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NATURAL RESOURCE ABUNDANCE AND ECONOMIC GROWTH IN NIGERIA(1980-2015)

Ewubare Dennis Brown, Kakain Stephen,

Department of Agricultural and Applied Economics, Rivers State University, Port Harcourt, Nigeria.

ABSTRACT: *The paper examined the impact of natural resource abundance on economic growth in Nigeria. The objectives of the study were to examine the impact of petroleum production on Nigerian economy, the impact of natural gas on the Nigerian economy, the impact of coal on Nigerian economy and the impact of limestone extraction on Nigerian economy. The Secondary data on GDP, Petroleum Production, Natural gas, coal and limestone (Dependent and Independent variables) are obtained from the CBN statistical bulletin and National Bureau of Statistics. The econometrics method of OLS, co-integration and Error Correction Mechanism were used for the analysis. The result of the unit root test showed that all the variables (GDP, Petroleum production, Natural gas, coal and Limestone) were stationary. The parsimonious error correction model indicated that R^2 is 52%, meaning that the dynamic model is a good fit. The Durbin Watson value of approximately 2.0, suggests a lesser level of autocorrelation. Furthermore, the coefficient of petroleum (PR) is positively signed but statistically not significant at 55 level with GDP. The coefficient of Natural Gas (NG) is positively signed but statistically not significant at 5% level with GDP. The coefficient of coal (CL) is positively signed and statistically significant at 5% level with GDP. The coefficient of limestone (LS) is positively signed but statistically not significant at 5% level with GDP. Based on this results, this paper we recommends that Nigerian government must as a matter of urgency, look beyond crude oil and natural gas but look inward in harnessing the huge natural resources in the country to engender growth and development of the economy. Also, there should be a stabilization in spending of natural resource proceed to ensure stable and moderate economic growth.*

KEYWORD: Natural Resource, Natural Resource Abundance, Economic growth.

INTRODUCTION

Background to the study

Natural resources endowment is an important source of national wealth, which enhances a country's potential for economic growth around the world. Yet, the vast availability of these rich endowments through a number of empirical studies has shown that they are neither necessary nor sufficient for economic prosperity. Natural resources of a nation generally include the land area, nature and quality of the soil, richness and quality of the forest, minerals,good river, good bracing climate and hydrocarbons etc.

Auty,(2001) classified natural resources into two categories; namely point source and diffuse economies. There are countries like Nigeria that are genuinely rich in both categories of natural resources but still have not been able to sustain the much desire economic growth.

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Natural resource abundance refers to all resources that exist in the natural state and systems that are or can be useful to man in the actual technological, economic and social circumstances which accounts for more than 23 percent of the value of a country's total export. Theoretically, the abundance of natural resources in Nigeria is expected to promote long run economicgrowth However, a large number of studies have shown that resource abundant countries perform poorly in terms of economic growth and prosperity compared to resource poor countries, Sachs and Warner (1995). The negative relationship between natural resource abundance and a nation's output and prosperity is being referred to resource curse by Auty (2001).

Nigeria is endowed with abundant mineral and natural resources which amounts to over 34 occurrences ranging from industrial materials, iron ore, tin-ore, limestone, coal, lead, zinc, columbite, marbles, bitumen and tar sand, statistically, the exploitation of these minerals is very minimal in relation to the level of deposits found in the country. Nigeria was among the largest producers of columbite, 6th largest producer of Tin, 8th largest producer of crude oil and gas.

About 31.3 percent of the total land area in the country is arable, of this, 3.0 percent of the total land is for permanent crop cultivation, 23.0 percent for meadows and pastures, 15.0 percent is the forest woodland region while 28.0 percent is for other uses with negligible percent for irrigation. Nigeria is also blessed with abundant maritime resources, water constitutes about 1.4 percent of the country's total area which provides an abundance of fish of large variety capable of producing about 600,000 metric tons of fish annually and producing less than 12 percent of their estimated fishery potential Mordi et al.

The country's oil and gas accounts for about 21.9 percent of GDP, 56.4 percent of foreign exchange receipts and 88.6 percent of government revenues in 2015. Prior to the discovery of oil in the 1960s and the oil boom era, Nigeria depended largely on primary commodities and artisanal mining for export and revenue. During this period, agriculture and artisanal mining accounts for 60 percent of GDP and approximately 60.0 percent of the labour force. The oil boom of the early 1970s resulted to a neglect of agriculture and other sources of revenue generation. During the study period, mining sector has not significantly contributed to GDP between 1980-2015 period, it peaked to 0.34 percent of total GDP at 1990 constant basic prices in 1982.

Nigeria's economic performance in the past three decades was generally poor. Over the period 1980-2015, annual GDP growth had averaged 3.5-4 per cent per annum which implied contraction in per Capita GDP with an increasing population growth rate of 3.8, which resulted in deterioration of living standards for most citizens. A major challenge for the Nigerian Economy is its macroeconomic volatility driven by external terms of trade shocks, the country's large reliance oil export earnings, misplaced priorities and perceived massive corruption which were transferred directly into the domestic economy. Volatility in public expenditure showed over reliance on oil earnings and weak fiscal discipline by successive governments.It has a prolonged period of economic stagnation, rising poverty levels, decline institutional qualities, low infrastructure, very low human development index, poor condition of the power sector and also income distribution deteriorate very sharply which leads to prolong economic stagnation, rising poverty levels, decline Institutional qualities, low infrastructure, very low Human Development Index, and income distribution declined sharply.

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It is not so much the availability of these abundance resourcesthat created the downturn and negative relationship in the growth of the economy but the failure of public authorities and institutions to meet the policy challenge of the abundance of these resources.

This paper examined the impact of natural resource to the growth of Nigeria economy in the period understudy (1980-2015).

REVIEW OF RELATED LITERATURE

The theoretical literature abounds on the relative impact of natural resource abundance on the economy. Although, there are economic analysts who offered earlier theories about the negative impact of natural resources on growth, for example, Gelb (1988) and Auty (1993), Sachs and Warner (1995) were the first to display any observational review to affirm that impact. They utilize the yearly growth rate in GDP per capita as the needy variable and the proportion of essential item fare to GNP as the free factor to look at levels of natural resources in various nations and find that there is a reverse relationship between them amid the period 1970-1990. The relationship stays hearty notwithstanding when they control for different elements, for example, initial GDP, openness strategy, investment, human capital, establishment quality and so forth.

Moreover, just two out of the eighteen asset inexhaustible developing nations, Malaysia and Mauritius, could manage a growth rate of 2 percent yearly. In 2001, Sachs and Warner did a contextual analysis of the natural resources curse in seven Latin American nations. They utilize time-series information to distinguish whether resource boom happened in those nations and dissect how growth rates contrast prior and then afterward such boom. In nations with resource booms, Bolivia, Mexico and Venezuela endured slower development a short time later, while Ecuador raised its GDP at first however is development rate a short time later was not speedier.

Norrbin, Onsurang and LillaBors (2008) test the legitimacy of the natural resources wealth and financial development by inspecting Sachs and Warner's model. Utilizing similar factors with redesigned information from 1970 to 2000 however changing the example choice, they find that the resource curse swings out to unimportant. Nonetheless, they understand that amid such a long stretch of thirty years, there can be diverse development designs that make it hard to evaluate the natural resources negative relationship. Subsequently, they partition the period into three decades and six semi decades, and find that the negative relationship gets to be distinctly powerful again notwithstanding when the example choice fluctuates. Butkiewicz and Yanikkaya (2010) somewhat affirm that characteristic asset and financial development negative relationship exists, yet just in creating nations and not in created nations.

Bagheri (2014) concentrated the effect of natural resources abundance and monetary development, utilizing a time series data of period 46year from 1965 to 2011 with significant intermediaries to quantify the nearness of oil reliance. The outcomes from the experimental regression analysis bolster the negative relationship holds within the sight of abundance normal resources.

Papyrakis and Gerlagh (2004) used the absolute convergence hypothesis to examined resource abundance and economic growth in the US. By focusing on initial income levels to account for the variability in income growth among regions.Empirical data show that natural resource abundance decreases investment, schooling, and openness and R&D expenditure and increases

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corruption and they show that these effects fully explain the negative effect of natural resource abundance in growth.

Chong-Sup Kim and Yeon-silkim (2008) examined Natural Resource Abundance and Economic Growth Revisited: Latin America and Developed countries from a comparative perspective: taken the basic framework of Sachs and Warner (1995), thus, examining the consistency of their results with the longer period of 1970 to 2005, instead of 1970-1990. Their findings once more highlight the views of Sachs and Warner: that, there is a negative relationship between economic growth and a high ratio of natural resource exports. Thus, this study supports the idea of Dutch Disease.

Gylfason and Zoega (2001) who studied Natural Resources and Economic Growth: The role of investment: Empirical evidence from 85 countries from 1965 to 1988 suggests that natural capital may on average crowd out physical as well as human capital, thereby inhibiting economic growth. The results also suggest that across countries, heavy dependence on natural resources may hurt saving and investment indirectly by slowing down the development of the financial system.

Gylfason (2001), reviews the relationship between natural resources and economic growth and stresses how natural capital tends to crowd out foreign capital, social capital and physical capital thereby impending economic growth across countries and presumable also over time.

Sala-i-Martin and Subramanian (2003) analyzed some natural resource oil and minerals specifically apply a negative and nonlinear effect on development by means of their pernicious effect on institutional quality, waste, debasement and Dutch disease has been in charge of its poor long run economic performance.

Ades and Tella (1999) are the first to look at the relationship between natural resource and debasement. They see that natural resource abundance in numerous nations has a tendency to produce lease looking for conduct, which thus prompts to debasement. Their exact model confirms that nations with firms that appreciate higher rents have a tendency to have higher defilement levels. In this way, institutional quality can be a channel through which natural resource abundance harms monetary development. Leile and Weidemann (1999) affirm this outcome, including that defilement has even a more prominent negative impact on development in less created nations.

Ajie and Ewubare (2011) contended that negative relativity of natural resource abundance and financial development in Less Developed Country (LDC) is thus of unutilization and underutilization, that monetary development happens when there is legitimate abuse through improved technology great institutional quality and initiative.

Akanni, (2007) conducted a data regression analysis for the period 1970 to 2000 for 47 countries and found that only oil rents have failed to promote economic growth but with the availability of other natural resource with its proper exploitation and utilization, economic growth could be achieved.

Oaikhinan (2015) studied natural resources and economic development in Nigeria and found that the country is slow and backward because, she failed to explore other abundant natural resource, instead of depending on only crude oil revenue and extinct or abandoning other minerals. However, other economists have refuted the negative relationship in natural resource and economic growth by offering different explanations.

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David (1995) reports that a specimen of 22 nations rich in natural resources from 1970 to 1991 perform well as a gathering in looks at to other non-mineral developing nations. He doesn't concur that abundance of natural resource for the most part prompts to financial underperformance and alludes to those with moderate monetary development as special cases.

Ding and Field (2005) Contest the meaning of abundance of natural resource by Sachs and Warner. They rethink abundance of natural resource as a mix of common asset blessing and characteristic asset reliance and express that Sachs and Warner's proportion of essential fares to GNP just measures the reliance. Utilizing a three condition recursive model and considering human capital, they demonstrate that natural resource negative relationship vanishes, which implies that there is no negative relationship between abundance of natural resource and monetary development.

Brunnschweiler and Bulte (2008), having same meaning of abundance of natural resource, display comparative confirmation that resource reliance does not influence development, and further show that resource endowment is really connected with higher development.

Manzano and Rigobon (2001), negate the common natural resource curse in two stages. To start with they watch that every one of the reviews that bolster the negative relationship utilize cross sectional data. Subsequently, they utilize panel data rather and find that the resources curse is not significant, recommending that past studies have brought about omitted variable biases. At that point, they clarify that the moderate development of the nations with resource abundance might be because of a debt overhang. In the 1970s, when the product costs were high, those nations acquire unnecessarily, utilizing their assets as security. Subsequently, when product costs fell in the 1980s, they experience the ill effects of debt overhang, a circumstance in which their debt accumulated and they didn't have enough income to finance it, which impeded their financial development. In any case, these two clarifications are by and by negated by Butkievwicz and YaniKkaya (2010) on the grounds that they present evidence with panel data that natural resource curse exists and at the same time show that it exists independently of a country's national debt.

Adu (2012) Investigated the relationship between long run economic growth in Ghana and Natural resource abundance, biased on time series econometric techniques, his unit root tests indicate that all the variables in their models are integrated of order one and thus have unit roots. He proposed the Philips-Hansen Fully modified least square estimator, using nine alternative specifications, the result rejected the resource curse hypothesis. Only one per capita crop land out of the nine alternative measures consistently.

METHODOLOGY

The study used time series data from 1980 to 2015.The data was obtained from Central Bank of Nigeria statistical bulletin and National Bureau of Statistics of various issues. Data were tested using Augmented Dickey-Fuller(ADF) unit root test, Johansen's co-integration test and Parsimonious Error Correction Mechanism . The econometric model adopted is stated below;

$$GDP = a_0 + a_1 PR + a_2 NG + a_3 CL + a_4 LS + U_t \quad (1.1)$$

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On the apriori, it is expected that;

$a_1 > 0,\ a_2 > 0, a_3 > 0$ and $a_4 > 0$

Meanwhile, the study employs the co-integration/ECM methods to ascertain the long-run dynamics of the estimated model. The equation for the ADF unit root test precedes the co-integration and ECM tests. The unit root test is presented thus:

$$\Delta Q_t = \alpha_0 + \alpha_1 Q_{t-1} + \Sigma\alpha_1 \Delta Q_1 + \theta_t + U_t \quad (1.2)$$

Where 'Q' is a time series, 't' is a linear time trend, 'Δ' is the first difference operator, α_0 is the constant, 'U' is the error term and 't-1' is the time lag.

Assuming the variables were stationary of Order one and co-integrated, the following ECM equation proposed by Engel, Johansen and Granger(1987) is formulated.

$$\Delta Q_t = Log\alpha_0 + \Sigma Log\alpha_1 \Delta PR + \Sigma Log_2 NG + \Sigma Log_3 CL + \sum Log_4 LS + ECM_{t-1}. \quad (1.3)$$

Where; α_1, α_2, α_3 and α_4 are the coefficient of the explanatory variables and ECM_{t-1} is the error correction mechanism obtained from the long run co-integration regression model.

RESULTS AND DISCUSSION

The research examined the impact of Natural Resource Abundance on economic growth in Nigeria during the period 1980-2015. An econometric model was constructed for the Nigerian economy. The constructed model has coal, natural gas, petroleum and limestone (Independent variables) and GDP as the dependent variable). All the variables mentioned above are in million naira (₦,m) see appendix.

Table 1: Unit Root Stationarity Test (ADF)

Variables	ADF Test	Critical Value			Order of integration
		1% critical value	5%critical value	10%critical value	
GDP	-6.87854	-3.639407	-2.951125	-2.614300	Order one
PR	-8.175983	-3.639407	-2.951125	-2.614300	Order One
NG	-5.361514	-3.639407	-2.951125	-2.614300	Order One
CL	-5.334682	-3.639407	-2.951125	-2.614300	Order One
LS	-4.267356	-3.699871	-2.976263	-2.627420	Order One

Source: *Researcher's Computation*

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The stationarity test presented in table 1 showed that at various levels of significance (1%, 5% and 10%), the variables were stationary. From the result; GDP, Petroleum, Natural Gas, Coal and Limestone were integrated of order one (first difference). Hence, the entire variables in this study are stationary. This therefore means that the best regression results will be obtained when the above variables are used to estimate the model. The reason for this is that using the OLS regression techniques at levels in estimating the model would lead to spurious regression results since some of the variables were not stationary.

Table 2: Test of co-integration

Eigen value	Trace Statistics	5% critical value	Prob. **	Hypothesis of CE(s)
0.803574	156.2230	69.81889	0.0000	None *
0.764049	104.1439	47.85613	0.0000	At most 1 *
0.717519	57.93167	29.79707	0.0000	At most 2 *
0.407853	17.47905	15.49471	0.0248	At most 3 *
0.021976	0.711065	3.841466	0.3991	At most 4

Source: *Researcher's Computation*

From table 2 above, there are four co- integrating equations at 5% level of significance. This is because the Trace Statistic is greater than critical values at 5%. This is strong evidence from the unit root test conducted, where all the variables were stationary at order one. Therefore, there exists a long-run relationship or equilibrium among the variables. Given that there are four co-integrating equations, the requirement for fitting in an error correction model is satisfied.

Table 3: Parsimonious ECM

Dependent Variable: DLOG(GDP)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.048907	0.012718	3.845347	0.0010
DLOG(GDP(-1))	0.335428	0.176570	1.899693	0.0720
DLOG(GDP(-2))	0.012345	0.166798	0.074013	0.9417
DLOG(GDP(-3))	-0.033296	0.034409	-0.967658	0.3448
DLOG(PR(-2))	0.513876	0.173121	2.968302	0.0076
DLOG(NG(-2))	0.004918	0.026438	0.185999	0.8543
DLOG(CL(-2))	0.031601	0.015404	2.051494	0.0535
DLOG(LS(-2))	0.006107	0.011982	0.509638	0.6159
ECM(-1)	-0.054302	0.017801	-3.050503	0.6196

R-squared	0.520891	Mean dependent var	0.052462
Adjusted R-squared	0.329248	S.D. dependent var	0.045493
S.E. of regression	0.037259	Akaike info criterion	-3.492728
Sum squared resid	0.027764	Schwarz criterion	-3.068395
Log likelihood	59.64456	Hannan-Quinn criter.	-3.359833
F-statistic	2.718024	Durbin-Watson stat	2.422976
Prob(F-statistic)	0.033283		

Source:*Researcher's Computation*

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The Parsimonious Error Correction Model (ECM) in table 4.6 indicated that the dynamic model is a good fit. This is because the variation in the dependent variable account for 52 percent of the total variation of the independent variables in the model. Specifically, the R^2 value of 0.5208 indicated that the variation in GDP explained by petroleum (PR), natural gas (NG), coal (CL) and lime stone (LS) is 52 percent. Therefore, the explanatory power of the model estimated is 52 percent. The goodness of fit of the model is further buttress by the value of f-statistic at 2.718 which is statistically significant at 5% level. This implied that the overall regression result is significant. The Durbin Watson (DW) value of 2.4, which is approximately 2.0, suggests a lesser level of autocorrelation. Meaning that the successive values of the error term are serially dependent or correlated.

Moreover, an important characteristic to be noticed in table 4.6 is the coefficient of the parameter of error correction term. The coefficient of the error correction term appears with the right sign (negative) and statistically significant at 5 percent level. This showed that about 5.4 percent disequilibria in the GDP in the previous year were corrected for in the current year. It therefore, follows that the ECM could rightly correct any deviations from short run to long-run equilibrium relationship between GDP and the explanatory variables.

Furthermore, the coefficient of petroleum (PR) is positively signed and statistically significant at 5 percent level with GDP. Meaning that a percentage increase in petroleum will increase the GDP by 0.513%. Also, the result indicated that petroleum (PR) impact on GDP significantly. Therefore, the study accepts the alternative hypothesis which says 'there is a significant relationship between petroleum and GDP in Nigeria'.

The coefficient of natural gas (NG) is positively signed but statistically not significant at 5 percent level with GDP. Meaning that a percentage increase in natural gas will increase the GDP by 0.004918%. The implication of the statistical not significance of the natural gas with GDP is that natural gas (NG) does not impact on GDP in Nigeria during the period of study. Therefore, the study accepts the null hypothesis which says 'there is no significant relationship between natural gas and GDP in Nigeria.

Furthermore, the coefficient of coal (CL) is positively signed and statistically significant at 5 percent level with GDP. Meaning that a percentage increase in coal production will increase the GDP by 0.031601%. The implication of the statistical significance of the coal with GDP is that coal impacted on GDP in Nigeria during the period of study. Therefore, the study accepts the alternative hypothesis which says 'there is a significant relationship between coal and GDP in Nigeria'.

The coefficient of limestone (LS) is positively signed but statistically not significant at 5 percent level with GDP. Meaning that a percentage increase in Limestone will increase the GDP by 0.006107%. The implication of the statistical not significance of the limestone with GDP is that limestone (LS) does not impact on GDP in Nigeria during the period of study. Therefore, the study accepts the null hypothesis which says 'there is no significant relationship between limestone and GDP in Nigeria.

CONCLUSION AND RECOMMENDATION

The study focuses on the impact of Natural Resource Abundance on economic growth in Nigeria. Natural sources play a major role in defining the growth of any economy. The study

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adopted the co-integration/ECM on a 35 years' time series data (1980-2015). On the basis of the finding of this paper, the following recommendations among others were proferred towards enhancing the impact of natural resource abundance on economic growth in Nigeria;

Government should stabilized funds from natural resources so as to ensure moderate economic growth and avoid rent seeking and corruption. Government should promote the manufacturing sector of the economy, government should intensify efforts in coal and limestone production revenue from natural resource should be invested in other sector like agriculture and industrial sector as well as other untapped mineral resources in the economy in other to create employment and increase the standard of living of the people and hence economic growth in Nigeria. The argument is in line with Ajie and Ewubare who argued that negative relativity of natural resource abundance and economic growth in less developed countries (LDCs) is as a result of underutilization, misutilization and unutilization, hence her backwardness, stagnation and underdevelopment.

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APPENDIX

In ₦m,000

YEAR	GDP	PR	NG	CL	LS
1980	31546.08	137.6000	541.4000	131.7000	143.2000
1981	205222.1	96.10000	382.2000	86.60000	85.80000
1982	199685.2	86.00000	83.60000	40.70000	83.30000
1983	185598.1	82.50000	81.80000	38.30000	85.00000
1984	183563.0	92.90000	84.50000	52.40000	104.3000
1985	201036.3	100.0000	100.0000	100.0000	100.0000
1986	205971.4	97.90000	63.30000	103.2000	102.0000
1987	204804.5	88.40000	57.70000	82.00000	142.3000
1988	219875.6	92.90000	108.0000	56.10000	50.10000
1989	236729.6	109.9000	132.4000	65.80000	40.50000
1990	267550.0	115.9000	145.8000	102.7000	51.20000
1991	265379.1	121.0000	176.6000	61.00000	57.10000
1992	271365.5	124.3000	170.2000	70.00000	8.300000
1993	274833.3	125.6000	172.0000	38.50000	1.700000
1994	275450.6	122.3000	172.1000	16.60000	1.800000
1995	281407.4	125.4000	172.0000	13.80000	2.000000
1996	293745.4	130.1000	196.2000	14.20000	10.10000
1997	302022.5	128.4000	782.0000	1.000000	6.800000
1998	310890.0	134.7000	766.7000	2.000000	5.100000
1999	312183.5	135.1000	767.7000	1.900000	6.400000
2000	329178.7	140.6000	712.8000	12.00000	6.200000
2001	356994.3	141.8000	722.0000	12.30000	7.200000
2002	433203.5	145.8000	240.3000	11.40000	6.500000
2003	477533.0	145.7000	238.2000	11.50000	6.100000
2004	527576.0	155.3000	240.9000	11.70000	6.400000
2005	561931.4	157.9000	241.3000	0.000000	1.600000
2006	595821.6	152.9667	240.1333	7.733333	4.700000
2007	634251.1	155.3889	240.7778	6.477778	4.233333
2008	672202.6	155.4185	240.7370	4.737037	3.511111
2009	718977.3	154.5914	240.5494	6.316049	4.148148
2010	776332.2	155.1329	240.6881	5.843621	3.964198
2011	834161.9	155.0476	240.6582	5.632236	3.874486
2012	902794.0	154.9240	240.6319	5.930636	3.995610
2013	964184.0	155.0348	240.6594	5.802164	3.944765
2014	969969.1	155.0021	240.6498	5.788345	3.938287
2015	1016528.	154.9870	240.6470	5.840382	3.959554

Source: *CBN Statistical Bulletin (Various Issues, 1980-2015)*

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