

THE VALUATION OF EQUITY DERIVATIVES

Response to the Exposure Draft

About the respondent

APVIF is the association of professional financial instruments valuers. It was founded in 2011 and currently counts 10 members.

The association purposes are;

- to define and broadcast standards and guidelines of financial valuation methods,
- to communicate on the profession and promote it,
- to take part in working groups with regulators.

APVIF is a member of FFEE.

Its President is Francis Cornut, Chief Executive Officer of DeriveXperts and member of the derivatives valuation working group.

Comments

We appreciate the effort put in the production of this document and we recognise that the objective set in 'Introduction and Scope' (Paragraphs 1-6) is not an easy task.

APVIF has started to work on its own set of documents defining good practices for a professional valuer, and how to setup a specific certification for our members. We expect to release a first version early 2014. Of course, we intend to rely as much as possible on International Standards set by IVSC. This is why our comments reflect our positive commitment in helping IVSC producing valuation standards for financial instruments.

Six different organisations, through their representatives, all of which are recognised professional valuers, were involved in this response. In our view, more emphasis should be put on implementation and calibration as model theory is already well documented in literature (this is why we are in favor of references rather than rewriting).

Before answering each question, we would like to make a few remarks that we believe are relevant to the document.

Remarks

Paragraph 7

Leg : A **stream of cash flows** on one side of a swap agreement, would me more accurate.

Paragraphs 8-10

We believe this chapter deserves more details such as :

- main participants in the markets and their role (e.g. price maker or price taker)
- main uses of equity derivatives; hedging, enhance performance, tailor made retail products.

Paragraphs 11-23

An exhaustive list of derivatives products is not necessary in our view, an annex would be more appropriate. It would be more interesting to summarise categories like 'delta-one' products, convexity products and others complex structures. It would also be interesting to emphasize the necessity to translate a complex derivative in a standardised language like an algorithm linking the pay-off and the underlying processus. This is the pre-processing necessary to any valuation and where the understanding and experience of the professional valuer will be key.

Paragraph 24

"The value of forwards and future contracts is not affected by the stock volatility" : this is not always true. For example : if the equity modeling includes stochastic or local dividends.

Paragraph 27

The formula for the forward should be avoided since it does not correspond to the real valuation that is performed by a professional valuer. First, it does not include discrete dividends (stochastic or not); second, the dividend yield is hardly used except to simplify like with indices, and is at least time-dependent; third, the value "r", defined as an interest rate, is a funding rate, and should also be time-dependent; fourth, the compounding is using a linear interest rate, which is not usual in the equity derivatives world (use continuous instead). One input (repo) is missing.

Paragraph 30

What is the "zero-coupon curve"? Depending on the nature of the floating rate leg, the basis of this curve will be different (3M, 6M, ...).

Paragraphs 39 - 41

This may be confusing for someone not aware of the subject. This is difficult to vulgarise. For example paragraph 41 is misleading as there is usually a whole family of risk-neutral expectations, which correspond to a range of prices. So that even in a risk-neutral universe and for a given model, the mathematical theory of valuation provides a *range* of arbitrage-free prices.

Paragraph 43

The usual academic exposition of Black-Scholes incorporates constant continuous dividends. Perhaps explain that no transaction cost assumption allows for an infinite frequency hedging strategy.

Paragraphs 47-52

This is a common misunderstanding between models in the form of mathematical equations representing this model and the computer solving algorithm. This section is misleading in our view, Monte Carlo or finite difference method are not models but algorithms that can be used to solve different models such as Black Scholes, Heston, Sabr, Local volatility. This difference should be clearly explained and paragraphs 85-87 should be more detailed.

Paragraph 59

This is not really the point. From a static perspective the term structure of interest rates may be non-flat – this fits with a natural and classical time-dependent extension of Black-Scholes.

Paragraph 61

We would find more appropriate:

- a) Stochastic and local stochastic volatility models
- b) Jump diffusion models

Paragraphs 82-83

This should be mitigated by the fact that, at least for the major equity indices, variance swaps provide a mean to hedge volatility. A liquid vanilla option makes it, too!
Heston and SABR are by far more often used in practice than the other models.

Paragraphs 86-96

This is the key part in a valuation process. In our view, the TIP misses a detailed description of the calibration process supported by real life examples. Which market data should be used and how from that data imply pricing parameters? The main concept in calibration is consistency between observed trades/quotes and valuations produced, how can this be achieved in a transparent manner? What are the main obstacles in the calibration process (lack of data, noise, invalid information) and how to bridge gaps? How to replicate complex products with more vanilla instruments to get an estimated value, upper value, lower value? Furthermore, options quoted on stocks are usually of american type, so that the dividend can not be inferred by the call-put parity. Also note that stochastic dividend models are successfully used in order to account for dividend options quotes.

Response to questions

Q1 Under the heading of “Equity Derivative Products” (para 11-22) the main types of equity derivative are listed. Do you believe there are any material omissions? If so, please indicate what they are.

Answer

It is difficult to be exhaustive in describing all kind of equity derivatives. At the level of detail used in the exposure draft, we believe three main instruments are missing :

Employee Stock Options

Correlation swaps

Quanto options

Q2 Do you believe the descriptions provided for each of the listed products are sufficiently detailed?

Answer

YES

Q3 Do you think more complicated derivatives and strategies should be included? For example where products are combined, such as in straddles and strangles?

Answer

No. Strategies are combinations of more simple products, it would be confusing to describe them as a specific derivative.

Q4 The discussion on forwards (para 23 to -27) includes a number of formulae. Do you find the inclusion of formulae to be helpful in understanding the principles or would you prefer a purely descriptive narrative?

Answer

We believe including formulae in the main body of the TIP can discourage readers and/or be misleading. The formulae used in this paragraph are not the ones used by professional valuers. Descriptive narrative is sufficient.

Q5 Would you prefer to see greater use being made of formulae to illustrate principles in other parts of the TIP?

Answer

NO. Formulae gives the impression that valuation is straightforward as long as you know

them, which is not true. The expertise of valuation is more a question of knowing their limitations, their range of applications, and how to use them.

Q6 The discussion of various models types includes the key assumptions and other inputs required. The objective is not to provide detailed instruction on the use of the model, but do you think the information on these inputs is sufficiently detailed to provide an understanding of the principles involved by someone relying on the valuation?

Answer

YES.

Q7 Do you believe the model section of this paper should discuss each model's relative applications and when it is appropriate to use one rather than another, for example, by mapping each model to a list of products?

Answer

Not necessarily. The mapping is not a good idea, but a general discussion on the use cases could be interesting for the reader. The technical description is interesting but cannot be used without a detailed discussion on how to use them.

Q8 "The Greeks" are summarised with brief descriptions in this paper. Do you believe it would be helpful if there were a more detailed discussion of sensitivities?

Answer

Greeks are just mathematical derivatives of a fair value relative to some parameters. calculations don't need further details However explaining the use of sensitivities to estimate a value from other inputs can be useful.

Q9 Please list the departments within your organisation that you believe would find this document useful, e.g. Executive Management, Treasury, Risk, Financial Reporting, Product Control etc.

Answer

Not applicable to APVIF, but we believe any user of valuations should understand how they were produced.

Q10 Do you consider that the overall level scope and level of detail in this proposed TIP is sufficient to meet its objective of reducing diversity of practice and raising awareness of the principle methods used for valuing equity instruments among the wider financial community, and in particular investors?

Answer

NOT as such. Diversity of practice is already reduced amongst professional valuation experts with respect to models and techniques. Raising awareness on such matters requires a high personal investment from readers with insufficient technical background. We believe that a minimum understanding of financial modeling should be assumed to read this document. If not, we should guide the reader on how to reach that level.

However it is also important not to let people believe that understanding models is sufficient to produce valuations for financial instruments. The real gap lies in the capacity of a professional valuer to receive and analyse enough market data to produce reliable valuations. Even if we are not able to describe with precision the process to produce accurate market parameters, because we cannot rely on consistent market data, it is a priority to familiarise valuations users with the necessary steps and efforts to achieve this. May be selecting a few test cases to illustrate this difficulty, without presenting them as templates that can be copied and paste, would help readers to better understand real life situations.