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Resource Wealth and Happiness: Evaluating The 'Resource Curse' VS. 'Resource-Based Development' Theories

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ABSTRACT

The wealth of natural resources in different countries has a complex impact on economic development and people's welfare. The aim of this research is to critically evaluate the influence of natural resource wealth on happiness, assess the effectiveness of governance and policy in mediating this relationship, and provide actionable recommendations for policymakers to optimize the benefits of resource extraction. The analysis was conducted using data from 116 countries over the period 2017-2022. Linear regression models were used to examine the effect of mining production and national GDP on happiness. Data was taken from World Mining Data, the World Bank, and the World Happiness Report. The model used includes two approaches: one that measures the effect of national GDP on happiness, and another that considers the interaction between national GDP and mining production. Results show that national GDP has a significant positive correlation with happiness, supporting the "resource-based development" theory. However, the interaction between national GDP and mining production shows a negative effect, reflecting aspects of the "resource curse" theory. Variability in the impact of mining production was also observed, suggesting that the social and economic context influences this relationship. This research highlights the importance of effective natural resource management to improve people's happiness. While resource wealth can support economic growth, over-reliance on resource spending can reduce its positive impact. The findings provide insights for policymakers to formulate balanced strategies to utilize natural resources for sustainable social welfare.

Keywords : resource curse, resource-based development, economic growth, societal happiness, natural resource abundance

INTRODUCTION

The relationship between natural resource abundance and economic development is multifaceted and has sparked diverse perspectives in academic discourse (Barbier, 2019; Mikdashi, 2019; Saleh et al., 2020). Traditionally, the "resource curse" is a theory coined by Auty and Warhurst in 1993 that describes a paradox where countries rich in natural resources often underperform economically compared to those with scarce resources (Fadillah & Pieńkowski, 2024). This theory, which has been applied in various contexts, proposes that such abundance could potentially extend to social indicators like happiness, influencing them in complex ways.

Research exploring the connection between natural resources and happiness using the "resource curse" theory presents mixed findings. Studies by Ali et al. (2020) have found evidence of a negative relationship, particularly in developing countries with weaker governance. These findings align with the "resource curse" perspective, which emphasizes the risks associated with dependence on natural resource wealth. However, other studies challenge this view. Fadillah and Pieńkowski (2024) and Slesman (2022)

provide evidence suggesting that the negative correlation may not be as definitive, indicating that the link between natural resources and happiness could be influenced by factors not fully captured in previous analyses.

Meanwhile, examples like Australia and Norway illustrate a more optimistic scenario where natural resources contribute positively to economic development. This view supports the "resource-based development" theory, which posits that, with effective management and governance, resource wealth can serve as a foundation for sustainable development (Andersen et al., 2018; Andrews et al., 2022). Departing from the point where past research extends the "resource curse" from purely economic outcomes to include happiness, this paper applies the same principle to the "resource-based development" theory (Andersen et al., 2018; Andrews et al., 2022; Surya et al., 2021). Instead of validating only the existence of the "resource curse" in relation to happiness, this study also assesses the "resource-based development" perspective. It does so by analyzing the effect of mining production on gross national income's influence on happiness among 116 countries.

This research seeks to navigate these perspectives by answering the research question: "Does natural resource abundance contribute positively or negatively to people's happiness, and which theoretical framework-'resource curse' or 'resource-based development' better explains this relationship?" The purpose of this study is to critically evaluate the effect of natural resource wealth on happiness, assess the effectiveness of governance and policy in mediating this relationship, and provide actionable recommendations for policymakers to optimize the benefits of resource extraction. Through a quantitative approach, this research seeks to provide data-driven insights that go beyond theoretical debates and add clarity to how natural resource wealth interacts with economic development to impact happiness.

RESEARCH METHOD

The countries included as data in this paper are Albania, Algeria, Argentina, Armenia, Australia, Austria, Azerbaijan, Bahrain, Bangladesh, Belarus, Belgium, Benin, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Bulgaria, Burkina Faso, Cambodia, Cameroon, Canada, Chad, Chile, China, Colombia, Costa Rica, Croatia, Cyprus, Czechia, Denmark, Dominican Republic, Ecuador, El Salvador, Estonia, Ethiopia, Finland, France, Gabon, Georgia, Germany, Ghana, Greece, Guatemala, Guinea, Honduras, Hungary, Iceland, India, Indonesia, Iraq, Ireland, Israel, Italy, Ivory Coast, Jamaica, Japan, Jordan, Kazakhstan, Kenya, Kosovo, Kuwait, Latvia, Libya, Lithuania, Madagascar, Malawi, Malaysia, Malta, Mauritania, Mexico, Moldova, Mongolia, Montenegro, Morocco, Mozambique, Myanmar, Namibia, Nepal, Netherlands, New Zealand, Nicaragua, Niger, Nigeria, Norway, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Romania, Saudi Arabia, Senegal, Serbia, Sierra Leone, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Tajikistan, Tanzania, Thailand, Togo, Tunisia, Uganda, Ukraine, United Arab Emirates, United Kingdom, United States, Uruguay, Uzbekistan, Zambia, and Zimbabwe.

The research is determined to investigate the effect of mining production as reliable economic data that represents the amount of resources a country extracts. Not only that it measures actual resource extraction, mining production data also implies the immediate economic contributions from resources to a country's economy. The mining production data that is used in this paper is taken from the World Mining Data website owned by the Austrian Federal Ministry of Finance (BMF, 2024). It publishes annual

mining production data per country after summarization and statistical evaluation are performed (BMF, 2024).

Mining production is then investigated whether it affects gross national income's influence on happiness. The reason why gross national income's influence on happiness is taken as a benchmark to check the effect of mining production is due to the generally-accepted assumption that economic development enhances happiness, as is documented in past research (Zagórski, Kelley, and Evans, 2007). Economic development in this case is represented by the gross national income, as gross national income is an important indicator of development in a country because it represents the economic side of development (Martín, 2019). Gross national income itself is indicative of economic growth, which is a key aspect of economic development (Martín, 2019).

The gross national income data is taken from the World Bank (World Bank, 2024). The figure used in this paper is PPP-adjusted (World Bank, 2024). Meanwhile, the happiness data is taken from the World Happiness Report by Gallup, the Oxford Wellbeing Research Centre, the UN Sustainable Development Solutions Network, and the WHR's Editorial Board (World Happiness Report, 2024). All the data presented in this paper spans over multiple years, from 2017 to 2022, published annually. Therefore, in total the annual data for three variables (mining production, gross national income, and happiness) is 6-year worth.

The analytical method used in this paper is linear regression by R software. The technical formula that is used is lm(). The main information extracted is Slope, R^2, and P-value. Below are the steps taken for each year's data:

1. 1^{st} lin. reg. model : gross national income happiness,
2. 2^{nd} lin. reg. model : (gross national income * mining production) happiness,
3. Check R^2, P-value, and Slope of 1^{st} and 2^{nd} lin. reg. models results,
4. Compare R^2 of 1^{st} and 2^{nd} lin. reg. models results.

Here is how the results are evaluated:

1. Check P-value of 1^{st} and 2^{nd} lin. reg. models results to determine statistical significance ($P < 0.05$),
2. Check Slope of 1^{st} and 2^{nd} lin. reg. models results to determine the direction of correlation,
3. Check the comparison of R^2 between 1^{st} and 2^{nd} lin. reg. models results to determine if the correlation power strengthens or weakens.

It is important to emphasize that the theoretical debate that occurs between proponents of the "resource curse" and proponents of the "resource-based development" are on the direction of how natural resources influence happiness. If the natural resources effects negatively on happiness, it is indicative of the "resource curse". Meanwhile, if the effect is positive, it means that the results are leaning towards the "resource-based development".

RESULT AND DISCUSSION

Before jumping into the results, below is the data that is used:

Table 1. **Data used in this paper**

YEAR		GNI	Min. Prod. (*in metr. t.*)	WHR
2017	Max.	85,850	4,358,945,768	7.537
	Min.	1,050	1,200	3.349
	Mean	18,583	125,597,308	5.518
2018	Max.	73,520	4,060,859,604	7.632

YEAR		GNI	Min. Prod. (*in metr. t.*)	WHR
	Min.	1,280	1,200	3.303
	Mean	22,431	122,006,800	5.561
2019	Max.	75,200	4,107,911,005	7.769
	Min.	1,310	500	3.231
	Mean	23,464	124,084,791	5.615
2020	Max.	71,070	4,154,188,674	7.809
	Min.	1,230	500	3.299
	Mean	22,595	128,150,844	5.669
2021	Max.	83,750	4,324,215,796	7.842
	Min.	1,230	500	3.145
	Mean	24,698	131,041,032	5.698
2022	Max.	118,470	4,427,153,043	7.821
	Min.	1,210	500	2.995
	Mean	27,663	126,532,966	5.690

The results will be presented into three tables: R^2, P-value, and Slope.

Table 2. R^2 and P-value of the linear regression results

Year	R^2 GNI □ WHR	R^2 (GNI * Min. Prod.) □ WHR
2017	0.5357 (P < 0.05)	0.5380 (P < 0.05)
2018	0.6486 (P < 0.05)	0.6501 (P < 0.05)
2019	0.6427 (P < 0.05)	0.6439 (P < 0.05)
2020	0.6319 (P < 0.05)	0.6350 (P < 0.05)
2021	0.6477 (P < 0.05)	0.6502 (P < 0.05)
2022	0.6462 (P < 0.05)	0.6480 (P < 0.05)

Table 3. Slope of the linear regression results

Year	Slope	Slope (GNI * Min. Prod.) □ WHR		
	GNI □ WHR	GNI	Min. Prod.	GNI : Min. Prod
2017	4.58E-05	4.70E-05	1.62E-10	-6.53E-15
2018	4.44E-05	4.52E-05	1.01E-10	-4.85E-15
2019	4.18E-05	4.24E-05	1.50E-11	-2.89E-15
2020	4.27E-05	4.33E-05	-8.71E-11	-1.38E-15
2021	3.83E-05	3.90E-05	-1.55E-11	-2.54E-15
2022	3.39E-05	3.46E-05	8.10E-11	-3.73E-15

Discussions

The results show several points:

1. **Statistical significance**

   Results across all years and all models show statistical significance (P < 0.05).

2. **Consistent increase in R^2**

   Across the six-year period, the R^2 value consistently riss, albeit incrementally, when transitioning from the 1st model (GNI□WHR) to the 2nd model (GNI*Min.Prod. □WHR). This increase suggests that incorporating the mining production into the model instead of evaluating the model where happiness is measured based solely on gross national income enhances the model's explanatory power. It underscores the importance of acknowledging the interdependent effects of

natural resources wealth and economic development in shaping happiness, which would otherwise be understated.

3. **Positive slope for gross national income**

   The slope for gross national income remains consistently positive in both the 1st model and the 2nd model, signifying that higher national income levels are associated with increased happiness. In the 2nd model especially, this positive relationship implies that natural resources wealth intensifies the positive impact of economic development on happiness, which in turn suggests that resources wealth contributes to financial wealth and ultimately to aggregate happiness of the society (López-Cabarcos et al., 2024; Untari et al., 2019). This finding aligns with the "resource-based development" theory, which says that resource extraction, when effectively managed, can stimulate economic growth and promote improved social outcomes.

4. **Negative slope for interaction between gross national income and mining production**

   The interaction term (GNI:Min.Prod.) in the 2nd model captures the combined effect of mining production and gross national income on happiness, specifically examining how the impact of one variable changes depending on the level of the other. The consistently negative slope indicates that if both variables were to simultaneously increase, then they have a diminishing effect on happiness. In other words, when it is assumed that an increase in either gross national income or mining production individually increases happiness, the combined effect of both simultaneously increasing will have less impact on happiness comparatively. Such a pattern aligns with the "resource curse" theory, which states that a strong dependence on natural resources can introduce socio-economic challenges that offset some of the positive effects associated with economic growth.

5. **Mixed slope for mining production**

   The slope for mining production in the 2nd model varies over the six years, with a positive association in four years (2017, 2018, 2019, and 2022) and a negative association in two (2020 and 2021). This variability suggests that mining production's effect on happiness is context-dependent, potentially influenced by different factors not fully captured by the model. There might be external factors at play that can be local and/or temporal, such as economic fluctuations, environmental impacts, social dynamics, or regulatory instability (Ramírez & Selsky, 2016; Reivan-Ortiz et al., 2023). In years where the slope is positive, these uncaptured factors are relatively favorable, allowing the benefits of mining production to positively impact happiness. In contrast, during the years of negative slope, they could amplify the drawbacks of mining, thus reducing happiness.

Together, these findings illustrate that the relationship between natural resources abundance, economic development, and happiness is not straightforward. The data supports aspects of "resource-based development" theory, particularly the idea that income growth contributes positively to happiness. However, the negative interaction and year-to-year variability in mining's impact reveal elements of the "resource curse", suggesting that resource-driven economic growth may introduce challenges that limit the potential benefits to happiness. This complex interplay highlights that the effects of mining on happiness are highly context-dependent, shaped by factors that extend beyond immediate economic gains, and that effective management is essential to maximize the benefits and mitigate the drawbacks of resource-based development.

These findings suggest that policymakers need to consider the complex and context-dependent impacts of resource-based economy on happiness. While resource extraction can provide substantial economic benefits, an overreliance might lead to diminishing social returns, particularly if income growth is not balanced with measures that address potential environmental, social, and economic challenges. Effective policies could include diversifying economic activities, investing in sustainable development, and implementing regulations that mitigate the adverse effects of resource extraction on local communities and ecosystems. Such strategies may help maximize the benefits of resource-based economic growth while minimizing its drawbacks.

This study does not definitively settle the debate between the "resource curse" and the "resource-based development" theories; instead, it contributes valuable insights to the ongoing academic discussion. By demonstrating that the relationship between mining production, gross national income, and happiness is complex, nuanced, and context-dependent, this research underscores the need for further investigation. Future studies might explore additional variables, such as governance quality, environmental policies, or demographic factors, to better understand the conditions under which resource extraction enhances or detracts from happiness. This study highlights that a generalized approach is insufficient and encourages a more tailored examination of resource-dependent economies.

CONCLUSION

This study examines the relationship between natural resource abundance, economic development, and societal happiness. The analysis indicates that while gross national income positively correlates with happiness, aligning with the "resource-based development" theory, the interaction with mining production introduces complexities. The negative interaction effects observed suggest that heavy reliance on resource extraction can reduce the positive impact of economic growth, reflecting aspects of the "resource curse" theory. These findings underscore that the influence of natural resources on happiness varies with context, potentially shaped by factors such as governance and economic policies.

Policymakers should consider that although natural resources can support economic growth and happiness, effective management is necessary to avoid potential drawbacks. This can involve promoting economic diversification and strengthening governance to ensure that the benefits of resource wealth are sustainable. Further research could explore additional variables, such as governance and environmental frameworks, to provide a more comprehensive understanding of when natural resource wealth contributes to or detracts from happiness.

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