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Catching the mirage: The shadow impact of financial crises

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ABSTRACT

This paper examines the dynamics of the shadow economy in times of financial crises. First, we estimate the size of the shadow economy in nine developing countries using energy consumption as a proxy for total economic activity. We show that our proposed proxy performs better than the conventional proxy of electricity consumption. In addition, given that financial crises usually overlap; a fact that is overlooked by existing literature, we construct a zero-one index to measure the intensity of a given shock. To explain the shadow economy impact of financial crises, we employ a set of country-specific VAR models and exploit their impulse responses. To this end, the paper finds empirical evidence of the countercyclical behaviour of the shadow economy, which suggests its buffering role in time financial crises. We show that our results are not sensitive to the method used to measure the size of the shadow economy. Finally, we build on these results to draw some policy recommendations.

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1. Introduction

Many development economists believe that a considerable portion of economic activities in developing countries is taking place off records (Eilat & Zinnes, 2002; Lesica, 2011; Macias & Cazzavillan, 2009; Schneider & Enste, 2000).¹ However, their claims have never been rigorously proven, mainly due to a failure to measure what is meant to remain in the shadow (Arby, Malik, & Hanif, 2010).² Despite this, researchers and policy makers have shown a great deal of interest in understanding the unseen part of the economy, claiming that it has a distorting impact from a policy standpoint (Georgiou, 2007). This interest has increased significantly since the eruption of the recent financial and economic crises. More particularly, these crises have put forward questions such as how both sides of the economy interact over business cycles, and what would be the appropriate policy response in times

of financial turbulence. There is ample evidence of the fact that financial crises have a negative impact on official output. In times of crisis, unemployment rises and workers may be forced to move to the informal sector. Also, restricted access to bank credit during financial crises may push more firms into the informal sector than in normal times (Colombo, Onnis, & Tirelli, 2016; Thomas, 1992). Therefore, this paper investigates the dynamics of the shadow economy in times of financial crisis. More particularly, it examines whether the shadow economy acts as a transmission channel for financial shocks, or it can play a buffering role in times of crisis.

Thus, our objective in this paper is twofold. Firstly, the size of the shadow economy in a number of developing countries is estimated for a forty year period (1971–2011). We employ an augmented version of the modified total activity MTA method introduced by Eilat and Zinnes (2002). In response to critiques facing studies using electricity consumption as a proxy for total economic activity, we show that energy consumption might be a better proxy. Our second objective is to investigate the underground response to financial shocks. To proxy for financial shocks, we construct an index that takes the value of zero if there is no crisis, and the value of one if the crisis is very severe. For estimation purposes, we employ a VAR model for each country separately and exploit its impulse response function.

To this end, the current study makes a genuine contribution to the literature from several aspects. First, using an improved methodology, this study contributes to the literature on measuring the shadow economy by providing updated estimates as they pertain to a number of developing countries. Second, we introduce

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¹ Figures reported in Pratap and Quintin (2006), for instance, show that although the size of the shadow economy varies greatly among nations, it represents 25–80% of official GDP in developing countries, compared to 10–15% in most developed nations. Shadow economic activities include, but are not limited to, house production, street vendors and even illegal activities such as drug dealing.

² The unrecorded economy has appeared in the literature under various names. In this paper, we will use the terms shadow economy and underground economy interchangeably to refer to the same thing.

an in-depth analysis of the shadow economy dynamics in times of financial crisis, suggesting a channel of transmission that has been, so far, overlooked in the existing literature. Finally, this study contributes to the limited, however growing, literature studying the dynamics of the shadow economy over business cycles. This contribution to the literature is based on the fact that only very few studies have examined the effect of financial crises on the size of the shadow economy, especially after the incidence of the global financial crisis.

This study is important to policy makers in developing countries for at least the following reasons: While policy makers design strategies intended to repress the shadow economy in order to mitigate its distortion to development policies, these strategies may 'unintentionally' play a destructive role in time of crises, if the expansion of the shadow economy is temporary and therefore can act as a buffer to the shock. In the latter case, policies that repress the shadow economy may hinder one of the mechanisms by which the economy has a chance to absorb the shock.³ In contrast, if the shadow economy response to financial crises is procyclical or if it expands persistently, then it would not be advisable to relax the anti-shadow regulations in times of financial crisis. Therefore, it is imperative and informative to examine whether the shadow economy response is procyclical or countercyclical and if this response persists over time, or is short-lived.

The remainder of this study consists of the following sections: Section 2 reviews the literature. Section 3 discusses our empirical strategy and the dataset. Finally, the empirical results and conclusion are presented in Sections 4 and 5, respectively.

2. Literature review

A relevant strand of literature is concerned with the cyclical behaviour of the shadow economy; i.e., whether it is procyclical or countercyclical. The former concept refers to a larger shadow economy in times of boom, while in times of bust a smaller shadow economy will exist. However, the latter suggests the opposite, while the shadow size flourishes in recessions, it shrinks in peak times. In fact, economic theory explains the business cycles properties of the shadow economy as the final outcome of *income effect* and *substitution effect* (Bajada, 1999, 2003; Elgin, 2012). While *income effect* implies that negative shocks to an economy will affect both sides of that economy, and hence lends support to the procyclical behaviour of the shadow economy, the *substitution effect* indicates that laid-off formal workers in response to the shock – will be enticed to go underground, which legitimises the countercyclicity assumption.⁴

Although, theoretically speaking, it may appear unclear whether the shadow economy is procyclical or countercyclical, empirical research suggests that it tends to display a countercyclical adjustment, i.e. backing the *substitution hypothesis*. Using a VAR modelling approach, Fliess, Fugazza, and Maloney (2010) have reported similar patterns in Argentina, Brazil, Colombia and Mexico. Loayza and Rigolini (2011) find that shadow employment plays a temporary safety net role when it negatively co-moves over the business cycle. Elgin (2012) uses the shadow economy estimates from Schneider,

Buehn, and Montenegro (2010) to examine the informal sector behaviour over the business cycles. The author finds evidence towards the countercyclical nature of the underground economy, where the presence and volatility of the underground sector amplifies the magnitude of the business cycles. Using this finding, the paper interprets the higher amplitude of business cycles in developing countries with a large shadow economy. Çiçek and Elgin (2011) build their empirical analysis on the idea that the shadow economy exhibits a countercyclical pattern.⁵ Work by Bajada and Schneider (2005), Feld and Schneider (2010), Schneider and Enste (2000) supports the expansion of the shadow economy in times of recession. Roca, Moreno, and Sánchez (2001) conclude that lower wage premium in the official economy triggers expansion in the underground economy, which leads to larger fluctuations in the official economy. In addition, Vaillant, Grimm, Lay, and Roubaud (2014) and Lee and Ofreneo (2014) examine the underground adjustments in tough times. Vaillant et al. (2014) find that after growth was hit hard by a political crisis in Madagascar in 2004, the informal sector has proved to be a *labour-absorbing* function. Lee and Ofreneo (2014) study the Asian labour markets adjustments in two crisis times; Asian crises and global financial crises. They find that labour markets continue to be characterised by informal, vulnerable and precarious employment, even in recovery times.

None of the extant literature has explicitly investigated the effect of financial crises on the size of the underground economy as we do in this study. The only exception is Colombo et al. (2016), who study the impact of two different types of financial crisis; banking and currency crises, measured as a dummy variable to identify periods of shocks. However, our study differs from theirs in the way we model financial crises. More particularly, while we construct a zero-one index to proxy for the intensity of the shock, they merely rely on the incidence of a shock using a dummy variable ignoring the fact that financial crises usually overlap. Keeping this in mind, what type of financial crisis should one be interested in? Even if one decides to compare the shadow response to each crisis, there is no way to explain the overlapping of two or more crises. In addition, while they use electricity consumption to proxy for total economic activity which is heavily criticised, we employ energy consumption in an attempt to respond to those critiques.

To this end, this review of the literature shows that, apart from the study by Colombo et al. (2016) which we deviate from, there is a strong need for more empirical evidence on the shadow economy adjustments of financial crises, the main objective of this study.

3. Methodology and data

The underground economy is a phenomenon that could be, and in fact has been, studied under plenty of names, including the 'shadow', 'unrecorded', or 'informal' economy; the list is endless. So far, the present study has intentionally made no attempt to engaging the long lasting debate on defining what the term 'underground' actually means. The reason is that we do not wish to get bogged down in a discussion on how legitimate these definitions are, which would certainly distract our attention away from the main focus of this study. In addition, the existence of fine surveys of literature defining the shadow, such as Schneider (2012), obviates the need for a comprehensive review here. Yet, measuring the underground economic activities has to start with a satisfactory identification of

³ We understand that the movement from the official economy to the shadow economy may have adverse implications on total productivity. However, holding other things equal, when official economy becomes incapable to produce productive jobs, less productive jobs may be more preferred from policy point of view compared to no jobs at all.

⁴ Another way to interpret the procyclicity behaviour of the shadow economy is suggested by Elgin (2012), who states that in times of negative shock, while less productive businesses which operate in the shadow are perfect candidates to shut down, those businesses in the official economy are more likely to survive thanks to their relatively higher level of productivity.

⁵ In Australia, the findings of Bajada (1999, 2003) support the procyclicity of the underground economy. They show that negative shocks in the official economy have a greater effect on the underground economy than do positive shocks, which implies that the underground economy may deepen economic downturns and increase the volatility of the business cycle. A similar pattern is found by Giles (1997) in New Zealand.

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