“Nexus between corruption, market capitalization, exports, FDI, and country’s wealth: A pre-global financial crisis study”

AUTHORS	Mamdouh Abdulaziz Saleh Al-Faryan

ARTICLE INFO	Mamdouh Abdulaziz Saleh Al-Faryan (2022). Nexus between corruption, market capitalization, exports, FDI, and country’s wealth: A pre-global financial crisis study. *Problems and Perspectives in Management*, *20*(4), 224-237. doi:10.21511/ppm.20(4).2022.17
DOI	http://dx.doi.org/10.21511/ppm.20(4).2022.17
RELEASED ON	Monday, 21 November 2022
RECEIVED ON	Monday, 11 April 2022
ACCEPTED ON	Thursday, 27 October 2022

JOURNAL	"Problems and Perspectives in Management"
ISSN PRINT	1727-7051
ISSN ONLINE	1810-5467
PUBLISHER	LLC “Consulting Publishing Company “Business Perspectives”
FOUNDER	LLC “Consulting Publishing Company “Business Perspectives”

NUMBER OF REFERENCES	NUMBER OF FIGURES	NUMBER OF TABLES
38	2	11

BUSINESS PERSPECTIVES

LLC "CPC "Business Perspectives"
Hryhorii Skovoroda lane, 10,
Sumy, 40022, Ukraine

www.businessperspectives.org

Mamdouh Abdulaziz Saleh Al-Faryan (United Kingdom, Saudi Arabia)

NEXUS BETWEEN CORRUPTION, MARKET CAPITALIZATION, EXPORTS, FDI, AND COUNTRY'S WEALTH: A PRE-GLOBAL FINANCIAL CRISIS STUDY

Abstract

The study investigates the impact of corruption, market capitalization, exports, and foreign direct investment on the wealth of 178 countries worldwide. Thus, the paper uses univariate and multivariate regressions to observe the nexus among exports, foreign direct investment, market capitalization, corruption, and wealth of nations. The findings indicate that corruption poses a significant hindrance to prosperity and development, as evaluated with respect to the Transparency International Corruption Perceptions Index. Additionally, the results showed that the world's poorest nations are becoming less corrupt while the wealthiest ones are growing more corrupt. The paper also concludes that exports and market capitalization are critical for prosperity and development when combined with lower corruption levels. Furthermore, the analysis also suggests that inbound foreign direct investment favors the development of emerging countries. Surprisingly, market capitalization and exports had little impact on wealth of countries before the crisis period. Moreover, integrity also fosters economic growth. Overall, the study concludes that the causes of wealth are country-specific.

Keywords corruption perception index, economic growth, macroeconomic variables, best linear unbiased estimates, globalization, classification of economies

JEL Classification D73, O16, O43, P48

Received on: 11th of April, 2022
Accepted on: 27th of October, 2022
Published on: 21st of November, 2022

Mamdouh Abdulaziz Saleh Al-Faryan, Ph.D., School of Accounting, Economics and Finance, Faculty of Business and Law, University of Portsmouth, United Kingdom; Consultant in Economics and Finance, Riyadh, Saudi Arabia.

Conflict of interest statement:
Author(s) reported no conflict of interest

INTRODUCTION

There are two theories describing the nexus between economic growth and corruption. One is "grease the wheels," and the other is "sand the wheels." "Grease the wheels" arguments suggest that corruption surges economic growth, with two main theories describing how corruption is expected to influence economic growth. The "grease the wheels" hypothesis holds that corruption increases economic growth as corruption is the result of inefficient regulations and the bureaucratic environment, especially when rules on starting a business are strict. Bribing influential people in the system can stimulate economic activity that ultimately improves economic growth. Contrarily, the "sand the wheels" camp sees corruption as a hurdle to innovation and production, which finally reduces economic growth. The previous literature has also asserted that corruption tends to reduce economic growth in countries with a lower market capitalization (Swaleheen, 2011; Tsanana et al., 2016).

In line with Acemoglu and Robinson (2012), this paper posits that nations having many of the same characteristics may vary significantly in terms of political and institutional setups. On the one hand, market capitalization, exports, and foreign direct investments are considered

http://dx.doi.org/10.21511/ppm.20(4).2022.17

a determinant of wealth in developed economies. On the other hand, their role in determining the wealth of many countries worldwide still needs to be specified. Therefore, this study aims to investigate the impact of exports, foreign direct investment, and market capitalization on the selected resource-endowed countries across the world. Further, in many countries, institutions are controlled by different business groups that prioritize their business interests over national interests (Colpan et al., 2010). Thus, the study also aims to determine the impact of CPI on the economic growth of a country.

This study contributes to the literature by observing the impact of the degree of corruption on the wealth of a country, along with its resource endowment, exports, foreign direct investment, and stock market capitalization. Swaleheen (2011) and Tsanana et al. (2016) have not considered all of these factors together, only observing the impact of corruption on the wealth of a country. However, the paper posits that the above factors are complex and intertwined with corruption. As such, they cannot be observed in isolation in the era of globalization while observing the impact of corruption on a country's wealth.

Further, due to globalization, the flow of capital across the nations has increased in exports, market capitalization, and foreign direct investment. However, corruption has also emerged across the countries as a by-product, which demands attention.

1. LITERATURE REVIEW AND HYPOTHESIS

Corruption may be described as the misuse of power by those in positions of authority for their benefit. Corruption levels vary by nation. Scholars have used various measures of corruption, including the international country risk guide (ICRG), the world governance indicator (WGI), and transparency international's corruption perception index (CPI). Among these three, the CPI is a more appropriate measure of corruption. The ICRG is not a direct measure of corruption, and the WGI has severe methodological issues in the calculation (Qu et al., 2019). There is compelling evidence that corruption is detrimental to economies. The extant literature has confirmed a direct relationship between corruption and economic growth.

Campos et al. (2010) and Ugur (2014) researched corruption and economic growth and confirmed a negative relationship between them. While adding further to this topic, Ugur (2014) argued that, in the long run, the cause-and-effect relationship between corruption and growth is weak in low-income countries. Studies have also checked for linearity between corruption and economic growth. For example, Swaleheen (2011) confirmed that the inverted CPI has a negative association with economic growth compared to the squared CPI, which has shown a positive relationship with economic growth. Similarly, in countries with upward trends in military expenditures, corruption declines economic growth (d'Agostino et al., 2016a; Cieślik & Goczek, 2018). Results from regional and continental perspectives have confirmed that, in Africa, corruption has acted as a barrier to economic growth. In contrast, in the case of Asia, corruption is not a determinant of economic growth. Surprisingly, in South Korea, corruption has surged economic growth; the same phenomenon has been observed in more developed economies in Europe compared to less-developed European economies (Huang, 2016; d'Agostino et al., 2016b; Tsanana et al., 2016).

There exists mounting evidence that corruption is detrimental to economies. For example, Mo (2001) discovered that each one-point increase in corruption results in a more than 0.5% decline in economic development. Meanwhile, Aïssaoui and Fabian (2022) found that the formal dimensions of globalization benefit GDP and corruption in low-income countries the most. However, they also found that, as countries increase in wealth, they become more receptive to the legitimacy accrued by the informal dimensions of globalization, which comes at the expense of economic efficiency for high-income countries.

Further, along with corruption, stock market capitalizations are also increasing in countries to boost economic activity, which has finally led to high growth and development in various coun-

tries in the era of globalization (Calderón & Liu, 2003; Schumpeter, 1911). In contrast, Radikoko et al. (2019) found that market capitalization and turnover ratios are negatively correlated with economic growth; the value of shares exchanged is strongly correlated with economic growth. This finding demonstrates that Botswana's liquidity can potentially support economic development. Additionally, their findings indicated no direct association between stock market development and economic growth. Due to these inconsistent findings, the study considers stock market capitalization in the proposed model while observing the impact of corruption on the wealth of countries in the context of globalization. Cieślik and Goczek (2018) and Ugur (2014) have neglected market capitalization development in corruption-related research, due to which this study seems to be pioneering in the field of market capitalization and corruption.

To a certain extent, it is self-evident that exports generate wealth. If a nation does not export, it must be self-sufficient, which no country is. The road map of a self-sufficient nation was provided in Washington Consensus, which recommends that in order to be self-sufficient, a country should 1) stabilize its exchange rate, 2) minimize the trade barriers and should go for trade liberalization, 3) encourage FDI, 4) introduce institutional reform like privatization and deregulation, 5) reduce its fiscal deficits. Further, it encourages a country to increase its exports to become wealthier (Naim, 2000). However, after the Washington Consensus, a UN Millennium report was prepared by the World Bank to see the practicality of the Washington consensus. It was concluded that the benefits of all the above-mentioned suggestions vary from setting to setting of a nation (Rodrik, 2006). Sachs and Warner (2001), who assert that resource-rich nations often expand at a slower pace than resource-poor countries, also mention these variations in the conditions of a country. As a result of their ability to export natural resources, resource-rich nations may have stronger currencies and, hence, may face higher relative import prices. These increased domestic costs might stymie development exports, and wealth may also be bidirectional.

In an analysis of Canada's economy from 1947 to 1996, Wernerheim (2000) found no indication of exports driving growth. In contrast, Narayan and Smyth (2009) discovered that rapid growth results in rapid export growth and vice versa. However, in the era of corruption and globalization, it is necessary to observe the role of exports in improving growth while countering the effects of corruption. For this reason, this study decided to include exports in the model while exploring the nexus between corruption and wealth. Unfortunately, Radikoko et al. (2019), Wernerheim (2000), Alfaro et al. (2004), Narayan and Smyth (2009), Piore and Cardoso (2017), Owusu-Nantwi and Erickson (2019), and Hansen and Rand (2006) have ignored this phenomenon, due to which this study can be considered a contribution to the literature on the corruption levels of countries across the world.

As a result of globalization and in the era of free markets, there is a dire need to detect the determinants of wealth in a resource-endowed country. Factors like market capitalization, FDI, exports, and corruption have influenced these economies differently compared to their facts in developed economies. Therefore, the primary objective of this study is to determine the mechanism by which the determinants of national wealth function during a complex pre-global financial crisis by examining four indicators: corruption, market capitalization, exports, and inward investment. From this stance, the study posits the following hypothesis in the alternative form:

H_1: *There is a nexus between market capitalization, corruption, exports, FDI, and wealth of a country in a pre-global financial crisis.*

2. METHODOLOGY

Data for all variables were collected between 2005 and the financial crisis of 2008. The following variables are included in the measures:

- Per capita income (GDP). This is a US dollar-based inflation-adjusted measure of annual per capita income. The currency rate used is the official rate, not purchasing power parity.
- Market capitalization (Market). This is the market value of listed firms, measured as a percentage of the country's Gross Domestic Product.

http://dx.doi.org/10.21511/ppm.20(4).2022.17

- Integrity (CPI). This is the country's Corruption Perceptions Index score.
- Exports. This is the export value as a percentage of the country's Gross Domestic Product.
- Inward investment (FDI). This is a foreign direct investment as a percentage of the country's Gross Domestic Product.
- Growth. This is calculated as the change in per capita Gross Domestic Product from 2005 to 2008 (i.e., 2008 data divided by 2005 data).

Gapminder provided the data for GDP, Market, Exports, and FDI[1], while CPI data were obtained from Transparency International. The list of the countries used in this study is provided in Table 1.

Table 1. List of countries

Countries			
Afghanistan	Eritrea	Mauritania	Swaziland
Albania	Estonia	Mauritius	Sweden
Algeria	Ethiopia	Mexico	Switzerland
Angola	Finland	Moldova	Syria
Argentina	France	Mongolia	Taiwan
Armenia	Gabon	Montenegro	Tajikistan
Australia	The Gambia	Morocco	Tanzania
Austria	Georgia	Mozambique	Thailand
Azerbaijan	Germany	Myanmar	Timor-Leste
Bahrain	Ghana	Namibia	Togo
Bangladesh	Greece	Nepal	Tonga
Barbados	Guatemala	Netherlands	Trinidad and Tobago
Belarus	Guinea	New Zealand	Tunisia
Belgium	Guinea-Bissau	Nicaragua	Turkey
Belize	Guyana	Niger	Turkmenistan
Benin	Haiti	Nigeria	Uganda
Bhutan	Honduras	Norway	Ukraine
Bolivia	Hong Kong (China)	Oman	United Arab Emirates
Bosnia and Herzegovina	Hungary	Pakistan	United Kingdom
Botswana	Iceland	Panama	Uruguay
Brazil	India	Papua New Guinea	USA
Bulgaria	Indonesia	Paraguay	Uzbekistan
Burkina Faso	Iran	Peru	Vanuatu
Burundi	Iraq	Philippines	Venezuela
Cambodia	Ireland	Poland	Viet Nam
Cameroon	Italy	Portugal	Yemen
Canada	Jamaica	Qatar	Zambia
Cape Verde	Japan	Romania	Zimbabwe
Central African Republic	Jordan	Russia	
Chad	Kazakhstan	Rwanda	
Chile	Kenya	Saint Lucia	
China	Kiribati	Saint Vincent	
Colombia	Kuwait	Samoa	
Comoros	Kyrgyzstan	Sao Tome and Principe	
Congo, Democratic Republic	Laos	Saudi Arabia	
Congo, Republic	Latvia	Senegal	
Costa Rica	Lebanon	Serbia	
Côte d'Ivoire	Lesotho	Seychelles	
Croatia	Liberia	Sierra Leone	
Cuba	Libya	Singapore	
Cyprus	Lithuania	Slovakia	
Czech Republic	Luxembourg	Slovenia	
Denmark	Macau (China)	Solomon Islands	
Djibouti	Macedonia	Somalia	
Dominica	Madagascar	South Africa	
Dominican Republic	Malawi	South Korea	
Ecuador	Malaysia	Spain	
Egypt	Maldives	Sri Lanka	
El Salvador	Mali	Sudan	
Equatorial Guinea	Malta	Suriname	

Table 1 demonstrates that the nations represent all major geographical areas, varying in wealth from extremely wealthy (e.g., the United States of America, 2008 GDP: $37,867.11) to extremely impoverished (e.g., Madagascar, 2008 GDP: $271.91). Additionally, they vary from being very clean (e.g., Sweden, 2008 CPI: 9.3) to highly corrupt (e.g., Equatorial Guinea, 2008 CPI: 1.7). The list contains nations with wildly disparate amounts of natural resources, ranging from oil-rich Saudi Arabia to diamond-rich Botswana to Hong Kong Territory (China), which has no natural resources at all (Hong Kong even has to import water).

2.1. Data manipulation

Data for each variable obtained from Gapminder were downloaded onto Microsoft Excel. Data not from the period 2005 or 2008 and not from the

1 Gapminder has a database of significant environmental, social, health, social, and economic indices. Gapminder's database includes data from the United Nations, World Health Organization, World Bank, and International Monetary Fund: http://www.gapminder.org/

countries listed in Table 1 were removed. Natural logarithms were calculated for all data.

The study divided the countries into five categories based on their wealth status (Table 2).

- *Very poor.* The per capita Gross Domestic Product is less than $1000 USD per annum. (Inflation adjusted, official exchange rate).
- *Poor.* The per capita Gross Domestic Product is between $1000 and $4999 USD per annum. (Inflation adjusted, official exchange rate).
- *Medium*. The per capita Gross Domestic Product is between $5000 and $9999 USD per annum. (Inflation adjusted, official exchange rate).
- *Rich*. The per capita Gross Domestic Product is between $ 10,000 and $19,999 USD per annum. (Inflation adjusted, official exchange rate).
- *Very rich*. The per capita Gross Domestic Product is more than $20,000 USD per annum. (Inflation adjusted, official exchange rate).

Table 2. Example countries by the category of wealth

Very poor	Poor	Medium	Rich	Very rich
Bangladesh	Albania	Argentina	Greece	Australia
Benin	Algeria	Chile	Italy	Austria
Burkina Faso	Angola	Croatia	Malta	Belgium
Burundi	Armenia	Czech Republic	Bahrain	Canada

Certain variables were missing for all nations. This included ten nations with no accessible GDP statistics (e.g., Afghanistan).

2.2. Empirical methods

The study estimates the various regressions after confirming their best linear unbiased estimates (BLUE) along with other techniques, such as Granger Causality and ANOVA, to confirm the nexus between variables.

Further, two main regression models were used. The first used only the 2008 data and estimated the model shown in Model 1:

$$GDP = \beta_0 + \beta_1 \cdot Market + \beta_2 \cdot CPI + \\ + \beta_3 \cdot Exports + \beta_4 \cdot FDI + \varepsilon. \quad (1)$$

Clearly, the model evaluated the relative contributions of the four predictor variables to the present national wealth. The second regression included 2008 data as predictor variables and estimated the model shown in Model 2:

$$Growth = \beta_0 + \beta_1 \cdot Market + \beta_2 \cdot CPI + \\ + \beta_3 \cdot Exports + \beta_4 \cdot FDI + \varepsilon. \quad (2)$$

Thus, for market capitalization, the study uses the models shown in Model 3 (a and b):

$$GDP_{2008} = \beta_0 + \beta_1 \cdot Market_{2005} + \\ + \beta_2 \cdot GDP_{2005} + \varepsilon, \quad (3a)$$

$$Market_{2008} = \beta_0 + \beta_1 \times Market_{2005} + \\ + \beta_2 \times GDP_{2005} + \varepsilon. \quad (3b)$$

The same rationale led to the models shown in Models 4-6 (a and b), dealing with CPI, exports, and FDI, respectively:

$$GDP_{2008} = \beta_0 + \beta_1 \cdot CPI_{2005} + \\ + \beta_2 \cdot GDP_{2005} + \varepsilon, \quad (4a)$$

$$CPI_{2008} = \beta_0 + \beta_1 \cdot CPI_{2005} + \\ + \beta_2 \cdot GDP_{2005} + \varepsilon, \quad (4b)$$

$$GDP_{2008} = \beta_0 + \beta_1 \cdot Exports_{2005} + \\ + \beta_2 \cdot GDP_{2005} + \varepsilon, \quad (5a)$$

$$Exports_{2008} = \beta_0 + \beta_1 \cdot Exports_{2005} + \\ + \beta_2 \cdot GDP_{2005} + \varepsilon, \quad (5b)$$

$$GDP_{2008} = \beta_0 + \beta_1 \cdot FDI_{2005} + \\ + \beta_2 \cdot GDP_{2005} + \varepsilon, \quad (6a)$$

$$FDI_{2008} = \beta_0 + \beta_1 \cdot FDI_{2005} + \\ + \beta_2 \cdot GDP_{2005} + \varepsilon. \quad (6b)$$

Of course, these models are not Granger models because they do not obey Granger's equation; they do, however, adhere to Granger's reasoning.

http://dx.doi.org/10.21511/ppm.20(4).2022.17

3. RESULTS

3.1. Descriptive statistics and correlations matrix

As indicated in Table 3, statistics on market capitalization were particularly sparse. Additionally, it demonstrates a wide range of values for all variables and that, on average, the nations were roughly 12% richer in 2008 than in 2005.

Table 4 demonstrates a dearth of data on market capitalization. Additionally, it shows a broad range for each variable. Surprisingly, a comparison with Table 3 reveals that, on average, nations became more corrupt as they became wealthier (mean CPI of 4.01 in 2008, as opposed to 4.09 in 2005).

From Table 5, it can be seen that only FDI was unrelated to GDP. All other correlations between GDP and other variables were extremely significant (SPSS reports probabilities less than 0.0005 as zero). The correlations were also high: that for market capitalization, with the correlation coefficient $r = 0.420$, suggests that market

Table 3. Descriptive statistics for 2008

Variables	N	Minimum	Maximum	Mean	Std. Deviation
GDP 2008	162	97	54,844	7089.50	10,881.792
CPI 2008	178	1.0000	9.3000	4.012291	2.1080810
Market 2008	93	1.4771	217.5922	42.761325	40.8188292
Exports 2008	142	10.8053	234.3404	47.004292	32.3924623
FDI 2008	159	−8	44	6.06	7.074
Growth	161	0.92	1.80	1.1283	0.11092
Valid N (listwise)	77				

Table 4. Descriptive statistics for 2005

Variables	N	Minimum	Maximum	Mean	Std. Deviation
GDP 2005	170	89	51,934	6769.70	10,345.999
CPI 2005	154	2	10	4.09	2.210
Market 2005	107	0.2578	390.0994	64.215677	70.4775007
Export 2005	170	5.7820	236.4446	45.037044	30.0263478
FDI 2005	165	−15	44	4.46	5.791
Valid N (listwise)	96				

Table 5. Pearson correlation matrix for each of the six variables for 2008

Variables		GDP 2008	CPI 2008	Market 2008	Export 2008	FDI 2008	Growth
GDP 2008	Pearson Correlation	1					
	Sig. (2-tailed)						
	N	162					
CPI 2008	Pearson Correlation	0.828**	1				
	Sig. (2-tailed)	0.000					
	N	162	179				
Market 2008	Pearson Correlation	0.420**	0.384**	1			
	Sig. (2-tailed)	0.000	0.000				
	N	90	93	93			
Export 2008	Pearson Correlation	0.471**	0.375**	0.460**	1		
	Sig. (2-tailed)	0.000	0.000	0.000			
	N	138	142	83	142		
FDI 2008	Pearson Correlation	−0.068	0.034	0.137	0.439**	1	
	Sig. (2-tailed)	0.404	0.671	0.201	0.000		
	N	154	159	89	135	159	
Growth	Pearson Correlation	−0.178*	−0.231**	−0.180	0.072	0.035	1
	Sig. (2-tailed)	0.024	0.003	0.090	0.402	0.663	
	N	161	161	90	137	153	161

Note: * Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed).

Table 6. Pearson correlation matrix for each of the five variables for 2005

Variables		GDP 2005	CPI 2005	Market 2005	Export 2005	FDI 2005
GDP 2005	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	170				
CPI 2005	Pearson Correlation	0.871**	1			
	Sig. (2-tailed)	0.000				
	N	146	154			
Market 2005	Pearson Correlation	0.566**	0.553**	1		
	Sig. (2-tailed)	0.000	0.000			
	N	105	103	107		
Export 2005	Pearson Correlation	0.355**	0.316**	0.487**	1	
	Sig. (2-tailed)	0.000	0.000	0.000		
	N	167	148	106	170	
FDI 2005	Pearson Correlation	0.064	0.183*	0.245*	0.294**	1
	Sig. (2-tailed)	0.421	0.029	0.013	0.000	
	N	162	143	102	163	165

Note: * Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed).

capitalization accounts for around 16% of the variance in GDP, while that for CPI (r = 0.828) suggested that integrity accounts for over 60% of the variance in GDP. That for exports (r = 0.471) implies that exports contribute roughly 20% of the variance in GDP. Curiously, the only significant growth correlates were GDP and CPI, and each of these correlations was negative.

Furthermore, Table 5 demonstrates other highly significant correlations; for example, CPI is highly connected with market capitalization, and FDI is highly correlated with exports. However, none of these correlations are too high to seriously upset a regression model. In general, correlations between predictor variables of less than r = 0.7 are considered safe unless mutual correlations between predictor variables produce high VIFs (Field, 2009).

Table 6 resulted in similar conclusions as those obtained in Table 5. Notably, GDP was correlated with all factors except FDI.

3.2. Regression for Models 1 and 2

Model 1 used data from 74 countries, and was highly significant ($F(4, 69) = 41.176$; $p < 0.0005$).[2] This model explained around 85% of the variance in GDP ($R^2 = 0.71$, $R^2_{\text{adjusted}} = 0.69$).

The sole significant predictor, as shown in Table 7, was CPI, with a partial correlation of 0.790 and a standardized coefficient of 0.792. This indicates that integrity accounts for around 60% of the variance in GDP, with more integrity countries being wealthier. The model fit the regression assumptions effectively.

In Table 8, the data for the second regression (Model 2) on growth predictors violated the identical normal distribution and homoscedasticity requirements. Utilizing modified growth data did not remedy the issue. As a result, all the data included in the regression were converted logarithmically.

Model 2 used data from 74 countries and was also highly significant ($F(4, 69) = 9.51$; $p < 0.0005$). The

Table 7. Main results for Model 1

Model	Beta (unstandardized)	Beta (standardized)	t	Sig.	Partial correlation	VIF
(Constant)	4.141		6.163	0.000		
CPI	2.514	0.792	10.698	0.000	0.790	1.282
Market	0.087	0.063	0.907	0.368	0.109	1.143
Exports	0.037	0.015	0.186	0.853	0.022	1.482
FDI	0.086	0.075	0.980	0.330	0.117	1.358

2 P: Probability of a Type I error.

http://dx.doi.org/10.21511/ppm.20(4).2022.17

Table 8. Main results for Model 2

Model	Beta (unstandardized)	Beta (standardized)	t	Sig	Partial correlation	VIF
(Constant)	0.274		5.175	0.000		
CPI	–0.064	–0.378	–3.457	0.001	–0.384	1.282
Market	–0.014	–0.196	–1.894	0.062	–0.222	1.143
Exports	–0.013	–0.099	–0.844	0.402	–0.101	1.482
FDI	0.027	0.432	3.834	0.000	0.419	1.358

model explained around 30% of the variance in growth ($R^2 = 0.36$, $R^2_{adjusted} = 0.32$).

Table 8 shows two significant predictors: CPI and FDI. CPI had a partial correlation of –0.384 and a standardized slope of 0.378. This suggests that integrity explains around 10% of the variance in GDP, with less integrity nations showing greater growth. FDI had a partial correlation of 0.419 and a standardized slope of 0.432, suggesting that FDI explains more than 15% of the variance in growth. It can also be seen that the result for market capitalization was close to significance ($p = 0.06$). Furthermore, the results are the best estimates, econometrically.

3.3. Market capitalization (Model 3)

Model 3 used data from 98 countries and was highly significant ($F(2, 95) = 27{,}079.15$; $p < 0.0005$). The model explained around 100% of the variance in the 2008 GDP ($R^2 = 1.0$, $R^2_{adjusted} = 1.0$).

Market capitalization in 2005 significantly predicted GDP in 2008 ($p = 0.006$); however, the relationship was negative, with countries having less market capitalization showing greater growth. Market capitalization had a standardized slope of –0.02 and a partial correlation of –0.28, suggesting that market capitalization in 2005 explained about 7% of the variance in GDP in 2008.

Additionally, the paper found that the GDP of 2005 accurately anticipated the GDP of 2008; this, however, should come as no surprise. Tests of robustness confirm that results are robust. The second part of the analysis of Model 3 used data from 91 countries. The result was again highly significant, and the model is the best fit according to the statistics.

The GDP of 2005 significantly predicted market capitalization in 2008 ($p = 0.002$). The partial correlation of the GDP was –0.326, and the standardized slope was –0.224, suggesting that the GDP of 2005 explained about 10% of the variation in 2008 levels of market capitalization. Tests of robustness confirm that results are robust.

As the GDP in 2005 explained 10% of the variance in market capitalization in 2008 but only 7% of the variance in GDP in 2008, one cannot assert Granger causality. Any causation, if it exists, has the potential to be bidirectional.

3.4. CPI (Model 4)

Model 4 used data from 139 countries and was highly significant ($F(2, 136) = 26{,}160.85$; $p < 0.0005$). The model explained around 100% of the variance in 2008 GDP ($R^2 = 1.0$, $R^2_{adjusted} = 1.0$).

The 2005 CPI was a significant predictor of 2008 GDP ($p < 0.0005$). As in Model 2, the relationship was negative, with more corrupt countries showing greater growth. CPI had a standardized slope of –0.28 and a partial correlation of –0.29, suggesting that CPI in 2005 explained about 8% of the variance in the GDP of 2008.

The second part of the analysis of Model 4 used data from 146 countries. The result was highly significant, and the model is the best fit according to the statistics. As the CPI in 2005 explained 8% of the variance in GDP in 2008, but none or almost none of the variance in the CPI in 2008, one may assert that CPI has a Granger causality effect on GDP, with the relationship being negative.

3.5. Exports (Model 5)

Model 5 used data from 159 countries and was highly significant ($F(2, 156) = 25{,}661.37$; $p < 0.0005$). The model explained around 100% of the variance in 2008 GDP ($R^2 = 1.0$, $R^2_{adjusted} = 1.0$).

Exports in 2005 were a significant predictor of 2008 GDP ($p = 0.001$), with a standardized slope

of 0.017 and a partial correlation of 0.27. This suggests that exports in 2005 explained about 7% of the variance in the GDP of 2008.

The second part of the analysis of Model 5 used data from 139 countries. The result was highly significant, and the model is the best fit according to the statistics. The GDP of 2005 significantly predicted exports in 2008 ($p = 0.001$). The GDP of 2005 had a standardized slope of 0.10 and a partial correlation of 0.28, suggesting that the GDP of 2005 explained over 7% of the variance of exports in 2008. As the GDP in 2005 was a significant predictor of exports in 2008, it is impossible to tell whether exports alone drive GDP.

3.6. FDI (Model 6)

Model 6 used data from 146 countries and was highly significant ($F(2, 143) = 23{,}170.20$; $p < 0.0005$). The model explained around 100% of the variance in 2008 GDP ($R^2 = 1.0$, $R^2_{\text{adjusted}} = 1.0$).

The FDI in 2005 was a significant predictor of the 2008 GDP ($p = 0.005$). Moreover, FDI had a standardized slope of 0.014 and a partial correlation of 0.23, suggesting that FDI in 2005 explained about 5% of the variance in the GDP of 2008.

The second part of the analysis of Model 6 used data from 139 countries. The result was highly significant, and the model is the best fit according to the statistics. The GDP of 2005 did not significantly predict FDI in 2008 ($p = 0.220$), but FDI in 2005 did ($p < 0.0005$). Since the FDI predicted GDP but GDP did not predict FDI, one may argue that FDI has a Granger causality effect on GDP.

3.7. ANOVA 1: Interaction between wealth and other variables

The continuous data, in their raw form, were not normally distributed. Thus, all continuous variables were converted logarithmically. Table 9 provides a breakdown of the nations included in the study regarding wealth.

Table 9. Countries, by wealth, included in ANOVA 1

Wealth	N
Very poor	12
Poor	32
Medium	13
Rich	5
Very rich	12

The data violated the sphericity assumption. Accordingly, Greenhouse-Geisser statistics are reported. As indicated, the only test of interest in the ANOVA was that of interactions. This was highly significant ($F(9.432) = 11.44$; $p < 0.0005$). The effect size was substantial ($\eta_p^2 = 0.40$), suggesting that the interaction explained almost 40% of the variance in the data.

Unsurprisingly, Figure 1 demonstrates that GDP increased gradually from the very poor to the extremely rich. Additionally, it implies that although the extremely poor countries get the least FDI, poor and middle-income countries receive as much (or more) FDI as a percentage of their national GDP as rich and very rich countries.

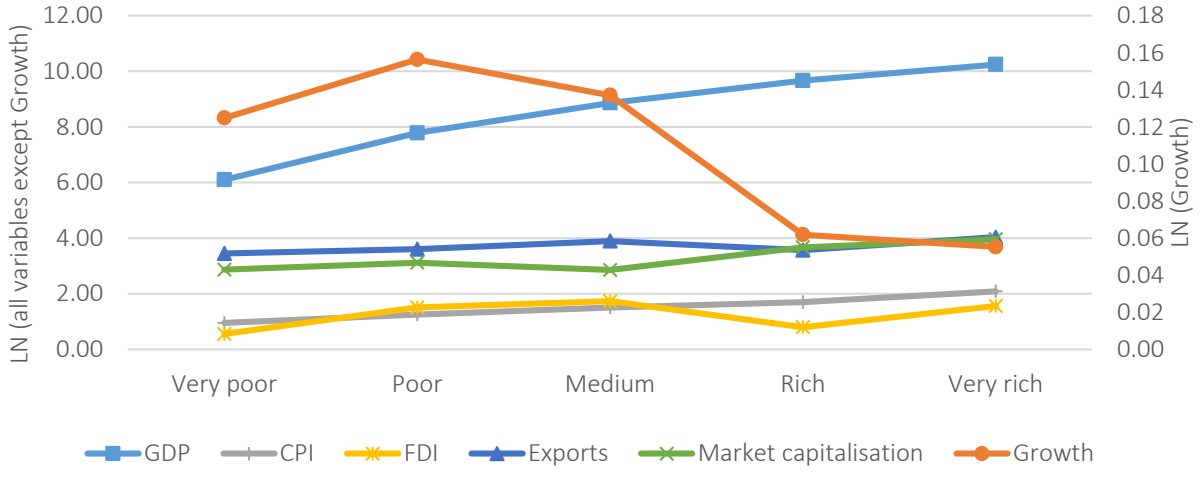

Figure 1. Interactions between measures in 2008 and wealth

http://dx.doi.org/10.21511/ppm.20(4).2022.17

3.8. ANOVA 2: Interaction between wealth and changes in other variables

As with ANOVA 1, continuous data in their raw form were not normally distributed; as such, all continuous variables were converted logarithmically. Table 10 provides a breakdown of the nations included in the study by wealth.

Table 10. Countries, by wealth, included in ANOVA 2

Wealth	N
Very poor	12
Poor	28
Medium	13
Rich	5
Very rich	12

Again, the data violated the sphericity assumption. Accordingly, Greenhouse-Geisser statistics are reported. The interaction was significant ($F(1.682) = 3.809$; $p = .001$). The effect size was substantial ($\eta_p^2 = 0.19$), suggesting that the interaction explained more than 15% of the variance in the data.

Figure 2 demonstrates that market capitalization decreased everywhere except in the poorest countries where it increased, and that this decline was most severe in rich and extremely rich countries. Additionally, it indicates that, as measured by the CPI, the extremely poor, poor, and medium-sized countries became more integrity (or less corrupt). In contrast, the rich and very rich countries became less integrity (or more corrupt). Meanwhile, exports as a percentage of national GDP increased in all countries except for the poorest. FDI rose globally, except in the richest countries, where the increase was most pronounced in impoverished and highly impoverished nations.

4. DISCUSSION

As evidenced by the descriptive statistics, the data set was very diverse in every way; the nations analyzed varied from the extremely poor to the extremely wealthy, from the most integrity to the most corrupt, and from those with the highest to those with the lowest growth rates. This may contradict Luintel et al. (2008).

Further, although roughly accounting for country differences by using ANOVA, the correlations were intriguing and corroborated by the ANOVA findings. An inverse relationship between wealth and growth was observed, as measured in terms of per capita GDP. This implies that the world's poorest countries are now expanding at a higher rate than the world's wealthiest. This has been corroborated by statistics from the CIA (2012). The ten fastest-growing countries in the world (as of 2011) are shown in Table 11.

Table 11. The fastest-growing nations in the world

Nation	Growth rate % (2011 estimate)
Qatar	18.8
Mongolia	17.3
Turkmenistan	14.7
Ghana	13.6
Timor-Leste	10.6
Panama	10.6
Iraq	9.9
Zimbabwe	9.3
Solomon Islands	9.3
China	9.2

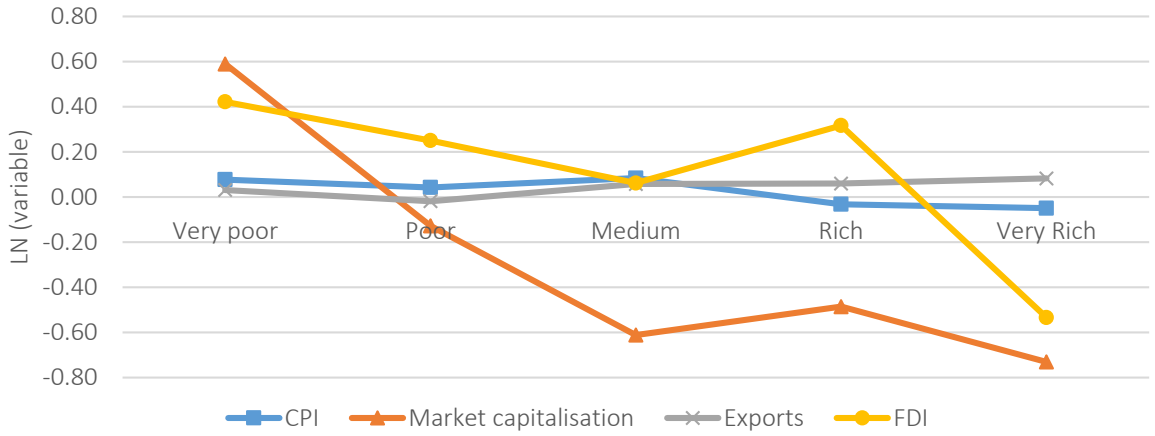

Figure 2. Interactions between changes in the values of measures and wealth

Except for Qatar, all of the countries in Table 11 are impoverished or highly impoverished. Three factors for the greater prosperity of impoverished countries come to mind. First, it may be simpler for impoverished nations to accomplish rapid development than for wealthy countries. Second, wealthy nations may grow complacent as a result of their wealth. Third, it is possible that the financial crisis of 2007–2008 disproportionately harmed wealthy nations.

The first of these hypotheses is the most improbable. Before 2000, the growth rates of Sub-Saharan African nations were dismal and had been so for decades; they were often less than 1% (Moyo, 2009). Moreover, it is not only the African nations currently growing at a fantastic clip. Other African nations also showed rapid development; for example, Rwanda showed 8.8%, Ethiopia showed 7.5%, Nigeria showed 7.2%, and Equatorial Guinea showed 7.1% (CIA, 2012). Meanwhile, the only European nations capable of matching such growth rates are the comparatively impoverished Baltic states of Estonia (7.6%), Lithuania (5.9%), and Latvia (5.5%).

Perhaps many of the world's wealthiest nations are complacent. However, as Qatar's accomplishment demonstrates, affluence does not always lead to complacency. Hong Kong Territory (China; 5%), the United Arab Emirates (4.9%), and the Isle of Man Territory (UK; 5.2%) are among the wealthy nations experiencing high growth rates. However, the developed world, as a whole, is not doing well; for example, Andorra's growth rate is negative (–1.8%), the United Kingdom's growth rate is low (0.7%), as are the growth rates of Luxembourg (1.0%), Denmark (1.1%), and the United States (1.7%). The European Union's average growth rate is merely (1.6%; all statistics are from the CIA (2012); all figures are estimates for 2011).

The correlation and ANOVA findings showed that two more variables were significant. To begin with, FDI is mainly directed at emerging nations. This might be because labor is more affordable in developing nations; however, there are other possible reasons. As Moyo (2009) explained, many impoverished nations are resource-rich, and the world wants their resources. Consequently, China is investing extensively in Africa at the moment – not out of philanthropy or imperialism, but out of necessity due to China's mineral and other resource requirements. The substantial inflow of FDI into Sub-Saharan Africa may account for the subcontinent's exceptional development rates. These findings bolster Moyo's (2009) contention that the sub-continent benefits from and needs FDI considerably more than it does assistance (the majority of which is used to fatten the bank accounts of dictators and finance war).

The correlation data also indicated that corruption is detrimental to wealth and development. Indeed, CPI had the most substantial correlation values with wealth and growth (both over 0.8). The critical point here is that, as revealed by the descriptive statistics and ANOVAs, corruption is increasing in wealthy nations while decreasing in impoverished ones. Asiedu (2006) suggested that the decline in corruption in impoverished nations may be due to corruption acting as a deterrent to FDI. If this is the case, a series of virtuous loops may exist. The absence of corruption may fuel FDI, FDI may fuel growth, and FDI and wealth creation may further fuel corruption reductions. In this respect, the current findings reinforce Moyo's (2009) claim that, in addition to other issues, a significant hindrance to the advancement of Sub-Saharan Africa is the region's chronic corruption – Sub-Saharan Africa continues to be the world's most corrupt area.

It is difficult to account for the rise in corruption in developed nations. To begin with, as wealthy individuals, they should have been better equipped to defend themselves against corruption. Second, the detrimental impacts of corruption have been recognized for decades, and wealthy nations should have been aware of them. Third, the reason might be political; European Union politicians, for example, seem to be intrinsically crooked – the union's internal auditors have failed to certify the union's financial statements sixteen times (Taylor, 2010). A degradation of the political fabric may have contributed to the rise in corruption in developed nations. Alternatively, or in combination, as the Enron case has illustrated, people in wealthy nations may be enticed to amass great wealth by unscrupulous methods. Explaining why developed nations have gotten more corrupt is an area of future research.

http://dx.doi.org/10.21511/ppm.20(4).2022.17

The findings show that FDI is disproportionately directed at developing nations. That integrity alone accounts for the majority of the variation in wealth. That integrity and FDI account for the majority of the variance in growth. These findings indicate that exports and market capitalization are insignificant; however, it is also possible that integrity contributes to the export success and efficient market capitalization. The results imply that integrity and FDI function synergistically. There is also a possibility that exports and market capitalization could be linked in a two-way relationship. There is compelling evidence that integrity fosters economic growth and that FDI benefits poor nations. Furthermore, emerging countries grew faster than rich countries in 2008, despite receiving less FDI than rich countries. As a result of their phenomenal growth, the world's poorest countries became more integrity as a result, while the world's wealthiest countries became more corrupted.

CONCLUSION

The paper aims to investigate the impact of corruption, market capitalization, exports, and foreign direct investment on the wealth of countries. The findings indicated that integrity alone accounts for the majority of the variation in wealth and that integrity and FDI account for the majority of the variance in growth. At first appearance, these findings imply that neither exports nor market capitalization are significant. However, it is also possible that integrity contributes to the export success and efficient market capitalization. From the results, the study concludes that integrity fosters economic growth and that FDI benefits emerging nations.

In terms of the four factors examined, integrity and FDI likely function synergistically, whereas the linkages between market capitalization and exports to wealth may be bidirectional. Given these findings, the current study highlights the need for further investigation into the complex interactions between additional putative wealth boosters. Additionally, the study drew resounding conclusions concerning integrity. Integrity may be more critical than most of the available literature has recognized.

AUTHOR CONTRIBUTIONS

Conceptualization: Mamdouh Abdulaziz Saleh Al-Faryan.
Data curation: Mamdouh Abdulaziz Saleh Al-Faryan.
Formal analysis: Mamdouh Abdulaziz Saleh Al-Faryan.
Funding acquisition: Mamdouh Abdulaziz Saleh Al-Faryan.
Investigation: Mamdouh Abdulaziz Saleh Al-Faryan.
Methodology: Mamdouh Abdulaziz Saleh Al-Faryan.
Project administration: Mamdouh Abdulaziz Saleh Al-Faryan.
Resources: Mamdouh Abdulaziz Saleh Al-Faryan.
Software: Mamdouh Abdulaziz Saleh Al-Faryan.
Supervision: Mamdouh Abdulaziz Saleh Al-Faryan.
Validation: Mamdouh Abdulaziz Saleh Al-Faryan.
Visualization: Mamdouh Abdulaziz Saleh Al-Faryan.
Writing – original draft: Mamdouh Abdulaziz Saleh Al-Faryan.
Writing – review & editing: Mamdouh Abdulaziz Saleh Al-Faryan.

ACKNOWLEDGMENTS

I thank the editor and the reviewers for the helpful comments and suggestions that significantly enhanced this work. The usual disclaimer applies.

REFERENCES

1. Acemoglu, D., & Robinson, J. A. (2012). *Why Nations Fail: The Origins of Power, Prosperity and Poverty* (1st ed.). New York: Crown.
2. Adjasi, C. K. D., & Biekpe, N. B. (2006). Stock Market Development and Economic Growth: The Case of Selected African Countries. *African Development Review, 18*(1), 144-161. https://doi.org/10.1111/j.1467-8268.2006.00136.x
3. Aïssaoui, R., & Fabian, F. (2022). Globalization, economic development, and corruption: A cross-lagged contingency perspective. *Journal of International Business Policy, 5,* 1-28. https://doi.org/10.1057/s42214-020-00091-5
4. Alfaro, L., Chanda, A., Kalemli-Ozcan, S., & Sayek, S. (2004). FDI and Economic Growth: The Role of Local Financial Markets. *Journal of International Economics, 64*(1), 89-112. https://doi.org/10.1016/S0022-1996(03)00081-3
5. Asiedu, E. (2006). Foreign Direct Investment in Africa: The Role of Natural Resources, Market Size, Government Policy, Institutions and Political Instability. *The World Economy, 29*(1), 63-77. https://doi.org/10.1111/j.1467-9701.2006.00758.x
6. Baron, R. M., & Kenny, D. A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51*(6), 1173-1182. https://doi.org/10.1037/0022-3514.51.6.1173
7. Calderón, C., & Liu, L. (2003). The Direction of Causality between Financial Development and Economic Growth. *Journal of Development Economics, 72*(1), 321-334. https://doi.org/10.1016/S0304-3878(03)00079-8
8. Campos, N. F., Dimova, R. D., & Saleh, A. (2010). *Whither corruption? A quantitative survey of the literature on corruption and growth* (IZA Discussion Paper No. 5334). http://dx.doi.org/10.2139/ssrn.1716129
9. Central Intelligence Agency (CIA). (2012). *The CIA World Factbook 2012.* New York, NY: Skyhorse Publishing, Inc.
10. Cieślik, A., & Goczek, Ł. (2018). Control of corruption, international investment, and economic growth – Evidence from panel data. *World Development, 103,* 323-335. https://doi.org/10.1016/j.worlddev.2017.10.028
11. Colpan, A. M., Hikino, T., & Lincoln, J. R. (2010). *The Oxford handbook of business groups.* Oxford: Oxford University Press.
12. d'Agostino, G., Dunne, J. P., & Pieroni, L. (2016a). Government spending, corruption and economic growth. *World Development, 84,* 190-205. https://doi.org/10.1016/j.worlddev.2016.03.011
13. d'Agostino, G., Dunne, J. P., & Pieroni, L. (2016b). Corruption and growth in Africa. *European Journal of Political Economy, 43,* 71-88. https://doi.org/10.1016/j.ejpoleco.2016.03.002
14. Field, A. (2009). *Discovering Statistics Using SPSS for Windows* (3rd ed.). London: Sage.
15. Graff, M. (2003). Financial Development and Economic Growth in Corporatist and Liberal Market Economies. *Emerging Markets Finance and Trade, 39*(2) 47-69. https://doi.org/10.1080/1540496X.2003.11052534
16. Hansen, H., & Rand, J. (2006). On the Causal Links between FDI and Growth in Developing Countries. *The World Economy, 29*(1), 21-41. https://doi.org/10.1111/j.1467-9701.2006.00756.x
17. Huang, C. (2016). Is corruption bad for economic growth? Evidence from Asia-Pacific countries. *The North American Journal of Economics and Finance, 35,* 247-256. https://doi.org/10.1016/j.najef.2015.10.013
18. Jung, W. S. (1986). Financial Development and Economic Growth: International Evidence. *Economic Development and Cultural Change, 34*(2), 333-346. https://doi.org/10.1086/451531
19. Luintel, K. B., Khan, M., Arestis, P., & Theodoridisa, K. (2008). Financial structure and economic growth. *Journal of Development Economics, 86*(1), 181-200. https://doi.org/10.1016/j.jdeveco.2007.11.006
20. Mo, P. H. (2001). Corruption and Economic Growth. *Journal of Comparative Economics, 29*(1), 66-79. https://doi.org/10.1006/jcec.2000.1703
21. Moyo, D. (2009). *Dead Aid: Why Aid is Not Working and How There is Another Way for Africa*. London: Bloomsbury.
22. Naim, M. (2000). Washington consensus or Washington confusion? *Foreign policy, 118,* 86-103. https://doi.org/10.2307/1149672
23. Narayan, P. K., & Smyth, R. (2009). Multivariate Granger Causality between Electricity Consumption, Exports and GDP: Evidence from a Panel of Middle Eastern Countries. *Energy Policy, 37*(1), 229-236. https://doi.org/10.1016/j.enpol.2008.08.020
24. Owusu-Nantwi, V., & Erickson, C. (2019). Foreign direct investment and economic growth in South America. *Journal of Economic Studies, 46*(2), 383-398. https://doi.org/10.1108/JES-11-2017-0323
25. Piore, M., & Cardoso, C. F. (2017). *SENAI+ ISIs: the Silicon Valley consensus meets organizational challenges in Brazil* (MIT-IPC Working Paper 17-005). Cambridge, MA: MIT Industrial Performance Center. Retrieved from https://ipc.mit.edu/sites/default/files/2019-01/17-005.pdf
26. Qu, G., Slagter, B., Sylwester, K., & Doiron, K. (2019). Explaining the standard errors of corruption perception indices. *Journal of Comparative Economics, 47*(4), 907-920. https://doi.org/10.1016/j.jce.2019.07.003

http://dx.doi.org/10.21511/ppm.20(4).2022.17

27. Radikoko, I., Mutobo, S. A., & Mphoeng, M. (2019). The Impact of Stock Market Development on Economic Growth: The Case of Botswana. *International Journal of Economics and Finance, 11*(12), 149-159. https://doi.org/10.5539/ijef.v11n12p149

28. Rodrik, D. (2006). Goodbye Washington consensus, hello Washington confusion? A review of the World Bank's economic growth in the 1990s: learning from a decade of reform. *Journal of Economic literature, 44*(4), 973-987. https://doi.org/10.1257/jel.44.4.973

29. Sachs, J. D., & Warner, A. M. (2001). Natural Resources and Economic Development: The Curse of Natural Resources. *European Economic Review, 45*(4-6), 827-838. https://doi.org/10.1016/S0014-2921(01)00125-8

30. Schumpeter, J. A. (1911). *The Theory of Economic Development*. Cambridge, MA: Harvard University Press.

31. Swaleheen, M. (2011). Economic growth with endogenous corruption: an empirical study. *Public Choice, 146*(1), 23-41. https://doi.org/10.1007/s11127-009-9581-1

32. Taylor, J. (2010, November 10). *Another year, Another EU Audit SAGA*. The Economic Voice. Retrieved from https://www.economicvoice.com/another-year-another-eu-audit-saga/#axzz23WZIlqsf

33. Thurman, W. N., & Fisher, M. E. (1988). Chickens, Eggs, and Causality, or Which Came First? *American Journal of Agricultural Economics, 70*(2), 237-238. https://doi.org/10.2307/1242062

34. Transparency International. (2012). *Corruption Perceptions Index 2012*. Retrieved from https://www.transparency.org/en/cpi/2012/index/nzl

35. Tsanana, E., Chapsa, X., & Katrakilidis, C. (2016). Is growth corrupted or bureaucratic? Panel evidence from the enlarged EU. *Applied Economics, 48*(33), 3131-3147. https://doi.org/10.1080/00036846.2015.1136395

36. Uberti, L. J. (2022). Corruption and growth: Historical evidence, 1790–2010. *Journal of Comparative Economics, 50*(2), 321-349. https://doi.org/10.1016/j.jce.2021.10.002

37. Ugur, M. (2014). Corruption's direct effects on per-capita income growth: A meta-analysis. *Journal of Economic Surveys, 28*(3), 472-490. https://doi.org/10.1111/joes.12035

38. Wernerheim, C. M. (2000). Cointegration and Causality in the Exports-GDP Nexus: The Post-War Evidence for Canada. *Empirical Economics, 25*(1), 111-125. https://doi.org/10.1007/s001810050006