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The Underground Economy of Czech Republic and Tax Evasion: The Currency Demand Approach

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Abstract

This study investigates the underground economy of Czech Republic and the associated losses in tax revenue. The presence of an underground economy may not necessarily be bad for the economies in which they prevail but they could cause huge losses to government revenue and could also constitute serious violation of labour regulations. The study uses the Currency Demand Approach. It measures the size of the underground economy in two stages: a) the econometric estimation of an aggregate money demand equation b) the calculation of the value of the underground economy through the quantity theory of money. The key variables in the study include: the total currency held outside the banking system, the number of automatic teller machines, the deposit interest rate, GDP deflator, the average tax, velocity of money, nominal GDP and nominal money supply. The results from the study show that the underground economy of Czech Republic on the average is about 20.9% as at the end of 2013 and the country loses an average tax revenue of about 7.2% of GDP yearly. The data was obtained from the World Bank country indicators and the International Financial Statistics.

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Keywords: underground economy, currency demand, quantity theory of money, tax evasion

1. Introduction

The biggest issue with underground economy or in other words black market or shadow economy is its hidden nature. There is no official statistics on this subject and it has to be estimated using indirect approaches. Official

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statistics, closer to the core of the problem suffer with a lot of inaccuracies and misreporting. All of them are just estimations and hypotheses.

The underground economy consists mostly of illegal and therefore hidden activities of companies or other subjects, avoiding payment of taxes, trading contraband or skirting prices. It should not be confused with the grey market, which means a distribution of illegal wares and things over the legal distribution net.

For a good functioning economy it is important to understand its entire range, so as to be able to estimate the size of the underground economy. The definition of underground economy differs among various authors. The study uses a definition provided by Schneider and Enste (2002), modified by Faal (2003). According to them, the underground economy includes all market-based legal production of goods and services that are deliberately concealed from public authorities for any of the following reasons: 1) to avoid payment of income, value added or other taxes, 2) to avoid payment of social security contributions, (3) to avoid having to meet certain legal labor market standards, such as minimum wages, maximum working hours, safety standards, etc., and (4) to avoid complying with certain administrative procedures, such as completing statistical questionnaires or other administrative forms.

From literature, the size of the underground economy of the Czech Republic as estimated by Schneider et al (2010) was about 18.4% as at the end of 2007, 16% by Schneider (2013) and 15.4% in 2013 by Zídková (2012). The estimated amount of tax revenue lost in Czech Republic is about 20%.

The study employed the Currency Demand Approach in estimating the level of the underground economy. Originally suggested by Cagan (1958), and subsequently redefined and applied by Tanzi (1983) to the U.S. economy, this approach is widely adopted in the literature (see Ferwerda et al. 2010; Schneider et al 2010). The Currency Demand Approach measures the size of the underground economy in two stages: a) the econometric estimation of an aggregate money demand equation, with specific variables related to cash transactions in the underground sector, b) the calculation of the value of these underground transactions through the quantity theory of money. The key assumptions for the first-stage estimation are that transactions in the underground economy are settled in cash to avoid traceability, and that the main cause of the underground economy is a high tax burden.

The objective of this paper is to estimate the size of the underground economy of Czech Republic and to calculate the associated losses in tax revenue as a percentage of GDP (Gross Domestic Product). The rest of the paper is structured as follows: chapter 2 deals with the materials and methods, chapter 3 focuses on the results and discussions while chapter 4 gives the summary of the study referred to as the conclusion.

2. Materials and methods

The study employed the Currency Demand Approach and made use of five variables with yearly observations: currency outside the banking system (C_t) measured as the total amount of currency in circulation, the total number of automatic teller machines (ATM_t), the GDP deflator, the deposit interest rate (DPI_t) and average tax (AT_t). All variables except the deposit interest rate and the GDP deflator were in logarithmic form.

Stationarity test using the KPSS test (Kwiatkowski, Phillips, Schmidt, and Shin) was carried out for each variable, over the sample period 1991 to 2013. See Kwiatkowski, Phillips, Schmidt, and Shin (1992). Extrapolation method was used to derive the data for 1991 and 1992. Models with and without trend were applied. For the log-level series, the KPSS test rejected the null hypothesis of no unit roots at 95% confidence level. Thus variables were non-stationary at level but were stationary after first order differences. The data was obtained from the World Bank country database.

Since one of the basic assumptions of the Currency Demand Approach is that a higher tax burden stimulates a higher tax evasion, which in turn causes an increase in the demand for cash, the expected sign on the average tax was positive. Empirical results of the influence of the tax burden on the shadow economy is provided in the studies of Schneider (see Schneider 1994; 2000) and Johnson, Kaufmann and Zoido-Lobatón (1998); they all found strong evidence for the general influence of taxation on the shadow economy.

The study confirmed the relationship between the average tax and total currency outside the banking system from the first stage (see equation (1)) where the first differenced log currency held outside the banking system was regressed on the four other explanatory variables as seen in equation (1).