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Volatility and growth in developing countries: An asymmetric effect

Nabil Alimi

University of Tunis el Manar, Faculty of Economic Sciences and Management of Tunis, Tunisia

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ABSTRACT

This paper investigates the relationship between macroeconomic volatility and growth and the determination of a threshold from which there is a reversal of the nature of this relationship in a panel of 47 developing countries over the period 1980–2013. Using Hansen (2000) methodology our findings prove that the relationship between macroeconomic volatility on economic growth is not linear and it looks like reversed Laffer curve as long as the volatility is below 4%.

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1. Introduction

The relationship between economic growth and macroeconomic volatility remains an important theme in the growth and development literature. Thus, it has been for long the central point of a careful examination by many authors who showed that the effect of volatility on the economic results should not be under-estimated especially after the 1980s, during which the widespread view is that the impact of the volatility on the growth is minor.

This question is of a paramount importance for developing economies since Lucas (1988); Loayza, Ranciere, Servén, and Ventura (2007) observe that developing economies are prone to sharp volatility in growth rates.¹ Three reasons can be advance to explain this fact.

Firstly, higher openness and the specialization in fewer sectors make developing countries more likely to experience a greater output variance. Head (1995) demonstrated that the higher output variance of smaller countries is due to their greater openness and susceptibility to exogenous shocks. Loayza et al. (2007) and Carmignani, Colombo, and Tirelli (2007) prove that trade openness may enhance output volatility specifically in less-diversified economies (Easterly, Islam, and Stiglitz, 2001; Giovanni & Levchenko, 2009), which is the case of developing countries. Comparing output growth rate fluctuation between developing economies and developed economies, Koren and Tenreyro (2007) prove that developing economies are specialize in fewer and more volatile sectors. Koren and Tenreyro added that developing economies' macroeconomic fluctuations are more highly correlated with the shocks of the sectors they specialize in.

E-mail address: nabil.alimi@fsegt.rnu.tn

¹ Balke and Gordon (1989); Boltho (1989); Altman (1992) observe that developed countries tend to manifest stable growth rates over long periods of time.

Secondly, financial markets and the macroeconomic stabilization policies identified by literature as shock absorber are weak and inefficient in developing countries, so they often amplify volatility. [Kharroubi \(2006\)](#) proved that the negative relationship between volatility and economic growth observed in developing countries is resulted from the weaknesses of their financial systems.

Thirdly, developing economies are more likely to experience more frequent and more severe aggregate shocks from macroeconomic policy ([Koren & Tenreyro, 2007](#)), and more domestic shocks, generated by; intrinsic instability of the development process, volatile fiscal policy ([Fatás & Mihov, 2006](#)), social conflict, economic mismanagement and political instability ([Raddatz, 2007](#)).

However, the compromise about the importance to study the effect of macroeconomic volatility on economic growth should not disguise the fact that the nature of the relationship linking the volatility at the growth is far from unanimous. Many theoretical and empirical arguments for and against a negative (positive) link between macroeconomic volatility and economic growth were advanced. To date the link between macroeconomic volatility and economic growth is ambiguous. This ambiguity leads us to believe that this relationship is not linear and so there is threshold at which the effect of macroeconomic volatility on economic growth is reversed.² This is our aim of this paper. Our results confirm that the relation between macroeconomic volatility and economic growth for 54 developing countries over the period 1980–2013 is not linear and it looks like a reverse Laffer curve. A threshold value was determined.

The rest of this paper is structured as follows. [Sections 2](#) outlines the theoretical and empirical debate about the link between volatility and growth that we want to test. [Section 3](#) describes the stylized facts. [Section 4](#) presents the modeling approach and results. [Section 5](#) concludes.

2. Related literature

The relationship between volatility and growth has been the subject of theoretical and empirical intense scrutiny from which there has been no consensus ([Caporale & McKiernan, 1998](#)). As regards macroeconomic theory, the impact of macroeconomic volatility on economic growth may be positive, negative, or zero. The empirical substantiation based on cross-country studies, panel data studies, or time series analysis is also mixed ([Fountas & Karanasos, 2006](#)). Without the intention of being exhaustive, we would mention the main related works below.

2.1. Theory

Many arguments in favor of a positive link between volatility and growth were advanced. [Kormendi and Meguire \(1985\)](#); [Sandmo \(1971\)](#); [Mirman \(1971\)](#) argue that firstly, the volatility should leads to higher yields and, as well, a superior growth on the condition that the countries have mechanisms for sharing of risks so that risky projects to be carried out without difficulty. Secondly, the companies have a higher probability of innovating during periods of strong growth (even if they are followed by periods of contraction), which should boost growth. Thirdly, savings believes more during periods of volatility for the reason of precaution. As well, more instability encourages more savings which (if they are kept in the national economy) would raise the investment. If the investment is positively linked to growth, growth will also increase.

In addition, a positive relationship between volatility and growth may be argued by the “creative destruction” view.³ Volatility is associated with recession, which contribute to higher research and development spending and innovation that may be leads to the apparition of new firms and/or the destruction of the non-productive firms and thus accelerate economic growth.

[Black \(2009\)](#) adds that countries with high average growth would also have high volatility. Investments in riskier technologies will only be prosecuted if the expected return on investment is high enough to compensate the higher risk ([Fountas & Karanasos, 2006](#)).⁴ [Blackburn \(1999\)](#) proved that if economic growth comes from learning-by-doing, business cycle volatility is positively related to long-run growth rate.

Developing a stochastic monetary growth model with nominal rigidities and learning-by-doing [Blackburn and Pelloni \(2004\)](#), show that the relationship between growth and volatility may be positive or negative. If real shocks predominate in the economy, volatility is positively linked to the economic growth. However, if nominal shocks predominate, an increase in volatility leads to a decrease of the economic growth.

Of even the reasons suggesting that macroeconomic volatility may lead to a lower economic growth are not lacking. In effect, a volatility associated with economic uncertainty may reduce growth through several channels. First, it encourages the agents to defer their decisions, precisely the risky decisions (due to the risk aversion). Secondly, in the face of uncertainty, the companies could engage in investment sub-optimal. Thirdly, the financial constraints increase during periods

² The non-linearity of this relationship was confirmed by [Garcia-Herrero and Villarrubia \(2007\)](#) who proved that the relation between volatility and growth looks like a Laffer curve, however authors didn't determined an exact value

³ The “creative destruction” view describes the “process of industrial mutation that incessantly revolutionizes the economic structure from within, incessantly destroying the old one, incessantly creating a new one” ([Schumpeter, 1942](#)).

⁴ “Countries may have a choice between high-variance, high-expected-returns technologies and low-variance, low-expected-returns technologies”, [Ramey and Ramey \(2000, p.1138\)](#).

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