

Valuation and Its Discontents

Derivatives 2007

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What's the Point of a Financial Model?

- In physics you predict the future.
- In finance, you interpolate, extrapolate in the present.

“Right” vs. “True”?

- ‘Right’ is consistent.
- ‘True’ is true.

Accuracy?

- Ross: “Options pricing is the most successful theory, not only in finance, but in all of economics.”
- Yes, but how accurate it is?

The Volatility Smile

S&P Smile

BS Smile

QuickTime™ and a
TIFF (LZW) decompressor
are needed to see this picture.

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Vulgar models are probably the most practical.

The Derivatives Paradigm

This is how options theory works:

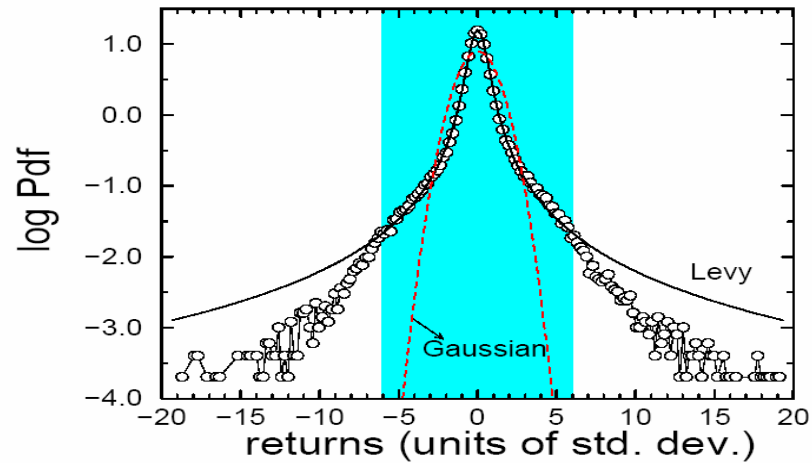
- * pick a plausible stochastic process with parameters;
- * calculate the value of liquid securities whose prices you know;
- * calibrate the parameters to match those prices;
- * use the model to calculate values of other securities.

Every few years the process has been repeated for a new asset class:

- * stock options: match stock and bond prices, calibrate volatility;
- * interest rates: match bond or swap prices, calibrate volatilities;
- * credit: match CDS prices, calibrate future default probabilities.

Underlyer Trouble

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