

Contents lists available at [ScienceDirect](#)

Social Science & Medicine

journal homepage: www.elsevier.com/locate/socscimed

Short communication

More heat, less light! The resource curse & HIV/AIDS: A reply to Olivier Sterck

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ARTICLE INFO

Article history:

Received 2 November 2015

Received in revised form

14 December 2015

Accepted 16 December 2015

Available online xxx

Keywords:

Natural resource curse

HIV/AIDS

Governance

ABSTRACT

We reported fairly robust results suggesting that resource rich countries did less well containing HIV/AIDS than resource poor states (de Soysa and Gizelis 2013). We argued that public action to prevent the spread of disease was going to be weaker in resource rich states because rulers would have less incentive to fight disease. Olivier Sterck (this issue) criticizes our study on several grounds, arguing that resource rich states can provide anti-retroviral therapy (ART) and thereby fight the AIDS epidemic. He, however, finds no relationship between resource wealth and HIV/AIDS. We argue that his reanalyses do not fully address the theoretical association between resource wealth and the spread of HIV/AIDS and that his argument about ART is more wishful than a realistic expectation. Future research should probe more carefully why resource wealth has not been deployed more effectively for fighting disease—a point we can all agree on.

Published by Elsevier Ltd.

Motivated by the debate across several disciplines on the natural resource curse, we examined if resource wealthy states suffer higher prevalence rates of HIV/AIDS and TB (xxx 2013). The connection between the resource curse and disease is particularly interesting since one strong argument for why natural resource wealth leads to lower social welfare is supposedly through the neglect of human capital, often proxied by spending (Frankel, 2012). Indeed, recent empirical studies show robustly that resource rich countries spend a lower portion of gross domestic product (GDP) on health (Cockx and Francken, 2014). Spending, though important for many reasons, is ambiguous because lower spending could be due to neglect, or higher efficiency, and higher spending might simply be corruption. Moreover, judging by the vast literature on fighting HIV/AIDS, the reason for why some countries have lower prevalence than others is apparently due to effective public action by concerned governments. Countries, such as South Africa, are often criticized for having downplayed the problem of HIV/AIDS. We were, thus, unsurprised by the robust relationship between resource wealth and higher prevalence rates of HIV/AIDS.

Sterck critiques our findings on three counts. He claims that our

main findings are not robust, our main dependent variable is not correct, and finally the results are spurious because of non-stationarity bias (Sterck, 2015). We appreciate and welcome Sterck's critique, but we find his re-analyses to be unconvincing, and that his recommendations seem wishful rather than based on realistic grounds. First, we address the methodological issues and then his substantive claims.

Sterck finds that excluding three influential cases (Sudan, Equatorial Guinea, and South Africa) from our original analyses reduces the impact of our results. Excluding influential cases or removing outliers can of course in many cases have a major influence on the final results. In fact, in our own analysis we excluded each one of the two cases with very high oil rents, namely Equatorial Guinea and the Republic of Congo (Brazzaville) as part of our robustness checks. However, it is not generally a suitable approach to drop outliers, especially in cases where the population of main interest is limited (Belsley et al., 1980). These African cases are critical in the resource curse literature since they have extreme resource dependence, and in this case, very high rates of AIDS. Instead of just excluding these cases as unrepresentative, it is methodologically more useful to examine these cases for gleaning greater insight into the theoretically important questions.

One of Sterck's major objection to our study is that the data suffer bias from non-stationarity. We certainly acknowledge that we did not check for this, and future studies on the subject should

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pay greater attention. Sterck reanalyzes the data after using the standard fix for this problem, which is to first-difference the data. A test based on differenced data, however, is unsuited to the theory being tested, even if it may solve some statistical problems. Moreover, Sterck's test on the data suggests second differencing to remove all bias. At this point, it becomes unclear what impact the transformation has had on the raw data, but more importantly, the data no longer are suitable to answering the original, theoretically-interesting question. The theory being tested should be based on the variation of levels of natural resource dependence on the levels of HIV/AIDS. The differenced data capture rates. Theory requires that we measure the impact of the intensity of resource dependence on the intensity of the outcome, not the rate of change of the outcome. Change in HIV/AIDS prevalence is likely affected by a host of other factors, such as demographic and economic factors, which are not explicitly modelled, an issue we get back to below.

Anticipating both trending data and the issue of appropriate measurement of the independent variable of interest, we tested a discrete variable (oil exporter = 1, 0 if not), which also supported our basic results in the original article. Sterck does not offer a valid explanation for modelling dynamics, except to suggest mistakenly that our original analyses use ambiguous variables; namely, a flow measure (rents per capita) on a dependent variable that is a stock (prevalence).

Our reasoning is different. Flows of rents capture how dependent a state is on resources, regardless of whether or not one knows how much of what is under the ground. It is a proxy for the nature of the revenue stream, not an immediate cure for AIDS. We use oil rents on a per capita basis rather than per GDP because it is less likely to be endogenously related to the prevalence of HIV/AIDS. In fact, stock rather than flow is more likely to be related endogenously because higher stock may reflect greater state capacity since a well-functioning state at peace is likely to encourage greater discovery (Ross, 2012). The dependent variable (prevalence) captures the severity of the problem because it is a count of HIV/AIDS cases as a share of the population, whereas incidence (flow) is simply the number of new cases from year to year.

We use prevalence (stock) on the assumption that oil was not discovered at the start of our study period. Presumably, countries receiving high rents in 1990 had high rents two decades or so earlier when the HIV/AIDS crisis exploded. Using the World Development Indicators data, we obtain a correlations of $r = 0.84$ between oil rents to GDP in 1970 with oil rents to GDP for 1980 and $r = 0.92$ between oil rents in 1980 and 1990 for a global sample of countries (World Bank, 2015). This suggests that flows of oil rents are a fairly good proxy for long-term dependence of regimes on natural resources. Our arguments about how the incentives of resource-wealthy rulers to invest in public action designed to stem the aids epidemic does not anticipate short term changes in the rate of infection (incidence). Public action takes time to work, whether it is education, norm change, or the construction of infrastructure designed to administer effective services. The first differenced results that Sterck presents, thus, may not be 'nonsensical' in statistical terms, but they are quite off the mark in theoretical terms.

In order to address the question of causality between oil wealth and HIV/AIDS, Sterck argues for an alternative strategy where he aggregates oil rents over time and regresses this oil stock measure on an aggregated measure of aids cases (accumulated aids cases). Again, he finds no effect between the historical values of oil on the accumulated incidence of HIV/AIDS. Since he does not present his results on control variables, it is hard for us to judge the validity of his findings fully. These cross-sectional analyses show greatly reduced sample sizes, which appears problematic. Also, he uses the

same controls as XXX, but is this the proper specification for a cross-sectional analysis on this alternative dependent variable? For example, country size and other demographic factors associated with oil rents could be strongly related the number of accumulated AIDS cases.

The best test of the original proposition would be of course to test the effects of natural resource dependence on some variable(s) capturing a genuine effort to fight disease, such as actual spending on fighting HIV/AIDS might proxy. Since some find that resource-wealthy countries have lower health budgets in general, it may be premature to expect higher spending on HIV/AIDS (Cockx and Francken, 2014). While we can certainly sign on to Sterck's claim that ART can save lives, we also wonder how knowing how much it would cost to save lives actually motivate capricious governments to something about it. Considering the strong evidence linking resource wealth, particularly oil, to lower democracy and higher corruption, including political instability and conflict, we find it hard to share his sanguine expectations (de Soysa, 2015, Diamond, 2008; Ross, 2012). Even journalistic, casual observations, are telling. According to *The Economist*:

Angola has built 24 new hospitals, but cannot staff them because, although it has 18m people, it has only 1500 doctors. Although among Africa's richest countries, it is the only one in the world with cases of urban polio. Elsewhere, Africa's rulers have spent billions on their armies (*The Economist*, 2011).

Like Sterck, our aim for examining the oil/AIDS relationship is to motivate policy that may influence oil-wealthy rulers to deploy this wealth for improving health. There is ample evidence to suggest that oil-wealthy rulers, particularly in Africa, prioritize military spending (Ali and Abdellatif, 2015). According to SIPRI, in the past decades, the African region has increased defense expenditure as a share of GDP by as much as a third when other regions are cutting back (Perlo-Freeman et al., 2015). Clearly, there are many reasons for this, and it is very doubtful that these reasons will be trumped by the urgency of fighting HIV/AIDS. We applaud Sterck for generating heat with his useful critique of our article and are convinced that he has prompted the search for a better understanding of how to fight the AIDS epidemic. Future studies might do well to shed light on why resource-wealthy countries have not done better than resource poor ones – a point that we all seem to agree on. Our hunch still remains that easy money from resources kill incentives among governing elites for investing in human capital by prioritizing health.

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