



Measuring the shadow economy using company managers



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ABSTRACT

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This study develops a method that uses surveys of company managers to measure the size of a shadow economy. Our method is based on the premise that company managers are the most likely to know how much business income and wages go unreported due to their unique position in dealing with both of these types of income. We use a range of survey design features to maximize the truthfulness of responses. Our method combines estimates of misreported business income, unregistered or hidden employees, and unreported wages, to arrive at an estimate of the size of a shadow economy as a percentage of GDP. This approach differs from most other studies of shadow economies, which largely focus on using macroindicators. We illustrate the application of our method to three new EU member countries. We also analyze the factors that influence companies' participation in the shadow economy. *Journal of Comparative Economics* **43** (2) (2015) 471–490. University of Technology, Sydney, Australia; Stockholm School of Economics in Riga, Riga, Latvia.

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1. Introduction

The size of a shadow economy is an important issue because informal production has a number of negative consequences. First, informal production and tax evasion can create a vicious spiral: individuals go underground to escape taxes and social welfare contributions, eroding the tax and social security bases, causing increases in tax rates and/or budget deficits, pushing more production underground and ultimately weakening the economic and social basis for collective arrangements. Second, tax evasion can hamper economic growth by diverting resources from productive uses (producing useful goods and services) to unproductive ones (mechanisms and schemes to conceal income, monitoring of tax compliance, issuance and collection of penalties for non-compliance). Third, informal production can constrain companies' ability to obtain debt or equity financing for productive investment because potential creditors/investors cannot verify the true (concealed) cash flows of the company. This can further impede growth. Finally, shadow activities distort official statistics such as GDP, which are important signals to policy makers.

Like most phenomena that are not directly observable, shadow economies are difficult to measure. Despite decades of research, the literature is yet to arrive at a consensus on what are the best or most reliable methods of measuring a shadow

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economy. Importantly, the lack of a broadly accepted method of measurement has hampered research efforts aimed at understanding shadow economies: their size, their determinants, their relation to the stages of economic development, and their responsiveness to various policy measures. For example, Feige and Urban (2008) examine the main ‘macro’ approaches to measuring the shadow economy and find alarmingly varied estimates across the methods and a lack of convergence. This leads them to conclude “it is time to acknowledge how little we really know about unobserved economies despite forty years of effort to measure their size and growth” (p. 300) and suggest “econometricians must be encouraged not only to critique existing macromethods but to develop constructive alternative means of measurement” (p. 300). This paper aims to do exactly that.

This study makes a methodological contribution by developing an index that measures the size of a shadow economy as a percentage of GDP. We do not seek to directly resolve the debate about advantages, disadvantage, accuracy and reliability of existing methods; instead, we aim to extend the promising group of ‘direct methods’ by developing and testing a method that has several novel features. Our hope is that with continued refinement of existing methods their estimates will begin to converge.

We use the term ‘shadow economy’ (also ‘informal’ or ‘unreported’ economy) to refer to all legal production of goods and services that is deliberately concealed from public authorities.¹ In contrast to studies that focus on analyzing aggregate macroeconomic data, our estimates of the size of a shadow economy are derived from surveys of company managers. The reasoning for this approach is that those most likely to know how much business income and wages go unreported are the company managers that themselves engage in the misreporting and shadow production. In essence, GDP measured using the income approach is made up of personal income (wages) and corporate income (business profits). Therefore, the shadow economy can be measured as the sum of deliberately concealed wages (including wages paid to unregistered workers) and unreported business profits. Our motivation for turning to company managers to measure the shadow economy is they are in the unique position of simultaneously knowing about both of these components of the shadow economy – unreported wages and unreported business profits. The challenge is eliciting maximally truthful and precise responses. To do this, our method makes use of a number of surveying and data collection techniques shown in previous studies to be effective in eliciting more truthful responses.

The shadow economy index combines estimates of misreported business income, unregistered or hidden employees, as well as unreported “envelope” wages. Our method requires fewer assumptions than most existing methods of measuring the shadow economy, in particular compared to methods based on macroindicators. Our shadow economy index can be used through time or across sectors and economies and thus is a useful tool for evaluating the effectiveness of policy designed to decrease the size of a shadow economy. Our approach has two main advantages compared to methods using aggregated macroeconomic data: (i) it produces micro-level (firm-level) estimates, which can be used to examine the structure of the shadow economy and thus guide policies that target problematic sectors or types of firms, or test theories about factors that influence involvement in the shadow economy; and (ii) it is precise about what parts of observed or unobserved production are included in the estimates. Therefore estimates from our approach may be used in adjusting GDP to account for shadow production.

A limitation of our approach is that despite the various surveying and data collection techniques that we use to maximize the truthfulness of responses, some respondents may still provide untruthful responses due to the sensitive nature of this topic or due to fear of being exposed to their government authorities. As a result, our estimates may understate the true size of the shadow economy and can be treated conservatively as lower-bound estimates. Furthermore, our method is more expensive to apply than indirect macromethods.

Our paper is not the first to use surveys to estimate the size of the shadow economy,² but it extends this literature in three main ways. First, to our knowledge, our method is the first to focus specifically on company managers as the source of information about the shadow economy, motivated by the observation that they play a central role in determining both main components of the shadow economy (misreported business income and misreported wages). This allows us to concurrently obtain estimates of both components, which when combined produce an estimate of the full shadow economy. This contrasts with the typical survey-based approach of focusing on households or individuals. Second, our method produces an estimate of the shadow economy that is both well-defined and expressed as a proportion of true GDP. This is achieved through careful framing of the survey questions to elicit the quantities of interest, and a set of equations that exploit accounting identities within the system of national accounts to map survey responses into a proportional measure of the shadow economy. This feature of our method is what gives it potential to be used in adjusting official GDP estimates to account for the shadow economy. Third, our method is transparent, tested, adequately documented (including a questionnaire form), and sufficiently general such that it can be applied in a large number of countries. Our method only requires the following two sources of non-survey data: (i) a list of local companies with contact details (available from databases such as Bureau Van Dijk’s Orbis, or national business registries); and (ii) national accounts estimates of employees’ remuneration and gross operating income of firms (available from national statistics bureaus or agencies such as Eurostat).

¹ This definition corresponds to what the Organization for Economic Co-operation and Development (OECD) in their comprehensive 2002 handbook “Measuring the Non-observed Economy” as well as the System of National Accounts (SNA 1993) refer to as “underground production”. It is also consistent with definitions employed by other researchers (e.g., the World Bank study of 162 countries by Schneider et al. (2010)).

² For example, see Isachsen and Strom (1985); Mogensen et al. (1995); Kazemier and van Eck (1992); Kim (2003); Hanousek and Palda (2004); Gerxhani (2007).

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