



# IMF STAFF DISCUSSION NOTE

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## **What Happens to Social Spending in IMF-Supported Programs?**

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## EXECUTIVE SUMMARY

This Staff Discussion Note finds that education and health spending have risen during IMF-supported programs at a faster pace than in developing countries as a whole. The analysis is based on the most comprehensive dataset assembled thus far for this purpose, with data covering 1985–2009 for 140 countries. Controlling for other determinants of education and health spending, including macroeconomic conditions, the results confirm that IMF-supported programs have a positive and significant effect on social spending in low-income countries. Over a five-year period with IMF-supported programs, spending for education increases by about  $\frac{3}{4}$  percentage point of GDP; and for health, by about 1 percentage point of GDP. IMF-supported programs are also associated with increases in the share of government spending allocated to education and health.

## I. INTRODUCTION

The effect of IMF-supported programs on social spending continues to be widely debated.<sup>2</sup> Critics argue that during these programs, countries are required to cut public spending to meet fiscal targets, thereby squeezing priority expenditure on education and health and hurting the poor (e.g., Batniji, 2009; and Baker, 2010). These criticisms are made despite the fact that a number of studies have shown that IMF-supported programs are associated with increases in such spending in comparison with nonprogram countries (Gupta, Clements, and Tiongson, 1998; Gupta and others, 2002; IMF Independent Evaluation Office (IEO), 2003; and Center for Global Development (CGD), 2007). In the past, IMF-supported programs in low-income countries envisaged that education and health spending be increased, or at a minimum protected during the program period. More recently, minimum indicative floors on social and other priority spending have been incorporated into programs for low-income countries where appropriate.<sup>3</sup>

IMF-supported programs are not the only determinants of a country's social spending. Demographic factors (such as the size of the school-aged population), income levels, and macroeconomic conditions also play a role. Thus, a fair test of the impact of IMF-supported programs on this spending must take these factors into account—a point that has been recognized in the studies on the effects of IMF-supported programs on economic growth (Barro and Lee, 2005).

The purpose of this Staff Discussion Note (SDN) is to revisit the debate on IMF-supported programs and education and health spending. It makes an important contribution to the literature by employing the most comprehensive dataset assembled thus far to study this issue and using advanced quantitative techniques to assess the effects of IMF-supported programs. Our findings suggest that in low-income countries, IMF-supported programs have a positive effect on education and health outlays. In other developing countries, spending has also risen, although it appears that IMF-supported programs have no effect per se on these expenditures.

The rest of this SDN is structured as follows. In Section II, we briefly summarize the critics' views of the effects of IMF-supported programs on social spending and various studies that have responded to these critics. In Section III, we analyze trends in education and health spending in 140 developing countries on the basis of the latest available data. This section also discusses the effect of IMF-supported programs on social spending after controlling for macroeconomic and other determinants of such spending. Section IV concludes.

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<sup>2</sup>Social spending is defined here as public spending on education and health.

<sup>3</sup>See IMF (2009).

## II. IMF-SUPPORTED PROGRAMS AND SOCIAL SPENDING: THE CRITICS' VIEW

Critics claim that countries with IMF-supported programs are obliged to decrease social spending to meet fiscal targets, which in turn reflect a preoccupation with keeping inflation under control (e.g., MacDonald, 2007; Batniji, 2009; Ooms and Hammonds, 2009; Stuckler and Basu, 2009; Rowden, 2009; and Baker, 2010). Moreover, wage ceilings, particularly in the health sector—that is, limits on the amount that a government can spend on wages—prevent desirable increases in health employment. Finally, critics argue that increases in aid, intended to support higher spending on health, are diverted and used to repay domestic debt or increase international reserves.

Most studies carried out in the 1990s and early 2000s did not find evidence to support these claims. Studies of IMF-supported programs from the mid-1980s to the mid-1990s found that social spending rose by more in program than in nonprogram countries (for example, Gupta, Clements, and Tiongson, 1998). Studies by the IMF's IEO (2003), as well as by others (CGD, 2007) supported this result. IMF staff has further explained (Gupta, 2010) that IMF-supported programs have been flexible in accommodating deficits; that there have never been wage bill ceilings that specifically applied to the health sector, and in any case since 2007 the use of aggregate wage ceilings in IMF-supported programs has virtually disappeared; and that in practice, social spending has been unaffected by aid flows, reflecting government plans to maintain such spending in the face of volatile financing.

Only two studies have used econometric methods to isolate the effects of IMF-supported programs on social spending. Nooruddin and Simmons (2006) found that, in democracies, IMF-supported programs reduced real per capita health spending, as well as the share of government spending allocated to both education and health.<sup>4</sup> Econometric analysis from IEO (2003), in contrast, found that IMF-supported programs boosted education and health spending as a share of GDP and government spending, as well as in real per capita terms. Given the small number of empirical studies to date, and the availability of new data from the last decade on social spending, additional econometric work is needed to address anew the critics' claims.

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<sup>4</sup>Hajro and Joyce (2009) examine the direct effects of IMF-supported programs on social indicators and find mixed results.

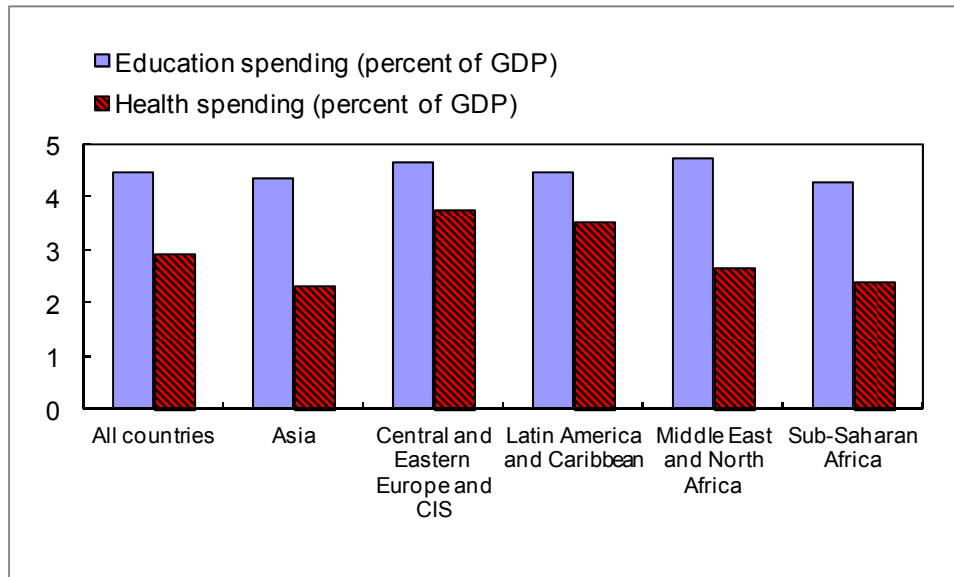
### III. HOW HAVE IMF-SUPPORTED PROGRAMS AFFECTED SOCIAL SPENDING?

#### A. Overview

The analysis presented here is based on public spending for education and health for 1985–2009.<sup>5</sup> The dataset covers 140 developing countries, including 70 low-income countries eligible for concessional financing from the IMF, and is the most comprehensive ever assembled to assess this issue. In the ensuing discussion, we first provide an overview of social spending by region, followed by an overview of the distribution of IMF-supported programs across the globe.

The level of social spending differs across countries and regions (Figures 1 and 2), most notably for health spending. Figure 1 indicates spending-to-GDP ratios by region, while Figure 2 divides countries into those in the top, middle, and bottom thirds of the distribution of spending as a ratio of GDP.

**Figure 1. Education and Health Spending in Developing Countries by Region<sup>1</sup>**



Source: IMF staff calculations.

<sup>1</sup>Unweighted averages, based on the latest year for which data are available. CIS refers to Commonwealth of Independent States.

<sup>5</sup>The dataset is compiled from various sources, including databases of the Asian Development Bank, Eurostat, the IMF (Government Finance Statistics), UNESCO, the World Bank, the World Health Organization, and IMF country desks. The dataset is available at <http://www.imf.org/external/pubs/ft/sdn/2011/data/sdn1115.xls>.

The data suggest a pattern of spending consistent with that obtained in earlier studies:

- In all regions, education spending (averaging 4½ percent of GDP in the entire sample) is higher than health spending (3 percent of GDP);
- Education expenditures do not differ substantially across regions in percent of GDP; and
- Health expenditures show greater variation across regions than education spending. Public health spending is especially low in Asia and Sub-Saharan Africa.<sup>6</sup>

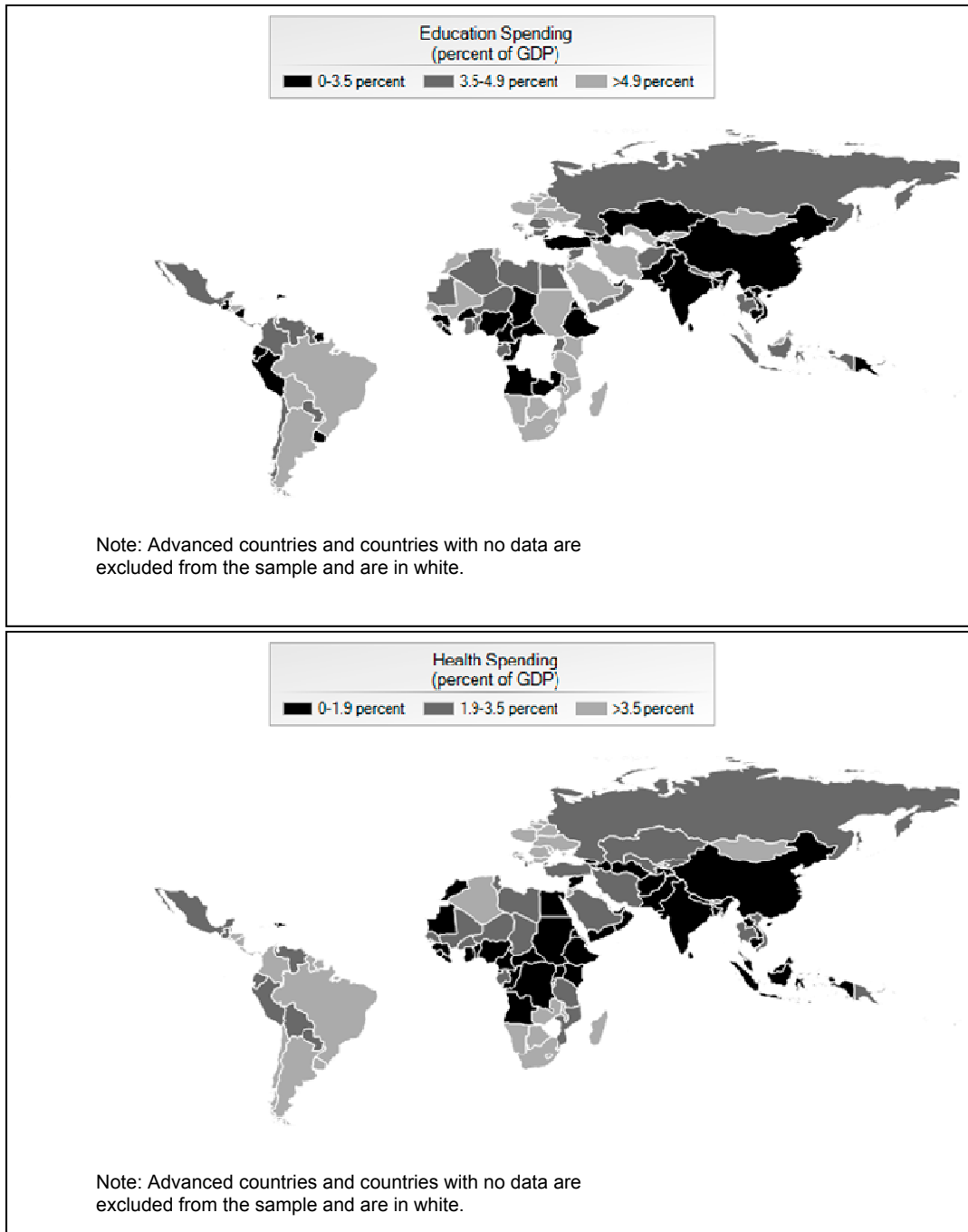
A large number of developing economies have undertaken IMF-supported programs. Since 1985, 112 of the 140 countries in the sample had such a program for at least one year. The number of years a given country had a program varied substantially. Over the entire sample, about one-third of the time countries had IMF-supported programs (Figure 3). By region, IMF-supported programs are more frequent in Sub-Saharan Africa (51 percent) than elsewhere.

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<sup>6</sup>For an examination of health spending across emerging economies, and a comparison with advanced economies, see IMF (2010).



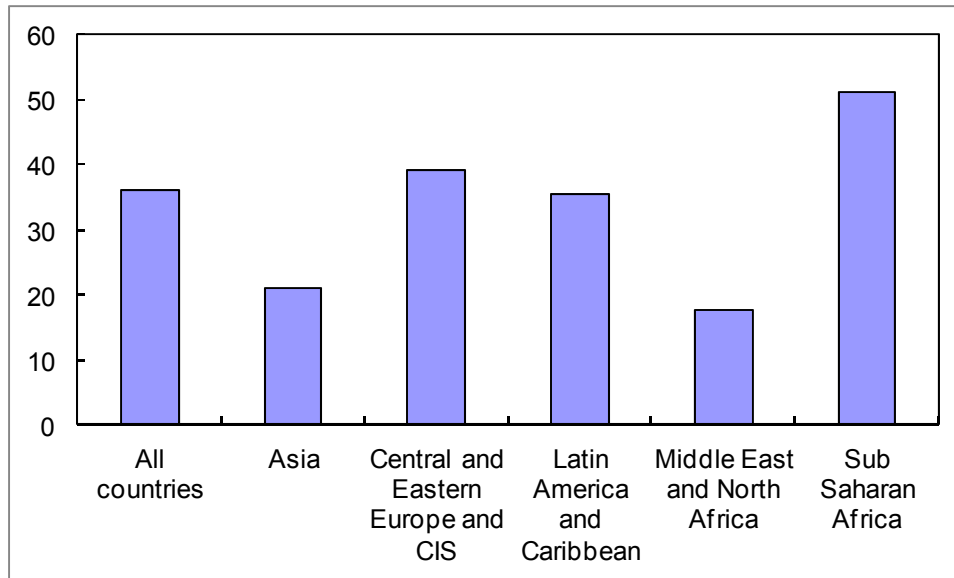
**Figure 2. Education and Health Spending in Developing Countries<sup>1</sup>**



Source: IMF staff calculations.

<sup>1</sup>The threshold values for spending-to-GDP in the three categories represent the bottom, middle, and top thirds of the distribution of spending. Spending-to-GDP ratios based on latest year for which data are available.

**Figure 3. Developing Countries: Percentage of Sample with IMF-Supported Programs, 1985–2009**  
(In percent)



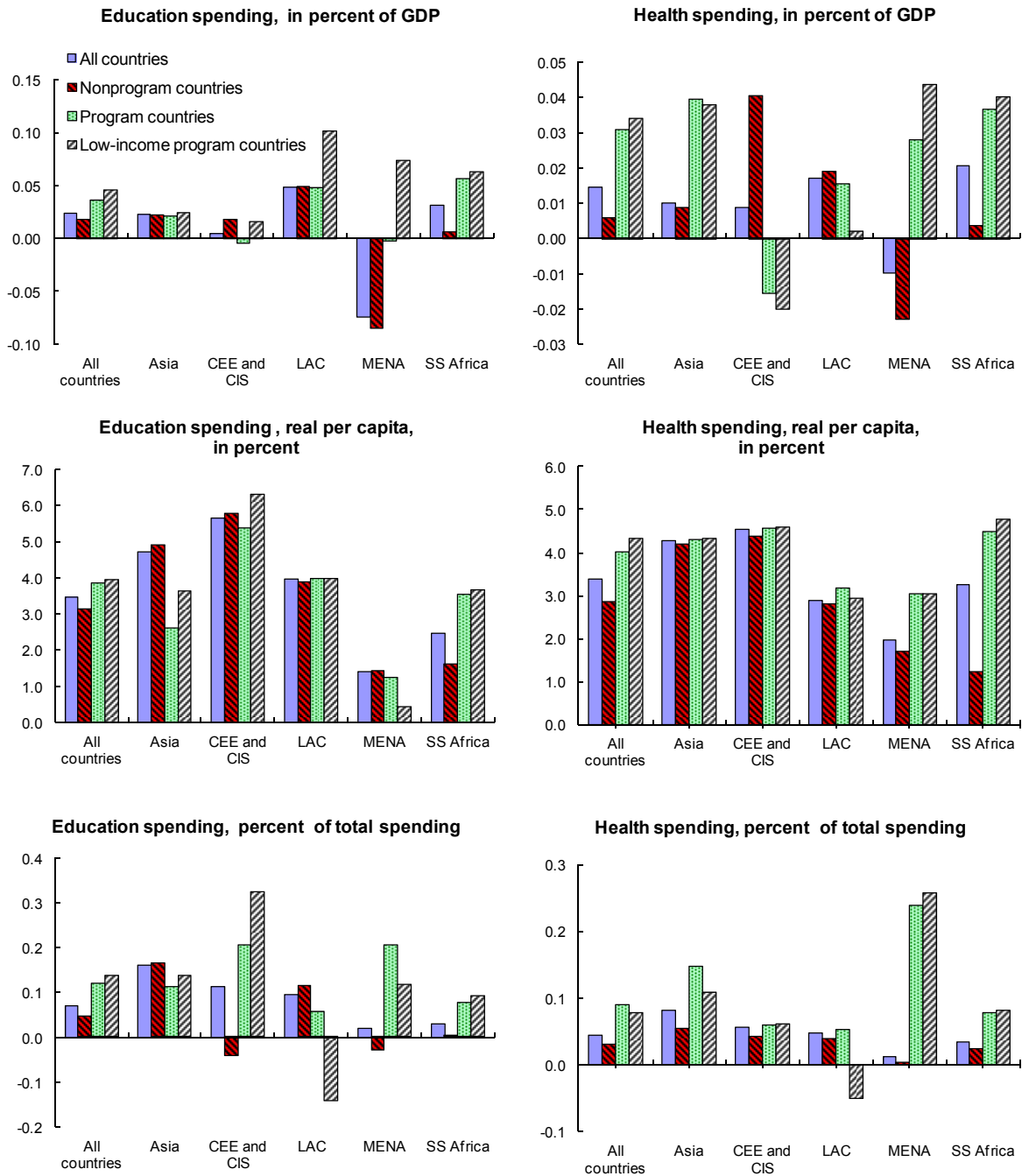
Source: IMF staff calculations.

### **B. Social Spending in IMF-Supported Programs: Stylized Facts**

Developments in education and health spending in countries with IMF-supported programs are reported in Figure 4. Changes in spending levels as a percent of GDP and as a percent of total government spending, as well as percentage changes in real per capita terms, are reported. Countries with IMF-supported programs (“program countries”) are compared with the sample as a whole as well as with those without programs. In addition, developments in social spending in countries receiving the IMF’s concessional support (“low-income program countries”) are reported. Countries are considered as being in the program sample only for the years for which they have an IMF-supported program.<sup>7</sup> For other years, they are part of the nonprogram sample. The findings, reported below, are broadly consistent with earlier studies (IEO, 2003; and CGD, 2007).

<sup>7</sup>We define the starting year of an IMF-supported program as the year in which the program was approved, provided this occurred in the first half of the year. If the approval date was in the second half of the year, the starting year is the following year. The end year is the year in which the program expired.

**Figure 4. Median Annual Change in Education and Health Spending, 1985–2009<sup>1</sup>**



Source: IMF staff calculations.

<sup>1</sup>CEE and CIS, LAC, MENA, and SS Africa refer to Central and Eastern Europe and Commonwealth of Independent States, Latin America and the Caribbean, Middle East and North Africa, and Sub-Saharan Africa, respectively.

The main findings are as follows:

- On average, education and health spending increased slowly in percent of GDP on a per year basis. However, cumulating these increases over 10 years, spending increased every decade at the rate of 0.2 percentage point of GDP for education and 0.1 percentage point of GDP for health. This translates into annual percentage changes in real per capita terms of 3.5 percent for education spending and 3.4 percent for health spending.
- There were differences in the rate of real per capita spending growth across regions, with the highest growth in the CEE and CIS.<sup>8</sup> Regions with the fastest growth of real per capita spending did not necessarily have the greatest increases in spending as a share of GDP, due to differences in economic growth across regions. In the case of the CEE and CIS, for example, both GDP and real per capita social spending have increased strongly in program countries, with the result that spending-to-GDP ratios slightly declined.
- Social spending has increased at a faster pace for countries with an IMF-supported program, particularly those in the low-income group. Over a 10-year horizon, for example, these increases translate into a cumulative rise in education and health spending in low-income program countries of 0.5 and 0.3 percentage points of GDP, respectively. Annual percentage changes in real per capita spending were slightly higher in low-income program countries than program countries as a whole. Spending increases were substantially sharper, however, than in low-income countries without programs: in the program group, per capita education and health spending rose at about 4 percent per year, while it averaged about 2½ percent per year in countries without programs.
- Increases in spending-to-GDP ratios have accelerated since 2000 in low-income program countries, reflecting the effects of debt relief and a focus on poverty reduction in program design.<sup>9</sup>
- The share of government spending allocated to health and education has increased in most regions, and most strongly in program countries. One exception was low-income program countries in LAC, where this spending declined as a share of government outlays in spite of increases in spending as a share of GDP.

What are the channels through which IMF-supported programs spur higher spending in education and health? One of them is the effects of programs on fiscal space, in particular through reforms that increase the revenue effort to provide additional resources for

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<sup>8</sup>Data for the CIS and CEE start, on average, between 1992 and 1994, after the initial decline in output and spending during the transition to market-based economies.

<sup>9</sup>Between 1985 and 1999, the median annual increase in education and health spending in low-income program countries was 0.04 and 0.01 percent of GDP, respectively. This compares with 0.07 and 0.06 percent of GDP, respectively, in the period since 2000.

spending.<sup>10</sup> Another channel is the catalytic effect of IMF-supported programs on donor financing. To the extent that programs lead to higher growth, IMF-supported programs can help generate greater fiscal space. In addition, changes in the composition of spending in favor of health and education have been stronger in countries with programs (Figure 4). For low-income countries, this has reflected the emphasis in these programs to use additional resources—including those generated by debt relief—to increase poverty-reducing spending as part of countries' poverty-reduction strategies.<sup>11</sup> Formal conditionality, in the form of performance criteria or benchmarks, has been used sparingly in IMF-supported programs and does not appear to play a role in the observed increase in these outlays.<sup>12</sup>

### C. IMF-Supported Programs and Social Spending: Quantitative Analysis

As noted earlier, to get a true assessment of the impact of IMF-supported programs on social spending, it is necessary to take account of developments in other variables that might influence this spending. Moreover, studies have to take into account the fact that countries with IMF-supported programs are not directly comparable to nonprogram countries, because the former must address macroeconomic imbalances that will influence fiscal policy and the ability of government to increase spending. Following IEO (2003), we address these issues through a quantitative analysis and distill the effects of IMF-supported programs on social spending. Methodological issues are covered in the Appendix.

We estimate the effect of IMF-supported programs on education and health spending both in percent of GDP and as a share of total spending (Table 1) for low-income countries. The results from two different models—fixed effects and system GMM (generalized method of moments)—are reported. The shaded row of Table 1 provides an estimate of the independent effect of IMF-supported programs on the corresponding indicator of social spending, holding constant other determinants of these outlays.

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<sup>10</sup>Tax revenues rose by a median of 0.19 percentage point of GDP per year in program countries, compared with 0.14 percentage point of GDP in nonprogram countries.

<sup>11</sup>See, for example, Gupta and others (2002) and Selassie and others (2006).

<sup>12</sup>For an examination of conditionality on social spending in IMF-supported programs in low-income countries, see Gupta and others (2000). Since 2002, there have been no programs with benchmarks or performance criteria on spending, but the number of programs with indicative targets for social spending has increased from none in 2002–03 to about eight in 2008–09.

**Table 1. Effect of IMF Programs on Social Spending in Low-Income Countries**

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dependent variable	Education spending (% of GDP)	Education spending (% of GDP)	Health spending (% of GDP)	Health spending (% of GDP)	Education spending (% of total spending)	Education spending (% of total spending)	Health spending (% of total spending)	Health spending (% of total spending)
Estimator	Fixed effect	System GMM	Fixed effect	System GMM	Fixed effect	System GMM	Fixed effect	System GMM
IMF program	0.26* (0.133)	0.22** (0.101)	0.17** (0.070)	0.27*** (0.094)	0.72 (0.659)	1.15*** (0.389)	0.66** (0.292)	0.46** (0.182)
Lagged dependent variable	0.71*** (0.053)	0.85*** (0.029)	0.61*** (0.066)	0.84*** (0.035)	0.67*** (0.074)	0.68*** (0.078)	0.61*** (0.073)	0.68*** (0.097)
Second lagged dependent variable								0.18*** (0.051)
Real GDP per capita	-0.40 (0.330)	-0.05 (0.030)	0.15 (0.119)	-0.01 (0.030)	-1.50 (1.093)	-0.05 (0.138)	0.40 (0.574)	0.02 (0.063)
Government balance	0.02** (0.010)	0.00 (0.010)	0.00 (0.004)	-0.00 (0.006)	0.04 (0.028)	-0.05 (0.046)	0.00 (0.021)	-0.05** (0.027)
Population under 15	-0.03* (0.016)	0.01 (0.016)			-0.00 (0.074)	0.03 (0.043)		
Population over 65			0.05 (0.107)	0.02 (0.026)			-0.09 (0.291)	0.06 (0.078)
Urbanization index	0.06* (0.029)	-0.01 (0.009)	0.02* (0.014)	-0.01* (0.003)	0.19* (0.097)	-0.00 (0.031)	0.03 (0.067)	-0.00 (0.016)
Openness	0.00 (0.004)	0.01*** (0.002)	0.00* (0.002)	0.00** (0.001)	-0.01 (0.012)	-0.00 (0.009)	-0.01 (0.008)	-0.00 (0.005)
Inverse Mills ratio	-0.17** (0.080)		-0.06* (0.036)		-0.50 (0.360)		-0.28 (0.178)	
Constant	1.82 (1.515)	0.34 (0.884)	-0.94 (0.644)	0.17 (0.259)	4.16 (6.240)	3.09 (2.423)	0.39 (1.510)	0.73 (0.971)
Number of observations	580	580	687	687	580	580	687	664
Number of countries	54	54	59	59	54	54	59	59
R-squared	0.651	...	0.498	...	0.514	...	0.442	...
P-value for Sargan test	...	1.00	...	1.00	...	1.00	...	1.00
P-value for AR(2) test	...	0.42	...	0.22	...	0.56	...	0.28

Source: IMF staff calculations.

Note. Standard errors are shown in parentheses. \*\*\*/ \*\*\*/ indicate significance levels of 99 percent, 95 percent, and 90 percent, respectively. The second lag of the dependent variable was added to equation (8) to ensure a satisfactory result for the  $p$ -value for the AR(2) test. See Appendix for details.

The results suggest that IMF-supported programs increase social spending in low-income countries. In the first year, IMF-supported programs raise education and health spending by 0.22–0.26 percentage points of GDP and 0.17–0.27 percentage points of GDP, respectively (columns (1)–(4)).<sup>13</sup> This is higher than the average annual increase in spending in IMF-supported program countries reported in Figure 4, which does not control for the effects of other factors on spending. IMF-supported programs have a statistically significant effect on the share of spending allocated to education and health.<sup>14</sup> Under the system GMM estimates, education and health spending rise as a share of total government outlays by about 1 percentage point and ½ percentage point, respectively, in the first year.<sup>15</sup>

<sup>13</sup>We also estimated the model with all of the statistically insignificant variables dropped. In the system GMM regressions, the IMF program variable remained significant in all formulations. We also ran the model with a time trend as well as with year dummies in place of control variables, and the IMF program variable remained statistically significant. These results are available from the authors upon request.

<sup>14</sup>IMF-supported programs could also potentially affect spending shares through their effects on the government balance. In equation 8, the coefficient is negative, but very small (-0.05). This suggests that countries have other priorities for spending when budget balances improve.

<sup>15</sup>We also estimated the effect of IMF-supported programs on the growth of real per capita education and health spending and found broadly similar results.

Our results also suggest that the effects of a sustained period of IMF-supported programs on social spending can be substantial. The lagged dependent variable captures the additional effects of macroeconomic and other factors that are realized only over time. Taking into account these longer-term effects, a consecutive period of IMF-supported program would increase education and health spending by 0.6 and 0.7 percentage points of GDP, respectively, by the third year after the program started, and 0.8 and 1 percentage points of GDP, respectively, by the fifth year (Table 2). The effects of an IMF-supported program on spending to GDP ratios, however, will eventually diminish and return to zero after a program ends. Take, for example, a country that has two years of IMF-supported programs and then ends the program. For this country, the peak effect of the program on spending comes after two years, with education and health spending rising by 0.4 and 0.5 percentage points of GDP, respectively, relative to the pre-program year. After that, the effect of the program begins to decline gradually, to 0.1 percentage point of GDP in about 10 years for both education and health outlays.<sup>16</sup>

**Table 2. Long-Term Effects of IMF-Supported Programs on Social Spending<sup>1</sup>**

	Year 1	Year 3	Year 5
(Increase in percentage point of GDP)			
Education spending	0.22	0.57	0.82
Health spending	0.27	0.69	0.98

Source: IMF staff calculations.

<sup>1</sup>Indicates increase in social spending (relative to the pre-program period) if a country has a consecutive period of IMF-supported programs, based on estimates from the system GMM model.

Quantitative analysis indicates that IMF-supported programs do not have an independent effect on social spending for countries outside of the low-income country sample.<sup>17</sup> This could reflect the fact that for such countries, the channels through which an IMF-supported programs can affect spending—including through its capacity to catalyze foreign financing and grants, raise revenues, and change the composition of spending—are less powerful than in low-income countries.<sup>18</sup>

<sup>16</sup>IEO (2003) also undertook an assessment of the effect of a two-year program on social spending. They found that the program would raise education spending by 0.4 percentage point of GDP by the second year, which is comparable to our results. On health, the IEO found spending would rise by 0.3 percentage point of GDP. The IEO estimates were based on a sample that included all developing economies.

<sup>17</sup>The estimation results for these countries are available from the authors upon request.

<sup>18</sup>The median annual increase in tax revenue to GDP ratios in low-income program countries was about 0.22 percentage point of GDP per year, compared with 0.06 percentage point per year in other program countries. As indicated in Figure 4, changes in the composition of spending in favor of education spending were greater in low-income countries than in program countries as a whole. This is not the case for health, although this should be interpreted with caution, given that this simple comparison does not control for other factors that

(continued...)

#### IV. CONCLUSIONS

This SDN reexamines the effects of IMF-supported programs on social spending, using data for 1985–2009 covering 140 countries. The evidence suggests that education and health spending has risen during IMF-supported programs at a faster pace than in developing countries as a whole. Controlling for the determinants of education and health spending and macroeconomic conditions, the results confirm that IMF-supported programs have a positive and significant effect on social spending in low-income countries. Over a five-year period in low-income program countries, education spending as a share of GDP increases by about 0.8 percentage point of GDP, and for health, about 1 percentage point of GDP. For other developing countries, the effect is estimated to be neutral. IMF-supported programs are also associated with increases in the share of government spending allocated to education and health.

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influence spending shares. The econometric results that control for other factors indicate that IMF-supported programs have a significant effect on spending shares for both education and health in low-income program countries, but not other program countries. This also reflects the fact that these outlays are lower (in percent of GDP) in low-income countries: combined, the median of education and health spending was 5 percent of GDP in the sample, compared with 7 percent of GDP for other program countries.



### Appendix: Methodological Issues

We use panel regression models to estimate the effect of IMF-supported programs on social spending. We use a cross-country panel of annual data for 1985–2009 for low-income countries (countries eligible for concessional IMF lending). We estimate the following equation:

$$g_{it} = \alpha g_{i,t-1} + \gamma d_{it} + \beta x_{it} + \mu_i + \varepsilon_{it},$$

where  $g_{it}$  is public spending on education or health (measured as percent of GDP or as percent of total spending),  $d_{it}$  is a dummy variable for IMF-supported programs (equals 1 if country  $i$  has a program in year  $t$  and 0 otherwise), and  $x_{it}$  is a set of control variables. The error term is decomposed into a country-specific effect  $\mu_i$  and a white noise term  $\varepsilon_{it}$ . The lagged dependent variable is included because social spending is highly persistent (i.e., education and health spending adjust only gradually over time).<sup>19</sup>

To generate the IMF-supported program dummy variable, we define the starting year of an IMF-supported program as the year in which the program was approved. If the approval date occurred in the second half of the year, the starting year is the following year. The end year is the year in which the program expired.

For control variables, we follow existing studies and include variables that would directly affect social spending. The government balance in the previous year (as percent of GDP) is included to control for a country's fiscal space to increase social spending, and the share of population younger than age 15 (for education spending) and the share of population older than 65 (for health spending) are included to control for demographic effects on social spending. We included income levels (log of real GDP per capita), the degree of urbanization, and trade openness, following Rodrik (1998), Baqir (2002), IEO (2003), and Baldacci and others (2008).

We use two estimation methodologies: fixed effects and system GMM. System GMM is the preferred method because it allows for an unbiased estimate of all variables, including the coefficient on the lagged dependent variable, and can account for endogeneity (two-way causality) between the explanatory and dependent variables. In system GMM estimations, we assume income levels and the government balance are endogenous. Standard errors reported in Table 1 are from two-step estimations.

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<sup>19</sup>The second lag of the dependent variable was added to the system GMM equation for health expenditure as a share of total spending (equation 8 in Table 1). This was done to ensure a satisfactory result for the  $p$ -value for the AR(2) test; without this lag, the  $p$ -value was 0.03, indicating serial correlation in the error term.

Finally, we follow the literature on the macroeconomic effect of IMF-supported programs and address the so-called selection bias problem (see Barro and Lee, 2005). In the case of social spending, countries that have IMF-supported programs are not directly comparable to countries that do not, because the former usually must address macroeconomic imbalances that will influence fiscal policy and the ability of the government to increase spending. To address this problem, we instrument the IMF-supported program variable with three variables: international reserves in months of imports, log of the bilateral exchange rate to U.S. dollar, and an index of exchange rate classification<sup>20</sup> (all of them are lagged by one period). These variables are well correlated with the IMF-supported program variable and would not be expected to have a direct effect on social spending. In the system GMM estimations, we included these variables as additional instruments. In the fixed effect estimations, we include the so-called inverse Mills ratio that is derived from a probit regression of the IMF-supported program on the instrumental variables (see table).

Result of probit regressions to generate inverse Mills ratio		
Dependent variable	Education	Health
	IMF program	IMF program
IMF program (lagged)	1.75*** (0.12)	1.87*** (0.12)
Government balance (lagged)	0.01 (0.01)	0.00 (0.01)
International reserves (lagged)	-0.03* (0.02)	-0.02 (0.02)
Bilateral exchange rate (lagged)	0.03 (0.03)	0.04* (0.02)
Exchange rate classification (lagged)	0.04** (0.02)	0.03* (0.02)
Constant	-0.87*** (0.21)	-1.03*** (0.20)
Number of observations	608	703
R-squared	0.31	0.34

Source: IMF staff calculations.

Note. Standard errors are shown in parentheses. \*\*\*/\*\*/\* indicate significance levels of 99 percent, 95 percent, and 90 percent, respectively.

<sup>20</sup> A higher value for the index indicates a more flexible exchange rate regime.

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