Reviewer's report

Title: Investigating health system performance: An application of data envelopment analysis to Zambian hospitals

Version: 4 Date: 12 March 2007

Reviewer: Dan Friesner

Reviewer's report:

General

In general, the manuscript is much improved. The introduction no longer "oversells" the paper, and the discussion of the data, empirical methodology and results are much clearer. The discussion of hospital ownership and levels was particularly illuminating. Additionally, when the author cannot address an issue due to data limitations, it is clearly mentioned in the text as such. Given the number of reviewers (and we apparently gave some conflicting suggestions) the author should be commended for effectively addressing our concerns.

At this point I have two suggestions for the author, one of which is major and one of which is very minor.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)

For the most part, the author did a reasonably good job addressing all of my comments. There is one issue, though, that the author did not address appropriately. In particular, I asked the author to use nonparametric hypothesis tests, not run a regression. A recent paper by Leopold Simar and Paul Wilson (forthcoming in the Journal of Econometrics, and it is also a 2003 working paper at the Catholic Institute of Louvain) have shown that simply running a Tobit leads to incorrect parameter estimates, and thus incorrect inferences. Partly this is because the assumption of (truncated or censored) normality is inappropriate for DEA scores, and partly because of the small sample bias and serial correlation inherent in these scores. Again, nonparametric tests such as the chi-square, the Mann-Whitney or those based on Spearman correlations are parsimonious and appropriate approaches.

I would also like to see the test statistic values and/or the associated p-values of the tests in the paper, even if one fails to find a significant relationship, just for the sake of completeness.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)

Please give the manuscript one more proof-reading. There are a few typos and other grammatical issues that I found, and there may be others that I missed. This isn't a big deal from my perspective (who doesn't make typos? there are probably a few in my report, too), but probably should be done just for the sake of completeness.

1) The first sentence on page 2: either change "to" to "toward" or change the tense of the words "improving" and "meeting" to "improve" and "meet".

2) Page 5, section 3, 4th line: please remove the word "about".

3) Page 6, section 3.2, 3rd line: change "of" to "or".

4) Page 6, the three lines following the definition of the input requirement set: I think you need to combine these three sentences into two.

5) Page 8, first line: replace the ? with a .

6) Page 9: The second sentence is redundant. Please remove and place the Fare citation after the first
sentence.

7) Page 13, fourth line from the bottom: change "department" to "departments".

8) Page 18, fourth line about Table 7: Change "results" to "result".

Discretionary Revisions (which the author can choose to ignore)

**What next?:** Accept after minor essential revisions

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.

**Declaration of competing interests:**

I declare that I have no competing interests.