



Macroeconomic volatility: The role of the informal economy[☆]



Paulina Restrepo-Echavarria^{a,b,*}

^a Federal Reserve Bank of St. Louis, One Federal Reserve Bank Plaza, Broadway and Locust Street, St. Louis, MO 63166, United States

^b The Ohio State University, 410 Arps Hall, 1945 N. High Street, Columbus, OH 43210, United States

ARTICLE INFO

Article history:

Received 21 February 2014

Accepted 15 June 2014

Available online 5 July 2014

JEL classification:

E26

E01

E32

E41

Keywords:

Informal economy

Business cycles

Relative volatility

Mis-measurement

Calibration

ABSTRACT

Many countries have a large informal economy that is poorly measured in the national accounts. I develop a two-sector small open economy business cycle model where one sector is formal and the other is informal, and explore the effect that the informal sector has on measured business cycles. I show that if the informal economy is poorly measured, the model can generate a volatility of measured consumption that is higher than that of output, as observed in many developing countries and some developed countries, even though actual consumption is not nearly as volatile. My results illustrate the importance of the informal sector and its mis-measurement in understanding measured cyclical fluctuations.

© 2014 Elsevier B.V. All rights reserved.

In many countries (particularly developing countries) there is a large informal economy that is poorly measured in national account statistics.¹ However, very little or no attention has been paid to how this mis-measurement of the informal sector affects the behavior of business cycle fluctuations. In this paper I develop a two-sector small open economy business cycle model where one sector is formal and the other is informal, and explore the effect that the informal sector has on measured business cycles.

I show that if the informal sector is poorly measured, this model can account for a business cycle pattern that is puzzling from the standpoint of standard business cycle models. In particular, as opposed to a standard one-sector business cycle model featuring consumption smoothing, this model can generate a volatility of measured consumption that is higher than that of output. Interestingly, this means that the model can rationalize high observed volatility of measured consumption relative to output in both developing countries and some developed countries that have a large informal economy. These results illustrate the importance of recognizing the informal sector in order to understand business cycle fluctuations. This

[☆] A previous version of this paper was circulated under the title “Business Cycles in Developing vs. Developed Countries: The Importance of the Informal Economy.” The views expressed are my own and do not necessarily reflect official positions of the Federal Reserve Bank of St. Louis, the Federal Reserve System, or the Board of Governors. First draft: August 22, 2008.

* Correspondence address: Federal Reserve Bank of St. Louis, One Federal Reserve Bank Plaza, Broadway and Locust Street, St. Louis, MO 63166, United States. Tel.: +1 314 444 3712.

E-mail address: paulinares@me.com

¹ I define the informal economy as those market-based value-added creating activities which are not taxed or registered by the government. In developing countries the informal sector has been estimated to be around 36% of GDP. In developed countries it has been estimated to be around 13% of GDP. However, there is a subset of developed countries for which it is considerably higher, at around 20% of GDP (see [Schneider, 2007](#)).

excess volatility of consumption puzzle that is observed in the data is well known in the business cycle literature and has been documented by [Rand and Tarp \(2002\)](#), [Mendoza \(1995\)](#), [Neumeyer and Perri \(2005\)](#), and [Aguiar and Gopinath \(2007\)](#), among others.

A large informal sector, which is poorly measured due to its underground nature, can be reflected in a volatility of consumption that is greater than that of output because in response to a relative productivity shock, agents can substitute formal for informal consumption over the cycle and we mostly observe movements in and out of the formal sector. Furthermore, if we mostly observe movements in the formal sector and only formal output can be traded, then consumption can be more volatile than output because in response to a relative productivity shock, formal output does not respond as much as formal consumption.

I consider a model where a representative agent can decide whether to work in the formal sector and pay income taxes, or work in the informal sector where she does not have to pay taxes, but faces a risk of a tax audit and a punishment if she is found evading taxes. The informal sector faces a productivity shock; the agent consumes both formal and informal consumption goods and invests in international capital markets.² The government collects the labor tax from the formal sector and uses these resources to improve law enforcement.

If the formal and informal sectors are well measured (so that output and consumption are given by the sum of formal and informal output and consumption), when the informal sector receives a good productivity shock, agents substitute formal for informal consumption.³ As consumption goods are negatively correlated between the two sectors, the model implies that total consumption has a low volatility. At the same time, due to a strategic savings motive, the trade balance is not as volatile as formal consumption, so the covariance between formal and informal outputs is lower than that of consumption. As a result, total consumption is less volatile than the total output as in the standard one-sector model.

However, if the formal sector is measured but the informal sector is not (meaning that measured output and consumption are just formal output and consumption), when the informal sector receives a good productivity shock, agents substitute formal for informal consumption, but this time, as only the formal sector is measured, we observe a highly volatile consumption. Furthermore, when the informal sector is not measured, consumption can be more volatile than the output because the substitution of consumption goods from the formal to the informal sector over the business cycle is greater than that of the change in net foreign assets (because of a strategic savings motive).

I parametrize the model to assess the quantitative importance of these mechanisms. In my numerical exercise I study how the relative volatility of consumption to output changes when the size of the informal economy increases. Given the uncertainty of the degree to which the informal economy is measured in the national account statistics in practice, I do the exercise both when the informal sector is fully measured in the model and in the extreme case when it is not measured at all.

I find that theory predicts that the volatility of consumption is greater than that of the output in countries with large *unmeasured* informal sectors. My results imply that if countries could accurately measure the informal sector in their national accounts, then their observed relative volatility of consumption to output would fall significantly. These results suggest that a mis-measured informal sector can be very important in accounting for observed business cycle fluctuations.

This paper follows the home production literature, the literature on emerging market business cycles and the literature on informality. As in home production models, volatility arises due to relative productivity differentials between the formal and the informal sector (see [Benhabib et al., 1991](#), p. 1168). Nevertheless, the informal sector is different from the household sector because the former is market-based while the latter is not. Consequently, informal production should ideally be included in the national accounts while home production should not.

In terms of the emerging market business cycles' literature, this paper is more closely related to [Neumeyer and Perri \(2005\)](#) and [Aguiar and Gopinath \(2007\)](#), who study the excess relative volatility of consumption to output. Neumeyer and Perri construct a model of a small open economy where the real interest rate is decomposed in an international rate and a country risk component; the key features of the model are that country risk is affected by fundamental shocks and that there is working capital. They find that if interest rate shocks are large compared to productivity shocks, their model induces equilibrium consumption to be more volatile than output. Aguiar and Gopinath propose a small open economy model which is subject to volatility in trend growth due to frequent policy regime switches. They find that shocks to trend growth are the primary source of fluctuations in emerging markets. Their model predicts that consumption volatility (driven by income shocks) should exceed income volatility in emerging economies. The “informal sector” channel presented in this paper is thus a mechanism driving high consumption volatility in emerging markets that is complementary to other mechanisms in the literature. Nevertheless, unlike mechanisms in the previous literature, the mechanism in this paper not only explains the excess relative volatility of consumption to output that we observe in emerging markets but also explains the high consumption volatility observed in some developed countries.

² In this model because relative productivity is what matters, having a relative productivity shock in the informal sector is analogous to having both the formal and the informal sector face a productivity shock that is positively but not perfectly correlated due to financial frictions faced by the informal sector, for example.

³ Formal and informal consumption goods are substitutes because the fruit and/or vegetable that is sold by a vendor on the street is the same one that is found in the supermarket.

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات