# Andreas Dombret: Systemic risk analysis and crisis prevention

Speech by Dr Andreas Dombret, Member of the Executive Board of the Deutsche Bundesbank, at the high-level Eurosystem seminar with central banks and monetary agencies of the Gulf Cooperation Council, Abu Dhabi, 19 January 2012.

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## 1. Systemic risk analysis and the Sybilline books

Dear colleagues,

Referring to the sovereign debt crisis in Europe the Minister of Finance of Poland, Jacek Rostowski, mentioned that the negotiations remind him of the story of the purchase of the Sibylline Books in Ancient Rome. Those books contained prophecies which were not an exact forecast of future events but had to be understood as an aid to finding measures to prevent and manage a devastating disaster.

The last king of Ancient Rome, the legendary Tarquinius Superbus, was eager to acquire those nine Sibylline Books. But the price that Sibyl, the prophetess, demanded struck him as too high, and the king declined to buy them. Either offended or shrewd, Sibyl burned three of the nine books and offered him the remaining six books for the same price as before. But Tarquinius again turned down the offer. So the prophetess burned three more books, again offering the remaining three books for the original price. This time, Tarquinius accepted the terms, and the books found their way into the Temple of Jupiter.

The books got lost in more recent times. But the questions remain: What advice did the books would have had for modern policymakers? What kind of systemic analysis is presented there?

## 2. First Sybilline book: Reducing complexity

Modern systemic risk analysis consists of many tools. Central banks, supervisory authorities as well as national and international bodies of macroprudential supervision such as the European Systemic Risk Board (ESRB) and the Financial Supervision Board (FSB) apply these tools. Such tools start with the collection and description of a wide set of indicators, most of them giving concurrent signals with regard to financial stability. In a further step it is tried to extract those indicators with predictive power, which is rather difficult, conceptually as well as statistically. Other tools are designed to condense the information into risk dashboards, colour coded systems or web diagrams to present an overview of the highly complex picture. More sophisticated methods include stress tests to study the effects of different scenarios and specified econometric models capturing potentially destabilising feedback loops and systemic effects.

Clearly, these tools are important and helpful in preventing and managing systemic risks. But are they sufficient?

This seems questionable given the high level of complexity that has arisen in globally integrated financial markets. This complexity leads to non-linear dynamics in the system which are very difficult to handle both for the risk management of financial institutions and for supervisors.

The complexity is also characterised by a phenomenon known as “Knightian uncertainty”, named after the famous Chicago economist Frank Knight. Knight argued: “There are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns – the ones we don’t know we don’t know.”

Let me illustrate this theory. Prior to the financial crisis a shadow banking system emerged which found itself at the centre of the crisis a few years later. This shadow banking system has aspects of "known unknowns" and "unknown unknowns". As a consequence, risks stemming from this system were broadly ignored or underestimated. International macroprudential bodies like the ESRB and the FSB are trying to fill this gap with knowledge, but progress in this area is made at a snail's pace due to the lack of data.

Even if we are successful in the end we cannot be sure we have identified all relevant risks, because "unknown unknowns" could also exist in another area of the financial system which we do not observe. In my view, therefore, complexity reduction might be an effective instrument for preventing systemic crises. I can imagine that advice such as this could have been found in the lost Sibylline Books.

Again, let us be specific. There are a lot of regulatory target variables which involve the use of complex risk-adjusting methods. For example, the core capital ratio is the ratio of core capital to risk-weighted assets. But the models used for adjusting the risk did not perform perfectly and underestimated the true risks stemming from CDOs.

As a result, financial institutions were undercapitalised when Lehman became insolvent. If, in addition, we had had a robust target such as a leverage ratio which is not risk-adjusted, financial institutions would have been better prepared on the eve of Lehman. Moreover, according to the concept of RWAs, government bonds have zero weights. With a risk-robust measure institutions would also have been better prepared for sovereign crises. The point is that such robust targets are independent of risk assessment errors and provide additional buffers to absorb risks stemming from the "known unknowns" and "unknown unknowns".

Another example of how complexity reduction can help prevent crisis is standardisation of financial products. In the past, OTC contracts were created with unknown and very hard-to-handle, non-normal probability distributions of random variables – which means creating "known unknowns" via terms of contracts with potentially destabilising effects on the financial system.

## 3. Second and third Sybilline Book: Communicating risk analysis

The second message we might have found in the Sibylline Books is this: "Be aware that risk analysis has to be carefully communicated. Sometimes policy backups are necessary."

The example of stress testing immediately leads us to the third message of Sibylline Books. In a setting in which financial analysis is communicated to the public it is important to find the balance between making realistic assumptions about scenarios and avoiding devastating self-fulfilling prophecies of the markets. Moreover, if stress tests detect capital needs private and public recapitalisation has to be announced and implemented, thereby preventing market uncertainty. In a systemic crisis recapitalisation has to be a part of a comprehensive package including public aid for banks. This aid helps to restore confidence in the wholesale markets, to overcome funding problems and ultimately to mitigate excessive deleveraging pressure.

## 4. Fourth and fifth Sybilline Book: Building up institutions and credibility

The fourth message contained in the Sibylline Books could be: "Systemic risk analysis needs an appropriate institutional set-up". As in Ancient Rome, where the Sibylline Books were treasured by the priests of the Temple of Jupiter, modern-day risk analysis needs an institutional framework. The EU has solved this problem by delegating systemic risk analysis to the ESRB which can issue official warnings and recommendations. Other EU bodies and the national authorities are responsible for implementing policy measures. Central banks have an important role to play here given their analysis competence and expertise. But monetary policy instruments are not in the first instance financial stability policy instruments.

Therefore, the institutional set up is not simply a matter of organisation but essentially a matter of credibility of the institutions involved.

So the fifth Sibylline message might be this: “The risk analysis credibility of the various bodies needs to be built up”. In practical terms for the ESRB this means finding the right balance in issuing warnings and recommendations. Too few warnings entail the danger of missing systemic risks. Conversely, too many warnings could be missed by the addressees.

## 5. Sixth and seventh Sybilline Book: Taking into account the global economy

The sixth message of the Sibylline Books might read as follows: “Be aware of relevant developments outside your own region.”

Financial stability is a systemic and a global phenomenon. And as is well known global imbalances play an important role. The savings glut is seeking safe and high yield assets. And global players can help to solve the current crisis in Europe.

Sometimes, international investors ask me, “Why should we buy bonds from sovereigns in crisis if their European partners are unwilling to do so to a larger extent?” My answer is “Look, the European partners have to be aware of moral hazard implications, because they are players in the European political game,” the game, which is reminding us of the story of the purchase of the Sybilline books. Investors outside Europe need not take into account moral hazard implications. They can and should buy such bonds because they have confidence in the long-term sustainability of the fiscal position of the countries in question, and because they are interested in portfolio diversification.

Progress in the various countries can be seen in Ireland, for example, but also in Italy, where the new government is going to implement fiscal measures. They can build on what is essentially a sound economy. Therefore, my seventh and last message is this: “European sovereigns deserve more confidence than markets are currently willing to give them.”

These are seven of the possible messages of the lost or burned Sibylline Books. The remaining messages may be “known unknowns” or “unknows unknowns”.

Thank you.