Editorial

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One of the less well-known applications of derivatives is in the construction of indices of sentiment or risk appetite. This activity has been pursued by central banks and academics. The basic principle is the comparison of the risk-neutral density with nature's density. A measure of sentiment is based on a comparison between these two densities. The relevance of option pricing is that you can compute the risk-neutral density by differentiating option prices, in particular European calls, twice with respect to the exercise price. Readers may convince themselves of this fact by writing the call price as the discounted risk-neutral expected payout and differentiating the integral twice using Leibnitz's rule. This argument has an interesting consequence. If nature's density of equity were the risk-neutral density, nobody would trade if they were risk-averse. Otherwise,

if nature's density was not the risk-neutral density, investors would long or short equity depending upon their personal beliefs about nature's density. So sentiment in this world is really non-zero demand, a sensible conclusion. As usual, all the unrealistic assumptions about derivative pricing come into play. We need to assume markets are complete. We need options for all states of the world. The problem quickly switches from one of theory to one of econometric approximation. Perhaps, this is not one of the better applications of derivative pricing. One can only hope that central bankers make no important decisions based on this information.

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