



Explaining cross-country differences in participation rates and aggregate fluctuations[☆]

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Abstract

The empirical evidence shows that there exists a negative relationship between the ratio of employment to population and the standard deviation of (log of) GDP. In this paper, we build a Real Business Cycle model with an underground economy sector in order to quantitatively address this issue. The existence of an alternative to registered market activities for providing tradeable goods and services implies that population will be switching sectors in response to aggregate productivity shocks, amplifying the response of registered output. The level of participation in registered market activities will then be negatively related to fluctuations. This feature does not arise in a standard one sector model. © 2002 Elsevier Science B.V. All rights reserved.

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1. Introduction

The empirical evidence shows that there exists a negative relationship between the ratio of employment to population and the standard deviation of (log of) GDP. In this paper, we build a real business cycle (RBC) model with an underground economy sector in order to quantitatively address this issue. The existence of an alternative to registered market activities for providing tradeable goods and services implies that population will be switching sectors in response to aggregate productivity shocks, amplifying the response of registered output. The level of participation in registered market activities will then be negatively related to fluctuations. This feature does not arise in a standard one-sector model.

Using the Summers–Heston data base we observe that countries with small ratios of employment over population (we will call this ratio the market participation rate) experience higher volatility of output. In particular, countries with participation rates as low as 25–30% might experience standard deviations of detrended output that are five times bigger than those experienced by countries with market participation rates above 50%.

We show that the opportunity cost of not participating in the market, i.e. the wage differential between market and non-registered activities, is the key element for understanding this pattern. If this opportunity cost is low, there will be smaller participation in the registered economy. Then, in response to aggregate technology shocks, there will be more movements in or out of the market sector, generating higher fluctuations. Notice that these differences arise even if the magnitude of shocks to total factor productivity is the same across countries.

In our paper the term “underground economy” refers to the production of goods and services that could otherwise be provided through registered market channels, but this activity is not registered in national income and product accounts. The tradeability of the output generated by this activities is the key feature distinguishing our approach from the household production literature (see Benhabib et al., 1991; McGrattan et al., 1997). Also, hours worked in the market are indivisible, while they are not in the underground economy. We use lotteries in order to handle this indivisibility (see Hansen, 1985, and Rogerson, 1987).

In Conesa et al. (2001) we also used the same theoretical framework in order to understand differences in fluctuations between the European and the US economies.

The paper is organized as follows. Section 2 presents the empirical evidence and motivation. Section 3 presents the model. Section 4 discusses the calibration and simulation procedures. Section 5 comments the simulations results. The conclusions close the paper.

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