## Response to referee 2.

Referee 2 states that ".. the author provides a mechanical ad hoc analysis of what leverage would be optimal and shows that leverage was too high, but that is something everyone could see just from eyeballing the raw numbers.".

## My repsonse is that:

- (a) I show how Greenspan, Bernanke, and the Quants did not see from eyeballing what the referee thinks was obvious. The warnings were disregarded. I quote from Greenspan's retrospective where he asserts that the crisis was unpredictable. This is not anecdotal material.
- (b) I show how and why the Quants assumed very high leverages.
- (c) The question is then can one derive on the basis of theory what is an optimal, and an excessive debt that increases the probability of a crisis.
- (d) The technique that I use is stochastic optimal control SOC. In no way can this elegant mathematical technique be considered ad hoc or mechanical.
- (e) On the basis of this SOC I derive operational early warning signals. Whereas Greenspan claims that the crisis was unpredictable, the SOC analysis rejects that feeling.
- (f) The governance problem has to rest upon a theoretically based measure of excess risk. The SOC does this whereas as I show, the BIS and regulators had no theory.