

Report on “*Black Swans, Dragon Kings, and Bayesian Risk Management*”

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Paper Summary. The paper suggests Bayesian Risk Management as a means to incorporate expert judgement into financial risk measurement. Bayesian Risk Management consists of three pillars: (i) hardcore BRM uses Bayesian updating whenever there is sufficient data available, (ii) Softcore BRM deals with informal information, and (iii) Bayesian Due Diligence incorporates expert judgement and a precautionary principle. The authors argue that such a framework could be used by policy makers instead of a frequentist approach that is based on the use of historic data only.

General remarks. The paper is quite unusual in a number of ways. The depth of the arguments, the style of the writing, and the length of the paper would be ideal for an op-ed piece or maybe a paper in a political science journal. For an economic article however, the paper lacks depth. The arguments are interesting and worth exploring, but the paper scratches only the surface of each argument. In addition, the authors do not do a very good job in placing the paper within the economic literature which makes it hard to see what the contribution of the paper is.

For these reasons I recommend to reject the paper.

Specific remarks. I want to highlight a few points that the authors might find useful for future revisions.

- There is a vast literature on fundamental uncertainty in economics. Just to name one paper from network theory, the field chosen by the authors to illustrate their arguments, Caballero and Simsek (2009) show how complexity can give rise to financial crises. There are various other papers in a similar spirit and the authors should be cognisant of this literature.
- The authors seem to imply that the vast majority of economists and in particular policy makers use a frequentist approach and are strong believers of the rational expectations / perfect markets paradigm. The starting point for all regulation, however,

is the realization that financial markets are incomplete. To stick with the network example, for example Acharya and Bisin (2010) show the existence of a counterparty risk externality in interbank markets. And even more fundamentally, Diamond and Dybvig (1983) outline an externality between different types of households to motivate deposit insurance. Policy makers have reacted to the financial crisis not just by imposing higher capital requirements (which would just be more of the same), but also by creating new measures (e.g. liquidity ratio) that counteract further externalities. Furthermore, many central banks have created new tools and models (see e.g. Aikman et al. (2009) for the Bank of England's RAMSI model, or Georg (2011) for a multi-agent model used at Deutsche Bundesbank) utilizing network theory, agent based modelling and interdisciplinary research.

- The Bayesian due diligence part of the paper is one of the contributions the authors want to make. But it remains vague and the paper would much benefit from concrete examples or concrete policy recommendations.

References

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