

Market Option Pricing

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The following three papers present a radically different approach to option pricing. Those readers who are already deeply into option pricing theory and well read in the various approaches will likely cry “foul” at this work since it upsets the current applecart. But take heart, dear readers, this really is good stuff.

The understanding of these papers is based on the concept of “theory”. In science, nature is observed, and those observations are analyzed to determine the causal mechanism of the phenomenon under scrutiny. When there is a gap in the understanding, a “theory” is invoked to get from Point A to Point C without having to go through the inconvenience of identifying Point B. A little bit of theory, especially if it is logically consistent with other observed phenomena is probably OK. But a lot of theory that assumes things that are irrational is not good. If it is necessary to go through a bunch of mental gymnastics to get the input to match the output, the process is flawed. Not “probably” flawed but “inherently” flawed. Nature is parsimonious, and there is usually a simple explanation (although you may not yet have found it). Think Occam’s Razor (and if you do not know what that is, you should look it up).

You will note that the title of this section does not include the word “theory”. That is because there is no theory involved. Observations are analyzed, and the results are specified in a simple model that has no underlying assumptions. There is no need to argue about assumptions simply because they are not there. And if you personally want to put in some assumptions, why? If you already know the answer, there is no need to carry extra baggage or muddy the water. Occam’s Razor reappears and cuts again.

It is suggested that you read the papers in the order that they are presented. The first two papers set the stage for the third. A brief introduction is given to show the sequence of the logical development of the model through the three papers.

One of the more subtle assumptions underlying option pricing theory is that put options work like call options, just the other way around. This results in pricing models for puts and calls that are symmetric with some minus signs tossed into the equations. While such an assumption might be appealing, there is no reason why it should be true. Puts and calls are different contracts, and they are not opposite contracts. The opposite of a long call is a short call. Puts and calls do not come into existence simultaneously; they are different. It is interesting to note that virtually all research done to date has focused on call options, probably because the data is more abundant. But the whole assumption of puts and calls being opposites is just that, an assumption.

This first paper tests the simple notion that puts and calls are opposites. Puts and calls that are identical in all aspects are matched, and their prices are not the same. It is actually quite easy to see when you look for it, so here you are:

Option Pricing Asymmetry

Now that that balloon has been popped, it is necessary to consider one of the basic assumptions underlying option pricing theory, Put/Call Parity. Put/Call Parity is one of those theories that is beautifully logical, and it is difficult to conceive that it could not be true. But Put/Call Parity depends on the pricing of puts and calls, and if the pricing is not symmetric, which it is not, then maybe Put/Call Parity can be questioned. This paper uses a large data base and digs into the details of Put/Call Parity, and, no surprise, it really does not exist. There are some other interesting observations concerning option pricing, too.

A Farewell to Put/Call Parity

Since Put/Call Parity does not hold, it is necessary to reconsider any other theory which uses it as an assumption. The Black-Scholes option pricing model requires Put/Call Parity and a bunch of other assumptions to work. Some of these other assumptions are a bit shaky, too. It is time to start from scratch and go back from first principles. Use a lot of data and try to figure out how it all fits together, without assuming anything, no matter how seductive an assumption may be. The results lead to:

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And there it is. Another approach to pricing option contracts that recognizes that puts and calls are different. There are no underlying assumptions, and the resulting model is simpler and more accurate than existing models. Occam's Razor in action.

The point of this research is not to throw rocks at existing dogma. It is to recognize that dogma is just that, and it should be examined periodically to see if it makes sense. The early stages of any type of research usually require the use of theory to get an idea of what is happening, but the models must be continually refined. When the refining process results in an even more cumbersome model, something is wrong. Understanding is supposed to become simpler, not more complex. When the best you can do is create a complex, cumbersome model, it is time to start all over again and approach the problem from a different direction.

This research simplifies the modeling of option pricing. It is not concerned about "why" people price these contract, it is concerned with "how" the contracts are priced. Research into "why" is probably not numerical anyway. Now that the "how" has been clarified, maybe the "why" can be addressed separately.

I am aware that there are folks out there who regard these papers as sheer blasphemy; I have heard them before. I have words for you, too, but they do not belong here. If you have any comments that you would like to address to me that do not include the words "you idiot", please do so. I am really interested in the whole problem of securities pricing, but I am sick and tired of being called names by people who do not have the courtesy to read the papers and consider them on their own merit. I look forward to your insights.

Dallas Brozik