adjustments for hidden activities in registered enterprises linked with hidden labour
				Q3
				Adjustments for activities of not registered enterprises not linked with hidden labour
					Q4
					Adjustments for activities in not registered enterprises linked with hidden labour
						Q5
						Estimates for the informal sector
							Q6
							Final national accountants decision

Business surveys							
• **Agriculture**							
- **2+ employees**	-	-	-	-	-	-	-
- **1 employee**	-	-	-	-	-	-	-
- **0 employees**	-	-	-	-	-	-	-
• **Mining**	-	-	-	-	-	-	-
• **…**	-	-	-	-	-	-	-
• **Construction**							
- **25+ employees**	-	-	-	-	-	-	-
- **10-25 employees**	-	-	-	-	-	-	-
- **2-9 employees**	-	-	-	-	-	-	-
- **1 employee**	-	-	-	-	-	-	-
- **0 employees**	-	-	-	-	-	-	-
• **…**	-	-	-	-	-	-	-
Custom forms:							
• **Exports**	-	-	-	-	-	-	-
• **Imports**	-	-	-	-	-	-	-
Tax returns:							
• **Wages and salaries**	-	-	-	-	-	-	-
• **VAT**	-	-	-	-	-	-	-

Improving the business register is also the best action if the adjustment Q3 (hidden production related to administered labour in not registered units) is relatively large. Improving the register by including more enterprises, eliminating dead units and more frequent updating may improve the quality of the raw survey based or administration based estimates (Q in table 4). Consequently this will decrease the adjustments for the production of not registered units (Q3 and Q4). Whether it will decrease the adjustments for the production of registered units (Q1 and Q2) or not, depends on the finally realised improvement of the register. See also Van Eck (1983).

In the ideal case, where all enterprises are included in the register, the adjustment for hidden production related to administered labour will become (almost) zero, while quadrant 4 in table 2 (hidden production linked with not administered labour in not registered units) will only contain illegal production.

When the adjustments for hidden production related with not administered labour input (Q2 and Q4) are relatively large and relatively weak, improving or enhancing the statistical program may be the wisest thing to do. This is especially the case if the statistical program is almost minimal. Changing over to another mix of surveys and statistics or adding new surveys and statistics to the program can lead to other types of confrontations which may, but not necessarily do improve the adjustments for hidden activities.

Confrontations of datasource, and more general, the usefulness of statistics may improve if all statistics use the same classifications and definitions. This so called statistical co-ordination is probably the most difficult thing to achieve, especially if all statistics have their own users with their own wishes and needs. Nevertheless, it is worthwhile to attempt, as it can significantly improve the quality of statistics and the adjustments for hidden activities.

Finally, if none of the above actions are possible because of lack of resources, because they are too expensive compared to the expected results, or because they simply do not sufficiently improve the adjustments, the only things to be done are special investigations. In general it is possible to organize such a research in such a way that the results can be used for several years. This is especially the case if these researches lead to adjustment percentages, which can be expected not to change very much over years.

6. FINAL REMARKS

This paper presents a systematic framework to analyse the nature of the non-observed economy and how statistical observation is affected. At least four types of problems, in terms of statistical observation, can be distinguished: units not (properly) included in the business register, combined with deliberate misreporting because of concealed activities. A fifth problem in terms of observation can be the existence of an informal economy.

Different combinations of observation problems require different solutions. Some of these are the improvement of the business register, better statistical co-ordination or extension of the statistical program. Others require special research. Some problems can only be partly solved, for example illegal activities.

As additional effort means additional resources, a framework is needed to set priorities. Such a framework is presented in the tables 3 and 4. A first step is to fill these tables with already available data and with well argumented guesses. This leads to a first insight of the main problems, in terms of, for example, non-observed value added. This table can also already be used in the compilation of the national accounts. Over years, this table can be updated and weak adjustments can be replaced by stronger and better adjustments.

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