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The impact of IMF conditionality on government health expenditure: A cross-national analysis of 16 West African nations



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ABSTRACT

How do International Monetary Fund (IMF) policy reforms—so-called ‘conditionalities’—affect government health expenditures? We collected archival documents on IMF programmes from 1995 to 2014 to identify the pathways and impact of conditionality on government health spending in 16 West African countries. Based on a qualitative analysis of the data, we find that IMF policy reforms reduce fiscal space for investment in health, limit staff expansion of doctors and nurses, and lead to budget execution challenges in health systems. Further, we use cross-national fixed effects models to evaluate the relationship between IMF-mandated policy reforms and government health spending, adjusting for confounding economic and demographic factors and for selection bias. Each additional binding IMF policy reform reduces government health expenditure per capita by 0.248 percent (95% CI –0.435 to –0.060). Overall, our findings suggest that IMF conditionality impedes progress toward the attainment of universal health coverage.

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1. Introduction

Strengthening public healthcare systems is central to achieving Universal Health Coverage (UHC), a key objective of the United Nations Sustainable Development Goals (UNGA, 2015; WHO, 2014). Yet, in low-income countries (LICs), especially those dependent on aid or subject to fluctuating commodity prices, it is unclear how progress can be sustained. Recent studies highlight the importance of funding UHC through increasing domestic tax revenues and employer contributions (O'Hare, 2015; Reeves et al., 2015). Success will also depend on the ability to overcome long-standing barriers to health system expansion, including legacies of conflict, state failure, and underinvestment in healthcare facilities and personnel (Benton and Dionne, 2015). Foreseeably, a multitude of global actors will contribute to shaping the design, implementation, and ultimate outcome of these endeavours (Chorev, 2012; Patel and Phillips, 2015).

Quite possibly the most important international institution setting the fiscal priorities of LICs is the International Monetary Fund (IMF). Established in 1944, a core function of the organization has been to provide financial assistance to countries in economic turmoil. In exchange for this support, countries agree to implement IMF-designed policy reform packages phased over a period of one or more years—so-called ‘conditionalities’. Over the past two decades, the 59 countries classified by the IMF (2015b) as LICs have been exposed to conditionalities for 10.3 years on average, or one out of every two years. The IMF's extended presence in LICs has spurred a great deal of controversy. Critics stress inappropriate or dogmatic policy design (Babb and Kentikelenis, *In press*; Babb and Carruthers, 2008; Kentikelenis et al., 2016; Stiglitz, 2002), adverse effects on the economy (Dreher, 2006), and negative social consequences (Abouharb and Cingranelli, 2007; Babb, 2005; Oberdabernig, 2013).

In relation to health, the IMF has long been criticized for impeding the development of public health systems (Baker, 2010; Batniji, 2009; Benson, 2001; Benton and Dionne, 2015; Cornia et al., 1987; Goldsborough, 2007; Kentikelenis et al., 2015a,b; 2016; Ooms and Hammonds, 2009; Stuckler and Basu, 2009;

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Stuckler et al., 2008; 2011). For example, a recent qualitative analysis of IMF programmes in Guinea, Liberia, and Sierra Leone found that the organization contributed to the failure of health systems to develop, thereby exacerbating the Ebola crisis (Kentikelenis et al., 2015a). The IMF's policy advice was associated with fewer public health resources, difficulties in hiring and retaining health workers, and unsuccessful health sector reforms. The IMF responded by arguing that its programmes strengthen health systems (Clements et al., 2013; Gupta, 2010, 2015). Box 1 summarizes the debate between the IMF and its critics.

To revisit these controversies, we use original documents collected from the IMF's Archives to examine whether and how IMF-mandated policy reforms have impacted government health expenditures in West Africa. We also construct a novel dataset of IMF-mandated policy reforms to evaluate quantitatively the impact of IMF lending conditionalities on government health spending in the region.

2. Methods

2.1. Data sources and study design

We collected 484 documents—primarily loan agreements and staff reports—from the IMF Archives in Washington DC and online pertaining to the 16 West African countries (UN Statistics Division classification): Benin, Burkina Faso, Cabo Verde, Cote d'Ivoire, Gambia, Ghana, Guinea, Guinea-Bissau, Liberia, Mali, Mauritania, Niger, Nigeria, Senegal, Sierra Leone, and Togo. When requesting a loan from the IMF, countries send a letter to its management setting out the loan specifics (e.g. amount and duration), main objectives, and associated conditionality. These documents—drafted by country policymakers in collaboration with IMF staff—are known as Letters of Intent with attached Memoranda of Economic and

Box 1

How do IMF programmes affect health systems?

The IMF proposes three channels through which its programmes are linked to strengthening of health systems. First, IMF-supported reforms improve economic growth or raise tax revenues, thereby expanding fiscal space to allow governments to invest in public health (Clements et al., 2013; Crivelli and Gupta, 2016). Second, the inclusion of social spending floors in IMF programmes shelters sensitive expenditures from austerity measures (Gupta et al., 2000; Gupta, 2010; IMF, 2015a). Third, implementation of the IMF's policy advice catalyses foreign aid (including for health) and foreign investment (Clements et al., 2013; IEO, 2007b).

In contrast, critics argue that governments are unable to adequately invest in health because of pressure to meet rigid fiscal deficit targets set by the IMF, and that the organization diverts additional revenues and aid earmarked for the health sector to repay debt or increase reserves (Kentikelenis 2015; Kentikelenis et al., 2015a,b, 2016; Ooms and Schrecker, 2005; Stuckler and Basu, 2009; Stuckler et al., 2008; 2011). Additional evidence suggests that IMF-supported programmes decrease economic growth (Barro and Lee, 2005; Dreher, 2006; Przeworski and Vreeland, 2000), thereby shrinking available resources to fund health systems, and that the organization's programmes do not catalyse health aid (Stubbs et al., 2016).

Financial Policies, and are reviewed and updated in regular intervals. For example, a programme that is reviewed five times over its duration is linked to six Letters of Intent and Memoranda of Economic and Financial Policies: one for the original approval and then one for each review. The IMF also produces its own staff report to accompany each Letter of Intent, which contains information on macroeconomic developments, policy discussions, programme monitoring, as well as a concluding staff appraisal. We use these documents in a mixed methods research strategy. In doing so, we seek to avoid the risks of presenting selective evidence that can be associated with qualitative research, while yielding nuanced accounts that supplement statistical associations and illuminate causal pathways.

First, to map potential mechanisms of how IMF policies impact government health spending, we searched our archival material for information related to health systems and social protection policies. Our search terms included 'health', 'medic*', 'pharm*', 'pro-poor', 'social', 'poverty', 'labor', and other related keywords. To ensure that outliers were not captured, we only report pathways for which evidence was identified in three or more countries. While these mechanisms provide expositional clarity, they should not be viewed as wholly representative of the countries considered. That is, not all pathways apply to all countries under study (or during all IMF programmes), and it is possible that additional pathways exist that we were unable to capture. To our knowledge, this study is among the first to systematically deploy the IMF's own primary documents to identify specific IMF policy reforms related to health.

Second, we utilised these records to develop a new measure of exposure to IMF influence, which we then employed to quantify the association between IMF programmes and government health expenditures. We extracted all IMF loan conditions applicable to West African countries between 1995 and 2014, and disaggregated them into those which are binding and non-binding. During conditionality extraction and classification, we replicated coding to ensure inter-coder reliability and minimize measurement error.

In our quantitative analysis, we focus on binding conditions because they directly determine scheduled disbursements of loans, whereas non-binding conditions serve as markers for broader progress assessment (IMF, 2001b)—that is, non-implementation does not automatically suspend the loan—and may thus introduce noise to the analysis if included. Web Appendix 1 provides further details on the categories of conditions.

Our measure advances on previous research, which has relied on dummy variables or numbers of years of exposure to characterise IMF influence and has therefore overlooked heterogeneity in conditionality across programmes (Murray and King, 2008). While the IMF has its own conditionality database, known as Monitoring of Fund Arrangements (MONA), this database has been criticized by researchers and the IMF's own Independent Evaluation Office (Arpac et al., 2008; IEO, 2007a; Mercer-Blackman and Unigovskaya, 2004). First, the data is collected *ad hoc* from IMF desk economists, rather than being sourced directly from the loan agreements (Mercer-Blackman and Unigovskaya, 2004). Second, the data is presented in a way that precludes use in academic research: a large number of conditions are duplicates (thereby necessitating extensive and error-prone data cleaning), a break in reporting exists in 2002, and some reported conditions lack crucial information like the intended date of implementation. Third, underreporting and misclassification of conditions is ubiquitous (IEO, 2007a; Mercer-Blackman and Unigovskaya, 2004).

Fig. 1 summarizes the conditions applicable in all IMF loans for each country in Africa between 1995 and 2014, recorded from our own research. As shown, West Africa stands out as having the highest number of conditions across the continent, totalling 8344 (4886 binding and 3458 non-binding) across the 16 countries.

2.2. Statistical models

We investigate the effects of IMF conditionality on government health spending per capita reported by the World Bank (2015), which covers the period 1995 to 2012. We take the natural logarithm of this variable due to its skewed distribution. In a separate analysis, we also examine government health spending as a share of GDP. Results did not substantively change, so we present these findings in Web Appendix 6. We report additional data sources and descriptive statistics in Web Appendix 2.

Following previous research, we include several controls in the analysis. First, we control for GDP per capita because health spending is expected to increase as economic development takes place (Brady and Lee, 2014; Nooruddin and Simmons, 2006; Wagner, 1994). Second, we include overseas development assistance, as it may provide additional funds that the state can spend on health or—alternatively—displace health spending from the government to the non-government sector (Lu et al., 2010). Third, we control for the dependency ratio—i.e., the combined share of the population aged under 15 and over 65—as it is expected to be associated with higher expenditures due to the greater health burdens of these age groups (Nooruddin and Simmons, 2009). Fourth, we include a variable for levels of urbanisation, since urban dwellers can mobilize demands for additional healthcare services from governments, and cities also offer economies of scale (Baqir, 2002; Bates, 1981). Fifth, given the propensity of

violent conflict to inflict costly damages on public health infrastructures, we control for the occurrence of war (Ghobarah et al., 2003). Sixth, we introduce country fixed effects to account for time-invariant country-level characteristics, and year fixed effects to control for common external shocks across all countries.

Because countries are not randomly assigned into a ‘treatment group’ of IMF programme participants in a given year, we also need to control for unobservable factors—such as the political will to implement reforms—that affect both IMF participation and government health spending (Vreeland, 2003). If we fail to account for these unobserved factors, then their effect will be incorrectly attributed to IMF conditionality. Following previous studies (Clements et al., 2013; Dreher and Walter, 2010; IEO, 2003; Kentikelenis et al., 2015b; Nooruddin and Simmons, 2006; Wei and Zhang, 2010), we control for bias due to non-random country selection into IMF programmes by including the inverse-Mills ratio in our model (Heckman, 1979). These values are generated in a separate probit model predicting IMF programme participation in Web Appendix 5. A significantly negative coefficient on the inverse-Mills ratio indicates that unobserved variables that make IMF participation more likely are associated with lower government health expenditure; a significantly positive coefficient indicates that unobserved variables that make IMF participation more likely are associated with higher government health expenditure (Kentikelenis et al., 2015b).

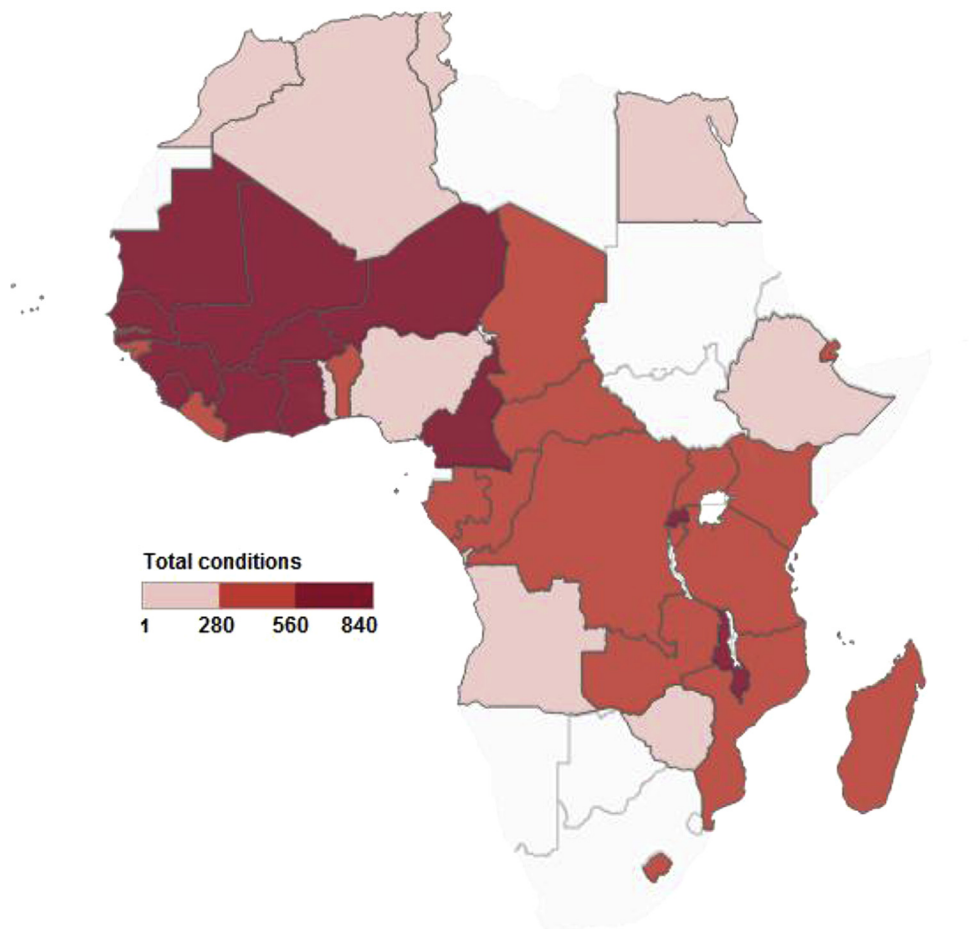


Fig. 1. IMF conditionality in African countries, 1995–2014. Note: Blank space denotes no IMF conditionality applicable in that country.

We employ cross-national multivariate ordinary least squares (OLS) models using the following equation:

$$\begin{aligned} HXP_{it} = & \alpha + \beta_1 IMFCOND_{it-1} + \beta_2 IMFPROG_{it-1} + \beta_3 GDPPC_{it-1} \\ & + \beta_4 ODA_{it-1} + \beta_5 DEP_{it} + \beta_6 URBAN_{it} + \beta_7 WAR_{it} \\ & + \beta_8 INVMILLS_{it} + \mu_i + \psi_t + \varepsilon_{it} \end{aligned}$$

Here, i is country and t is year. HXP is the natural log of government health expenditure per capita in constant 2005 US dollars. $IMFCOND$ is the number of binding conditions (known as ‘prior actions’ or ‘performance criteria’) applicable to a country. $IMFPROG$ is a dummy variable for whether a country was participating in an IMF programme, included to capture effects not related to conditionality (e.g., stemming from the catalytic effect of IMF programmes on the involvement of donors). The two IMF variables are correlated at $r = 0.58$, indicating no issues of collinearity (see [Web Appendix 4](#)). $GDPPC$ is the natural log of gross domestic product per capita in constant 2005 US dollars. ODA is the natural log of net overseas development assistance per capita. These variables enter the model lagged one year to correspond with the budget cycle. In addition, DEP , the dependency ratio, $URBAN$, the proportion of the country’s population living in urban areas, and WAR , a dummy variable for the occurrence of 1000 or more deaths in a year from armed conflict, enter the model contemporaneously. $INVMILLS$ is the inverse-Mills ratio that controls for non-random country selection into IMF programmes. Finally, μ is a set of country dummies (i.e., country fixed effects), ψ is a set of period dummies (i.e., year fixed effects), and ε is the error term. Standard errors are calculated using the clustered Sandwich estimator, which adjusts for heteroscedasticity and serial correlation. Im-Pesaran-Shin tests on the dependent variable reject the null hypothesis that the panels contain a unit root, whether demeaned, with a time trend, or both ([Im et al., 2003](#)). Analyses are performed using Stata version 13.

3. Qualitative results

Our archival research reveals three pathways linking IMF-supported policies to government health spending: fiscal space for health investment; health sector wage and personnel caps; and health system budget execution.

3.1. Fiscal space for health investment

IMF programmes in West African nations often included conditions intended to augment minimum expenditures in priority areas, including health. If effectively implemented, these “priority spending floors” can contribute to increases in budgetary allocations for health ([IMF, 2015a](#)), as in the case of Gambia in 2012 ([IMF, 2013](#)). However, [Table 1](#) shows these targets were frequently not met in our sample of countries. Of the 210 priority spending floors for which we could identify implementation data, only 97 were implemented, about 46%.

Moreover, we find evidence that macroeconomic targets set by the IMF—for example, on budget deficit reduction or international reserve holdings—crowded out health concerns. Cabo Verde provides a case in point. In 2004, IMF staff, concerned by reductions in Cabo Verde’s fiscal surplus, warned of “the importance of ensuring, in the medium term, that the pace of implementation of their poverty reduction strategy did not exceed available resources” ([IMF, 2003b](#), p. 8). In response, Cabo Verdean authorities indicated that meeting IMF-mandated fiscal targets would interrupt recruitment of new doctors ([IMF, 2003b](#)). The country later reported to the [World Health Organization \(WHO\)](#) a 48% decrease in the number of physicians between 2004 and 2006 ([WHO, 2015](#)).

Another example is Mali, which was exposed to IMF programmes from 1995 to 2010. In 2005, when government expenditure on health reached 3.0% of GDP, IMF staff encouraged authorities to reduce spending due to concerns that “financing substantial increases of education and health sector wages with HIPC [Heavily Indebted Poor Countries] Initiative resources might eventually prove unsustainable” ([IMF, 2005c](#), p. 14). Similarly, authorities in Benin—a country that met only 10 of its 30 social spending floors—cut poverty reduction spending (including health) in 2005 to “ensure achievement of the main fiscal objectives” ([IMF, 2006a](#), p. 37). Such patterns were also observed in Guinea and Sierra Leone, where recent governments have reported an inability to meet social spending floors due to government expenditure reductions mandated in their IMF programmes ([IMF, 2014a, 2014b](#)).

3.2. Health sector wage and personnel caps

Of the 320 country-years examined here, West African countries experienced a combined total of 211 years with IMF conditions, 45% of which, or 95 years, included conditions stipulating layoffs or caps on public-sector recruitment and limits to the wage bill. These targets can impede a country’s ability to hire, adequately remunerate, or retain health-care professionals ([McCull, 2008](#)), although the IMF has argued that health sector spending is protected ([Verhoeven and Segura, 2007](#)).

The case of Ghana is illustrative. In 2005, a series of conditions aimed to reduce the country’s public-sector wage bill by 0.6% of GDP over three years ([IMF, 2005a](#)). Domestic authorities defended wage spending levels on the grounds of, *inter alia*, social sector needs ([IMF, 2005b](#)). The Ghanaian Minister of Finance wrote to the IMF that “at the current level of remuneration, the civil service is losing highly productive employees, particularly in the health sector,” and that wage bill limits raised concern about the country’s ability to meet its “goal of bolstering service delivery and value for money” ([IMF, 2006b](#), p. 55). Nonetheless, wage ceilings were maintained until the end of the programme in late-2006, during which period Ghana experienced a reduction in healthcare staff: nursing and midwifery personnel decreased from an estimated 0.92 per 1000 people in 2004 to 0.68 in 2007; the numbers of physicians halved from 0.15 per 1000 people to 0.07 ([WHO, 2015](#)).

Another case is Sierra Leone, which was exposed to several years of limits placed on public-sector wage spending ([IMF, 2006c](#)). This corresponded to the country experiencing a reduction in the already-low number of physicians, from 0.033 per 1000 inhabitants in 2004 to 0.016 in 2008 ([WHO, 2015](#)). To counter this, the government launched its Free Health Care Initiative buttressed by the promise of a living wage for physicians. Yet, IMF staff raised concerns about the fiscal implications and advocated “a more gradual approach to the salary increase in the health sector” ([IMF, 2010](#), p. 10). Similarly, when Cote d’Ivoire was subject to a wage bill ceiling in 2002, IMF staff expressed concern that pressure from Ivorian health workers for salary increases posed a “risk to the program, [and would] derail efforts to rein in the wage bill” ([IMF, 2002a](#), p. 24).

Likewise, Senegal had a decade of wage bill ceilings and hiring freezes under successive IMF programmes since 1994. Domestic authorities wrote to the IMF in 2004 that severe personnel shortages had affected the quality of public service in social sectors ([IMF, 2004b](#)). Medical ‘brain drain,’ a phenomenon linked to inadequate remuneration ([McCull, 2008](#)), had heavily encumbered the country: in the early-2000s, a conservative estimate of the number of physicians abroad as a fraction of total Senegalese physicians was 51%, against the sub-Saharan African mean of 28% ([Clemens and Pettersson, 2008](#)).

Table 1
Targets on health and other social spending, 1995–2014.

	Total	Of which implementation data available	Of which implemented
Benin	30	29	10
Burkina Faso	32	21	8
Cabo Verde	0	0	0
Cote d'Ivoire	29	22	15
Gambia	6	3	3
Ghana	19	16	12
Guinea	27	17	3
Guinea-Bissau	12	7	3
Liberia	15	12	9
Mali	19	16	10
Mauritania	25	13	4
Niger	16	11	2
Nigeria	0	0	0
Senegal	0	0	0
Sierra Leone	42	36	16
Togo	11	7	2
TOTAL	283	210	97

Note: Number of targets (spending floors) reported. Spending floors are set for “priority expenditures” that include health, education, and other social sectors.

3.3. Health system budget execution

Another element of IMF reforms relevant to health systems in West Africa is the introduction of budget monitoring and execution systems. When appropriately designed, such measures can contribute to an increase of budgetary allocations on health that reach the intended target and reduce leakages. For instance, in the late-1990s, IMF staff noted that Benin consistently spent less on health than was approved in budgetary appropriations (IMF, 1998a). The organization then prioritised assistance to the country to improve the utilization of social sector appropriations (IMF, 1998a), ultimately contributing to higher spending (IMF, 2000).

We find evidence that steps towards improving budget execution often translated into fiscal and administrative decentralisation of health-care systems. In principle, decentralisation can make health systems more responsive to local needs, but—in practice—it often created governance problems, exacerbating local institutional weaknesses. For instance, following IMF advice, Guinean authorities transferred budgetary responsibilities from the central government to the prefectural level in the early-2000s (IMF, 2001a, 2002b). Five years later, an IMF mission to the country reported “governance problems” that included “insufficient and ineffective decentralisation”, while also noting deterioration in the quality of health-service delivery (IMF, 2007, p. 4).

Mali's decentralisation of health services in the late-1990s under IMF tutelage was similarly problematic (IMF, 1998b). By 2004, IMF staff reported that “the effectiveness of the devolution process has been limited so far” due to “insufficient human and financial resources at the local level, and weak coordination of sectoral policies at the local and central levels” (IMF, 2004a, p. 16). Likewise, Burkina Faso experienced execution issues following the introduction of a decentralized management system for health while under an IMF programme in the late-1990s (IMF, 1997). Several years later, IMF staff reported that “the lack of a fully operational decentralized administrative structure did not allow for an efficient and swift execution of poverty-reducing projects in remote areas” (IMF, 2003a, p. 11). Senegal also introduced IMF-endorsed decentralisation measures, including devolution of health spending decisions to regional and local authorities. By the mid-2000s, IMF staff reported delays in the implementation of health policy reforms due to “weak financial programming and monitoring capacities at the decentralized level” (IMF, 2004c, p. 89), and noted that “health expenditure declined, owing to low implementation capacity” (IMF, 2005d, p. 8).

4. Quantitative results

Having identified three areas of conditionality linked to reductions in government health expenditure, we turn to evaluating this relationship using quantitative methods. Table 2 presents the results of the cross-national statistical model of the association of IMF conditionality and programme participation with government health spending, adjusted for potential confounding economic and demographic factors. Since the dependent variable has been log-transformed, effects of predictors are interpreted as percent changes in government health spending equivalent to the coefficient multiplied by 100 (except where a predictor is also log-transformed in which case the multiplication is not required). In Model 1, we exclude the IMF conditionality variable but include the IMF programme dummy variable, which yields a positive but statistically non-significant association with government health spending. This indicates that the combined effect of the IMF's credit, technical assistance, aid catalysis, and conditionality on government health spending is no different from zero.

In Model 2, we include the IMF conditionality variable in addition to the IMF programme dummy. At standard thresholds of statistical significance, exposure to an additional binding IMF condition is associated with a decrease of 0.248% (95% CI -0.435 to -0.060) in government health spending per capita. However, outside of the conditionality channel (e.g., the IMF's credit, technical assistance, or catalytic effect on aid), the IMF still does not appear to affect health spending. In Fig. 2, we illustrate the joint effect of IMF programme participation and conditionality on government health spending per capita, varying the number of conditions, and compare it against a scenario where there is no IMF programme. The plot should be interpreted with caution, as results of a partial Wald test showed that the combined IMF condition and programme effect was not statistically different from zero.

For control variables, official development assistance is also associated with increases in government health spending. As noted earlier, selection into IMF programs is not random, which can introduce bias to the analysis. Our model includes the Inverse-Mills ratio to control for this issue, finding unobserved factors that make IMF participation more likely are associated with higher government health spending. We find no statistically significant association for GDP per capita, the dependency ratio, urbanisation, or the occurrence of war. Our model explains 91% of the total variation.

Setting government health spending per capita at the mean value of our entire sample—\$14.66 constant 2005 US dollars—we

Table 2
Effect of IMF conditionality on government health spending, 1995–2012.

	Dependent variable: Log government health expenditure per capita (constant 2005 US\$)	
	Model 1: IMF programme dummy only Coefficient [95% CI]	Model 2: IMF programme dummy and number of IMF conditions Coefficient [95% CI]
IMF condition (lagged)		–0.00248* [–0.00435, –0.000599]
IMF programme (lagged)	0.0877 [–0.0568, 0.232]	0.116 [–0.0283, 0.261]
Log GDP per capita (lagged)	0.547 [–0.365, 1.460]	0.543 [–0.350, 1.435]
Log ODA per capita (lagged)	0.168** [0.0717, 0.264]	0.185** [0.0834, 0.286]
Dependency ratio	0.00420 [–0.0105, 0.0190]	0.00463 [–0.00986, 0.0191]
Urbanisation	0.0901 [–0.00753, 0.188]	0.0917 [–0.000751, 0.184]
War	0.103 [–0.397, 0.602]	0.0849 [–0.419, 0.589]
Inverse-Mills ratio	0.678* [0.00140, 0.134]	0.0866** [0.0261, 0.147]
Number of countries	16	16
Country-years	276	276
R ²	0.913	0.914

Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. Coefficients and 95% CIs are based on robust standard errors clustered by country. All models correct for country and year fixed effects. Data sources and descriptive statistics are provided in [Web Appendix 2–3](#).

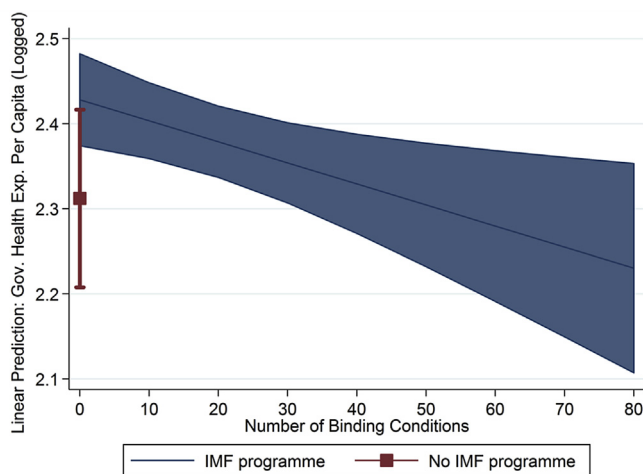


Fig. 2. Joint effect of IMF programme participation and conditionality on government health spending per capita, with 95% confidence intervals. Note: Predictive margins based on Model 2 (see [Table 2](#)).

calculate the effect of one additional IMF condition on government health spending as an average reduction of \$0.036 per person, all other factors held constant. The mean number of binding conditions when countries participate in IMF programmes, at 25 per year, thus corresponds to a reduction of \$0.91 per capita (a 6.21% decrease in government health spending per capita).

In robustness checks, presented in [Web Appendix 6](#), we adopt an alternative approach to account for endogeneity concerns. We deploy a two-stage-least-squared model with both IMF programme participation and IMF conditionality variables instrumented using United Nations General Assembly (UNGA) voting affinity with the United States and the total number of countries under IMF programmes. UNGA voting patterns provide a measure of foreign policy alignment and have been used as an instrument in several previous studies for various elements of IMF programmes, including participation, loan amount, and share of agreed loan drawn ([Barro and Lee, 2005](#); [Dreher, 2006](#); [Oberdabernig, 2013](#)). Countries aligned with the United States tend to receive more favourable treatment from the IMF and thus would receive fewer binding conditions. For the number of countries under IMF programmes, sovereignty costs are perceived to be lower when more countries are on programmes, thus prompting additional countries to participate ([Oberdabernig, 2013](#); [Sturm et al., 2005](#)). Both variables are unlikely to affect government health expenditure except

via the number of binding conditions, thus fulfilling the criteria of an instrumental variable. The Sargan test for overidentification is non-significant, indicating instruments are valid. Our findings remain substantively unchanged.

As an additional test for robustness of results, we also re-estimate the model using our preferred estimation strategy, but with the dependent variable as government health spending as a share of GDP, a widely used measure of political priorities on health. We record consistent results, which are available in [Web Appendix 6](#). Each binding IMF condition is associated with a percent point decrease of 0.007 (95% CI –0.013 to –0.001) in government health spending as a share of GDP.

Lastly, we check whether results are driven by outliers. We initially exclude observations with 50 or more conditions—yielding a total of five exclusions—and re-estimate the model. We then exclude based on the less stringent criterion of 40 or more conditions, which eliminates an additional 14 observations. Results remain substantively the same throughout, as reported in [Web Appendix 6](#).

5. Discussion

Our study finds that IMF conditionality reduced government health expenditures in West Africa, the region with greatest exposure to Fund programmes in Africa. We identify three pathways linking IMF-mandated policies to decreases in government health spending in the region: macroeconomic targets that reduce fiscal space for investment in health, limits to wage bills and civil service employment ceilings that inhibit hiring and retention of health staff, and decentralisation measures that amplify budget execution challenges in the health sector.

Before discussing these findings, we note several limitations. First, we restrict our analysis to evidence identified in the IMF's own archival documents. It is possible that additional effects on health systems are not reported in archival data. Future in-depth analyses of country experiences can help uncover these links. Second, statements by country officials may not always be evidence-based, since they may be a product of political expedience. To minimize such potential biases, we have verified the accuracy of officials' statements using various contextual indicators of health system performance (e.g., WHO health systems data). Third, we recognize that the IMF is not the sole international financial institution involved in these countries. Other organizations—like the World Bank and the African Development Bank—also affect health systems in West Africa ([Coburn et al., 2015](#); [Ruger, 2005](#)), often in parallel programmes with the IMF. Fourth, for our

quantitative analysis, we acknowledge that using a binding condition count does not fully capture IMF programme heterogeneity. Even so, it is still a major advance on previous studies, where programme heterogeneity is largely ignored.

Though our quantitative analysis reveals a negative association between IMF conditionality and government health spending, the aggregate impact of the IMF—programme participation and conditionality combined—is not statistically different from zero. Furthermore, our analysis cannot completely rule out that—unlike conditionality—the IMF's credit, technical assistance, or catalytic effect on aid may help increase government health spending. The association of IMF participation with health spending independent of the conditionality channel was positive, but failed to reach standard thresholds of significance (i.e., estimated with low precision). Overall, while we fail to find quantitative evidence that the IMF on aggregate has any impact on government health spending, it is nonetheless the case that each additional binding condition is associated with decreases in government spending.

Our findings have broader implications for contemporary policy debates about the role of the IMF in efforts to reach the global target of UHC. In recent years, the IMF has promoted social protection policies and health systems strengthening as part of its lending programs (IMF, 2015a). However, the evidence presented reveals that—under direct IMF tutelage—some of the world's poorest countries underfunded their health systems. The legacy of such policies affects these countries' progress towards UHC attainment—a key Sustainable Development Goal.

Looking forward, our research suggests that the IMF should consider the potential effects of its policies on public health systems. Given the current momentum for UHC, the organization has the opportunity to facilitate this process by allowing policy space for borrowing countries to invest in health and determine their health policies free from the influence of unduly restrictive conditionalities. In doing so, the IMF can learn from and collaborate with its sister institution, the World Bank, that recently supported the goal of UHC.

Appendix A. Supplementary data

Supplementary data related to this article can be found at <http://dx.doi.org/10.1016/j.socscimed.2016.12.016>.

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