Quantitative Methods I

Homework #7: Research Note Excerpt/Fragment

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1 Data

Below, I examine data on the level of corruption in, number of donors per, and level of aid fractionalization to nearly 100 foreign aid recipients from 2005-2010 (the period during which the Paris Declaration on Aid Effectiveness was enacted by more than 100 countries). Transparency International's Corruption Perceptions Index (CPI), an aggregation of surveys on expert perceptions of corruption in more than 100 countries, is used as the measure of corruption. CPI scores range from 0 to 10, with lower scores indicating higher levels of corruption. In order to facilitate greater ease of interpretation, values are inverted. Data on the number of donors per recipient and the level of aid fractionalization were taken from *OECD.stat*. The set of donors was restricted to DAC countries. The number of donors per recipient ranged from, at minimum, 1 to, at maximum, 29. Due to missing values in the data, however, the minimum number of donors per recipient used in data analysis was 3. Aid fractionalization was operationalized using the inverse of the Herfindahl-Hirschmann Index (HHI). That is, aid fractionalization was measured as one minus the sum of the squared proportion of aid inflows into a recipient j from a given donor i per year t:

$$1 - \sum_{i=1}^{n} \left(\frac{Aid_{ijt}}{\sum_{i=1}^{n} Aid_{ijt}} \right)^2$$

Values for each of these variables were then averaged across the 2005-2010 period. Summary statistics are shown in table 1. The mean of the aggregate level of aid fractionalization during this period was 0.66 with a standard deviation of 0.2. The minimum level of aid fractionalization observed was a miniscule 0.001, and the highest level observed was 0.91. The mean number of donors per recipient was 17.5 ($sd = 6.9$), meanwhile the mean level of corruption per recipient was 6.7 (on an inverted scale from 0 to 10 where higher values equal more corruption) with a standard deviation of 1.49 and a minimum value of 0.7 and a maximum of 8.47.

Table 1: Summary Statistics

Statistic	N	Mean	St. Dev.	Min	Max
Aid Fractionalization	150	0.661	0.200	0.001	0.911
Number of Donors	154	17.503	6.911	1.667	28.333
Corruption	97	6.665	1.493	0.700	8.467

Values are based on averages per aid recipient (2005-2010).

1.1 Positive and Negative Change in the Number of Donors and Level of Aid Fractionalization per Recipient

Over the 2005-2010 period, the number recipients that experienced an increase in the number of aid donors was nearly double the number that experienced a decrease, and more than six times the number that saw no change (table 2). Moreover, according to an analysis of variance (ANOVA), the level of corruption in countries that witnessed a decline in the number of donors was significantly higher than the level of corruption in countries that saw either no change or an increase in the number of donors (table 3 and figure 1).

Table 2: Change in the number of donors per recipient (2005-2010).

Change in Number of Donors	Count
Decrease	46
Increase	93
No Change	15

Table 3: ANOVA estimates of the difference in mean corruption levels.

Decrease	Increase	No Change
7.276	6.303	7.010

N = 97. F-value = 177.7. $p < 0.000$.
Cell entries are mean inverted CPI scores.

As with the change in the number of donors over the 2005-2010 period, the number of recipients that experienced an increase in aid fractionalization exceeded the number that experienced a decline; however, the magnitude of this differnce was much smaller and, moreover, there was no instance where the level of aid fractionalization experienced no change (table 4). Additionally, a difference in means t-test failed to reject the null hypothesis that there is no difference in the mean level of corruption in countries that experienced an increase in aid fractionalization and those that experienced a decline (figure 2).

While no statistically significant difference in mean corruption in countries that experienced a decline

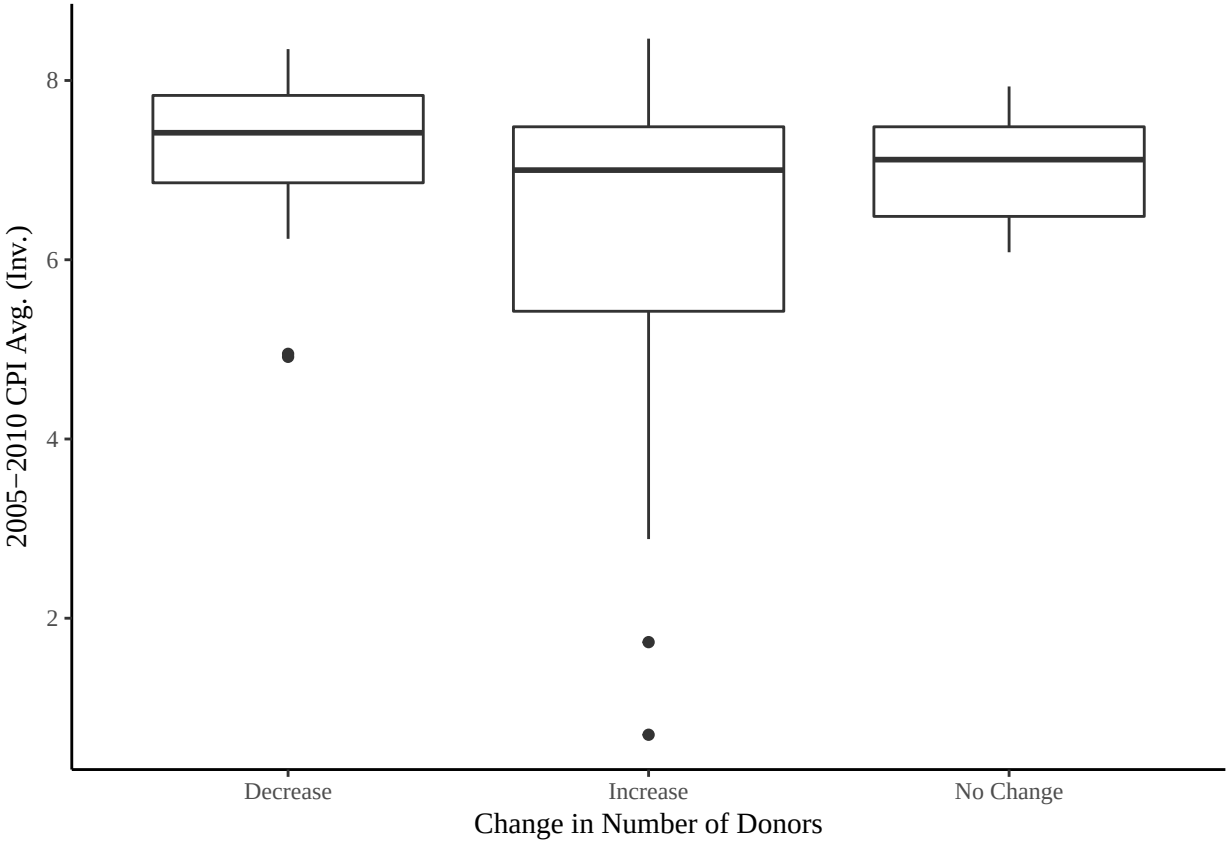

Figure 1: Positive vs. negative change in the number of donors per recipient and mean level of corruption (2005-2010).

Table 4: Change in aid fractionalization per recipient (2005-2010).

Change in Aid Fractionalization	Count
Decrease	67
Increase	83

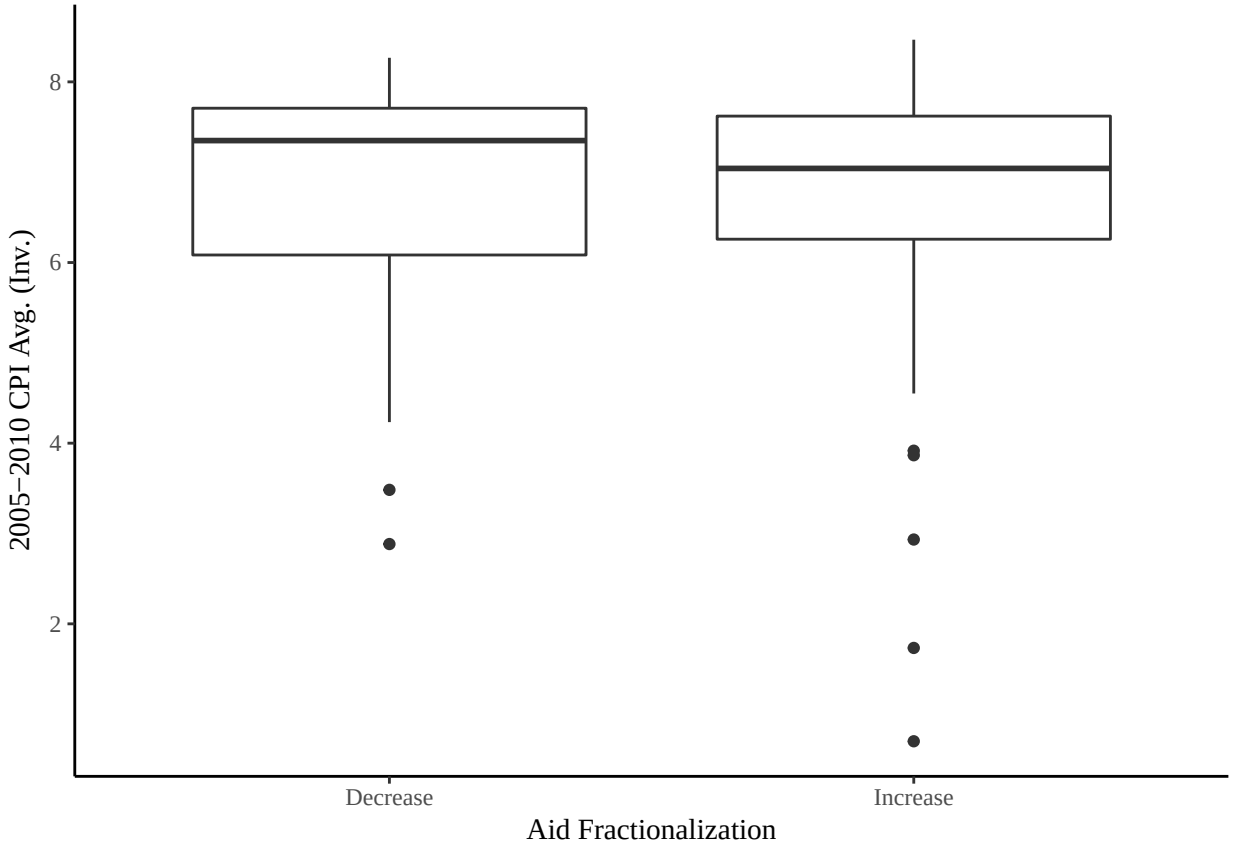

Figure 2: Positive vs. negative change in aid fractionalization and mean level of corruption (2005-2010).

in aid fractionalization as opposed to an increase in aid fractionalization was found, ANOVA estimates indicate a significant difference in mean corruption in countries that experienced *both* a decline in the number of donors and in the level of aid inflow fractionalization as compared with countries that only experienced a change in one or a decline in both (table 6 figure 3). The number of cases that experienced a change in only one or the other measure was nearly double the number that saw an increase in both and more than five times the number that experienced a decline in both (table 5).

These preliminary findings suggest that during the 2005-2010 period when the Paris Declaration was in effect, a decline both in aid fractionalization and in the number of donors per aid recipient was most concentrated in more corrupt recipients, whereas an increase both in aid fractionalization and in the number of donors per aid recipient was most concentrated in less corrupt recipients.

Table 5: Change in aid fractionalization and number of donors per recipient (2005-2010).

Change in Aid Fractionalization and Number of Donors	Count
Change in Only One	87
Decrease in Both	17
Increase in Both	46

Table 6: ANOVA estimates for the difference in mean corruption levels.

Change in Only One	Decrease in Both	Increase in Both
6.793	7.493	6.148

N = 95. F-value = 167.6. $p < 0.000$.
Cell entries are mean inverted CPI scores.

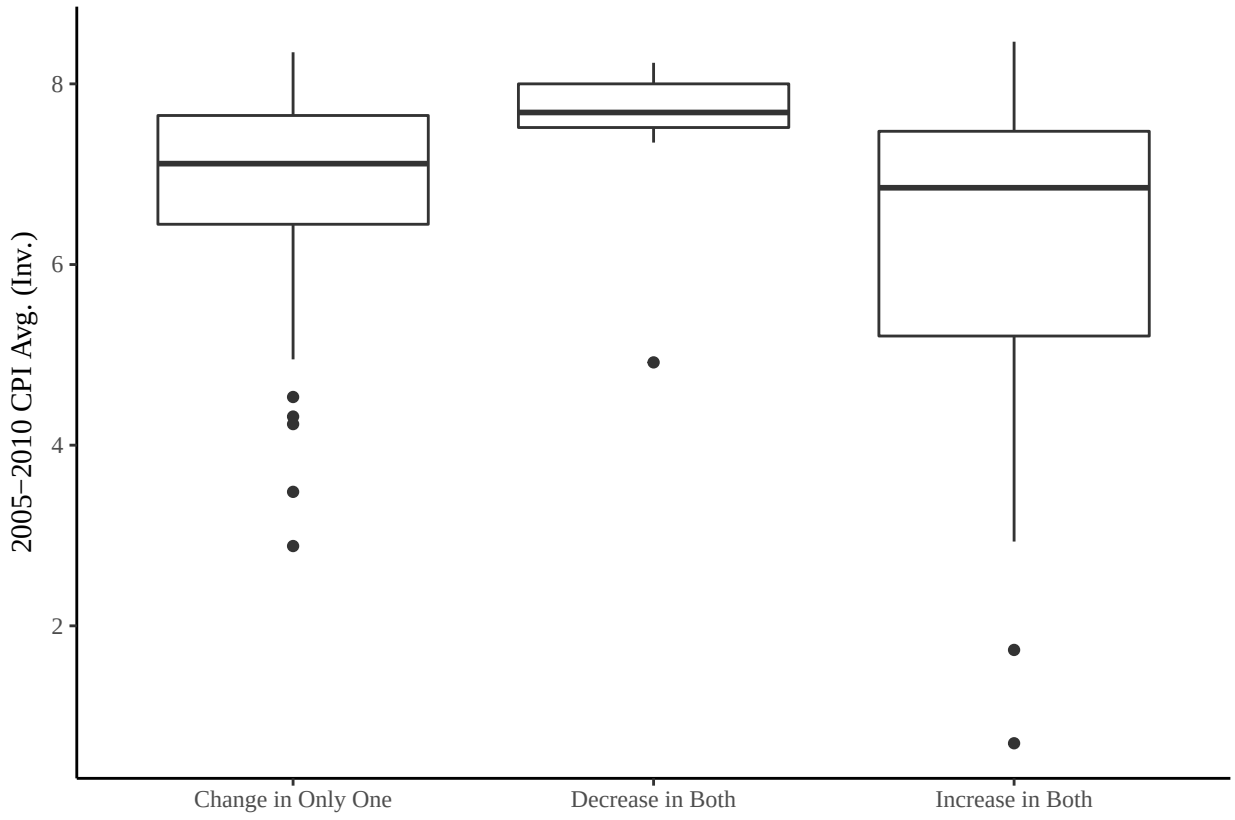

Figure 3: Change in aid fractionalization and number of donors and mean level of corruption (2005-2010).