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Is natural resource abundance a stimulus for financial development in the USA?

Muhammad Shahbaz^{a,*}, Muhammad Naeem^b, Muhammad Ahad^c, Iqbal Tahir^d

^a Montpellier Business School, Montpellier, France

^b University of the Central Punjab, Lahore, Pakistan

^c COMSATS Institute of Information Technology, Lahore, Pakistan

^d Karachi School of Business & Leadership, Karachi, Pakistan

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ABSTRACT

This paper investigates the stimulating role of natural resource abundance in financial development for the case of the USA over the period of 1960–2016. We included education, economic growth and capitalization as additional determinants of financial development in finance demand function. Thus, we applied traditional and recent unit root tests, accommodating unknown structural breaks in the series for examining the unit root properties of the variables. To examine cointegration between the variables, we apply the Bayer-Hanck cointegration approach. The robustness of cointegration relationship is tested by applying the bounds testing approach to cointegration. The empirical results show the presence of cointegration between financial development and its determinants. In the long run, we observe that natural resource abundance contributes to financial development. Education has a positive impact on financial development. A positive relationship exists between economic growth and financial development. Capitalization is inversely linked with financial development. The causality analysis reveals a feedback effect between natural resource abundance and financial development i.e. natural resource abundance causes financial development; in turn, financial development Granger causes natural resource abundance. This empirical evidence provides new insights for policy makers to use natural resource abundance as an economic tool to improve the performance of financial sector by considering the role of economic growth and education.

1. Introduction

Most of the empirical evidence has shown that the majority of resource-dependent countries have a low level of financial development (Gelb, 1988, 2010; Sachs and Warner, 2001; Cordon and Neary, 1982; Mehlum et al., 2006; Elbadawi and Soto, 2012; Frenkel, 2012). There is an evidence in the existing literature regarding the negative relation between natural resource abundance and financial development; however, to date, this relation has not been determined conclusively (see e.g., Sachs and Warner, 1995, 2001; Auty, 2001; Gylfason, 2001a, 2001b). Wealth from natural resources is not a negative factor. Various components lead to the ability for reaping benefits from resources that countries such as Norway and Botswana have succeeded in acquiring to twist the “curse” into a blessing. The issues of possible negative effect and appropriate rental gains can be achieved through better economic and political institutions (Boschini et al., 2007). Hence, developed financial institutions are one of the solutions to stimulate economic

growth and escape the curse driven by resource rents. A well-organized financial market determines investment opportunities, transfers public funds to the non-public sector (stimulate savings), encourages innovations, facilitates corporate control, and facilitates risk management and therefore leads to poverty reduction strategies (Rajan, 2003).¹ Therefore, it will be interesting to know the relationship of financial development and natural resource abundance for reliable and conclusive empirical findings. The United States is one of the developed country with developed financial sector and natural resource rich country. Therefore, exploring linkage of financial development with natural resource abundance is important because financial development constitutes an important mechanism for long-run economic growth, any impact of natural resource abundance on financial development can inevitably influence the pace of economic growth. Further, empirical investigation of relationship between natural resource abundance and financial development provides new insights for policy makers to utilize natural resources as a blessing rather than a curse.

* Corresponding author.

E-mail addresses: muhdshahbaz77@gmail.com (M. Shahbaz), muhhammad.naeem@ucp.edu.pk (M. Naeem), m.ahad68@yahoo.com (M. Ahad), iqbalt@gmail.com (I. Tahir).

¹ Detailed existing literature on finance-growth can be seen (Beck and Levine, 2004; Benhabib and Spiegel, 2000; Levine et al., 2000; Nili and Rastad, 2007).

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The United States of America (USA) is blessed with an unusual abundance of natural resources, including a large land mass, large coastlines, fertile land, fresh water and energy (oil, gas and coal). The USA has 95,471 miles of shoreline, which contributed \$222.7 billion and \$257.7 billion to gross domestic product (GDP), creating 2.6 and 2.8 million jobs in 2009 and 2010 respectively. Nearly three-quarters of these jobs are related to tourism and ocean recreation. However, the highest paying sector is oil drilling, which pays \$125,700 per worker. The US economy has the world's largest reserves of coal, with 491 billion short tons or 27% of the total. In 2005, 60% of oil used in the United States was imported, which decreased to 24% by 2015 (Kimberly, 2017). The United States has an approximately 502,000-square-mile area between the Rocky Mountains and the Mississippi River, which have ideal conditions for cultivation. Approximately 80% of water used in the US is obtained through rivers, lakes and streams; the remaining 20% of water is pumped out of the ground. This water is primarily used in the electric power industry and agriculture sector. The US has also attracted approximately 43 million skilled immigrants who played a great role in making the US as hub of innovation industry. The US economy is among the top 10 producers of crude oil. The US natural gas exports continued to increase, as exports in 2016 were more than 3 times greater than the exports 10 years ago, and the USA is expected to become net exporter of natural gas by 2018 (Victoria and Katie, 2017). According to Daniel (2017), United States is the fourth largest exporter of coal.

According to U.S. Geological Survey in 2017, the United States produced 13 mineral commodities in 2016 that were valued at more than \$1 billion each; the estimated value of total U.S. industrial minerals production in 2016 was \$51.6 billion, 5% more than that of 2015. In 2012, 33% of the total land of the United States consists of forest, of which 10% is reserved. In addition to the additional benefits of controlling pollution, the value of these trees is more than 2.4 trillion. According to the American Forest and Paper Association, the U.S. forest products industry employs approximately 1 million workers and represents approximately 6% of the total U.S. manufacturing gross domestic product, or GDP, placing it approximately equivalent with the automotive and plastics industry. The forest products industry generates more than \$200 billion a year, placing it among the top 10 manufacturing sector with employers in 48 states and approximately \$54 billion in annual payroll. In 2011, the industry recycled 66.8% of paper consumed and is the leading generator and user of renewable energy. Business managers and entrepreneurs require financial resources to begin a new business or expand an existing business. There are various entities associated with business development, including money institution (banks), business partners, and capital market. Hence, financial system is a key driver of business environment. The development of new firms is affected by cost of capital and characteristics of financing for new firms (Cuervo, 2005). Schumpeter (1934) and Keynes (1971) argued the importance of an efficient banking sector in the development of innovation technology and economic growth. The crowding out effect and financial repression theories explain the relationship between oil revenues and financial system.

According to the previous theory, if money markets and commodity revenues are both in equilibrium, any increase in public spending that is not related with an increase in money supply will increase interest rates, and private sector investment will thus be decreased. Similarly, Beck (2011) argued that the relationship between resource abundance and financial development can be explained in term of supply and demand side. Furthermore, regarding the supply-side, a resource abundant economy can crowd-out investment and skills in financial sector. Moreover, regarding the demand-side, Dutch disease can lead to the expansion of consumer credit as a result of more demand for financial services. Public expenditures may increase due to public sector expansion, particularly during the period of oil booms. Conversely, with oil prices decreasing, government must continue to spend money on ongoing projects. In this situation, government uses its power and

borrow money from the central bank, thereby weakening the financial system. This weakened financial system does not favor businesses. Gylfason et al. (1999) explain that an adverse relationship prevails between natural resource dependence and school enrollment for all school levels across countries. This relationship is observed because real exchange rate variations induced by natural resources impedes investment in the high-skill-intensive secondary sector. Furthermore, Alexeev and Conrad (2011) found the negative relationship between oil wealth and primary school enrollment for economies in transition. Furthermore, Gylfason (2001a, 2001b) argued that an increase in resource income shrinks the manufacturing sector for which human capital is a key production factor. Therefore, returns on education and the need for higher education decrease through reductions in the manufacturing sector. Moreover, Papyrakis and Gerlagh (2004, 2007) also reported the negative relationship between natural resource extractions and investments in human capital. It is evident from the existing literature that the wealth from natural resources has a sustainable and positive effect on economic growth if saved or invested properly (Auty, 2007; Humphreys et al., 2007; Mehlum et al., 2007). The action is justified as it leads to capital accumulation. The goal of generating positive economic growth through accumulated capital can be achieved by well-functioning financial system. An important connection between financial development and natural resources is that resource revenues or rents can act as an alternative for private saving. Therefore, if a financial system is poor in resource rich countries, different forms of fluctuations could arise in the economy as a consequence of supplement the negative effects of natural resources, such as ineffectiveness of investments. Furthermore, a well-organized financial structure is likely to behave as a hedge to distortions in prices to which resource rich countries are sensitive and are thus likely to absorb disturbance better (Denizer et al., 2000).

There is a vast body of existing literature on the effect of institutional quality on natural resource curse. However, previous studies have focused minimally on the effect of natural resource abundance on financial development with additional determinants, such as education, economic growth and capital. In doing so, this study contributes to the existing literature by five means: (i), This study investigates the stimulating role of natural resource abundance on financial development for the case of the USA over the period of 1960–2016. (ii), Education, economic growth and capitalization are added as additional determinants of financial development in finance demand function. (iii), The traditional and structural break unit root tests are applied for examining unit root properties of the variables. (iv), We apply Bayer-Hanck combined cointegration approach and the robustness of cointegration relationship is tested by applying the bounds testing approach to cointegration. (v), The VECM Granger causality is applied to examine causal relationship between financial development and its determinants in the presence of structural break stemming in the series. Our empirical evidence reveals the presence of cointegration between the variables. Moreover, natural resource abundance adds in financial development. Education is positively linked with financial development. Economic growth contributes to financial development. A negative relationship exists between capitalization and financial development. The causality analysis reveals the feedback effect between natural resources abundance and financial development.

The rest of paper is organized as following: Section-II details review of studies in existing literature and model construction with data collection is explained in Section-III. Section-IV deals with methodological framework and results are interpreted in Section-V. The concluding remarks with policy implication are drawn in Section-VI.

2. Literature review

Existing literature of the late 1980s shows natural resources as blessing; however, these resources may increase the chances of unfavorable political and economic scenarios, and the term “resource

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