From: Boris Nikolic <[redacted]>
To: "Jeffrey Epstein (jeevacation@gmail.com)" <jeevacation@gmail.com>
Subject: Derman's new book is coming out in a few days: "Models. Behaving. Badly."
Date: Wed, 26 Oct 2011 04:04:06 +0000

This might interest you!

It is from a friend that reads a lot and send regular updates.

Derman's new book is coming out in a few days ***Models. Behaving. Badly.*** [redacted] Behaving-Badly-Confusing-Illusion-Reality-Disaster/dp/1439164983 I enjoyed reading his book ***My Life as A Quant: Reflections on Physics and Finance***

When you read his work, even though he admits some of the big failings of these models, it comes through that he still believes that somehow complex adaptive systems can be modeled, which is, well, not something we should trust people about ever again when the downside is as big as it was in finance.

Derman reminds me of someone who proclaims he is an atheist, but talks about religion just the same since he was trained as a minister.

An interview with Dermon is here: [redacted] One quote here:

"In finance you can't predict the future even to one decimal place…..[if you could] there would be no need for markets."

Here is the Amazon blub for the new book:

Derman looks at why people-- bankers in particular --still put so much faith in these models, and why it's a terrible mistake to do so.

Though financial models imitate the style of physics and employ the language of mathematics, ultimately they deal with human beings. There is a fundamental difference between the aims and potential achievements of physics and those of finance. In physics, theories aim for a description of reality; in finance, at best, models can shoot only for a simplistic and very limited approximation to it. When we make a model involving human beings, we are trying to force the ugly stepsister's foot into Cinderella's pretty glass slipper. It doesn't fit without cutting off some of the essential parts. Physicists and economists have been too enthusiastic to acknowledge the limits of their equations in the sphere of human behavior--which of course is what economics is all about.

Models.Behaving.Badly includes a personal account of Derman's childhood encounters with failed models--the oppressions of apartheid and the utopia of the kibbutz. He describes his experience as a physicist on Wall Street, the models quants generated, the benefits they brought and the problems, practical and ethical, they caused. Derman takes a close look at what a model is, and then highlights the differences between the successes of modeling in physics and its failures in economics. Describing the collapse of the subprime mortgage CDO market in 2007, Derman urges us to stop the naïve reliance on these models, and offers suggestions for mending them. This is a fascinating, lyrical, and very human look behind the curtain at the intersection between mathematics and human nature.

Derman and Taleb actually wrote a paper together, in which they attack Merton.
[redacted] Felix Salmon wrotes about the battle here:
[redacted]

Here's a recent interview with Derman:

***Risk*:** You have said you are no longer a believer in quantitative finance – what does that mean?
ED: I meant I used to believe in it as a theory, like physics. Physics and quantitative finance have a lot in common – both use Monte Carlo simulation, partial differential equations, stochastic calculus and so on. But physics is a theory used for predictions, and in finance that's not what we're doing. Quantitative finance isn't really a theory – it's a collection of models. A theory tells you what something in the world is – a model tells you what it's like. It's a kind of metaphor, or analogy.
For example, quantum physics is a full theory. It says how things actually are, and makes quantifiable – and unbelievably accurate – predictions. Physics has models – the liquid drop model of the nucleus basically says sometimes we can say that a nucleus behaves like a small drop of liquid, for instance. Within quantum physics there are two complementary models for interpreting the objects – as a wave or a particle – but that is our interpretation. The theory itself is categorical about what things are, and its predictions are unambiguous. Something like that, or the principle of least action, or Newton's laws – they're not based on any analogy, they just say how the world is.
But everything in mathematical finance is based on some kind of analogy with some physical or biological process. You're trying to price things by saying they are like something you understand better in physics, such as diffusion processes. People get deluded and think that because it uses the same mathematics, you should put the same amount of belief in it. Also, unlike a theory, quantitative finance isn't about prediction – it's about interpolation. Even the most sophisticated stochastic model is ultimately just a way of taking prices for liquid instruments and constructing prices for illiquid ones. It achieves this by making an analogy – for instance, that a stock price is sort of like a random walk.
Until it describes the reality of what a market actually is, quantitative finance won't be a theory. That's why those market microstructure models are so interesting – they move closer to being a genuine theory. But it's hard to do because you are trying to capture the behaviour of people – and people are very complicated.

***Risk*:** Are you disillusioned with the subject?
ED: No, not at all, I like the field. But I am a bit disillusioned at the extent to which it has become a branch of pure mathematics. I was at an academic seminar, and somebody mentioned the fundamental theorem of finance, and I had no idea what it was. I looked it up and it was a completely incomprehensible statement about "locally convex topological vector spaces".

***Risk*:** It has some very specific technical conditions on the space of portfolios that actually are only non-trivial if there are infinitely many assets.
ED: Well, quite. Of course there's really only a finite number of assets. What the theorem is saying is that having no arbitrage in a market is the same as prices being consistent, but it's phrased in this bafflingly complex mathematical language and style, with this unnecessary extreme generality. It's evidence that quantitative finance has been abstracted and axiomatised far away from the reality of the object of study.
I would see it all the time when interviewing prospective new quants at Goldman. [redacted] ask why I should believe their model can price an option, and [redacted] point to Girsanov's theorem, which tells you how the dynamics of stochastic processes change when you move from real-world probabilities to risk-neutral ones. But what I wanted them to say was something practical – because I can replicate it using assets whose prices I know – something like that. My biggest piece of advice is: don't get deluded by maths. If you have written down an elegant equation, well, that's nice, but it's only as good as the analogy underpinning it is applicable.

***Risk*:** What, specifically, has quantitative finance learned during the crisis?
ED: The most common models – the capital asset pricing model (CAPM), geometric Brownian motion and so on – make all sorts of assumptions, from market efficiency to normality of returns and so on. Some of them are just not true, and this makes the analogy doubtful.
The biggest specific lesson from the experience is that the assumption of normality in returns is not just flat wrong, but dangerous. At least you can say that assumptions of perfect liquidity and market efficiency are approximations – but using a normal distribution actually leaves you exposed to the risks you most need to capture. People have known since Mandelbrot in 1963 that returns are not normally distributed, but because of its ease of use and simplicity it became very popular. But you see evidence refuting it every day....:

http://www.risk.net/risk-magazine/interview/2108323/-emanuel-derman-model-risks-quantitative-finance-theory-bailout-ethics#ixzz1bYVxYSO0

Models can ony inform. They can't predict with certainty.

More from Derman in a Reuters op-ed:

> **A PRINCIPLE: IF YOU USE A MODEL, YOU ARE SHORT VOLATILITY**
>
> All models are analogies, and being analogies, they are limited in their scope. In physics you can describe ice, water and steam, and the phase transitions between them, with one unified theory, amazingly, and hence you can handle the extremes of freezing and boiling.
>
> In finance or economics we have nothing like that. Even beautiful Black-Scholes-Merton ignores volatility variations, illiquidity, panic, government regulations on shorting, to name just a few things that lie outside it.
>
> Therefore, when the world changes dramatically, every single model you can think of is likely to fail. I would like the following principle to be engraved on the foreheads of all financial and economic model users: **All models are short volatility**. When volatility changes a lot, the model is going to fail.
> what we really need is a few strong defensible principles that, if rigorously applied, will produce incentives that mean less regulation is needed. Unfortunately, these principles have been violated very badly during and after the great financial crisis. Let me list a few that I think are good. [redacted] sure there are more, but still less than the number of regulations.
>
> - **If you want the benefits of risk taking, you must suffer the disadvantages too.**
> - **Don't treat (only some people's) insolvency as illiquidity.**
> - **Efficiency isn't everything. Efficiency alone isn't a good reason for anything.**
> - **You can't solve political or spiritual problems by tackling the money supply. You can only postpone them.**
> - **If you stimulate at some times, then you must dampen at others.**
> - **"If you believe that capitalism is a system in which money matters more than freedom, you are doomed when people who don't believe in freedom attack using money." (Edward Lucas)**
> - **Above all, do no harm.**
>
> [redacted]
> regulation

If all you have is a model that says markets are always right you fail because there are public goods and externalities. If all you have is a model that says markets always fail, then you have an predictable/certain disaster too. Derman's claim that principles can be a substitute for regulation flies in the face of reality (see, for example, the Marshmallow problem [redacted] wealthy-life.html and overconfidence bias* etc.). Imagine the carnage for the great masses if Wall Street had succeeded in privatizing social security. It boggles the mind to do so. How does one "rigorously apply" principles without regulation? Society is going to trust Wall Street to be "principled"? Do we need kills loads of regulations that prevent people from doing business or things like the laws that require more ground floor retail stores in the face of a glut? Absolutely. Can we continue to let bankers profit on the upside and society absorb the downside? That would be insanity as Einstein defined it.

Here's a fellow from Morgan Stanley who argues something similar to the point in red below:

> **Fiscal dominance - what does it mean?** In the simplest characterisation of fiscal dominance, the fiscal position of the economy effectively 'sets' a target that monetary policy has to follow. Monetary policy plays a subordinate role, keeps interest rates low and allows inflation to erode the real value of government debt. By contrast, monetary dominance implies that fiscal policy plays a passive role while monetary policy goes about keeping inflation under control without a concern about the adverse effect of higher interest rates on the ability of governments to sustain the debt burden. Such a regime clearly existed before the onset of the Great Recession in the advanced economies (excluding Japan) and continues to exist in the emerging market economies even now. Since the Great Recession, however, things have changed.
> [redacted]

Morgan Stanley is more right than wrong, but more importantly understates the complexity of the problem set. Regarding Dermon's point about postponement **You can't solve political or spiritual problems by tackling the money supply. You can only postpone them)** and what is going on in the EU right now here's my tweet version:

> reality = Greek default, but lenders are Europeans= requires apportioning pain= why no agreement = why so many summits [redacted]

Dermon is correct that sometimes a simple model is very powerful. For example, here in a few words is how to invest:

> "view a share of stock as a part "ownership of the business and judge the staying quality of the business in terms of its competitive advantage. Look for more value in terms of discounted future cash-flow than you're paying for. Move only when you have an advantage. You have to understand the odds and have the discipline to bet only when the odds are in your favor."

Or more simply:

> "buy businesses with sustainable competitive advantages at a low, or even fair, price."

Is that a model or a set of principles? Both really.

[redacted].,

*The Hazards of Confidence
[redacted]

The Marvels and Flaws of intuitive thinking
[redacted]