International Trade Openness, Resource Abundance and Economic Growth Nexus: A Panel Data Analysis of Resource-Intensive Countries

Samuel Bachunge

Graduate School of Pan-Pacific International Studies

Kyung Hee University

Yongin, Republic of Korea

OUTLINE

I. THEORETICAL BACKGROUND

Trade and Economic Growth Theories	
Classical scholars	- Adam Smith (A. A) -Ricardian Model (C.A)
Neo-classical scholars	-Heckscher-Ohlin (H-O) (C.A) -Leontief's paradox -Stolper Samuelson (C.A) -Rybcynski theorem (C.A) -Paul Krugman: (NTT) -Solow's Exogeneous Growth model -Romer, Lucas, Weil, Mankwiw: Endogeneous Growth Model

Resource Abundance and Growth Interplay	
Raul Presbish Hans Singer D. Meier and D. Seers,	Export pessimism theories
Corden and Neary	-"Dutch disease" theory -TOT volatility Analysis
Sachs and Warner	-Resource Curse theory (paradox of plenty)

I. THEORETICAL BACKGROUND

Trade Openness and Economic Growth

- Findings from theoretical models and empirical studies have led to non-homogeneous or even non-convergent conclusions in the relationship between trade and growth.
- No definitive and unequivocal proof that trade openness always causes a country's economy to grow faster or always has a positive influence on a country's economic growth.

Resource Abundance and Economic Growth

- Resource-intensive countries tend to grow more slowly than resource-scarce countries.
- Natural resource abundance and economic growth link poses a conceptual puzzle and remains a paradox to date: Resource curse phenomenon or paradox of plenty.

II.RESEARCH DESIGN

A. Objective

- Given the controversy on international trade-economic growth nexus and natural resource abundance-economic growth nexus; this paper tests an economic growth model on 47 resource-intensive countries on the basis of the fundamental principle of comparative advantage.

B. Key Questions

- This research tries to identify what type of association exist between trade openness and economic growth, and between resource abundance and economic growth of resource-rich countries as a group after controlling for a certain number of factors and explains why.

II. RESEARCH DESIGN

C. Hypotheses

- Hypothesis 1: International trade openness and resource abundance could be the main determinants of resource-rich countries' economic growth.

- Hypothesis 2: Resource-abundance would not guarantee higher economic growth in resource-abundant countries. It will depend on the degree of trade openness, human capital (skilled, educated or trained workers, health conditions), macroeconomic stability, industrial development, institutional quality, and investments in infrastructures.

II.RESEARCH DESIGN

D. Contribution

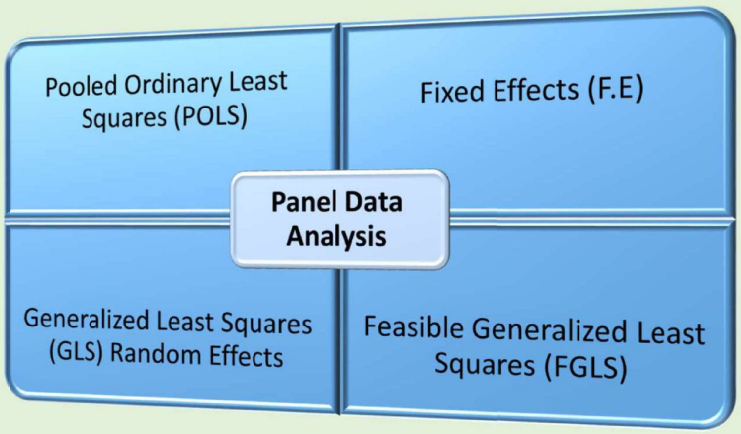
- Extension of previous methodologies by using the FGLS estimator, analyzing more recent data and examining whether the conclusion from existing studies are robust or fragile to the integration of more control variables;
- Gap filling by analyzing a particular setting of resource-rich countries;
- Lessons learnt for developing resource-intensive countries.

II. RESEARCH DESIGN

E. Methodology- Data- Variables- Estimation Methods-Equations

a. Data base	47 countries and 10,012 observations
b. Time period	Non-overlapping five-year intervals from 1987 to 2017

c. Estimation Methods:



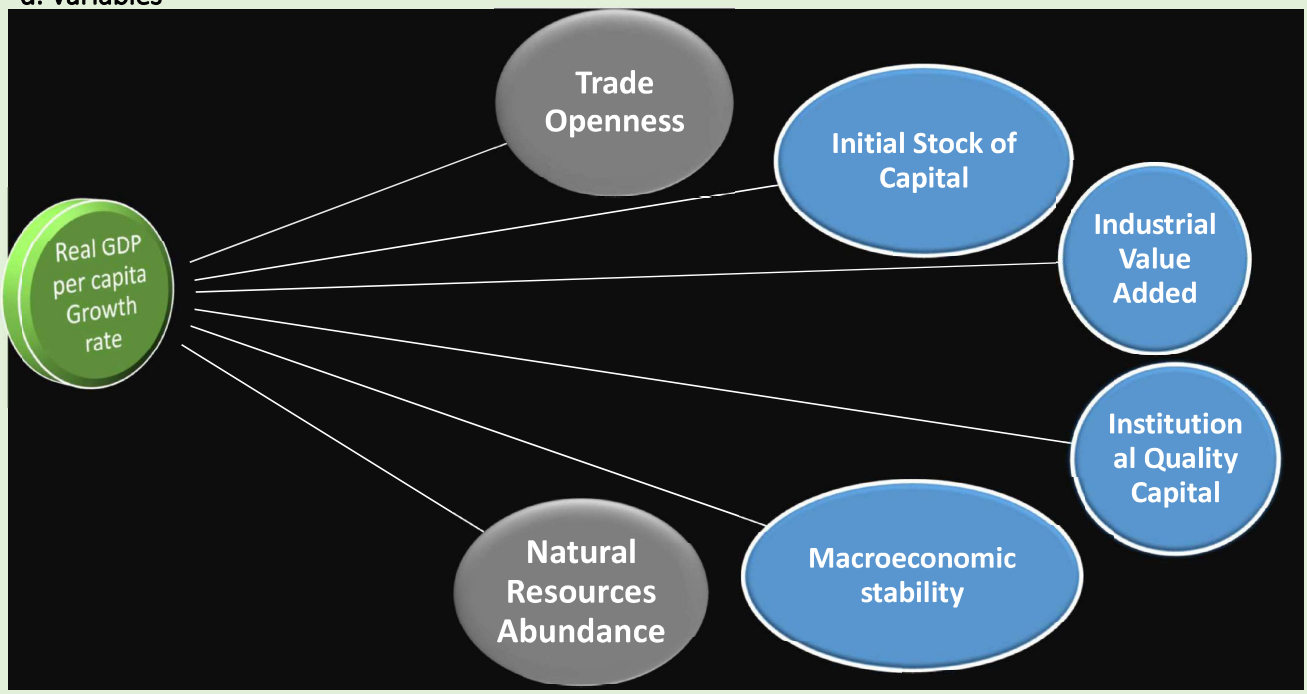
II. RESEARCH DESIGN

d. Variables

Variables	Notation	Definition	Source
Real GDP per capita Growth	GDPc	Annual growth rate of GDP per capita based on constant 2010 U.S. dollars. Real GDP per capita is gross domestic product adjusted for inflation, divided by midyear population..	World Bank (WDI)
Initial GDP per capita	$(GDPc)_{i,t-1}$	Initial real GDP per capita (initial stock of capital)	World Bank (WDI)
Trade Openness	TradOp	(Export+Import)/GDP	World Bank (WDI)
Trade Openness and Initial GDP per capita Interaction	$TraOp*(GDPc)_{i,t-1}$	(Export+Import)/ GDP and Initial GDP per capita	World Bank (WDI)
Natural Resources Abundance	ResAb	Total natural resources rents (% of GDP): the sum of oil rents, natural gas rents, coal rents (hard and soft), mineral rents, and forest rents	World Bank (WDI)
Natural Resources Abundance and Institutional Quality Capital Interaction	ResAb*InstQual	Total natural resources rents (% of GDP) and Institutional Quality Capital	World Bank (WDI)
Human Capital	HumCap	Percentage of population aged 15 and over enrolled in secondary level education (regardless of completion status)	World Bank (WDI)
Physical Capital	GFCF	Gross Fixed Capital Formation (GFCF) (GFCF/GDP*100)	World Bank (WDI)
Institutional Quality Capital	InstQual	Index of Physical Property Rights, Intellectual Property Rights, and the Legal and Political Environment	Heritage Foundation
Industrial Value Added	Ind	Industry, value added (% of GDP) Industrial share of GDP that comprises value added in mining, manufacturing, construction, electricity and gaz	World Bank (WDI)
Macroeconomic stability	Infl	Inflation rate	World Bank and IMF

II. RESEARCH DESIGN

d. Variables



II. RESEARCH DESIGN

e. Equation

- $\Delta \ln(\mathrm{GDPc})_{it} = \boldsymbol{\beta_{0,i}} + \boldsymbol{\beta_{1,i}} \ln(\mathbf{GDPc})_{i,t-1} + \boldsymbol{\beta_{2,i}} \ln \boldsymbol{TraOp_{i,t}} + \boldsymbol{\beta_{3,i}} \ln \boldsymbol{ResAb_{i,t}} + \boldsymbol{\beta_{4,i}} \ln \boldsymbol{InstQual_{i,t}} + \boldsymbol{\beta_{5,i}} \boldsymbol{Infla_{i,t}} + \boldsymbol{\beta_{6,i}} \ln \boldsymbol{Indu_{i,t}} + \boldsymbol{\lambda i} + + \boldsymbol{\varepsilon_{it}}$

III. EMPIRICAL ANALYSIS

Trade Openness Index and Economic Growth Distribution across 47 countries, 1987-2017

Resource Rent Index and Economic Growth Distribution across 47 countries, 1987-2017

III. EMPIRICAL ANALYSIS

B . Regressions and Findings Discussion

Regressions (POLS, FE, RE and FGLS) Results

	(F.E)	(R.E GLS)	(FGLS)
	lnGDPc_it	lnGDPc_it	lnGDPc_it
$ln\ (GDPc)_{i,t-1}$	0.0787***	0.0784***	0.07769***
	(0.0177)	(0.0646)	(0.0112)
$ln\ TraOp$	0.006231***	0.006971***	0.08751***
	(0.0457)	(0.0450)	(0.0423)
ln $ResAb$	-0.16129*	-0.15132*	-0.22179*
	(0.0633)	(0.0625)	(0.0516)
ln $InstQual$	0.0408	0.0399	0.06656
	(0.152)	(0.151)	(0.0134)
$ln\ Indu$	0.210***	0.237***	0.58729**
	(0.00500)	(0.00490)	(0.00456)
$ln\ Infla$	-0.0504***	-0.0500*	-0.02275**
	(0.00732)	(0.00733)	(0.00161)
N	725	725	725
R^2	0.337	0.393	0.584

IV. CONCLUDING REMARKS

Major Findings	Recommendations for resource-intensive developing countries
On average, Increase in trade shares and industrial value added are associated with possible higher growth rates	1. Policies that favor openness to international trade and mostly imports of intermediate and capital goods to support industrial development.

IV. CONCLUDING REMARKS

Major Findings	Recommendations for resource-intensive developing countries
On average higher exports of natural resources or increase in resources rents are associated with lower annual growth rates of real GDP per capita Most of energy and mineral natural resources are exhaustible, pose real challenges with regard to revenue management or some risks such as the "Dutch disease" and civil wars, among others	2. Building up diversified and resilient economies by developing a growth path outside the resource sector both in the level and composition of non-resource exports. 3. Engaging in industrial development (construction of mining and mineral industries in petroleum refining, copper; cobalt transformation or steel making) to create backward and forward linkages.

IV. CONCLUDING REMARKS

Major Findings	Recommendations for resource-intensive developing countries
Higher exports of natural resources or increase in resources rents are associated with lower annual growth rates of GDP per capita Most of energy and minerals natural resources are exhaustible, pose real challenges with regard to revenue management or some risks such as the "Dutch disease" and civil wars, among others	4. Efficient use of strategies and reforms to enhance the quality of economic management, transparency, accountability and political governance, such as the Extractive Industries Transparency Initiative (EITI) 5. Constitution of a sovereign wealth fund and adhesion to the International Forum of Sovereign Wealth Funds (IFSWF) in order to pursue multiple objectives, for example, short-term and long-term macroeconomic stabilization, resource curse mitigation, revenue volatility minimization, "Dutch disease" prevention

IV. CONCLUDING REMARKS

Major Findings	Recommendations for resource-intensive developing countries
Higher exports of natural resources or increase in resources rents are associated with lower annual growth rates of GDP per capita	6. Use of legal regulations to require multinational firms exploiting natural resources to closely work with some domestic firms in order to transmit them technologies and know-how, and lift their capability and potential to compete in international markets over time.
Most of energy and minerals natural resources are exhaustible, pose real challenges with regard to revenue management or some risks such as the "Dutch disease" and civil wars, among others	7. Policies oriented toward economic development and inclusive growth to address poverty issue and narrow wealth inequalities, both issues are major source of frustration and civil wars in resource-abundant countries.

Thank you