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vanna is the cross-partial derivative of an option's value with respect to spot price and fixed-strike implied volatility.

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Replying to @bennpeifert

Vanna. How to assess it, how to trade it if you feel you have half ass data, the importance of dealer positioning vs raw OI. How big ups or big down days effect/don't effect it.

Any 2nd level stuff I would eat right up tbh 😂.

equivalently, it is the rate of change of vega as spot prices rise; and the rate of change of delta as implied volatility rises. also equivalently, it is risk exposure to spot / fixed strike vol covariance,  $E[dx * dv]$ .

implied volatility skew in derivatives markets relates directly to market implied spot-vol covariance. in particular, the latter is the level of SVC that will cause the holder of a pure vanna position (a gamma and volga neutral risk reversal) to break even on dynamic hedging

what does this mean? lets suppose i am long a downside put and short an upside call with - \$1 million of vanna 1% on the position. that means if spot falls 1%, i get long \$1 million vega, and i experience vanna pnl driven by how vol moves in response.

if fixed strike vol rises 1 point, i will make approximately \$500k on the move; greeks are linear extrapolations, i will have been long an average of \$500k vega for a 1 vol point move higher (insert triangle diagram with integral that im not gonna draw for you)

it also means that if fixed strike vol rises 1 point, i will get short -\$100 million of equity exposure at that point, and will have had -\$50 million on average for the -1% selloff, making another \$500k.

that is a total of \$1 million in vanna pnl. now let's suppose we were also paying \$1 million of theta daily on the position. that is the definition of an implied move:  $dx(\%) * dv = 0.01$  was the level of daily spot vol covariance being priced in.

such that vanna pnl at the expected move is equal to the theta paid for that vanna. now, note that heuristically, vol usually goes up when spot goes down. that is especially true in floating strike vol. fixed strike vol has to slide on the skew curve and moves less than floating

e.g., if the slope of the skew curve is -1 vol point per 1%, spot goes down 1% and floating strike vol goes up 1 point, fixed strike vol is actually unchanged

in some environments, like now, fixed strike vol is reliably rising when markets rally and falling when they sell off. so even if skew was literally flat, a long skew position (long downside, short upside) would be losing money on vanna exposure!!

start by truly understanding your risk and your pnl attribution, then you will eventually understand what volatility surfaces mean.

as it is with so many things, so it is with skew: "Public opinion has common sense, but is infected by accidents of opinion, ignorance and perversity." - Hegel , Philosophy of Right