



Are Differences in National Definitions of Informal Employment and Employment in the Informal Sector Necessary?

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1. Introduction

The introduction of the international standards concerning a statistical definition of informal employment (2003)² and concerning statistics of employment in the informal sector (1993)³ have provided countries with a comprehensive conceptual framework for measuring informal employment and employment in the informal sector. The international standards provide considerable flexibility in applying the definitions in different national settings. The ILO has recently prepared a manual on concepts and methods for measuring informal employment (and employment in the informal sector) with the objective of assisting countries to implement the international standards in light of their national circumstances.⁴

There are various approaches or perspectives that are important in considering the criteria to implement the concepts of informal employment and informal sector, neither of them self-sufficient or conclusive but complementary: a) conceptual b) statistical and c) what makes sense in terms of public policy. Arguments have been forwarded that the flexibility of the international standards and much of the national differences are necessary because social protection systems vary from country to country and because data requirements are driven by public concerns and development policies on the informal economy and these differ from one country to another. It is also argued that informality is in fact not a dichotomy, but a continuum, and flexible definitions are necessary to accommodate the range of possible degrees of informality.

The purpose of this paper is to argue that some of the flexibility of the international standards and national differences in the definitions of informal employment and the informal sector are actually not necessary and tools can be developed to narrow the differences. Those differences that are context-specific or emanate from conceptual reasoning and public policy concerns are of course not to be eliminated as they serve a genuine purpose. But differences that are only statistical in nature or that are otherwise not necessary should be eliminated to the extent possible.

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² ILO, *Guidelines concerning a statistical definition of informal employment*, adopted by the Seventeenth International Conference of Labour Statisticians, Geneva, 2003.

³ ILO, *Resolution on the measurement of employment in the informal sector*, adopted by the Fifteenth International Conference of Labour Statisticians (ICLS), Geneva, 1993.

⁴ ILO and UN Statistical Commission Delhi Group on Informal Sector and System of National Accounts, *Measuring informality: A statistical manual on the informal sector and informal employment*, available free of charge in pdf format in English, Spanish and French http://www.ilo.org/global/publications/ilo-bookstore/order-online/books/WCMS_222979/lang-en/index.htm

The international definitions of informal sector and informal employment as well as the corresponding national definitions are generally formulated in terms of a series of criteria A, B, ..., linked together in the form of A AND B and A OR B. It is shown in Section 2 that the international definitions provide considerable flexibility in the choice of the criteria A, B, ... and in some cases also flexibility in their combination in the form of AND/OR.

It is argued in Section 3 that if two operational criteria A and B are found to be statistically independent, they are measuring different dimensions of informality and therefore they should be combined in the form of A AND B. On the other hand, if they are found to be statistically dependent, they are measuring essentially the same dimensions of informality and therefore they should be combined in the form of A OR B. In all numerical examples given in the paper using data from seven capital cities of West Africa, the hypothesis of statistical independence was rejected and the A OR B formulation prevailed.

It is further argued in Section 4 that statistical analysis may also help to narrow the choice of the operational criteria A, B, ..., themselves. Consider a benchmark definition of informal sector or informal employment. Rank the operational criteria A, B, ..., in terms of their statistical power to discriminate against the benchmark. The operational criterion with the highest discriminatory power is statistically more effective than one with lower discriminatory power. In the numerical illustrations given here with informal sector data from the 2000 labour force survey of South Africa, registration ranked highest, followed by type of location of the workplace, size in terms of number of regular workers engaged, and whether the enterprise makes deduction of unemployment insurance fund (UIF) contribution. The South Africa survey is especially relevant here as it contained a direct question asking the respondent whether the enterprise/business in which the individual works is formal or informal. The response to this question is used here as the benchmark for the assessment of the discriminatory power of the other criteria.

In section 5, the results of the study are briefly summarized and a proposal is made to extend the statistical analysis to more country data and more operational criteria. If consistent results are obtained, the information can be used to reduce the flexibility of the international standards and narrow the national differences.

2. The flexibility of the international definitions

The international definitions of informal employment and employment in the informal sector are analyzed in terms of the flexibility they provide for national implementation. The text of the definitions are reproduced in Annexes A and B, respectively. The basic elements are summarized in **Tables 1a, 1b** below.

Informal employment

The concept of informal employment refers to jobs as observation units as opposed to the concept of informal sector that refers to production units as observation units. The two concepts are nevertheless related. Informal employment is a broader concept including (a) employment in the informal sector (except those rare employees in that sector who may have formal employment), and (b) informal employment outside the informal sector. As indicated in **Table 1a**, the international definition of informal employment distinguishes between types of jobs in terms of status in employment.

**Table 1a. International definition of informal employment:
Basic elements**

Status in employment		Definition	Operational criteria
Employee para. 3(5)	OR AND /OR	Employed in employment relationship that is not subject to <ul style="list-style-type: none"> • National labour legislation • Income taxation • Social protection • Entitlement to certain employment benefits (advance notice of dismissal; severance pay; paid annual or sick leave; etc.) 	To be determined in accordance with national circumstances and data availability
Own-account worker para. 3(2)(i)		<ul style="list-style-type: none"> • Employed in own informal sector enterprise (without hired workers) 	
Employer para. 3(2)(ii)		<ul style="list-style-type: none"> • Employed in own informal sector enterprise (with hired workers) 	
Contributing family worker para. 3(2)(iii)		<ul style="list-style-type: none"> • Irrespective of whether working in formal or informal sector enterprise 	
Member of producer cooperative para. 3(4)	AND	<ul style="list-style-type: none"> • Employed in cooperative which is not formally established as legal entity and meets the other criteria of informal sector enterprises 	

For jobs held by employees, informal employment is defined in terms of the employment relationship. Four elements are identified. For a job held by an employee to be considered as informal, the employment relationship should not, in law or in practice, be subject to national labour legislation, income taxation, social protection or entitlement to certain employment benefits (advance notice of dismissal, severance pay, paid annual or sick leave, etc.).

The text of the guidelines goes on further to specify a list of possible reasons for informal employment relationship including non-declaration of the jobs or the employees; casual jobs or jobs of a limited short duration; jobs with hours of work or wages below a specified threshold (e.g. for social security contributions); employment by unincorporated enterprises or by persons in households; jobs where the employee's place of work is outside the premises of the employer's enterprise (e.g. outworkers without an employment contract); or jobs for which labour regulations are not applied, not enforced, or not complied with for any other reason. Finally, the guidelines leave the operational criteria for defining informal jobs of employees to be determined in accordance with national circumstances and data availability.

In the case of own-account workers and employers, the informal employment status of the job is determined by the informal sector nature of the enterprise in which they operate. Thus, own-account workers (without hired workers) operating an informal enterprise are classified as in informal employment. Similarly, employers (with hired workers) operating an informal enterprise are classified as in informal employment. The definition of informal sector is analysed in the next section.

In the case of contributing family workers, the international definition is straightforward and all contributing family workers are classified as having informal employment, irrespective of whether they work in formal or informal sector enterprises.

In the case of members of producers' cooperatives, their classification in informal employment depends on the nature of the cooperative. It should not be a cooperative established as a legal entity and it should meet the criteria of informal sector enterprises.

Informal sector

In contrast with informal employment defined in terms of the nature of the job of the individual worker, employment in the informal sector is defined in terms of the characteristics of the enterprise in which the person works. As indicated earlier, for own-account workers and employers, their informal employment status is the same as the informal sector nature of their enterprise. The international definition of informal sector distinguishes between informal own-account enterprises and enterprises of informal employers as shown in **Table 1b** below.

**Table 1b. International definition of informal sector:
Basic elements**

		Definition	Operational criteria
Informal own-account enterprise as para. 8	AND AND	<ul style="list-style-type: none"> Household enterprises (in the sense of paragraph 7) Has the characteristics described in subparagraphs 5 (1) and (2) Owned and operated by an own-account worker, either alone or in partnership with members of the same or other households which may employ contributing family workers and employees on an occasional basis, but do not employ employees on a continuous basis 	<ul style="list-style-type: none"> Any own-account enterprise OR <ul style="list-style-type: none"> Non-registered own-account enterprise Registration under specific forms of national legislation (e.g., factories or commercial acts, tax or social security laws, professional groups' regulatory acts)
Enterprise of informal employer para. 9		<ul style="list-style-type: none"> Household enterprises (in the sense of paragraph 7) Has the characteristics described in subparagraphs 5 (1) and (2) Owned and operated by an employer, either alone or in partnership with members of the same or other households, which employ one or more employees on a continuous basis 	<ul style="list-style-type: none"> Size of the unit below a specified level of employment AND/OR <ul style="list-style-type: none"> Non-registration of the enterprise AND/OR <ul style="list-style-type: none"> Non-registration of its employees

Informal own-account enterprises as well as enterprises of informal employers should satisfy two broad conditions. The enterprise should be a household enterprise in the sense of the system of national accounts (essentially, not constituted as a separate legal entity and for which no complete sets of accounts are available). And, the enterprise should have the general characteristics of informal sector units (namely, low level of organization, with little or no division between labour and capital as factors of production and on a small scale).

The distinction between informal own-account enterprises and the enterprises of informal employers rests on the status in employment of the owner and operator of the enterprise. An informal own-account enterprise is owned and operated by an own-account worker, either alone or in partnership with members of the same or other households which may employ contributing family workers and employees on an occasional basis, but do not employ employees on a continuous basis. The enterprise of an informal employer is owned and operated by an employer, either alone or in partnership with members of the same or other households, which employ one or more employees on a continuous basis.

The international definition specifies a number of operational criteria for measuring informal sector enterprises as shown in the last column of **Table 1b**. For operational purposes, informal own-account enterprises are defined as either all own-account enterprises or only those that are not registered under specific forms of national legislation. Enterprises of informal employers are defined in terms of one or more of the following criteria: (i) size of the unit below a specified level of employment; (ii) non-registration of the enterprise or its employees. Registration under specific forms of national legislation includes factories or commercial acts, tax or social security laws, professional groups' regulatory acts. Registration of employees means that they are employed on the basis of an employment or apprenticeship contract which commits the employer to pay relevant taxes and social security contributions on behalf of the employee or which makes the employment relationship subject to standard labour legislation.

It is clear from **Tables 1a** and **1b** that the international definitions of informal employment and informal sector leave considerable flexibility for countries in specifying their national definitions. The flexibility is in terms of the choice of the operational criteria to be used and the procedure to combine them for measurement. These two issues are examined in reverse order below.

3. The “and/or” issue

The first issue which may be called the “and/or” issue is reflected in the flexibility provided in combining informal employment criteria or informal sector criteria with a restrictive “and” or an expansive “or”. Consider the definition of an informal employee job, schematically represented at the top panel of the middle columns of **Table 1b**. There are four elements listed, any one of which defines an informal employee job. This is an expansive “or”. Now consider more closely the fourth element “Entitlement to certain employment benefits”. Several examples are given: “advance notice of dismissal”, “severance pay”, “paid annual leave”, “paid sick leave” and more. It is not clear whether the lack of any one of these conditions reflect the absence of entitlement to employment benefits or the lack of more than one condition or all conditions is required. This is the “and/or” issue.

To fix the ideas, consider alternative national definitions of informal employment based on different combinations of the two criteria, A and B. One definition that may be called the main definition requires that both criteria A and B hold simultaneously for a person to be classified as in informal employment. The other definition that may be called here the alternative definition requires that at least one of the two criteria to hold for the person to be classified as in informal employment. The difference between the two definitions may be illustrated in terms of the cross-classification of the total number of employed persons by presence or absence of the two criteria as in **Table 2**.

Table 2. Cross-classification of two dichotomous criteria A and B defining informal employment

		A		
		Yes	No	
B	Yes	a	b	
	No	c	d	
				n

In **Table 2**, the term “n” represents the total number of employed persons, “a” the number of employed persons satisfying both criteria A and B; “b” the number of employed persons satisfying criterion B but not A; “c” the number of employed persons satisfying A but not B; and finally “d” the number the employed persons satisfying neither A nor B. With these term notations, the total number of persons with informal employment according to the main definition is “a” and the percentage of employed persons with informal employment is $p1=a/n$. According to the alternative definition, the number of persons with informal employment is “a+b+c” or “n-d” and the percentage of employed persons with informal employment is $p2=(a+b+c)/n=(n-d)/n=1 - d/n$.

From a statistical perspective, the question arises as whether the two underlying criteria (A and B) are statistically independent, in which case each criterion is in fact measuring a different aspect of informal employment and therefore the presence of both criteria are necessary for classification into informal employment.

Data from seven capital cities of West Africa

The test of independence of the two underlying criteria is illustrated below with data from a study in seven capital cities of West Africa⁵. The study examines the numerical differences obtained by using alternative definitions of informal employment in seven capital cities, namely, Niamey, Ouagadougou, Bamako, Dakar, Abidjan, Lome and Cotonou. The data refer to the results of a series of multi-phase household surveys (so-called 1-2-3 surveys) conducted with a sample size of 2,500 households in each of the seven cities with the exception of Cotonou where the sample size was raised to 3,000 households. The main results are reproduced in **Table 3** below.

According to these results, the estimated total number of employees in the seven cities covered by the study is 1,532,595 persons, 892,187 had informal employment under the main definition (corresponding to 58.2 per cent of total number of employees), and 1,371,382 under the alternative definition (corresponding to 89.5 per cent of the total). Under the main definition, informal employees were those having no written contract AND declaring no payment of pension contribution on their pay slip. Under the alternative definition, informal employees were those who either had no written contract OR reported no payment of pension contribution on their pay slip.

⁵ WIEGO Working Paper No 9, *Informal Sector and Informal Employment: Overview of Data from 11 Cities in 10 Developing Countries*, Javier Herrera Mathias Kuépié, Christophe J. Nordman, Xavier Oudin and François Roubaud, January 2012, Appendix 1.

**Table 3. Informal and formal employees under main and alternative definitions:
Seven Capital Cities in West Africa**

	Total number of employees	Main definition		Alternative definition	
		Formal employment	Informal employment	Formal employment	Informal employment
All seven cities, total employees	1,532,595	640,408	892,187	161,213	1,371,382
Non-agriculture, non-household employees	1,332,687	623,982	708,705	159,009	1,173,678
Niamey	76,476	40,397	36,079	15,224	61,251
Ouagadougou	117,886	54,523	63,363	22,838	95,049
Bamako	102,356	55,728	46,628	26,159	76,197
Dakar	267,862	115,765	152,097	26,509	241,354
Abidjan	543,583	247,352	296,231	46,708	496,875
Lome	109,828	54,957	54,871	10,128	99,699
Cotonou	114,695	55,261	59,434	11,442	103,252

Source: WIEGO Working Paper No 9, *Informal Sector and Informal Employment: Overview of Data from 11 Cities in 10 Developing Countries*, Javier Herrera Mathias Kuépié, Christophe J. Nordman, Xavier Oudin and François Roubaud, January 2012, Appendix 1, Tables A1.1 and A1.3, p. 112-3..

**Table 4. Sample size and effective sample size:
Surveys of Seven Capital Cities in West Africa**

	Sample size (Number of employees)	Assumed design effect (Deff)	Effective sample size
All seven cities, total employees	25,383	4	6,346
Non-agriculture, non-household employees	22,072	4	5,518
Niamey	1,267	4	317
Ouagadougou	1,952	4	488
Bamako	1,695	4	424
Dakar	4,436	4	1,109
Abidjan	9,003	4	2,251
Lome	1,819	4	455
Cotonou	1,900	4	475

Source: Author calculation of effective sample size based on reported sample sizes, WIEGO Working Paper No 9, *Informal Sector and Informal Employment: Overview of Data from 11 Cities in 10 Developing Countries*, Javier Herrera Mathias Kuépié, Christophe J. Nordman, Xavier Oudin and François Roubaud, January 2012, Appendix 1.

The surveys being based on area samples may not be considered as having simple random samples and therefore their sample size should be adjusted for the design effect or intra-class correlations that exist within sample areas. The design effect is assumed here to be four for all surveys. This value corresponds to the design effect of a typical labour force survey based on area sampling. The effective sample sizes obtained are shown in **Table 4**.

Informal employment criteria: test of independence

The test of independence of the two underlying criteria A (existence of written contract) and B (pension contribution on pay slip) is a chi-square test calculated on the basis of the expression,

$$\chi^2 = \frac{(ad - cb)^2}{n^3 p_A q_A p_B q_B}$$

$$p_A = \frac{a+b}{n} \quad q_A = 1 - p_A$$

$$p_B = \frac{a+c}{n} \quad q_B = 1 - p_B$$

In the present context, the value of “c” is negligible (persons with no contract but with pension deduction in their pay slip) and the chi-square expression may be simplified to

$$\chi^2 = n \left(\frac{p_1}{q_1} \right) / \left(\frac{p_2}{q_2} \right)$$

where p1 and p2 are respectively the proportions of informal employees under the main and alternative definitions. The expression may be interpreted as the relative odds of informal employment under the two definitions. The chi-square values of the test of independence are calculated for the seven cities of West Africa, combined and separately, and the results are shown in **Table 5** below.

Table 5. Test of independence of criteria (A=Written contract and B=Pension contribution on pay slip) for defining informal employees, Seven Capital Cities in West Africa

	Chi-square value	Critical value (at 5% level of significance)	Test result
All seven cities, employees	1039	3.84	Reject
Non-agriculture, non-household employees	849	3.84	Reject
Niamey	70	3.84	Reject
Ouagadougou	136	3.84	Reject
Bamako	122	3.84	Reject
Dakar	160	3.84	Reject
Abidjan	253	3.84	Reject
Lome	46	3.84	Reject
Cotonou	57	3.84	Reject

Source: Author analysis based on data Table 3 and 4.

The results show that the data do not support the hypothesis of independence of the two underlying criteria of the definitions of informal employment. The test of independence is rejected for all cities combined as well as for each city separately. The results indicate that criteria A and B are not independent, and in a sense one is complementary to the other. In such a situation the restrictive AND does not seem appropriate, and one should therefore use the expansive OR in the definition of informal employment.

The “and/or” issue was also raised in connection with the choice of definition of informal employment in the context of a survey in China. The proposed solution is in line with the recommendation of the ILO expert (Mr. Ralf Hussmanns) to use the following definition of informal employee jobs: “no labour contract OR no social insurance by employer”. It was further suggested that if a single criterion needs to be used the preference would be for “social insurance coverage” rather than “labour contract”.

4. The choice of criteria

The next issue is the choice of criteria for the national definition of informal sector or informal employment. The relevance of a criterion in measuring informality may be assessed in terms of its discriminatory power. A criterion that has a high discriminatory power in distinguishing between informal and formal jobs or between informal sector and formal sector units is more effective in measuring informal employment or informal sector than a criterion with lower discriminatory power.

Data from the first labour force survey of South Africa

Consider the data compiled in a case study on South Africa examining the informal economy in the context of the national economy and gender. They refer to the first full-scale labour force survey (LFS) conducted in September 2000 by Statistics South Africa⁶. The sample covered 30,000 households spread throughout the country.

The LFS questionnaire asks directly whether the enterprise/business in which the individual works is (a) in the formal sector or (b) in the informal sector. In case the respondent does not know whether the sector is formal or informal, a note explains that formal sector employment is where the employer (that may be an institution, business or private individual) is registered to perform the activity. Within the informal sector, the occupation of the worker is used to separate out domestic workers from other informal sector workers. The data presented here in **Tables 6 to 9** do not distinguish the domestic workers as a separate category but include them within the informal sector.

In the present study, the respondent’s self-classification as working in the informal sector is considered as benchmark and the discriminatory power of the various other criteria are evaluated against this benchmark. Only the criteria concerning the informal sector are examined (registration of enterprise, type of location of workplace, size of unit and deduction of UIF contribution). The criteria concerning informal employment (terms of employment, contract and paid leave) are not examined because no corresponding benchmark existed in South Africa against which they can be evaluated. The analysis was done in 2001 before the International Conference of Labour Statisticians (ICLS) guidelines for the concept of informal employment were established.

Informal sector criteria

Consider the data in **Table 6** where total employment is cross-classified according to formal and informal sector and size of the unit measured in terms of number of regular workers. The table includes an additional row and column to account for the unknown category. The penultimate column shows the percentage of workers in the formal sector for each size category. In total 34.1 per cent of the workers are engaged in the informal sector. In micro-units with one regular worker, the percentage of informal sector employment is 87.4 per cent and in small units with two to four regular workers, the percentage is 61.9 per cent.

⁶ ILO Task Force on the Informal Economy, “The Informal Economy: Statistical Data and research Findings. Country case study: South Africa,” prepared by Debbie Budlender in collaboration with Peter Buwembo and Nozipho Shabalala, Statistics South Africa (2001).

**Table 6. How well “size” discriminates between employment in formal and informal sectors:
Case Study -- South Africa**

Number of regular workers	Total ('000)	Formal sector ('000)	Informal sector ('000)	Unknown ('000)	Informal sector %	Cumulative %
Total	11,946	7,658	3,959	329	34.1%	-
1 worker	2,476	307	2,121	48	87.4%	20.7%
2-4 workers	2,053	762	1,240	51	61.9%	37.9%
5-9 workers	1,330	1,016	284	29	21.8%	49.0%
10+ workers	5,567	5,177	279	110	5.1%	95.6%
Unknown	520	394	35	91	8.2%	100.0%

Source: Author analysis of data from ‘The Informal Economy: Statistical Data and Research Findings Country case study: South Africa,’ (2001) Section 2.3.2 Alternative definitions of the informal sector, Table 13, p. 17.

It can be observed that the percentage of workers in informal sector units decreases with the size of the unit. In larger units with five to nine regular workers, the percentage of informal sector workers decreases to 21.8 per cent and in still larger units with 10 or more regular workers, the percentage reaches 5.1 per cent. In units for which the size is unknown, the percentage of workers in the informal sector is 8.2 per cent, a result that suggests the units with unreported size are generally large, perhaps with 10 to 12 regular workers.

Examining the entire column of the percentage distribution and comparing the values with the overall percentage (34.1 per cent), it results that the first two size categories (units with one regular worker and units with two to four regular workers) have a higher percentage of workers in the informal sector than the average. This means that the size threshold that discriminates between informal and formal sector is four. Units with four or less regular workers contain a higher percentage of workers in the informal sector than the overall percentage.

The last column of **Table 6** shows the cumulative percentage of workers by size of unit. Thus, 20.7 per cent of all workers are engaged in units with just one regular worker, 37.9 per cent in units with four or less regular workers and so on. It is instructive to note that this value is close to the overall percentage, indicating that under a definition of the informal sector based on size with four or less regular workers as threshold, the percentage of workers in the informal sector that would be obtained (34.1 per cent) would be close to the percentage according to the official definition (37.9 per cent).

Similar calculations are carried out to examine the discriminatory power of the criterion “type of location of workplace” for non-agriculture workers. The results are shown in **Table 7**, where the different types of location of workplace are sorted in descending order of the percentage of informal sector workers in the given type of location. The original order as given in the LFS questionnaire is indicated in the first column of the table. The table shows that overall 29.2 per cent of non-agriculture workers are engaged in informal sector units. Among those engaged in units located in “someone else’s home”, the percentage of informal sector workers is highest (85.8 per cent), followed by units located in the owner’s home/farm (80.0 per cent) and units with no fixed location (66.2 per cent) and units operating on a footpath, street or in open spaces (54.6 per cent).

Table 7. How well “location of workplace” discriminates between non-agriculture employment in formal and informal sectors: Case Study -- South Africa

	Location of work place	Total ('000)	Formal sector ('000)	Informal sector ('000)	Unknown ('000)	Informal sector %	Cumulative %
0	Total	10110	6972	2877	262	29.2%	-
2	Someone else's home	580	81	489	10	85.8%	5.7%
1	Owner's home/farm	2023	398	1592	33	80.0%	25.7%
7	No fixed location	712	229	448	34	66.2%	32.8%
6	Footpath, street, open space	225	99	119	7	54.6%	35.0%
8	Other	115	80	20	14	20.0%	36.2%
9	Unknown	110	26	4	80	13.3%	37.2%
5	Market	299	260	36	3	12.2%	40.2%
4	Service outlet	1241	1150	73	18	6.0%	52.5%
3	Formal business premises	4805	4649	95	61	2.0%	100.0%

Source: Author analysis of data from ‘The Informal Economy: Statistical Data and Research Findings Country case study: South Africa,’ (2001) Section 2.3.2 Alternative definitions of the informal sector, Table 17, p. 19.

The percentages of informal sector workers in “other “ (20.0 per cent) or “unknown” location (13.3 per cent) are below the overall average (29.2 per cent) as are the percentages in units located in marketplaces (12.2 per cent), service outlets (6.0 per cent) and formal business premises (2.0 per cent). This means that the threshold categories for distinguishing between informal and formal sector units are (Someone else’s home; owner’s home/farm; no fixed location; footpath, street, open space) versus (other, unknown, market, service outlet, formal business premises).

The last column of the table shows that 35.0 per cent of non-agriculture workers are working in units with informal-sector-type locations and 65.0 per cent in units with formal-sector-type locations. If type of location of workplace were used as the sole criterion for measuring informal sector employment, the percentage of non-agriculture workers found to be in the informal sector would be 35.0 per cent, a value not far from the LFS value of 29.2 per cent based on the official Statistics South Africa definition for non-agriculture employment.

Similar analyses for criteria “registration” and “deduction of UIF contribution” are shown in **Tables 8** and **9**, respectively. The results in **Table 8** indicate that “registration” has a high discriminatory power for distinguishing between informal and formal sector units: 82.3 per cent of non-agriculture workers engaged in non-registered units are in the informal sector, and 36.9 per cent of all non-agriculture workers are in non-registered units, a value close to the overall percentage of non-agriculture workers in the informal sector according to the official Statistics South Africa definition.

Table 8. How well "Registration" discriminates between employment in formal and informal sectors: Case Study -- South Africa

	Registration	Total ('000)	Formal sector ('000)	Informal sector ('000)	Unknown ('000)	Informal sector %	Cumulative %
0	Total	11946	7658	3959	329	34.1%	-
2	No	4408	762	3546	100	82.3%	36.9%
3	Unknown	466	231	107	128	31.7%	40.8%
1	Yes	7072	6665	306	101	4.4%	100.0%

Source: Author analysis of data from ‘The Informal Economy: Statistical Data and Research Findings Country case study: South Africa,’ (2001) Section 2.3.2 Alternative definitions of the informal sector, Table 14, p. 18.

By contrast, **Table 9** shows a weak discriminatory power of the criterion “deduction of UIF contribution” for distinguishing between informal and formal sector units: only 59.7 per cent of workers engaged in units not deducting UIF contribution units are in the informal sector, and the other 40.3 per cent in units deducting UIF contribution. It should be noted that public sector civil servants, part-time workers and those earning on a commission basis only are exempt from deduction of UIF contribution. This may explain the weak discriminatory power of the UIF criterion.

Table 9. How well "deduction of UIF contribution" discriminates between employment in formal and informal sectors: Case Study -- South Africa

	Deduction of UIF contribution	Total ('000)	Formal sector ('000)	Informal sector ('000)	Unknown ('000)	Informal sector %	Cumulative %
0	Total	11946	7657	3958	329	34.1%	
3	No deduction for other reason	5804	2286	3380	137	59.7%	48.6%
2	No deduction because income above limit	1220	830	363	26	30.4%	58.8%
4	Unknown	489	309	83	97	21.2%	62.9%
1	Deduction of UIF4432	4434	4232	132	69	3.0%	100.0%

Source: Author analysis of data from ‘The Informal Economy: Statistical Data and Research Findings Country case study: South Africa,’ (2001) Section 2.3.2 Alternative definitions of the informal sector, Table 15, p. 18.

Misclassification errors

The results of this section are summarized in Diagram 1 below. It shows the errors of misclassification of employees at their main job using alternative criteria of informal sector. The misclassification error is calculated as the sum of two types of errors: type-1 error, i.e., classifying an employee in informal sector while the benchmark classification is formal sector; and type-2 error, i.e., classifying an employee in formal sector while the benchmark classification is informal sector. The misclassification errors may be derived from the data in **Tables 7 to 9**. For example, the misclassification error of the size criterion is the sum of type-1 error (307+762) and type-2 error (284+279+35), given in percentage terms 14 per cent as shown in Diagram 1.

Diagram 1. Misclassification errors of employment in informal sector for different criteria

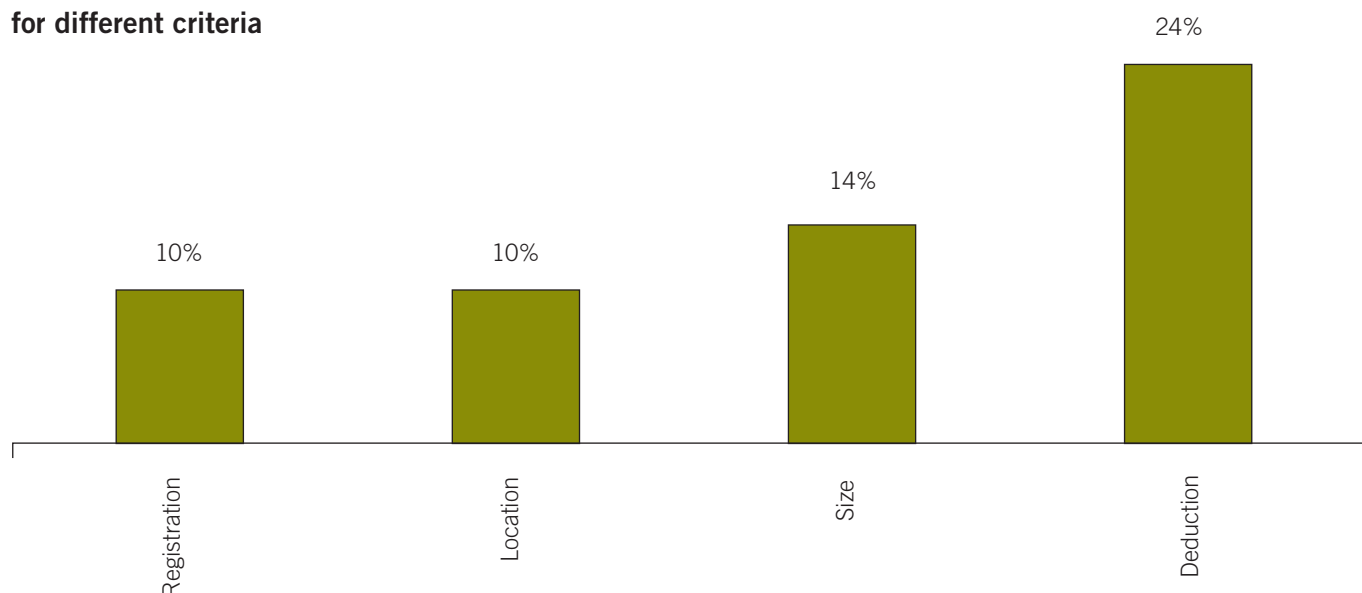


Diagram 1 shows that the error rate of misclassifying employment in the informal sector based on different criteria. The criteria with the lowest number of misclassification errors are registration (10 per cent) and type of location of workplace (10 per cent), followed by size (14 per cent), and whether the enterprise makes deductions of UIF contribution (24 per cent).

5. Narrowing national differences

The results of the study can be used to reduce the flexibility of the international standards and narrow the national differences. The analysis of the data in Section 3 on the seven capital cities of West Africa showed that the hypothesis of independence is uniformly rejected for the seven cities combined and each of the cities separately. This means that the underlying criteria A (Written contract) and B (Payment of pension contribution on their pay slip) are not statistically independent of each other and lead to significantly different numerical results if combined in the form of A AND B as opposed to A OR B. We interpreted these results as indicating that A and B are in fact measuring the same dimension of informality as opposed to distinct dimensions of informality. We concluded that when two criteria fail the test of independence of the underlying criteria, they should be combined in the form A OR B, rather than A AND B.

If similar results could be obtained for more countries and more combinations of criteria listed in the international standards, one may reduce the range of the flexibility of the international criteria, removing the formulations in terms of “and/or” and replacing with the unique formulation in terms of “or”.

The second part of the study in Section 4 proposes a simple methodology for assessing the discriminatory power of the different criteria for measuring the informal sector⁷. The methodology may be described as follows: Define initially as benchmark what people think as formal or informal such as in the 2000 LFS questionnaire of Statistics South Africa. Then find the criterion, or combination of criteria, that discriminates most against this benchmark definition.

If a limited number of criteria, or combination of criteria, emerges from repeating this exercise in a large number of countries covering different regions of the world, the result should help to narrow the range of flexibility of the international standards to that limited set of criteria or combination of criteria. Clearly narrowing the flexibility of the international standards should also help to improve the international comparability of the resulting national data.

⁷ More complex methods for assessing the discriminatory power and error rates of different criteria, alone and in combination could be considered, for example, by using classification trees as developed in Brieman, L., J.H. Friedman, R. A. Olshen and C. J. Stone, *Classification and Regression Trees*, The Wadsworth Statistics/Probability Series, Wadsworth International Group, Belmont, California, 1984.

Annex A. ICLS definition of informal employment⁸

3. (1) Informal employment comprises the total number of informal jobs as defined in subparagraphs (2) to (5) below, whether carried out in formal sector enterprises, informal sector enterprises or households, during a given reference period.

(2) As shown in the attached matrix, informal employment includes the following types of jobs:

- (i) Own-account workers employed in their own informal sector enterprises (cell 3);
- (ii) Employers employed in their own informal sector enterprises (cell 4);
- (iii) Contributing family workers, irrespective of whether they work in formal or informal sector enterprises (cells 1 and 5);
- (iv) Members of informal producers' cooperatives (cell 8);
- (v) Employees holding informal jobs (as defined in subparagraph (5) below) in formal sector enterprises, informal sector enterprises, or as paid domestic workers employed by households (cells 2, 6 and 10);
- (vi) Own-account workers engaged in the production of goods exclusively for own final use by their household (cell 9), if considered employed according to paragraph 9(6) of the resolution concerning statistics of the economically active population, employment, unemployment and underemployment adopted by the 13th ICLS.

(3) Own-account workers, employers, members of producers' cooperatives, contributing family workers and employees are defined in accordance with the latest version of the International Classification of Status in Employment (ICSE).

(4) Producers' cooperatives are considered informal if they are not formally established as legal entities and also meet the other criteria of informal sector enterprises specified in the resolution concerning statistics of employment in the informal sector adopted by the 15th ICLS.

Conceptual Framework: Informal Employment

Production units by type	Jobs by status in employment									
	Own-account workers		Employers		Contributing family workers	Employees		Members of producers' cooperatives		
	Informal	Formal	Informal	Formal	Informal	Informal	Formal	Informal	Formal	
Formal sector enterprises					1	2				
Informal sector enterprises ^(a)	3		4		5	6	7	8		
Households ^(b)	9					10				

(a) As defined by the Fifteenth International Conference of Labour Statisticians (excluding households employing paid domestic workers).

(b) Households producing goods exclusively for their own final use and households employing paid domestic workers.

Note: Cells shaded in green refer to jobs, which, by definition, do not exist in the type of production unit in question. Cells shaded in grey refer to formal jobs. Unshaded cells represent the various types of informal jobs.

Informal employment:

Cells 1 to 6 and 8 to 10.

Employment in the in formal sector:

Cells 3 to 8.

Informal employment outside the informal sector:

Cells 1, 2, 9 and 10.

⁸ Extract from ILO, *Guidelines concerning a statistical definition of informal employment*, adopted by the Seventeenth ICLS, Geneva, 2003.

(5) Employees are considered to have informal jobs if their employment relationship is, in law or in practice, not subject to national labour legislation, income taxation, social protection or entitlement to certain employment benefits (advance notice of dismissal, severance pay, paid annual or sick leave, etc.). The reasons may be the following: non-declaration of the jobs or the employees; casual jobs or jobs of a limited short duration; jobs with hours of work or wages below a specified threshold (e.g. for social security contributions); employment by unincorporated enterprises or by persons in households; jobs where the employee's place of work is outside the premises of the employer's enterprise (e.g. outworkers without employment contract); or jobs for which labour regulations are not applied, not enforced or not complied with for any other reason. The operational criteria for defining informal jobs of employees are to be determined in accordance with national circumstances and data availability.

Annex B. ICLS definition of employment in the informal sector⁹

Concept

5. (1) The informal sector may be broadly characterized as consisting of units engaged in the production of goods or services with the primary objective of generating employment and incomes to the persons concerned. These units typically operate at a low level of organization, with little or no division between labour and capital as factors of production and on a small scale. Labour relations – where they exist – are based mostly on casual employment, kinship or personal and social relations rather than contractual arrangements with formal guarantees.

(2) Production units of the informal sector have the characteristic features of household enterprises. The fixed and other assets used do not belong to the production units as such but to their owners. The units as such cannot engage in transactions or enter into contracts with other units, nor incur liabilities, on their own behalf. The owners have to raise the necessary finance at their own risk and are personally liable, without limit, for any debts or obligations incurred in the production process. Expenditure for production is often indistinguishable from household expenditure. Similarly, capital goods, such as buildings or vehicles, may be used indistinguishably for business and household purposes.

(3) Activities performed by production units of the informal sector are not necessarily performed with the deliberate intention of evading the payment of taxes or social security contributions, or infringing labour or other legislations or administrative provisions. Accordingly, the concept of informal sector activities should be distinguished from the concept of activities of the hidden or underground economy.

Informal sector

6. (1) For statistical purposes, the informal sector is regarded as a group of production units which, according to the definitions and classifications provided in the United Nations System of National Accounts (Rev.4), form part of the household sector as household enterprises or, equivalently, unincorporated enterprises owned by households as defined in paragraph 7.

(2) Within the household sector, the informal sector comprises (i) "informal own-account enterprises" as defined in paragraph 8; and (ii) the additional component consisting of "enterprises of informal employers" as defined in paragraph 9.

(3) The informal sector is defined irrespective of the kind of workplace where the productive activities are carried out, the extent of fixed capital assets used, the duration of the operation of the enterprise (perennial, seasonal or casual) and its operation as a main or secondary activity of the owner.

Household enterprises

7. According to the United Nations System of National Accounts (Rev.4), household enterprises (or, equivalently, unincorporated enterprises owned by households) are distinguished from corporations and quasi-corporations on the basis of the legal organization of the units and the type of accounts kept for them. Household enterprises are units engaged in the production of goods or services which are not constituted as separate legal entities independently of the households or household members that own them, and for which no complete sets of accounts (including balance sheets of assets and liabilities) are available which would permit a clear distinction of the production activities of the enterprises from the other activities of their owners and the identification of any flows of income and capital between the enterprises and the owners. Household enterprises include unincorporated enterprises owned and operated by individual household members or by two or more members of the same household as well as unincorporated partnerships formed by members of different households.

⁹ Extract from ILO, Resolution on the measurement of employment in the informal sector, adopted by the Fifteenth International Conference of Labour Statisticians (ICLS), Geneva, 1993.

Informal own-account enterprises

8. (1) Informal own-account enterprises are household enterprises (in the sense of paragraph 7) owned and operated by own-account workers, either alone or in partnership with members of the same or other households, which may employ contributing family workers and employees on an occasional basis, but do not employ employees on a continuous basis and which have the characteristics described in subparagraphs 5 (1) and (2).

(2) For operational purposes, informal own-account enterprises may comprise, depending on national circumstances, either all own-account enterprises or only those which are not registered under specific forms of national legislation.

(3) Registration may refer to registration under factories or commercial acts, tax or social security laws, professional groups' regulatory acts or similar acts, laws or regulations established by national legislative bodies.

(4) Own-account workers, contributing family workers, employees and the employment of employees on a continuous basis are defined in accordance with the most recently adopted version of the International Classification of Status in Employment (ICSE).

Enterprises of informal employers

9. (1) Enterprises of informal employers are household enterprises (in the sense of paragraph 7) owned and operated by employers, either alone or in partnership with members of the same or other households, which employ one or more employees on a continuous basis and which have the characteristics described in subparagraphs 5 (1) and (2).

(2) For operational purposes, enterprises of informal employers may be defined, depending on national circumstances, in terms of one or more of the following criteria: (i) size of the unit below a specified level of employment; (ii) non-registration of the enterprise or its employees.

(3) While the size criterion should preferably refer to the number of employees employed on a continuous basis, in practice it may also be specified in terms of the total number of employees or the number of persons engaged during the reference period.

(4) The upper size limit in the definition of enterprises of informal employers may vary between countries and branches of economic activity. It may be determined on the basis of minimum size requirements as embodied in relevant national legislations, where they exist, or in terms of empirically determined norms. The choice of the upper size limit should take account of the coverage of statistical inquiries of larger units in the corresponding branches of economic activity, where they exist, in order to avoid an overlap.

(5) In the case of enterprises which carry out their activities in more than one establishment, the size criterion should, in principle, refer to each of the establishments separately rather than to the enterprise as a whole. Accordingly, an enterprise should be considered to satisfy the size criterion if none of its establishments exceeds the specified upper size limit.

(6) Registration of the enterprise may refer to registration under specific forms of national legislation as specified in subparagraph 8 (3). Employees may be considered registered if they are employed on the basis of an employment or apprenticeship contract which commits the employer to pay relevant taxes and social security contributions on behalf of the employee or which makes the employment relationship subject to standard labour legislation.

(7) Employers, employees and the employment of employees on a continuous basis are defined in accordance with the most recently adopted version of the International Classification of Status in Employment (ICSE).

10. For particular analytical purposes, more specific definitions of the informal sector may be developed at the national level by introducing further criteria on the basis of the data collected. Such definitions may vary according to the needs of different users of the statistics.

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