Report on "Almost first-degree stochastic dominance for transformations and its application in insurance strategy", by Feng Zhao, Jianwei Gao, and Yundong Gu

This paper extends the idea of Almost Stochastic Dominance (ASD), or at least first-order almost dominance (AFSD), to monotonic transformations of random variables. It provides necessary and sufficient conditions on the transformations for the AFSD relation to hold. It is remarked that it would be difficult to extend this approach to higher orders of dominance, and this is probably related to the fact that first-order dominance is invariant under an increasing transformation of the variables involved, whereas higher-order dominance is invariant only under a linear transformation.

The paper seems a useful addition to the literature. My comments are on small points, of logic as much as anything else, or else typos.

- The discussion following Proposition 2 on page 5 seems the wrong way round. The Proposition says that, if EX = EY, and X dominates Y by SSD, then X does not dominate Y by ε -AFSD for any $\varepsilon < 0.5$. However, what is stated, namely that, when the two variables have the same expectation, SSD leads to AFSD, is just the contrary of this.
- For Theorem 1, let A denote the proposition that m(X) dominates n(X) by ε -AFSD, and let B denote the condition of the theorem, namely that

$$\int_{T} [n(x) - m(x)]f(x) \, \mathrm{d}x \le \varepsilon \int_{a}^{b} [m(x) - n(x)]f(x) \, \mathrm{d}x.$$

Saying "A if B" means that B implies A. This is proved as the "only if" part of the theorem, but it is in fact the "if" part. Saying "A only if B" means that A implies B, or, equivalently, that not-B implies not-A. This is proved as the "if" part. Thus the names of the two parts of the proof should be interchanged. Similarly, in the paragraph that immediately precedes Corollary 1, the "only if" part should in fact be the "if" part.

- Just below Corollary 1, "no any" should be just "no".
- First paragraph of section 4, line 4: "practice application" > "practical application".