Author's response to reviews

Title: Global and regional trends of domestic-public AIDS financing

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Author's response to reviews: see over
Dear Editor,

We are re-submitting our original work, entitled “Global and regional trends of domestic-public AIDS financing” to BMC Public Health for publication consideration. The responses of the reviewers followed by our changes are detailed in the following paragraphs.

Editor 1: The table in appendix II appears crowded. Please improve on it to make it easy to understand.

Response: We examined the table and are not aware of any way to improve the table while still including the full range of raw data.

Editor 2: Please revise the reference list and ensure that references are written in a consistent manner (ie. APA, MLA etc). There are too many inconsistencies from one reference to the next.

Response: The references are in the format that uses Endnote BMC Public Health format. Please let us know if further changes need to be made.

Editor 3: The authors will need to standardise the way they refer to the national programmes - HIV/AIDS programme spending or AIDS programme spending or HIV programme spending.

We examined the text and made these changes. We referred to everything as HIV and took out AIDS or HIV/AIDS references.

Editor 3: General: explain the acronyms the first time they are used - LMICs, OECD, GDP

We updated these.

Editor 3: Abstract: in the results and discussion section, the authors mention a three-fold increase in government spending and give the cumulative total of US$ spent between 2000 to 2010. It would be clearer for the reader if the authors can give the initial spending in 2000 and the total achieved in 2010 - for reference.

We added this into the abstract.

Editor 3: Abstract: in the conclusion, the authors write: “Domestic spending in LMICs increases with economic growth[…]”. They found an association with GDP per capita, they didn't explore the association of changes in GDP per capita (growth) during this period and the government investment. Please re-phrase.

We rephrased this comment.
Editor 3: Background - “this paper seeks to understand the independent predictors of domestic spending on HIV between 2000 and 2009 and to provide feasible projections of regional HIV spending trends.” The period looked at is up to 2010 and the authors do not present projections in the results.

We removed the reference to projections and replaced 2009 with 2010.

Editor 3: Methods: “… a dataset was constructed by combining country reports that included the total amount of domestic spending at the country level.” Would be useful if they could specify what was combined - yearly (?) reports for different countries from 2000 to 2010?

This data set was constructed from the annual UNGASS reports for domestic public spending on HIV.

Editor 3: Methods, research questions: I found useful how the authors state their hypothesis. The predefinition of variables to be tested helps reduce the chance of spurious findings. However, they focus the analysis on several plausible variables - and it is not clear to me how they estimated plausibility. From the literature?

This was estimated using previous literature (see Hacker, Murray, Lu, Farag). We added a sentence into the methods clarifying this.

Editor 3: Methods: They also refer to the “national economic expressed as GDP per capita” - might this be a typo and they meant economy?

We fixed this and changed to economy.

Editor 3: Methods: It is assumed that spending on HIV is a normal good – for non-economists, what are the implications for the analysis of considering spending on HIV as a “normal good”.

We clarified this in the text.

Editor 3: Methods: The authors refer to the World Bank’s governance indicators - it might be useful to explain these concepts (especially the ones included in the models). They then list the governance variables included: measures of accountability, corruption, government efficiency, political stability, regulatory quality and rule of law. But because these are highly correlated, only political stability was included. But in table 2 - it seems they were all included in model (1). Please clarify.

We appreciate the reviewer’s comment; these variables are most likely correlated, however the final model did not include any of the governance indicators. They are shown in the first model of table 2 to show the reader that we did in fact check these and they were not significant. We also checked each variable separately in the model excluding others to avoid correlation.
Therefore, we decided not to include any descriptions of the governance indicators in the text as they were not used in the final model.

**Editor 3: Methods:** Namibia, South Africa, Botswana and Swaziland were excluded from the prediction model because they were outliers - it would be useful to have a description on what made these countries outliers.

Regression diagnostics determined the outliers using dfbeta, cooks distance and leverage tests. We added this to the methods.

**Editor 3: Methods:** Last paragraph of the analytical strategy mentions that panel data […] were corrected by using both random and fixed effects models with clustered standard errors. But the data were not corrected, several models were tested. Please rephrase.

We rephrased this.

**Editor 3: Table 1:** the authors refer to both SD and standard errors. Panel sample size column, I would imagine that the different values are for different years, maybe specify the years.

We corrected the SD and changed them to SE; this was a mistake on our part. We also clarified the sample size label.

**Editor 3: Results:** All of the variables in the prediction model (4) were highly significant at the 0.01 percent level - please correct: either 0.1 percent level or 0.001 level.

We corrected this to the .001 level.

**Editor 3: Results:** Table 2 would benefit from spelling out the name of the variables

Response: We added the variable names to the table.

**Editor 3: Results:** The phrase before the trends in domestic-public spending - all coefficients retained the same sign and significance level except that prevalence became negative - I assume that HIV prevalence did not become negative, needs rephrasing.

The editor read this correctly as the sign did become negative.

**Editor 3: Figure 3** - I find interesting the 2 regression lines presented, but there was no comment on these in the results.

We added some additional explanation in the text.

**Editor 3: 4 figures and 3 tables seem a bit much - I would suggest that figure 3 and 4 can be combined and figure 1 presented as an appendix.**
We agree and we decided to remove Figure 3 and keep figure 4 only. We are happy to submit figure 3 as an appendix if the editor agrees. We do think that we should keep figure 1 in the text as this is an important figure to orient the readers to the bifurcation of domestic public spending in LMICs.

**Editor 3: Discussion:** The discussion overall could benefit from a better structure. I would also add some discussion on how this government spending is being used. Is there evidence that governments spend the increased budget on programmes targeting those groups at highest risk?

We added discussion of international funding generally going towards MARPS and how domestic funding is generally not used for these populations. We also re-arranged parts of the conclusion to make it more coherent.

**Editor 3:** A brief discussion on fungibility is needed and how this fits with the results presented.

We removed the mention of fungibility and the interaction between domestic/public spending and international spending as it is outside of the scope of this paper. However, we agree that this is an important topic for any paper addressing international spending.

**Editor 3:** The limitations of the dataset used are mentioned but not the limitations of the method used to predict missing data points.

We added more discussion of these limitations such as unobserved effects into the text.

**Editor 3:** Appendix 2 - this appendix is really useful as supporting information but it will be good to know which data points were predicted and which were reported

We updated this table and clearly marked which points are predicted and which were reported.

**Editor 3:** This study refers to a global estimation of trends in domestic financing of HIV/AIDS programmes and its determinants, but the authors mention that they will also look at the influence of international aid on domestic HIV/AIDS expenditures (in the abstract) which is not really explored in the paper. The abstract will need to be modified.

This was an oversight on our part. We originally wanted to look at international aid, but we decided that this was not within the scope of this paper. This comment and a paragraph in the discussion should have been removed from the text. We have now removed them.

**Editor 3:** Results - wrt table 1: in the text the authors say that table 1 includes “international assistance per capita” this is missing from the table but will be good to add it.
As mentioned above, we took out the international assistance per capita.

**Editor 3: Results, last sentence before the discussion - it states that the amount of resources committed by governments has been increasing and almost matched international aid over the past eleven years - but we don't know the level of international aid - data not presented.**

We removed this sentence.

**Editor 3: In the discussion - paragraph 2: “this analysis also found that GDP, HIV prevalence and political stability are positively associated with the level of domestic spending from public sources.” This is not evident from table 2. Please rephrase.**

We removed the reference to political stability as it was not found to be significant in our final models as seen in table 2. GDP and prevalence are significant in this table in the random effects models.

**Editor 3: Some data used in the analysis was sourced from country reports and other data points were predicted - the authors should explain how they predicted these data points in the methods.**

We added some explanation to the methods about how we used linear interpolation to add ~150 data points to the data set and explained that 512 of the 678 points were from validated country reports.

Thank you for taking the time to review these changes.

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