

The flawed maths of financial models

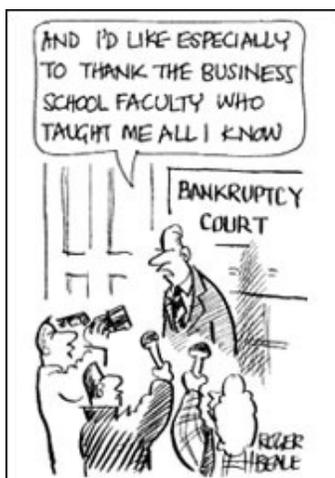
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Imagine a car school that specialised in teaching how to build Toyotas. Following the manufacturer's recall of thousands of malfunctioning vehicles, should the school rethink its curriculum or should it trot along unperturbed, delivering the same lectures as before, as if nothing had happened?

A similar conundrum is faced today by those universities that offer graduate programmes in what we could generally label quantitative finance. The credit crisis that started in mid-2007 has brought to the surface serious malfunctions in some glorified financial mathematical models as well as the tendency of finance theory's most sacred tenets to calamitously break down. The models did not just fail, they contributed, decisively in my opinion, to the unleashing of the mayhem.



This comes on the heels of other monstrous quantitative disappointments, such as the stock market crash of October 1987 and the September 1998 failure of Long-Term Capital Management; in fact, it is reasonable to argue that the worst market crises since 1929 were all aided, abetted and directly caused by flawed analytical concoctions. In all those cases, the system's very viability was threatened. Improper maths came close to sinking us for good.

So, what should the many schools worldwide, including several leading business schools, hosting quant finance programmes do? Should they remain unperturbed and not change a thing or should they learn from the lessons of real life and adapt? Should they doubt themselves in the face of math-fuelled chaos?

Needless to say, the most intelligent and pro-social step would be to engage immediately in curricula reform. What many already strongly suspected has been proclaimed true by events: quantifying in finance may be an oxymoron.

Painful or not, profound change is needed and should be delivered. To act otherwise would be tantamount to declaring yourself impervious to real-life developments. Schools should consider the following steps:

- Quant finance programmes must start focusing on why and how financial modelling can be useless and dangerous.
- The demonstrably broken and troubling models must be presented as failures of the discipline, not, as has often been the case, symbols of triumph. When teaching derivatives or risk management courses, ensure that the models' flaws are emphasised and highlight the potentially negative real consequences of such defects.
- Hire faculty that is not analytically dogmatic and openly sceptical to the value to be derived from financial modelling and quantitative finance. At the very least, students need to be exposed to both sides of the debate.
- Question the wisdom of having key (and deeply influential) aspects of financial regulation based on theoretical models.
- Encourage critical thinking among your students; intellectualise the programmes by emphasising history and big-picture ideas.
- Investigate how things were done in the markets before quantification became prevalent and analyse without bias whether the models truly represented valuable improvements and whether market crashes became more likely than before.
- Look at how models are used as alibis by otherwise no-nonsense operators in order to engage in reckless actions.
- Consider whether so-called quant funds (among the most profitable investment managers yet) truly employ financial theory when making their decisions. If they do not, ask why.
- Run mandatory courses on ethics for students; make them take an oath agreeing not to promote the use of knowingly erroneous and lethal mathematical concoctions that can lead to social unrest.
- Overall, the notion that finance can be quantified needs to be questioned at every turn. If that results in uncomfortable answers, perhaps the kind that make administrators wonder about the need for the degree, so be it.

Pablo Triana is the author of 'Lecturing Birds on Flying: Can Mathematical Theories Destroy the Financial Markets?' Wiley, 2009

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