Natural Resources, Institutional Quality and Financial Development in GCC Member Countries: Visiting 'Resource Curse Hypothesis' by DCCE Estimation

Muhammad Faheem (✉ faheem@bzu.edu.pk)

Bahauddin Zakariya University <https://orcid.org/0000-0002-9879-2522>

Imran Sharif Chaudhry

Bahauddin Zakariya University

Sadam Hussain

Dongbei University of Finance and Economics

Research Article

Keywords: Financial Development, Natural Resource Rent, Institutional Quality, DCCE Approach, GCC Countries

Posted Date: May 10th, 2021

DOI: <https://doi.org/10.21203/rs.3.rs-356533/v1>

License: © ⓘ This work is licensed under a Creative Commons Attribution 4.0 International License.
[Read Full License](#)

Version of Record: A version of this preprint was published at Review of Economics and Development Studies on May 31st, 2021. See the published version at <https://doi.org/10.47067/reads.v7i2.343>.

Natural Resources, Institutional Quality and Financial Development in GCC Member Countries: Visiting ‘Resource Curse Hypothesis’ by DCCE Estimation

Muhammad Faheem¹, Imran Sharif Chaudhry² Sadam Hussain³

Abstract

The main purpose of the study is to check whether natural resource rent affects the financial development or supporting resource curse hypothesis by employing a recently developed estimation technique by Chudik and Pesaran (2015) over 1985 to 2017 in GCC member countries. The novelty of this methodology is to consider structural breaks and the heterogeneity issues that are common in panel data. The results of DCCE estimates are in support of resource hypothesis that natural resource rent hurt financial development. Additionally, this study takes moderation of institutional quality to check the threshold point or turning point where natural resource rent effect becomes positive. Our results of interaction term postulate that a higher level of institutional quality mitigates the adverse effect of natural resource rent on financial development. The study results recommend the policy of natural resource rent in the presence of high institutional quality should continue because it improves the financial development in GCC member countries.

Keywords: Financial Development, Natural Resource Rent, Institutional Quality, DCCE Approach, GCC Countries.

JEL Codes: A19, C58, G00, Q34

1. Introduction

Financial development role is central for greater prosperity achievement, and an efficient financial system is needed to encourage natural resources efficient for growth any economy (Pradhan et al., 2016; Nawaz et al., 2019). Financial development also improves financial intermediary services quality and quantity (Muhammad et al. 2016). Stabilization and commercial banking assets, net interest margins and creation of creating credit circulation are the source of financial indicators stability (Dwumfour and Ntow-Gyamfi, 2018) that contribute to economic growth but in low strength in resource abundance countries (Sachs and Warner, 2001; Gelb, 2010). The development of any economy natural resources plays a crucial role of the countries as it is an asset of a country (Guan et al., 2020), and that is in discussion since Smith (1776) and Ricardo (1917). It helps to generate economic activities and recorrect trade balance through institutional performance, good governance indicators and financial development (Asif et al., 2020). On the contrary, under certain conditions, resource abundance creates an exigent environment for financial sector development. Nevertheless, in recent times several economies that have high natural resources but lagging in economic growth from countries that have less resources (Badeeb et al., 2017).

¹ School of Economics Bahauddin Zakariya University, Multan Pakistan (faheem@bzu.edu.pk)

² School of Economics Bahauddin Zakariya University, Multan Pakistan (imran@bzu.edu.pk)

³ Dongbei University of Finance and Economics, China, (Email: sadam_2iqbal@yahoo.com)

In theory, resource curse concept assumes about the cause of the economic collapse of assets plentiful nations, and experimentally, it was shown that in the mainstream of surveys (Sachs and Warner, 2001). The investigation described numerous reasons that trigger resource curse hypothesis, for example, dishonesty, rental pursuing actions, fall back industrial sector financing and inferior organizational quality and goods price shocks in assets rich nations (Mlachila and Quedraogo, 2019). Economic growth is supposed to be a foundation for moving capital curse into capital benediction in the existence of higher organizational superiority, high-level trade and great value of human capital (Rajan and Zinglaes, 2013).

Previous literature has shown that institutional quality important determinant of financial development (Law et al., 2014; Kirch and Terra, 2012; Law and Habibullah, 2006; Tamazian and Rao, 2010). Many researchers reported a positive relation (Khan et al., 2020; Bhattacharyya and Hodle, 2014). In contrast, others found a negative relation (Hunjra et al., 2020). The literature revealed damaging linkage of sources with economic advancement (Cardon and Neary, 1982; Zoega and Gylfascon, 2001; Guan et al., 2020; Sun et al., 2020). On the other side, there is a work in the paradox of these researches and revealed a positive relationship (Auty, 2001; Gokmenoglu and Rustamov, 2019; Nawaz et al., 2019). So, our investigation provides policy direction for accomplishment of financial expansion along with efficient natural assets use in the GCC countries.

This remaining is organized in following sections: part 2 reviews previous studies. Part 3 detail the methodology. Part 4 express the results and the final section draw concluding remarks and suggestions.

2. Literature Review

A glut of empirical literature investigated the association of natural resource with macroeconomic indicators, like natural resource and economic growth (Fum and Hodler, 2010; Alexeev and Chernyavskiy, 2015; Erum and Hussain, 2019; Atil et al., 2020); inflation (Ouoba, 2016; Kim and Lin, 2017; Henri, 2019; Freeman et al., 2020) unemployment (Sjöberg et al., 2010; Kayode et al., 2014; Bagchi and Paul, 2018; Mukoka, 2020) trade balance (Vallejo, 2010; Gill et al., 2014; Harding and Venables, 2016; Tran et al., 2020); poverty (Barbier, 2010; Timilsina and Zilberman, 2016; Marchand and Weber, 2018); environment (Simon, 2010; Panayotou, 2016; Ding and Peng, 2018; Badeeb et al., 2020).

However, limited studies revealed the linked of natural resources with financial sector (Shahbaz et al., 2013; Bhattacharyya and Hodler, 2014; Hattendorff, 2014; Suliman and Elia, 2014). The overwhelming part of the literature demonstrates a positively association of natural resources with financial development like, (Nwani, 2016; Zaidi et al., 2019; Ibrahim, 2019; Faisal et al., 2019; Yıldırım et al., 2020) and other negatives (Khan et al., 2020).

Many studies reported a positively association link of natural resources with the financial development of countries (Nwani, 2016; Ibrahim, 2019; Zaidi et al., 2019; Khan et al., 2020). Khan et al. (2020) indicate linkage between financial development and natural resources by employing maki cointegration and multiple structural break approach evidence from China positively. Recently, Yıldırım et al. (2020) reported the positive influence of natural resources on financial development evidence from 16 countries. In contrast, Asif et al. (2020) used the ARDL

approach and empirical result reported that natural resources harm to financial development in long-run in Pakistan. Evidence from China, Guan et al. (2020) reported negatively effect of natural resources on financial development overused time-series data from 1971-2017 by employing the ARDL approach. Similarly, Bhattacharyya and Hodler (2014) argued that if the political-institutional quality is poor, so the result reported with statistic evidence that found a negative association. In China, Yuxiang and Chen (2011) tested how natural resources affected financial development overtime period 1996 to 2006 by employing the GMM model. The result indicates that natural resources hurt financial development.

In eight Asian countries, Law et al. (2014) tested the relation between institutional quality and financial development over time 1984 to 2006 by employing an econometrics heterogeneous panel cointegration test. The empirical result reported positive influence of institutional quality on financial development. In ninety developed and developing countries, Huang (2010) revealed the association of financial development and political intuition by employing the GMM model overusing panel data from 1960 to 1999. The result statistically indicates positive association. In contrast, Girma and Shortland (2008) investigated the influence of political intuition on financial development by employing the GMM model. The statistical result indicates that political institution has positively affected to financial development.

Law et al. (2015) tested the influence of real GDP with other variables like institutional quality and globalization on financial development over the time from 1984 to 2008 in East Asian countries. The empirical analysis result indicates that real GDP affected positively. Atil et al. (2020) explores the association of real GDP, oil price, natural resource and globalization with financial development in Pakistan over 1972-2017 and found real GDP associated positively with financial development. Similarly, Satti et al.(2014) found the granger causality relationship.

In the case of GCC panel countries, Grassa and Gazdar (2014) by employing OLS, and GLS approaches and result indicates the negative and signification impact of financial development on economic growth. In contrast, Bist (2018) analyzed the association of financial development on economic growth in the long run by employing OLS approach over using panel data of 20 years.

From the previous literature, it can be wrap up those ambiguous findings exists in literature and there is a need to address this issue in the context of oil-exporting countries like GCC member countries that are highly resource-abundant.

3. Data and Methodology

For the testing of the resource curse hypothesis, our study uses financial development (proxied by broad money to GDP) as a dependent variable. The regressors are natural resource rent, gross domestic product (GDP), institutional quality (INSQ) and the interaction term of institutional quality and natural resource (NRR*INSQ) and all variables are taken in logarithmic form, and description reported in table A1 (see appendix). The study covers period 1985-2017 for GCC member countries.

There are different methodologies that have been used in previous studies to prove the resource curse hypothesis. Some are on time series data like ARDL, NARDL, VAR and others are on a panel like GMM, fixed and random effect, panel ARDL. These methods are traditional methods and unable to cover sever issues related to heterogeneity, cross-sectional dependence and structural breaks. The study uses the recently developed methodology that covers this issue and provides reliable estimates.

3.1 DCCE Estimation Methodology

A recently developed dynamic common correlated effects (DCCE) method by Chudik and Pesaran (2015) solve the previous studies issues that make them inefficient and unreliable for estimation. This method solves the issue of cross-sectional dependence (CSD) which was not entertained in previous studies by taking cross-sectional averages and lagged CS averages of the dependent variable with regressors. This method also entertains the heterogeneity issue in the parameters with the assistance of mean group method and suitable, even small sample size. The beauty of this methodology is that it gives reliable estimates to even have unbalanced data and structural breaks (Kapetanios et al. 2011; Ditzen, 2016; Ditzen, 2019).

The study empirically tested the resource curse hypothesis in the specification DCCE estimation by taking financial development as the dependent variable and natural resource rent, real GDP, institutional quality and interaction term of institutional quality and natural resource rent as independent variables.

The concerned model is composed in the following equation:

$$Y_{it} = \alpha_i Y_{it-1} + \delta_i X_{it} + \sum_{p=0}^{Pr} \gamma_{xip} \bar{X}_{t-p} + \sum_{p=0}^{Pr} \gamma_{yip} \bar{X}_{t-p} + \mu_{it} \quad (1)$$

In the above equation Y_{it} , Y_{it-1} and X_{it} represent the dependent variable, lag of dependent variable and independent variable, respectively. The cross-sectional time and dimension denoted by i and t . And P_T and μ_{it} denotes the lag of cross-sectional averages and the error term. γ_{xip} and γ_{yip} denotes the unobserved factors.

For testing the resource curse hypothesis, we extend this in our variable formulation:

$$LFD_{it} = \alpha_i LFD_{it-1} + \beta_i X_{it} + \sum_{p=0}^{pT} \gamma_{xip} \bar{X}_{t-p} + \sum_{p=0}^{pT} \gamma_{yip} \bar{X}_{t-p} + \mu_{it} \quad (2)$$

In the above equation, LFD is the log of financial development that is used as the dependent variable, and other LNRR, LGDP, LINSQ and (LNRR*LINSQ) are explanatory variables reported by X_{it} . μ_{it} is the error term.

3.2 Test of Cross-sectional Dependence (CSD)

It can happen CD in the panel estimation because of interaction among countries, space effects and unobserved factors and estimation will provide unreliable results if these issues not address properly (Chudik and Pesaran, 2013; Dong et al., 2018b). the widely used method to tackle this CD issue is Lagrange multiplier (LM) test grounded in Breush and Pagan (1980) and expressed as follows:

$$y_{it} = \alpha_i + \beta_i x_{it} + \mu_{it}$$

β_i and α_i denotes countries individual slope coefficients and intercept.

Breush and Pagan (1980) LM test standard form is the following:

$$LM_{BP} = T \sum_{i=1}^{N-1} \sum_{j=i+1}^N \hat{\rho}_{ij}^2$$

Notwithstanding, there are some shortcoming in this test like it is suitable only for the large time period and the small number of countries (Pesaran, 2004). Therefore, the scaled version given by Pesaran (2004) which tackle the previous test issues.

$$Scaled \text{ LM Test} = \sqrt{\left(\frac{1}{N(N-1)}\right)} \left[\sum_{i=1}^{N-1} \sum_{j=i+1}^N (T \hat{\rho}_{ij}^2 - 1) \right]$$

For the small sample and large N, Pesaran (2004) introduced cross-sectional dependence (CD) test which is also suitable.

$$CD = \sqrt{\left(\frac{2T}{N(N-1)}\right)} \left[\sum_{i=1}^{N-1} \sum_{j=i+1}^N \hat{\rho}_{ij} \right]$$

The latest modified version of the LM test is given by Baltagi et al. (2012) for accurate mean and variance of the LM statistics:

3.3 Unit Root Tests (First Generation and Second Generation)

There are frequently adopted traditional first generation unit root test in the literature like LLC, IPS, ADF and PP that provides the guidance about variable stationarity. But the issue is that in the case of CD, these test results are not more reliable (Pesaran, 2007). In contrast, the second generation unit root test like CIPS introduced by Pesaran (2007) tackle these issue that first-generation unit root ignored.

3.4 Cointegration Test (Pedroni and Westerlund)

In the case of CSD, the results not more reliable by tradition unit root test like Pedroni (1999). Consequently, we apply a recently developed cointegration technique developed by Westerlund (2007) that provides reliable results and cope up the issues. The speciality of this test is it considers the cointegration in panel series whether ecm present for individual or the whole panel (Persyn and Westerlund, 2008).

4. Results and Discussion

The summary of features of data expresses in the form of descriptive statistics and correlation shows the association, results are reported in the following table 1 of LFD, LNRR, LGDP, LINSQ and (LNRR*LINSQ), respectively.

Table 1: Descriptive statistics and Correlation

	LFD	LNRR	LGDP	LINSQ	(LNRR*LINSQ)
Mean	3.9619	3.4665	25.2838	1.8387	6.3944
Median	3.9529	3.5063	25.286	1.9284	6.5066
Maximum	5.2587	4.1278	27.2233	2.1691	8.6051
Minimum	3.2614	2.1613	23.4531	2.00E-06	4.32E-06
Std. Dev.	0.3715	0.3599	1.0452	0.3007	1.2638
Skewness	0.2693	-0.7789	0.1026	-2.1118	-1.0582
Kurtosis	2.8053	3.7047	1.8582	10.7401	5.8312
Jarque-Bera	2.2550	20.0971	9.2519	534.5270	85.9024
Probability	0.3238	0.0000	0.0098	0.0000	0.0000
Sum	653.7071	571.9790	4171.821	303.3864	1055.083
Sum Sq. Dev.	22.6310	21.2537	179.1699	14.8284	261.9439
Observations	165	165	165	165	165
LFD	1	-0.1189**	0.1131	-0.0814	-0.1002
LNRR		1	-0.1775**	0.1905**	0.6529***
LGDP			1	0.3085***	0.1434*
LINSQ				1	0.8544***
(LNRR*LINSQ)					1

To test the cross-sectional dependence is very crucial for choosing the econometric method. Different types of tests are applied like biased-corrected scaled LM test, CD test and scaled LM test which is given by Baltagi et al. (2012), (Pesaran et al. 2004), and Pesaran (2004) to check the CSD and provides us guidance about methodology. The results of these tests report in the following table 2.

167

Table 2 : Panel Unit Root Test for Cross-Sectional Dependence

	Pesaran CD	Pesaran scaled LM	Breusch-Pagan LM
LFD	8.68***	24.14***	122.99***
LNRR	12.37***	34.01***	167.09***
LGDP	17.14***	62.44***	294.24***
LINSQ	14.31***	44.55***	214.22***
(LNRR*LINSQ)	14.71***	46.28***	221.96***

168 *** show to the levels of significance at 1 percent.

169 Unit root tests are two types namely first and second generations unit root test and most studies only rely on first-
170 generation unit root tests like Levin et al. (2002), Im et al. (2003) and some others traditional unit root tests. There
171 are some issues that are not covered by these unit root tests like these tests ignore the CSD, which is the most major
172 problem in panel data. To tackle this issue and for reliable results, we use the second-generation unit root test (CIPS-
173 Test), which is introduced by Pesaran (2007) and is useful for guidance of econometric methodology. The following
174 table 3 of unit root test results express that variable are mixed order of integration.

175

Table 3: Unit Root (First & Second Generation) Tests Results

Unit Root Tests (LLC & IPS)				
	Levin, Lin, and Chu		Im, Pesaran, and Shin W-stat	
	Level	First Difference	Level	First Difference
LFD	2.57	-5.76***	2.04	-7.61***
LNRR	-2.36***	-2.96***	-3.03***	-9.44***
LGDP	2.08	-3.24***	4.39	-4.59***
LINSQ	-2.82***	-7.33***	-1.56*	-6.85***
(LNRR*LINSQ)	-1.87**	-3.95***	-1.34*	-7.19***
Unit Root Test (CIPS)				
	Level		First Difference	
LFD	-1.52		-5.39***	
LNRR	-3.13***		-5.46***	
LGDP	-2.23		-4.56***	
LINSQ	-1.99		-4.19***	
(LNRR*LINSQ)	-2.62**		-4.98***	

176 Note: *** , **and * show to the levels of significance at 1 percent, 5 percent and 10 percent, respectively.

177

The next step is to check the cointegration among the variables. For this, we applied two types of unit root test for reliable results. First, we applied traditional cointegration test that is introduced by Pedroni (1999), and table 4 express the results. The outcome of traditional cointegration test shows there is no cointegration.

The results of traditional cointegration test are not sufficient and reliable because it ignores the various issues like CSD, structural breaks. While the second generation cointegration test that was introduced by Westerlund (2007) which is suitable because it copes up these issues regarding structural breaks, CSD, serial correlation and heteroskedasticity.

Table 4: Pedroni Residual (Traditional) Cointegration Test

	t-Stat	Probability	W. Stat	Probability
v-Stat	0.48	0.31	0.32	0.37
rho-Stat	-0.53	0.29	-0.16	0.43
PP-Stat	-1.85**	0.03	-1.32	0.09
ADF-Stat	-1.34*	0.08	-0.92	0.17
	Stat	Probability		
Group rho-Stat	0.23	0.59		
Group PP-Stat	-1.63**	0.04		
Group ADF-Stat	-1.16	0.12		

Note: **and * refer to 5% and 10% levels of significance, respectively.

The following table 5 reports the results of Westerlund (2007) cointegration test that show the existence of cointegration in the long run.

Table 5: Panel Cointegration Test (Westerlund ECM)

H ₀ : no cointegration	Value	Probability
Gt	-3.63**	0.02
Ga	-11.01**	0.01
Pt	-7.96***	0.00
Pa	-13.36**	0.03

Note: *** and ** refer to 1% and 5% significance level, respectively.

The findings of DCCE model is reported in table 6. The results show our main independent variable NRR is associated with financial development negatively, that means one per cent increase in LNRR will decrease financial

development by 0.28%. These results support the resource curse hypothesis in GCC member economies. Other control variables affect significantly financial development. The variable LFDI shows a positive association with the ecological footprint. However, the result of our interaction term is positively significant that explains this resource curse effect minimize and convert to positive effect in the presence of strong institutional quality.

Table 6: Results Dynamic Common Correlated Effects (DCCE) estimation

Regressors	Coefficient	p-value
LFD (-1)	-0.79**	(0.06)
LNRR	-0.28**	(0.03)
LGDP	0.37*	(0.07)
LINSQ	0.88**	(0.02)
(LNRR*LINSQ)	0.23***	(0.00)
Constant	0.44	(0.90)

Note: ***, ** and * shows 1%, 5% and 10% significance level, respectively

Furthermore, the study finds the marginal effect at various institutional quality levels like minimum, mean and maximum level, and following table 7 and the graph presents the results.

Table 7: Marginal Effect

		Minimum	Average	Maximum
GCC member Countries	Institutional Quality	2.00E-06	1.8387	2.1691
	Marginal Effect	-0.208	0.2149	0.2908

$$\delta LFD_{it} / \delta LNRR_{it} = -0.208 + 0.23 LINSQ_{it}$$

The marginal effect of natural resource rent on financial development is calculated at minimum, the mean and maximum level of institutional quality is -0.208, 0.2149 and 0.2908, respectively.

Figure 1: Marginal Effect Graph

The study further check the robustness by using new proxy financial development, and results are given in Table 8. The findings are consistent with the previous results reported in Table 6. Natural resource abundance hurts the financial development while real GDP, institutional quality and interaction term increase the financial development for GCC member countries.

Table 8: Robustness Check using Financial Development Index as Measure for Financial Development

Regressors	Coefficient	probability-value
LFD (-1)	-0.56***	(0.00)
LNRR	-0.57***	(0.00)
LGDP	0.15**	(0.04)
LINSQ	0.45***	(0.00)
(LNRR*LINSQ)	0.17**	(0.02)
Constant	0.77	(0.81)

Our results are in line with the empirical studies of Asif et al. (2020) that show the adverse association of resources with financial development. The control variables real GDP, and institutional quality affect positively significant.

The interaction term of natural resource rent and institutional quality is positive that postulates, resource curse hypothesis mitigated by a high level of institutional quality.

5. Conclusion and Recommendations

The explores the relation of natural resource rent with financial development in visiting the resource curse hypothesis in GCC member countries over 1985-2017. We employ the novel method DCCE approach developed by Chudik and Pesaran (2015) that have an advantage over the traditional method to cope up the crossectional dependence and structural breaks problem in the panel data. The results of DCCE estimates are in support of resource hypothesis that natural resource rent has an adverse effect on financial development. Additionally, we take moderation of institutional quality to check the threshold point or turning point where natural resource rent effect becomes positive. Our results of interaction term postulate that a higher level of institutional quality mitigates the adverse effect of natural resource rent on financial development. The study results recommend the policy of natural resource rent in the presence of high institutional quality should continue because it improves the financial development in GCC member countries.

Funding : No funding was received to conduct this research.

Acknowledgment : We would like to acknowledge the contributions of research participants to this research paper.

Conflict of interest : On behalf of all authors, the corresponding author states that there is no conflict of interest associated with this manuscript.

Human and animal rights: No human or animals were harmed to do this research.

Consent to Publish: All the authors are agreed to publish the paper in the journal of environmental science and pollution research.

Material and Data Required: All the data is obtained online from world development indicators. You can access data from the link provided. <https://databank.worldbank.org>.

Ethical Approval and Consent to Participate: Not Applicable

Author's Contribution:

Dr. Muhammad Faheem: Complete writing, Data analysis, Software working, Econometric modeling, Methodology.

Dr. Imran Sharif Chaudhry: Supervision, Conceptualization.

Sadam Hussain : Review, editing, references verification, and resources verification.

Author's Position:

Dr. Muhammad Faheem is working as Assistant Professor at the School of Economics, Bahauddin Zakariya University, Multan Pakistan.

261 **Dr. Imran Sharif Chaudhry** is working as a Professor at the School of Economics, Bahauddin Zakariya
 262 University, Multan Pakistan.

263 **Sadam Hussain** is PhD Scholar at Dongbei University of Finance and Economics, China

264 **References:**

265 Albuquerque, U. P., Soldati, G. T., Ramos, M. A., de Melo, J. G., de Medeiros, P. M., Nascimento, A. L. B., &
 266 Júnior, W. S. F. (2015). The influence of the environment on natural resource use: evidence of apparency.
 267 In *Evolutionary ethnobiology* (pp. 131-147). Springer, Cham.

268 Alexeev, M., & Chernyavskiy, A. (2015). Taxation of natural resources and economic growth in Russia's
 269 regions. *Economic Systems*, 39(2), 317-338.

270 Asif, M., Khan, K. B., Anser, M. K., Nassani, A. A., Abro, M. M. Q., & Zaman, K. (2020). Dynamic
 271 interaction between financial development and natural resources: Evaluating the 'Resource
 272 curse' hypothesis. *Resources Policy*, 65, 101566.

273 Atil, A., Nawaz, K., Lahiani, A., & Roubaud, D. (2020). Are natural resources a blessing or a curse for
 274 financial development in Pakistan? The importance of oil prices, economic growth and economic
 275 globalization. *Resources Policy*, 67, 101683.

276 Auty, R. M. (2001). The political economy of resource-driven growth. *European economic review*, 45(4-6),
 277 839-846.

278 Badeeb, R. A., Lean, H. H., & Clark, J. (2017). The evolution of the natural resource curse thesis: A critical
 279 literature survey. *Resources Policy*, 51, 123-134.

280 Badeeb, R. A., Lean, H. H., & Shahbaz, M. (2020). Are too many natural resources to blame for the shape of the
 281 Environmental Kuznets Curve in resource-based economies?. *Resources Policy*, 68, 101694.

282 Bagchi, A., & Paul, J. A. (2018). Youth unemployment and terrorism in the MENAP (Middle East, North
 283 Africa, Afghanistan, and Pakistan) region. *Socio-Economic Planning Sciences*, 64, 9-20.

284 Baloch, M. A., Khan, S. U. D., & Ulucak, Z. Ş. (2020). Poverty and vulnerability of environmental degradation
 285 in Sub-Saharan African countries: what causes what?. *Structural Change and Economic Dynamics*.

286 Baloch, M. A., Khan, S. U. D., & Ulucak, Z. Ş. (2020). Poverty and vulnerability of environmental degradation
 287 in Sub-Saharan African countries: what causes what?. *Structural Change and Economic Dynamics*.

288 Baltagi, B. H., Feng, Q., & Kao, C. (2012). A Lagrange Multiplier test for cross-sectional dependence in a fixed
 289 effects panel data model. *Journal of Econometrics*, 170(1), 164-177.

290 Barbier, E. B. (2010). Poverty, development, and environment. *Environment and Development Economics*, 635-
 291 660.

- 292 Bhattacharyya, S., & Hodler, R. (2014). Do natural resource revenues hinder financial development? The role of
293 political institutions. *World Development*, 57, 101-113.
- 294 Bist, J. P. (2018). Financial development and economic growth: Evidence from a panel of 16 African and non-
295 African low-income countries. *Cogent Economics & Finance*, 6(1), 1449780.
- 296 Brauner-Otto, S. R., & Axinn, W. G. (2017). Natural resource collection and desired family size: a longitudinal test
297 of environment-population theories. *Population and environment*, 38(4), 381-406.
- 298 Breusch, T. S., & Pagan, A. R. (1980). The Lagrange multiplier test and its applications to model specification in
299 econometrics. *The review of economic studies*, 47(1), 239-253.
- 300 Cave, J., Chaudhuri, K., & Kumbhakar, S. C. (2019). Do banking sector and stock market development
301 matter for economic growth? *Empirical Economics*, 1-23.
- 302 Chaigneau, T., Coulthard, S., Brown, K., Daw, T. M., & Schulte-Herbrüggen, B. (2019). Incorporating basic needs
303 to reconcile poverty and ecosystem services. *Conservation Biology*, 33(3), 655-664.
- 304 Chidiebere, O. N., Iloanya, K., & Udunze, U. (2014). Youth unemployment and entrepreneurship development:
305 Challenges and prospects in Nigeria. *Kuwait Chapter of the Arabian Journal of Business and*
306 *Management Review*, 4(4), 20.
- 307 Chudik A, Pesaran MH (2013) Large panel data models with crosssectional dependence: a survey. SSRN
308 Electron J. <https://doi.org/10.2139/ssrn.2316333>.
- 309 Chudik, A., & Pesaran, M. H. (2015). Common correlated effects estimation of heterogeneous dynamic panel data
310 models with weakly exogenous regressors. *Journal of Econometrics*, 188(2), 393-420.
- 311 Corden, W. M., & Neary, J. P. (1982). Booming sector and de-industrialisation in a small open economy. *The*
312 *economic journal*, 92(368), 825-848.
- 313 Ding, Y., & Peng, J. (2018). Impacts of urbanization of mountainous areas on resources and environment:
314 Based on ecological footprint model. *Sustainability*, 10(3), 765.
- 315 Ditzén, J. (2016). xtdece: Estimating dynamic common correlated effects in Stata. *The Spatial Economics and*
316 *Econometrics Centre (SEEC)*.
- 317 Ditzén, J. (2019). Estimating long run effects in models with cross-sectional dependence using xtdece2. *Centre for*
318 *Energy Economics Research and Policy (CEERP) Working Paper No, 7*.
- 319 Dong, K., Hochman, G., Zhang, Y., Sun, R., Li, H., & Liao, H. (2018b). CO2 emissions, economic and population
320 growth, and renewable energy: Empirical evidence across regions. *Energy Economics*, 75, 180-192.

321 Dwumfour, R. A., & Ntow-Gyamfi, M. (2018). Natural resources, financial development and institutional
322 quality in Africa: Is there a resource curse?. *Resources Policy*, 59, 411-426.

323 Erum, N., & Hussain, S. (2019). Corruption, natural resources and economic growth: Evidence from OIC
324 countries. *Resources Policy*, 63, 101429.

325 Faisal, F., Sulaiman, Y., & Tursoy, T. (2019). Does an asymmetric nexus exist between financial deepening and
326 natural resources for emerging economy? Evidence from multiple break cointegration
327 test. *Resources Policy*, 64, 101512.

328 Faisal, F., Sulaiman, Y., & Tursoy, T. (2019). Does an asymmetric nexus exist between financial deepening and
329 natural resources for emerging economy? Evidence from multiple break cointegration
330 test. *Resources Policy*, 64, 101512.

331 Freeman, D., Inklaar, R., & Diewert, W. E. (2020). Natural resources and missing inputs in international
332 productivity comparisons. *Review of Income and Wealth*.

333 Fum, R. M., & Hodler, R. (2010). Natural resources and income inequality: The role of ethnic
334 divisions. *Economics Letters*, 107(3), 360-363.

335 Gelb, A., 2010. Economic Diversification in Resource Rich Countries. Center for Global Development, pp. 1–23.

336 Gill, I. S., Izvorski, I., Van Eeghen, W., & De Rosa, D. (2014). *Diversified development: making the most of*
337 *natural resources in Eurasia*. The World Bank.

338 Girma, S., & Shortland, A. (2008). The political economy of financial development. *Oxford economic*
339 *papers*, 60(4), 567-596.

340 Gokmenoglu, K. K., & Rustamov, B. (2019). Examining the World Bank Group lending and natural resource
341 abundance induced financial development in KART countries. *Resources Policy*, 63, 101433.

342 Grassa, R., & Gazdar, K. (2014). Financial development and economic growth in GCC countries. *International*
343 *Journal of Social Economics*.

344 Guan, J., Kirikkaleli, D., Bibi, A., & Zhang, W. (2020). Natural resources rents nexus with financial
345 development in the presence of globalization: is the “resource curse” exist or myth?. *Resources*
346 *Policy*, 66, 101641.

347 Guan, J., Kirikkaleli, D., Bibi, A., & Zhang, W. (2020). Natural resources rents nexus with financial
348 development in the presence of globalization: is the “resource curse” exist or myth?. *Resources*
349 *Policy*, 66, 101641.

350 Harding, T., & Venables, A. J. (2016). The implications of natural resource exports for nonresource trade. *IMF*
351 *Economic Review*, 64(2), 268-302.

352 Hassan, S. T., Xia, E., Khan, N. H., & Shah, S. M. A. (2019). Economic growth, natural resources, and ecological
353 footprints: evidence from Pakistan. *Environmental Science and Pollution Research*, 26(3), 2929-
354 2938.

355 Hattendorff, C. (2014). *Natural resources, export concentration and financial development* (No. 2014/34).
356 Diskussionsbeiträge.

357 Henri, P. A. O. (2019). Natural resources curse: A reality in Africa. *Resources Policy*, 63, 101406.

358 Huang, Y. (2010). Political institutions and financial development: an empirical study. *World*
359 *Development*, 38(12), 1667-1677.

360 Ibrahim, M. H. (2019). Oil and macro-financial linkages: Evidence from the GCC countries. *The Quarterly Review*
361 *of Economics and Finance*, 72, 1-13.

362 Ibrahim, M. H. (2019). Oil and macro-financial linkages: Evidence from the GCC countries. *The Quarterly Review*
363 *of Economics and Finance*, 72, 1-13.

364 Im, K. S., Pesaran, M. H., & Shin, Y. (2003). Testing for unit roots in heterogeneous panels. *Journal of*
365 *econometrics*, 115 (1), 53-74.

366 Kapetanios, G., Pesaran, M. H., & Yamagata, T. (2011). Panels with non-stationary multifactor error
367 structures. *Journal of Econometrics*, 160 (2), 326-348.

368 Kayode, A., Arame, A., & Silas, A. (2014). The rising rate of unemployment in Nigeria: the socio-economic
369 and political implications. *Global Business and Economics Research Journal*, 3(1).

370 Khan, A., Ahmed, M., & Bibi, S. (2019). Financial development and economic growth nexus for Pakistan: a revisit
371 using maximum entropy bootstrap approach. *Empirical Economics*, 57(4), 1157-1169.

372 Khan, H., Khan, S., & Zuojun, F. (2020). Institutional Quality and Financial Development: Evidence from
373 Developing and Emerging Economies. *Global Business Review*, 0972150919892366.

374 Khan, H., Khan, S., & Zuojun, F. (2020). Institutional Quality and Financial Development: Evidence from
375 Developing and Emerging Economies. *Global Business Review*, 0972150919892366.

376 Kim, D. H., & Lin, S. C. (2017). Natural resources and economic development: new panel
377 evidence. *Environmental and resource economics*, 66(2), 363-391.

378 Kottutt, S. K., Sumukwo, J. Y., & Omondi, P. (2020). Forest Ecosystem Resources for Alleviating Household
379 Poverty in Eastern Mau, Kenya. *Africa Environmental Review Journal*, 3(2), 1-19.

380 Law, S. H., Tan, H. B., & Azman-Saini, W. N. W. (2014). Financial development and income inequality at
381 different levels of institutional quality. *Emerging Markets Finance and Trade*, 50(sup1), 21-33.

382 Law, S. H., Tan, H. B., & Azman-Saini, W. N. W. (2015). Globalisation, institutional reforms and financial
383 development in East Asian economies. *The World Economy*, 38(2), 379-398.

384 Levin, A., Lin, C. F., & Chu, C. S. J. (2002). Unit root tests in panel data: asymptotic and finite-sample
385 properties. *Journal of econometrics*, 108 (1), 1-24.

386 Marchand, J., & Weber, J. (2018). Local labor markets and natural resources: A synthesis of the literature. *Journal*
387 *of Economic Surveys*, 32(2), 469-490.

388 Masron, T. A., & Subramaniam, Y. (2019). Does poverty cause environmental degradation? Evidence from
389 developing countries. *Journal of poverty*, 23(1), 44-64.

390 Mlachila, M., & Ouedraogo, R. (2019). Financial development curse in resource-rich countries: The role of
391 commodity price shocks. *The Quarterly Review of Economics and Finance*.

392 Muhammad, N., Islam, A. R. M., & Marashdeh, H. A. (2016). Financial development and economic growth: an
393 empirical evidence from the GCC countries using static and dynamic panel data. *Journal of Economics*
394 *and Finance*, 40(4), 773-791.

395 Mukoka, S. (2020). DOES INFLATION INFLUENCE UNEMPLOYMENT IN ZIMBABWE? AN
396 ECONOMETRIC ASSESSMENT. *International Journal of Information, Business and*
397 *Management*, 12(2), 156-165.

398 Nawaz, K., Lahiani, A., & Roubaud, D. (2019). Natural resources as blessings and finance-growth nexus: A
399 bootstrap ARDL approach in an emerging economy. *Resources Policy*, 60, 277-287.

400 Nwani, C. (2016). Finance and growth in oil-dependent economies: does crude oil price matter? evidence from
401 Nigeria. *OPEC Energy Review*, 40(4), 354-373.

402 Nwani, C. (2016). Finance and growth in oil-dependent economies: does crude oil price matter? evidence from
403 Nigeria. *OPEC Energy Review*, 40(4), 354-373.

404 Ouoba, Y. (2016). Natural resources: Funds and economic performance of resource-rich countries. *Resources*
405 *Policy*, 50, 108-116.

406 Panayotou, T. (2016). Economic growth and the environment. *The environment in anthropology*, 140-148.

407 Pedroni, P. (1999). Critical values for cointegration tests in heterogeneous panels with multiple
408 regressors. *Oxford Bulletin of Economics and statistics*, 61(S1), 653-670.

409 Persyn, D., & Westerlund, J. (2008). Error-correction-based cointegration tests for panel data. *The STATA*
410 *journal*, 8(2), 232-241.

411 Pesaran, H., Smith, R., & Im, K. S. (1996). Dynamic linear models for heterogeneous panels. In *the econometrics of*
412 *panel data*. Springer, Dordrecht, 145-195.

413 Pesaran, M. H. (2004). General diagnostic tests for cross section dependence in panels. CESifo Working Papers
414 No.1233, 255-60.

415 Pesaran, M. H. (2007). A simple panel unit root test in the presence of cross-section dependence. *Journal of*
416 *applied econometrics*, 22(2), 265-312.

417 Pesaran, M. H., & Smith, R. (1995). Estimating long-run relationships from dynamic heterogeneous panels. *Journal*
418 *of econometrics*, 68(1), 79-113.

419 Pradhan, R. P., Arvin, M. B., Hall, J. H., & Nair, M. (2016). Innovation, financial development and economic
420 growth in Eurozone countries. *Applied Economics Letters*, 23(16), 1141-1144.

421 Rajan, R. G., & Zingales, L. (2003). The great reversals: the politics of financial development in the twentieth
422 century. *Journal of financial economics*, 69(1), 5-50.

423 Ricardo, D., 1911. Principles of Political Economy first published 1817. London, Dent.

424 Sachs, J. D., & Warner, A. M. (2001). The curse of natural resources. *European economic review*, 45(4-6),
425 827-838.

426 Satti, S. L., Farooq, A., Loganathan, N., & Shahbaz, M. (2014). Empirical evidence on the resource curse
427 hypothesis in oil abundant economy. *Economic Modelling*, 42, 421-429.

428 Satti, S. L., Farooq, A., Loganathan, N., & Shahbaz, M. (2014). Empirical evidence on the resource curse
429 hypothesis in oil abundant economy. *Economic Modelling*, 42, 421-429.

430 Shahbaz, M., Hye, Q. M. A., Tiwari, A. K., & Leitão, N. C. (2013). Economic growth, energy consumption,
431 financial development, international trade and CO2 emissions in Indonesia. *Renewable and Sustainable*
432 *Energy Reviews*, 25, 109-121.

433 Simon, J. L. (2010). 59 More People, Greater Wealth, More Resources, Healthier
434 Environment. *Environmental Ethics: The Big Questions*, 22(5), 447.

435 Sjöberg, O., Palme, J., & Carroll, E. (2010). Unemployment insurance. In *The Oxford handbook of the welfare*
436 *state*.

437 Smith, A., 1776. An Inquiry into the Wealth of Nations. Strahan and Cadell, London, pp. 1–11.

438 Suliman, A. H., & Elian, M. I. (2014). Foreign direct investment, financial development, and economic
439 growth: a cointegration model. *The Journal of developing areas*, 219-243.

440 Sun, Y., Ak, A., Serener, B., & Xiong, D. (2020). Natural resource abundance and financial development: A
441 case study of emerging seven (E- 7) economies. *Resources Policy*, 67, 101660.

442 Timilsina, G. R., & Zilberman, D. (2016). *Impacts of Biofuels on the Economy, Environment, and Poverty*.
443 Springer-Verlag New York.

444 Tran, T. N., Nguyen, T. T., Nguyen, V. C., & Vu, T. T. H. (2020). Energy Consumption, Economic Growth and
445 Trade Balance in East Asia: A Panel Data Approach.

446 Vallejo, M. C. (2010). Biophysical structure of the Ecuadorian economy, foreign trade, and policy
447 implications. *Ecological Economics*, 70(2), 159-169.

448 Westerlund, J. (2007). Testing for error correction in panel data. *Oxford Bulletin of Economics and statistics*, 69(6),
449 709-748.

450 Yıldırım, S., Gedikli, A., Erdoğan, S., & Yıldırım, D. Ç. (2020). Natural resources rents-financial development
451 nexus: Evidence from sixteen developing countries. *Resources Policy*, 68, 101705.

452 Yıldırım, S., Gedikli, A., Erdoğan, S., & Yıldırım, D. Ç. (2020). Natural resources rents-financial development
453 nexus: Evidence from sixteen developing countries. *Resources Policy*, 68, 101705.

454 Yuxiang, K., & Chen, Z. (2011). Resource abundance and financial development: Evidence from China. *Resources*
455 *Policy*, 36(1), 72-79.

456 Zaidi, S. A. H., Wei, Z., Gedikli, A., Zafar, M. W., Hou, F., & Iftikhar, Y. (2019). The impact of globalization,
457 natural resources abundance, and human capital on financial development: Evidence from thirty-one
458 OECD countries. *Resources Policy*, 64, 101476.

459 Zhu, Q., Wu, J., Li, X., & Xiong, B. (2017). China's regional natural resource allocation and utilization: a
460 DEA-based approach in a big data environment. *Journal of Cleaner Production*, 142, 809-818.

461 Zoega, G., Gylfason, T., 2001. *Natural Resources And Economic Growth: the Role Of Investment* (No. 2743).
462 CEPR Discussion Paper.

463

464

465

466

467

Appendix

468

Table A1: Variable Description and Data Sources

Variables	Description	Measurement (Unit)	Source
LFD	Log of financial development	Broad Money to GDP	WDI
LNRR	log of natural resource rent	Total natural resource rent (% of GDP)	WDI
LGDP	log of GDP	constant 2015 US\$	WDI
LINSQ	Log of institutional Quality	Calculated through panel principal component analysis (PCA)	International Country Risk Guide (ICRG)

469

Figures

Figure 1

Marginal Effect Graph. The marginal effect of natural resource rent on financial development is calculated at minimum, the mean and maximum level of institutional quality is -0.208, 0.2149 and 0.2908, respectively.