

Week 3 - The Sofa Session

Hi, welcome to this Sofa Session.

During the last week, we have considered the VaR (the Value-at-Risk), some of its derivations, and another measure which is strictly related to the VaR, that is to say the Expected Shortfall.

Now, under Basel II and Basel III, the Value-at-Risk is the queen measure for market risk, and surely a fundamental measure of risk for what concerns credit risk and operational risk.

In the field of credit risk, the VaR is known as "the C-VaR", the credit risk VaR.

Now, even if the VaR is such an important measure in risk management, yet the VaR has been seriously criticized by experts; it has also been considered one of the causes of the 2008 crisis.

So, why?

First of all, we have seen that the VaR is not - generally speaking - a coherent measure of risk.

Do you remember why?

The point is that we can show that the VaR fulfills most of the properties that a coherent measure of risk should have, but not sub-additivity, not in general at least.

So, there are special cases in which the VaR is sub-additive, for example if the loss distribution is a Gaussian distribution, but not in general.

This means that the VaR may be against the diversification of risk. In other words, the VaR of a portfolio could be larger than the sum of the VaRs of the single assets or securities that constitute the portfolio.

And since the diversification of risk is of the basics in risk management, you can understand that this is surely against the use of the VaR as a measure of risk.

Moreover, as we will see later on, during this course, when we will speak of the credit risk VaR, after introducing different models that we can use to produce a loss distribution in the case of credit risk, the VaR is a procyclical measure of risk. What does it mean?

It means that, during a crisis, the VaR may contribute in making the crisis even worse. How can it be?

Heuristically, we can think of this: we will see that during a crisis, the VaR may indirectly impose banks to increase their economic capital, that is to say the amount of money that they keep as reserve, in order to cover themselves from risk.

Ok, if the VaR imposes banks to increase their economic capital, this means that, very probably, banks will subtract resources from the market, that is to say money, in order to increase the reserves.

But this has obviously a negative impact on the market during a crisis. And, since the crisis gets even worse, what may happen is that, again, the VaR may impose banks to increase their economic capital. And so on...so, you see that this is a self-reinforcing process that can really have a negative impact on a crisis.

So, why do we use the VaR?!

If the VaR has so many weaknesses, what is the point in using such a measure.

Ok, the VaR is surely a simple measure of risk. And this can be an advantage, because everyone, with just a little effort, can understand the Value-at-Risk.

If we have a 95% VaR, that means that we essentially look for the threshold loss, according to which 95% of the losses we can expect are smaller, and only 5% of the losses we can expect are greater than that threshold loss.

Now the problem is that the VaR is always computed with respect to a given loss distribution. And it is not guaranteed that our loss distribution is the TRUE loss distribution.

In particular, if we think of extreme events, well, this type of events surely has a very strong impact on the economy. Think for example of the default of Lehman Brothers. No one could have expected such an event, but that event happened, and it had a very strong impact on the world economy.

The problem is that our loss distribution could underestimate extremes. Or, to be more exact, it surely underestimates extremes.

So, when we compute the VaR, that value, the threshold value, is perfectly ok under the loss distribution we are using, but if that loss distribution is not the real loss distribution, here comes the problem. Ok?

So what is the end of the story about the VaR?

For the VaR, which is a fundamental measure of risk that every risk manager must know and must be able to use...for what concerns the VaR, and for what concerns any measure of risk we may consider, we have to know how to compute it, how it works, but most of all what are its weaknesses, its points of weakness.

I will continuously insist on this point during the course.

Anyway, for what concerns the practical use of credit VaR in credit risk management, we will come back to this, later on during this course.

So, for this week we are done.

Goodbye.