PETROLEUM RESOURCES, INSTITUTIONS AND ECONOMIC DEVELOPMENT

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Overview

Several theoretical and empirical research papers have claimed that a privileged natural resources endowment often prevents instead of drives economic development. Those research papers have pointed out that natural resource abundance would lower annual percentage growth rates of income per capita in the long term. (SACHS and WARNER, 1995, 1997 and 2001). In addition, natural resources abundance also would be often associated with: (i) barriers to democratic transition (ROSS, 2001; JENSEN and WANTCHEKON, 2004; TSUI, 2011); (ii) higher levels of corruption (LEITE and WEIDMAN, 1999; ADES and DI TELLA, 1999) and (iii) increased likelihood of irruption of civil wars (COLLIER and HOEFFLER, 1998; HUMPHREYS, 2005 ROSS, 2006). The empirical results have especially ratified these conclusions in the case of petroleum-rich countries (oil and natural gas). In this sense, rather than a blessing, petroleum resources would be a curse.

In general, the literature describes the resource curse as a crowding-out mechanism, in which a key factor for the economic development is "removed" when oil and natural gas are explotited from underground. This factor may be the accumulation of physical and human capital, or entrepreneurial and innovative activities, or even important institutions that support the processes of coordination between economic agents and decision makers. Thus, the resource curse is not only caused by the trade channel of Dutch Disease and weak production linkages, but also through other transmission channels such as: (i) *Education*: a reduction in education and R&D spending or retraction of economic activity of some qualified human capital intensive sectors (GYLFASON, 2001); (ii) *Investment*: inadequate management of the portfolio in the inter-temporal terms (ATKINSON and HAMILTON, 2003 GYLFASON and ZOEGA, 2006); (iii) *Institutional*: lack of governance which makes room for a false sense of security and optimism that leads governments and economic agents to irrational behaviour; or incentives for corruption and other forms of rent-seeking behavior (LEITE and WEIDMANN, 2002; PAPYRAKIS and GERLAGH, 2004; ISHAM et al., 2005).

This work aims to evaluate the resource curse hypothesis by estimating both direct and indirect effects (through the trade and institutional channels) of petroleum resourses on the long-run economic growth. The institutional indirect effect is particularly relevant for a group of oil exporting countries – *Petro-states* as defined by Karl (1997). The *Petro-states* have composed a distinct analytical unit among petroleum producing countries, typified by the common feature to have a high dependence (income, trade and fiscal) on petroleum revenues.

The paper is organised as follows: after the introduction, the second section gives a brief overview about the natural resource curse hypothesis and the special institutional context of *Petro-states*. In the third section, we describe the proposed methodology to measure both direct and indirect impacts (by institutional and trade channels) of petroleum revenues on long-run economic growth rate. In section four we discuss the regression results. In the final section we highlithed the main conclusions.

Methods

We propose the following simultaneous equations model to measure both direct and indirect effects of petroleum resources intensity on economic growth rate of selected countries sample:

$$INST_{i,t} = \alpha_0 + \alpha_1 RP_{i,t} + \alpha_2 LAT_{i,t} + \alpha_3 FRAC_{i,t} + \alpha_4 PETROSTATE_{i,t} + \alpha_5 OPEN_{i,t} + \varepsilon^1_{i,t} \quad (1)$$

$$DRN_{i,t} = \beta_0 + \beta_1 INST_{i,t} + \beta_2 RP_{i,t} + \beta_3 OPEN_{i,t} + \beta_4 PETROSTATE_{i,t} + \varepsilon^2_{i,t} \quad (2)$$

$$y^{'}_{i,t} = \theta_0 + \theta_1 \ln(y_{i,0}) + \theta_2 DRN_{i,t} + \theta_3 RP_{i,t} + \theta_4 INST_{i,t} + \theta_5 INV_{i,t} + \theta_6 TT_{i,t} + \theta_7 OPEN_{i,t} + \varepsilon^3_{i,t} \quad (3)$$

Equation (1) estimates the impact of petroleum revenues level on institutional quality. Equation (2) provides the factors that determine dependence degree of petroleum producing countries. Equation (3) specifies the economic growth function, capturing both direct effect of petroleum resources (by revenue) and indirect through the trade channel (dependence degree) and institutional channel.

In the proposed model, the exogenous variables are (i) petroleum revenues *per capita* (RP); (ii) investment rate in physical capital (INV); (iii) trade openness index (OPEN); and (iv) the variation of the terms of trade (TT). The institutional quality (INST), the petroleum dependence degree (DRN) and the average annual growth rate

are endogenous variables. For model identification, we use as included covariates the latitude (LAT), ethnic fractionation (FRAC), and oil and natural gas reserves *per capita* as excluded instrument. The dummy for *Petro-states* specifies those countries where oil production has conditioned its institutional trajectories. Due to endogeneity and simultaneity problems present in the proposed equation model system, we estimatate the functions by three stages least squares method (3SLS Pooled) acoording the most recent literature. We also use 5-year panel data between the period of 1970-2010.

Results

First, simultaneous equations model highlights that both institutional quality and petroleum revenues are important factors to explain the economic growth rate of oil and natural gas producing countries.

Second, in petroleum producing countries the petroleum revenues are also one of the key factors that determine institutional change. Moreover, we demonstrate that idiosyncratic effects of *Petro-states* when uncontrolled can skew the conclusions about the petroleum resources impact on economic growth. It happens due to historical parallel of the formation of their oil and natural gas industries and the establishment of their sovereign states. That historical coincidence has left an institutional background (deeply rooted institutions) that prevents a more vigorous process of institutional improvement - a necessary condition for the petroleum rich countries generate a sustained economic development.

Third, based on the estimated growth function, we found that both the petroleum revenues and the petroleum dependence do not confirm the resource curse hypothesis pointed out by SACHS e WARNER (1995, 1997 and 2001). However, we could not confirm that petroleum revenues have accelerated economic growth of oil and natural gas producing countries in the long term.

Conclusions

We have not confirmed the natural resources hypothesis as posed by other research papers in the Economic literature. In fact, we found that petroleum producing countries do not have an annual average rate growth lower than the non-producing countries between 1970-2010. However, their economic growth have been more volatile, which has prevented these countries to transform their oil and natural gas wealth into an advantage for their development pace. This conclusion is particularly valid for the *Petro-states* which have been unable to develop sustainable management of their natural wealth. We found that the main obstacle is deeply rooted institutions – like the relationship between the *State* and organized social groups – which stimulate rent-seeking behavior that prevents institutional change that could promote an alternative development model to petroleum dependence.

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