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Growth volatility and resource curse: Does financial development dampen the oil shocks?

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ABSTRACT

We assess whether well-developed financial system can moderate the positive association between oil volatility and growth volatility. Using a core sample of 63 oil-producing countries over the period 2000–2010, the empirical analysis confirms a negative link between oil terms of trade volatility and growth volatility. In addition, we find evidence that financial development dampens the effect of oil terms of trade volatility.

1. Introduction

Do natural resources experience larger volatility in economic growth? Does well-developed financial system dampen the impact of oil volatility on the economy? According to experiences of natural resource rich countries, the natural resource wealth can be considered as a double edges sword. On one hand, natural resource wealth can enhance the pace of development by increasing national income. It may dampen the long-run economic growth through damaging the balance of growth across different sectors of the economy. While the pioneering empirical cross-country studies have established a negative impact of natural resource abundance on economic growth, which is known as resource curse (e.g. see Arezki and van der Ploeg, 2007; Brückner, 2010; Bulte et al., 2005; Kronenberg, 2004; Rodriguez and Sachs, 1999; Sachs and Warner, 1995, 1997, 2001), the potential link between natural resource volatility and the volatility of growth have not been considered systematically yet.

Different studies have explained the negative effect of resource abundance on economic growth. The term "Dutch Disease" originally was coined by Economist in 1976 and used for the first time to stress the adverse effects of the natural gas discoveries on Dutch manufacturing. Subsequent appreciation of the real exchange rate worsened the competitiveness of Dutch manufacturing internationally and deteriorated industry sector gradually. The Dutch Disease phenomena has attracted a good deal of attention starting with the first studies by Gregory (1976), and subsequently by Snape (1977), Corden and Neary (1982), Corden (1984), Wijnbergen (1984a; 1984b), Krugman (1987), and Sachs and Warner (2001).

Investment in physical capital is another transmission channel for adverse effect of natural resource on economic growth. It was stated by Gylfason (2004) that 'a high dependency on natural capital inhibits rate of growth through crowding out other types of capital'. Gylfason and Zoega (2006) argue that continuous stream of natural resource wealth reduces the need for saving and investment in resource endowed countries. The shrinking of savings and investments is because of devoting the resources to rent seeking and less human and social capital in resource abundance countries.

The negative association between economic growth and corruption has been deeply studied (Adenike, 2013; Ajie and Wokekoro, 2012; Asiedu and Freeman, 2009; Farooq et al., 2013; Dissou and Yakautsava, 2012; Mauro, 1995, 1998; Méon and Sekkat, 2005; Mo, 2001; Shleifer and Vishny, 1993; Tanzi and Davoodi, 1997). Additionally, it is suggested by previous studies that natural resources induce corruption via exclusive licenses to political elites

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and their partners to extract and export natural resources and reduce the level of competition in this countries (Ades and Di Tella, 1999; Leite and Weidmann, 1999; Treisman, 2000, 2007).

Institutional quantity has been found to be an important factor determining growth rate by enhancing investment (Acemoglu and Johnson, 2005; Cooley et al., 2004; Monge-Naranjo, 2009; North, 1991) and reducing corruption (Bardhan, 1997; Méndez and Sepúlveda, 2006; Mauro, 1995). Thus, theory suggests that an adverse effect of resource revenue is less severe in the presence of good institutions (Mehlum et al., 2006a, 2006b). Empirical evidences of studies by Murphy et al. (1993) and Acemoglu (1995) demonstrates that resource revenues tend to enhance rent seeking behavior and waste. Torvik (2002), suggests that a natural resource bonanza may shift productive entrepreneurs to rent seeking. This is because the extra income from the resource revenues is less than the reduction in income due to decline in productivity.

While, previous studies have considered different studies through which natural resource abundance may retard the rate of growth in belonged countries, we are particularly interested in two channels, namely volatility and financial development. New resource discoveries or sudden changes in price of resource commodity cause changes in natural resource wealth. Because price elasticity of supply for resource is low, their revenues are highly volatile, thus it can lead to boom and bust cycles. Therefore, one explanation for resource curse is that volatile commodity prices have thrown many natural resource endowed countries into debt crises. Namely, if debt is induced as an explanatory variable, the negative effect of natural resource dependence on growth vanishes. van der Ploeg and Poelhekke (2009) include the natural resource abundance as an underlying determinant of unanticipated output growth volatility in the growth model. The main objective of their study is to investigate whether any direct effect of resource abundance on growth may offset the indirect impact through volatility controlling for other determinant variables in growth model. The cross-country evidences for the period 1970–2003 show the positive and significant direct relationship between resource abundance and growth, while the indirect effect through volatility is negative and statistically significant. They conclude that the commodity price volatilities is the main reason for the adverse effect of natural resource on economic growth, especially for point-source natural resources and in economies with weak financial institutions, current account restrictions and high degree of capital mobility. Therefore, natural resources are curse for volatile economies but it can be a blessing for countries with stable growth output.

Adopting Instrumental Variable (IV) approach in which resource export is included as an instrument, van der Ploeg and Poelhekke (2010) suggest that the presence of a significant and strong negative effect of macroeconomic volatility on economic growth on the one hand and positive relationship between exports of point-source resources and macroeconomic volatility on the other hand. Therefore, the adverse indirect effect of resource exports on economic growth through the volatility overweighs has direct positive effect of natural resource on economic growth.

On the other hand, quite a few studies in the area of resource curse have paid attention to the effect of oil abundance on the pace of financial development as the possible explanation for resource curse. As an instance, Gylfason (2004) suggests that crowding out effect of natural resource on financial development is a transmission channel for resource curse. Yuxiang and Chen (2011), emphasize on the importance of resource abundance in the development of financial system in China. Utilizing the first difference GMM method for panel data of provinces in China, they show the slower development in financial system for the resource-rich regions than resource-poor ones.

This paper tries to shed light on the association between oil terms of trade volatility and growth volatility empirically by accounting for the role of financial development. Previous studies have suggested that macroeconomic volatility can be declined by better financial system (Easterly et al., 2000; Denizer et al., 2002; Hausmann and Gavin, 1996; Raddatz, 2006). Building on Beck et al. (2006) theoretical model, we examine whether financial intermediaries serve as shock observers and mitigate the effect of oil volatility on growth volatility. The hypothesis put forward by Beck et al. (2006) argues that the economic shocks alter the relative composition of investment and output, which in turn causes the output volatility. Distinguishing between two classes of entrepreneurs, i.e. high wealth and low wealth entrepreneurs, they discuss that the shocks affecting the real sector will change the available internal funds for both classes of entrepreneurs. Because the marginal productivity of low wealth entrepreneurs is higher than high wealth ones, this characteristic of low wealth entrepreneurs amplifies the productivity shocks in the imperfect capital market system. Therefore, more developed financial market dampens the effect of real shocks by alleviating the cash-flow constraint for low wealth entrepreneurs.

Given above literature, the aim of this study is to investigate the link between volatility of oil terms of trade growth and economic growth conditioning on the financial development. The results of current study contribute to resource curse literature by assessing the role of financial development in the growth and oil volatility association. In this study we investigate the impact of the volatility of oil terms of trade as the real shock on growth volatility using a core panel of data for 63 oil-producing countries and five-year moving-sample observations between 2000 and 2010. The empirical results confirm a robust positive relationship between oil terms of trade volatility and growth volatility. In addition, we find evidence that financial development can moderate the impact of oil terms of trade volatility.

This paper is organized as follows. Section 2 describes the data and econometric model. Section 3 presents the main findings, while Section 4 concludes.

2. Data and econometric model

2.1. The data

Two groups of countries were sampled with a five-year moving sample observation for the period of 2000–2010. In particular, the panel of 63 countries is utilized when the domestic credit to private sector is used as an index for the financial development; while the number of countries reduces to 61, the measure of financial development is the share of liquid liabilities in GDP (Table 1 lists the name of all countries used in the empirical estimation). Using two different measure of financial development serves partly as a robustness check on the empirical results, and partly because of the lack of data on the ratio of liquid liabilities in GDP for Oman and United Arab Emirates. Table 2 describes the data and sources in more detail.

Two different approaches were adopted to calculate the growth volatility as dependent variables. The first approach to measure growth volatility is the five-year moving-sample standard deviation of annual growth rate of real GDP per capita. This measure of volatility accounts for low and high amount of volatility in variables of interest during time (Arize et al., 2000). The second measurement of growth volatility is the five-year moving standard deviation of absolute values of the changes in annual growth rate of real GDP per capita. Table 3 presents the data statistics for core sample of 63 countries. The first index for growth volatility in Table 3 ranges from a minimum of 0.21 per cent to about 24 per cent, while the minimum and maximum amount of growth