

MEASUREMENT OF THE UNDERGROUND ECONOMY WITH THE HELP OF THE MANAGERS OF ECONOMIC ENTITIES

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Summary

The research uses a method based on questioning the managers of economic entities from Estonia, Lithuania, Latvia in order to try to quantify the underground economy in the period 2019-2021. This method starts with the premise that managers are among the few people who know the sources of income, the forms of pay of employees, but also know how to manage them. In order to arrive at an estimate of the underground economy, as a percentage of the gross domestic product, the method combines the estimates of the income of undeclared business, unregistered employees, undeclared salaries; at the same time we analyze the factors that influence the participation of economic entities in the underground economy. This approach is different from other studies on underground economies, which are based on the values of macroeconomic indicators.

Keywords: *underground economy, tax evasion; managers of economic entities, Member States of the European Union, gross domestic product.*

1. Introduction

The size of an informal economy is a quite important issue, as hidden (undeclared) production has a number of negative repercussions. As a first idea, undeclared production, together with tax evasion, can create a vicious circle: individuals are sinking into subterranean to evict taxes and social security contributions, taxing the tax and social security steps, leading to tax rate increases and/or budget cuts, contributing to more underground production and ultimately destabilizing the economic and social base of the mass. Secondly, tax evasion can prevent economic growth by diverting resources from beneficial uses (production of useful goods and services) to non-beneficial ones (revenue-hiding mechanisms and schemes, monitoring tax compliance, issuing and collecting penalties for non-compliance). Thirdly, non-undeclared production may somehow close the ability of economic entities to obtain debt or equity financing for productive investments, as potential investors cannot control the true (hidden) cash flows of the company. This can further hinder growth. Finally, hidden activities distort official statistics, such as GDP, which are important signals for policy makers.

Like most unobservable phenomena, shadow economies are difficult to determine. Even if there are decades of research, literature has not yet reached a common denominator on which are the best or most usable methods of measuring an underground economy. Very importantly, the lack of a majority-accepted method of weighing has stalled research efforts aimed at understanding the mechanisms of

hidden economies: their size, which determines their relationship with the phases of economic development and their ability to react to various policy measures. For example, Feige and Urban (2008) examines the main "macro" approaches to measuring the hidden economy and find alarming estimates of different methods and a lack of convergence. This leads them to conclude „it is time to recognize how little we really know about unseen economies, despite forty years of effort to measure their size and growth” (p. 300) and suggests "economists should be encouraged not only to criticize existing macro-methods but to develop alternative means of constructive measurement" (p. 300).

With this work, we aim to do exactly that.

A constraint on our method is that, despite the various research and data collection techniques that we use to maximize the reality of the answers, some "respondents" can still provide answers that are not real because of the sensitive nature of the subject or because of the fear of being exposed to the authorities. As a result, our estimates may underestimate the real dimension of the hidden economy and can be conservantly treated as lower estimates. In addition, the method used by us is more expensive to apply than the indirect macro methods. The method we have heard is the first one that focuses specifically on managers of economic entities as a source of information about the shadow economy, motivated by the observation that they play a central role in determining both main components of the hidden economy (misreported business revenues).

2. Types of approaches to measuring the shadow economy

Existing methods for measuring the hidden economy can be divided into indirect and direct approaches. The indirect approaches, sometimes known as "macro" methods, are all based on the notion that "economic activity, whether reported or underground, leaves observable traces or indicators such as electricity consumption, currency use, transactions, official rates of labor participation, and so on." In essence, these methods consume observable indicators in various econometric specifications (in some cases also incorporating the causes of shadow activity) to estimate the real level of economic activity. The decline in economic activity from the estimation of real economic activity provides an estimate of the shadow economy.

Most of the cross-tangential macro-analyzes are based on a single benchmark of economic activity. Thus, the approach to transactions assumes that the ratio between transactions and GDP is constant.

The value traded is estimated as the product of the currency offer (currency and current deposits) and the speed of circulation. By choosing a base year in which the value of the shadow economy is estimated to have been very low (ideally zero), the method analyzes the growth of total economic activity over the range, monitoring the increase in the volume of transactions. The fall in GDP in official reports will provide an informal economy value. One of the limitations of this method could be that transactions are not a perfect measure of economic activity. Thus, there are transactions that generate revenue, the money being used for value deposits. Cash and deposits are also sensitive instruments for inflation and interest rates, and bank cards and other payment arrangements are also used for transactions. Similarly, many researchers found it unlikely to assume a constant relationship between transactions and GDP. Critics insist that the way transactions are carried out on the one hand, and the volume of transactions per unit of GDP on the other, changes over time and may vary depending on the country, causing calculation errors in hidden economy estimates.

The approach to the demand for liquidity is based on the assumption that hidden transactions are made with cash payments, and this way of working does not provide evidence that authorities can find. Under this assumption, a dimensional increase in the hidden economy also increases demand for cash. The method verifies naturally the factors that influence cash demand, such as payment habits, interest rates, intensive use of bank cards, etc. this can be achieved by reducing the cash ratio of deposits on the basis of natural demand while also taking into account a number of factors that influence the shadow economy. The use of "excess" cash (demand not justified by its natural factors) is attributed to

transactions in the hidden economy. This method is relatively simple to implement, which is why it has been applied to a large number of countries. Criticism of this method also concerns the fact that there are many non-cash transactions in the shadow economy, and many of the factors contributing to influencing the shadow economy, such as tax morals, are often not included in insufficient data. and identifying the basic case where work in the subsurface is close to zero is cumbersome and subjective.

The electricity consumption analysis method is based on the empirical statement that the value of total electricity consumption is directly related to the level of economic activity. The method uses the aggregate consumption of electricity to calculate an estimate of total GDP (official and informal). As with the above-mentioned methods, the reduction in the value of official GDP from the estimate of total GDP can be considered a hidden economy estimate. The result can be accepted provided that not all activities in the shadow economy require a large amount of electricity, continuing to require calibration against a zero base case of the underground economy,¹ while the trend of technological improvements or the way changes in the structure of the economy affect the amount of electricity used in production may vary widely between countries in terms of electricity elasticity/GDP.

The macro methods so far reported are based on a single indicator of economic activity. In contrast, the multiple case-by-case method (MIMIC) analyzes simultaneously several causes of the existence and growth of the shadow economy (e.g. regulatory burden, tax burden, unemployment, tax behavior, etc.) and multiple impacts or indicators of the hidden economy (e.g. Labor participation rates, weekly hours worked, etc.. MIMIC treats the size of the hidden economy as a latent (unnoticed) variable and specifies structural equations linking the shadow economy to its causes and indicators. Given the information about the causes and indicators involved, the model parameters can be analyzed with maximum probability. From these parameters, the relative size of the economy hidden in one country or over a time span compared to another can be estimated. In order to obtain an estimate of the true size of a hidden economy, the relative estimates shall be calibrated using a known or capable of being considered correct underground economy absolute measure. MIMIC estimates are often calibrated using estimates from the currency demand approach (e.g. Dell'Anno, 2007; Feld and Schneider, 2010; Schneider and colab., 2010) making absolute values sensitive not only to MIMIC assumptions (and errors) but also to assumptions (and errors) of addressing currency demand.

A major advantage of the MIMIC approach is its flexibility due to the fact that a researcher can choose to include any list of causes and/or indicators considered relevant; although this flexibility may also be a disadvantage because these different causes/indicators may lead to different estimates due to the fact that the choice of causes/indicators to use is somewhat subjective. Another advantage is that MIMIC, like other macro methods, has lower costs and is easier to apply to a large sample of countries and/or time intervals than direct methods. The MIMIC approach also has a number of disadvantages for which it has received rather strong criticism (e.g. Breusch, 2005a, 2005b). MIMIC estimates are sensitive to the calibration method and there is currently no single agreement on the most appropriate calibration method. MIMIC estimates may be unstable regarding variations in the specification of the sample or model (see Helberger and Knepel, 1988). Finally, as with other macro methods, we will not be able to easily know which components of the underground activity captured by this method (Buehn and Schneider, 2013).

3. Application of the method in the Baltic countries

We apply the method above to Estonia, Latvia and Lithuania. We use random stratified sampling to make a sample that is representative of the population of economic entities. We are procuring information about the companies active in each of the Baltic countries from the Orbis database maintained by Bureau Van Dijk. We form sizes for each country (using asset book value) and select

equally sized random samples from each size quintile. At least 500 telephone interviews per country will be conducted in each of the survey rounds.

Each interviewee will be assured that the interviewer is part of an academic institution and that we guarantee absolute confidentiality, specifying also that the company and the respondent will not be mentioned in the analysis or results. Insurance and safety will help to obtain more true answers. As a rule, the promise of confidentiality is not credible when the study is carried out by a government agency. This impediment can be overcome by outsourcing the study to a credible academic institution.

The hearing polls take place between March and April each year and have questions about the underground activity over the past two years. For example, in the first round of the survey, which was conducted in 2019, the survey aimed at estimating the size of the hidden economies in 2018 and 2017. One-year overlap in consecutive survey rounds is used to validate the consistency of the responses.

In the 2019 survey, 591 telephone interviews were conducted in Latvia, 536 in Lithuania and 500 in Estonia. During the 2020 survey, I made a total of 503 telephone interviews in Latvia, 502 in Lithuania and 500 in Estonia. In the 2021 survey, we conducted a total of 503 telephone interviews in Latvia, 501 in Lithuania and 500 in Estonia.

The results show that the size of the hidden economy in 2017-2019 is considerably higher in Latvia than in Estonia and Lithuania. The dynamics of the shadow economy in the countries for which we have conducted surveys seem to be directly correlated to the variation in macroeconomic conditions. The differences between the three countries are linked to different country-specific factors. For example, Estonia was the first of the three countries to make the changeover in the euro area. Estonia is also the only country out of the three to have seen a decrease in the expected size of the shadow economy, in line with greater transparency and a better structured legal framework. Similarly, Latvia joined the euro area on 1 January 2014 and then experienced a decline in the size of the economy. Only Latvia of the sample used received a rescue package during the recent crisis from a number of international organizations (the European Union, the International Monetary Fund and others). The condition for granting this financial assistance was the commitment of the Latvian Government to take severe austerity measures and to carry out a number of reforms, including measures directly targeting the shadow economy. As a result, the Latvian Government has set up a high-level working group led by the State Secretary of the Ministry of Finance and composed of members from various ministries, the Treasury, the Latvian Federal Police, the State revenue Service, the Office for Prevention of and fight against corruption, As well as academic experts, the Bank of Latvia and the Central Bureau of Statistics. The work of the working group has resulted in a package of 66 different policy actions to tackle the informal economy as a key outcome. These policy actions were almost entirely accepted and concerned either changes to the legislation or were simply programs or actions by different ministries or government organizations. Latvia has thus experienced the strongest deliberate political efforts aimed at reducing the activity of the shadow economy sector.

4. Conclusions

The main interest of the study is to find out to what extent entrepreneurs are satisfied with the government's work, as well as how government policy influences entrepreneurial behavior, including tax avoidance.

Through the MIMIC method we measured the underground economy in Estonia, Lithuania and Latvia in the period 2019-2021. The results showed that Latvia has the highest value of the underground economy, followed by Lithuania and Estonia.

There are many approaches for policy makers to minimize the size of parallel economies in countries similar to the new EU Member States to which we have applied the study method. First, the reduction in dissatisfaction with the tax system is likely to reduce the size of hidden economies. Second, the increased probability of tracking is expected to reduce shadow activity. This could be achieved

through a high number of tax audits, warning systems that provide incentives to report correct data to authorities, non-compliant companies and investments in technology to detect tax evasion.

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