Humanitarian Aid and Government Spending in Education

Cecil John, Zhongxian Liu, MinAh Kim, Xinrui Zhao

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Overview

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The Question

- **Humanitarian Aid** aims to "save lives, alleviate suffering and maintain human dignity during and in the aftermath of man-made crises and natural disasters, as well as to prevent and strengthen preparedness for the occurrence of such situations" (OCHA, 2004).
  - In many cases, low and lower middle income countries are the recipients of humanitarian aid
- Often, **education** is one of the areas that need additional assistance during and aftermath of the crisis
  - e.g. Resources (food, wage) for school construction workers/teachers/staff, school supplies, education facilities, "Peace/reconciliation education"

The Question (cont.)

- There has been a debate on the effectiveness of aid in helping the disadvantaged population of the world.
  - Optimist: foreign aid is essential in reducing poverty (Wright, Winters, 2010).
  - Pessimist: foreign aid needs to bypass the government because the government has the 'incentives to divert aid funds for their own purposes.' (Wright, Winters, 2010).
- Implication: government's commitment to reduce educational disparity is a factor determining the effectiveness of aid.

The Question (cont.)

- Government spending can be a measure of the government's priorities and commitment to solve the issue.
  - Case of application: UNICEF requested China to match their government fund for the immunization system for children to 600 million Yuan with their $20 million aid (Huang, 2015)
- So, we translate the research question to:
- **Is there a correlation between humanitarian aid for education and the government spending on education in low/lower-middle income countries?**

Literature Review

- Case studies of how foreign aid affect/does not affect government spending
  - example of no effect 1: Philippines received 33 billion from 1966 to 1986, a big portion of aid was transferred into the president's private foreign bank accounts. In consequence, wage rate for farms fell by 25 % from 1966 to 1986 (Lohani, 2004)
  - example of no effect 2: The experiment in Malawi, those politicians were 22-29 percent likely to spend nothing in a school with foreign projects (Swaroop et al., 1996).
  - example of effect: According to Swaroop et al., Foreign aid can stimulate more government spending, private investment and public investment to bring better welfare to the society (1996).

Theory and the Hypotheses

- **Null Hypothesis** : The amount of humanitarian aid on education received is irrelevant to government spending in education.
- **Alternative Hypothesis** : The amount of humanitarian aid on education received and government spending in education are correlated.
- **Expectation**: The amount of humanitarian aid on education received and government spending in education will have a **positive correlation**.
  - Why? It will encourage the government to work on education since they have the resources to run the projects and have more international parties monitoring the progress.

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Data and Method

- **Independent Variable**: "Total Reported Funding", filtered by sector = "education" from 2007-2019
  - UN Office for the Coordination of Humanitarian Affairs (OCHA) Financial Tracking Services
  - The years differ by the lagging of the data (0,1,2 years)
- **Dependent Variable**: "Government expenditure on education, US$ (millions)", "Government expenditure on education as % of GDP (%)", "Government expenditure on primary education, US$ (millions)", "Government expenditure on primary education as % of GDP (%)" from 2009-2019
  - UNESCO UIS (Institute of Statistics) Database
  - also accessible through World Bank DataBank
  - The years differ by the lagging of the data (0,1,2 years)

Data and Method

- We use linear regression with a control variable
  - Control Variable: Region
    - World Bank World Development Indicator
    - We include region because 1) the influx of humanitarian aid in education differ greatly by continents and 2) neighborhood effects
    - Default is "East Asia & Pacific"
    - We also use the same dataset to filter "Low income" and "Lower middle income" countries

$$Gov\_expenditure = \beta_0 + \beta_1 * Total\_Reported\_Funding + \epsilon_i$$

$$+\beta_2 Region\_Europe\&CentralAsia$$

$$+\beta_3 Region\_LatinAmerica\&Caribbean...$$

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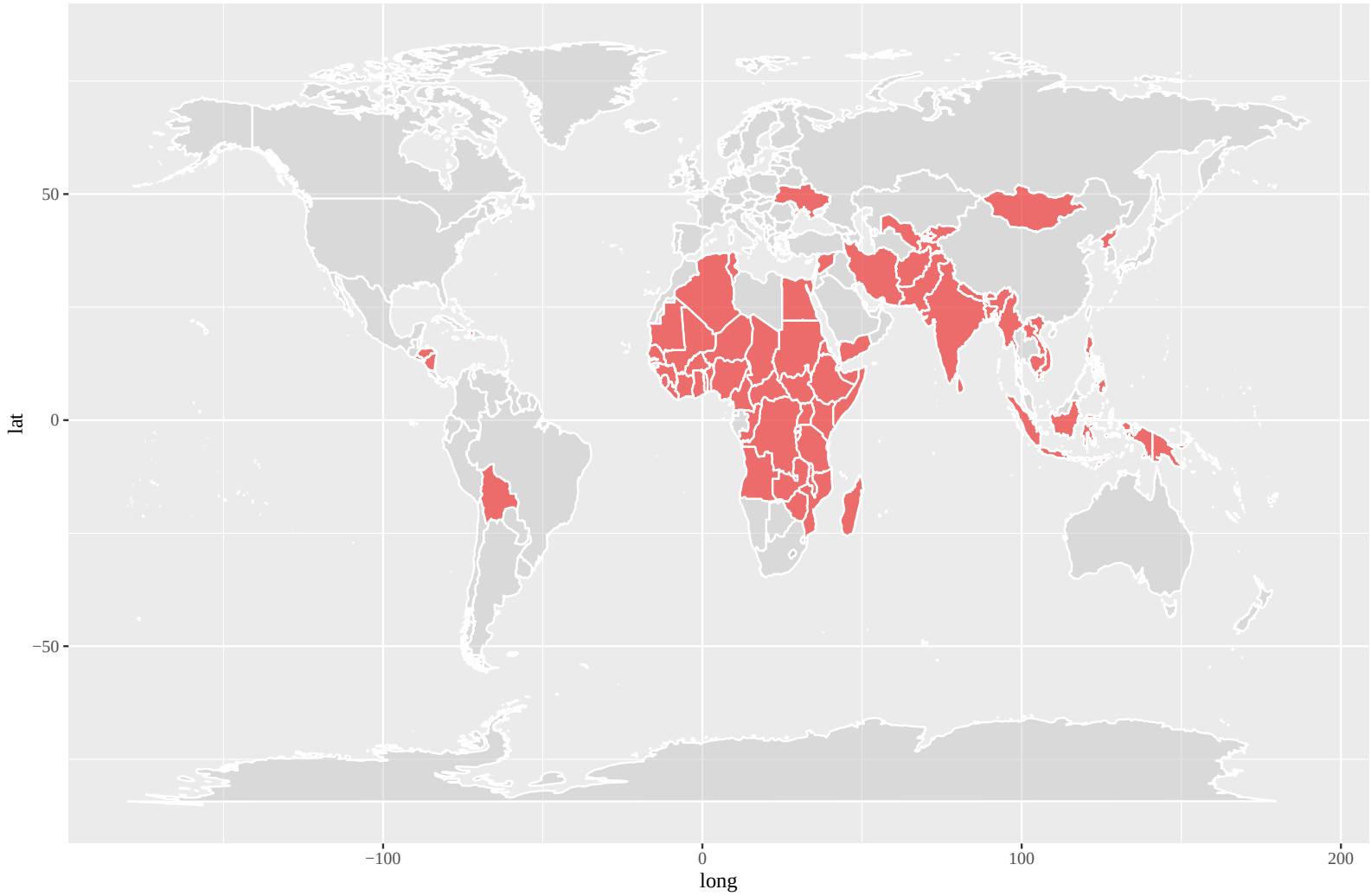
Data and Method

Low and Lower−Middle Income Countries that received humanitarian aid for education



Source: UNOCHA FTS & World Bank

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## List of 94
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Result

```
# function to apply linear regression
linear_f <- function(df){
  linear_m <- lm(amount~aid + Region, data = df)
  linear_m
}
```

Result

Results for no time lag

	Dependent variable:			
	Government Expenditure in Education			
	Total (US m)	Total (% of GDP)	Primary (US m)	Primary (% of GDP)
	(1)	(2)	(3)	(4)
aid	-47.780 (67.968)	-0.042*** (0.015)	-24.290 (57.857)	-0.019* (0.010)
RegionEurope_CentralAsia	-4,151.608 (3,236.151)	2.834*** (0.724)	-1,789.067 (1,946.834)	0.071 (0.405)
RegionLatinAmerica_Carribean	-7,487.205*** (2,771.573)	0.146 (0.620)	-2,967.802 (2,904.954)	0.561 (0.621)
RegionMiddleEast_NorthAfrica	-3,183.713 (2,403.876)	1.333** (0.530)	101.844 (1,278.173)	0.485* (0.250)
RegionSouth Asia	-3,285.206 (2,005.359)	-0.393 (0.448)	-1,864.182** (930.135)	0.226 (0.199)
RegionSub-Saharan Africa	-7,271.519*** (1,716.306)	0.026 (0.384)	-3,092.609*** (803.359)	0.204 (0.171)
Constant	8,201.352*** (1,572.195)	3.589*** (0.352)	3,426.434*** (708.527)	1.261*** (0.151)
Observations	183	184	109	112
R^2	0.126	0.171	0.175	0.067
Adjusted R^2	0.096	0.143	0.126	0.014
Residual Std. Error	6,843.968 (df = 176)	1.530 (df = 177)	2,818.133 (df = 102)	0.603 (df = 105)
F Statistic	4.232*** (df = 6; 176)	6.092*** (df = 6; 177)	3.600*** (df = 6; 102)	1.255 (df = 6; 105)
Note:				*p<0.1; **p<0.05; ***p<0.01

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Result

Results for one-year time lag

	Dependent variable:			
	Government Expenditure in Education			
	Total (US m)	Total (% of GDP)	Primary (US m)	Primary (% of GDP)
	(1)	(2)	(3)	(4)
aid	-81.224 (61.041)	-0.034* (0.018)	-48.992 (39.783)	-0.008 (0.009)
RegionEurope_CentralAsia	-5,980.148** (2,495.668)	2.583*** (0.750)	-2,215.682 (1,736.483)	0.113 (0.466)
RegionLatinAmerica_Carribean	-8,904.670*** (2,101.967)	0.205 (0.632)	-4,034.667*** (1,172.408)	0.810** (0.316)
RegionMiddleEast_NorthAfrica	-4,951.758** (1,943.223)	1.683*** (0.573)	-1,102.815 (1,093.650)	0.595** (0.259)
RegionSouth Asia	-5,421.137*** (1,600.047)	-0.351 (0.481)	-3,136.540*** (752.738)	0.267 (0.203)
RegionSub-Saharan Africa	-8,434.919*** (1,409.565)	0.160 (0.424)	-3,988.440*** (651.394)	0.337* (0.175)
Constant	9,526.387*** (1,312.178)	3.433*** (0.395)	4,408.465*** (594.253)	1.127*** (0.159)
Observations	173	174	113	116
R^2	0.205	0.166	0.299	0.088
Adjusted R^2	0.176	0.136	0.259	0.038
Residual Std. Error	5,210.548 (df = 166)	1.567 (df = 167)	2,263.406 (df = 106)	0.610 (df = 109)
F Statistic	7.134*** (df = 6; 166)	5.531*** (df = 6; 167)	7.523*** (df = 6; 106)	1.760 (df = 6; 109)
Note:				*p<0.1; **p<0.05; ***p<0.01

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Result

Results for two-year time lag

	Dependent variable:			
	Government Expenditure in Education			
	Total (US m)	Total (% of GDP)	Primary (US m)	Primary (% of GDP)
	(1)	(2)	(3)	(4)
aid	-132.295 (83.122)	-0.025 (0.023)	-59.156 (43.492)	-0.005 (0.011)
RegionEurope_CentralAsia	-6,365.308** (2,841.839)	2.483*** (0.797)	-1,475.186 (2,250.201)	0.066 (0.674)
RegionLatinAmerica_Carribean	-8,455.715*** (2,234.480)	0.284 (0.626)	-3,232.623** (1,234.777)	0.934** (0.370)
RegionMiddleEast_NorthAfrica	-5,076.461** (2,182.009)	1.609*** (0.598)	-702.827 (1,132.902)	0.662** (0.294)
RegionSouth Asia	-4,788.413*** (1,691.914)	-0.358 (0.474)	-2,330.067*** (727.208)	0.299 (0.218)
RegionSub-Saharan Africa	-7,864.581*** (1,512.848)	0.106 (0.424)	-3,142.664*** (644.517)	0.411** (0.193)
Constant	9,149.472*** (1,398.944)	3.439*** (0.392)	3,613.418*** (591.395)	1.099*** (0.176)
Observations	159	160	109	112
R^2	0.178	0.150	0.229	0.087
Adjusted R^2	0.146	0.117	0.183	0.034
Residual Std. Error	5,534.923 (df = 152)	1.552 (df = 153)	2,171.186 (df = 102)	0.651 (df = 105)
F Statistic	5.485*** (df = 6; 152)	4.512*** (df = 6; 153)	5.041*** (df = 6; 102)	1.660 (df = 6; 105)
Note:				*p<0.1; **p<0.05; ***p<0.01

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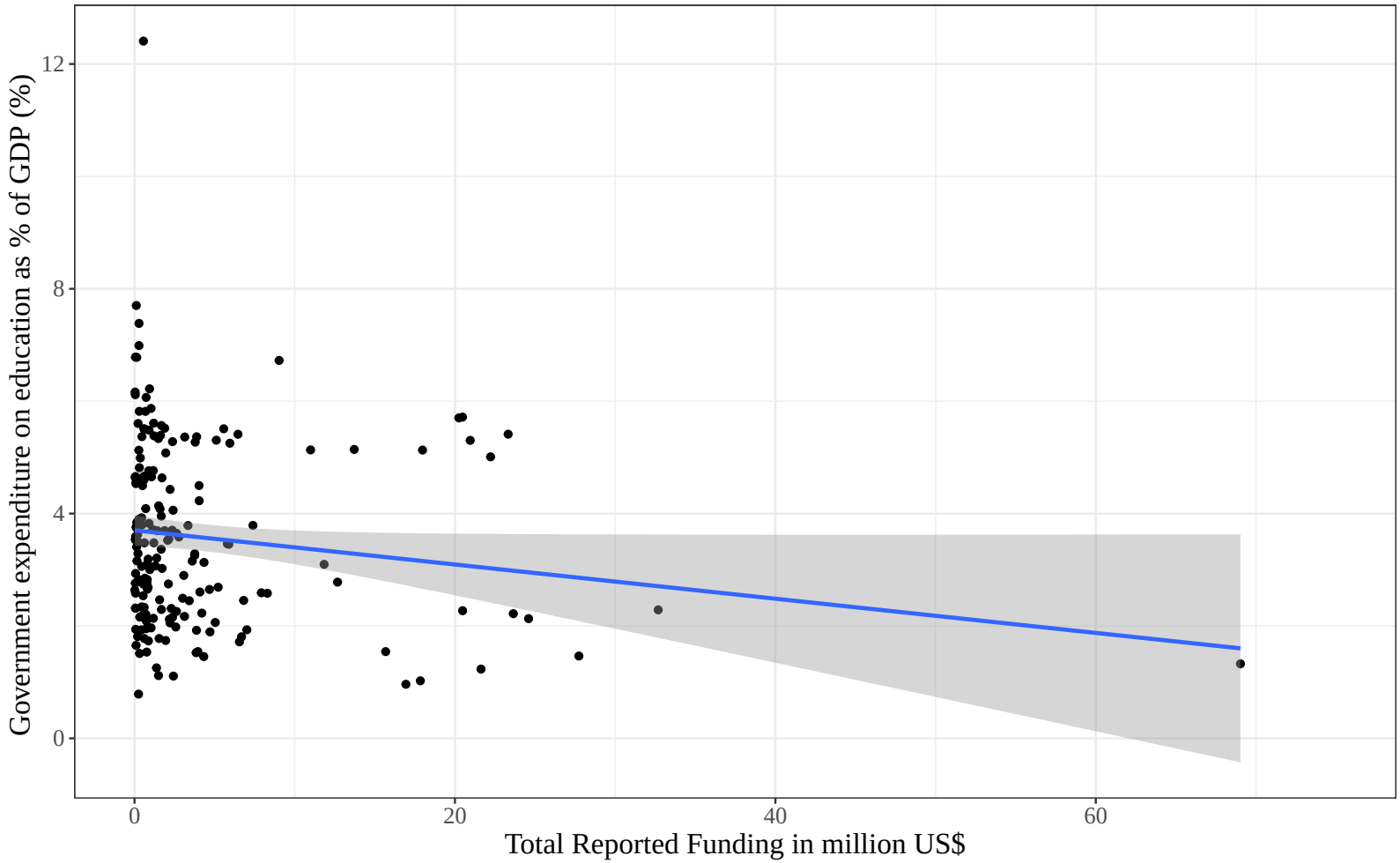
Result

For educaiton, Government Expenditure (% of GDP) Decreases as Humanitarin Aid Increases

No Time Lag: linear regression on total reported humanitarian funding and the government expenditure



Source: UN OCHA FTS& UNESCO UIS

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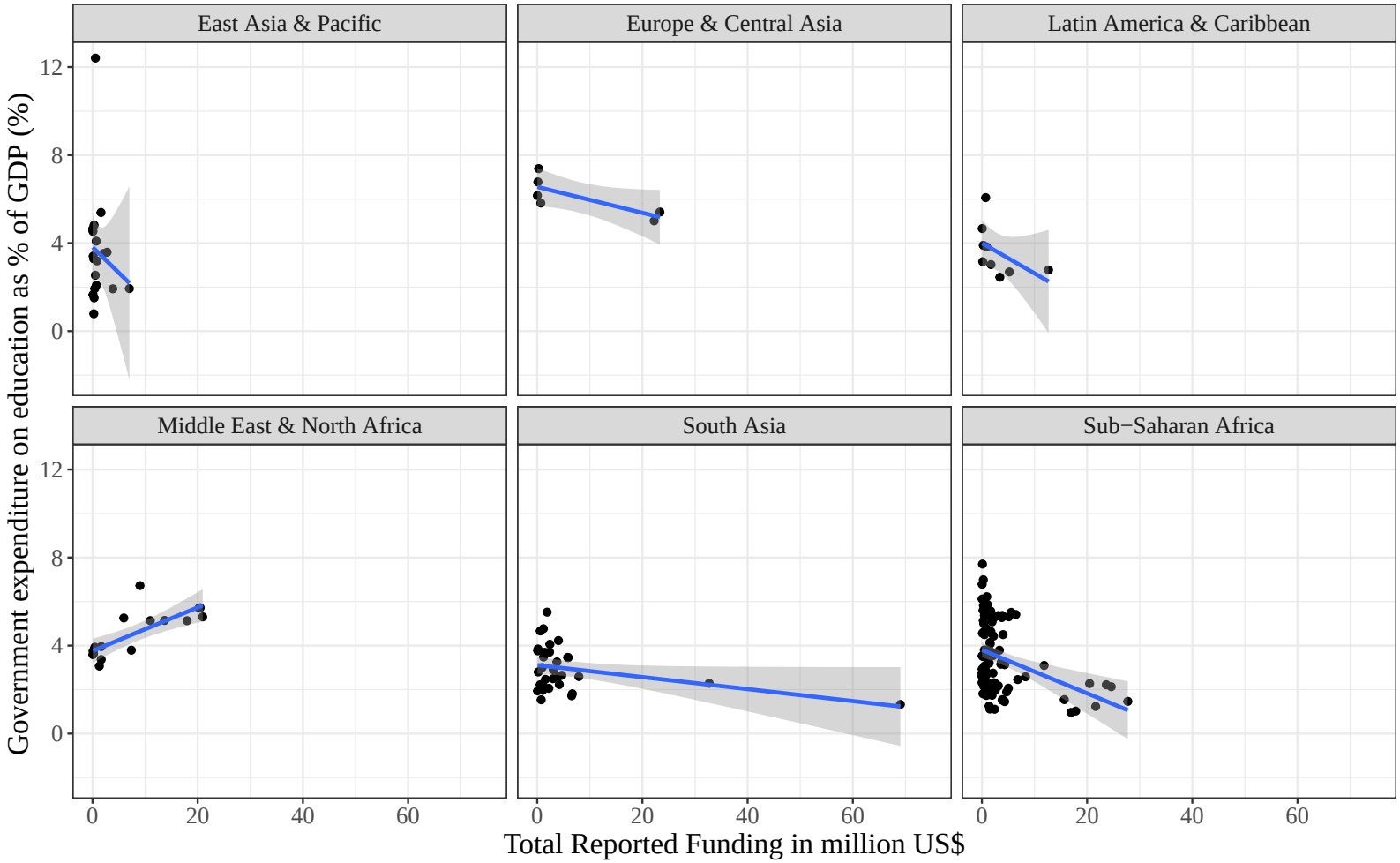
Result

The Negative Correlation is more apparent when divided by Region

No Time Lag: linear regression on total reported humanitarian funding and the government expenditure



Source: UN OCHA FTS& UNESCO UIS

Result

- The amount of humanitarian aid on education received and the Government expenditure on education as percentage of GDP are **negatively** correlated.
  - We reject the null hypothesis, but the result defies our expectation.
  - The R square value ranges from 0.150 to 0.171 (adjusted R square 0.117~0.136), meaning that only 10~20% of the data are explained by the model.
- The result is most significant (in terms of p value and R square) when we do not include any time lag.
  - The longer we assume it takes to reflect humanitarian aid, the more unlikely to find statistical significance.

Conclusion

- The government is less likely to prioritize spending on education when a country received more humanitarian aid in education.
  - Possible Explanation 1: The government is prioritizing more immediate needs (e.g. infrastructure, military. . .), so humanitarian aid is not enough incentive for them to prioritize spending.
  - Possible Explanation 2: It may be because the government does not need to increase the government expenditure because of the influx of humanitarian aid from other channels.
    - From the early 21st century the World Bank is trying to find alternative from the "government-to-government" support to NGOs and private sectors (Mosley et al., 2004).
    - If the other non-profit organizations or parties are already working on education based on the humanitarian aid, the government may have less incentive to invest in education.

Conclusion

- Limitation
  - Humanitarian aid is a very small fraction of foreign aid (e.g. development aid)
  - When looking at total amount of government expenditure, we did not include GDP as control variable.
- For Further studies, we can check
  - if the education indexes(e.g. literacy rate, attendance/graduation rate) improve or worsen despite the lack of government spending.
  - the destinations of humanitarian aid.
  - the exception of Middle East & North Africa from the trend

Link to Data Sources

- UN OCHA FTS (independent variable): https://fts.unocha.org/global-funding/countries/2019?f%5B0%5D=destinationGlobalClusterIdName%3A3%3AEducation
- UNESCO UIS (dependent variable): http://data.uis.unesco.org
- World Bank DataBank (dependent variable): https://databank.worldbank.org/source/education-statistics:-education-expenditure#
- World Bank World Development Indicator (limiting the scope & control variable): https://datatopics.worldbank.org/world-development-indicators/the-world-by-income-and-region.html

References

- UN Office for the Coordination of Humanitarian Affairs. (2004, September). Criteria for inclusion of reported humanitarian contributions into the Financial Tracking Service database, and for donor appealing agency reporting to FTS. OCHA Services Financial Tracking Services. Retrieved December 4, 2022, from https://fts.unocha.org/sites/default/files/2020-10/26.01.17_-_criteria_for_inclusion_-_2017_updated_annex_i.pdf
- Huang, Y. (2015). International Institutions and China's Health Policy. Journal of Health Politics, Policy and Law, 40(1), 41–71. https://doi.org/10.1215/03616878-2854551
- Lohani, S. (2004), Effect of Foreign Aid on Development: Does More Money Bring More Development? Honors Projects. 18. https://digitalcommons.iwu.edu/econ_honproj/18

References

- Mosley, P., Hudson, J., & Verschoor, A. (2004). Aid, Poverty Reduction and the "New Conditionality." The Economic Journal (London), 114(496), F217–F243. https://doi.org/10.1111/j.1468-0297.2004.00220.x
- Swaroop, V., Feyzioglu T., & Zhu, M. (1996). Foreign Aid's Impact on Public Spending. The World Bank Group. https://doi.org/10.1596/1813-9450-1610
- Wright, J., & Winters, M. (2010). The Politics of Effective Foreign Aid. Annual Review of Political Science, 13(1), 61–80. https://doi.org/10.1146/annurev.polisci.032708.143524