This paper addresses the diffusion of subsidized antimalarial treatments in two districts in Tanzania. It will be an important contribution to the literature, as there is little evidence on the diffusion of pharmaceuticals in the private for-profit sector in sub-Saharan Africa. It also presents rare longitudinal data of private medicine outlets over many survey rounds.

Major essential revisions

1. I think that more detail is required in the second last paragraph of the background/introduction section. Diffusion of innovations is typically used to examine a new technology that has recently been introduced in a market. However, the product examined in this paper, quality-assured ACTs subsidized through AMFm, have been present in Tanzania for many years prior to the AMFm intervention. The only tangible characteristic that distinguishes the medicines subsidized through AMFm from those that were available prior to the intervention is a small leaf logo on the packaging.

The patterns of diffusion or characteristics of late versus early adopters might be quite different for an entirely new pharmaceutical (e.g. a novel treatment) compared to the product examined in this study, which have been made available (for free) in Tanzania’s public sector for several years prior to AMFm. I think that this information is critical, particularly for readers that are somewhat unfamiliar with AMFm/malaria and might seek to apply the findings from this study to another context.

2. The sampling strategy should be described more clearly. Was a complete census of all ADDOs in the two study regions conducted? How were ADDOs identified? Were there any dropouts over the seven survey rounds?

3. It was not clear to me whether the analysis presented in the paper focuses on stocking of ACTs generally, or on stocking of AMFm-subsidized ACTs. I believe that the focus of the paper is the diffusion of AMFm subsidized ACTs in
particular, based on the Background/Introduction sections. However, ‘ACT stocking’ is used throughout the methods and results (with the exception of the results sub-section entitled diffusion of ACTs under AMFm), which could lead one to believe that the analysis is mostly focused on stocking of any ACT. I feel that the paper would benefit from more precision own whether all outcomes are stocking an AMFm ACT. Similarly, where competitor stocking behavior was considered as a predictor for ACT stocking, was the predictor competitor stocking of an ACT or competitor stocking of an AMFm co-paid ACT.

4. The results of an optimal multivariate model of ACT stocking is presented in Table 5. It would be helpful to document somewhere what variables were initially considered and eliminated from the model via backward selection. In particular, I wondered whether only the variables included in table 4 were initially considered, or if other variables (such as ACT stocking by named competitors) were also included, as I feel that ACT stocking by a named competitor or other variables related to ACT stocking among competitors (e.g. ACT stocking by proximal shops or public health facilities) ought to have been considered for the model.

5. In the limitations section, the authors state that they feel that the two selected regions are representative of much of Tanzania. What empirical evidence is there to support this statement?

6. The first round of data collection for this study took place in February 2011, which is 5 months after the first-arrival of subsidized medicines in the private sector in Tanzania. I believe that this is a limitation of this study that should be mentioned, as stocking of quality-assured ACTs among drug shops or public health facilities in the two regions might be an important predictor or late/early adoption of a subsidized medicines.

Similarly, there other are variables related to consumer demand that might have been associated with stocking of ACTs for which data were likely not available (e.g. fever prevalence and other characteristics of the ADDO’s catchment population). This should also be included as a limitation.

Minor essential revisions

7. In the background section, more information is required on AMFm in Tanzania would be helpful (dates AMFm ACTs arrived in country, nature at timing of supporting interventions, etc)

8. In the data subsection of methods, describe how the field teams determined whether subsidized ACTs were stocked (i.e. was it based on observation of the AMFm logo on product packaging or some other methods?).

9. In the first paragraph of the subsection of the methods called ‘product diffusion under AMFm’ I suggest specifying the definition of early/late adopters you actually used (i.e early adopters were shops that stocked ACTs in either of the first two survey rounds). It would also be helpful to provide readers with context on how many months AMFm co-paid ACTs were in Tanzania by the time data collection for the second survey round had taken place.
10. The determinants of ACT stocking section of the results (3rd paragraph) describe findings that stocking behavior of perceived competitors is associated with an individual outlet’s decision to stock ACTs. These results are not reported in Table 4. I suggest including this in the table, as it is unclear why it is excluded from the table (especially given that the OR for this association is greater than ORs for some of the other competition variables included in the table).

11. In the subsection of results describing the multivariate model of ACT stocking, customer numbers, and fraction of customers appearing for malaria concerns are listed as being positively associated with ACT stocking. Number of proximal shops is also mentioned, but with a caveat that the association is small. It’s not clear to me why this caveat is included for proximal shops, because the OR and CI for proximal ADDOs is actually higher that the OR for percentage of customers appearing for malaria concerns (table 5).

12. I noticed a few places requiring minor edits. These are:

- In the Regression Methods/Tests for Association subsection of methods, write out Akaike Information Criterion in place of AIC as it is the only time the abbreviation appears.
- In Determinants of ACT Stocking in results, the second paragraph refers to table 3, but I believe that this should be table 4.
- In the Multivariate Model of ACT stocking subsection of Results, the first sentence in the first paragraph refers to table 4, should be table 5? Also, in the third sentence of this paragraph there is extra punctuation that should be deleted.
- 2nd paragraph of the Early/late adopters section of results: The last sentence should refer to Table 6 not table 5.
- Table 2: If this table shows % of shops stocking co-paid ACTs, the title should be amended.
- Table 3: The amount ordered and supplier locations sections add up to 100.1%. I realize that this is most likely rounding, but perhaps double check there isn’t a typo/rounding error.

Discretionary revisions:

13. The author could consider comparing their results to O’Meara et al (2013) from the Malaria Journal.

Level of interest: An article of importance in its field

Quality of written English: Acceptable

Statistical review: Yes, and I have assessed the statistics in my report.

Declaration of competing interests:
I declare that I have no competing interests.