Effect of crude oil price changes on human development in Ghana: A structural equation modeling approach

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Abstract

While the effect of oil price fluctuations on the macro economy is well studied, their effect on human index remains under researched. Thus, this paper examines the effect of oil price changes on human development in Ghana using annual data covering the period from 1971 to 2019. In order to ascertain the specific effects of oil price changes on various human development components, the structural equation modeling approach was employed. The research findings revealed a negative and significant effect of oil price changes on school enrolment and GDP per capita. The study further showed a negative but insignificant relationship between oil price changes and life expectancy at birth. It is recommended that the government develops alternative sources of energy such as natural gas, solar power plants and biofuels so as to reduce the country's dependence on oil.

Keywords: Oil price, Structural equation, human development, life expectancy, GDP per capita, school enrolment

Introduction

In recent years, there has been growing interest in the link between crude oil price changes and the macro economy by researchers and policy makers. This may be as a result of the relatively volatile nature of crude oil prices. In the 1970s, crude oil price increased sharply to over US$40 a barrel and by the end of the decade it rose above US$100 (in nominal terms) per barrel (Aye et al., 2014). The price declined significantly in the 1980s but later became volatile and rose to US$145 per barrel by 2009 (Hamilton, 2009). A large body of empirical work suggest that the rapid changes in crude oil price has significant effect on economic activities as well as human development. Crude oil price fluctuations affect economies differently depending on whether they are oil importing or oil exporting economies. In the case of an oil exporting economy, crude oil price increase is expected to have a positive impact on the economy. On the other hand, a crude oil price increase is expected to adversely affect oil importing economies. Also, crude oil price fluctuations affect oil-importing economies differently depending on whether they are developed or developing countries (Kebalo, 2020). At the global level, however, crude oil price increases affect the world demand for goods and services. This is so because production activities that require the use of more oil become more expensive due to higher petroleum prices and production costs.

Crude oil production and exportation began in Ghana in 2010 and this led to a significant increase in the country's Gross Domestic Product of 15% in 2011 (Marbuah, 2017). In spite of this development, Ghana is still regarded as a traditionally net importer of crude oil and depends heavily on the product for domestic use (primary refinery operations and electricity generation). Thus, the importation of crude oil into the country continues to increase over the years. According to the Ghana Energy Commission's report for 2020, Ghana increased the volume of crude oil

importation from 197,000 tonnes in 2018 to 830,000 tonnes in 2019. This trend, undoubtedly, makes the Ghanaian economy often vulnerable to crude oil price shocks during periods of major price changes (Cantah & Asmah, 2015). Thus, human capital as well as the economic wellbeing of citizens are adversely affected. Gylfason (2001) posits that natural resources (such as crude oil) crowd out human capital investment. In the light of this, it is reasonable to investigate the extent to which fluctuations in crude oil prices can influence the human development index (HDI) in Ghana.

The discourse on oil price changes has often focused on the effect of oil price fluctuations on economic growth (Ftiti et al., 2016; Awunyo-Vitor et al., 2018; Van Eyden et al., 2019; Dabachi et al., 2020; Murshed & Tanha, 2021). However, the relationship between crude oil price fluctuations and HDI remains sparse. It is important to note that the HDI improves on Gross Domestic Product (GDP) per capita as an indicator of development by incorporating health and education aspects of development. Crude oil price changes are expected to impact negatively on human life conditions (health care and education) in net oil importing countries rather than merely affecting the GDP per capita. This is so because as the price of crude oil increases in the world market, the price of fuel at the pumps in oil importing countries (including Ghana) tend to increase thereby, increasing production costs and prices of most commodities in the domestic market. Thus, in an attempt to extend the realm of understanding, this paper seeks to address the lacuna by empirically examining the link between crude oil price changes and human development in Ghana. In doing so, we have opted to use human development components (life expectancy at birth, secondary school enrolment and GDP Per Capita) as the dependent variables. Decomposing the HDI discloses a better insight into the relationship between crude oil price changes and human development. According to Razmi et al. (2012), any factor that may increase these three

components, will lead to promoting human development. Additionally, the structural equation modeling technique (SEM) is employed for the empirical analysis. SEM has three main advantages over traditional multivariate techniques: (1) It provides an explicit assessment of measurement error; (2) It is used for the estimation of latent variables via observed variables; and (3) it is used for model testing. Unlike most multivariate techniques, SEM is used to estimate error variance parameters for both independent and dependent variables (Byrne, 2012)

So far, the closest investigation to the present paper is a study by Marza et al. (2018) which examined the impact of oil price fluctuations on HDI in Iraq using the EGARCH model and the ARDL approach. However, the present investigation differs from Marza et al. (2018) in two substantial ways. First, the authors used HDI as the dependent variable but the current study examines the link between crude oil price changes and HDI components (i.e. life expectancy at birth, school enrolment and GDP per capita) using SEM. Second, whereas the authors' study was on an oil exporting country the present paper is on a traditionally net oil importing country. Thus, this paper provides the first empirical attempt on the effect of crude oil price changes on human development both at the national and continental level. Empirical findings from this paper would provide guidelines for policy makers to discuss and improve the human development in Ghana and other oil importing economies.

The rest of the paper proceeds as follows: Section 2 deals with literature review whilst Section 3 describes the methodology used for the study. Section 4 discusses the empirical findings and Section 5 deals with the conclusion and policy recommendations.

Literature Review

Theoretically, the transmission channels through which oil prices have an impact on economic activities and human capital include the demand side effect, the supply side effect, the

wealth transfer effect, the real balance effect, the inflation effect, the sector adjustment effect and the unexpected effect (Ahmad, 2013). According to the supply side effect, an increase in oil prices leads to a decline in the output level and this is due to the fact that oil is considered as the basic factor of production (Beaudreau, 2005). The demand side effect refers to the adverse effect of oil price shocks on investment and consumption. In an attempt to meet the high costs of production, firms begin to downsize and offer lower wages to their employees. Consequently, this leads to a fall in the demand for consumer goods (Ahmad, 2013). The wealth transfer effect involves the transfer of wealth from oil importing countries to oil exporting countries in the form of oil payments (Brown & Yücel, 2002). The transfer of wealth from oil importing countries results in a reduction in the demand for consumer goods in those countries and an increase in consumer demands for oil exporting countries (Ahmad, 2013). Real balance effect is the fourth transmission channel espoused by Enzler and Pierce (1974) and Mork (1994). The authors posit that an increase in oil prices leads to a corresponding increase in money demand. When there is a failure on the part of the monetary authorities to meet the growing money demand, interest rate rises result and this consequently slows down growth rate. Inflation effect is fifth transmission effect put forward by Tang et al. (2010). According to the authors, whenever there is a rise in the domestic inflation rate due to oil price shocks, the government tries to control the inflation by implementing deflationary monetary policy. This consequently, leads to a decrease in long term output and employment.

The sixth transmission channel is the sector adjustment effect proposed by Beaudreau (2005). This channel explains how oil price shocks lead to relative increases in the costs of production in some industrial sectors and its implications on employment. Unexpected effect is the seventh transmission channel espoused by Brown and Yucel (2002). This channel explains the

uncertainty associated with direction of crude oil prices and the impact it has on economic activities.

Many empirical studies have been conducted on the relationship between oil price fluctuations and various components of human development. For instance, a study by Oduyemi and Owoeye (2020) examines the co-movement of oil price fluctuations and health outcomes in Nigeria, which is Africa's largest oil producer, using time series data from 1980 to 2017 and employing the Vector Autoregressive Model (VAR) approach. The findings reveal that health outcomes are not adversely affected by oil price shocks, with increases in oil price contributing to an improvement in life expectancy at birth in the short- as well as in the long-run. The results suggest that changes in health outcomes are not conditioned on oil price shocks, but rather attributed to other factors such as government spending in times of resource windfalls and downturns.

Similarly, Abdel-Latif et al. (2018) investigated the asymmetric impacts of oil price shocks on government expenditure on health and education in Saudi Arabia, using a quarterly dataset from 1990Q1 to 2017Q2, and employing a non-linear autoregressive distributive lag (NARDL) model. The results indicate a positive co-movement of oil price and government expenditure. Specifically, a 1 percent change in oil price leads to a 0.059 and 0.58 percent change in government expenditure on health and education, respectively, in the long run. The findings, further reveal that, the impacts of shocks on government expenditure are asymmetrical in the long run, but symmetrical in the short run. Thus, in the long run, the impact of a positive oil shock on educational expenditure is more pronounced than the effects of a negative oil shock, while the reverse is true for the shocks effect on health expenditure.

Cantavella (2020) analyzes the asymmetric impact of crude oil prices on the real per capita Gross Domestic Product (GDP) between 1945 and 2018 in Spain, an oil importing country. The study concludes that lower crude oil prices increase the per capita GDP while higher prices decrease it. Similarly, Bruckner et al. (2012) investigate the effect of oil price shocks on income and democracy using dataset spanning the period 1960 – 2007 and employed the Two Stage Least Squares (2SLS) and the Generalized Method of Moments (GMM) techniques. The findings reveal a significant, positive and persistent impact of oil price change on purchasing-power-parity GDP per capita growth, with the results showing that a 10 percent increase in international oil prices leads to approximately 1 percent increase in per capita income.

Using the Non-Linear Auto-Regressive Distributive Lag (NARDL) approach, Mahmood and Murshed (2021) examine the asymmetric impact of oil price changes on economic growth in Saudi Arabia. The study finds a symmetrical co-movement of oil price and income in the long-run, while in the short-run, an asymmetrical relationship was established. The study further show that, the positive effect of oil price increase on income is the same as the negative effect of oil price decrease on income in the long-run. Furthermore, in the short-run, the positive effect of oil price increase on income is more pronounced than the negative effect of oil price decrease on income.

In contrast, Akinsola and Odhiambo (2020) used the NARDL technique to examine the asymmetric effect of oil price on economic growth in low-income oil-importing countries in the sub-Saharan African (SSA) region. The findings show a negative co-movement of real oil price and real GDP per capita. This results confirm the a priori expectation of a negative relationship between oil price and economic growth of oil importing countries. Similarly, using the structural vector autoregressive technique, Chiweza and Aye (2018) adopted a monthly data covering the

period between 1990 and 2015 to investigate the effect of oil price uncertainty on key macroeconomic indicators in South Africa. The study concludes that oil price uncertainty impacts negatively on the South African economy.

From the above, it can be seen clearly that even though there are several studies on crude oil price fluctuations, a major shortcoming in the literature is the absence of a specific empirical study on the relationship between oil price changes on the one hand and decomposed human development index on the other. This therefore motivates further studies on the subject.

Methodology and data source

Data Source

This paper selects annual time series data from 1971 to 2019 as the analysis period from the World Development Indicators (WDI) of the World Bank. The data on crude oil prices is obtained from the Federal Reserve Bank of St. Louis.

Empirical model

The SEM technique is used in analyzing the effect of crude oil price changes on human development. The model aims to capture the causal effects among exogenous and endogenous variables. Unlike the traditional multivariate techniques, SEM provides greater flexibility for the researcher to test the structure coefficients (Fan, 1997) and also allows the researcher to simultaneously consider relationships among multiple independent and dependent constructs (Amoh et al., 2019).

Following Marza et al. (2018), the multivariate models are specified as follows:

$$life_t = \beta_0 + \beta_1 Oilshock_t + \beta_2 lnFDI_t + \beta_3 LR_t + Dummy_t + \mu_t \quad (1)$$

$$enrol_t = \beta_0 + \beta_1 Oilshock_t + \beta_2 lnFDI_t + \beta_3 LR_t + Dummy_t + \mu_t \quad (2)$$

$$lnGDPPC_t = \beta_0 + \beta_1 Oilshock_t + \beta_2 lnFDI_t + \beta_3 LR_t + Dummy_t + \mu_t \quad (3)$$

The β_s are the coefficients, t represents time, $life$ is life expectancy at birth, $lnFDI$ is natural log of foreign direct investment, LR is interest (lending) rate, $enrol$ is secondary school enrolment as a percentage of gross enrolment, $lnGDPPC$ is natural log of Gross Domestic Product per capita and $Dummy$ is a dummy variable for economic reforms in Ghana where 0 represents the years before the reform period (i.e. from 1971-1982) and 1 represents economic reforms period starting from 1983 to 2019. Finally, $Oilshock$ represents oil price change. In this paper, we use the conventional first difference transformation of oil price variable (in natural logarithm) as the definition of oil price change (see Kumar, 2005). Thus, oil price change ($Oilshock$) is measured as follows:

$$\Delta Oilprice = \ln Oilprice_t - \ln Oilprice_{t-1}$$

Table 1: Definition and measurement of exogenous variables

Variable	Definition	Expected signs
$Oilshock$	Crude oil price change between the current period and the previous period	negative

$lnFDI$	The natural log of foreign direct investment inflow into Ghana	positive
LR	The interest (lending) rate	negative
$Dummy$	Dummy variable to capture economic reforms in Ghana	positive

Source: Based on authors' a priori expectations

Analytical procedures were conducted using the STATA software and the Maximum Likelihood Estimation (MLE) approach was employed to estimate the SEM. The MLE is a method used in determining values for a chosen model.

Empirical Findings and Discussion

In this section, we present the path analysis and empirical findings and discussions.

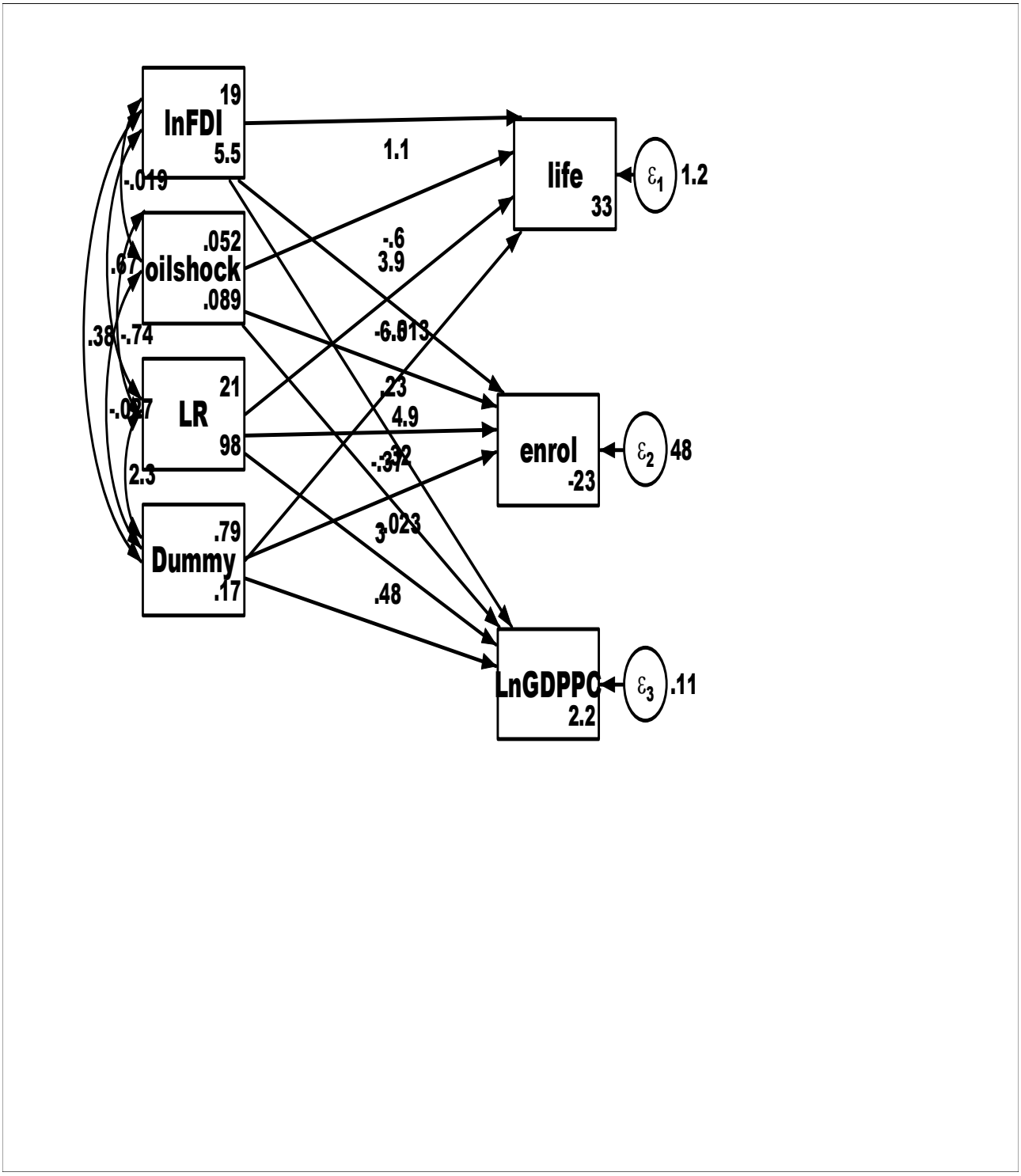
Path analysis of models

Model 1: Oilshock, lnFDI, LR, Dummy – > life (4)

Model 2: Oilshock, lnFDI, LR, Dummy – > enroll (5)

Model 3: Oilshock, lnFDI, LR, Dummy – > lnGDPPC (6)

Figure 1 shows the structural equation model's path diagram establishing the relationships among the exogenous and endogenous variables.



Source: Authors' Computation from WDI (2021) and Federal Reserve Bank of St. Louis (2021).
Figure 1: Path Analysis Indicating the Relationships Among the Exogenous and Endogenous Variables

In Figure 1, the means, variances and co-variances the coefficients of the exogenous variables, are identified. In the model framework, life, enroll and lnGDPPC are the endogenous variables interacting with the exogenous variables, Oilshock, lnFDI, LR and Dummy. Table 2 presents the direct effects of the model.

Table 2: Model Estimation Results- Direct Effects

Endogenous variable	Exogenous Variable	Coefficient
	$Oilshock$	-0.605
		(0.552)
	$lnFDI$	1.101^{***}
		(0.076)
	LR	-0.0128
		(0.020)
	$Dummy$	4.930^{***}
		(0.528)
$life$	$Cons$	33.027^{***}
		(8.772)
	$Oilshock$	-6.461^{*}
		(3.507)
	$lnFDI$	3.860^{***}
		(0.482)
	LR	-0.373^{***}
		(0.128)
	$Dummy$	2.999
		(3.356)
$enrol$	$Cons$	-22.832^{***}
		(8.772)
	$Oilshock$	-0.321^{*}
		(0.166)
	$lnFDI$	0.229^{***}
		(0.023)

	LR	-0.023^{***}
		(0.006)
	$Dummy$	0.475^{***}
		(0.159)
$lnGDPPC$	$Cons$	2.187^{***}
		(0.416)

Note: *p < 0.10; **p < 0.05; ***p < 0.01. standard errors in parentheses.

Source: Authors' computation from WDI (2021) and Federal Reserve Bank of St. Louis (2021)

From Table 2, it can be seen clearly that crude oil price changes influence changes in secondary school enrolment and GDP per capita. Holding other factors constant, 1% increase in crude oil price leads to a decrease in secondary school enrolment by 6% and this is statistically significant at p< 10%. Similarly, a 1% increase in crude oil price leads to a decrease in GDP per capita by 0.321% and this is statistically significant at p< 10%. This result is consistent with the study by Cantavella (2020) which concludes that higher prices of crude oil decrease GDP per capita for Spain. The results also reveal that crude oil price changes in life expectancy at birth is statistically insignificant.

The results also reveal that FDI influences life expectancy at birth, secondary school enrolment and GDP per capita. All other things being equal, a 1% increase in FDI leads to an increase in life expectancy at birth by 1.1% and this is statistically significant at 1%. This result coincides with the findings by Timothy (2018) and Alam et al. (2016) which show that an increase in FDI results in an increase in life expectancy at birth in Nigeria and Pakistan respectively. Similarly, a 1% increase in FDI leads to an increase in secondary school enrolment by 3.86% ceteris paribus and this is statistically significant at 1%. This result supports the study by Gokmenoglu et al.(2018) which finds evidence that FDI has a positive and statistically significant effect on school enrolment in Nigeria. Again, a 1% increase in FDI leads to an increase in GDP

per capita by 0.229% holding other factors constant and this is statistically significant at 1%. This result is consistent with the studies by Oladele (2015) and Ma'in and Isa (2020) which reveal that FDI has a positive impact on GDP per capita in Nigeria and Malaysia respectively.

The results further indicate that there is an inverse relationship between lending rate and the three human development components used in the analysis. An increase in lending rate by 1%. holding other things constant, leads to a decrease in secondary school enrolment by 0.373% and this result is statistically significant at 1%. Again, a 1% increase in lending rate leads to a decrease in GDP per capita by 0.023% and this is statistically significant at 1% *ceteris paribus*. There is also an inverse relationship between lending rate and life expectancy at birth but this is statistically insignificant.

Additionally, economic reforms have a positive relationship with the three human development components. Holding other factors constant, economic reforms improves life expectancy at birth and GDP per capita and this is statistically significant at 1%. However, the relationship between economic reforms and secondary school enrolment is statistically insignificant.

Table 3: Equation-Level RMSEA and SRMR Goodness of Fit

Endogenous Variable	Fitted	Variance Predicted	R^2	m^2
$life$	16.069	14.890	0.93	0.927
$enrol$	149.486	101.866	0.68	0.681
$lnGDPPC$	0.525	0.418	0.80	0.80
Overall R^2			0.97	

Standardised Root Mean Residual (SRMR)	0.041
Root mean square error of approximation (RMSEA)	0.002

m^2 indicates the Bentler-Raykov squared multiple correlation coefficient

Source: Computed from WDI, 2021

SRMR is the square root of the difference between the residuals of the sample covariance matrix and the hypothesized covariance model (Hooper et al., 2008). It allows for the examination of the average magnitude of the discrepancies between observed and expected correlations as an absolute measure of a fit criterion. According to Hu and Bentler (1999) a model with an SRMR as high as 0.08 is acceptable and an indication of a good model fit. Thus, our SRMR of 0.046 shown in Table 3 indicates that our model is a good fit.

The RMSEA indicates how the model, with optimally chosen parameter estimates would fit the populations covariance matrix (Byrne, 1998). According to Hu and Bentler (1999), RMSEA of not more than 0.07 is an indication of a good model fit. Thus our RMSEA of 0.02 shown in Table 3 indicates that our model is a good fit.

The overall R^2 of 0.97% indicates that the models jointly and significantly explain the relationship between crude oil price fluctuations and human development. Individually, 93%, 68% and 80% of the changes in life expectancy at birth, secondary school enrolment and GDP per capita respectively, are accounted for by changes in the exogenous variables.

Model Stability

All three models recorded a stability index of zero with all the zero eigenvalues lying inside the unit circle. Thus, the SEM path analysis satisfies the stability condition.

Wald Joint Significance Test

According to Hoyle (1995), the Wald test provides information about the change in chi-square that results if free parameters are fixed. A p-value of less than 5% indicates the rejection of the null hypothesis that exogenous variables do not jointly affect the endogenous variable. It can be seen from Table 4 that, all the exogenous variables (Oilshock, lnFDI, LR, Dummy) jointly and significantly affect the endogenous variable in Equation 1(life), Equation 2 (enrol) and Equation 3 (lnGDPPC).

Table 4: Wald Test for Equations

Observed variable	Chi2	Df	P-value
life	593.72	4	0.000
enrol	100.54	4	0.000
ln *GDPPC*	193.25	4	0.000

Source: Computed from WDI, 2021

Conclusion and Policy Recommendations

This paper was motivated by the lack of empirical study on the effect of crude oil price changes on human development. It employed the SEM approach to estimate the separate effect of oil price changes on human development components namely; life expectancy at birth, secondary school enrolment and GDP per capita. Annual data covering the period 1971 to 2019 was used for the empirical analysis and the results revealed a negative and statistically significant link between crude oil price on the one hand and secondary school enrolment and GDP per capita on the other for oil importing countries. The results further show that the effect of crude oil price on life expectancy at birth is negative but statistically insignificant.

Based on the aforementioned findings, we recommend that the government develops alternative sources of energy such as natural gas, solar power plants and biofuels so as to reduce the country's dependence on oil. This would help improve human development in the country and also make Ghana's economy more resilient to world crude oil price fluctuations. We encourage future research to extend the literature by examining the effect of exchange rate uncertainty on human development in Ghana.

References

Abdel-Latif, H., Osman, R. A., & Ahmed, H. (2018). Asymmetric impacts of oil price shocks on government expenditures: Evidence from Saudi Arabia. *Cogent Economics & Finance*, *6*(1), 1512835. https://doi.org/10.1080/23322039.2018.1512835

Ahmad, F. (2013). The effect of oil prices on unemployment: evidence from Pakistan. *Business and Economics Research Journal,* 4(1), 43–57.

Akinsola, M. O., & Odhiambo, N. M. (2020). Asymmetric effect of oil price on economic growth: Panel analysis of low-income oil-importing countries. *Energy Reports*, *6*, 1057- 1066.https://doi.org/10.1016/j.egyr.2020.04.023

Alam, M. S., Raza, S. A., Shahbaz, M., & Abbas, Q. (2016). Accounting for contribution of trade openness and foreign direct investment in life expectancy: The long-run and short-run analysis in Pakistan. *Social Indicators Research*, *129*(3), 1155–1170.

Amoh, J. K., Abdallah, A.-M., & Fosu, R. A. (2019). Does foreign direct investment cause financial sector development–evidence from an emerging economy. *Review of Economic and Business Studies*, *12(1)*, 35-57.

Asongu, S., & Nting, R. (2021). The role of finance in inclusive human development in Africa revisited. *Journal of Economic and Administrative Sciences*.

Asongu, S., & Nwachukwu, J. (2015). Finance and Inclusive Human Development: Evidence from

Africa. *Brussels Economic Review, Forthcoming, African Governance and Development Institute Working Paper*, (15/061).

Awunyo-Vitor, D., Samanhyia, S., & Bonney, E. A. (2018). Do oil prices influence economic growth in Ghana? An empirical analysis. *Cogent Economics & Finance*, *6*(1), 1496551.

Aye, G. C., Dadam, V., Gupta, R., & Mamba, B. (2014). Oil price uncertainty and manufacturing production. *Energy Economics*, *43*, 41–47.

Beaudreau, B. C. (2005). Engineering and economic growth. *Structural Change and Economic Dynamics*, *16*(2), 211–220.

Brown, S. P., & Yücel, M. K. (2002). Energy prices and aggregate economic activity: An interpretative survey. *The Quarterly Review of Economics and Finance*, *42*(2), 193–208.

Brückner, M., Ciccone, A., & Tesei, A. (2012). Oil price shocks, income, and democracy. *Review of Economics and Statistics*, *94*(2), 389-399.

Byrne, B. M. (1998). *Structural equation modeling with LISREL, PRELIS, and SIMPLIS: Basic concepts, applications, and programming*. Mahwah, NJ: Erlbaum.

Byrne, B. M. (2012). Choosing structural equation modeling computer software: Snapshots of LISREL, EQS, AMOS, and Mplus. In R. H. Hoyle (Ed.), *Handbook of structural equation modeling* (pp. 307–324). The Guilford Press.

Cantah, W., & Asmah, E. (2015). Crude oil price and growth of output: The case of Ghana. *International Journal of Economics, Commerce and Management*, *3*(5), 470- 498

Cantavella, M. (2020). Fluctuations of Oil Prices and Gross Domestic Product in Spain. *International Journal of Energy Economics and Policy*, *10*(2), 57.

Chiweza, J. T., & Aye, G. C. (2018). The effects of oil price uncertainty on economic activities in South Africa. *Cogent Economics & Finance*, *6*(1), 1518117.

Dabachi, U. M., Mahmood, S., Ahmad, A. U., Ismail, S., Farouq, I. S., Jakada, A. H., & Kabiru, K. (2020). Energy consumption, energy price, energy intensity environmental degradation, and economic growth nexus in african OPEC countries: Evidence from simultaneous equations models. *Journal of Environmental Treatment Techniques*, *8*(1), 403–409.

Enzler, J., & Pierce, J. (1974). The effects of inflationary shocks. *Brookings Papers on Economic Activity*, *1*, 13–54.

Fan, X. (1997). *Effects of data nonnormality and other factors on fit indices and parameter estimates for true and misspecified SEM models.*

Federal Reserve Bank of St. Louis, (2021). Crude oil prices: Brent – Europe.

Ftiti, Z., Guesmi, K., Teulon, F., & Chouachi, S. (2016). Relationship between crude oil prices and economic growth in selected OPEC countries. *Journal of Applied Business Research (JABR)*, *32*(1), 11–22.

Ghana Energy Commission, (April, 2020). Energy (demand and supply) outlook for Ghana. Available at: http://www.energycom.gov.gh/planning/data-center/energy-outlook-for-Ghana

Gökmenoğlu, K. K., Apinran, M. O., & Taşpınar, N. (2018). Impact of foreign direct investment on human development index in Nigeria. *Business and Economics Research Journal*, *9*(1), 1–14.

Gylfason, T. (2001). Natural resources, education, and economic development. *European Economic Review*, *45*(4–6), 847–859.

Hamilton, J. D. (2009). Understanding crude oil prices. *The Energy Journal*, *30*(2), 179- 206

Hooper, D., Coughlan, J., & Mullen, M. (2008). Evaluating model fit: A synthesis of the structural equation modeling literature. *7th European Conference on Research Methodology for Business and Management Studies*, 195–200.

Hoyle, R. H. (1995). *The structural equation modeling approach: Basic concepts and fundamental issues.*

Hu, L., & Bentler, P. M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling: A Multidisciplinary Journal*, *6*(1), 1–55.

Kebalo, L. (2020). Effects of oil price shocks on economic sectors of net oil-importing countries: Case of Togo. *Economics Bulletin*, *40*(4), 2689–2703.

Kumar, S. (2005). The macroeconomic effects of oil price shocks: Empirical evidence for India. *Available at SSRN 900285*.

Ma'in, M., & Isa, S. S. M. (2020). The impact of foreign direct investment on economic growth in Malaysia. *Advances in Business Research International Journal*, *6*(1), 25–34.

Mahmood, H., & Murshed, M. (2021). Oil price and economic growth nexus in Saudi Arabia: Asymmetry analysis. *International Journal of Energy Economics and Policy*, *11*(1), 29.

Marbuah, G. (2017). Understanding crude oil import demand behaviour in Africa: The Ghana case. *Journal of African Trade*, *4*(1–2), 75–87.

Marza, M., Shaaibith, S. J., & Daly, S. S. (2018). Impact of oil price fluctuations on human development: A standard study of Iraq. *The Journal of Social Sciences Research*, 396–399.

Mork, K. A. (1994). Business cycles and the oil market. *The Energy Journal*, *15*(Special Issue).

Murshed, M., & Tanha, M. M. (2021). Oil price shocks and renewable energy transition: Empirical evidence from net oil-importing South Asian economies. *Energy, Ecology and Environment*, *6*, 183–203.

Oduyemi, G., & Owoeye, T. (2020). Oil price fluctuation and health outcomes in an oil exporting country: Evidence from Nigeria. *International Journal of Energy Economics and Policy*, *10*(4), 212.

Oladele, A. A. (2015). Sectoral inflow of foreign direct investment and economic growth in Nigeria. *Journal of Economics and Sustainable Development*, *6*(17), 168–172.

Razmi, M. J., Abbasian, E., & Mohammadi, S. (2012). *Investigating the effect of government health expenditure on HDI in Iran*. KMRP.

Tang, W., Wu, L., & Zhang, Z. (2010). Oil price shocks and their short-and long-term effects on the Chinese economy. *Energy Economics*, *32*, S3–S14.

Timothy, P. O. (2018). Impact of Economic Globalization on Life Expectancy in Nigeria. *Health Econ Outcome Res Open Access*, *4*(152), 2.

Van Eyden, R., Difeto, M., Gupta, R., & Wohar, M. E. (2019). Oil price volatility and economic growth: Evidence from advanced economies using more than a century's data. *Applied Energy*, *233*, 612–621.

World Bank, (2021). World development indicators on online (WDI) database*,* Retrieved March 12, 2021, from World Bank: http://www.worldbank.org