



## Health sector funding in Ghana: The effect of IMF conditionalities

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### ARTICLE INFO

#### Keywords:

Health sector funding  
Health financing  
Democracy  
International monetary fund  
Foreign aid  
Health expenditure

### ABSTRACT

**Purpose:** This paper examines the factors influencing government health spending in Ghana with a particular focus on IMF conditionalities.

**Design/methodology/approach:** We estimate four simultaneous equations using three-stage least squares (3SLS) estimator. The data used cover the period 1980–2014.

**Findings:** After controlling for some other factors affecting government health spending, the results show that democracy and foreign aid significantly increase public sector health funding. IMF programs with its associated conditionalities insignificantly reduce public health spending Ghana.

**Originality/value:** This study provides important evidence on the impact of IMF conditionalities on health sector funding in Ghana. The results will serve as guide to policymakers when negotiating for IMF credit so that such arrangements do not obstruct health sector funding.

### 1. Introduction

Health outcomes and economic policies are linked. Economic policies such as minimum wages, excise taxes and subsidies on certain goods do affect health outcomes in complex channels. Healthcare financing policies also play a key role in enabling access to healthcare services and improving outcomes. Although findings are mixed, several studies have shown that health outcomes respond to the nature and type of healthcare financing [1–4]. Globally, government healthcare expenditures form the major source of funding for the health sector [5]. In high-income countries, governments finance a larger part of total health expenditures. Even with private health spending, a large part is paid by medical aid schemes due to the well-developed health insurance systems in these countries [6].

In many low- and middle-income countries, however, health insurance systems are under-developed, or unavailable and governments finance a smaller share of total health expenditures [5,6]. Thus, private health expenditures dominate, and are mostly out-of-pocket (OOP) expenditures. Every year, these OOPs push many households into poverty [7]. At the same time, health outcomes in these areas, despite steady improvements, are still poor. To achieve the health-related Sustainable Development Goals (SDGs), there is growing interest in organising resources from all possible sources hence the interest in stimulating domestic revenue mobilisation for health in low- and middle-income countries in the presence of declining aid flows [8,9]. Indeed, many developing countries depend on foreign aid and grants to improve delivery of social sector services (including health) and boost

economic growth. However, such aid has the potential to reduce domestically generated government health spending [10,11].

While the global health community is pushing governments to increase funding for health amid declining aid flows to the developing world, there is also a growing concern on the impact of conditionalities associated with loans or programmes from multilateral financial institutions such as the International Monetary Fund (IMF) on social sector funding and outcomes [12–15]. The reason being that IMF programs indirectly reduce funding for many social sectors which consequently affects outcomes. Stuckler, King and Basu [13] provide evidence that IMF program and its associated conditionalities caused more tuberculosis mortalities in post-communist countries. In Ebola stricken African countries, development of health systems were impeded by reduced healthcare expenditures resulting from IMF programs which consequently worsened the Ebola crisis [16]. In Western Africa, IMF conditionalities were found to create budget execution challenges in health systems and reduced public health spending by about 0.25% although the aggregate impact was insignificant [17]. The negative effect of IMF's programs on government spending on healthcare is mainly attributed to the diversion of both domestic revenue and foreign aid for debt repayment. The diversion of aid could reduce future aid for health financing [17–20].

On the contrary, Clements, Gupta and Nozaki [21] show that the IMF's programs in low- and middle-income countries have had positive effect on social sector spending both in terms of GDP and as share of government spending. Since the Fund's programmes promote economic growth and

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or increase tax revenues, aside from the spending floors, it allows governments to invest in the health sector through an enhanced fiscal space [21–23]. The introduction of budget monitoring and execution systems component of IMF programmes would contribute to increased spending on health and reduce leakages with proper design [17].

## 2. Overview of IMF programmes, aid, and public health spending in Ghana

In Ghana, after the overthrow of Dr. Nkrumah's Convention People's Party (CPP) government in 1966, multiparty democracy was weak until its return in 1993 [24]. Between 1980 and 2014, the political environment improved slowly as the polity index which measures how autocratic or democratic a country is improved from -7 in 1980 to 8 in 2014 [24].

The relatively stable democratic environment in Ghana has the country an ardent of IMF programs though it has been on-and-off. The first agreement, with its conditions, was signed in May 1966 and the recent agreement was signed in 2015 and ended in 2019. Data from various publications of the Government of Ghana and the World Bank show that government health expenditure (as share of GDP) grew from 0.95% in 1980 to 3.83% in 2010 and later declined to 2.12% in 2014. While private health spending remained relatively flat for the period, that of the public sector was not. Aid flows (development assistance and aid in 2013 dollars) also increased from US\$460 million in 1980 to US\$1.1 billion in 2014.

Source: compiled from various publication of the World Bank and Government of Ghana.

However, when measured as share of GDP, there were large fluctuations in aid flows (see Fig. 1). Summarised in Table 1 (see appendix) are the historical information of lending agreements between Ghana and IMF as of 31 May 2018. Table 1 shows that IMF and Ghana have had a long-standing relationship, as the former has been the lender of last resort on many occasions. Even though the recent agreement ended in April 2019 and new negotiations are ongoing since July 2022, Ghana is more likely to seek additional credit or support from the IMF in the future.

**Table 1**  
Effect of Democracy, Aid, and IMF programmes on Government Health Expenditure.

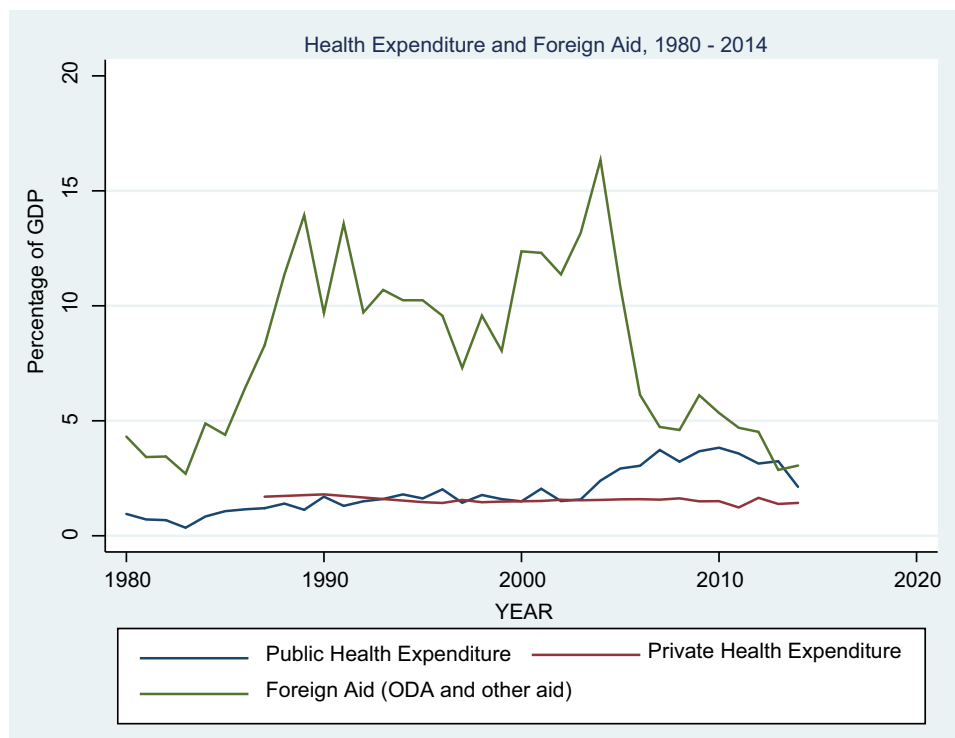
Variables	(OLS)	2SLS	SURE	3SLS
Democracy	0.001* (0.000)	0.000 (0.001)	0.001* (0.000)	0.001* (0.000)
Log Aid	0.009** (0.004)	0.011* (0.006)	0.006** (0.003)	0.010** (0.004)
Log GDP	0.007 (0.011)	0.042** (0.020)	0.000 (0.008)	0.057*** (0.014)
Log UMR	-0.006 (0.011)	0.020 (0.018)	-0.019** (0.008)	0.035*** (0.012)
IMF Programmes	-0.002 (0.002)	-0.002 (0.005)	-0.002 (0.002)	-0.001 (0.003)
Physician per 1000 people	-0.055 (0.048)	-0.053 (0.057)	-0.058 (0.039)	-0.043 (0.031)
Constant	-0.175 (0.155)	-0.556** (0.247)	-0.006 (0.114)	-0.693*** (0.170)
Observations	35	35	35	35
R-squared	0.213	0.584	0.743	0.659

Standard errors in parentheses. † Coefficients and standard errors are zero due to rounding. Dependent variable: public health spending to GDP ratio.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

Given the growing concerns for the IMF to restructure loans to improve social sector spending in the developing world, a number of studies have examined the nexuses between IMF programmes, aid and public health spending [9,17,21]. Nonetheless, none of these studies was solely devoted to Ghana. To this end, we analyse the determinants of public healthcare spending in Ghana, with a focus on IMF program participation, aid and democracy. Doing so is important as it will shed light on the attention to be given to IMF programs, aid and democracy in designing country-specific policies aimed at enhancing health spending in Ghana.

In particular, the effect of democracy and foreign aid are examined for following additional reasons. First, Ghana has experienced various forms of governance: dictatorship and democracy. In a democracy, the government is accountable to the people and therefore its spending patterns would reflect the preferences of the voters to avoid being fired since voters



**Fig. 1.** Trends in Health Expenditure and Foreign Aid, 1980–2014.

are the ultimate employers [25,26]. In this case, government would be expected to spend more on health in a democracy since people may vote for a particular party because of its health policy. Also, since the political aim of government officials is to retain power, an incumbent government may be opportunistic by altering fiscal policies by spending more on specific sectors of the economy to attract votes [26,27]. Further, since democracy reduces corruption, government health spending is expected to be higher in democracies than under dictatorships [10].

### 3. Methods

#### 3.1. Study design

This study is a time series analysis of the link between IMF programmes and health sector outcomes. Time series research is a subcategory of longitudinal research design focusing on observations made on the same variable consecutively over time. Thus, the study analyses annual data collected on same variables over time.

#### 3.2. The model and data

To find the effect of the democracy, aid flows, and IMF programs (and conditions) on public health spending, the Eq. (1) is estimated.

$$GHE = \beta_0 + \beta_1 Dem + \beta_2 Aid + \beta_3 GDP + \beta_4 UMR + \beta_5 IMF + \beta_6 PHY + \epsilon \quad (1)$$

where GHE is government health spending to GDP ratio, *Dem* is the polity score to measure democracy, *Aid* is the natural log net overseas development assistance and aid received during the period and *IMF*, the participation in International Monetary Fund's programmes. IMF programmes and conditionalities take the values of 1 in years with IMF agreement in operation and 0 otherwise. Since participation in the IMF program implies acceptance of all conditions set by the IMF the dummy variable also captures all conditionalities associated with IMF credit.

As control, we include the natural log real per capita GDP (constant 2005 US\$), UMR (log of under-five mortality per 1000 live births, a measure of prevailing health conditions), and PHY, the density of physicians per 1000 people. We specify other models to address possible endogeneity of suspected independent variables. Nonetheless, we only report results from Eq. (1).

$$GDP = \beta_0 + \beta_1 GHE + \beta_2 Openness + \beta_3 Investment + \beta_4 UMR + \beta_5 Edu + \epsilon \quad (2)$$

$$UMR = \beta_0 + \beta_1 GDP + \beta_2 GHE + \beta_3 PHY + \beta_4 FEDU + \epsilon \quad (3)$$

$$IMF = \beta_0 + \beta_1 Democracy + \beta_2 GDP + \beta_3 Openness + \beta_4 GHE + \epsilon \quad (4)$$

Other variables in the equations are *Openness*, trade to GDP ratio, *investment*, gross fixed capital formation, *Edu* (primary school enrolment to measure to measure education), *FEDU* (primary school enrolment among females).

#### 3.3. Data sources

Except democracy, data on all variables used come from the World Bank's World Development Indicators (2016 excel database) [28] and other publications of the World Bank and various departments of the Government of Ghana relating to health expenditures and physician density. Details on data sources are provided in the appendix. In this study, public health expenditure includes domestically generated funds for health and external financing for health. Since both sources are controlled by central government, it is appropriate to use the term public health expenditure.

Data on democracy is abstracted from the Polity2 index (under the Polity IV Project) database [24]. The index ranges from -10 to +10 with the extreme ends as strongly autocratic and strongly democratic respectively;

this is rescaled to 0 to 10 where strongly autocratic takes 0 and strongly democratic takes 10. The data cover the period 1980–2014.

#### 3.4. Estimation strategy

The three-stage least squares (3SLS) estimator is used to study the effect of democracy, aid, and IMF programmes on government health spending in Ghana within a simultaneous equation setup. We estimate four simultaneous equations with public health spending, per capita income, under-five mortality and participation in IMF programme as dependent variables (see Eqs. (1)–(4)). That is, our empirical strategy is analogous to that of Nosier and El-Karamani [29] and uses Stata routine command, *reg3*. The estimator corrects for endogeneity issues to allow us to disentangle the effect of endogenous regressors in the model. Although the 2SLS estimator which also provides consistent estimates can be used, correlations among the errors terms of various equations makes the 2SLS estimator inefficient. Using information on the correlation of the stochastic disturbance terms of the structural equations, the 3SLS, which combines seemingly unrelated (SURE) and the 2SLS, provides a more asymptotically efficient estimates. [30] For information purposes, we report the results from OLS, 2SLS and SURE estimations.

### 4. Results

Presented in Table 1 are the results on the effect of democracy, aid and IMF programmes on government health spending in Ghana for the period 1980–2014. The coefficients of democracy and foreign aid are positive, but only foreign aid is statistically significant at 5%. The coefficients are 0.001 and 0.01, respectively.

Similarly, real per capita GDP and under-five mortality (a proxy for the general health situation) are positive and statistically significant at 1% with coefficients 0.057 and 0.035, respectively. IMF bailout and physician density are negative but statistically insignificant. The coefficient of IMF programme is -0.001, while that of physician density is -0.043. Sixty-six per cent of the total variation in public health spending to GDP ratio is explained by the independent variables presented in the model. The results suggest that increases in foreign aid and income as well as improvement in democracy are associated with higher government spending on health. For example, in Table 1, a percentage increase in real per capita GDP is associated with 0.057 increase in public spending to GDP ratio, while 1% increase in foreign aid increases the ratio by 0.01. A unit increase in the democracy score increases public health spending ratio by 0.001.

In another estimation, we change the measurement of democracy (using a dummy variable) and use log of per capita government health spending (2005 US dollars) as the dependent variable. The dummy takes the value of 1 in years with civilian government and 0 otherwise. The results are similar to that in Table 1 albeit slight changes. Democracy ( $\beta = 0.332, p < 0.01$ ), foreign aid ( $\beta = 0.885, p < 0.01$ ) and real per capita GDP ( $\beta = 2.1, p < 0.01$ ) are positive and statistically significant at conventional levels. IMF programmes ( $\beta = -0.169, p > 0.1$ ) and physician density ( $\beta = 2.22, p > 0.1$ ) are negative but statistically insignificant. This model explains 93% of the total variation in government per capita health spending. Table 2 presents the regression with per capita health spending as dependent variable. IMF programmes are associated with lower health sector funding, but the effect is not statistically significant.

In Table 2, a percentage increase in GDP induces 2.1% increase in per capita public health spending, whereas the same percentage rise in foreign aid increases per capita spending by 0.9%. Similarly, democracy increases per capita spending by 0.33%.

In Tables 1 and 2, only two of our variables of interest (foreign aid and democracy) are statistically significant (at least 10% level) in influencing public health expenditure in Ghana. The effect of IMF programmes on government health spending is statistically insignificant suggesting that IMF programmes have no impact on public health spending.

**Table 2**  
Effect of Democracy, Aid, and IMF programmes on Government Health Expenditure.

Variables	OLS	(2SLS)	SURE	3SLS
Democracy	0.285** (0.119)	0.310** (0.134)	0.297*** (0.105)	0.332*** (0.117)
Log Aid	0.773*** (0.169)	0.848*** (0.235)	0.775*** (0.150)	0.885*** (0.208)
Log GDP	1.299** (0.479)	1.803** (0.819)	1.140*** (0.424)	2.100*** (0.721)
Log UMR	-0.199 (0.564)	0.301 (0.852)	-0.344 (0.497)	0.618 (0.748)
IMF programmes	-0.145 (0.097)	-0.197 (0.195)	-0.146* (0.086)	-0.169 (0.171)
Physician per 1000 people	-2.339 (1.897)	-2.561 (2.066)	-2.595 (1.692)	-2.338 (1.785)
Constant	-20.854** (7.625)	-27.783** (11.501)	-19.229*** (6.732)	-31.898*** (10.119)
Observations	35	35	35	35
R-squared	0.391	0.543	0.632	0.705

Standard errors in parentheses. Dependent variable: log per capita public health spending.

\*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

## 5. Discussion

We investigate the effect of democracy, foreign aid and IMF programmes and conditionalities on government health spending in Ghana. After employing the 3SLS for estimation we find that democracy is associated with higher public health spending. This finding was expected given that politicians have incentive to retain power [25–27]. Between 1980 and 1992, voters had no means of expressing their preferences. Afterwards, Ghana saw improvement in governance through democracy as governments were formed through elections coupled with relatively strengthened institutions of state to reduce corruption and protect the rights of the people. The findings are in tandem with those by Karyani, Homaie Rad, Pourrezaei et al. [31] and Gregorio and Gregorio [32]. To win votes and trust of the electorates, politicians spend (or promise to) more on health under democracies. A case in point is the proposed one-time premium for the National Health Insurance Scheme (NHIS) in 2008 by the National Democratic Congress (NDC) with the aim of winning votes, [33] and that major health policy reforms in the last two decades are due to democratic politics [33]. We note that the one-time premium proposition was never implemented.

The regression estimates also suggest that foreign aid increases public funding for health. The coefficients mean that if the amount of aid increases by 1% per capita public health spending rises 0.9% (Table 2), while public spending to GDP ratio increases by 0.01 (Table 1). Thus, foreign aid plays a key role in government health spending decisions. We do not find this to be surprising. As a developing country, Ghana receives a sizeable amount in aid from donor countries. Sometimes, some of these funds come purposely for health. Similar findings finding has been reported in Pakistan [34]. In Rwanda, foreign aid contributed to government's investment in rural health services [35].

IMF programmes are insignificantly associated inversely with lower public funding for health. That is, the negative impact of IMF credit and associated conditions is not significant. The Fund mitigates the impact of its programmes through spending floors for social sectors like health and promoting resilient growth [21–23]. While such floors, in theory, may enable governments to spend on health, they are practically weak since governments are committed to meeting policy targets for credibility. For instance, the Government of Ghana maintained wage ceilings until the end of the programme in late-2006 despite recognising that such ceilings endanger the government's ability to improve public service delivery [17]. Such issues may explain the negative coefficient. In a cross-national analysis, Stubbs, Kentikelenis, Stuckler et al. [17] find an insignificant negative relationship between IMF programmes (on aggregate scale) and government health spending in Western Africa. Our findings are inconsistent with

those of Clements, Gupta and Nozaki [21] who reported IMF's programs in low- and middle-income countries have had positive effect on social sector spending.

For the control variables, physician density is not a significant determinant of government health spending. Its negative sign is similar to previous literature [31]. We find that real per capita income and prevailing health conditions (measured by under-five mortality) are key in explaining government health spending in Ghana [36,37]. During the period, income increased. Government financing of major projects such as the expansion and construction of healthcare facilities also increased to improve health conditions of the people. The finding is consistent with the literature [9,36,37] and confirms Wagner's law that rising income raises the size of government.

## 6. Concluding remarks

To achieve Universal Health Coverage (UHC) towards the attainment of the SDGs, health and development practitioners are concerned about health sector funding in low- and middle-income countries. Consequently, this paper has investigated the impact of democracy, foreign aid, and IMF programmes on public health spending in Ghana using 1980–2014 data. We find that democracy and foreign aid have contributed to health sector investment, while IMF programmes had negative but insignificant effect of health sector funding. The study also finds that income and prevailing health conditions influence government health spending in Ghana.

The findings have important implications for policy. First, there is need to build and strengthen institutions to ensure that Ghana's democracy is consolidated. Such efforts would enhance broader participation of the people in decision making and governance of the country. This will reduce corruption and improve investment in social sectors including health. Secondly, measures should be instituted to ensure continuous and judicious use of aid, particularly health aid to achieve the overall improvement in health outcomes. While we do not find any evidence of the significant effect of IMF programmes in Ghana, the finding on the negative coefficient calls for policymakers to be circumspect when negotiating for IMF credit so that such arrangements do not obstruct health sector funding. On 01 July 2022, the Government declared its intention to go into an IMF programme and many labour unions have raised concerns over wages, employment and other social services. Given the results on income, there is the need for government to strengthen the supply side of the economy to boost income while ensuring that the conditions of the people are improved. Better health would allow government to invest in other sectors of the economy.

We note some limitations of the study. Aside from the Fund, the other international organisations such as the World Bank and the African Development Bank also have policies and programmes that affect Ghana's health systems and that of many other countries. However, we are unable to assess each of these institutions' impact on spending due to data paucity. The use of dummy variable to capture the Fund's programmes and conditionalities may not fully reflect the binding and non-binding agreements as well as programme heterogeneity for different periods. Despite these and other limitations that this study may have, we have, for the first time, attempted to look at how democracy, foreign aid and IMF programmes (which usually have conditions) affect public sector funding for health in Ghana to inform policy.

## Funding

This research was financially supported by South African Medical Research Council (grant number: 23108) through SAMRC/Wits Centre for Health Economics and Decision – PRICELESS SA.

## Declaration of Competing Interest

The authors declare the following financial interests/personal relationships which may be considered as potential competing interests:

Micheal K. Boachie reports financial support was provided by South African Medical Research Council

## Appendix

### Notes on Data sources

1. Data on the variables in Eq. (1) are compiled from various sources.
  - a. Data on health expenditure were compiled based on World Bank Reports on Ghana.
    - i. No. 7597-GH (Ghana: Population, Health and Nutrition Sector Review, March 1989).
    - ii. Peters, D. H., Kandola, K., Elmendorf, A. E., & Chellaraj, G. (1999). Health expenditures, services, and outcomes in Africa: basic data and cross-national comparisons, 1990–1996. The World Bank.
    - iii. World Development Indicators, 2016. (updated 14th April 2016).
  - b. Data on physician density are compiled based on:
    - i. No. 4702-GH (Ghana: Policies and Program for Adjustment, Volume 2: Statistical Appendix, October 3, 1983).
    - ii. No. 7597-GH (Ghana: Population, Health and Nutrition Sector Review, March 1989).
    - iii. Various issues of Ghana Health Services Facts and Figs. (2005, 2008, 2010).
    - iv. Annual Reports of the Ghana Health Services (2002, 2014).
  - c. All other variables in Eqs. (1)–(4) are abstracted from the WDI 2016 database.

**Table 3**

History of Lending Arrangements between IMF and Ghana.

Type of Facility	Date of Arrangement	Expiration Date	Amount Agreed**	Amount Drawn**	Amount Outstanding
Extended Credit Facility	Apr 03, 2015	Apr 02, 2019	664,200	531,360	531,360
Extended Credit Facility	Jul 15, 2009	Jul 23, 2012	387,450	387,450	257,641
Extended Credit Facility	May 09, 2003	Oct 31, 2006	184,500	184,500	0
Extended Credit Facility	May 03, 1999	Nov 30, 2002	228,800	176,218	0
Extended Credit Facility	Jun 30, 1995	May 02, 1999	164,400	137,000	0
Extended Credit Facility	Nov 09, 1988	Mar 05, 1992	388,550	388,550	0
Extended Fund Facility	Nov 06, 1987	Nov 09, 1988	245,400	97,550	0
Structural Adjustment Facility Commitment	Nov 06, 1987	Nov 09, 1988	129,858	40,900	0
Standby Arrangement	Oct 15, 1986	Oct 14, 1987	81,800	81,800	0
Standby Arrangement	Aug 27, 1984	Dec 31, 1985	180,000	180,000	0
Standby Arrangement	Aug 03, 1983	Aug 02, 1984	238,500	238,500	0
Standby Arrangement	Jan 10, 1979	Jan 09, 1980	53,000	32,000	0
Standby Arrangement	May 29, 1969	May 28, 1970	5000	5000	0
Standby Arrangement	May 28, 1968	May 27, 1969	12,000	12,000	0
Standby Arrangement	May 25, 1967	May 24, 1968	25,000	25,000	0
Standby Arrangement	May 17, 1966	May 16, 1967	36,400	31,400	0
Total			3,024,858	2,549,228	789,001

Source: IMF.

\*\* Amounts in thousands of SDRs. Government of Ghana started arrangements for another support in July 2022.

**Table 4**

Descriptive Statistics of the variables.

Variable	Obs	Mean	Std. Dev.	Min	Max
GHE	35	0.019	0.01	0.003	0.038
Democracy	35	1.257	6.237	-7	8
Democracy_rescaled**	35	5.505	4.158	0	10
Log of Aid	35	20.66	0.46	19.504	21.312
Log GDP per capita	35	6.107	0.235	5.771	6.638
Log UMR	35	4.676	0.288	4.159	5.113
IMF programs	35	0.771	0.426	0	1
Physician per 1000 people	35	0.077	0.026	0.043	0.152

\*\* Used in the regression.

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