Reviewer's report

Title: Productivity Loss and Indirect Costs Associated with Cardiovascular Events and Related Clinical Procedures

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Reviewer: G. Nathan Dong

Reviewer's report:

Major Compulsory Revisions

In this paper the authors attempt to contribute to the literature of health risk effects on work productivity by narrowing the definition of “productivity” to workplace absenteeism and short-term disability and “health risk” to cardiovascular events and related procedures. Specifically, the authors created two propensity-score-matched samples, one with patients experiencing cardiovascular events and related procedures (quasi-treated sample) and the other without (quasi-control sample). They compared the differences in workplace absenteeism and short-term disability before and after the events/procedures, and reported the productivity losses in both dollars and hours. I think the effort is worthwhile and this type of “focused” research deserves high priority.

In my comments I want to pick up on a couple of issues which I feel are worthy of further discussion. The first concerns its connection to a broader understanding of the relation between health risks and productivity. This has been extensively examined in the prior literature (e.g., Boles et al. 2004; Gates et al. 2008). Even with the special lens of cardiovascular diseases, previous research has conducted similar studies and found similar evidence (Liu et al. 2002; Luengo-Fernandez et al. 2006). A detailed discussion of this “focused” approach and its importance and contribution to the extant literature will help bridge the gap between theoretical prediction and empirical evidence.

The second comment concerns its limitation in the sample selection that needs to be considered when interpreting the results of this study. The differences in patient health status between the two samples, as reported in Table 2, suggest that on average the patients in the quasi-treated sample (experiencing cardiovascular events and related procedures) have higher rate of diabetes and psychiatric disorders than those in the quasi-control sample (without experiencing cardiovascular events and related procedures). We knew that adults with diabetes are more likely to have heart disease than adults without diabetes (AHA 2012) and heart disease and psychiatric illness often coexist (Schulman 2005). Therefore, it is very difficult to draw the conclusion that cardiovascular diseases actually caused the observed absenteeism and short-term disability by this difference-test of the “matched” samples. The author did recognize that it is not a RCT. Still, we need to be cautious to interpret the
outcome of the present study before jumping into the discussion of its policy implication.

The last comment is about the statistical method that is used to examine the difference in productivity measures (absenteeism and short-term disability) of two samples. Since the two samples are not (possibly) perfectly matched, it is worthwhile to conduct a more formal regression analysis (e.g., differences-in-differences) with controls for patient characteristics (including health status).

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

**Quality of written English:** Acceptable

**Statistical review:** Yes, but I do not feel adequately qualified to assess the statistics.

**Declaration of competing interests:**

I declare that I have no competing interests.