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Financial fragility in natural resource-rich economies: Is liberalization a threat?

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ABSTRACT

This paper investigates the key drivers of financial fragility in high-income resource-rich economies over the period 2006-2023. The paper uses panel data for 10 high-income, resource-rich countries for the period 2006-2023 and analyzes the interaction between the new CAMEL-based Financial Fragility Index and indicators of financial liberalization, institutional quality, and fiscal stance through a fixed effects model with country fixed effects and estimated with Driscoll-Kraay robust standard errors. The study finds that strong institutions, defined by rule of law safeguards, an independent judiciary, and reliable contract enforcement, support long-term stability. Productively oriented public spending, supported by liquid and well-capitalized banks, reduces macro financial fragility. In contrast to orthodox prescriptions, premature or excessive liberalization creates a paradoxical situation and increases fragility. Rich natural resources alone do not guarantee financial stability; financial stability can be achieved together with institutional strength, prudent budget management, and gradual financial liberalization. Politicians should first strengthen legal and regulatory capacity, then gradually deepen financial markets, and finally accelerate economic diversification that will reduce commodity dependency. Gradual and staged reforms reduce cyclical fluctuations and transform natural wealth into inclusive, sustainable growth.

Contribution/Originality: This study introduces a novel CAMEL-based Financial Fragility Index for high-income, resource-rich economies, emphasizing the moderating role of institutional quality. It advocates for gradual reforms by demonstrating that premature liberalization paradoxically increases fragility. The multidisciplinary approach integrates financial fragility with resource curse dynamics, offering policy insights for balanced stability and growth.

1. INTRODUCTION

Financial liberalization, a topic of considerable disagreement within the global economy, also aims to maximize economic growth by increasing the mobility of capital and eliminating barriers in financial markets. However, the implications of this change, especially in highly industrialized countries endowed with abundant resources, are complex, demanding a critical appraisal from both a theoretical and factual perspective. The seminal studies by Rodrik (2008) and Kaminsky and Reinhart (1999) acknowledge the potential benefits of financial liberalization but warn of the increasing systemic risks involved in unregulated progress. This paper aims to advance current economic research by performing a tripartite reappraisal of these debates, with a particular focus on highly industrialized countries characterized by their resource abundance.

Financial liberalization, which is one of the most controversial policies under the global economic regime, aims to promote economic growth by allowing the free mobility of capital and eliminating controls on financial markets. However, the effects of this process, especially in natural resource-rich high-income economies, present a paradox that needs to be examined in depth in both the theoretical and empirical literature. The pioneering work of Rodrik (2008) and Kaminsky and Reinhart (1999) acknowledge the potential benefits of financial liberalization but warn that uncontrolled implementation of this process may increase systemic risks. This paper aims to make a multidimensional contribution to the literature by reassessing these debates in the context of high-income resource economies.

Natural resource wealth has been both a blessing and a curse for many economies. The "resource curse" hypothesis proposed by Sachs and Warner (2001) explains this dilemma but does not adequately address its relationship with financial system fragility. Macroeconomic instability caused by commodity price volatility exerts unique pressures on the financial system, especially in high-income resource economies. This paper aims to systematically examine the mechanisms of these pressures and the interaction of financial liberalization with these dynamics.

The methodological framework of the study is based on panel data analysis covering the period 2006-2023. The 10 high-income resource economies (Bahrain, United Arab Emirates, Qatar, Kuwait, Norway, Russia, Saudi Arabia, Chile, Trinidad and Tobago, Oman) are selected according to the World Bank (2024) income classification, with natural resource exports accounting for over 45% of total exports (Trade Map, 2024; World Bank, 2024). This selection provides an important originality that differentiates the study from similar studies in the literature.

The theoretical contribution of the study is structured in three dimensions. First, a new index (finfrag), based on CAMEL (Capital Adequacy, Asset Quality, Management Quality, Profitability, Liquidity) components, is introduced to the financial fragility literature. This index aims to overcome the limitations of unidimensional measures in the literature by enabling a multidimensional assessment of financial stability. Second, while the existing literature emphasizes the bidirectional effects of financial liberalization on economic growth and stability (Demirgüç-Kunt & Detragiache, 1998b), it does not focus enough on the specificity of the dynamics in high-income, resource-rich economies. For instance, traditional studies usually examine developing countries and ignore the interaction of institutional capacity, financial deepening, and resource management policies in high-income but resource-dependent economies. Demirgüç-Kunt and Detragiache (1998a)'s theoretical framework on the two-way effects of financial liberalization is re-tested and extended in the context of high-income resource economies. The third and most important contribution is the empirical demonstration of the moderating role of institutional quality (rule of law, judicial independence, corruption control) on financial fragility.

While theoretical frameworks such as the "Resource Curse" and the "Dutch Disease" are usually restricted to macroeconomic imbalances, this study brings a multidisciplinary perspective to the literature by integrating the financial fragility dimension into the analysis. The indirect effects of natural resource revenues on the financial system (e.g., speculative capital flows and banking sector risks) are analyzed in relation to institutional quality and financial regulation.

The findings highlight the need for a gradual liberalization model for high-income resource economies, supported by institutional infrastructure. In particular, the paper makes concrete proposals on how a strong rule of law and independent supervision mechanisms can offset the speculative risks posed by sudden capital account openness. Additionally, empirical evidence supports the claim that economic diversification policies can reduce dependence on resource-based activities while, at the same time, increasing the resilience of the financial system.

The role of policy is significant. The findings suggest, in this case, that financial liberalization in resource-rich economies should be conducted gradually and carefully. In this respect, policy prescriptions are clear on how the risks of speculative instability from premature liberalization of the capital account can be hedged through the creation of a strong rule of law in addition to effective supervisory structures. Empirical evidence also proves that policies of

economic diversification can successfully minimize dependence on resources while, at the same time, increasing the stability of the financial system.

This study offers a broad framework that enhances the presumably extensive body of existing literature by analyzing the economic vulnerability implications of financial liberalization. It does this not merely through traditional macroeconomic metrics but also considers the quality of governance, levels of openness, and banking structure. Lastly, it recommends a twofold policy plan for policymakers: supporting development while maintaining stability in economically successful countries, highlighting the utilization of dedicated economic tools such as stability funds, credit-debt ratios, and monetary policy coordination. These contributions will not only enrich academic debate but also provide an empirical basis for decision-making in resource-dependent economies integrated into the global financial system.

The structure of this study is organized as follows: Section 2 provides a comprehensive review of the existing scholarly literature, Section 3 outlines the dataset and methodological framework employed, Section 4 analyzes and interprets the empirical results, and Section 5 concludes with a discussion of policy recommendations and key takeaways. This structure allows the reader to evaluate both the theoretical and methodological contributions of the study holistically.

2. LITERATURE REVIEW

The following studies contribute to a multidimensional literature centered around financial liberalization, financial fragility, natural resource wealth, and economic growth. Academic discourse has predominantly focused on four key dimensions: (1) the growth implications of financial liberalization, (2) the underlying causes of financial fragility, (3) the unique economic behaviors of resource-dependent nations, and (4) the pivotal influence of institutional frameworks in mediating these relationships.

Numerous studies have examined the connection between financial liberalization and financial fragility. In their early work, Demirgüç-Kunt and Detragiache (1998a) investigated banking crisis determinants across both developed and developing nations, highlighting how liberalization impacts financial stability. Iftikhar (2015) examined the factors of financial fragility after financial reforms with panel data analysis; Bialowolski, Weziak-Bialowolska, and McNeely (2021) emphasized the social dimension of financial stability by focusing on the role of financial fragility on the welfare of individuals. Boratyńska (2021) examined the causes of economic weakness in Central and Eastern European nations and identified key characteristics of their financial systems. Argitis and Nikolaidi (2014) researched the weaknesses of the public sector, particularly in Greece.

The study of financial liberalization has been approached in two primary ways: first, how it can be improved for growth; second, how it can lead to issues such as sudden fund exits and potential crises. Kaminsky and Schmukler (2008) illustrate how there can be long-term gains from financial liberalization, while in the short term, it yields issues. For Hartwell (2017), it could be challenging to forecast the impact of liberalization in transforming economies. Pina (2018) examines economic and financial liberalization, while also analyzing their impacts on savings as well as growth. Atiq-ur-Rehman, Bashir, Shah, and Bhatti (2021) examine how financial openness and financial growth impact economic growth across regions. Suhaibu, Abdul-Malik, and Adzagbre (2022) and Hussain, Tahir, and Khan (2022) study the complex relationship between financial growth, imbalances, and total growth in African countries. Batuo, Mlambo, and Asongu (2018) illustrate how financial growth, instability, and growth are interconnected in Africa, while this topic is also contributed to by Misati and Nyamongo (2012).

It examines how economic growth, instability, and financial freedom are related in Sub-Saharan Africa. Igbinovia and Igbinovia (2023) also examine how financial freedom impacts economic growth within ECOWAS. Kudaisi, Ojeyinka, and Osinubi (2022) examine how liberalization, remittances, and growth occur concurrently in Nigeria. Abd Latib and Mohamad (2023) offer a clear explanation of how financial liberalization impacts the economy by synthesizing numerous studies.

Having abundant natural resources and sound regulations is crucial. Mlachila and Ouedraogo (2017) discuss the reasons why the financial system fails to expand in societies with numerous resources, based on the notion of the "financial resource curse." Bhattacharyya and Hodler (2014) discuss how resource-created money impacts financial development and political structures. Yıldırım, Yıldırım, Bostancı, and Tarı (2022) discuss several ways in which resource-created money impacts financial growth. Boucekkine, Prieur, Vasilakis, and Zou (2021) evaluate the dynamics of institutional factors in resource-dependent economies within a stochastic approach. Sugawara (2014) points out the fragility-reducing role of stabilization funds in resource-rich economies.

In recent years, there has been increasing evidence that high-income, natural resource-rich economies are also affected by global financial turmoil. In particular, sudden decreases or increases in commodity prices can increase the volatility of financial markets in these countries and multiply risks in the banking system and capital markets (Arezki & Brückner, 2011; Bornhorst, Gupta, & Thornton, 2009). Although relatively high institutional capacity, the establishment of macroeconomic stability funds, and the management of resource revenues with specific rule sets provide tools that can mitigate these vulnerabilities (Cavalcanti, Mohaddes, & Raissi, 2011). Problems such as sudden fund outflows, overvaluation of currencies, and openness to external shocks may continue in economies that are integrated with international financial markets, especially during periods of intense capital flows (Bley & Chen, 2006).

The literature review shows that financial liberalization is not a solution on its own, but rather is shaped by interactions with many factors such as institutional quality, political stability, market structure, regional differences, and natural resource dependency. This field, which was founded with the classical studies of McKinnon (1973) and Shaw (1973), reveals how economic, political, institutional, and structural elements affect the financial liberalization process and its results in a multidimensional manner with current approaches. Data and classifications provided by organizations such as the World Bank offer opportunities for comparative analyses across countries and serve as an important reference point for policymakers in developing more effective regulatory frameworks.

3. DATA AND METHODOLOGY

The fragility effects of financial liberalization indicators on the economies of high-income resource-rich countries included in the study during the period 2006-2023 were analyzed using panel data analyses and measurement indices widely accepted in the literature. In the study, 10 high-income resource-rich economies (Bahrain, United Arab Emirates, Qatar, Kuwait, Norway, Russia, Saudi Arabia, Chile, Trinidad and Tobago, Oman) with natural resource exports exceeding 45% of their total exports according to Trademap (International Trade Centre, 2024) and with a per capita GDP exceeding 14,005 US dollars according to the World Bank 2023 Income Classification method were examined. The necessary data on liberalization, governance, and financial structures of the economies included in the scope of the research were compiled from statistics and databases published by international organizations such as the World Bank, IMF, UNCTAD, and the Heritage Foundation.

The selected countries (Bahrain, United Arab Emirates, Qatar, Kuwait, Norway, Russia, Saudi Arabia, Chile, Trinidad and Tobago, Oman) are economies that meet the criteria of both high income and resource dependence. Countries with inconsistent data due to political instability, such as Libya, are excluded from the sample. This time period provides the most comprehensive and consistent data set for the selected countries in the databases of international organizations such as the World Bank, IMF, UNCTAD, and the Heritage Foundation. It is also suitable for examining the dynamics of financial fragility, as it includes critical macroeconomic events such as the 2008 global financial crisis and post-COVID-19 economic fluctuations (Arezki & Brückner, 2011).

Panel data analysis was preferred in this study. This method increases analytical depth by allowing the modeling of both cross-sectional differences across countries and changes over time simultaneously (Baltagi, 2005). The panel data approach provides an advantage that strengthens internal validity, especially in studies analyzing heterogeneous economic structures (Wooldridge, 2010). In the model, Driscoll and Kraay (1998) standard errors are used to correct for cross-sectional dependence and heteroskedasticity problems commonly observed in panel data. This method

produces valid and reliable results, especially for large time-sized panels. Moreover, the error terms are robust to both within-series and cross-sectional dependence, which supports the robustness of the estimates. Hausman test is applied for model selection and it is found that the fixed effects model is more appropriate than the random effects model ($p<0.05p<0.05$). The fixed effects approach reduces bias in parameter estimates by controlling for country-specific unobserved factors (e.g., institutional quality, geographical location) (Wooldridge, 2010).

Theoretical basis and formulation of the empirical model.

The financial fragility index ($finfrag_{it}$), is estimated as the dependent variable with the following panel regression model.

$$finfrag_{it}=\beta_0+\beta_1 libskor_{it}+\beta_2 hhar_{it}+\beta_3 m21_{it}+\ldots+\alpha_i+\epsilon_{it}$$

- α_i: Country-specific fixed effects.
- ϵ_{it}: Error term.

Table 1. Hausman test results for high-income resource-rich economies.

Hausman Test Results	High-income resource-rich economies Coef.
Chi-square test value	7.886
P-value	0.01

H_0: The difference between coefficients is not systematic.

H_1: The difference between the coefficients is systematic.

Table 1 presents the Hausman specification-test results for high-income, resource-rich economies. The obtained chi-square statistic of 7.886 ($p = 0.01$), along with the finding that all p-values from the analysis are less than 0.05, leads to the rejection of the null hypothesis (H0). This outcome consequently supports the preference for the fixed-effects estimator over the random-effects estimator for this income group, affirming its consistency.

Table 2. Key metrics related to financial fragility.

CAMEL metrics	Variables	Financial fragility index weight share	Effect on the index
Capital adequacy	Market capitalization excluding top 10 companies to total market capitalization (%)	20%	(+)
	Bank regulatory capital to risk-weighted assets (%)		(+)
	Bank capital to total assets (%)		(+)
	Stock-market capitalization to GDP (%)		(+)
Asset quality	Bank non-performing loans to gross loans (%)	20%	(-)
	Provisions to non-performing loans (%)		(+)
Management efficiency	Bank cost to income ratio (%)	20%	(-)
	Bank net interest margin (%)		(+)
Earnings	Bank return on assets (%, after tax)	20%	(+)
	Bank return on equity (%, after tax)		(+)
Liquidity	Liquid assets to deposits and short-term funding (%)	20%	(+)
	Bank deposits to GDP (%)		(+)

Table 2 summarizes the CAMEL-based indicators that feed into the Financial Fragility Index: each pillar Capital Adequacy, Asset Quality, Management Efficiency, Earnings, and Liquidity—receives an equal weight of

20 percent, while the rightmost column shows the anticipated directional impact (+) or (−) of each variable on overall financial fragility.

The methodological process followed in the construction of the Financial Fragility Index is based on the five main components of the CAMEL analysis. In the first step, the variables listed in Table 2, which constitute the CAMEL components, are added or subtracted by taking into account their impact on financial stability. Then, a standardized data set is created by multiplying the five main components, such as capital adequacy, asset quality, management quality, profitability, and liquidity, by a weighting coefficient of 0.20 using the equal weighting method. The data was then scaled in the range [0,1] through the use of min-max normalization methods. The normalization step used the formula normalizing_value = (data - min_data)/(max_data - min_data), considering all observations, even negative values, in a standardized manner. This thorough process allows for the creation of a consistent Financial Fragility Index capable of evaluating the impact of liberalization. The two-stage standardization and normalization process enables a consistent combination of financial indicators with diverse scales and units. The use of equal weights helps reflect the theoretical importance of the CAMEL components vis-à-vis financial fragility.

Convergence of the index values to 1 indicates that financial stability is strong, and therefore, financial fragility is minimized. Conversely, index values converging to 0 indicate the presence of significant fragilities in the financial system and a weakening of stability. This index will be used as the main dependent variable in the empirical analysis section of the study, and its relationship with economic liberalization indicators will be analyzed using econometric methods.

Table 3. Resource-rich economies by income classification.

High income resource rich economies		Natural resource type	GDP per capita (USD) 2023[1]	Percentage of natural resource exports in total exports 2023[2]
High income	Bahrain	Crude oil, natural gas	28280	53%
(GDP per capita > $14,005)	United Arab Emirates	Crude oil and natural gas, gold, diamonds, aluminum	53290	63.2%
	Qatar	Crude oil and natural gas, aluminum	71358	88.3%
	Kuwait	Crude oil, natural gas	46140	93.2%
	Norway	Crude oil, natural gas, hard coal	102460	54.6%
	Russia	Crude oil, natural gas, precious metals and Minerals	14250	66.7%
	Saudi Arabia	Crude oil, natural gas	28690	76.2%
	Chile	Copper and iron ore	15820	46.2%
	Trinidad and Tobago	Crude oil and petroleum products, natural gas	17940	85%
	Oman	Crude oil, natural gas	21540	73.1%

Table 3 presents high-income, resource-rich economies defined here as countries with 2023 GDP per capita above USD 14,005 and lists, for each, the dominant natural resource sectors, the 2023 GDP per capita figure, and the share of natural resource exports in total exports for 2023.

The dependent variable of the study, the Financial Fragility Index (finfrag), was created using data provided from international databases by assigning equal weight (0.20) to each of the CAMEL components (Capital adequacy, asset quality, management quality, profitability, liquidity). An increase in the index indicates an improvement in financial stability; a decrease indicates an increase in financial fragility.

[1] *databank.worldbank.org*

[2] *www.trademap.org*

This index, which includes capital adequacy, asset quality, management efficiency, profitability, and liquidity components of the banking sector, is a global standard for measuring financial stability across multiple dimensions (Demirgüç-Kunt & Detragiache, 1998a). The Heritage Foundation's Financial Freedom Index was used to test the impact of loosening regulations on financial market fragility. Kaminsky and Reinhart (1999) argue that uncontrolled liberalization can increase speculative risks. Variables such as government spending (hhar), broad money supply (m21), and bank lending (gdpban) are the main indicators associated with financial fragility in the literature (Bhattacharyya & Hodler, 2014).

4. FINDINGS AND DISCUSSIONS

In the panel data analysis for high-income resource-rich economies identified according to the World Bank income groups, cross-sectional dependence, autocorrelation, and heteroskedasticity problems were found. To improve the predictive efficiency of the model estimations for these resource-rich economies within the defined income groups, Driscoll-Kraay standard errors, derived by Driscoll and Kraay (1998), were used. The use of Driscoll-Kraay standard errors is an appropriate method for obtaining reliable standard errors when the panel data model's error terms exhibit heteroskedasticity, autocorrelation, and cross-sectional dependence.

This approach shows considerable relevance in data sets involving vast temporal fluctuations and has been demonstrated in maintaining consistency under changing dependency structures. This method is the foundation used in obtaining standard errors resistant to cross-sectional dependence, autocorrelation, as well as heteroscedasticity issues, which are especially applicable in panel data analysis. Such methods are favored within the professional community and have substantial documentation in academic research (Wooldridge, 2010). Panel data model derived for economically advanced as well as resource-rich countries was estimated using the fixed effect technique, a method used to remove the effect of time-invariant unobservable factors at the unit's level. The applied methodology is widely accepted in panel data analyses (Baltagi, 2005; Wooldridge, 2010). The descriptive statistics of the variables used in the analysis are presented in the table below.

Table 4. Descriptive statistics of variables.

Variable	Obs.	Mean	Std. error	Min.	Max.	Variable	Obs.	Mean	Std. error	Min.	Max.
finfrag	180	0.479	0.098	0.28	0.78	gdp6	180	0.003	0.043	-0.17	0.13
nfinfrag	180	0.602	0.13	0.34	1	gdp7	180	0.003	0.043	-0.17	0.13
libskor	180	0.667	0.072	0.5	0.79	gdp8	180	0.051	0.134	-0.31	0.42
mhak	180	0.603	0.175	0.2	1	gdp9	180	0.04	0.154	-0.34	0.42
yet	180	0.574	0.169	0.19	0.97	gdp10	180	0.003	0.043	-0.17	0.13
hdur	180	0.547	0.186	0.21	0.97	gdp11	180	0.003	0.043	-0.17	0.13
vyuk	180	0.893	0.148	0.5	1	gdp12	180	0.023	0.1	-0.33	0.39
hhar	180	0.625	0.179	0.03	0.9	gdp13	180	0.029	0.046	-0.09	0.26
fsag	180	0.727	0.275	0	1	gdp14	180	0.079	0.14	-0.31	0.48
iozg	180	0.704	0.102	0.48	0.95	gdp15	180	0.068	0.16	-0.33	0.48
cozg	180	0.673	0.12	0.4	0.97	gdp16	180	0.05	0.135	-0.32	0.38
pozg	180	0.754	0.066	0.57	0.91	gdp17	180	0.041	0.099	-0.2	0.31
tozg	180	0.794	0.065	0.44	0.89	gdp18	180	0.025	0.101	-0.32	0.41
yozg	180	0.55	0.17	0.25	0.9	gdp19	180	0.069	0.11	-0.19	0.57
fozg	180	0.57	0.132	0.3	0.9	gdp20	180	0.051	0.1	-0.3	0.42
dnug	180	0.059	0.143	-0.37	0.45	yetk1	180	-0.12	2.772	-30.3	7.25
dnugk	180	0.033	0.135	-0.37	0.43	yetk2	180	0.679	0.167	0.26	0.99
gdpt	180	0.109	0.068	0.01	0.34	ithe1	180	0.058	0.183	-0.37	0.63
m21	180	0.676	0.177	0.32	1.15	ithe2	180	0.032	0.149	-0.33	0.57
m22	180	0.094	0.094	-0.07	0.41	enf2	180	0.037	0.036	-0.05	0.16
m23	180	0.097	0.094	-0.07	0.41	enf3	180	0.047	0.115	-0.28	0.34
enf1	180	0.036	0.035	-0.05	0.16	isgucu	180	0.033	0.052	-0.08	0.27
yolsuz	180	-0.06	1.3	-9.46	8.18	regt1	180	0.026	1.692	-14.3	12.4
gdpban	180	0.727	0.322	0.26	1.64	regy2	180	0.672	0.171	0.13	0.97

Variable	Obs.	Mean	Std. error	Min.	Max.	Variable	Obs.	Mean	Std. error	Min.	Max.
isveren	180	0.02	0.015	0	0.05	hukust	180	-0.03	2.274	-28	9.15
ihre1	180	0.056	0.256	-0.45	1.17	dkayg	180	0.222	0.134	0.03	0.59
ihre2	180	0.065	0.255	-0.51	0.9	issiz	180	0.036	0.024	0	0.11
ihre3	180	0.016	0.101	-0.31	0.47	iozghes	180	-0.02	0.094	-0.68	0.16
fdi1	180	0.026	0.034	-0.07	0.16	fragile	180	0.059	0.074	0	0.23
fdi2	180	1.246	14.79	-47.4	188	ban1	180	1.18	0.374	0.56	2.14
gdp1	180	0.029	0.046	-0.09	0.26	ban2	180	0.346	0.113	0.19	0.95
gdp2	180	0.029	0.046	-0.09	0.26	ban3	180	0.861	0.377	0.3	2.46
gdp3	180	0.077	0.139	-0.31	0.45	gaz1	180	0.049	0.192	-0.39	1.56
gdp4	180	0.067	0.159	-0.34	0.45	gaz2	180	1.958	22.69	-0.99	304
gdp5	180	0.029	0.046	-0.09	0.26	gaz3	180	0.029	0.182	-0.35	1.29

Table 4 presents the descriptive statistics for all variables in the dataset, displaying, for each of the 180 observations, the mean, standard error, minimum, and maximum values that describe their central tendency and dispersion before the econometric analysis proceeds.

Financial Fragility Index (finfrag): This index demonstrates a mean value of 0.479 and a standard deviation of 0.098, with observed values ranging from a minimum of 0.28 to a maximum of 0.78. The descriptive statistics reveal substantial cross-country and temporal variations in financial fragility levels.

Liberalization Overall Score (libskor): The index yields a mean value of 0.667 with a standard deviation of 0.072, exhibiting a range between 0.5 and 0.79. The descriptive statistics suggest a comparatively uniform distribution of economic liberalization levels across the sample.

Government Expenditure (hhar): The analysis reveals an average value of 0.625 with a standard deviation of 0.179, demonstrating a considerable spread from 0.03 to 0.9. These descriptive statistics highlight substantial cross-country variation in government expenditure relative to GDP.

Broad Money Supply (M21): The M21 variable demonstrates a mean value of 0.0676 with a standard deviation of 0.177, ranging from 0.032 to 1.15. The descriptive statistics reveal substantial cross-country disparities in money supply relative to GDP, with certain economies exhibiting particularly elevated ratios.

Bank Loans to GDP Ratio (gdpban): The variable exhibits a mean of 0.727 with a standard deviation of 0.322, ranging from 0.26 to 1.64. The descriptive analysis indicates pronounced cross-country variations in bank loans relative to GDP, with certain economies demonstrating exceptionally high ratios.

Foreign Direct Investment to GDP Ratio (fdi1): The variable displays a mean of 0.026 with a standard deviation of 0.034, ranging from -0.07 to 0.16. The descriptive analysis reveals a relatively narrow cross-country distribution of foreign direct investment relative to GDP, with some instances exhibiting negative ratios.

Total Vulnerable Employment (fragile): The variable demonstrates a mean of 0.059 with a standard deviation of 0.074, spanning from 0 to 0.23. Derived from ILO modeled estimates, this indicator reflects vulnerable employment as a proportion of total employment. The descriptive analysis reveals substantial cross-country variation, with some nations exhibiting relatively modest rates while others display considerably higher levels of employment vulnerability.

Bank Credit/Bank Deposit Ratio (ban1): The ratio demonstrates a mean of 1.18 with a standard deviation of 0.374, exhibiting a range from 0.56 to 2.14. This variable shows the extent to which banks' credit-granting capacity is financed by their deposits. Descriptive statistics indicate that this ratio varies significantly across countries, with some economies having a low credit/deposit ratio, while others have loans that are well above deposits. The data obtained reveal that the banking sector exhibits different approaches in terms of financial soundness and liquidity management.

Government Integrity (hdur): The analysis yields a mean of 0.547 with a standard deviation of 0.186, with observed values ranging from 0.21 to 0.97. This variable represents the level of governments' anti-corruption and

transparency. Descriptive statistics show that there are significant differences in government integrity levels across countries. While low levels of integrity in some countries indicate widespread corruption, higher levels in other countries reflect strong transparency and accountability. These differences reveal the heterogeneous nature of government performance and institutional quality across countries.

Financial Health (fsag): The variable exhibits a mean of 0.727 (SD = 0.275), ranging from 0 to 1. This variable represents the financial health and sustainability levels of countries at both individual and institutional levels. Descriptive statistics show that there are significant differences in financial health levels across countries. In some countries, low financial health values indicate economic difficulties or weaknesses in the financial system, while in others, high values indicate a stronger financial structure and sustainability capacity.

Financial Freedom (fozg): The variable demonstrates a mean of 0.57 (SD = 0.132), ranging from 0.3 to 0.9. This variable represents the degree to which individuals and institutions in countries freely conduct their financial activities, i.e., financial environments with limited government intervention. Descriptive statistics show that there are significant differences in levels of financial freedom across countries. In some countries, lower levels of financial freedom indicate more restrictive regulations or market interventions, while in others, higher levels indicate a more liberal and competitive financial environment.

Management Effectiveness (yetk1): The variable exhibits a mean of -0.12 (SD = 2.772), with observed values ranging from -30.3 to 7.25. This variable reflects an estimate of the level of management effectiveness across countries. Descriptive statistics show that there is a wide dispersion in the estimate of management effectiveness. In particular, a very low minimum value indicates that management effectiveness is seriously weak in some countries, whereas a high maximum value indicates the existence of a strong and effective management system in some countries.

This study's descriptive statistics reveal significant cross-country variations in economic and institutional indicators. The Financial Fragility Index (0.28-0.78) and Broad Money Supply (0.032-1.15) exhibit wide ranges, highlighting heterogeneous financial system resilience. The bank loan/deposit ratio (0.56-2.14), government expenditure (0.03-0.9), and FDI (-0.07-0.16) demonstrate extreme values, reflecting divergent policy approaches. Striking disparities in government integrity (0.21-0.97) and management effectiveness (-30.3-7.25) further underscore profound governance capacity gaps across nations. The research findings demonstrate a close relationship between how institutions function and how the financial system operates. The wide ranges observed across variables indicate the necessity of context-specific policy approaches rather than one-size-fits-all solutions in economic development.

Table 5. Analysis results of high-income resource-rich economies.

Resource-rich economies panel data model	Independent variable	Coefficient	Drisc/Kraay std. error	t	P
Dependent variable: finfrag	libskor	-0.5591	0.1073	-5.21	0.001***
	hhar	0.0992	0.0306	3.24	0.010**
	m21	0.1338	0.0211	6.34	0.000***
	gdpban	-0.0747	0.0275	-2.71	0.024**
	fdi1	0.2012	0.0603	3.33	0.009*
	fragile	0.8697	0.2280	3.81	0.004***
	ban1	0.0643	0.0188	3.42	0.008***
	hdur	0.0886	0.0270	3.28	0.010**
	fsag	0.0351	0.0134	2.61	0.028**
	fozg	0.0904	0.0433	2.09	0.066*
	yetk1	0.0009	0.0005	1.81	0.10*
R-sq	0.3070				

Note: Increasing coefficients indicate financial stability, decreasing coefficients indicate financial fragility.
*** p<.01, ** p<.05, * p<.1.

Table 5 presents the Driscoll–Kraay panel-data estimates for high-income, resource-rich economies and indicates that higher liberalization scores (libskor) and a larger GDP share of bank loans (gdpban) significantly increase

financial fragility, whereas stronger capital adequacy (hhar), broader money supply (m2l), greater FDI inflows (fdi1), and better management-quality indicators (hdur, fsag, fozg) contribute to financial stability.

In the analysis findings, the increase in the coefficients for the standardized financial fragility index, which can take values between "0" and "1," indicates an increase in financial stability as it approaches the value of "1." Conversely, a decrease in coefficients indicates a decrease in financial stability.

4.1. High-Income Resource-Rich Economies Model

Liberalization Overall Score (libskor): The estimated coefficient of -0.5591 ($p = 0.001$) indicates that a one-unit increase in the liberalization score is associated with a 55.91% reduction in the financial fragility index, suggesting decreased financial stability. This negative relationship is statistically significant at the 1% level.

Government Expenditure (hhar): The positive coefficient of 0.0992 ($p = 0.010$) indicates that a one-unit increase in government expenditure is associated with a 9.92% increase in the financial fragility index, suggesting improved financial stability. This relationship is statistically significant at the 5% level.

Broad Money Supply (M2): The statistically significant coefficient of 0.1338 ($p < 0.001$) suggests that a one-unit increase in the money supply corresponds to a 13.38% rise in the financial fragility index, consistent with enhanced financial stability. This relationship is significant at the 1% level.

Bank Loans to GDP Ratio (gdpban): The negative coefficient of -0.0747 ($p = 0.024$) indicates that a one-unit increase in the bank loans-to-GDP ratio is associated with a 7.47% decrease in the financial fragility index, corresponding to reduced financial stability. This relationship is statistically significant at the 5% level.

Foreign Direct Investment to GDP Ratio (fdi1): The positive coefficient of 0.2012 ($p = 0.009$) suggests that a one-unit increase in foreign direct investment is associated with a 20.12% rise in the financial fragility index, consistent with enhanced financial stability through reduced fragility. This relationship is statistically significant at the 1% level.

Total Vulnerable Employment (fragile): The robust coefficient of 0.8697 ($p = 0.004$) indicates that a one-unit increase in vulnerable employment corresponds to an 86.97% increase in the financial fragility index, reflecting a substantial improvement in financial stability through reduced systemic fragility. This relationship is statistically significant at the 1% level.

Bank Loan/Deposit Ratio (ban1): The statistically significant coefficient of 0.0643 ($p = 0.008$) indicates that a one-unit increase in the bank loan-to-deposit ratio is associated with a 6.43% rise in the financial fragility index, consistent with enhanced financial stability through reduced systemic fragility. This relationship is significant at the 1% level.

Government Integrity (HDUR): The positive coefficient of 0.0886 ($p = 0.010$) suggests that a one-unit improvement in government integrity corresponds to an 8.86% increase in the financial fragility index, indicating stronger financial stability through reduced systemic vulnerability. This relationship is statistically significant at the 5% level.

Financial Health (FSAG): The statistically significant coefficient of 0.0351 ($p = 0.028$) indicates that a one-unit improvement in financial health corresponds to a 3.51% increase in the financial fragility index, reflecting enhanced financial stability through reduced systemic vulnerability. This relationship is significant at the 5% level.

Financial Freedom (fozg): The coefficient is 0.0904, and the p-value is 0.066. This indicates that a one-unit increase in the level of financial freedom increases the financial fragility index by 9.04%, which enhances financial stability by reducing fragility. However, this effect is only borderline significant at the 10% significance level.

Management Efficiency: Estimate (yetk1): The coefficient is 0.0009, and the p-value is 0.10. This indicates that a one-unit increase in management efficiency increases the financial fragility index by 0.09%, which enhances financial stability by reducing fragility.

The findings indicate that in high-income resource-rich economies, a one-unit increase in variables such as Government Expenditures (hhar), Broad Money Supply (m21), Ratio of Foreign Direct Investments to GDP (fdi1), Ratio of Total Vulnerable Employment to Total Employment (fragile), Bank Credit to Bank Deposits Ratio (ban1), Government Integrity (hdur), Financial Health (fsag), Financial Freedom (fozg), and Government Effectiveness (yetk1) reduces financial vulnerability and enhances stability. Conversely, in these economies, as the Liberalization Score (reflecting economic liberalization and the ease of entry and exit in financial markets) and the Ratio of Bank Credits to GDP (which can also be considered an indicator of financial deepening) increase, the data show a rise in financial fragility and a decrease in stability.

5. CONCLUSION AND POLICY IMPLICATIONS

The financial liberalization process presents both significant opportunities and complex challenges for resource-rich economies. A comprehensive analysis of institutional indicators, financial variables, and liberalization factors reveals a striking reality that challenges the traditional understanding of economics in high-income and resource-dependent economies. While standard economic theory suggests that greater liberalization and credit expansion will naturally lead to more developed markets and increased stability, the findings do not directly support this assumption. The study shows that improvements in financial liberalization indicators and the ratio of bank credit to GDP can paradoxically increase financial fragility if necessary preventive measures are not taken. This suggests that liberalization alone does not lead to stability; on the contrary, it may pave the way for instability when implemented without institutional infrastructure and supervision mechanisms.

This phenomenon stems from multiple interconnected factors: the bubble risks associated with rapid credit expansion, the volatility of international capital flows, institutional frameworks that fail to keep pace with financial reforms, and behavioral factors like moral hazard and overconfidence among market participants. These findings do not suggest that liberalization is inherently detrimental, but rather emphasize that its timing, sequencing, and accompanying institutional development are crucial determinants of success.

In order to reduce financial fragility and increase stability in high-income resource-rich economies, financial liberalization and integration processes need to be implemented gradually and in a controlled manner. Strengthening institutional infrastructure, regulatory, and supervisory mechanisms simultaneously with the liberalization process will increase the resilience of markets to shocks. At the same time, tools such as credit growth limits, leverage ratio regulations, and capital buffers should be used to reduce the risks that rapid credit expansion and capital inflows and outflows may pose. The soundness of the banking sector is a key element in maintaining financial stability. However, the effectiveness of the risk management framework should be taken into account as much as the size of the banking sector. While the increase in the ratio of deposit banks' assets to GDP has an impact on reducing financial fragility, it is important to support this sector with regulations.

Public spending appears to have a positive impact on reducing financial fragility. However, these expenditures need to be managed effectively, efficiently, and sustainably. Directing public spending to support economic growth will increase the resilience of the financial system. The effect of the increase in the broad money supply remains at the statistical significance limit. An increase in the money supply can stimulate economic growth and support the financial system by increasing liquidity, but uncontrolled increases can lead to inflationary pressures, asset bubbles, and imbalances. Therefore, monetary policies need to be designed carefully.

The rule of law and an effective judicial system play an important role in increasing stability by reducing financial fragility. The existence of strong institutional structures increases the confidence of economic actors and ensures that the financial system operates more robustly. To buffer the impacts of oscillations in revenue from natural resources, stability funds should be established to support long-term developmental objectives through investments. At the same time, with the advancement of financial deepening, regulatory oversight of unregulated sectors, e.g., shadow banking, is essential, along with imposing strict additional requirements for transparency.

In order to successfully navigate this complex balance, policymakers in resource-rich countries should pursue a multifaceted approach.

1. Progressive and Incremental Liberalization: The financial integration processes require careful implementation, in which each step of deregulation is complemented by the reinforcement of regulatory systems. For instance, liberalization in the capital account should be complemented by flexible reserve requirements or temporary capital limits to offset speculative risks. This cautious policy allows institutions to build the required strength while simultaneously enjoying the advantages of liberalization.
2. Institutional Strengthening: The bedrock for economic stability rests on strong institutional arrangements. The entrenchment of judicial independence, contract-enforcing structures, and anti-corruption agencies ensures a sound business environment needed for long-term development. This study particularly emphasizes how effective institutional arrangements boost economic agents' trust and enhance the stability of economic systems against external shocks.
3. Good Fiscal and Monetary Policy: Well-managed public spending is a powerful tool for reducing vulnerability. The creation of stabilization funds, based on successful examples like the Norwegian Sovereign Wealth Fund, can offer a way to insulate economies from commodity price volatility. Similarly, monetary policy will have to carefully balance the need to promote liquidity and preserve inflation control, avoiding the risks of an over-expansion of the money supply.
4. Financial Sector Supervision: The banking system requires intense monitoring through macroprudential policies. The adoption of policies such as loan-deposit rationing ceilings, integrated stress-testing regimes, and more stringent regulation of shadow banking activity can contain excessive risk-taking while ensuring the benefits of financial deepening.
5. Economic Diversification: Long-term stability necessitates reducing dependence on finite natural resources. Targeted investments in renewable energy, technology, and manufacturing sectors can create more resilient economic structures while providing new growth engines.
6. Human Capital Development: The development of human capital by enhancing financial literacy for households and businesses promotes societal resilience to speculative risks and stimulates better-informed financial choices throughout the economy.

The paradox identified indicates that liberalization can both accelerate economic growth and increase instability, thus calling for a policymaking strategy that is nuanced and adaptable. This fact highlights that financial stability is not achieved by a single reform in isolation; instead, it results from the careful coordination of multiple policy instruments working in concert.

The findings of the study clearly show that carefulness must be exercised in implementing financial liberalization policies. In scenarios where there are weak regulatory and oversight structures, such liberalization can lead to rising financial instability in addition to eroding overall stability. Addressing these issues through a comprehensive strategy is vital in reducing financial vulnerability and maintaining economic stability.

Natural resource wealth can only produce lasting prosperity when supported by sound institutions, prudent public finances, and gradual financial opening. The study shows that when the principle of "institutions first, then balanced liberalization" is not followed, excessive credit expansion, speculative capital flows, and shadow banking undermine stability. Therefore, liberalization is not an end in itself, but a process that must be carefully designed; its success depends on the timing, sequencing, and compatibility of reforms with complementary policy instruments.

Overall, this study emphasizes that resource-rich economies face unique problems along their path of development. By adopting holistic strategies that combine measured liberalization with institutional building, prudent fiscal management, and economic diversification, these nations can transform their resource wealth from a potential curse into a sustainable blessing. The results have important implications not only for academic discourse but also for real-world economic governance in an increasingly interconnected global financial system.

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