

**DEFINING AND ESTIMATING UNDERGROUND AND INFORMAL
ECONOMIES: THE NEW INSTITUTIONAL ECONOMICS APPROACH**

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To be published in *World Development*, Vol 18, No 7, 1990

Abstract:

A taxonomy of underground economies is elaborated based on the new institutional approach to economic development. Members of formal sectors confront different sets of transformation and transaction costs than do members of informal sectors and these differences are regarded as crucial to the development process. The paper distinguishes illegal, unreported, unrecorded and informal economies and examines the conceptual and empirical linkages among them. Alternative micro and macro methodologies for measuring underground activities are reviewed and evaluated including census and survey procedures, discrepancies and monetary methods.

Keywords: Underground, unrecorded, unreported, informal, illegal, unobserved, hidden, shadow economy, transaction costs, monetary methods.

JEL: O17, H26, H2, K42, D72, H3

DEFINING AND ESTIMATING UNDERGROUND AND INFORMAL ECONOMIES: THE NEW INSTITUTIONAL ECONOMICS APPROACH¹

Edgar L. Feige²

"When you can not measure, your knowledge is meager and unsatisfactory"

Lord Kelvin (Inscription at Harper Library- University of Chicago)

Purposes and Objectives

The purpose of this paper is to provide an overview of the state of the art of defining and measuring the phenomenon popularly known by the catch phrase the "underground" economy in both developed and developing nations. The objectives are:

- 1) To utilize the framework of the "new institutional" economics to establish a taxonomy of underground economies in order to clarify and facilitate measurement methodology.
- 2) To highlight the particular problems that arises in efforts to estimate the size, growth and characteristics of the underground economy.
- 3) To briefly describe and evaluate the strengths and weaknesses of alternative approaches to measurement that have been undertaken to date;
- 4) To define the role that successful measurement of the underground economy can play in a variety of policy contexts.

The Conceptual Framework of the New Institutional Economics

All measurement requires a conceptual framework since measurement without theory is vacuous. The conceptual framework must elaborate the substantive problems of concern; specify the particular hypotheses that require investigation and provide a set of

¹ To be published as "Defining and Estimating Underground and Informal Economies: The New Institutional Economics Approach", **World Development** Vol 18, No. 7; July 1990.

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operational definitions of the variables that are regarded as central to the analysis.

In the broadest terms, the fundamental problem of the economics profession is to comprehend the process of economic development, that is, to understand the forces that generate and distribute the production, income and wealth of a society. During the past two decades, social scientists and development agencies have paid increasing attention to the role of underground or informal economies in the development process. While a review of this literature is well beyond the scope of the present paper,³ this research has identified the underground economy with such diverse issues as: the persistence of poverty; underemployment; rural-urban migration; indigenous versus imported technology; a buffer for cyclical fluctuations in the formal economy; income inequality; growth dynamics; dual labor markets; industrial organization; the debt crisis; the effectiveness of macro economic policy; and economic accounting. In short, there is now general acceptance of the proposition that informed policy decisions in many areas require both analytical and empirical knowledge concerning the size, growth, composition, causes and consequences of the underground economy.

Yet despite this widespread recognition of the importance of underground activities there remain considerable ambiguities concerning the precise nature of the phenomenon. Different authors addressing different questions have employed a variety of alternative definitions of the underground economy and this has led to the criticism that it is "an exceedingly fuzzy concept" which "obscures analysis of central issues and is counterproductive" (Peattie, 1987). While it is true that the casual usage of the terms "informal sector" or "underground economy" are more connotative than denotative, a carefully constructed taxonomy of underground economy concepts can be very useful for a variety of analytical and empirical issues. What is required is a unified conceptual framework capable of clarifying distinctions between different types of underground economies as well as specifying the interrelationships between them.

A growing interest in the development literature is to gain a deeper theoretical and empirical understanding of the relationship between institutions and the process of economic development in order to generate policies and programs to improve economic

³ A critical examination of the role of the informal sector can be found in a series of articles that appear in "The Urban Informal Sector: Critical Perspectives", World Development 6(9/10) September-October 1978 and (Richardson, 1984).

performance at both the macro and micro levels. The broad conceptual framework which guides this undertaking is the "new institutional" approach which directs attention to the critical relationships between the rules of the game that constrain human activity and the process of economic development. It is now recognized that policy decisions require empirical knowledge of the complex set of relationships that link the development process to institutions, and that institutions in turn, determine the evolution and composition of the formal and the informal sectors. A necessary but not sufficient condition for understanding these linkages is a meaningful definition of the underground or informal economy and the ability to measure its dimensions, growth and characteristics.

The traditional neo-classical framework for analyzing the development process narrowly specifies a production or "transformation" function that relates outputs to inputs (land, labor, capital) and a transformation technology; a set of preference functions for individuals; and a market institution that employs the competitively determined prices of goods and factors as the information and incentive vehicle to determine the allocation and distribution of goods and services.

The new institutional approach (Olson, 1982; North, 1989) extends this basic framework by incorporating feedback relationships between the "economy" and the "institutions" that determine the rules of the game for economic exchange. An important innovation of the new institutional approach is to specify a "transaction function" (Wallis and North, 1986) that determines the costs associated with economic exchange. The aim of this new approach is to gain an understanding of the process of economic development in terms of both the costs of transforming inputs into outputs and the costs of exchange, namely, transaction costs. Policy decisions aimed at facilitating and accelerating the development process must be based on knowledge of the relationship between economic growth and the factors that effect both transformation and transactions costs.

Transformation and transactions costs are fundamentally determined by the availability of inputs and the efficiency with which inputs are combined to produce outputs and exchange. The availability of inputs and the efficiency with which they are used are affected by formal institutions that establish and guarantee rights, bestow privileges and administer regulations and penalty structures that serve to foster adherence

to the rules.

As a general proposition, an economic agent is regarded a member of the "formal" sector of any economy when his actions adhere to, or are protected by the established institutional rules of the game. Conversely, when his actions fail to adhere to the established rules, or are denied their protection, the agent is regarded as a member of the "informal" sector of the economy. Adherence to the established rules constitutes participation in the formal or aboveground economy, whereas, non compliance, or circumvention of the established rules, or exclusion from the protection of those rules, constitutes participation in an informal or underground economy. Since there are a variety of institutions (different sets of rules covering a wide spectrum of economic behaviors) there are also a variety of informal sectors. The characteristics of each distinct informal economy are determined by the particular set of institutional rules that its members circumvent.

Members of the formal sector, constrained by a particular institutional set of rules, confront a different set of transformation and transaction costs than those faced by members of the informal sector. According to the new institutional approach, it is these differences in the transformation and transactions costs associated with formal and informal sectors that give rise to their importance for the development process.⁴

A major challenge for the new institutional approach is to empirically estimate the relative transactions costs facing agents in both sectors, and to relate estimated costs of exchange to the levels of economic development across countries and to changes in growth rates for particular countries. The success of these efforts is contingent on our ability to obtain accurate estimates of both transaction costs and the level and rates of growth of a nation's overall economic activity, which includes estimates of the income generated in what is commonly known as the "informal economy".

Taxonomy of Underground Economies

The literature on the underground economy has avoided a common usage and

⁴ The importance of transactions costs as a determinant of informality is one of the primary themes developed by De Soto (1989). The theoretical foundations of the relationship between institutions and economic performance are being examined by North (1989) and methodologies for measuring transactions costs over time and across countries are now being developed by (Benham and Benham 1989).

has instead offered a plethora of appellations including: subterranean; hidden; grey; shadow; informal; clandestine; illegal; unobserved; unreported; unrecorded; second; parallel and black. This profusion of vague labels attests to the confusion of a literature attempting to explore a largely un-chartered area of economic activity. We require a road map through this murky territory.

At the outset, we will note the obvious; there is no single underground economy, there are many. These underground economies are omnipresent, existing in market oriented as well as in centrally planned nations, be they developed or developing. The polytypic nature of the underground economy requires elaboration of a taxonomy, tailored to address a variety of substantive issues of concern to policy makers.

Those engaged in underground activities circumvent, escape or are excluded from the institutional system of rules, rights, regulations and enforcement penalties that govern formal agents engaged in production and exchange. As a result, underground activities often elude enumeration and measurement in the social accounting systems designed to monitor economic activity. As participants in underground activities bypass institutional regulations, and hence risk penalties, they develop a penchant for secrecy and concealment. This inclination to avoid detection makes their behavior difficult to study empirically.

Major efforts have been undertaken to differentiate between various types of underground economies, to develop a nomenclature to identify them, and create operational methods for estimating their size, characteristics, composition and growth. Satisfactory definitions and methods of measurement are necessary to determine the causes for their growth and to analyze their implications for a broad range of pressing economic, social and political issues.

The critical criterion for distinguishing between aboveground or formal activity on the one hand, and underground or informal activity on the other, is whether or not the activity adheres to the established prevailing institutional rules of the game. Different types of underground activities are distinguished according to the particular institutional rules that they violate.

To illustrate the use of this standard as a basis for a classification system, we identify four specific types of "underground" economic activities: illegal; unreported;

unrecorded and informal and explore their nature and interrelationships and relevance for different economic issues. Each underground activity is characterized by the particular institutional set of rules that it circumvents. The metric for measuring the dimensions of each underground activity is the aggregate income generated by the activity. We distinguish four specific underground economies and name them:

- 1) the illegal economy
- 2) the unreported economy
- 3) the unrecorded economy
- 4) the informal economy

The illegal economy

The illegal economy consists of the income produced by those economic activities pursued in violation of legal statutes defining the scope of legitimate forms of commerce. Illegal economy participants engage in the production and distribution of prohibited goods and services. Criminologists and law enforcement officials have a natural interest in monitoring the size, growth and social consequences of illegal activities. From the prospective of economic development, the most notable illegal activities are the production of prohibited substances (e.g. drug traffic) and black market currency exchange. The illegal production of drugs provides a lucrative source of income that competes directly with the production of other cash crops. But its most serious consequence is to undermine the stability and responsibility of political, legal and economic institutions that might otherwise serve to facilitate the development process.

The existence of illegal black market currency transactions effect the development process by reducing transaction costs of obtaining foreign currencies and providing a hedge against fluctuations in the value of the domestic currency.

The unreported economy

The unreported economy consists of those economic activities that circumvent or evade the institutionally established fiscal rules as codified in the tax code. A summary measure of the unreported economy is the amount of income that should be reported to the tax authority but is not so reported. A complementary measure of the unreported

economy is the "tax gap", namely the difference between the amount of tax revenues due the fiscal authority and the amount of tax revenue actually collected. The "tax gap" measure takes account of the appropriate marginal tax rate as well as non compliance with the rules concerning deductions from and adjustments to reportable income.

The size and growth of unreported income and the tax gap effect the size of budget deficits, the government debt and tax reform policies. Tax evasion is a particular problem for developing nations whose already weakened fiscal authority must now shift a greater burden of revenue collection to monetary policy. Inflation is a major contributor to political instability of developing nations with its dramatic consequences for allocation and distribution.

At the micro economic level, participants in the unreported economy face a different configuration of relative prices for both inputs and outputs and hence face different transformation and transaction costs than participants in the reported economy. Consequently, allocation and distribution will be affected. Without empirical knowledge of the size and growth of unreported income, it is difficult to ascertain who are the winners and losers from policy changes.

The development literature has given little systematic attention to the problems associated with the measurement of unreported incomes despite the fact that developed economies have produced elaborate schemes for estimating its size and growth.(Feige, 1989) Research on unreported income has been a major stimulus to tax reform in developed nations and has stimulated the simplification of tax laws, lowering of tax rates and broadening of the tax base to reduce rates of non compliance and lower the efficiency and administrative costs of the tax system.

The growing debt crisis with its ramifications for capital accumulation, growth and trade make the issue of unreported income all the more salient for developing nations. The developing nations' failure to generate adequate fiscal institutions is reflected in a narrow tax base associated with "formal sector" firms as well as revenues generated by state related enterprises. The pernicious consequence of inadequate fiscal institutions is the tendency to reinforce what (De Soto, 1989) has characterized the "mercantilist system".

The unrecorded economy

The unrecorded economy consists of those economic activities that circumvent the institutional rules that define the reporting requirements of government statistical agencies. A summary measure of the *unrecorded economy* is the amount of unrecorded income, namely the amount of income that should (under existing rules and conventions) be recorded in national accounting systems (e.g National Income and Product Accounts) but is not recorded. Unrecorded income represents a discrepancy between total income or output and the actual amount of income or output captured or enumerated by the statistical accounting system designed to measure economic activity.

The importance of estimating the size and rate of change of unrecorded income can not be overemphasized. Any effort to evaluate the programmatic effects of policy changes designed to implement the overall development process must have accurate inter-temporal estimates of the actual level of overall economic activity. One particularly important component of unrecorded economic activity in developing nations is the production that takes place within the household. Although national income and product theory suggests that household production should be incorporated in national accounts, this sector is typically omitted owing to the difficulty of measurement. Various methods of estimating household production have been employed (Chadeau, 1985) and the results suggest that household production accounts for between 25% and 50% of recorded GNP (depending upon the valuation methods employed) in developed nations. In developing nations, the shifts between the household production sector and the enumerated sector are likely to have substantial effects on recorded rates of growth. Thus any interpretation of recorded growth rates needs to take account of shifts of activity between the un-enumerated household sector, the unrecorded sector and the recorded sector.

A large and rapidly changing unrecorded economy can systematically bias estimates of key economic indicators such as: unemployment rates, savings rates, productivity and price levels. (McGee and Feige, 1989) Systematically biased information that is disseminated to individuals, firms and policy makers will not only distort the perception of economic activity, it will effect actual behavior. To the extent that economic agents base their decisions on publicly available information, false

information can induce rational economic agents to engage in flawed behaviors. Similarly, to the extent that macroeconomic policy is based on systematically biased information, well intentioned policies are likely to produce unexpected and counterproductive outcomes.

Finally, since empirical research in macroeconomics relies almost exclusively on macroeconomic indicators that are derived from official national accounting or survey information systems, any systematic discrepancies in underlying data bases arising from unrecorded activities will distort the research results.

The informal economy

The term "informal economy" has been used so frequently, and inconsistently, in the development literature that it requires special attention. Following the classification system suggested by the new institutional economics, the informal economy comprises those economic activities that circumvent the costs and are excluded from the benefits and rights incorporated in the laws and administrative rules covering property relationships, commercial licensing, labor contracts, torts, financial credit and social security systems. A summary measure of the informal economy is the income generated by economic agents that operate informally.

The foregoing definition of the informal sector reflects the spirit of de Soto's (1989) essentially legalist conception of "informality"⁵, and is broadly consistent with a number of definitions.⁶ It should be noted that although most of the literature on

⁵ De Soto's volume does not contain an explicit definition of the informal sector. His characterization of informality is as follows:

"The concept of informality used in this book is based on empirical observation of the phenomenon itself. Individuals are not informal; their actions and activities are. Nor do those who operate informally comprise a precise or static sector of society; they live within a grey area which has a long frontier with the legal world and in which individuals take refuge when the cost of obeying the law outweighs the benefit. Only rarely does informality mean breaking all the laws; most individuals disobey specific legal provisions in a way that shall be described later. There are activities for which the state has created an exceptional legal system through which informals can pursue their activities, although without necessarily acquiring a legal status equivalent to that of people who enjoy the protection and benefits of the entire Peruvian legal system; these are also informal activities." (p. 12)

⁶ Some examples illustrating the evolution of the concept are instructive:

(Weeks 1975): "The distinction between a formal and informal sector is based on the organizational characteristics of exchange relationships and the position of economic activity vis-a-vis the State.. Basically, the formal sector includes government activity itself and those enterprises in the private sector which are officially recognized, fostered, nurtured and regulated by the State. ..Operations in the informal sector are characterized by the absence of such benefits."

(Portes; Blitzer and Curtis 1986): "the informal sector can be defined as the sum total of income-generating activities outside modern contractual relationships of production" (p.728)

(Portes and Sassen-Koob 1987): "The informal sector can be tentatively defined as the sum total of income-earning activities

informality is focused on urban sectors, it is clear from the definition that rural informality is likely to be sizable. This latter point appears to have been largely overlooked in the literature.

The salience of informal activities derives from the fact that their existence is intimately connected with the institutional arrangements imposed by the State. As such, whatever positive or negative outcomes that are associated with the emergence of the informal economy can in principle be either reinforced or weakened by policy actions which modify the institutional setting. In order to determine the causes and consequences of informal activity, it is necessary to estimate the size and composition of the informal economy.

The conceptual linkage among underground economies

Having explicitly defined a number of underground economies, it is also necessary to note some of the empirical linkages between them. To the extent that national income accounting procedures rely on tax based data sources as inputs to the development of the national accounting systems, the existence of unreported income will impart a downward bias to the national accounts estimates of overall economic activity. Thus, to the extent that the rate of tax non compliance increases over time, recorded rates of economic growth will be biased downward.

An analogous argument can be made for the growth of the informal sector. To the extent that national accounting systems are based on data sources primarily collected from the formal sector, a large and growing informal economy will play havoc with perceptions of development based on official statistics and consequently with policy decisions based exclusively on information provided by official sources.

Finally, the growth of non compliance in one area of economic life is likely to

with the exclusion of those that involve contractual and legally regulated employment. Although this definition encompasses criminal activities, the term is customarily reserved for such activities as those in the food, clothing, and housing industries that are not intrinsically illegal but in which production and exchange escape legal regulation." (p.31)

(Gray 1987):"Because the informal sector is defined in terms of income earning activities which escape official regulation and the constraints of labor legislation, an analysis of the role of the state is crucial to any understanding of its development." (p. 422)

(Amin 1987):"the informal sector may be defined as including enterprises that have in common one major and dominant attribute: the absence of official status. In other words, enterprises and individuals in the informal sector operate outside the incentive or social security system offered by the State and its institutions." (p.612)

have spillover effects into other areas. Tax non compliance shifts the burden from the dishonest to the honest, increasing the costs of adherence to any system of rules and regulations. An oft overlooked consequence of growing informality is the unraveling of the social and political fabric.

Methods of Measurement

Strengths and shortcomings of alternative approaches to measurement

If a family of “underground” economies exists, what special problems are we likely to encounter in efforts to measure their size and development over time? Any attempt to measure a social phenomenon whose *raison d’être* is to defy observation is fraught with empirical difficulties. All estimates of the size and growth of a particular underground sector are likely to be subject to substantial error. The variety of operational definitions of the underground economy that have been employed implies that comparisons of different estimates must be undertaken with great caution.

It is therefore necessary to establish some methodological criteria for what investigators would regard as reasonable evidence that the underground phenomenon has been estimated within tolerable limits. Any research strategy must be sufficiently broad to encompass available evidence from different sources and obtained by different procedures. The evidence may be qualitative, anecdotal, or quantitative. Since different methods are likely to measure different aspects of the unobserved sector, estimates must be carefully reconciled in terms of the correspondence between different concepts of underground activity.

Three major classes of information are available to the researcher, and each has an important role in the analysis. First, there is the large and suggestive body of anecdotal information that is not easy to analyze by the systematic procedures of modern quantitative methods. Such “institutional” information is, however highly relevant as a qualitative guide to both the frequency and nature of the phenomenon under investigation. Anecdotal institutional information provides a necessary starting point for inquiry. It serves to raise many key questions and points the research in specific directions concerning both the sources and processes involved in unobserved economic

activities. A particularly useful method for obtaining this type of information is through a "participant observer", namely a researcher who has made sufficiently close contacts with agents engaged in informal activities that he is trusted and is accepted as a routine participant. Much of the insightful empirical material contained in de Soto's *The Other Path* (1989) was obtained using this method.

A second class of information utilizes systematically collected micro-observations, be they from individual surveys, census reports, tax returns, unemployment records, or other similar sources. Micro data approaches are useful insofar as they yield disaggregated information that sheds light on the particular characteristics of firms and individuals engaged in underground activities. If such information can be combined with detailed estimates of transaction costs facing firms and individuals, it becomes particularly interesting for testing some of the maintained hypotheses of the new institutional approach. However, the classification scheme for counting informal employers and workers has often been based on proxy variables such as firm size, employee earnings or workers occupation rather than the extent to which survey respondents circumvent or are not covered by the institutional constraints that in fact define informal activities.

A great deal of the empirical work conducted by the International Labor Organization (ILO) is based on micro data sources, typically census or survey data. Unfortunately, census data provides no direct information on the informal economy as defined above, namely, those activities that circumvent or are not protected by existing institutional arrangements. Many studies (e.g. Webb, 1975; Mazumdar, 1975; Bose, 1978; Joshi and Joshi 1976; Deshpande, 1979) have therefore assigned the employees and employers of firms above some arbitrary size to the "formal" sector, with self employed and employees of small sized firms relegated to the "informal" sector. Even firm size allocations to the "informal" sector have not been consistently applied. Some studies include workers in the informal economy if their firm employs less than five workers, while others consider informal workers as those who are employed by firms with less than twenty five workers. Establishment based estimates are highly sensitive to under reporting of the actual number of workers employed, particularly, where social accounting practices exclude enumeration of smaller sized firms. Discovery of this type of under reporting in official data sources in Italy required two consecutive increases in

Italy's GNP of 8.9% and 9.8% in 1976 and 1977 respectively. (Contini, 1989).

Several survey studies (Portes, et. al. 1986; Merrick, 1976) based on household data attempt to distinguish between formal from informal workers according to whether or not wage and salaried workers are registered with the official social security system. This classification corresponds more closely to the definition of the informal sector based on the new institutional scheme developed above, and is useful in deriving estimates of the percentage of informals classified by industry. Using the foregoing classification system, these surveys provide estimates of relative income and earnings of "formal" and "informal" workers. An important, albeit tentative conclusion from studies of this type is that informal employees appear to have lower average earnings than "full time formal workers" but that informal employers incomes considerably exceed the incomes of workers in the formal sector.

Micro approaches to estimation tend to be costly and typically yield point estimates of the size of unobserved activity rather than temporal estimates of the growth of the sector. Consistently comparable surveys are typically not available on consistent time intervals thus limiting their usefulness in making historical comparisons. The lack of uniformity between micro surveys conducted at different time intervals often precludes their usefulness in uncovering the temporal causes and consequences of underground economy growth.

Another shortcoming of the micro approaches is that they typically rely on obtrusive methods of observation that may compromise the quality of the data collected. Incentives to conceal information may jeopardize the veracity of the response given to the data collector. Business, tax and employment records may be also be falsified to avoid regulation or taxation. Moreover, survey studies often suffer from high rates of non-response and from self-selection biases.

Non-response rates for sensitive survey questions are often 20-40% of the number of individuals contacted, and pose a particular problem when interviews are conducted with individuals or enterprises that have economic incentives to remain anonymous. These high non-response rates suggest the possibility of substantial survey bias when the cohort of self selected non respondents is those individuals most likely to be engaged in underground activities. In an effort to cope with non response bias, several large scale

surveys undertake to impute responses for non respondents. These imputations are based on estimated relationships between demographic variables and the observed answers of respondents. Insofar as the underground activities of non respondents are likely to be affected by variables unrelated to demographic factors, such approaches are unlikely to rectify self selection biases.

The results of micro investigations may also be sensitive to the method used to query respondents. An Internal Revenue Service taxpayer opinion survey on tax evasion, which used both direct questions (with assurances of anonymity) and a randomized response technique, revealed that the randomized response yielded evasion estimates between 62% and 433% higher on some questions than the direct question approach.

An alternative approach to measurement relies upon macroeconomic data sources. An advantage of macro approaches is that they employ published data sources that have been collected for purposes unrelated to the study of the underground economy. Because these are unobtrusive measures, they are not susceptible to willful distortion on the part of a respondent. Such approaches are typically less costly to undertake, and they provide temporal estimates of both the size and growth of unobserved activities. Most of the macro approaches depend on monetary aggregates that are collected for purposes unrelated to unobserved activities, and often represent the most accurate official data consistently collected by government agencies. Currency data are readily available for all developing countries from central bank records and their accuracy is assured by the administrative security requirements associated with the printing and issue of currency. Similarly, data on demand deposits and bank debits are widely available and are typically of high quality. Monetary data also tend to be readily available over long historical periods and are conceptually consistent both over time and across countries. This latter feature is of particular importance in the context of the new institutional approach, since institutional change in any given nation is likely to have an important temporal component and institutional differences between countries require consistent cross country observations of underground activity.

Macro methods typically require a few strong explicit counter-factual assumptions to produce estimates of the underground economy. The reliability of any particular macro approach will therefore depend upon the reasonableness of the

assumptions that underlie the estimation procedure. The macro methods are most useful for discerning longer run trends in the growth of unreported and unrecorded underground economies, but are incapable of providing details on the composition and specific characteristics of informal activities.

In sum, the major advantage of obtrusive micro measures is that they are capable of producing a rich set of detailed information concerning the characteristics and composition of underground activities. Unobtrusive macro methods use broad indicators that typically only capture aggregate underground activity. Obtrusive micro measures, being more costly, are rarely replicated consistently over time, and are therefore of little use in efforts to establish the inter-temporal development of underground activity. Unobtrusive macro measures are less costly and less contaminated because they often rely on more readily available time series that have been collected for purposes independent of the study of underground activities. They do however require the use of strong a priori assumptions to establish the relationship between macroeconomic "indicators" and underground activities. While the realism of these assumptions have been criticized in the literature, the fact that the assumptions are explicit and few in number, makes a sensitivity analysis of the results possible. The possibility for sensitivity analysis of micro approaches is more limited in so far as the assumptions implicit in the collection and organization of the data is less amenable to variation once a particular survey vehicle and methodology have been adopted.

To the extent that different measurement procedures have recognizable strengths and weaknesses, the soundest empirical strategy is an eclectic approach that evaluates information derived from all available sources. The first requirement is to identify which particular component of underground activity is captured by different procedures. Where different empirical approaches purport to measure the same conceptual entity, meaningful consistency checks are possible. Since every measurement procedure requires a priori assumptions, sensitivity analysis should be undertaken wherever possible. Given the difficulties inherent in any effort to quantify a particular underground economy, the various approaches to measurement are best viewed as complementary, yielding insights into different aspects of the issue.

Specific measurement methods

Discrepancy Methods

Discrepancy methods are widely used in developed nations as a means for estimating particular components of underground income but to date these methods have rarely been applied to third world nations. In some cases the procedures can not be readily applied because of the rudimentary and oft fragmentary nature of national accounting systems and the paucity of appropriate fiscal data. The discrepancy approach is feasible whenever independent means exist to estimate the same conceptual entity. If one procedure for measuring a particular form of underground activity is believed to be relatively free of biases induced by that activity while another procedure is known to be effected by the activity, the discrepancy between the two can be used to measure the net effect of the underground activity.

In practice, great care must be exercised in interpreting discrepancy measures. They are typically not measures of any underground sector. The observed discrepancy between two measures often reflects conceptual differences in what the two measures purport to estimate. Moreover, if both procedures are directly or indirectly affected by the underground activity, then the discrepancy method simply measures the difference between the two approaches rather than the absolute magnitude of the unobserved sector. The most common discrepancy approaches are reviewed separately in order to highlight the different aspects of underground activity that each measure captures.

National Accounts Discrepancies - (Unrecorded Income)

The income and expenditure sides of the national income accounts are typically estimated from different data sources. To the extent that the two sides of the accounts are measured by relatively independent methods, Macafee, (1980) proposed that the discrepancy between an expenditure side estimate of national income and an income side estimate of national income might be used to estimate the size of the unrecorded sector. If individuals are less likely to misrepresent their expenditures than they are to misrepresent income, such a method would capture the net difference in misrepresentation on the two

sides of the accounts. This difference should not be interpreted as a measure of the size of unrecorded income since both sides of the accounts may understate economic activity.

The raw initial discrepancies that are discovered between the two sides of the accounts are rarely published. When sizable initial discrepancies do appear in practice, the accounts are usually revised to reduce the discrepancy. In countries where raw discrepancies between income and expenditure estimates are available by sector, the approach may be useful in identifying those particular sectors of economic activity that are most likely to be affected by underground activity.

Fiscal-NIPA discrepancies - Unreported income

In those nations that rely heavily on some form of income or consumption tax, it is possible to obtain estimates of unreported income by examining the discrepancy between income estimates derived from tax data sources (typically tax returns) and those derived from national income and product accounts (NIPA). In the U.S. the Bureau of Economic Analysis (BEA) regularly calculates the discrepancy between actual adjusted gross income as reported to the Internal Revenue Service (IRS) and an independent estimate of adjusted gross income derived from NIPA based estimates of personal income. This "AGI gap" discrepancy measure represents a carefully constructed discrepancy measure that attempts to estimate unreported income. The AGI gap would be a conceptually approximate estimate of unreported income under the following conditions: 1) personal income (PI) was accurately measured, that is, there is no unrecorded income; 2) correct adjustments are made for all conceptual differences between the economic income measure PI and the fiscal income measure AGI.

Although the AGI gap is unlikely to yield an empirically exact measure of unreported income (due to the difficulties of measuring many of the large reconciliation items required to make PI and AGI conceptually compatible), it is nonetheless of interest since it highlights the conceptual similarities and differences between NIPA accounts and tax-based source information. These conceptual interdependencies are crucial for an understanding of how under reporting of tax source information will ultimately impact NIPA measures of GNP and PI.

The AGI gap measure is best interpreted as a rough measure of noncompliance in

the reporting of taxable income. It tends to understate total unreported income insofar as it takes no account of underreporting of other types of taxes nor does it capture unreported illegal income since the latter is not typically included in NIPA estimates of personal income. Moreover, to the extent that the NIPA measure of personal income is understated as a result of other unrecorded income, the AGI gap will correspondingly understate unreported income.

Tax audit discrepancies- Unreported Income

In recent years, the IRS has developed an elaborate methodology for constructing audit based estimates of unreported income that suggest that unreported income on federal income taxes now approaches \$500 billion per year. While estimating procedures of this type are far beyond the administrative capacities of most developing nations, they do indicate that fiscal audit data can be a useful tool in determining the causes of non compliance.

The payments - transactions discrepancies - Unrecorded transactions

The payments-transactions discrepancy method is a procedure for estimating the total volume of unrecorded transactions and hence provides an important aggregate measure of underground (unrecorded) economic activity. The conceptual basis for this approach is the familiar equation of exchange which notes that the total volume of payments (as measured by the quantity of the medium of exchange, M , times the transactions velocity of the medium of exchange, V) in a society must equal the total volume of monetary transactions (PT).

Total transactions can be readily decomposed into i) final goods and services transactions (domestic expenditures plus factor payments); ii) intermediate transactions; iii) transactions in real and financial domestic assets; iv) transfer payments; v) foreign goods and capital transactions and vi) unrecorded transactions. Estimates of total transactions can be derived from national accounting systems. Item i) represents transactions recorded in standard GNP accounts; ii) can be derived from the nation's input-output tables; iii) from flow of funds data; iv) from government transfer accounts v) from balance of payments accounts.

Estimates of total payments made by checks are readily available from bank debit statistics and total currency payments can be estimated from data on the stock of currency and methods to estimate the transaction velocity of currency have recently been developed. (Feige, 1987). To date, the only effort to estimate the total volume of payments in developing nations has been in India, despite the fact that payments data provide a very promising avenue for tracking overall economic development. They also are likely to provide an indirect estimate of aggregate transaction or exchange costs since payment volume is expected to increase as the costs of exchange are reduced.

The discrepancy between estimated payments [MV] and estimated transactions [PT] provides a conceptually consistent estimate of unrecorded transactions. Given estimates of the volume of unrecorded transactions it is possible to derive estimates of total unrecorded income from independent investigation of the ratio of transactions to income.

Currency ratio measurement methods: Unreported and Unrecorded Income

Currency ratio (C/D) methods (Feige, 1980; 1986, 1989) have been widely applied as a means for obtaining aggregate estimates of the size and growth of unreported and unrecorded income in developed nations and the methods can be readily applied to developing nations as well. The conceptual justification for estimating various types of underground economies employing currency based methods is that currency is regarded as a superior medium of exchange for conducting underground transactions. In developed nations, currency is often employed for unreported transactions because its use eliminates an "audit trail" and hence reduces the likelihood that tax evasion will be discovered and penalties assessed.

In developing nations, currency is the predominant medium of exchange for informal transactions since informal participants typically do not have access to formal credit facilities which employ demand deposits as the primary means of payment. Moreover, even if checking facilities exist for some informal firms, currency will be the preferred medium of exchange when incentives exist to avoid detection.

The development process is itself closely related to the growth of financial

intermediation that typically reduces costs of exchange. As such, one expects developed nations to have significantly lower ratios of currency to demand deposits than less developed nations. This expectation is generally borne out by the data. Moreover, for any particular country, one expects the ratio of currency to demand deposits to decline with economic growth. It was the surprising increase in the ratio of currency to demand deposits in the U.S. that first suggested that a growing unreported economy might be responsible for this empirical anomaly. Currency data now indicates that per capital holdings of U.S. currency are approaching \$1000 and that 45% of the value of the nation's currency supply is in the form of \$100 bills. U.S. households admit to holding only 11% of the nation's supply of currency in circulation outside of the banking system.

The general currency ratio (GCR) model (Feige, 1986) can be employed to estimate the amount of unreported income that would be generated by the estimated amount of "excess" currency. Figure 1 displays the estimated unreported income as a percentage of reported adjusted gross income for the U.S.: 1940 - 1987. Figure 1 also displays the most recent official IRS estimates based on an audit methodology.⁷ The IRS estimates for the years 1982 - 1987 are IRS projections since there is a substantial lag in processing audit information. The GCR time series estimates suggest a significant rise in unreported activity during World War II, when tax rates rose dramatically and price controls provided incentives for black markets. The time series also suggests a substantial increase in unreported activity during the past two decades which appears to have reversed course during the past two years, perhaps as a result of declines in tax rates and reform of the tax system. The conformity between the GCR results and the independent estimates produced by the IRS lend credence to the estimation method.

Census and survey methods:

It is beyond the scope of the present paper to review and evaluate the detailed results of the myriad of papers that report census and survey estimates of the "informal sector" in various developing countries. The stimulus for these estimates was provided by a concerted program of informal estimation supported by the International Labor

⁷ The IRS (1988) results do not include estimates for unreported illegal income. Earlier IRS estimates of illegal income have been incorporated in the reported figures in order to arrive at an estimate of total unreported income that is comparable with the estimates from the GCR model.

Organization (ILO) and the United Nations' Regional Employment Program for Latin America (PREALC). Several observations are however in order.

"Informal workers" in the PREALC studies are defined as the sum of unpaid family workers, domestic servants and the self-employed, minus professionals and technicians. This definition bears only the most tenuous relationship with the definition of informality offered above. The PREALC definition includes all wage earners in the formal sector. The definition therefore takes no account of activities that circumvent institutional constraints, nor does it take account of activities that are excluded from the institutional protection outlined in section III:D. As a result, the PREALC estimates are bound to substantially underestimate the number of informal workers that would be counted under the new institutional conceptual framework.

Portes and Sassen-Koob, (1987, pp34-35) draw attention to an interesting comparison of two alternative estimates of the percentage of the urban economically active population engaged in informal activities in Bogota. Under the PREALC definition, 34.2 % of the economically active urban population is considered to be in the informal sector. When the definition is changed to include workers not covered by social security coverage, (a measure closer to the one suggested above), the estimated percentage increases to 60.5 % for the same year. This example demonstrates that regardless of the shortcomings that may be inherent in underlying census or survey data, the critical factor affecting the estimated size of informal activities is likely to be the precise definition of informality employed.

Although the PREALC definition results in significantly lower estimates than those that would be expected under the definition proposed above, the data are useful insofar as they permit calculation of the growth of the PREALC estimates between the years 1950 and 1980.⁸ Figure 2 presents the estimated percentage change in urban and total "informal workers" for several Latin American countries, as estimated under the PREALC definition. Figure 2 also displays the corresponding percentage change in the ratio of currency to demand deposits over the same period. With the notable exception of Peru, the figure reveals a close correspondence between the rough monetary indicator and the PREALC estimates. This correspondence suggests that the GCR model might

⁸ The data presented here are taken from the Portes and Sassen-Koob (1987) summary table 1 of PREALC estimates.

usefully be employed to obtain temporal estimates of informal income in these Latin American countries.

Figure 3 displays the percentage of the urban economically active population in 1980 estimated to be in the "informal sector" as defined by PREALC.⁹ . The estimated range of the reported results is similar to the range of estimates reported by (Mehta, 1985) in his survey of seven such studies undertaken in India. In the Indian studies, the criteria used to classify workers as belonging to the "informal sector" was their employment in small enterprises. While none of the foregoing criterion correspond with the legalistic concept of informality, they do suggest that a large segment of the economically active population of these countries are engaged in small scale activities that might well be excluded from the institutional constraints that are deemed to be important by the new institutional approach.

Surveys of informal firms and workers, despite their shortcomings, are likely to be a rich and necessary data source for detailed examination of a number of hypotheses entertained by the development literature with respect to the role of the informal economy. For example, the earlier development literature explained the size and growth of the informal sector as a passive adjustment to underemployment resulting from the importation of capital intensive and labor saving technologies from the developed world. According to this view, there emerges a technologically heterogeneous production structure of high capital labor ratio formal firms with high profitability, and low capital labor ratio firms of low profitability who can only survive by reducing their transaction costs by circumventing the institutional constraints imposed by taxes, labor regulations, and social insurance systems.

The new institutional view suggests that the cause of informality is not inappropriate imported technology, but rather the high transaction costs imposed by the State through over regulation. The result is a distortion of relative factor prices. According to this view, the informal sector, defined as the sector that circumvents the State's distortions, is highly productive, efficient and profitable.

At the micro level, these competing hypotheses can best be tested by the use of

⁹ The first estimate for Bogota displayed in Figure 3 is based on the PREALC definition while the second estimate denoted with an * includes workers not covered by social security. As Portes and Sassen-Koob (1987) point out, if the alternative definition had been consistently applied to all of the Latin American countries, the resulting estimates of informal activities would likely be considerably higher.

new or existing surveys of individual firms which can be distinguished according to the degree to which they successfully circumvent institutional constraints. A detailed examination of factor input ratios, income and profitability is required in order to resolve these competing views.

Policy Issues and Measurement

Informed policy decisions aimed at promoting the development process require a deeper understanding of the causes and consequences of the various underground economies. Measurement is a key element in furthering this understanding. If policy makers are to monitor the development process they require accurate indicators of overall economic activity. Despite the obvious shortcomings of existing measures of underground activity, there does appear to be a general consensus that a significant fraction of economic activity in developed nations escapes enumeration and hence contributes to the problem of unrecorded income. Whenever there is an unnoticed shift in economic activity between the recorded and the unrecorded sectors, official statistics that inform current policy decisions will give false signals. Therefore one essential contribution of efforts to measure presently unrecorded activity is to improve the information system on which policy makers must rely.

The new institutional approach aims to redirect policy attention toward the restructuring of indigenous institutions that are found to play a vital role in the development process. In order for this policy redirection to be successful, it must be founded on a deeper empirical knowledge of the specific manner in which particular institutions promote or retard development. Does a growing informal sector promote recorded growth, or will accelerated growth shrink the informal sector? The former "bottoms up" approach implies vastly different policy decisions and programs than the latter "top down" approach to development. Figure 4 illustrates the difficulty of discriminating between these two bold hypotheses. The figure displays the estimated percentage change in "informal workers" and the recorded percentage change in real GDP for the period 1950-1980.¹⁰

Are we to conclude as do Portes and Sassen-Koob, (1987) that the "predicted

¹⁰ The data underlying the chart is from Portes and Sassen-Koob (1987) Table 1.

secular trend toward its (the informal sector) disappearance with the advance of capitalist industrialization has not materialized in any country of the region", that is to say, a failure of the "top down" theory of development; or should we conclude that it is precisely the tenacity and dynamism of the "bottoms up" informal sector that has supported the advance of "capitalist industrialization"? On the basis of the evidence presented, neither conclusion is warranted. The PREALC measure of the "informal sector" fails to capture much of the informal sector as defined by the new institutional approach. Moreover, this hypothesis can not be tested without a set of more complete time series estimates which may only be available with the use of aggregate monetary estimation procedures.

Does a growing unreported economy encourage the development process by reducing transactions costs, relative price distortions, and wasteful government expenditures, or does it undermine needed public expenditures and force the government to conduct reckless monetary policies to collect taxes by the vehicle of inflation? Do the benefits from avoiding institutional constraints outweigh the costs of exclusion from property rights and legal remedy? What are the income distribution consequences of a growing informal sector? Do the higher incomes accruing to informal employers result in lower incomes for informal employees? Does a growing informal sector encourage technologies and factor input ratios that benefit aggregate production through linkages with the formal sector or does it exacerbate technological and factor input imbalances?

I pose these questions to illustrate the complex nature of the policy issues raised by the new institutional approach as a means of incorporating the theory of informal economies in the development literature. While measurement alone is unlikely to provide definitive answers, it is sure folly to proceed without it.

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