Text Lecture 1.2 – Basel II

Hi, welcome back.

As anticipated, in this class we will start considering the so-called Basel Accords, or Agreements.

If you are interested in risk management, and in credit risk management, and you are a bank or a major financial institution, it's very important that you know what these agreements imply in terms of risk management.

The most important Basel Accords are Basel II and Basel III, and we will consider both of them.

Today, we will start with Basel II, which is probably the most important.

Basel III can be just seen as a modification of Basel II.

To explain the most important characteristics of Basel II, we will use top-level technologies. So…don't be scared.

In 1988, for the first time, central bankers from around the world agreed on a set of international standards for bank regulations. Prior to that, each national regulator used to regulate bank capital by setting minimum levels for the ratio of capital to total assets.

In 1988 the Basel Committee on Banking Supervision in Basel, Switzerland, published a first set of minimum capital requirements for banks. This was the first Basel accord, or Basel I.

What are capital requirements?

Capital requirements are simply the amount of capital that a bank or another financial institution has to hold as required by its financial regulator. The requirements are meant to guarantee that these institutions do not become extremely leveraged and, as a possible consequence, insolvent.

Capital requirements are not to be confused with economic capital, even if there is a clear overlap.

Economic capital is the optimal estimate of required capital that financial institutions use internally to manage and cover their own risks, while capital requirements are the mandatory capital to be maintained as required by the regulator. We will come back to this next week in more details.

Capital requirements are also known as regulatory capital or capital adequacy.

Over the years it became clear that Basel I was not sufficient to efficiently regulate the banking and financial sectors, especially because of the ever-increasing complexity of both sectors.

In 1999, the Basel Committee on Banking Supervision released Basel II, a second set of rules, later revised in 2001, 2003, 2004 and 2005. The implementation of these rules began in 2007. All these revisions were caused by the many discussions among the most important central bankers and economic players. In particular the United States of America and the European Union had to overcome many contrasting positions.

Basel II was a great leap forward, and it is still the backbone of international bank regulations, even after Basel III. In fact, we will see that Basel III only amends Basel II, but it is not a dramatic innovation, as Basel II was for Basel I.

Ok, after all that blah blah blah, look at the picture in front of you.

This small Greek temple represents Basel II.

This temple is supported by three pillars. These are the three pillars of Basel II.

The first pillar deals with the "Minimum Capital Requirements".

It essentially defines the detailed capital requirements for the three major components of risk that a bank faces according to the Basel Committee: market risk, credit risk and operational risk.

Wait a minute. Credit Risk? Yes, here it is…we will be back in a few minutes.

Now let's consider the second pillar: the "Supervisory Review".

The aim of this pillar is to define a framework for dealing with other types of risks: systemic risk, pension risk, concentration risk, strategic risk, liquidity risk and so on. The only risk is to forget all these risks.

The second pillar also contains rules and suggestions for the revision of the risk management systems of banks and financial institutions.

Finally we have the third pillar, named "Market Discipline". Here the Basel Committee develops a set of disclosure requirements which will allow the market participants to measure the capital adequacy of an institution. The Market Discipline pillar aims at making the markets more efficient and transparent.

In this course we are interested in credit risk, hence we focus our attention on the first pillar only. Let's remove the others.

As we have just said, the first pillar contains the minimum capital requirements for the most important risks a bank can face in its business life.

One of the risks is market risk. Market risk is easily defined as the risk of losses arising from movements in market prices and other market quantities. Say that we hold a portfolio of securities, and that we observe changes in the prices and in the interest rates. All these changes naturally influence the value of our portfolio, which can increase or decrease. This is market risk. Basel II presents a set of tools and techniques that can be used to model and

manage market risk, for example Value-at-Risk. Value-at-Risk is also used in credit risk, and we will learn how to use it in Week 3.

Then we have credit risk, which we already know. It is the risk linked to default risk and credit deterioration. One could argue that credit risk is really bank-specific, but we will see that, in reality, it is really pervasive in our economies.

Finally, we have operational risk. It is defined as the risk deriving from the internal and external activities of a bank or a another financial institution. It includes the risk of fraud, people risk, cyber risk, terrorism, calamities, and so on. It is a very difficult risk to model, and it has been first introduced in Basel II.

Market risk and credit risk were already present in Basel I, even if with simplistic definitions and rules.

Again, the course in about credit risk management, so you can imagine what we will do. We will focus our attention on credit risk only.

Basel II specifies three different approaches that we can use to assess and hedge credit risk. So, let's take our credit risk block and let's divide it into three different blocks.

The first approach, the simplest one, is the so-called Standardized Approach.

Then we have the two internal-rating based approaches.

The Foundation Internal Rating Based Approach, and the Advanced Internal Rating Based Approach.

All three approaches are meant to determine the capital requirements for credit risk, that is to say the amount of capital that a bank or another financial institution has to maintain to hedge credit risk, according to the regulator.

The computation of capital requirements is always dependent on a quantity called RWA, risk-weighted assets.

In the Standardized approach, the RWA is computed using simple formulas.

Once we have the RWA, capital requirements for credit risk are just 8% of it. The standardized approach is used by banks that are not sufficiently sophisticated to use the other approaches.

Then we have the Foundation IRB approach. In this approach the RWA is computed after introducing an important quantity, the PD or Probability of Default.

This can be computed using credit ratings (internal or external) and other models. Once you have it, you just plug the PD into some formulas given by the regulator, and you compute the RWA. Then, again, 8%, and you get the capital requirements.

Since the Standardized approach is rather conservative, typically the capital requirements under the Foundation approach are smaller.

Finally we have the Advanced IRB. In the advanced approach, banks are "free" to compute many different quantities, from the probability of default to the loss given default. All these quantities are then used to obtain the RWA, according to internal formulas, which are not imposed by the regulator, as in the Foundation approach. This leads to the development of complex probabilistic models. Very interesting models, I would say.

Obviously the regulator wants to check each single model, before approving its official use.

Once your approved model gives you the RWA, 8% and you are done.

The Advanced approach requires banks to invest money in research, hence it is generally used by large banks with quantitative research departments.

The incentive behind the Advanced approach is that this approach is often the one that allows large banks to decrease their capital requirements. Sometimes even too much, but we will see this later on.

Ok, this was Basel II in pills. For extra materials, you can refer to the pdf files you find on the course platform. But they are just for your curiosity.

In the next class, we will briefly describe the novelties of Basel III.

Next week we will deal with the Standardized and the internal-rating based approaches in more details.

Goodbye.